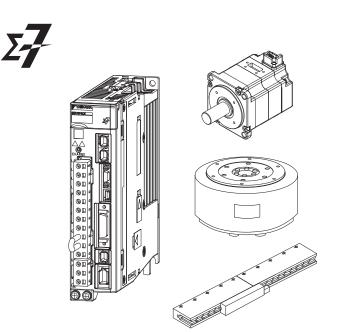
# YASKAWA

# $\Sigma$ -7-Series AC Servo Drive $\Sigma$ -7S SERVOPACK with FT/EX Specification for Press and Injection Molding Application Product Manual

Model: SGD7S-00020000F400, and -00020000F410



Basic Information on SERVOPACKs	1
SERVOPACK Ratings and Specifications	2
Pressure Feedback Control	3
Speed/Torque (Pressure) Table Operation	4
Maintenance	5

Parameter Lists

6

Copyright © 2016 YASKAWA ELECTRIC CORPORATION

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form, or by any means, mechanical, electronic, photocopying, recording, or otherwise, without the prior written permission of Yaskawa. No patent liability is assumed with respect to the use of the information contained herein. Moreover, because Yaskawa is constantly striving to improve its high-quality products, the information contained in this manual is subject to change without notice. Every precaution has been taken in the preparation of this manual. Nevertheless, Yaskawa assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained in this publication.

# About this Manual

This manual describes the press and injection molding application option for  $\Sigma\text{-}7\text{-}Series$  AC Servo Drive  $\Sigma\text{-}7S$  SERVOPACKs.

Read and understand this manual to ensure correct usage of the  $\Sigma$ -7-Series AC Servo Drives. Keep this manual in a safe place so that it can be referred to whenever necessary.

# **Outline of Manual**

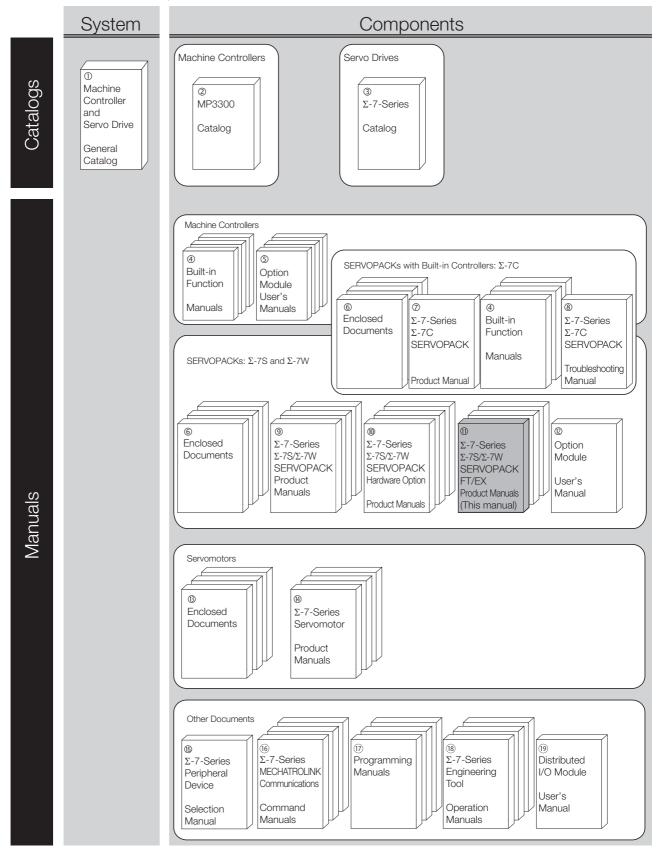
The contents of the chapters of this manual are described in the following table. When you use the SERVOPACK, read this manual and the relevant product manual given in the following table.

Item		This Manual	Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)
	The $\Sigma$ -7 Series	_	1.1
	Product Introduction	1.1	-
	Interpreting the Nameplates	_	1.2
	Part Names	_	1.3
	Model Designations	1.2	_
Basic Information on SERVOPACKs	Combinations of SERVOPACKs and Servo- motors	-	1.5
	Functions	1.4	-
	Restrictions	1.5	-
	SigmaWin+	1.6	-
	Combining the SERVOPACKs with MP- Series Machine Controllers and the MPE720 Engineering Tool	1.7	-
	Ratings	2.1	-
	SERVOPACK Overload Protection Charac- teristics	2.2	_
Selecting a SER-	Specifications	2.3	-
VOPACK	Block Diagrams	-	2.2
	External Dimensions	_	2.3
	Examples of Standard Connections between SERVOPACKs and Peripheral Devices	-	2.4
SERVOPACK Insta	lation	_	Chapter 3
Wiring and Connec	ting SERVOPACKs	_	Chapter 4
Basic Functions That Require Setting before Operation		_	Chapter 5
Application Functions		_	Chapter 6
Trial Operation and Actual Operation		_	Chapter 7
Tuning		_	Chapter 8
Monitor	Monitoring Product Information	-	9.1
	Monitoring SERVOPACK Status	-	9.2
	Monitoring Machine Operation Status and Signal Waveforms	3.7, 4.5	9.3
	Monitoring Product Life	_	9.4
			Continued on next nade

	Item	This Manual	Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)
Fully-Closed Loop	Control	_	Chapter 10
Safety Function		_	Chapter 11
	Introduction	3.1	_
	Input Signal Connections	3.2	_
	Operation Patterns for Pressure Feedback Control	3.3	-
Pressure Feed- back Control	Changing from Torque Control to Pressure Feedback Control	3.4	_
	Control Block Diagrams	3.5	-
	Setup Procedure	3.6	-
	Monitoring	3.7	_
	Introduction	4.1	-
Speed/Torque	Operation Patterns for Speed/Torque (Pres- sure) Table Operation	4.2	-
(Pressure) Table Operation	Table Parameter Settings for Speed/Torque (Pressure) Table Operation	4.3	-
	Operating Procedure	4.4	_
	Monitoring	4.5	_
	Inspections and Part Replacement	_	12.1
	Alarm Displays	5.1.1, 5.2.1	_
	List of Alarms	5.1.2, 5.2.2	-
	Troubleshooting Alarms	5.1.3, 5.2.3	_
	Resetting Alarms	_	12.2.3
	Display Alarm History	_	12.2.4
	Clearing the Alarm History	_	12.2.5
Maintenance	Resetting Alarms Detected in Option Modules	_	12.2.6
	Resetting Motor Type Alarms	_	12.2.7
	Warning Displays	5.1.4, 5.2.4	-
	List of Warnings	5.1.5, 5.2.5	-
	Troubleshooting Warnings	5.1.6, 5.2.6	_
	Monitoring Communications Data during Alarms or Warnings	-	12.4
	Troubleshooting Based on the Operation and Conditions of the Servomotor	5.1.7, 5.2.7	-
	Interpreting the Parameter Lists	6.1	_
Deremeter	List of Servo Parameters	6.2.1, 6.3.1	-
Parameter Lists	List of MECHATROLINK-III Common Parameters	6.2.2, 6.3.2	-
	Parameter Recording Table	6.2.3, 6.3.3	_
Appendices		_	Chapter 14

# **Related Documents**

The relationships between the documents that are related to the Servo Drives are shown in the following figure. The numbers in the figure correspond to the numbers in the table on the following pages. Refer to these documents as required.



Classification	Document Name	Document No.	Description	
① Machine Controller and Servo Drive General Catalog	Machine Controller and AC Servo Drive Solutions Catalog	KAEP S800001 22	Describes the features and application examples for combinations of MP3000-Series Machine Controllers and $\Sigma$ -7-Series AC Servo Drives.	
② MP3300 Catalog	Machine Controller MP3300	KAEP C880725 03	Provides detailed information on MP3300 Machine Controllers, including features and specifica- tions.	
③ Σ-7-Series Catalog	AC Servo Drives Σ-7 Series	KAEP S800001 23	Provides detailed information on $\Sigma$ - 7-Series AC Servo Drives, including features and specifications.	
④ Built-in Function Manuals	Σ-7-Series AC Servo Drive Σ-7C SERVOPACK Motion Control User's Manual	SIEP S800002 03	Provides detailed information on the specifications, system configu- ration, and application methods of the Motion Control Function Mod- ules (SVD, SVC4, and SVR4) for $\Sigma$ - 7-Series $\Sigma$ -7C SERVOPACKs.	
	Machine Controller MP3000 Series Communications User's Manual	SIEP C880725 12	Provides detailed information on the specifications, system configu- ration, and communications con- nection methods for the Ethernet communications that are used with MP3000-Series Machine Control- lers and $\Sigma$ -7-Series $\Sigma$ -7C SERVO- PACKs.	
© Option Module User's Manuals	Machine Controller MP2000 Series Communication Module User's Manual	SIEP C880700 04		
	Machine Controller MP2000 Series 262IF-01 FL-net Communication Module User's Manual	SIEP C880700 36	Provide detailed information on the specifications and communications methods for the Communications Modules that can be mounted to MP3000-Series Machine Controllers and $\Sigma$ -7-Series $\Sigma$ -7C	
	Machine Controller MP2000 Series 263IF-01 EtherNet/IP Communication Module User's Manual	SIEP C880700 39	SERVOPACKs.	
	Machine Controller MP2000 Series I/O Module User's Manual	SIEP C880700 34		
	Machine Controller MP2000 Series Analog Input/Analog Output Mod- ule AI-01/AO-01 User's Manual	SIEP C880700 26	Provide detailed information on the specifications and communica- tions methods for the I/O Modules that can be mounted to MP3000- Series Machine Controllers and $\Sigma$ - 7-Series $\Sigma$ -7C SERVOPACKs.	
	Machine Controller MP2000 Series Counter Module CNTR-01 User's Manual	SIEP C880700 27	Continued on part page	

Continued from previous page. Classification **Document Name** Document No. Description Provides detailed information for Σ-7-Series AC Servo Drive  $\Sigma\text{-}7S$  and  $\Sigma\text{-}7W$  SERVOPACK TOMP C710828 00 the safe usage of  $\Sigma$ -7-Series SERVOPACKs. Safety Precautions  $\Sigma$ -V-Series/ $\Sigma$ -V-Series for Large-Capacity Models/ Provides detailed information for TOBP C720829 00  $\Sigma$ -7-Series the safe usage of Option Modules. Safety Precautions Option Module  $\Sigma$ -V-Series/ $\Sigma$ -V-Series for Large-Capacity Models/ Provides detailed procedures for  $\Sigma$ -7-Series TOBP C720829 01 installing the Command Option Installation Guide Module in a SERVOPACK. **Command Option Module**  $\Sigma$ -V-Series/ $\Sigma$ -V-Series for Large-Capacity Models/ Provides detailed procedures for  $\Sigma$ -7-Series TOBP C720829 03 installing the Fully-closed Module in ര Installation Guide a SERVOPACK. **Enclosed Documents** Fully-closed Module  $\Sigma$ -V-Series/ $\Sigma$ -V-Series for Large-Capacity Models/ Provides detailed procedures for TOBP C720829 06  $\Sigma$ -7-Series installing the Safety Module in a Installation Guide SERVOPACK. Safety Module  $\Sigma$ -V-Series/ $\Sigma$ -V-Series for Large-Capacity Models/ Provides detailed procedures for installing the INDEXER Module in a  $\Sigma$ -7-Series TOBP C720829 02 SERVOPACK. Installation Guide **INDEXER** Module  $\Sigma$ -V-Series/ $\Sigma$ -V-Series for Large-Capacity Models/ Provides detailed procedures for  $\Sigma$ -7-Series TOBP C720829 07 installing the DeviceNet Module in a Installation Guide SERVOPACK. **DeviceNet Module** Provides detailed information on selecting  $\Sigma$ -7-Series  $\Sigma$ -7C SERVO- $\overline{\mathcal{O}}$ Σ-7-Series AC Servo Drive PACKs; installing, connecting, set- $\Sigma$ -7-Series ting, testing in trial operation, and  $\Sigma$ -7C SERVOPACK SIEP S800002 04  $\Sigma$ -7C SERVOPACK Product Manual tuning Servo Drives; writing, moni-Product Manual toring, and maintaining programs; and other information. ര  $\Sigma$ -7-Series  $\Sigma$ -7-Series AC Servo Drive Provides detailed troubleshooting  $\Sigma$ -7C SERVOPACK  $\Sigma$ -7C SERVOPACK SIEP S800002 07 information for  $\Sigma$ -7-Series  $\Sigma$ -7C SERVOPACKs. Troubleshooting **Troubleshooting Manual** Manual

			Continued from previous page.
Classification	Document Name	Document No.	Description
<ul> <li>         9         Σ-7-Series         Σ-7S/Σ-7W         SERVOPACK         Product Manuals     </li> </ul>	$\Sigma$ -7-Series AC Servo Drive $\Sigma$ -7S SERVOPACK with MECHATROLINK-III Communications References Product Manual	SIEP S800001 28	
	$\Sigma$ -7-Series AC Servo Drive $\Sigma$ -7S SERVOPACK with MECHATROLINK-II Communications References Product Manual	SIEP S800001 27	
	$\Sigma$ -7-Series AC Servo Drive $\Sigma$ -7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual	SIEP S800001 26	Provide detailed information on selecting $\Sigma$ -7-Series SERVO-PACKs and information on install-
	$\Sigma$ -7-Series AC Servo Drive $\Sigma$ -7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual	SIEP S800001 64	ing, connecting, setting, performing trial operation for, tuning, and mon- itoring the Servo Drives.
	$\Sigma$ -7-Series AC Servo Drive $\Sigma$ -7S SERVOPACK Command Option Attachable Type with DeviceNet Module Product Manual	SIEP S800001 70	
	$\Sigma$ -7-Series AC Servo Drive $\Sigma$ -7W SERVOPACK with MECHATROLINK-III Communications References Product Manual	SIEP S800001 29	
$ $	$\Sigma$ -7-Series AC Servo Drive $\Sigma$ -7S/ $\Sigma$ -7W SERVOPACK with Hardware Option Specifications Dynamic Brake Product Manual	SIEP S800001 73	Provide detailed information on
	$\Sigma$ -7-Series AC Servo Drive $\Sigma$ -7W/ $\Sigma$ -7C SERVOPACK with Hardware Option Specifications HWBB Function Product Manual	SIEP S800001 72	Hardware Options for Σ-7-Series SERVOPACKs.

			Continued from previous page.
Classification	Document Name	Document No.	Description
<sup>መ</sup> Σ-7-Series	$\Sigma$ -7-Series AC Servo Drive $\Sigma$ -7S SERVOPACK with FT/EX Specification for Indexing Application Product Manual	SIEP S800001 84	
	$\Sigma$ -7-Series AC Servo Drive $\Sigma$ -7S SERVOPACK with FT/EX Specification for Tracking Application Product Manual	SIEP S800001 89	Provide detailed information on the
Σ-7S/Σ-7W SERVO- PACK FT/EX Product Manuals	$\Sigma$ -7-Series AC Servo Drive $\Sigma$ -7S SERVOPACK with FT/EX Specification for Application with Special Motor, SGM7D Motor Product Manual	SIEP S800001 91	FT/EX Option for $\Sigma$ -7-Series SERVOPACKs.
	$\Sigma$ -7-Series AC Servo Drive $\Sigma$ -7S SERVOPACK with FT/EX Specification for Press and Injec- tion Molding Product Manual	This manual (SIEP S800001 94)	
© Option Module User's Manual	AC Servo Drives $\Sigma$ -V Series/ $\Sigma$ -V Series for Large-Capacity Models/ $\Sigma$ -7 Series User's Manual Safety Module	C-V Series/Σ-V Series or Large-Capacity Models/ C-7 Series Jser's Manual	
® Enclosed Documents	AC Servo Drive Rotary Servomotor Safety Precautions	TOBP C230260 00	Provides detailed information for the safe usage of Rotary Servomo- tors and Direct Drive Servomotors.
	AC Servomotor Linear Σ Series Safety Precautions	TOBP C230800 00	Provides detailed information for the safe usage of Linear Servomo- tors.
	Σ-7-Series AC Servo Drive Rotary Servomotor Product Manual	SIEP S800001 36	
<sup>®</sup> Σ-7-Series Servomotor Product Manuals	Σ-7-Series AC Servo Drive Linear Servomotor Product Manual	SIEP S800001 37	Provide detailed information on selecting, installing, and connecting the $\Sigma$ -7-Series Servomotors.
	Σ-7-Series AC Servo Drive Direct Drive Servomotor Product Manual	SIEP S800001 38	
<sup>®</sup> Σ-7-Series Peripheral Device Selection Manual	Σ-7-Series AC Servo Drive Peripheral Device Selection Manual	SIEP S800001 32	Describes the peripheral devices for a $\Sigma$ -7-Series Servo System.

Continued from previous page.

	Continued from previous page.			
Classification	Document Name	Document No.	Description	
© Σ-7-Series MECHATROLINK Communications Command Manuals	Σ-7-Series AC Servo Drive MECHATROLINK-II Communications Command Manual	SIEP S800001 30	Provides detailed information on the MECHATROLINK-II communications commands that are used for a $\Sigma$ -7-Series Servo System.	
	Σ-7-Series AC Servo Drive MECHATROLINK-III Communications Standard Servo Profile Command Manual	SIEP S800001 31	Provides detailed information on the MECHATROLINK-III communi- cations standard servo profile com- mands that are used for a $\Sigma$ -7- Series Servo System.	
<sup>®</sup> Programming Manuals	Machine Controller MP3000 Series Ladder Programming Manual	SIEP C880725 13	Provides detailed information on the ladder programming specifica- tions and instructions for MP3000- Series Machine Controllers and $\Sigma$ - 7-Series $\Sigma$ -7C SERVOPACKs.	
	Machine Controller MP3000 Series Motion Programming Manual	SIEP C880725 14	Provides detailed information on the motion programming and sequence programming specifica- tions and instructions for MP3000- Series Machine Controllers and $\Sigma$ - 7-Series $\Sigma$ -7C SERVOPACKs.	
$^{(I)}$ $\Sigma$ -7-Series Operation Interface Operating Manuals	Machine Controller MP2000/MP3000 Series Engineering Tool MPE720 Version 7 User's Manual	SIEP C880761 03	Describes in detail how to operate MPE720 version 7.	
	Σ-7-Series AC Servo Drive Digital Operator Operating Manual	SIEP S800001 33	Describes the operating proce- dures for a Digital Operator for a $\Sigma$ -7-Series Servo System.	
	AC Servo Drive Engineering Tool SigmaWin+ Operation Manual	SIET S800001 34	Provides detailed operating proce- dures for the SigmaWin+ Engineer- ing Tool for a $\Sigma$ -7-Series Servo System.	
<sup>®</sup> Distributed I/O Module User's Manuals	MECHATROLINK-III Compatible I/O Module User's Manual	SIEP C880781 04	Describes the functions, specifica- tions, operating methods, and MECHATROLINK-III communica- tions for the Remote I/O Modules for MP2000/MP3000-Series Machine Controllers.	

# **Using This Manual**

### ◆ Technical Terms Used in This Manual

The following terms are used in this manual.

Term	Meaning		
Servomotor	A $\Sigma$ -7-Series Rotary Servomotor.		
Rotary Servomotor	A generic term used for a $\Sigma$ -7-Series Rotary Servomotor (SGM7A, SGM7J, SGM7P, or SGM7G) or a Direct Drive Servomotor (SGM7E, SGM7F, SGMCV, or SGMCS). The descriptions will specify when Direct Drive Servomotors are excluded.		
Linear Servomotor	A generic term used for a $\Sigma$ -7-Series Linear Servomotor (SGLG, SGLF, or SGLT).		
SERVOPACK	A $\Sigma$ -7-Series $\Sigma$ -7S Servo Amplifier with MECHATROLINK-III Communications References.		
Servo Drive	The combination of a Servomotor and SERVOPACK.		
Servo System	A servo control system that includes the combination of a Servo Drive with a host controller and peripheral devices.		
servo ON	Supplying power to the motor.		
servo OFF	Not supplying power to the motor.		
base block (BB)	Shutting OFF the power supply to the motor by shutting OFF the base current to the power transistor in the SERVOPACK.		
servo lock	A state in which the motor is stopped and is in a position loop with a position reference of 0.		
Main Circuit Cable	One of the cables that connect to the main circuit terminals, including the Main Circuit Power Supply Cable, Control Power Supply Cable, and Servomotor Main Circuit Cable.		
SigmaWin+	The Engineering Tool for setting up and tuning Servo Drives or a computer in which the Engineering Tool is installed.		

### ◆ Differences in Terms for Rotary Servomotors and Linear Servomotors

There are differences in the terms that are used for Rotary Servomotors and Linear Servomotors. This manual primarily describes Rotary Servomotors. If you are using a Linear Servomotor, you need to interpret the terms as given in the following table.

Rotary Servomotor	Linear Servomotor
torque	force
moment of inertia	mass
rotation	movement
forward rotation and reverse rotation	forward movement and reverse movement
CW and CCW pulse trains	forward and reverse pulse trains
rotary encoder	linear encoder
absolute rotary encoder	absolute linear encoder
incremental rotary encoder	incremental linear encoder
unit: min <sup>-1</sup>	unit: mm/s
unit: N·m	unit: N

### Notation Used in this Manual

### Notation for Reverse Signals

The names of reverse signals (i.e., ones that are valid when low) are written with a forward slash (/) before the signal abbreviation.

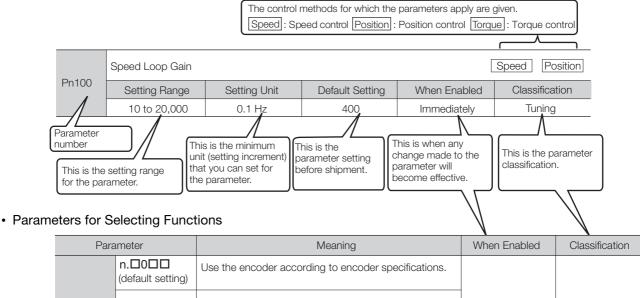
### Notation Example

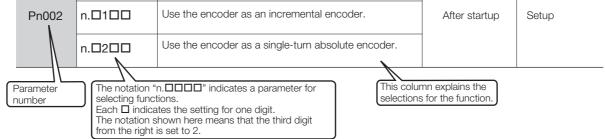
BK is written as /BK.

### Notation for Parameters

The notation depends on whether the parameter requires a numeric setting (parameter for numeric setting) or requires the selection of a function (parameter for selecting functions).

· Parameters for Numeric Settings





### Notation Example

### Notation Examples for Pn002

	Digit Notation			Numeric Value Notation
n.0 0 0 0	Notation	Meaning	Notation	Meaning
	Pn002 = n.□□□X	Indicates the first digit from the right in Pn002.	Pn002 = n.□□□1	Indicates that the first digit from the right in Pn002 is set to 1.
	Pn002 = n.□□X□	Indicates the second digit from the right in Pn002.	Pn002 = n.□□1□	Indicates that the second digit from the right in Pn002 is set to 1.
▶	Pn002 = n.□X□□	Indicates the third digit from the right in Pn002.	Pn002 = n.⊡1⊡⊡	Indicates that the third digit from the right in Pn002 is set to 1.
►	Pn002 = n.X□□□	Indicates the fourth digit from the right in Pn002.	Pn002 = n.1□□□	Indicates that the fourth digit from the right in Pn002 is set to 1.

### Engineering Tools Used in This Manual

This manual uses the interfaces of the SigmaWin+ for descriptions.

### ♦ Trademarks

- MECHATROLINK is a trademark of the MECHATROLINK Members Association.
- QR code is a trademark of Denso Wave Inc.
- Other product names and company names are the trademarks or registered trademarks of the respective company. "TM" and the ® mark do not appear with product or company names in this manual.

### Visual Aids

The following aids are used to indicate certain types of information for easier reference.

Č 🖸
Importan

Indicates precautions or restrictions that must be observed. Also indicates alarm displays and other precautions that will not result in machine damage.



Indicates definitions of difficult terms or terms that have not been previously explained in this manual.

Example Indicates operating or setting examples.

Information Indicates supplemental information to deepen understanding or useful information.

# **Safety Precautions**

### ♦ Safety Information

To prevent personal injury and equipment damage in advance, the following signal words are used to indicate safety precautions in this document. The signal words are used to classify the hazards and the degree of damage or injury that may occur if a product is used incorrectly. Information marked as shown below is important for safety. Always read this information and heed the precautions that are provided.

### 

• Indicates precautions that, if not heeded, are likely to result in loss of life, serious injury, or fire.

# 

• Indicates precautions that, if not heeded, could result in loss of life, serious injury, or fire.

# 

• Indicates precautions that, if not heeded, could result in relatively serious or minor injury, or in fire.

# NOTICE

• Indicates precautions that, if not heeded, could result in property damage.

### ◆ Safety Precautions That Must Always Be Observed

### General Precautions

# 

- Read and understand this manual to ensure the safe usage of the product.
- Keep this manual in a safe, convenient place so that it can be referred to whenever necessary. Make sure that it is delivered to the final user of the product.
- Do not remove covers, cables, connectors, or optional devices while power is being supplied to the SERVOPACK.

There is a risk of electric shock, operational failure of the product, or burning.

# 

- Use a power supply with specifications (number of phases, voltage, frequency, and AC/DC type) that are appropriate for the product. There is a risk of burning, electric shock, or fire.
- Connect the ground terminals on the SERVOPACK and Servomotor to ground poles according to local electrical codes (100  $\Omega$  or less for a SERVOPACK with a 100-VAC or 200-VAC power supply, and 10  $\Omega$  or less for a SERVOPACK with a 400-VAC power supply). There is a risk of electric shock or fire.
- Do not attempt to disassemble, repair, or modify the product. There is a risk of fire or failure. The warranty is void for the product if you disassemble, repair, or modify it.

# 

- The SERVOPACK heat sinks, regenerative resistors, External Dynamic Brake Resistors, Servomotors, and other components can be very hot while power is ON or soon after the power is turned OFF. Implement safety measures, such as installing covers, so that hands and parts such as cables do not come into contact with hot components. There is a risk of burn injury.
- For a 24-VDC power supply, use a power supply device with double insulation or reinforced insulation.

There is a risk of electric shock.

- Do not damage, pull on, apply excessive force to, place heavy objects on, or pinch cables. There is a risk of failure, damage, or electric shock.
- The person who designs the system that uses the hard wire base block safety function must have a complete knowledge of the related safety standards and a complete understanding of the instructions in this document. There is a risk of injury, product damage, or machine damage.
- Do not use the product in an environment that is subject to water, corrosive gases, or flammable gases, or near flammable materials.
  - There is a risk of electric shock or fire.

# NOTICE

- Do not attempt to use a SERVOPACK or Servomotor that is damaged or that has missing parts.
- Install external emergency stop circuits that shut OFF the power supply and stops operation immediately when an error occurs.
- In locations with poor power supply conditions, install the necessary protective devices (such as AC reactors) to ensure that the input power is supplied within the specified voltage range. There is a risk of damage to the SERVOPACK.
- Use a Noise Filter to minimize the effects of electromagnetic interference. Electronic devices used near the SERVOPACK may be affected by electromagnetic interference.
- Always use a Servomotor and SERVOPACK in one of the specified combinations.
- Do not touch a SERVOPACK or Servomotor with wet hands. There is a risk of product failure.

### Storage Precautions

# 

• Do not place an excessive load on the product during storage. (Follow all instructions on the packages.)

There is a risk of injury or damage.

# NOTICE

- Do not install or store the product in any of the following locations.
  - Locations that are subject to direct sunlight
  - · Locations that are subject to ambient temperatures that exceed product specifications
  - Locations that are subject to relative humidities that exceed product specifications
  - · Locations that are subject to condensation as the result of extreme changes in temperature
  - · Locations that are subject to corrosive or flammable gases
  - · Locations that are near flammable materials
  - · Locations that are subject to dust, salts, or iron powder
  - Locations that are subject to water, oil, or chemicals
  - · Locations that are subject to vibration or shock that exceeds product specifications
  - Locations that are subject to radiation
  - If you store or install the product in any of the above locations, the product may fail or be damaged.

### Transportation Precautions

# 

- Transport the product in a way that is suitable to the mass of the product.
- Do not use the eyebolts on a SERVOPACK or Servomotor to move the machine. There is a risk of damage or injury.
- When you handle a SERVOPACK or Servomotor, be careful of sharp parts, such as the corners. There is a risk of injury.
- Do not place an excessive load on the product during transportation. (Follow all instructions on the packages.)

There is a risk of injury or damage.

# NOTICE

- Do not hold onto the front cover or connectors when you move a SERVOPACK. There is a risk of the SERVOPACK falling.
- A SERVOPACK or Servomotor is a precision device. Do not drop it or subject it to strong shock. There is a risk of failure or damage.
- Do not subject connectors to shock. There is a risk of faulty connections or damage.
- If disinfectants or insecticides must be used to treat packing materials such as wooden frames, plywood, or pallets, the packing materials must be treated before the product is packaged, and methods other than fumigation must be used.

# Example: Heat treatment, where materials are kiln-dried to a core temperature of 56°C for 30 minutes or more.

If the electronic products, which include stand-alone products and products installed in machines, are packed with fumigated wooden materials, the electrical components may be greatly damaged by the gases or fumes resulting from the fumigation process. In particular, disinfectants containing halogen, which includes chlorine, fluorine, bromine, or iodine can contribute to the erosion of the capacitors.

• Do not overtighten the eyebolts on a SERVOPACK or Servomotor. If you use a tool to overtighten the eyebolts, the tapped holes may be damaged.

### Installation Precautions

 Install the Servomotor or SERVOPACK in a way that will support the mass given in technical documents.
 Install SERVOPACKs, Servomotors, regenerative resistors, and External Dynamic Brake Resistors on nonflammable materials. Installation directly onto or near flammable materials may result in fire.
 Provide the specified clearances between the SERVOPACK and the control panel as well as with other devices. There is a risk of fire or failure.
 Install the SERVOPACK in the specified orientation. There is a risk of fire or failure.
 Do not step on or place a heavy object on the product. There is a risk of failure, damage, or injury.
 Do not allow any foreign matter to enter the SERVOPACK or Servomotor. There is a risk of failure or fire.

# NOTICE

- Do not install or store the product in any of the following locations.
  - Locations that are subject to direct sunlight
  - · Locations that are subject to ambient temperatures that exceed product specifications
  - Locations that are subject to relative humidities that exceed product specifications
  - · Locations that are subject to condensation as the result of extreme changes in temperature
  - · Locations that are subject to corrosive or flammable gases
  - · Locations that are near flammable materials
  - · Locations that are subject to dust, salts, or iron powder
  - Locations that are subject to water, oil, or chemicals
  - · Locations that are subject to vibration or shock that exceeds product specifications
  - Locations that are subject to radiation
  - If you store or install the product in any of the above locations, the product may fail or be damaged.
- Use the product in an environment that is appropriate for the product specifications. If you use the product in an environment that exceeds product specifications, the product may fail or be damaged.
- A SERVOPACK or Servomotor is a precision device. Do not drop it or subject it to strong shock. There is a risk of failure or damage.
- Always install a SERVOPACK in a control panel.
- Do not allow any foreign matter to enter a SERVOPACK or a Servomotor with a Cooling Fan and do not cover the outlet from the Servomotor's cooling fan. There is a risk of failure.

### Wiring Precautions

# 

• Do not change any wiring while power is being supplied. There is a risk of electric shock or injury.

# 

- Wiring and inspections must be performed only by qualified engineers. There is a risk of electric shock or product failure.
- Check all wiring and power supplies carefully. Incorrect wiring or incorrect voltage application to the output circuits may cause short-circuit failures. If a short-circuit failure occurs as a result of any of these causes, the holding brake will not work. This could damage the machine or cause an accident that may result in death or injury.
- Connect the AC and DC power supplies to the specified SERVOPACK terminals.
  - Connect an AC power supply to the L1, L2, and L3 terminals and the L1C and L2C terminals on the SERVOPACK.
  - Connect a DC power supply to the B1/⊕ and ⊖2 terminals and the L1C and L2C terminals on the SERVOPACK.

There is a risk of failure or fire.

 If you use a SERVOPACK that supports a Dynamic Brake Option, connect an External Dynamic Brake Resistor that is suitable for the machine and equipment specifications to the specified terminals.

There is a risk of unexpected operation, machine damage, burning, or injury when an emergency stop is performed.

### Wait for at least six minutes after turning OFF the power supply (with a SERVOPACK for a 100-VAC power supply input, wait for at least nine minutes) and then make sure that the CHARGE indicator is not lit before starting wiring or inspection work. Do not touch the power supply terminals while the CHARGE lamp is lit after turning OFF the power supply because high voltage may still remain in the SERVOPACK. There is a risk of electric shock. Observe the precautions and instructions for wiring and trial operation precisely as described in this document. Failures caused by incorrect wiring or incorrect voltage application in the brake circuit may cause the SERVOPACK to fail, damage the equipment, or cause an accident resulting in death or injury. • Check the wiring to be sure it has been performed correctly. Connectors and pin layouts are sometimes different for different models. Always confirm the pin layouts in technical documents for your model before operation. There is a risk of failure or malfunction. • Connect wires to power supply terminals and motor connection terminals securely with the specified methods and tightening torque. Insufficient tightening may cause wires and terminal blocks to generate heat due to faulty contact. possibly resulting in fire. • Use shielded twisted-pair cables or screened unshielded multi-twisted-pair cables for I/O Signal Cables and Encoder Cables. • Observe the following precautions when wiring the SERVOPACK's main circuit terminals. Turn ON the power supply to the SERVOPACK only after all wiring, including the main circuit terminals, has been completed. If a connector is used for the main circuit terminals, remove the main circuit connector from the SER-VOPACK before you wire it. Insert only one wire per insertion hole in the main circuit terminals. When you insert a wire, make sure that the conductor wire (e.g., whiskers) does not come into contact with adjacent wires.

 Install molded-case circuit breakers and other safety measures to provide protection against short circuits in external wiring.
 There is a risk of fire or failure.

# NOTICE

- Whenever possible, use the Cables specified by Yaskawa. If you use any other cables, confirm the rated current and application environment of your model and use the wiring materials specified by Yaskawa or equivalent materials.
- Securely tighten cable connector screws and lock mechanisms. Insufficient tightening may result in cable connectors falling off during operation.
- Do not bundle power lines (e.g., the Main Circuit Cable) and low-current lines (e.g., the I/O Signal Cables or Encoder Cables) together or run them through the same duct. If you do not place power lines and low-current lines in separate ducts, separate them by at least 30 cm. If the cables are too close to each other, malfunctions may occur due to noise affecting the low-current lines.
- Install a battery at either the host controller or on the Encoder Cable. If you install batteries both at the host controller and on the Encoder Cable at the same time, you will create a loop circuit between the batteries, resulting in a risk of damage or burning.
- When connecting a battery, connect the polarity correctly. There is a risk of battery rupture or encoder failure.

### Operation Precautions

### WARNING Before starting operation with a machine connected, change the settings of the switches and parameters to match the machine. Unexpected machine operation, failure, or personal injury may occur if operation is started before appropriate settings are made. • Do not radically change the settings of the parameters. There is a risk of unstable operation, machine damage, or injury. Install limit switches or stoppers at the ends of the moving parts of the machine to prevent unexpected accidents. There is a risk of machine damage or injury. For trial operation, securely mount the Servomotor and disconnect it from the machine. There is a risk of injury. • Forcing the motor to stop for overtravel is disabled when the Jog (Fn002), Origin Search (Fn003), or Easy FFT (Fn206) utility function is executed. Take necessary precautions. There is a risk of machine damage or injury. When an alarm occurs, the Servomotor will coast to a stop or stop with the dynamic brake according to the SERVOPACK Option specifications and settings. The coasting distance will change with the moment of inertia of the load and the resistance of the External Dynamic Brake Resistor. Check the coasting distance during trial operation and implement suitable safety measures on the machine. • Do not enter the machine's range of motion during operation. There is a risk of injury. • Do not touch the moving parts of the Servomotor or machine during operation. There is a risk of injury. CAUTION • Design the system to ensure safety even when problems, such as broken signal lines, occur. For example, the P-OT and N-OT signals are set in the default settings to operate on the safe side if a signal line breaks. Do not change the polarity of this type of signal. • When overtravel occurs, the power supply to the motor is turned OFF and the brake is released. If you use the Servomotor to drive a vertical load, set the Servomotor to enter a zero-clamped state after the Servomotor stops. Also, install safety devices (such as an external brake or

• Always turn OFF the servo before you turn OFF the power supply. If you turn OFF the main circuit power supply or control power supply during operation before you turn OFF the servo, the Servomotor will stop as follows:

counterweight) to prevent the moving parts of the machine from falling.

- If you turn OFF the main circuit power supply during operation without turning OFF the servo, the Servomotor will stop abruptly with the dynamic brake.
- If you turn OFF the control power supply without turning OFF the servo, the stopping method that is used by the Servomotor depends on the model of the SERVOPACK. For details, refer to the manual for the SERVOPACK.

 If you use a SERVOPACK that supports a Dynamic Brake Option, the Servomotor stopping methods will be different from the stopping methods used without the Option or for other Hardware Option specifications. For details, refer to the 2-7-Series AC Servo Drive 2-7S/2-7W SERVOPACK with Hardware Option Specifications Dynamic Brake Product Manual.

• Do not use the dynamic brake for any application other than an emergency stop. There is a risk of failure due to rapid deterioration of elements in the SERVOPACK and the risk of unexpected operation, machine damage, burning, or injury.

### NOTICE When you adjust the gain during system commissioning, use a measuring instrument to monitor the torque waveform and speed waveform and confirm that there is no vibration. If a high gain causes vibration, the Servomotor will be damaged guickly. • Do not frequently turn the power supply ON and OFF. After you have started actual operation, allow at least one hour between turning the power supply ON and OFF (as a guideline). Do not use the product in applications that require the power supply to be turned ON and OFF frequently. The elements in the SERVOPACK will deteriorate quickly. • An alarm or warning may occur if communications are performed with the host controller while the SigmaWin+ or Digital Operator is operating. If an alarm or warning occurs, it may interrupt the current process and stop the system. • After you complete trial operation of the machine and facilities, use the SigmaWin+ to back up the settings of the SERVOPACK parameters. You can use them to reset the parameters after SERVOPACK replacement. If you do not copy backed up parameter settings, normal operation may not be possible after a faulty SERVOPACK is replaced, possibly resulting in machine or equipment damage. Maintenance and Inspection Precautions DANGER

• Do not change any wiring while power is being supplied. There is a risk of electric shock or injury.

# 

• Wiring and inspections must be performed only by qualified engineers. There is a risk of electric shock or product failure.

# 

- Wait for at least six minutes after turning OFF the power supply (with a SERVOPACK for a 100-VAC power supply input, wait for at least nine minutes) and then make sure that the CHARGE indicator is not lit before starting wiring or inspection work. Do not touch the power supply terminals while the CHARGE lamp is lit after turning OFF the power supply because high voltage may still remain in the SERVOPACK. There is a risk of electric shock.
- Before you replace a SERVOPACK, back up the settings of the SERVOPACK parameters. Copy the backed up parameter settings to the new SERVOPACK and confirm that they were copied correctly.

If you do not copy backed up parameter settings or if the copy operation is not completed normally, normal operation may not be possible, possibly resulting in machine or equipment damage.

# NOTICE

 Discharge all static electricity from your body before you operate any of the buttons or switches inside the front cover of the SERVOPACK. There is a risk of equipment damage.

### Troubleshooting Precautions

# 

 If the safety device (molded-case circuit breaker or fuse) installed in the power supply line operates, remove the cause before you supply power to the SERVOPACK again. If necessary, repair or replace the SERVOPACK, check the wiring, and remove the factor that caused the safety device to operate.

There is a risk of fire, electric shock, or injury.

# 

• The product may suddenly start to operate when the power supply is recovered after a momentary power interruption. Design the machine to ensure human safety when operation restarts. There is a risk of injury.

# 

- When an alarm occurs, remove the cause of the alarm and ensure safety. Then reset the alarm or turn the power supply OFF and ON again to restart operation. There is a risk of injury or machine damage.
- If the Servo ON signal is input to the SERVOPACK and an alarm is reset, the Servomotor may suddenly restart operation. Confirm that the servo is OFF and ensure safety before you reset an alarm.

There is a risk of injury or machine damage.

- Always insert a magnetic contactor in the line between the main circuit power supply and the main circuit power supply terminals on the SERVOPACK so that the power supply can be shut OFF at the main circuit power supply.
   If a magnetic contactor is not connected when the SERVOPACK fails, a large current may flow, possibly resulting in fire.
- If an alarm occurs, shut OFF the main circuit power supply. There is a risk of fire due to a regenerative resistor overheating as the result of regenerative transistor failure.
- Install a ground fault detector against overloads and short-circuiting or install a molded-case circuit breaker combined with a ground fault detector.
   There is a risk of SERVOPACK failure or fire if a ground fault occurs.
- The holding brake on a Servomotor will not ensure safety if there is the possibility that an external force (including gravity) may move the current position and create a hazardous situation when power is interrupted or an error occurs. If an external force may cause movement, install an external braking mechanism that ensures safety.

### Disposal Precautions

• When disposing of the product, treat it as ordinary industrial waste. However, local ordinances and national laws must be observed. Implement all labeling and warnings as a final product as required.

### General Precautions

- Figures provided in this document are typical examples or conceptual representations. There may be differences between them and actual wiring, circuits, and products.
- The products shown in illustrations in this document are sometimes shown without covers or protective guards. Always replace all covers and protective guards before you use the product.
- If you need a new copy of this document because it has been lost or damaged, contact your nearest Yaskawa representative or one of the offices listed on the back of this document.
- This document is subject to change without notice for product improvements, specifications changes, and improvements to the manual itself.
   We will update the document number of the document and issue revisions when changes are made.
- Any and all quality guarantees provided by Yaskawa are null and void if the customer modifies the product in any way. Yaskawa disavows any responsibility for damages or losses that are caused by modified products.

# Warranty

### Details of Warranty

### Warranty Period

The warranty period for a product that was purchased (hereinafter called the "delivered product") is one year from the time of delivery to the location specified by the customer or 18 months from the time of shipment from the Yaskawa factory, whichever is sooner.

### Warranty Scope

Yaskawa shall replace or repair a defective product free of charge if a defect attributable to Yaskawa occurs during the above warranty period.

This warranty does not cover defects caused by the delivered product reaching the end of its service life and replacement of parts that require replacement or that have a limited service life.

This warranty does not cover failures that result from any of the following causes.

- Improper handling, abuse, or use in unsuitable conditions or in environments not described in product catalogs or manuals, or in any separately agreed-upon specifications
- · Causes not attributable to the delivered product itself
- Modifications or repairs not performed by Yaskawa
- Use of the delivered product in a manner in which it was not originally intended
- Causes that were not foreseeable with the scientific and technological understanding at the time
   of shipment from Yaskawa
- Events for which Yaskawa is not responsible, such as natural or human-made disasters

### Limitations of Liability

- Yaskawa shall in no event be responsible for any damage or loss of opportunity to the customer that arises due to failure of the delivered product.
- Yaskawa shall not be responsible for any programs (including parameter settings) or the results of program execution of the programs provided by the user or by a third party for use with programmable Yaskawa products.
- The information described in product catalogs or manuals is provided for the purpose of the customer purchasing the appropriate product for the intended application. The use thereof does not guarantee that there are no infringements of intellectual property rights or other proprietary rights of Yaskawa or third parties, nor does it construe a license.
- Yaskawa shall not be responsible for any damage arising from infringements of intellectual property rights or other proprietary rights of third parties as a result of using the information described in catalogs or manuals.

### ♦ Suitability for Use

- It is the customer's responsibility to confirm conformity with any standards, codes, or regulations that apply if the Yaskawa product is used in combination with any other products.
- The customer must confirm that the Yaskawa product is suitable for the systems, machines, and equipment used by the customer.
- Consult with Yaskawa to determine whether use in the following applications is acceptable. If use in the application is acceptable, use the product with extra allowance in ratings and specifications, and provide safety measures to minimize hazards in the event of failure.
  - Outdoor use, use involving potential chemical contamination or electrical interference, or use in conditions or environments not described in product catalogs or manuals
  - Nuclear energy control systems, combustion systems, railroad systems, aviation systems, vehicle systems, medical equipment, amusement machines, and installations subject to separate industry or government regulations
  - Systems, machines, and equipment that may present a risk to life or property
  - Systems that require a high degree of reliability, such as systems that supply gas, water, or electricity, or systems that operate continuously 24 hours a day
  - Other systems that require a similar high degree of safety
- Never use the product for an application involving serious risk to life or property without first ensuring that the system is designed to secure the required level of safety with risk warnings and redundancy, and that the Yaskawa product is properly rated and installed.
- The circuit examples and other application examples described in product catalogs and manuals are for reference. Check the functionality and safety of the actual devices and equipment to be used before using the product.
- Read and understand all use prohibitions and precautions, and operate the Yaskawa product correctly to prevent accidental harm to third parties.

### Specifications Change

The names, specifications, appearance, and accessories of products in product catalogs and manuals may be changed at any time based on improvements and other reasons. The next editions of the revised catalogs or manuals will be published with updated code numbers. Consult with your Yaskawa representative to confirm the actual specifications before purchasing a product.

# Compliance with UL Standards, EU Directives, and Other Safety Standards

Certification marks for the standards for which the product has been certified by certification bodies are shown on nameplate. Products that do not have the marks are not certified for the standards.

### North American Safety Standards (UL)

Product	Model	North American Safety Standards (UL File No.)			
SERVOPACKs	SGD7S	UL 61800-5-1 (E147823) CSA C22.2 No.274			
Rotary Servomotors	• SGMMV • SGM7A • SGM7J • SGM7P • SGM7G	UL 1004-1 UL 1004-6 (E165827)			
Direct Drive Servo- motors	SGM7E <sup>*1</sup> SGM7F <sup>*2</sup> SGMCV	UL 1004-1 UL 1004-6 (E165827)			
Linear Servomotors	• SGLGW • SGLFW • SGLFW2 <sup>*1</sup> • SGLTW	UL 1004 (E165827)			

\*1. Certification is pending.

® 🗅

\*2. SGM7F-DDB, -DDC, and -DD: Certified; SGM7F-DDA: Certification is pending.

### European Directives

CE			
Product	Model	EU Directive	Harmonized Standards
		Machinery Directive 2006/42/EC	EN ISO13849-1: 2015
SERVOPACKs	SGD7S	EMC Directive 2004/108/EC	EN 55011 group 1, class A EN 61000-6-2 EN 61000-6-4 EN 61800-3
		Low Voltage Directive 2006/95/EC	EN 50178 EN 61800-5-1
	SGMMV • SGM7J • SGM7A • SGM7P • SGM7G	EMC Directive 2004/104/EC	EN 55011 group 1, class A EN 61000-6-2 EN 61800-3
Rotary		Low Voltage Directive 2006/95/EC	EN 60034-1 EN 60034-5
Servomotors		EMC Directive 2004/108/EC	EN 55011 group 1, class A EN 61000-6-2 EN 61000-6-4 EN 61800-3
		Low Voltage Directive 2006/95/EC	EN 60034-1 EN 60034-5
Direct Drive Servomotors	<ul> <li>SGM7E<sup>*1</sup></li> <li>SGM7F<sup>*1</sup></li> <li>SGMCV</li> <li>SGMCS-</li> <li>DD, DDE</li> <li>(Small-Capacity, Coreless Servomotors)</li> </ul>	EMC Directive 2004/108/EC	EN 55011 group 1, class A EN 61000-6-2 EN 61000-6-4 <sup>*2</sup> EN 61800-3 <sup>*3</sup>
Servomotors		Low Voltage Directive 2006/95/EC	EN 60034-1 EN 60034-5
Linear Servomotors	SGLG     SGLF     SGLFW2	EMC Directive 2004/108/EC	EN 55011 group 1, class A EN 61000-6-2 EN 61000-6-4
	• SGLT	Low Voltage Directive 2006/95/EC	EN 60034-1

\*1. Certification is pending.

\*2. Certification is pending for the SGM7F and SGMCV. No application has been made for SGMCS certification.

\*3. No application has been made for SGMCS certification.

Note: We declared the CE Marking based on the harmonized standards in the above table.

### Safety Standards



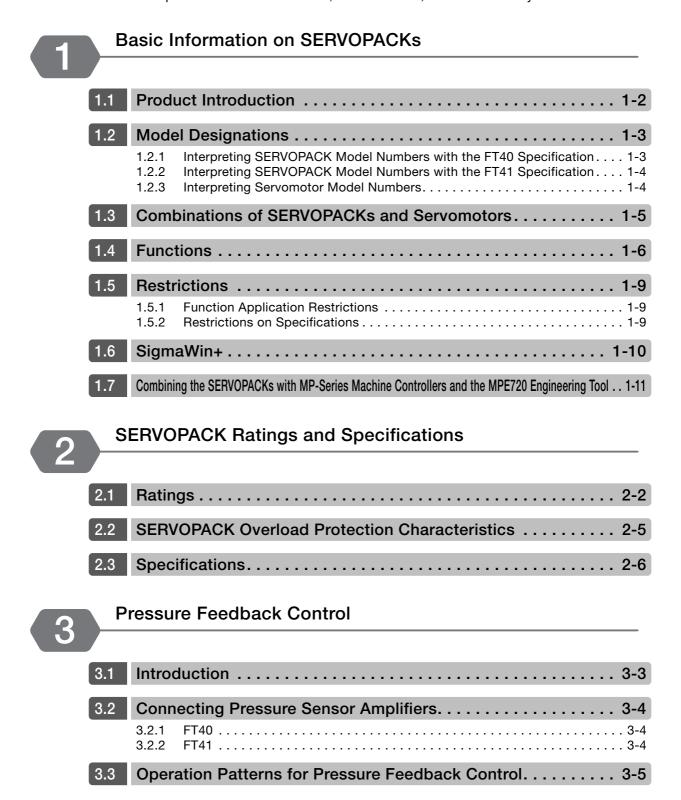
Product	Model	Safety Standards	Standards
	SGD7S	Safety of Machinery	EN ISO13849-1: 2015 IEC 60204-1
SERVOPACKs		Functional Safety	IEC 61508 series IEC 62061 IEC 61800-5-2
		EMC	IEC 61326-3-1

# Safety Parameters

Item	Standards	Performance Level	
Sefety Integrity Level	IEC 61508	SIL3	
Safety Integrity Level	IEC 62061	SILCL3	
Probability of Dangerous Failure per Hour	IEC 61508 IEC 62061	PFH = 4.04×10 <sup>-9</sup> [1/h] (4.04% of SIL3)	
Performance Level	EN ISO 13849-1	PLe (Category 3)	
Mean Time to Dangerous Failure of Each Channel	EN ISO 13849-1	MTTFd: High	
Average Diagnostic Coverage	EN ISO 13849-1	DCavg: Medium	
Stop Category	IEC 60204-1	Stop category 0	
Safety Function	IEC 61800-5-2	STO	
Mission Time	IEC 61508	10 years	
Hardware Fault Tolerance	IEC 61508	HFT = 1	
Subsystem	IEC 61508	В	

# Contents

About this Manual		
Outline of Manual		iii
Related Documents		V
Using This Manual		xi
Safety Precautions		xiv
Warranty		xxiv
Compliance with UL Standards, EU Directives, and Other	r Safety Standard	dsxxvi



3.4	Chan	ging from Torque Control to Pressure Feedback Control 3-6
	3.4.1 3.4.2	Mode 2 Operation       .3-6         Mode 1 Operation       .3-6
3.5	Cont	rol Block Diagrams
	3.5.1 3.5.2	Pressure Feedback Control 2 (Pn458 = n.□□1□)
3.6	Setu	o Procedure
	3.6.1 3.6.2 3.6.3 3.6.4 3.6.5 3.6.6 3.6.7	Flowchart3-10Disabling Tuning-Less Function3-10Setting and Checking Other Station Monitoring3-10Settings for the System That Uses Pressure Feedback Control3-13Automatic Offset Adjustment for Pressure Feedback Detection10Input Signal3-15Settings prior to Pressure Feedback Control Operation3-16Gain Adjustment3-18
3.7	Moni	toring 3-23



4.1	Intro	duction
4.2	Opera	ation Patterns for Speed/Torque (Pressure) Table Operation 4-3
4.3	Table	Parameter Settings for Speed/Torque (Pressure) Table Operation4-4
	4.3.1	Setting the Number of Speed Table References and the Number of Torgue (Pressure) References
	4.3.2	Settings for Speed Table Operation
	4.3.3	Setting Condition for Changing from Speed Table Operation to Torque (Pressure) Table Operation
	4.3.4	Settings for Torque (Pressure) Table Operation
4.4	Oper	ating Procedure 4-13
4.5	Moni	toring



4

### Maintenance

5.1	FT40	Specification	5-2
	5.1.1	Alarm Displays	5-2
	5.1.2	List of Alarms	5-2
	5.1.3	Troubleshooting Alarms	5-8
	5.1.4	Warning Displays	.5-39
	5.1.5	List of Warnings	.5-39
	5.1.6	Troubleshooting Warnings	.5-42
	5.1.7	Troubleshooting Based on the Operation	
		and Conditions of the Servomotor	.5-49

FT41	Specification 5-58
5.2.1	Alarm Displays
5.2.2	List of Alarms
5.2.3	Troubleshooting Alarms
5.2.4	Warning Displays 5-95
5.2.5	List of Warnings
5.2.6	Troubleshooting Warnings 5-98
5.2.7	Troubleshooting Based on the Operation
	and Conditions of the Servomotor 5-105

6

### **Parameter Lists**

6.1	List o	of Servo Parameters 6-2
	6.1.1 6.1.2	Interpreting the Parameter Lists       6-2         List of MECHATROLINK-III Common Parameters       6-3
6.2	FT40	Specification
	6.2.1 6.2.2 6.2.3	List of Servo Parameters
6.3	FT41	Specification 6-69
	6.3.1 6.3.2 6.3.3	List of Servo Parameters

# Index

**Revision History** 

# Basic Information on SERVOPACKs

This chapter provides information required to select SERVOPACKs, such as the SERVOPACK models.

1.1	Product Introduction1-2
1.2	Model Designations1-3
	1.2.1 Interpreting SERVOPACK Model Numbers with the FT40 Specification
	1.2.2 Interpreting SERVOPACK Model Numbers with the FT41 Specification
	1.2.3 Interpreting Servomotor Model Numbers1-4
1.3	Combinations of SERVOPACKs and Servomotors 1-5
1.4	Functions1-6
1.5	Restrictions1-9
	1.5.1Function Application Restrictions1-91.5.2Restrictions on Specifications1-9
1.6	SigmaWin+1-10
1.7	Combining the SERVOPACKs with MP-Series Machine Controllers and the MPE720 Engineering Tool1-11

# **1.1 Product Introduction**

The FT40 SERVOPACKs provide the following two functions to achieve high-precision pressing control for molding equipment, compressors, and other machines that require press and injection molding.

Function	Description	Reference
Pressing Feedback Control	<ul> <li>The value input from a pressure sensor is used to perform fully-closed loop control of a torque reference.</li> <li>For the values input from a pressure sensor, you can select either of the following two types.</li> <li>FT40 (11th to 13th digits in SERVOPACK model number: F40): Analog signals</li> <li>FT41 (11th to 13th digits in SERVOPACK model number: F41): Data via network connected with MECHATROLINK-III</li> </ul>	page 3-1
Speed/Torque (Pressure) Table Operation	Operation is automatically switched between speed references and torque references based on information set in the SERVOPACK.	page 4-1

1.2.1 Interpreting SERVOPACK Model Numbers with the FT40 Specification

# 1.2 Model Designations

# 1.2.1 Interpreting SERVOPACK Model Numbers with the FT40 Specification

Σ-7-Se Σ-7S		- R70 1st+2nd+3rd digits	A 4th digit	20 <sup>5th+6th</sup> digits	A 7th digit		23 h+10th gits	F40 11th+12th+13th digits	B 14th digit
1st+2nd	d+3rd dig	its Maximum Applicable Motor Capacity	4th dig	git Voltage			8th+9t	h+10th digits Specifie	are Options cation
Voltage	Code	Specification	Code	Speci	ification		Code	Specification	Applicable
Three- Phase, 200 VAC	R70*1	0.05 kW	A	200 VAC				opeoindation	Models
	R90*1	0.1 kW	F	100 VAC			023	Analog sensor input	All models
	1R6*1	0.2 kW							
	2R8*1	0.4 kW	5th+6t	th digits Interf	ace*2				
	3R8	0.5 kW	Code	Speci	ification		11th+1	2th+13th digits FT/	EX Specification
	5R5*1	0.75 kW	20	MECHATROLIN					
	7R6	1.0 kW	20	communications references		S	Code	de Specification	
	120	1.5 kW					F40	Press and injection m	olding option
	180	2.0 kW	7th dig	git Design Revi	sion Order				-
	200	3.0 kW	А						
	330	5.0 kW					14th di	git BTO Specification	*3
	470	6.0 kW					Code	Specificat	ion
	550	7.5 kW							
	590	11 kW					None	None	
	780	15 kW					В	BTO specification	
Single- Phase, 100 VAC	R70	0.05 kW							
	R90	0.1 kW							
	2R1	0.2 kW							
	2R8	0.4 kW							

\*1. You can use these models with either a single-phase or three-phase input.

\*2. The same interface is used for both Rotary Servomotors and Linear Servomotors.

\*3. The BTO specification indicates if the SEVOPACK is customized by using the MechatroCloud BTO service. You need a BTO number to order SERVOPACKs with customized specifications. Refer to the following catalog for details on the BTO specification.

 $\square$  AC Servo Drives  $\Sigma$ -7 Series (Manual No.: KAEP S800001 23)

1.2.2 Interpreting SERVOPACK Model Numbers with the FT41 Specification

### Interpreting SERVOPACK Model Numbers with the FT41 1.2.2 Specification SGD7S -R70 20 $\cap \cap \cap$ F41 1th+12th+13th st+2nd+3rd 3th+9th+10th $\Sigma$ -7-Series diaits Σ-7S **SERVOPACKs** Maximum Applicable Hardware Options 1st+2nd+3rd digits 4th digit Voltage 8th+9th+10th digits Motor Capacity Specification Specification Code Specification Voltage Code Code Specification R70\*1 0.05 kW 200 VAC А R90\*1 0.1 kW F 100 VAC No hardware options 000 1R6\* 0.2 kW 2R8\*1 0.4 kW 5th+6th digits Interface\*2 3R8 0.5 kW 11th+12th+13th digits FT/EX Specification Code Specification 5R5\*1 0.75 kW MECHATROLINK-III 20 Code Specification communications references 7R6 1.0 kW Three-120 Phase. 1.5 kW F41 Press and injection molding option 200 VAC 2.0 kW 7th digit Design Revision Order 180 200 3.0 kW А 14th digit BTO Specification\*3 330 5.0 kW 470 6.0 kW Code Specification 550 7.5 kW None None 11 kW 590 В **BTO** specification 780 15 kW R70 0.05 kW Single-R90 0.1 kW Phase. 2R1 0.2 kW 100 VAC 2R8 0.4 kW

\*1. You can use these models with either a single-phase or three-phase input.

- \*2. The same interface is used for both Rotary Servomotors and Linear Servomotors.
- \*3. The BTO specification indicates if the SEVOPACK is customized by using the MechatroCloud BTO service. You need a BTO number to order SERVOPACKs with customized specifications. Refer to the following catalog for details on the BTO specification.

 $\square$  AC Servo Drives  $\Sigma$ -7 Series (Manual No.: KAEP S800001 23)

## 1.2.3 Interpreting Servomotor Model Numbers

Refer to the following manuals for information on interpreting  $\Sigma$ -7-Series Servomotor model numbers.

 $\prod$   $\Sigma$ -7-Series Rotary Servomotor Product Manual (Manual No.: SIEP S800001 36)

 $\square$   $\Sigma$ -7-Series Linear Servomotor Product Manual (Manual No.: SIEP S800001 37)

Ω Σ-7-Series Direct Drive Servomotor Product Manual (Manual No.: SIEP S800001 38)

# 1.3 Combinations of SERVOPACKs and Servomotors

Refer to the following manuals for information on combinations with  $\Sigma$ -7-Series Servomotors.  $\square \Sigma$ -7-Series Rotary Servomotor Product Manual (Manual No.: SIEP S800001 36)

 $\square$   $\Sigma$ -7-Series Linear Servomotor Product Manual (Manual No.: SIEP S800001 37)

Ω Σ-7-Series Direct Drive Servomotor Product Manual (Manual No.: SIEP S800001 38)

1

# 1.4 Functions

This section lists the functions provided by SERVOPACKs. Refer to the following manuals for details on the functions.

Ω Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)

Functions given inside bold lines in the functions tables are restricted for the SERVOPACKs described in this manual. Refer to the following section for details on restrictions to these functions.

3 1.5 Restrictions on page 1-9

• Functions Related to the Machine

Function
Power Supply Type Settings for the Main Circuit and Control Circuit
Automatic Detection of Connected Motor
Motor Direction Setting
Linear Encoder Pitch Setting
Writing Linear Servomotor Parameters
Selecting the Phase Sequence for a Linear Servomotor
Polarity Sensor Setting
Polarity Detection
Overtravel Function and Settings
Holding Brake
Motor Stopping Methods for Servo OFF and Alarms
Resetting the Absolute Encoder
Setting the Origin of the Absolute Encoder
Setting the Regenerative Resistor Capacity
Operation for Momentary Power Interruptions
SEMI F47 Function
Setting the Motor Maximum Speed
Software Limits and Settings
Multiturn Limit Setting
Adjustment of Motor Current Detection Signal Offset
Forcing the Motor to Stop
Speed Ripple Compensation
Current Control Mode Selection
Current Gain Level Setting
Speed Detection Method Selection
Fully-Closed Loop Control
Safety Functions
External Latches

#### · Functions Related to the Host Controller

Function
Electronic Gear Settings
I/O Signal Allocations
Servo Alarm (ALM) Signal
Warning Output (/WARN) Signal
Rotation Detection (/TGON) Signal
/S-RDY (Servo Ready) Signal
Speed Coincidence Detection (/V-CMP) Signal
Positioning Completion (/COIN) Signal
Near (/NEAR) Signal
Speed Limit during Torque Control
Speed Limit Detection (/VLT) Signal
Encoder Divided Pulse Output
Selecting Torque Limits
Vibration Detection Level Initialization
Alarm Reset
Replacing the Battery
Setting the Position Deviation Overflow Alarm Level

#### Functions to Achieve Optimum Motions

Function							
Tuning-Less Function							
Automatic Adjustment without a Host Reference							
Automatic Adjustment with a Host Reference							
Custom Adjustment							
Anti-Resonance Control Adjustment							
Vibration Suppression							
Gain Selection							
Friction Compensation							
Backlash Compensation							
Model Following Control							
Compatible Adjustment Functions							
Mechanical Analysis							
Easy FFT							

#### • Functions for Trial Operation during Setup

Function								
Software Reset								
Trial Operation of Servomotor without a Load								
Program Jogging								
Origin Search								
Test without a Motor								
Monitoring Machine Operation Status and Signal Waveforms								

#### • Functions for Inspection and Maintenance

Function
Write Prohibition Setting for Parameters
Initializing Parameter Settings
Automatic Detection of Connected Motor
Monitoring Product Information
Monitoring Product Life
Alarm History Display
Alarm Tracing

# 1.5 Restrictions

This section describes restrictions that apply when using the SERVOPACKs described in this manual.

## 1.5.1 Function Application Restrictions

The following functional restrictions apply when you use the FT40 SERVOPACKs.

Function Name	Restriction
Tuning-Less Function	You cannot use this function when pressure feedback control is enabled (Pn440 = $n.\square\square\square1$ ).
Tuning-Less Level Setting	You cannot use this function when pressure feedback control is enabled (Pn440 = $n.\square\square\square1$ ).
Mechanical Analysis	You cannot use this function when pressure feedback control is enabled (Pn440 = $n.\square\square\square1$ ).

## 1.5.2 Restrictions on Specifications

The following restrictions on specifications apply when the SERVOPACKs described in this manual are used.

	Item	Specification
Mounting Type		There are no rack-mounted models or duct-venti- lated models.
I/O Signals	Linear Servomotor Overheat Protec- tion Signal Input	You cannot use this input.
Option Module		You cannot use a Safety Module.

# 1.6 SigmaWin+

The model information file must be added for the FT40 and FT41. Add the FT40 or FT41 model information file to SigmaWin+ version 7.

## **1.7** Combining the SERVOPACKs with MP-Series Machine Controllers and the MPE720 Engineering Tool

If you combine the SERVOPACK with an MP-Series Machine Controller or the MPE720 Engineering Tool, it will be recognized as a SERVOPACK with standard specifications. To use the parameters that have been added or changed for the SERVOPACKs described in this manual, use the SigmaWin+.

# SERVOPACK Ratings and Specifications

This chapter provides information required to select SERVOPACKs, such as specifications.

2.1	Ratings2-2
2.2	SERVOPACK Overload Protection Characteristics 2-5
2.3	Specifications2-6

# 2.1 Ratings

This section gives the ratings of SERVOPACKs.

## Three-Phase, 200 VAC

Ν	Nodel SGI	D7S-	R70A	R90A	1R6A	2R8A	3R8A	5R5A	7R6A	120A	180A	200A	330A
Maximum Applicable Motor Capacity [kW]		0.05	0.1	0.2	0.4	0.5	0.75	1.0	1.5	2.0	3.0	5.0	
Continuo	ous Output Cu	urrent [Arms]	0.66	0.91	1.6	2.8	3.8	5.5	7.6	11.6	18.5	19.6	32.9
Instantaneous Maximum Output Current [Arms]			2.1	3.2	5.9	9.3	11	16.9	17	28	42	56	84
Main	Power Su	upply		200 VAC to 240 VAC, -15% to +10%, 50 Hz/60 Hz									
Circuit	Input Curr	rent [Arms]*	0.4	0.8	1.3	2.5	3.0	4.1	5.7	7.3	10	15	25
Con-	Power Su	upply			200 VA	C to 24	0 VAC,	-15% t	0 +10%	5, 50 Hz	z/60 Hz		
trol	Input Curr	rent [Arms]*	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.25	0.25	0.3
Power	Power Supply Capacity [kVA]*		0.2	0.3	0.5	1.0	1.3	1.6	2.3	3.2	4.0	5.9	7.5
	Main Circuit Power Loss [W]		5.0	7.0	11.9	22.5	28.5	38.9	49.2	72.6	104.2	114.2	226.6
Power Loss*	Control Circuit Power Loss [W]		12	12	12	12	14	14	14	15	16	16	19
L088.	Built-in Regenerative Resistor Power Loss [W]		-	_	_	_	8	8	8	10	16	16	36
	Total Powe	r Loss [W]	17.0	19.0	23.9	34.5	50.5	60.9	71.2	97.6	136.2	146.2	281.6
Regen-	Built-In Regener-	Resis-tance $[\Omega]$	-	_	-	-	40	40	40	20	12	12	8
erative Resis- tor	ative Resistor	Capacity [W]	_	_	_	_	40	40	40	60	60	60	180
	Minimum Allowable External Resistance [Ω]		40	40	40	40	40	40	40	20	12	12	8
Overvo	oltage Cate	egory											

\* This is the net value at the rated load.

	Model SGD7S-		470A	550A	590A	780A
Maximum Applie	cable Motor Capad	6.0	7.5	11	15	
Continuous Out	put Current [Arms]		46.9	54.7	58.6	78.0
Instantaneous N	Aaximum Output C	urrent [Arms]	110	130	140	170
Main Circuit	Power Supply		200 VAC to	240 VAC, -15	% to +10%, 5	0 Hz/60 Hz
Main Circuit	Input Current [Ar	rms] <sup>*1</sup>	29	37	54	73
Control	Power Supply		200 VAC to	240 VAC, -15	% to +10%, 5	0 Hz/60 Hz
Control	Input Current [Arm	IS] <sup>*1</sup>	0.3	0.3	0.4	0.4
Power Supply C	apacity [kVA]*1		10.7	14.6	21.7	29.6
	Main Circuit Pov	ver Loss [W]	271.7	326.9	365.3	501.4
<b>D I</b> *1	Control Circuit P	ower Loss [W]	21	21	28	28
Power Loss <sup>*1</sup>	External Regenerative R	Resistor Power Loss [W]	180 <sup>*2</sup>	350 <sup>*3</sup>	350 <sup>*3</sup>	350 <sup>*3</sup>
	Total Power Los	s [W]	292.7	347.9	393.3	529.4
	External Regen-	Resistance $[\Omega]$	6.25 <sup>*2</sup>	3.13 <sup>*3</sup>	3.13 <sup>*3</sup>	3.13 <sup>*3</sup>
Regenerative Resistor	erative Resistor	Capacity [W]	880 <sup>*2</sup>	1760 <sup>*3</sup>	1760 <sup>*3</sup>	1760 <sup>*3</sup>
	Minimum Allowable E	xternal Resistance [ $\Omega$ ]	5.8	2.9	2.9	2.9
Overvoltage Cat	tegory	Overvoltage Category			I	

\*1. This is the net value at the rated load.

\*2. This value is for the optional JUSP-RA04-E Regenerative Resistor Unit.

\*3. This value is for the optional JUSP-RA05-E Regenerative Resistor Unit.

	Model SGD7S-		R70A	R90A	1R6A	2R8A	5R5A		
Maximum App	0.05	0.1	0.2	0.4	0.75				
Continuous O	utput Current [Arms	3]	0.66	0.91	1.6	2.8	5.5		
Instantaneous	Maximum Output	Current [Arms]	2.1	3.2	5.9	9.3	16.9		
Main Circuit	Power Supply		200 VAC	C to 240 VA	C, -15% to	+10%, 50 H	lz/60 Hz		
Main Circuit	Input Current [Arm	าร]*	0.8	1.6	2.4	5.0	8.7		
Control Power Supply Input Current [Arms]*			200 VAC to 240 VAC, -15% to +10%, 50 Hz/60 Hz						
			0.2	0.2	0.2	0.2	0.2		
Power Supply	Capacity [kVA]*		0.2	0.3	0.6	1.2	1.9		
	Main Circuit Powe	5.0	7.1	12.1	23.7	39.2			
	Control Circuit Po	12	12	12	12	14			
Power Loss*	Built-in Regenerative Resistor Power Loss [W]		-	-	-	-	8		
	Total Power Loss	[W]	17.0	19.1	24.1	35.7	61.2		
5	Built-In Regener-	Resistance $[\Omega]$	-	-	_	-	40		
Regenera- tive Resistor	ative Resistor	Capacity [W]	-	-	-	-	40		
	Minimum Allowable Ex	40	40	40	40	40			
Overvoltage Category									

## Single-Phase, 200 VAC

\* This is the net value at the rated load.

### 270 VDC

Model SGD7S-			R90A	1R6A	2R8A	3R8A	5R5A	7R6A	120A	
Maximum Applicable Motor Capacity [kW]			0.1	0.2	0.4	0.5	0.75	1.0	1.5	
Continuous Output Cu	0.66	0.91	1.6	2.8	3.8	5.5	7.6	11.6		
Instantaneous Maximun	n Output Current [Arms]	2.1	3.2	5.9	9.3	11.0	16.9	17.0	28.0	
Main Circuit	Power Supply	270 VDC to 324 VDC, -15% to +10%								
Main Orcuit	Input Current [Arms]*	0.5	1.0	1.5	3.0	3.8	4.9	6.9	11	
Control	Power Supply	270 VDC to 324 VDC, -15% to +10%								
Control	Input Current [Arms]*	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Power Supply Capacity	y [kVA]*	0.2	0.3	0.6	1	1.4	1.6	2.3	3.2	
	Main Circuit Power Loss [W]	4.4	5.9	9.8	17.5	23.0	30.7	38.7	55.8	
Power Loss*	Control Circuit Power Loss [W]	12	12	12	12	14	14	14	15	
	Total Power Loss [W]	16.4	17.9	21.8	29.5	37.0	44.7	52.7	70.8	
Overvoltage Category				I	1					

\* This is the net value at the rated load.

Model	180A	200A	330A	470A	550A	590A	780A				
Maximum Applicable N	Notor Capacity [kW]	2.0	3.0	5.0	6.0	7.5	11.0	15.0			
Continuous Output Cu	rrent [Arms]	18.5	19.6	32.9	46.9	54.7	58.6	78.0			
Instantaneous Maximun	n Output Current [Arms]	42.0	56.0	84.0	110	130	140	170			
Main Circuit	Power Supply		270 V	/DC to 32	24 VDC,	-15% to -	+10%				
	Input Current [Arms]*	14	20	34	36	48	68	92			
Operatural	Power Supply	270 VDC to 324 VDC, -15% to +10%									
Control	Input Current [Arms]*	0.25	0.25	0.3	0.3	0.3	0.4	0.4			
Power Supply Capacit	y [kVA]*	4.0	5.9	7.5	10.7	14.6	21.7	29.6			
	Main Circuit Power Loss [W]	82.7	83.5	146.2	211.6	255.3	243.6	343.4			
Power Loss*	Control Circuit Power Loss [W]	16	16	19	21	21	28	28			
Total Power Loss		98.7	99.5	165.2	232.6	276.3	271.6	371.4			
Overvoltage Category								·			

\* This is the net value at the rated load.

## Single-Phase, 100 VAC

Model	SGD7S-	R70F	R90F	2R1F	2R8F
Maximum Applicable M	lotor Capacity [kW]	0.05	0.1	0.2	0.4
Continuous Output Cu	rrent [Arms]	0.66	0.91	2.1	2.8
Instantaneous Maximum	n Output Current [Arms]	2.1	3.2	6.5	9.3
Main Circuit	Power Supply	100 VAC t	o 120 VAC, -15	% to +10%, 50	Hz/60 Hz
	Input Current [Arms]*	1.5	2.5	5	10
Control	Power Supply	100 VAC t	o 120 VAC, -15	% to +10%, 50	Hz/60 Hz
Control	Input Current [Arms]*	0.38	0.38	0.38	0.38
Power Supply Capacity	y [kVA]*	0.2	0.3	0.6	1.4
	Main Circuit Power Loss [W]	5.3	7.8	14.2	26.2
Power Loss*	Control Circuit Power Loss [W]	12	12	12	12
	Total Power Loss [W]	17.3	19.8	26.2	38.2
Regenerative Resistor Minimum Allowable Resistance [Ω]		40	40	40	40
Overvoltage Category	·			l	•

\* This is the net value at the rated load.

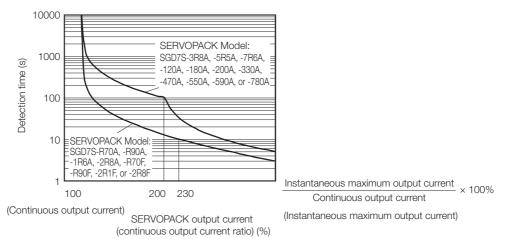
# 2.2 SERVOPACK Overload Protection Characteristics

The overload detection level is set for hot start conditions with a SERVOPACK surrounding air temperature of 55°C.

An overload alarm (A.710 or A.720) will occur if overload operation that exceeds the overload protection characteristics shown in the following diagram (i.e., operation on the right side of the applicable line) is performed.

The actual overload detection level will be the detection level of the connected SERVOPACK or Servomotor that has the lower overload protection characteristics.

In most cases, that will be the overload protection characteristics of the Servomotor.



Note: The above overload protection characteristics do not mean that you can perform continuous duty operation with an output of 100% or higher.

For a Yaskawa-specified combination of SERVOPACK and Servomotor, maintain the effective torque within the continuous duty zone of the torque-motor speed characteristic of the Servomotor.

# 2.3 Specifications

	Item	Specification					
Drive Metho	d	IGBT-based PWM control, sine wave current drive					
	With Rotary Servomotor	Serial encoder: 17 bits (absolute encoder) 20 bits or 24 bits (incremental encoder/absolute encoder) 22 bits (absolute encoder)					
Feedback	With Linear Servomotor	<ul> <li>Absolute linear encoder (The signal resolution depends on the absolute linear encoder.)</li> <li>Incremental linear encoder (The signal resolution depends on the incremental linear encoder or Serial Converter Unit.)</li> </ul>					
	Surrounding Air Tem- perature <sup>*1</sup>	<ul> <li>-5°C to 55°C</li> <li>(With derating, usage is possible between 55°C and 60°C.)</li> <li>Refer to the following manual for derating specifications.</li> <li>Ω Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)</li> </ul>					
	Storage Temperature	-20°C to 85°C					
	Surrounding Air Humidity	95% relative humidity max. (with no freezing or condensation)					
	Storage Humidity	95% relative humidity max. (with no freezing or condensation)					
Environ-	Vibration Resistance	4.9 m/s <sup>2</sup>					
mental Conditions	Shock Resistance	19.6 m/s <sup>2</sup>					
Conditions		Degree SERVOPACK Model: SGD7S-					
	Degree of Protection	IP20 R70A, R90A, 1R6A, 2R8A, 3R8A, 5R5A, 7R6A, 120A, R70F, R90F, 2R1F, 2R8F					
	Pollution Degree	IP10       180A, 200A, 330A, 470A, 550A, 590A, 780A         2       • Must be no corrosive or flammable gases.         • Must be no exposure to water, oil, or chemicals.         • Must be no dust, salts, or iron dust.					
Environ- mental	Altitude <sup>*1</sup>	<ul> <li>1,000 m max. (With derating, usage is possible between 1,000 m and 2,000 m.)</li> <li>Refer to the following manual for derating specifications.</li> <li>Ω Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)</li> </ul>					
Conditions	Others	Do not use the SERVOPACK in the following locations: Locations subject to static electricity noise, strong electromagnetic/magnetic fields, or radioactivity					
Applicable S	Standards	Refer to the following section for details.  Compliance with UL Standards, EU Directives, and Other Safety Stan- dards on page xxvi					
Mounting		Base-mounted					
	Speed Control Range	1:5000 (At the rated torque, the lower limit of the speed control range must not cause the Servomotor to stop.)					
		$\pm 0.01\%$ of rated speed max. (for a load fluctuation of 0% to 100%)					
	Coefficient of Speed	0% of rated speed max. (for a load fluctuation of ±10%)					
Perfor- mance	Fluctuation <sup>*2</sup>	$\pm 0.1\%$ of rated speed max. (for a temperature fluctuation of $25^{\circ}$ C) $\pm 25^{\circ}$ C)					
	Torque Control Preci- sion (Repeatability)	±1%					
	Soft Start Time Setting	0 s to 10 s (Can be set separately for acceleration and deceleration.)					
		Continued on next page.					

This section gives the general specifications of SERVOPACKs.

Continued on next page.

Continued from previous page.

	Item		Specification				
	Encoder Di Pulse Outp		Phase A, phase B, phase C: Line-driver output Number of divided output pulses: Any setting is allowed.				
	Pressure Fe Detection In		Number of input points: 1 Input voltage range: -12 V to 12 V				
			Allowable voltage range: 24 VDC ±20% Number of input points: 7				
	Sequence Input Signals	Input Signals That Can Be Allo- cated	<ul> <li>Input method: Sink inputs or source inputs</li> <li>Input Signals</li> <li>P-OT (Forward Drive Prohibit) and N-OT (Reverse Drive Prohibit) signals</li> <li>/P-CL (Forward External Torque Limit) and /N-CL (Reverse Externa Torque Limit) signals</li> <li>/DEC (Origin Return Deceleration Switch) signal</li> <li>/EXT1 to /EXT3 (External Latch Input 1 to 3) signals</li> <li>FSTP (Forced Stop Input) signal</li> <li>A signal can be allocated and the positive and negative logic can be changed.</li> </ul>				
I/O Signals		Fixed Output	Allowable voltage range: 5 VDC to 30 VDC Number of output points: 1 Output signal: ALM (Servo Alarm) signal				
	Sequence Output Signals	Output Signals That Can Be Allo- cated	Allowable voltage range: 5 VDC to 30 VDC Number of output points: 3 (A photocoupler output (isolated) is used.) Output Signals • /COIN (Positioning Completion) signal • /V-CMP (Speed Coincidence Detection) signal • /TGON (Rotation Detection) signal • /TGON (Rotation Detection) signal • /CLT (Torque Limit Detection) signal • /VLT (Speed Limit Detection) signal • /VLT (Speed Limit Detection) signal • /BK (Brake) signal • /WARN (Warning) signal • /NEAR (Near) signal A signal can be allocated and the positive and negative logic can be changed.				
	RS-422A	Inter- faces 1:N	Digital Operator (JUSP-OP05A-1-E) and personal computer (with Sig maWin+)				
	Communi- cations	Commu- nications	Up to N = 15 stations possible for RS-422A port				
Communi- cations	(CN3)	Axis Address Setting	Set with parameters.				
	USB	Interface	Personal computer (with SigmaWin+)				
	Communi- cations (CN7)	Commu- nications Standard	Conforms to USB2.0 standard (12 Mbps).				
Displays/Indi	icators		CHARGE, PWR, CN, L1, and L2 indicators, and one-digit seven-segment display				
	Communica tocol	ations Pro-	MECHATROLINK-III				
MECHA-	Station Add Settings	dress	03 to EF hex (maximum number of slaves: 62) The rotary switches (S1 and S2) are used to set the station address.				
TROLINK-III	Baud Rate		100 Mbps				
Communi- cations	Transmissio	on Cycle	125 μs, 250 μs, 500 μs, 750 μs, 1.0 ms to 4.0 ms (multiples of 0.5 ms)				
cations	11411511115510	on oyolo					

2

SERVOPACK Ratings and Specifications

2-7

Continued from previous page.

	Item	Specification					
	Performance	Position, speed, or torque control with MECHATROLINK-III communi- cations					
Reference Method	Reference Input	MECHATROLINK-III commands (sequence, motion, data setting, data access, monitoring, adjustment, etc.)					
	Profile	MECHATROLINK-III standard servo profile					
MECHATRO	LINK-III Communica-	Rotary switch (S1 and S2) positions: 16					
tions Setting	g Switches	Number of DIP switch (S3) pins: 4					
Analog Mon	itor (CN5)	Number of points: 2 Output voltage range: ±10 VDC (effective linearity range: ±8 V) Resolution: 16 bits Accuracy: ±20 mV (Typ) Maximum output current: ±10 mA Settling time (±1%): 1.2 ms (Typ)					
Dynamic Br	ake (DB)	Activated when a servo alarm or overtravel (OT) occurs, or when the power supply to the main circuit or servo is OFF.					
Regenerativ	e Processing	Built-in (An external resistor must be connected to the SGD7S-470A to -780A.) Refer to the following catalog for details. Ω AC Servo Drives Σ-7 Series (Manual No.: KAEP S800001 23)					
Overtravel (	OT) Prevention	Stopping with dynamic brake, deceleration to a stop, or coasting to a stop for the P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal					
Protective F	unctions	Overcurrent, overvoltage, low voltage, overload, regeneration error, etc.					
Utility Funct	ions	Gain adjustment, alarm history, jogging, origin search, etc.					
	Inputs	/HWBB1 and /HWBB2: Base block signals for Power Modules					
Safety	Output	EDM1: Monitors the status of built-in safety circuit (fixed output).					
Functions	Applicable Standards <sup>*3</sup>	ISO13849-1 PLe (Category 3), IEC61508 SIL3					
Applicable (	Option Modules	Fully-Closed Module					

\*1. If you combine a Σ-7-Series SERVOPACK with a Σ-V-Series Option Module, the following Σ-V-Series SERVO-PACKs specifications must be used: a surrounding air temperature of 0°C to 55°C and an altitude of 1,000 m max. Also, the applicable surrounding range cannot be increased by derating.

\*2. The coefficient of speed fluctuation for load fluctuation is defined as follows:

Coefficient of speed fluctuation = <u>No-load motor speed - Total-load motor speed</u> × 100% Rated motor speed

\*3. Always perform risk assessment for the system and confirm that the safety requirements are met.

\*4. The pressure feedback detection input applies to only FT40 specification SERVOPACKs.

# Pressure Feedback Control

3

This chapter describes pressure feedback control.

3.1	Introd	luction
3.2	Conne	ecting Pressure Sensor Amplifiers 3-4
	3.2.1 3.2.2	FT40
3.3	Operat	ion Patterns for Pressure Feedback Control3-5
3.4	Changin	g from Torque Control to Pressure Feedback Control3-6
	3.4.1 3.4.2	Mode 2 Operation3-6Mode 1 Operation3-6
3.5	Contr	ol Block Diagrams
	3.5.1 3.5.2	Pressure Feedback Control 2 (Pn458 = n.□□1□)
		(Pn458 = n.□□0□)
3.6	Setup	Procedure
	3.6.1 3.6.2 3.6.3	Flowchart3-10Disabling Tuning-Less Function3-10Setting and Checking Other Station
	3.6.4	Monitoring
	3.6.5	Feedback Control       3-13         Automatic Offset Adjustment for Pressure
	3.6.6	Feedback Detection Input Signal         3-15           Settings prior to Pressure Feedback Control
	3.6.7	Operation3-16Gain Adjustment3-18

37	N
J.1	IV

<i>I</i> onitoring						•	•	•	•	•			•	•	•	•	•		•		•		•	•	•	3-	-2	3	
--------------------	--	--	--	--	--	---	---	---	---	---	--	--	---	---	---	---	---	--	---	--	---	--	---	---	---	----	----	---	--

# 3.1 Introduction

Pressure feedback control is performed by inputting a feedback signal from a pressure sensor to a MECHATROLINK-III pressure command (i.e., torque control command).

For the FT40 (11th to 13th digits in SERVOPACK model number: F40), an analog signal from a pressure sensor built into the control target is passed through a pressure sensor amplifier and then directly input to the CN1 connector on the SERVOPACK.

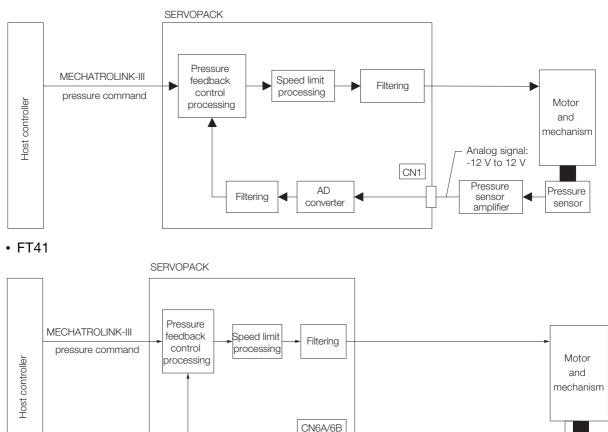
For the FT41 (11th to 13th digits in SERVOPACK model number: F41), MECHATROLINK-III data from a pressure sensor built into the control target is passed through a pressure sensor amplifier and through MECHATROLINK-III distributed I/O, then directly input to the CN6A and CN6B connectors on the SERVOPACK.

Pressure feedback control can be used to perform high-speed, high-precision pressure control.

Pressure feedback control is performed in Torque Control Mode. It cannot be used in Speed Control Mode or Position Control Mode. In pressure feedback control, you can only use positive torque references. You cannot use a negative torque reference. Change  $Pn000 = n.\square\square\squareX$  (rotation direction selection) as necessary.

Stop the motor before you change from Speed Control Mode or Position Control Mode to Torque Control Mode.

#### • FT40



\* For MECHATROLINK-III distributed I/O, we recommend R7G4HML3-6-LC2 I/O Modules from M-System Co., Ltd.

Filtering

MECHATROLINK-III

distributed I/O\*

Pressure

sensor

3.2.1 FT40

# 3.2 Connecting Pressure Sensor Amplifiers

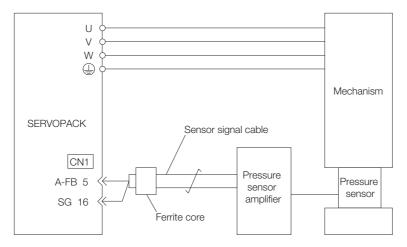
## 3.2.1 FT40

The input signal from the pressure sensor amplifier is connected to pins 5 (A-FB) and 16 (SG) on the I/O signal connector (CN1).

Туре	Signal Name	Pin No.	Name	Remarks
Input	A-FB	5	Pressure Feedback Detection Input	Connected to the pressure sensor amplifier.
	SG	16	Signal ground	

The input specifications are as follows:

- Maximum input voltage: ±12 V
- Input voltage resolution: ±10 bits
- Input impedance: 30 k $\Omega$



Implement the following countermeasures against noise to prevent inductive noise.

- Use twisted-pair cables.
- Minimize the connection distance.
- Attach a ferrite core.

### **Recommended Pressure Sensor Amplifier Specifications**

- Output voltage: ±12 V
- Response frequency: 500 Hz min.

Note: Response may deteriorate below 500 Hz.

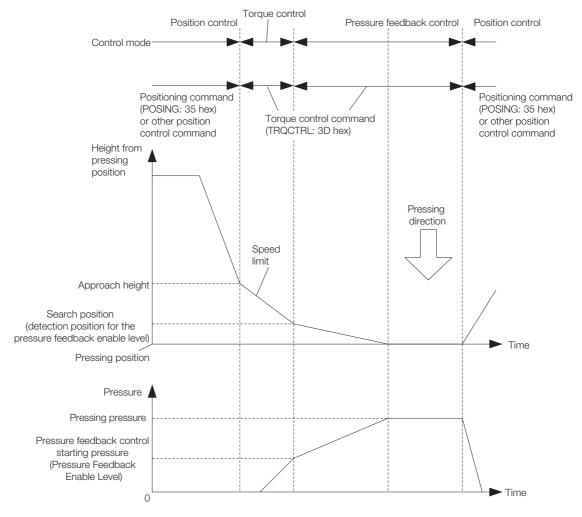
## 3.2.2 FT41

Connect the pressure sensor amplifiers and the R7G4HML3-6-LC2 I/O Modules from M-System Co., Ltd. for MECHATROLINK-III distributed I/O to the CN6A and CN6B connectors on the SERVOPACK with MECHATROLINK-III Communications Cables.

# 3.3 Operation Patterns for Pressure Feedback Control

Important	<ul> <li>Pressure feedback control will be performed if the TRQCTRL (Torque Control) command (3D hex) is executed while pressure feedback control is enabled (Pn440 = n.□□□1) and the pressure feedback detection value exceeds the pressure feedback enable level.</li> <li>To suppress shock when changing the control method, change the control method under the following conditions.</li> </ul>
	Changing from Torque Control or Pressure Feedback Control to Position Control or Speed Control:
	Stop the motor before changing the control mode.
	Changing from Position Control or Speed Control to Torque Control:
	Set a speed limit (Pn407) for torque control or a speed limit (Pn480) for force control and keep the speed constant.
	<ul> <li>If the torque limit is released when operating with the pressure feedback detection value at or below the pressure feedback reference value due to the torque limit, excess torque may be applied to the Servomotor. This creates a risk of workpiece and machine damage.</li> <li>Set appropriate values for the pressure feedback loop deviation overflow level (Pn447), torque limit (Pn402 or Pn403), external torque limit (Pn404 or Pn405), and torque limit and force limit (Pn483 or Pn484) set with MECHATROLINK-III commands.</li> </ul>

An example of pressure feedback control is provided below. In this example, the control method is changed from torque control to pressure feedback control.



#### 3.4.1 Mode 2 Operation

## 3.4 Changing from Torque Control to Pressure Feedback Control

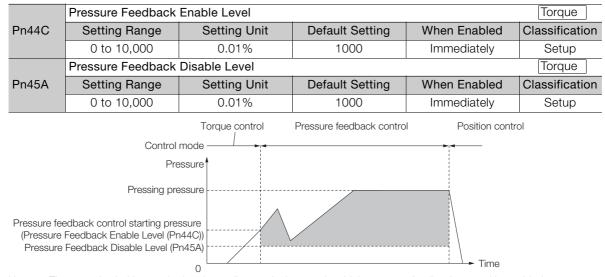
You can select from two modes to change from torque control to pressure feedback control: mode 1 and mode 2. The mode is set in  $Pn458 = n.\square\square\squareX$  (Pressure Feedback Control Mode Selection Switch).

However, if the pressure feedback type is set to pressure feedback control 2 (Pn458 =  $n.\Box\Box1\Box$ ), the setting in Pn458 =  $n.\Box\Box\BoxX$  is ignored and mode 2 operation is used.

Pa	arameter	Meaning	When Enabled	Classification
	n. <b>DDD</b> 0	Set mode 1.		
Pn458	n.□□□1 (default setting)	Set mode 2.	After restart	Setup

### 3.4.1 Mode 2 Operation

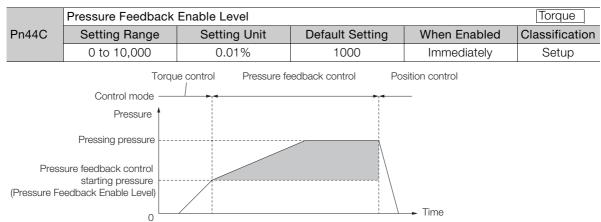
In mode 2, changing from torque control to pressure feedback control is performed according to Pn44C (Pressure Feedback Enable Level) and Pn45A (Pressure Feedback Disable Level).



Note: 1. The area shaded in gray in the above diagram is the area in which pressure feedback control is enabled.
 2. If chattering occurs in the pressure, mode 2 can be selected for pressure feedback control to enable stably changing to pressure feedback control.

### 3.4.2 Mode 1 Operation

In mode 1, changing from torque control to pressure feedback control is performed according to Pn44C (Pressure Feedback Enable Level).



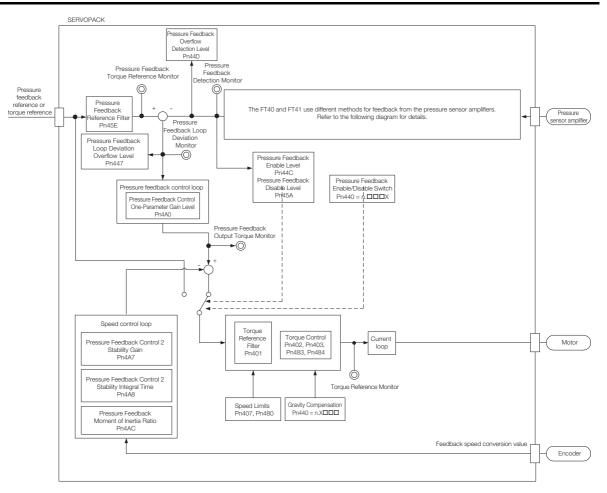
Note: The area shaded in gray in the above diagram is the area in which pressure feedback control is enabled.

3.5.1 Pressure Feedback Control 2 (Pn458 = n.□□1□)

# 3.5 Control Block Diagrams

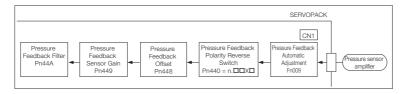
The control block diagrams for pressure feedback control are provided below.

## 3.5.1 Pressure Feedback Control 2 (Pn458 = $n.\Box\Box1\Box$ )



### Methods for Feedback from Pressure Sensor Amplifiers

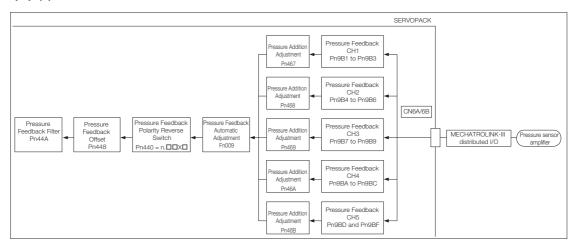
◆ FT40



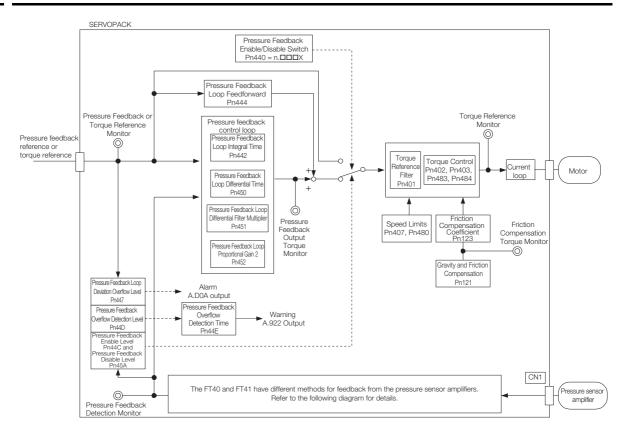
Pressure Feedback Control

3.5.2 Pressure Feedback Control 1 (Pn458 = n.□□0□)

◆ FT41

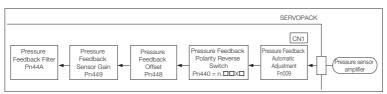


## 3.5.2 Pressure Feedback Control 1 (Pn458 = n. [] [] 0 []



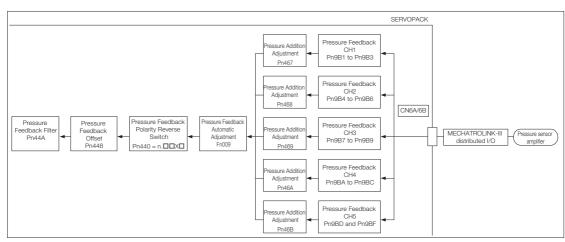
### Methods for Feedback from Pressure Sensor Amplifiers

#### ♦ FT40



#### 3.5.2 Pressure Feedback Control 1 (Pn458 = n.000)

◆ FT41

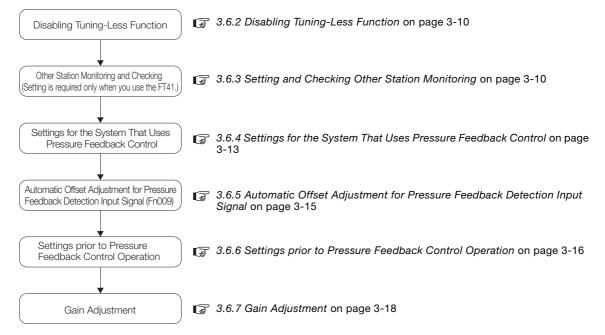


3.6.1 Flowchart

# 3.6 Setup Procedure

## 3.6.1 Flowchart

The following flowchart gives the setup procedure for pressure feedback control.



## 3.6.2 Disabling Tuning-Less Function

Disable the tuning-less function (Pn170 =  $n.\Box\Box\Box$ 0).

## 3.6.3 Setting and Checking Other Station Monitoring

You must set other station monitoring only when you use the FT41. There is no need to set other station monitoring for the FT40.

You can use input values from pressure sensor amplifiers for pressure feedback control by assigning them to other station monitoring.

To use other station monitoring to acquire pressure sensor amplifier information, you must do the following:

- 1. Connect the host controller to the MECHATROLINK-III distributed I/O device with a MECHATROLINK-III Cable.
- 2. Send the Connection Request command (CONNECT: 0E hex) from the host controller to the MECHATROLINK-III distributed I/O device. Note: For MECHATROLINK-III distributed I/O device, set the PROFILE\_TYPE to 30 hex.
- 3. Next, send a Data Read/Write\_A command (DATA\_RWA: 20 hex) from the host controller to the MECHATROLINK-III distributed I/O device.

With the above procedure, you send data between the host controller and the MECHATROLINK-III distributed I/O device, so the SERVOPACK can check the data being sent.

#### 3.6.3 Setting and Checking Other Station Monitoring

For details on the Connection Request command (CONNECT: 0E hex) and Data Read/ Information Write\_A command (DATA\_RWA: 20 hex), refer to the following document (issued by the MECHATROLINK Members Association).

MECHATROLINK-III Standard I/O Profile Command Manual

### Allocations for Other Station Monitoring

Set Pn9B1 to the station address to allocate to other station monitor channel 1.

	Other Station Monitor 1: Station Address											
Pn9B1	Setting Range	Setting Unit	Default Setting	When Enabled	Classification							
	0002 to FEEF	_	0002	After restart	Setup							

Set Pn9B2 to the number of transmission bytes for other station monitor channel 1.

	Other Station Monite	Torque			
Pn9B2	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 4	_	3	After restart	Setup

Set Pn9B3 to specify the contents of data assigned to other station monitor channel 1.

Parameter		Meaning	When Enabled	Classification
	n.🗆🗆XX	Address offset		
Pn9B3	n.¤X¤¤	Data size (unit: bytes)	After restart	Setup
	n.XDDD	Reserved parameter (Do not change.)		

The setting of Pn9B3 = n.□□XX depends on the data format of the MECHATROLINK-III dis-Information tributed I/O device that is used. The data format when you use an R7G4HML3-6-LC2 I/O Module from M-System Co., Ltd. is given below. This depends on the information in the 6th to 9th bytes.

Byte	Command (hexadecimal)	Response (hexadecimal)	Remarks
0	20	20	-
1	0	0	-
2 3	CMD_CTRL	CMD_STAT	-
4	0	Total input lower 8 bits	This gives the total for the 6th and 8th bytes of input 0.
5	0	Total input upper 8 bits	This gives the total for the 7th and 9th bytes of input 0.
6	0	Input 0 lower 8 bits	Input 0
7	0	Input 0 upper 8 bits	liput o
8	0	Input 1 lower 8 bits	loout 1
9	0	Input 1 upper 8 bits	Input 1
10 to 15	0	0	Not used.

Example

Example of parameter settings when you use an R7G4HML3-6-LC2 I/O Module.

Pn9B1 = 0004 hex (R7G4HML3-6-LC2 station address)

Pn9B2 = 0001 hex (number of transmission bytes: 16)

Pn9B3 = 1206 hex (address offset: 6 (input 0), 2 bytes)

Note: If you use an R7G4HML3-6-LC2 I/O Module, always set Pn9B2 to n. DDD1 (16 bytes).

#### 3.6.3 Setting and Checking Other Station Monitoring

When you connect multiple pressure sensors, set Pn9B4 to Pn9BF for other station monitor channels 2 to 5 following the same procedure as for other station monitor channel 1.

Pn9B4         Setting Range         Setting Unit         Default Setting         When Enabled         Classification           0002 to FEEF         -         0002         After restart         Setup           Pn9B5         Setting Range         Setting Unit         Default Setting         When Enabled         Classification           0 to 4         -         3         After restart         Setup           Pn9B6         Setting Range         Setting Unit         Default Setting         When Enabled         Classification           0 to 4         -         1000         After restart         Setup         Torque]           Pn9B6         Setting Range         Setting Unit         Default Setting         When Enabled         Classification           0000 to 14FF         -         1000         After restart         Setup           0002 to FEEF         -         0002         After restart         Setup           0002 to FEEF         -         0002         After restart         Setup           Pn9B7         Setting Range         Setting Unit         Default Setting         When Enabled         Classification           0002 to FEEF         -         0002         After restart         Setup         Torque]		Other Station Moni	tor 2: Station Addres	e		Torque
0002 to FEEF         -         0002         After restart         Setup           Pn9B5         Other Station Monitor 2: Number of Transmission Bytes         Torque]           Pn9B6         Setting Range         Setting Unit         Default Setting         When Enabled         Classification           Pn9B6         Other Station Monitor 2: Monitor Information Setting         Torque]         Torque]           Pn9B6         Setting Range         Setting Unit         Default Setting         When Enabled         Classification           0000 to 14FF         -         1000         After restart         Setup           Other Station Monitor 3: Station Address         Torque]         Setting Range         Setup           Other Station Monitor 3: Number of Transmission Bytes         Torque]         Setup           Pn9B8         Setting Range         Setting Unit         Default Setting         When Enabled         Classification           0002 to FEEF         -         0002         After restart         Setup         Torque]           Pn9B8         Setting Range         Setting Unit         Default Setting         When Enabled         Classification           0000 to 14FF         -         1000         After restart         Setup           Pn9B4         Setting Range	Pn9B4				When Enabled	
Other Station Monitor 2: Number of Transmission Bytes         Torque           Pn9B5         Setting Range         Setting Unit         Default Setting         When Enabled         Classification           0 to 4         -         3         After restart         Setup           Pn9B6         Setting Range         Setting Unit         Default Setting         When Enabled         Classification           0000 to 14FF         -         1000         After restart         Setup           0000 to 14FF         -         1000         After restart         Setup           0000 to 14FF         -         0000         After restart         Setup           0000 to 14FF         -         0002         After restart         Setup           0000 to 14FF         -         0002         After restart         Setup           0ther Station Monitor 3: Number of Transmission Bytes         Torque           Pn9B8         Setting Range         Setting Unit         Default Setting         When Enabled         Classification           0000 to 14FF         -         1000         After restart         Setup           Pn9B9         Setting Range         Setting Unit         Default Setting         When Enabled         Classification           0000				_		
Pn9B5         Setting Range         Setting Unit         Default Setting         When Enabled         Classification           0 to 4         -         3         After restart         Setup           Pn9B6         Other Station Monitor 2: Monitor Information Setting         Image Control         Image Contro         Image Control         Image Control <td></td> <td></td> <td>tor 2: Number of Trar</td> <td></td> <td></td> <td></td>			tor 2: Number of Trar			
0 to 4-3After restartSetupPn9B6Other Station Monitor 2: Monitor Information SettingTorquePn9B6Setting RangeSetting UnitDefault SettingWhen EnabledClassification0000 to 14FF-1000After restartSetupOther Station Monitor 3: Station AddressTorquePn9B7Setting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetup0002 to FEEF-0002After restartSetup0002 to FEEF-0002After restartSetup0002 to FEEF-0002After restartSetup0002 to FEEF-0002After restartSetup0005 to 14FF-1000After restartSetup0000 to 14FF-1000After restartSetup0000 to 14FF-0002After restartSetup0002 to FEEF-0002After restartSetup0000 to 14FF-3After restartSetup0000 to 14FF-1000After restartSetup0000 to 14FF-1000After restartSetup	Pn9B5				When Enabled	
Other Station Monitor 2: Monitor Information SettingTorquePn9B6Setting RangeSetting UnitDefault SettingWhen EnabledClassification0000 to 14FF–1000After restartSetupPn9B7Other Station Monitor 3: Station AddressTorquePn9B7Setting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF–0002After restartSetupOther Station Monitor 3: Number of Transmission BytesTorque]Pn9B8Setting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4–3After restartSetupOther Station Monitor 3: Monitor Information SettingTorque]Pn9B8Setting RangeSetting UnitDefault SettingWhen EnabledClassification0000 to 14FF–1000After restartSetupOther Station Monitor 4: Station AddressTorque]Pn9BASetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF–0002After restartSetup0002 to FEEF–1000After restartSetup0000 to 14FF–1000After restart <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						
Pn9B6Setting RangeSetting UnitDefault SettingWhen EnabledClassification0000 to 14FF-1000After restartSetupPn9B7Other Station Monitor 3: Station AddressTorque]Setting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupOther Station Monitor 3: Number of Transmission BytesTorque]Pn9B8Setting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupOther Station Monitor 3: Monitor Information SettingWhen EnabledClassification0 to 4-3After restartSetupPn9B9Setting RangeSetting UnitDefault SettingWhen EnabledClassification0000 to 14FF-1000After restartSetupOther Station Monitor 4: Station AddressTorquePn9B0Setting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetup0002 to FEEF-0002After restartSetupPn9B0Other Station Monitor 4: Number of Transmission BytesTorquePn9B1Setting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-1000After restartSetupPn9B2Other Station Monitor 5: Station AddressTorque<	-		tor 2: Monitor Inform	-	7	
0000 to 14FF-1000After restartSetupPn9B7Other Station Monitor 3: Station AddressTorque]Setting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupPn9B8Other Station Monitor 3: Number of Transmission BytesTorque]Setting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupOther Station Monitor 3: Monitor Information SettingTorque]Pn9B9Setting RangeSetting UnitDefault SettingWhen EnabledClassification0000 to 14FF-1000After restartSetupOther Station Monitor 4: Station AddressTorque]Pn9B4Setting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupOther Station Monitor 4: Number of Transmission BytesTorque]Pn9B8Setting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupPn9B8Other Station Monitor 4: Monitor Information SettingTorque]Pn9B6Setting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupOther Station Monitor 5: Station AddressTorque]Pn9B6Setting RangeSet	Pn9B6				When Enabled	
Other Station Monitor 3: Station AddressTorquePn9B7Setting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupPn9B8Other Station Monitor 3: Number of Transmission BytesTorquePn9B8Setting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupPn9B9Other Station Monitor 3: Monitor Information SettingTorqueSetting RangeSetting UnitDefault SettingWhen EnabledClassification0000 to 14FF-1000After restartSetupOther Station Monitor 4: Station AddressTorquePn9BASetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetup0002 to FEEF-0002After restartSetup0002 to FEEF-0002After restartSetupPn9BASetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupPn9BBSetting RangeSetting UnitDefault SettingWhen EnabledClassification0000 to 14FF-1000After restartSetup0000 to 14FF-1000After restartSetup0000 to 14FF-0002After restartSetup <td></td> <td></td> <td>_</td> <td>_</td> <td></td> <td></td>			_	_		
Pn9B7Setting Range Setting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupPn9B8Other Station Monitor 3: Number of Transmission BytesTorquePn9B8Setting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupPn9B9Other Station Monitor 3: Monitor Information SettingTorquePn9B9Setting RangeSetting UnitDefault SettingWhen EnabledClassification0000 to 14FF-1000After restartSetupOther Station Monitor 4: Station AddressTorquePn9BASetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetup0002 to FEEF-0002After restartSetupPn9BBSetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupPn9BBSetting RangeSetting UnitDefault SettingWhen EnabledClassification0001 to 4-3After restartSetupPn9BCSetting RangeSetting UnitDefault SettingWhen EnabledMassification0002 to FEEF-1000After restartSetupPn9BDSetting RangeSetting UnitDefault SettingWhen EnabledMass		Other Station Moni	tor 3: Station Addres	S		
0002 to FEEF-0002After restartSetupPn9B8Other Station Monitor 3: Number of Transmission BytesTorquePn9B8Setting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupPn9B9Other Station Monitor 3: Monitor Information SettingTorquePn9B9Setting RangeSetting UnitDefault SettingWhen EnabledClassification0000 to 14FF-1000After restartSetupOther Station Monitor 4: Station AddressTorquePn9BASetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupOther Station Monitor 4: Number of Transmission BytesTorquePn9B8Setting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupOther Station Monitor 4: Number of Transmission BytesTorquePn9B8Setting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupPn9B6Setting RangeSetting UnitDefault SettingWhen EnabledMassification0 to 4-1000After restartSetupPn9B7Setting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After	Pn9B7				When Enabled	
Other Station Monitor 3: Number of Transmission BytesTorquePn9B8Setting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupPn9B9Other Station Monitor 3: Monitor Information SettingTorqueTorquePn9B9Setting RangeSetting UnitDefault SettingWhen EnabledClassification0000 to 14FF-1000After restartSetup0000 to 14FF-1000After restartSetup0002 to FEEF-0002After restartSetup0004 to 4-3After restartSetup005 to 4-3After restartSetup0000 to 14FF-1000After restartSetup0000 to 14FF-1000After restartSetup0000 to 14FF-1000After restartSetup0000 to 14FF-1000After restartSetup0000 to 14FF-0002After restartSetup0002 to FEEF-0002After restartSetup			-	_	After restart	Setup
0 to 4-3After restartSetupPn9B9Other Station Monitor 3: Monitor Information SettingTorqueSetting RangeSetting UnitDefault SettingWhen EnabledClassification0000 to 14FF-1000After restartSetupPn9BAOther Station Monitor 4: Station AddressTorquePn9BASetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetup0002 to FEEF-0002After restartSetupPn9BBSetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupPn9BBSetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupPn9BCSetting RangeSetting UnitDefault SettingWhen Enabled分類0000 to 14FF-1000After restartSetupPn9BDSetting RangeSetting UnitDefault SettingWhen Enabled分類0000 to 14FF-1000After restartSetupPn9BDSetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupPn9BESetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002<		Other Station Moni	tor 3: Number of Trar	smission Bytes		
Pn9B9Other Station Monitor 3: Monitor Information SettingTorqueSetting RangeSetting UnitDefault SettingWhen EnabledClassification0000 to 14FF-1000After restartSetupPn9BAOther Station Monitor 4: Station AddressTorqueSetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetup0002 to FEEF-0002After restartSetupPn9BBSetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupPn9BCSetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupPn9BCSetting RangeSetting UnitDefault SettingWhen Enabled分類0000 to 14FF-1000After restartSetupPn9BCSetting RangeSetting UnitDefault SettingWhen Enabled分類0000 to 14FF-1000After restartSetupPn9BCSetting RangeSetting UnitDefault SettingWhen Enabled分類0000 to 14FF-0002After restartSetupPn9BDSetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupPn9BDSetting RangeSetting Unit <td>Pn9B8</td> <td>Setting Range</td> <td>Setting Unit</td> <td>Default Setting</td> <td>When Enabled</td> <td>Classification</td>	Pn9B8	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
Pn9B9Setting RangeSetting UnitDefault SettingWhen EnabledClassification0000 to 14FF-1000After restartSetupOther Station Monitor 4: Station AddressTorqueSetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupOther Station Monitor 4: Number of Transmission BytesTorquePn9BBSetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupPn9BEOther Station Monitor 4: Number of Transmission BytesTorquePn9BESetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupPn9BEOther Station Monitor 4: Monitor Information SettingTorquePn9BESetting RangeSetting UnitDefault SettingWhen Enabled分類0000 to 14FF-1000After restartSetupPn9BEOther Station Monitor 5: Station AddressTorquePn9BESetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupPn9BEOther Station Monitor 5: Number of Transmission BytesTorquePn9BESetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restar		0 to 4	_	3	After restart	Setup
0000 to 14FF-1000After restartSetupPn9BAOther Station Monitor 4: Station AddressTorqueSetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupPn9BBOther Station Monitor 4: Number of Trasmission BytesTorquePn9BBSetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetup0 to 4-3After restartSetupPn9BCSetting RangeSetting UnitDefault SettingWhen EnabledMage0000 to 14FF-1000After restartSetup0000 to 14FF-1000After restartSetup0000 to 14FF-1000After restartSetup0000 to 14FF-1000After restartSetup0000 to 14FF-0002After restartSetup0000 to 14FF-0002After restartSetup0000 to 5: Station AddressTorquePn9BDSetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetup0002 to FEEF-0002After restartSetup0002 to FEEF-0002After restartSetup0002 to FEEF-0002After restartSetup00010 to 4-3		Other Station Moni	tor 3: Monitor Inform	ation Setting	I	Torque
Pn9BAOther Station Monitor 4: Station AddressTorqueSetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF–0002After restartSetupPn9BBOther Station Monitor 4: Number of Transmission BytesTorquePn9BBSetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4–3After restartSetup0 to 4–3After restartSetupPn9BCSetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4–3After restartSetupPn9BCSetting RangeSetting UnitDefault SettingWhen Enabled分類0000 to 14FF–1000After restartSetup0002 to FEEF–0002After restartSetup0000 to 14FF–1000After restartSetup0002 to FEEF–0002After restartSetup0004 to 4–3After restartSetup0 to 4–3 <td>Pn9B9</td> <td>Setting Range</td> <td>Setting Unit</td> <td>Default Setting</td> <td>When Enabled</td> <td>Classification</td>	Pn9B9	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
Pn9BASetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupPn9BBOther Station Monitor 4: Number of Transmission BytesTorquePn9BBSetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetup0 ther Station Monitor 4: Monitor Information SettingWhen EnabledClassification0 to 4-3After restartSetupPn9BCSetting RangeSetting UnitDefault SettingWhen Enabled分類0000 to 14FF-1000After restartSetup0002 to FEEF-1000After restartSetupPn9BDSetting RangeSetting UnitDefault SettingWhen Enabled分類0002 to FEEF-0002After restartSetup0002 to FEEF-0002After restartSetup0100 to 4-3After restartSetup <td></td> <td>0000 to 14FF</td> <td>_</td> <td>1000</td> <td>After restart</td> <td>Setup</td>		0000 to 14FF	_	1000	After restart	Setup
OOO2 to FEEF-OOO2After restartSetupOther Station Monitor 4: Number of Transmission BytesTorquePn9BBSetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupOther Station Monitor 4: Monitor Information SettingTorquePn9BCSetting RangeSetting UnitDefault SettingWhen Enabled分類0000 to 14FF-1000After restartSetup0000 to 14FF-1000After restartSetup0002 to FEEF-0002After restartSetup0 to 4-3After restartSetup0 to 4-3After restartSetup0 to 4-3After restartSetup0 ther Station Monitor 5: Monitor Information SettingTorque0 ther Station Monitor 5: Monitor Infor		Other Station Moni	Torque			
Pn9BBOther Station Monitor 4: Number of Transmission BytesTorquePn9BBSetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupOther Station Monitor 4: Monitor Information SettingTorquePn9BCSetting RangeSetting UnitDefault SettingWhen Enabled分類0000 to 14FF-1000After restartSetup0000 to 14FF-1000After restartSetup0000 to 14FF-1000After restartSetup0000 to 14FF-0002After restartSetup0002 to FEEF-0002After restartSetup0002 to FEEF-0002After restartSetup0ther Station Monitor 5: Number of Transmission BytesTorquePn9BESetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupPn9BFSetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetup0 ther Station Monitor 5: Monitor Information SettingTorqueTorquePn9BFSetting RangeSetting UnitDefault SettingWhen EnabledClassification	Pn9BA	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
Pn9BBSetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupOther Station Monitor 4: Monitor Information SettingTorquePn9BCSetting RangeSetting UnitDefault SettingWhen Enabled分類0000 to 14FF-1000After restartSetupOther Station Monitor 5: Station AddressTorquePn9BDSetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupOther Station Monitor 5: Number of Transmission BytesTorquePn9BESetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetup0 ther Station Monitor 5: Number of Transmission BytesTorquePn9BESetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetup0 to 4-3After restartSetupPn9BFSetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupPn9BFSetting RangeSetting UnitDefault SettingWhen EnabledClassification		0002 to FEEF	-	0002	After restart	Setup
Other Station Monitor 4: Monitor Information SettingTorquePn9BCSetting RangeSetting UnitDefault SettingWhen Enabled分類0000 to 14FF-1000After restartSetup0000 to 14FF-1000After restartSetupPn9BDSetting RangeSetting UnitDefault SettingWhen Enabled分類0000 to 14FF-1000After restartSetupPn9BDSetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupPn9BESetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetup0 ther Station Monitor 5: Number of Transmission BytesTorquePn9BESetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupPn9BFSetting RangeSetting UnitDefault SettingWhen EnabledClassification		Other Station Moni	tor 4: Number of Trar	nsmission Bytes		Torque
Pn9BCOther Station Monitor 4: Monitor Information SettingTorquePn9BCSetting RangeSetting UnitDefault SettingWhen Enabled分類0000 to 14FF-1000After restartSetupOther Station Monitor 5: Station AddressTorquePn9BDSetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetup0002 to FEEF-0002After restartSetupPn9BESetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetup0 ther Station Monitor 5: Monitor Information SettingTorqueTorquePn9BFSetting RangeSetting UnitDefault SettingWhen EnabledClassification0 ther Station Monitor 5: Monitor Information SettingTorqueTorquePn9BFSetting RangeSetting UnitDefault SettingWhen EnabledClassification	Pn9BB	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
Pn9BCSetting RangeSetting UnitDefault SettingWhen Enabled分類0000 to 14FF-1000After restartSetup0000 to 14FF-1000After restartSetupPn9BDOther Station Monitor 5: Station AddressTorquePn9BDSetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetup0002 to FEEF-0002After restartSetupPn9BESetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupPn9BFOther Station Monitor 5: Monitor Information SettingTorquePn9BFSetting RangeSetting UnitDefault SettingWhen EnabledClassification		0 to 4	-	3	After restart	Setup
0000 to 14FF-1000After restartSetup0000 to 14FF-1000After restartSetupPn9BDOther Station Monitor 5: Station AddressTorqueSetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupPn9BEOther Station Monitor 5: Number of Transmission BytesTorquePn9BESetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetup0 ther Station Monitor 5: Monitor Information SettingTorqueTorquePn9BFSetting RangeSetting UnitDefault SettingWhen EnabledClassification		Other Station Moni	tor 4: Monitor Inform	ation Setting		Torque
Other Station Monitor 5: Station AddressTorquePn9BDSetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetupOther Station Monitor 5: Number of Transmission BytesTorquePn9BESetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupOther Station Monitor 5: Monitor Information SettingTorquePn9BFSetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetupPn9BFSetting RangeSetting UnitDefault SettingWhen EnabledClassification	Pn9BC	Setting Range	Setting Unit	Default Setting	When Enabled	分類
Pn9BDSetting RangeSetting UnitDefault SettingWhen EnabledClassification0002 to FEEF-0002After restartSetup0002Other Station Monitor 5: Number of Transmission BytesTorquePn9BESetting RangeSetting UnitDefault SettingWhen EnabledClassification0 to 4-3After restartSetup0 ther Station Monitor 5: Monitor Information SettingTorquePn9BFSetting RangeSetting UnitDefault SettingWhen EnabledClassificationPn9BFSetting RangeSetting UnitDefault SettingWhen EnabledClassification		0000 to 14FF	-	1000	After restart	Setup
O002 to FEEF         -         O002         After restart         Setup           Pn9BE         Other Station Monitor 5: Number of Transmission Bytes         Torque           Setting Range         Setting Unit         Default Setting         When Enabled         Classification           0 to 4         -         3         After restart         Setup           Pn9BF         Other Station Monitor 5: Monitor Information Setting         Torque           Pn9BF         Setting Range         Setting Unit         Default Setting         When Enabled         Classification		Other Station Moni	tor 5: Station Addres	s		Torque
Other Station Monitor 5: Number of Transmission Bytes         Torque           Pn9BE         Setting Range         Setting Unit         Default Setting         When Enabled         Classification           0 to 4         -         3         After restart         Setup           Pn9BF         Other Station Monitor 5: Monitor Information Setting         Torque           Setting Range         Setting Unit         Default Setting         Men Enabled         Classification	Pn9BD	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
Pn9BE         Setting Range         Setting Unit         Default Setting         When Enabled         Classification           0 to 4         -         3         After restart         Setup           Other Station Monitor 5: Monitor Information Setting         Torque           Setting Range         Setting Unit         Default Setting         When Enabled         Classification			_		After restart	Setup
0 to 4         -         3         After restart         Setup           Other Station Monitor 5: Monitor Information Setting         Torque           Pn9BF         Setting Range         Setting Unit         Default Setting         When Enabled         Classification		Other Station Moni	tor 5: Number of Trar	nsmission Bytes		
Other Station Monitor 5: Monitor Information Setting         Torque           Pn9BF         Setting Range         Setting Unit         Default Setting         When Enabled         Classification	Pn9BE	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
Pn9BF Setting Range Setting Unit Default Setting When Enabled Classification		0 to 4	-	3	After restart	
0000 to 14FF – 1000 After restart Setup	Pn9BF	Setting Range	Setting Unit	<b>.</b>	When Enabled	Classification
		0000 to 14FF	-	1000	After restart	Setup

### **Monitoring Methods**

You can display the input values from pressure sensor amplifiers for two channels at the same time. First, set other station monitoring with Pn824 or Pn825. Next, set the check channel with Pn9C0.

Parameter		Meaning	When Enabled	Classification	
Pn824	0101 hex	You can check other station monitor data with Option Monitor 1.	Immediately	Setup	
Pn825	0101 hex	You can check other station monitor data with Option Monitor 2.	Infinediately	Setup	
Parameter		Meaning	When Enabled	Classification	
Pn9C0	n.000X*1	Set the other station monitor number (1 to 5).	After restart	Setup	
	n.□□X□*2	Set the other station monitor number (1 to 5).	Alter Testart	Setup	

\*1. You can check the other station monitor setting in the other station monitor value 1 (lower 16 bits) area of Option Monitor 1 or 2 (32 bits).

\*2. You can check the other station monitor setting in the other station monitor value 2 (upper 16 bits) area of Option Monitor 1 or 2 (32 bits).

# Option Monitor 1 or 2 (Pn824 or Pn825 = 101 hex: Other Station Monitor Data)

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
		Other sta	ation monitor	value 1 (lowe	er 8 bits)		
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
		Other sta	ation monitor	value 1 (upp	er 8 bits)		
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
Bit 23	Bit 22		Bit 20 ation monitor			Bit 17	Bit 16
Bit 23	Bit 22					Bit 17	Bit 16
Bit 23 Bit 31	Bit 22 Bit 30					Bit 17 Bit 25	Bit 16 Bit 24

### **Setting Check Method**

Perform the following operations to check whether other station monitoring is set correctly.

- 1. Connect the host controller, SERVOPACK, and R7G4HML3-6-LC2 I/O Module from M-System Co., Ltd. with MECHATROLINK-III Cables.
- Set other station monitoring for the SERVOPACK. Refer to the following section for details.
   *Allocations for Other Station Monitoring* on page 3-11
   *Monitoring Methods* on page 3-12
- **3.** Send the Connection Request command (CONNECT: 0E hex) to the SERVOPACK and the R7G4HML3-6-LC2 I/O Module.
- 4. Send the SMON command to the SERVOPACK and the R7G4HML3-6-LC2 I/O Module.
- 5. With the SMON command, set bit 28 in the SVCMD\_IO area to 1 (other station monitor enable) for the SERVOPACK.
- 6. Send the SMON command from the host controller and set the Option Monitor 1 or 2 data selection code (0xE or 0xF) in the MONITOR1 or MONITOR2 area.
- 7. Make sure that you can observe the pressure sensor output with the pressure feedback detection monitor using the host controller option monitor or SigmaWin+ tracing.

#### 3.6.4 Settings for the System That Uses Pressure Feedback Control

### FT40

Set Pn449 (Pressure Feedback Sensor Gain) according to the output from the sensor amplifier.

Pn449	Pressure Feedback	Torque			
	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 10,000	0.01 V/rated torque or 0.01 V/rated force	0	Immediately	Setup

Setting Example

- For SGM7G-20 Servomotor
- Motor rated torque: 11.5 N·m
- Ball screw lead: 20 mm
- Sensor amplifier output: 0 to 10 V for 0 to 980 N

3.6.4 Settings for the System That Uses Pressure Feedback Control

The pressure for the rated torque is 11.5 N·m × 2 ×  $\pi$  × 1,000 mm/20 mm ≈ 3,612.8 N. Therefore, the servo amplifier output at the rated torque would be 10 V × 3,612.8 N/980 N = 36.86.

And, Pn449 would be set to 36.86 V, or 3,686 [0.01 V/rated torque].

If the pressure feedback detection input is negative, set the Pressure Feedback Polarity Selection Switch to reverse the polarity (Pn440 =  $n.\Box\Box1\Box$ ).

Parameter		Meaning	When Enabled	Classification
Pn440	n.□□0□ (default setting)	Do not reverse the polarity.	After restart	Setup
	n.🗆 🗆 1 🗖	Reverse the polarity.		

### FT41

For the FT41, set Pn467 to Pn46B (Pressure Feedback Sensor Gain) according to the output from the sensor amplifier.

Set it so that the product of each feedback sensor gain (%) multiplied by the maximum output value (0.01%) for each sensor amplifier is the 100% pressure feedback value.

Pressure feedback 100% value =

CH1 (pressure feedback value  $(0.01\%) \times \text{pressure feedback sensor gain 1 (Pn467 (\%)) + CH2}$  (pressure feedback value  $(0.01\%) \times \text{pressure feedback sensor gain 2 (Pn468 (\%)) + CH3 (pressure feedback value <math>(0.01\%) \times \text{pressure feedback sensor gain 3 (Pn469 (\%)) + CH4 (pressure feedback value <math>(0.01\%) \times \text{pressure feedback sensor gain 4 (Pn46A(\%)) + CH5 (pressure feedback value <math>(0.01\%) \times \text{pressure feedback sensor gain 5 (Pn46B (\%))}$ 

Note: CH1 to CH5 are the pressure feedback values acquired with the respective other station monitor channels.

	Pressure Feedback	Torque				
Pn467	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0 to 10,000	1%	0	Immediately	Setup	
	Pressure Feedback	Sensor Gain 2			Torque	
Pn468	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0 to 10,000	1%	0	Immediately	Setup	
	Pressure Feedback	Sensor Gain 3	-	-	Torque	
Pn469	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0 to 10,000	1%	0	Immediately	Setup	
	Pressure Feedback	Pressure Feedback Sensor Gain 4				
Pn46A	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0 to 10,000	1%	0	Immediately	Setup	
	Pressure Feedback	Sensor Gain 5			Torque	
Pn46B	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0 to 10,000	1%	0	Immediately	Setup	

### **Setting Example**

The conditions are as follows:

- Servomotor: SGM7G-20 (Motor rated torque: 11.5 N·m)
- Ball screw lead: 20 mm
- Sensor amplifier output: For 0 to 980 N, 0% to 100.0% is output.

The pressure for the rated torque is 11.5 N·m × 2 ×  $\pi$  × 1,000 mm/20 mm = 3,612.8 N. Therefore, the servo amplifier output at the rated torque would be 3612.8 N/980 N × 100.00% = 368.65%.

When there is one pressure sensor, the settings are as follows:

- 1. Set Pn467 so that the sensor amplifier output  $\times$  Pn467/100% = 100% for the pressure feedback detection value.
- 2. Set Pn467 to 10,000/sensor amplifier output = 10,000/368.65 = 27%.

**3.** Set Pn468 to Pn46B to 0.

When there are two pressure sensors, the settings are as follows:

- Set Pn467 and Pn468 so that sensor amplifier 1 output × Pn467/100% + sensor amplifier 2 output x Pn468/100% = 100% for the pressure feedback detection value. If the two sensor amplifiers have the same output specification, set it to 2 × (sensor amplifier 1 or 2 output x Pn467 or Pn468/10,000 (0.01%)) = 100%.
- **2.** Set Pn467 or Pn468 to 10,000/(sensor amplifier output 1 or  $2 \times 2$ ) = 10,000/(368.65  $\times$  2) = 14%.
- **3.** Set Pn469 to Pn46B to 0.

### 3.6.5 Automatic Offset Adjustment for Pressure Feedback Detection Input Signal

### Preparations

Confirm the following conditions before you automatically adjust the offset of the pressure feedback detection input signal.

- The parameters must not be write prohibited.
- The servo must be OFF.

### **Applicable Tools**

The following table lists the tools that you can use to automatically adjust the offset and the applicable tool functions.

Tool	Function	Operating Procedure Reference
Digital Operator	Fn009	Ω Σ-7-Series Digital Operator Operating Manual (Manual No.: SIEP S800001 33)
SigmaWin+	Setup - Adjust Speed and Torque Reference Offset	Derating Procedure on page 3-15

#### Operating Procedure

Use the following procedure to adjust the offset of the pressure feedback detection input signal.

- 1. Click the <u>I</u> Servo Drive Button in the workspace of the Main Window of the SigmaWin+.
- **2.** Select Adjust the Speed and Torque Reference Offset in the Menu Dialog Box. The Adjust the Speed and Torque Reference Offset Dialog Box will be displayed.
- 3. Click the Automatic Adjustment Tab.
- 4. Click the Adjust Button.

The value that results from automatic adjustment will be displayed in the New Box.

This concludes the automatic offset adjustment for pressure feedback detection input signal.

3.6.6 Settings prior to Pressure Feedback Control Operation

## 3.6.6 Settings prior to Pressure Feedback Control Operation

# **1.** Enable pressure feedback with the Pressure Feedback Selection Switch (Pn440 = n.□□□1).

Parameter		Meaning	When Enabled	Classification
Pn440	n.□□□0 (default setting)	Disable pressure feedback control and perform normal torque control.	After restart	Setup
	n.🗆 🗖 🗖 1	Enable pressure feedback control.		

Note: As a rule, use the default settings for the following parameters.

	Pressure Feedbac	Torque			
Pn448	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	-10,000 to 10,000	0.01%	0	Immediately	Setup
	Pressure Feedback	Filter			Torque
Pn44A	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 65,535	0.01 ms	0	Immediately	Setup
	Pressure Feedback	Torque			
Pn44E	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 5,000	0.1 ms	0	Immediately	Setup

# 2. Set Pn44C (Pressure Feedback Enable Level) and Pn44D (Pressure Feedback Overflow Detection Level) to suitable values for the system.

	Pressure Feedbac	Torque			
Pn44C	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 10,000	0.01%	1000	Immediately	Setup
	Pressure Feedbac		Torque		
Pn44D	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 800	1%	300	Immediately	Setup

Information Pressure feedback control will be enabled at or above Pn44C and below Pn44D.

Pressure Feedback Detection Value	Pressure Feedback Control	Pressure Feedback Overflow Warning (A.922)*	Remarks
Less than Pn44C	Disabled	No	If the pressure feedback detection value is less than the set- ting of the Pressure Feedback Enable Level, the system assumes that pressing does not need to be started and pres- sure feedback control is not performed. Normal torque control is performed. Set the value as a percentage of the rated torque. Note: Processing is performed to determine if pressing is enabled or disabled, so set as small a value as possible.
Equal to or greater than Pn44C and less than Pn44D	Enabled	No	_
Equal to or greater than Pn44D	Disabled	Yes	If the pressure feedback value exceeds the setting of the Pres- sure Feedback Overflow Detection Level, it is treated as an error and a Pressure Feedback Overflow Warning (A.922) is output after the time set in Pn44E (Pressure Feedback Over- flow Detection Time) elapses. Set the value as a percentage of the rated torque. Note: If Pn44D is set to 800, an error will not be detected and a warning will not occur.

\* Even if a Pressure Feedback Overflow Warning (A.922) occurs, pressure feedback control will be enabled again when the pressure feedback detection value decreases to below Pn44D. Execute the ALM\_CLR command to reset the warning.

**3.** Set Pn407 (Speed Limit during Torque Control) or Pn480 (Speed Limit during Force Control).

#### 3.6.6 Settings prior to Pressure Feedback Control Operation



To ensure safety during setup, the default value is set low. Use a monitor function or other means to confirm the motor speed and set a suitable value.

#### · Rotary Servomotors

	Speed Limit during Torque Control					
Pn407	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	1 to 10,000	1 min <sup>-1</sup>	100	Immediately	Setup	

#### Linear Servomotors

	Speed Limit during	Force			
Pn480	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	1 to 10,000	1 mm/s	100	Immediately	Setup

## **4.** Set the type of pressure feedback control to use in Pn458 = n.□□X□ (Pressure Feedback Type Selection).

Parameter		Meaning	When Enabled	Classification
	n.🗆 🗆 🛛 🗖	Set pressure feedback control 1.		
Pn458	n.0010 (default setting)	Set pressure feedback control 2.	After restart	Setup

# 5. Set the Torque Control Gravity Compensation Switch (Pn440 = n.XDDD) according to the system.

value is normally workpie Set Pn4	hable gravity compensation (Pn440 = $n.1\square\square\square$ ) and the pressure feedback detection 0 when the pressure sensor is faulty, pressure feedback control will not be performed y and the Servomotor will be operated with excessive torque, possibly damaging the see or machine. 47 (Pressure Feedback Loop Deviation Overflow Level), Pn402/Pn403 (Torque Limits), 483/Pn484 (Force Limits) to suitable values.

For a vertical axis or other axis that is affected by gravity, enable gravity compensation (Pn440 =  $n.1\square\square\square$ ).

For a horizontal axis, disable gravity compensation (Pn440 =  $n.0\square\square\square$ ).

Parameter		Meaning	When Enabled	Classification	
Pn440	n.0 <b>□□□</b> (default setting)	Disable gravity compensation.	After restart	Setup	
	n.1000	Enable gravity compensation.			

Important

For gravity compensation, input the pressure sensor output to the SERVOPACK and monitor the pressure feedback detection value. If you do not connect a pressure sensor and disable pressure feedback control ( $Pn440 = n.\Box\Box\Box$ ), always disable gravity compensation ( $Pn440 = n.\Box\Box$ ).

3.6.7 Gain Adjustment

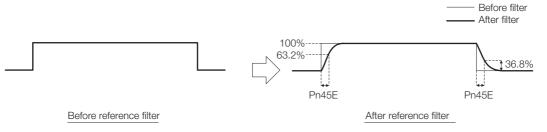
## 3.6.7 Gain Adjustment

### Gain Adjustment for Pressure Feedback Control 2

Use the SigmaWin+ to perform autotuning without a host reference and to estimate the moment of inertia. Adjust Pn4A7 (Pressure Feedback Control 2 Stability Gain), Pn4A8 (Pressure Feedback Control 2 Stability Integral Time), and Pn4AC (Pressure Feedback Moment of Inertia Ratio) as required and then set Pn4A0 (Pressure Feedback Control One-Parameter Gain Level) to a suitable value.

	Pressure Feedback	One-Parameter Gai	in Level		Torque
Pn4A0	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	1 to 65,535	-	1,000	Immediately	Setup
	Pressure Feedback	Control 2 Stability Ga	ain		Torque
Pn4A7	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	10 to 20,000	0.1 Hz	400	Immediately	Setup
	Pressure Feedback	Control 2 Stability In	tegral Time		Torque
Pn4A8	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	15 to 51,200	0.01 ms	2,000	Immediately	Setup
	Pressure Feedback	Torque			
Pn4AC	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 20,000	1%	100	Immediately	Setup

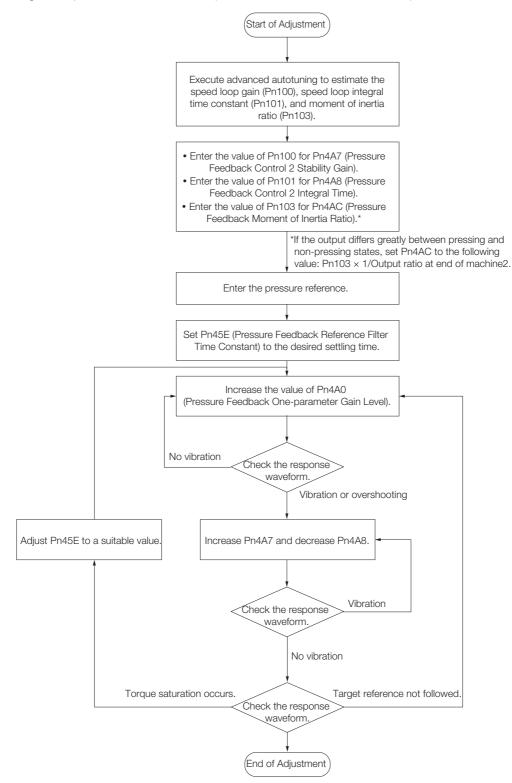
You can set Pn45E (Pressure Feedback Reference Filter Time Constant) according to the system to suppress shock when updating the pressure feedback reference for torque (pressure) control. If a large value is set, it will increase the delay and make response slower. Pn45E is valid only when pressure feedback control is enabled (Pn440 =  $n.\Box\Box\Box$ 1).



	Pressure Feedback Reference Filter Time Constant				
Pn45E	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 65,535	0.01 ms	0	Immediately	Setup

#### Gain Adjustment Flowchart

A gain adjustment flowchart for pressure feedback control 2 is provided below.



3.6.7 Gain Adjustment

## Gain Adjustment for Pressure Feedback Control 1

You can adjust the following parameters while performing pressure feedback control operation. Refer to the following section for details.

Gain Adjustment Flowchart on page 3-21

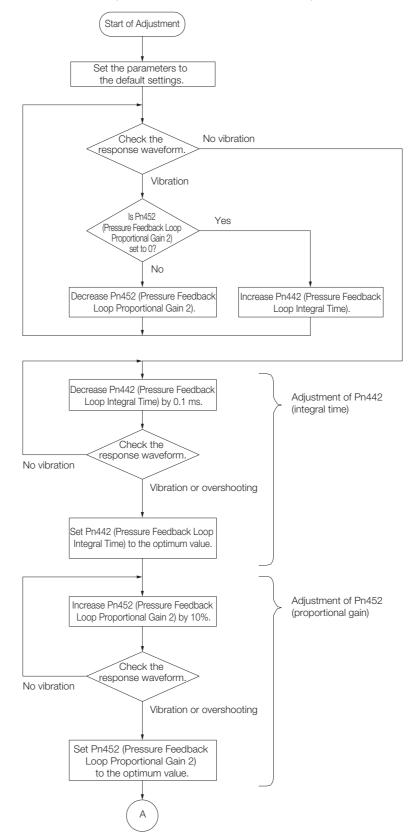
	Pressure Feedbac	k Control 1 Pressu	re Feedback Loop	Integral Time	Torque
Pn442	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 51,200	0.01 ms	2000	Immediately	Setup
	Pressure Feedbac	k Control 1 Pressu	re Feedback Loop	Feedforward	Torque
Pn444	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 1,000	1%	100	Immediately	Setup
	Pressure Feedbac	k Control 1 Pressu	re Feedback Loop	Differential Time	Torque
Pn450	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 51,200	0.1 ms	0	Immediately	Setup
	Pressure Feedbac	k Control 1 Pressu	re Feedback Loop	Differential Filter Ra	ate Torque
Pn451	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 10,000	1%	100	Immediately	Setup
	Pressure Feedbac	k Control 1 Pressu	re Feedback Loop	Proportional Gain 2	Torque
Pn452	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 10,000	1%	100	Immediately	Setup

If the following conditions are met, you can also adjust the following parameter. If a Pressure Feedback Loop Deviation Overflow Alarm occurs and the reason is clear: Increase the value of Pn447 (Pressure Feedback Loop Deviation Overflow Level).

	Pressure Feedbac	Torque			
Pn447	Setting Range	Range Setting Unit Default Setting When Enabled			
	0 to 800	1%	100	Immediately	Setup

#### ■ Gain Adjustment Flowchart

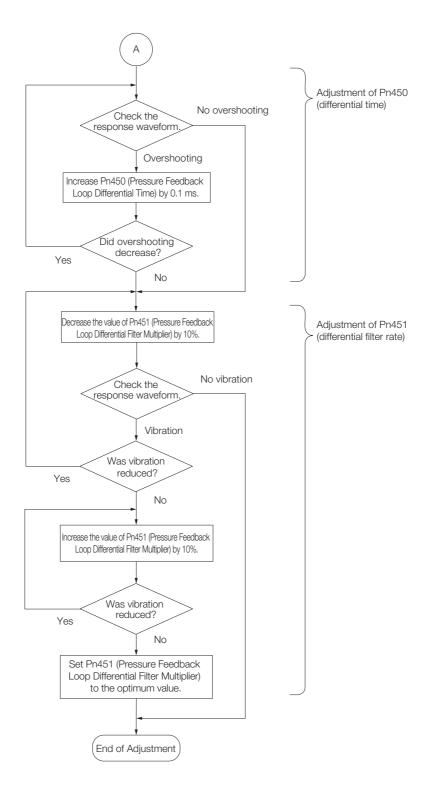
A gain adjustment flowchart for pressure feedback control 1 is provided below.



Pressure Feedback Control

3.6 Setup Procedure

#### 3.6.7 Gain Adjustment



## 3.7 Monitoring

You can monitor the following signals through analog monitors or through MECHATROLINK-III communications option monitors.

### **Analog Monitors**

Pn006 or Pn007	Signal Name	Output Unit
30 hex	Pressure Feedback Torque Reference Monitor	1 V/100% rated torque
31 hex	Pressure Feedback Detection Monitor	1 V/100% rated torque
32 hex	Pressure Feedback Output Torque Monitor	1 V/100% rated torque
33 hex	Pressure Feedback Loop Deviation Monitor	1 V/100% rated torque

## **Option Monitors with MECHATROLINK-III Communications**

Pn824/Pn825	Signal Name	Unit		
0050 hex	Pressure Feedback Detection Monitor	10,000/100% rated torque		
0052 hex	Control Method Change Monitor	0: Position or speed control, 1: Torque control, 3: Pressure feedback		
0100 hex	Speed/Torque (Pres- sure) Table Operation Monitor	Upper 16 bits: Pressure feedback value [0.01%] Lower 16 bits: Speed/torque (pressure) table operation status monitor value		
0101 hex* Other Station Moni- tor Data		Upper 16 bits: Other station monitor value 2 Lower 16 bits: Other station monitor value 1		

\* This can be monitored only when you use the FT41.

### Monitoring with SigmaWin+ Waveform Traces

Signal Name	Unit
Pressure Feedback Torque Reference Monitor	%
Pressure Feedback Detection Monitor	%
Pressure Feedback Output Torque Monitor	%
Pressure Feedback Loop Deviation Monitor	%

### Monitoring with SigmaWin+ I/O Tracing

Signal Name	Selected Data Name	Description
Control Method Selection Bit 0	/A feedback 0	Position/speed control: High, Torque control: Low, Pressure feedback: Low
Control Method Selection Bit 1	/A feedback 1	Position/speed control: High, Torque control: High, Pressure feedback: Low

# Speed/Torque (Pressure) Table Operation

This chapter describes speed/torque (pressure) table operation in detail. 4

4.1	Introc	luction						
4.2	Operation Patterns for Speed/Torque (Pressure) Table Operation 4-3							
4.3	Table Par	rameter Settings for Speed/Torque (Pressure) Table Operation 4-4						
	4.3.1 4.3.2 4.3.3 4.3.4	Setting the Number of Speed Table References and the Number of Torque (Pressure) References4-4 Settings for Speed Table Operation 4-5 Setting Condition for Changing from Speed Table Operation to Torque (Pressure) Table Operation						
4.4	Opera	ating Procedure						
4.5	Monit	oring						

## 4.1 Introduction

You can use speed/torque (pressure) table operation to perform speed control for up to 10 speeds and pressure (torque) control for up to five torques (pressures) according to table parameters that are set in the SERVOPACK in advance.

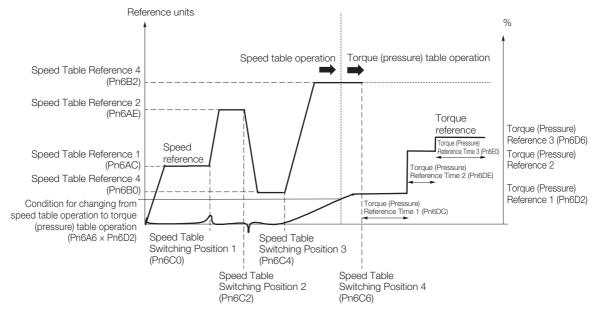
To use speed/torque (pressure) table operation, pressure feedback control must be operating normally. Refer to the following chapter for details on pressure feedback control.

You can perform speed/torque (pressure) table operation in Speed Control Mode. It cannot be used in Position Control Mode or Torque Control Mode.

Stop the motor before you change from Position Control Mode or Torque Control Mode to Speed Control Mode.

## 4.2 Operation Patterns for Speed/Torque (Pressure) Table Operation

This section provides an example of speed/torque (pressure) table operation. The following example is for changing from speed table operation (speed table reference 4) to torque (pressure) table operation (speed table reference 1).



4.3.1 Setting the Number of Speed Table References and the Number of Torque (Pressure) References

## 4.3 Table Parameter Settings for Speed/Torque (Pressure) Table Operation

To perform speed/torque (pressure) table operation, table parameters, such as the speed table references, speed table switching positions, torque (pressure) references, and torque (pressure) reference times, must be set in advance.

This section describes the table parameters that must be set.

# 4.3.1 Setting the Number of Speed Table References and the Number of Torque (Pressure) References

Set  $Pn6A4 = n.\square\squareX\square$  (Selection of Number of Speed Table References) to the number of speed table references to use in speed table operation of speed/torque (pressure) operation.

Set Pn6A4 =  $n.\Box X \Box \Box$  (Selection of Number of Torque (Pressure) References) to the number of torque (pressure) references to use in torque (pressure) table operation of speed/torque (pressure) table operation.

Parameter		Meaning	When Enabled	Classification
	n.□□0□ (default setting)	Do not perform speed table operation.		
	n.0010	Use speed table reference 1 (Pn6AC) for speed table operation.		
	n.🗆 🗆 2 🗖	Use speed table reference 1 (Pn6AC) and speed table reference 2 (Pn6AE) for speed table operation.		
	n.🗆 🗆 3 🗖	Use speed table reference 1 (Pn6AC) through speed table reference 3 (Pn6B0) for speed table operation.		
	n.0040	Use speed table reference 1 (Pn6AC) through speed table reference 4 (Pn6B2) for speed table operation.	-	Setup
	n.🗆 🗆 5 🗖	Use speed table reference 1 (Pn6AC) through speed table reference 5 (Pn6B4) for speed table operation.	Immediately	
	n.🗆 🗆 6 🗖	Use speed table reference 1 (Pn6AC) through speed table reference 6 (Pn6B6) for speed table operation.		
Pn6A4	n.0070	Use speed table reference 1 (Pn6AC) through speed table reference 7 (Pn6B8) for speed table operation.		
	n.0080	Use speed table reference 1 (Pn6AC) through speed table reference 8 (Pn6BA) for speed table operation.		
	n.0090	Use speed table reference 1 (Pn6AC) through speed table reference 9 (Pn6BC) for speed table operation.		
	n.🗆 🗆 A 🗖	Use speed table reference 1 (Pn6AC) through speed table reference 10 (Pn6BE) for speed table operation.		
	n.0000 (default setting)	Do not perform torque (pressure) table opera- tion.		
	n.🗆1🗖 🗖	Use torque (pressure) table reference 1 (Pn6D2) for torque (pressure) table operation.		
	n.0200	Use torque (pressure) table reference 1 (Pn6D2) and torque (pressure) table reference 2 (Pn6D4) for torque (pressure) table opera- tion.	Continue	

4.3.2 Settings for Speed Table Operation

Continued from previous page.

Parameter		Meaning	When Enabled	Classification	
Pn6A4	n.0300	Use torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table refer- ence 3 (Pn6D6) for torque (pressure) table operation.			
	n.0400	Use torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table refer- ence 4 (Pn6D8) for torque (pressure) table operation.	Immediately	Setup	
	n.0500	Use torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table refer- ence 5 (Pn6DA) for torque (pressure) table operation.			

## 4.3.2 Settings for Speed Table Operation

Set the ten speeds for speed table operation in Pn6AC to Pn6BE and the speed table switching positions for the ten speeds for speed table operation in Pn6C0 to Pn6D0.

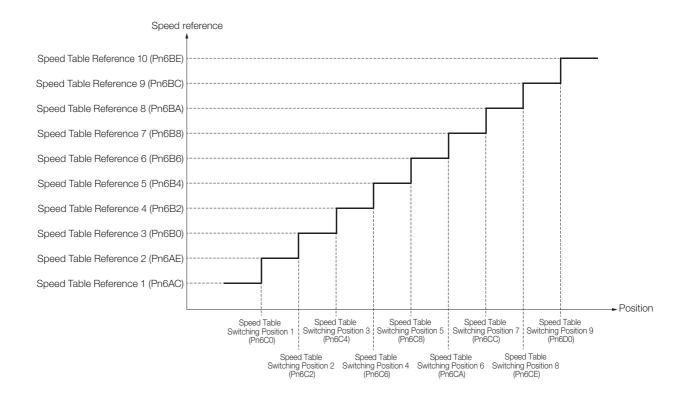
	Speed Table Refe	rence 1		Speed			
Pn6AC	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup		
	Speed Table Refe	rence 2		Speed			
Pn6AE	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup		
	Speed Table Refe	rence 3		Speed			
Pn6B0	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
THODO	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup		
	Speed Table Refe	rence 4		Speed			
Pn6B2	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup		
	Speed Table Reference 5			Speed			
Pn6B4	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup		
	Speed Table Refe	rence 6		Speed			
Pn6B6	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup		
	Speed Table Refe	rence 7		Speed			
Pn6B8	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup		
	Speed Table Refe	rence 8		Speed			
Pn6BA	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup		
	Speed Table Refe	rence 9		Speed			
Pn6BC	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup		

4.3.2 Settings for Speed Table Operation

	Continued from previous page						
	Speed Table Refer	rence 10		Speed			
Pn6BE	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup		
	Speed Table Swite	ching Position 1		Speed			
Pn6C0	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup		
	Speed Table Swite	ching Position 2		Speed			
Pn6C2	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup		
	Speed Table Swite	ching Position 3		Speed			
Pn6C4	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup		
	Speed Table Swite	ching Position 4		Speed			
Pn6C6	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup		
	Speed Table Swite	ching Position 5		Speed			
Pn6C8	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup		
	Speed Table Swite	ching Position 6		Speed			
Pn6CA	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup		
	Speed Table Swite	ching Position 7		Speed			
Pn6CC	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup		
	Speed Table Swite	ching Position 8		Speed			
Pn6CE	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup		
	Speed Table Swite	<u> </u>		Speed			
Pn6D0	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
. 1000	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup		

Each of the speed table switching positions 1 to 9 corresponds to one pair of speed table references 1 to 10. Refer to the following diagram for the speed table references and speed table switching positions, and set the parameters in ascending order of parameter numbers.

#### 4.3.3 Setting Condition for Changing from Speed Table Operation to Torque (Pressure) Table Operation



#### 4.3.3 Setting Condition for Changing from Speed Table Operation to Torque (Pressure) Table Operation

You can use  $Pn6A4 = n.\square\square\squareX$  (Table Operation Control Switching Condition Selection) and  $Pn6A4 = n.X\square\square\square$  (Table Operation Control Method Switching Selection) to select from the following three conditions for switching from speed table operation to torque (pressure) table operation.

- Pn6A4 = n.0□□0
   Speed table operation changes to torque (pressure) table operation when the pressure feedback detection value exceeds Pn6A7 × Pn6D2 and the motor position exceeds Pn6A8.
- Pn6A4 = n.0□□1
   Speed table operation changes to torque (pressure) table operation when the pressure feedback detection value exceeds Pn6A7 × Pn6D2 or the motor position exceeds Pn6A8.
- Pn6A4 = n.1□□□

During speed table operation, if the pressure feedback detection value falls to the setting for Pn44C (Pressure Feedback Enable Level) or less, torque references are restricted to the setting of Pn6A5 (Torque (Pressure) Reference during Speed Table Operation) or less. The pressure reference in Pn6A5 functions as the maximum limit when the pressure feedback detection value exceeds the value of Pn44C.

Speed table operation changes to torque (pressure) table operation when the motor position exceeds the table operation switching position (Pn6A8). After operation changes to pressure table operation, the pressure feedback control follows the setting in Pn44C.

#### 4.3 Table Parameter Settings for Speed/Torque (Pressure) Table Operation

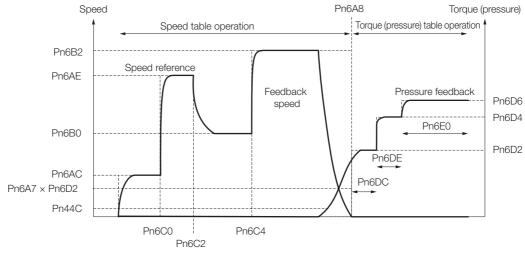
### 4.3.3 Setting Condition for Changing from Speed Table Operation to Torque (Pressure) Table Operation

P	arameter	Меа	aning	When Enabled	Classification
	n.□□□0 (Default Setting)	Switch from speed tab (pressure) table operat feedback detection val Pn6D2 and the motor Pn6A8.	ion when the pressure ue exceeds Pn6A7 ×	e	
Pn6A4	n.0001	Switch from speed tab (pressure) table operat feedback detection val Pn6D2 or the motor po	ion when the pressur ue exceeds Pn6A7 ×	e Immediately	Setup
	n.0 <b>□□□</b> (Default Setting)	Disable Pn6A5 and en	IX.		
	n.1000	Disable Pn6A4 = n.□□	I□X and enable Pn6A	45.	
	Torque (Pressure	e) Reference during Spe	eed Table Operation	Speed	
Pn6A5	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
1 110/10	0 to 1,073,741,824	1%	0	Immediately	Setup
	Pressure Contro	Switching Pressure P	ercentage	Speed	
Pn6A7	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 10,000	0.01%	0	Immediately	Setup
	Torque (Pressure	e) Reference 1		Speed	
Pn6D2	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
THODE	-1,073,741,824 1,073,741,824		0	Immediately	Setup
	Table Operation	Switching Position		Speed	·
Pn6A8	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 2,147,483,647	1 reference unit	0	Immediately	Setup

4.3.3 Setting Condition for Changing from Speed Table Operation to Torque (Pressure) Table Operation

#### ■ Torque (Pressure) Table Operation Example for Pn6A4 = n.0□□0

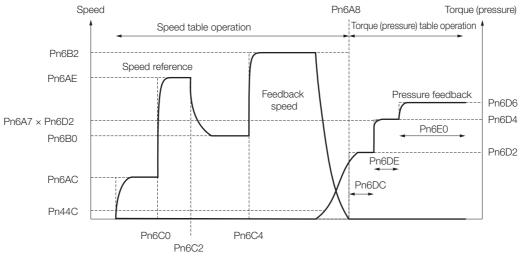
Speed table operation changes to torque (pressure) table operation when the pressure feedback detection value exceeds Pn6A7 × Pn6D2 and the motor position exceeds Pn6A8.



#### ■ Torque (Pressure) Table Operation Example for Pn6A4 = n.0□□1

Speed table operation changes to torque (pressure) table operation when the pressure feedback detection value exceeds  $Pn6A7 \times Pn6D2$  or the motor position exceeds Pn6A8.

In the following example, speed table operation is changed to torque (pressure) table operation when the motor position exceeds Pn6A8.



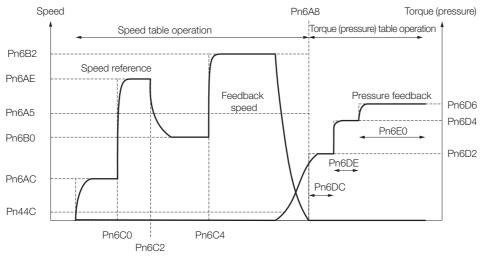
4.3.3 Setting Condition for Changing from Speed Table Operation to Torque (Pressure) Table Operation

#### ■ Torque (Pressure) Table Operation Example 1 for Pn6A4 = n.1□□□

During speed table operation, if the pressure feedback detection value falls to the setting for Pn44C (Pressure Feedback Enable Level) or less, torque references are restricted to the setting of Pn6A5 (Torque (Pressure) Reference during Speed Table Operation) or less. The pressure reference in Pn6A5 functions as the maximum limit when the pressure feedback detection value exceeds the value of Pn44C.

Speed table operation changes to torque (pressure) table operation when the motor position exceeds the table operation switching position (Pn6A8). After operation changes to pressure table operation, the pressure feedback control follows the setting in Pn44C.

In the following example, speed table operation is changed to torque (pressure) table operation when the motor position exceeds Pn6A8 even if the pressure feedback detection value does not exceed Pn44C.

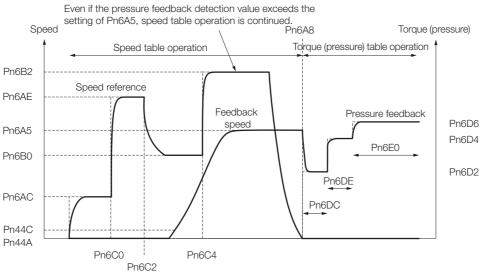


#### ■ Torque (Pressure) Table Operation Example 2 for Pn6A4 = n.1□□□

During speed table operation, if the pressure feedback detection value falls to the setting for Pn44C (Pressure Feedback Enable Level) or less, torque references are restricted to the setting of Pn6A5 (Torque (Pressure) Reference during Speed Table Operation) or less. The pressure reference in Pn6A5 functions as the maximum limit when the pressure feedback detection value exceeds the value of Pn44C.

Speed table operation changes to torque (pressure) table operation when the motor position exceeds the table operation switching position (Pn6A8). After operation changes to pressure table operation, the pressure feedback control follows the setting in Pn44C.

In the following example, the pressure feedback detection value exceeds Pn44C, so the motor operates at the pressure reference in Pn6A5. When the motor position exceeds Pn6A8, speed table operation changes to torque (pressure) table operation.



4.3.4 Settings for Torque (Pressure) Table Operation

## 4.3.4 Settings for Torque (Pressure) Table Operation

Set the five torque (pressure) references in Pn6D2 to Pn6DA and the torque (pressure) reference times at which to change between the five torque (pressure) references in Pn6DC to Pn6E2.

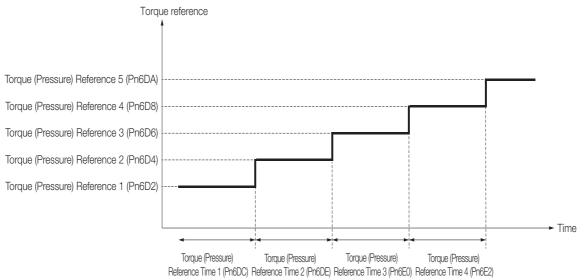
You can set the the speed limit for torque (pressure) table operation in Pn6AA (Speed Limit for Torque (Pressure) Table Operation).

The speed will not exceed the value of Pn6AA (Speed Limit for Torque (Pressure) Table Operation).

	Torque (Pressure) F	Reference 1		Speed		
Pn6D2	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
THODE	-1,073,741,824 to 1,073,741,824	1%	0	Immediately	Setup	
	Torque (Pressure) F	Reference 2		Speed		
Pn6D4	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	-1,073,741,824 to 1,073,741,824	1%	0	Immediately	Setup	
	Torque (Pressure) F	Reference 3		Speed		
Pn6D6	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
1 11020	-1,073,741,824 to 1,073,741,824	1%	0	Immediately	Setup	
	Torque (Pressure) F	Reference 4		Speed		
Pn6D8	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
1 11020	-1,073,741,824 to 1,073,741,824	1%	0	Immediately	Setup	
	Torque (Pressure) F	Reference 5		Speed		
Pn6DA	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	-1,073,741,824 to 1,073,741,824	1%	0	Immediately	Setup	
	Torque (Pressure) F	Reference Time 1		Speed		
Pn6DC	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0 to 180,000	0.01 s	0	Immediately	Setup	
	Torque (Pressure) Reference Time 2         Speed					
Pn6DE	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0 to 180,000	0.01 s	0	Immediately	Setup	
	Torque (Pressure) F			Speed		
Pn6E0	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0 to 180,000	0.01 s	0	Immediately	Setup	
	Torque (Pressure) F			Speed		
Pn6E2	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0 to 180,000	0.01 s	0	Immediately	Setup	
	Speed Limit for Tor	1 ( )	•	Speed		
Pn6AA	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup	

#### 4.3.4 Settings for Torque (Pressure) Table Operation

Each of the torque (pressure) reference times 1 to 4 corresponds to one pair of torque (pressure) references 1 to 5. Refer to the following diagram for the torque (pressure) references and torque (pressure) reference times, and set the parameters in ascending order of parameter numbers.



## 4.4 Operating Procedure

Speed/torque (pressure) table operation is controlled with the VELCTRL speed control command in MECHATROLINK-III communications.

This section provides the operating procedure for speed/torque (pressure) table operation.

- 1. Set Pn440 to n. DDD1 (Enable pressure feedback control).
- 2. Send the SV\_ON (Servo ON) command.
- Other station monitoring is set and checked only when you use the FT41. Refer to the following section for details.
   3.6.3 Setting and Checking Other Station Monitoring on page 3-10
- Set bits 28 and 29 in the SVCMD\_IO area of the VELCTRL command to 1.
   SVCMD\_IO (Output) Area

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
N CL	P CL	P PPI	V_PPI		Reserved (0).		
	0_		· · · · ·				
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
	Reserv	/ed (0).			G-8	SEL	
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
Reserved.	SO3	SO2	SO1	BANK_SEL			
Direct	D'L OO			D'1 07		Direc	
Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24
Reserved (0). Speed/ Torque (Pressure) Table Operation Reference		Speed/ Torque (Pressure) Table Operation Prepara- tions Start Bit		Reserv	/ed (0).		

Output Signal Bit Descriptions

	Bit	Command	Value	Setting	When Enabled			
_		Speed/Torque (Pres-	0	Do not start.				
	28	sure) Table Operation Preparations Start Bit	1	Start reception of speed/torque (pressure) table operation commands.	Level			
		If bit 28 is ON, the VELCTRL command is interpreted as a speed/torque (pressure) table operation command.						
_		Speed/Torque (Pres- sure) Table Operation Reference	0	No command, or cancel operation.				
	29		1	Start speed/torque (pressure) table operation.	Level			
_		If bit 28 is OFF, only VELCTRL commands are acknowledged.						



Do not use the CMD\_PAUSE (Pause) or CMD\_CANCEL (Cancel) commands during speed/torque (pressure) table operation. The send timing will affect behavior and may prevent normal control operations.

## 4.5 Monitoring

You can monitor the following signals through analog monitors or through MECHATROLINK-III communications option monitors.

### **Analog Monitors**

Pn006 or Pn007	Signal Name	Output Unit
30 hex	Pressure Feedback Torque Reference Monitor	1 V/100% rated torque
31 hex	Pressure Feedback Detection Monitor	1 V/100% rated torque
32 hex	Pressure Feedback Output Torque Monitor	1 V/100% rated torque
33 hex	Pressure Feedback Loop Deviation Monitor	1 V/100% rated torque

### **Option Monitors with MECHATROLINK-III Communications**

Pn824/Pn825	Signal Name	Unit
0050 hex	Pressure Feedback Detection Monitor	10,000/100% rated torque
0052 hex	Control Method Change Monitor	0: Position or speed control, 1: Torque control, 3: Pressure feedback
0100 hex	Speed/Torque (Pres- sure) Table Operation Monitor	- (channel 1/channel 2)
0101 hex*	Other Station Moni- tor Data	-

\* This can be monitored only when you use the FT41.

### Monitoring with SigmaWin+ Waveform Traces

Signal Name	Unit
Pressure Feedback Torque Reference Monitor	%
Pressure Feedback Detection Monitor	%
Pressure Feedback Output Torque Monitor	%
Pressure Feedback Loop Deviation Monitor	%

### Monitoring with SigmaWin+ I/O Tracing

Signal Name	Selected Data Name	Description
Control Method Selection Bit 0	/A feedback 0	Position/speed control: High, Torque control: Low, Pressure feedback: Low
Control Method Selection Bit 1	/A feedback 1	Position/speed control: High, Torque control: High, Pressure feedback: Low

## Speed/Torque (Pressure) Table Operation Monitor

• Monitor Area

You must allocate the pressure sensor values to use in the speed/torque (pressure) operation sequence and pressure control in the pressure monitor.

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	
LCIO_RDY*		Reserved (0).		CANCEL	Pressure Feedback Status			
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9 Bit 8		
	Reserv	ed (0).		Current Sequence Number				
Bit 23	Bit 22 Bit 21 Bit 20			Bit 19	Bit 18	Bit 17	Bit 16	
Pressure monitor (lower 8 bits)								
Bit 31         Bit 30         Bit 29         Bit 28         Bit 27         Bit 26         Bit 25         Bit 24								
Pressure monitor (upper 8 bits)								

- \* Only for the FT41.
- Monitor Details

Bit	Name	Value	Setting			
		0	Not ready for operation			
	Speed/Torque (Pres- sure) Table Operating	1	Ready for operation			
	Sure) Table Operating Status	2	Speed table operation is in progress.			
0 or 1		3	Torque (pressure) table operation is in progress.			
	The status is 0 after the The status will change t operation have been co	o 1 when	upply is turned ON. preparations for speed/torque (pressure) table			
	Pressure Feedback	0	Torque/force control			
2	Status	1	Pressure feedback control			
	The status will be 1 when pressure feedback control is enable.					
		0	Not canceled.			
3	CANCEL	1	Speed/torque (pressure) table operation monitor canceled.			
0		The status will change to 1 when a command to cancel speed/torque (pressure) table operation is received. When operation is canceled, the motor is stopped with a speed reference of 0.				
		0	Default			
	Current Sequence Number	1 to 10	The number of the speed table reference or torque (pressure) reference that is currently being exe- cuted.			
8 to 11	tain 5. If torque (pressur tion, these bits will cont	If speed table reference 5 is being used for speed table operation, these bits will con- tain 5. If torque (pressure) reference 3 is being used for torque (pressure) table opera- tion, these bits will contain 3. Use the Speed/Torque (Pressure) Table Operating Status to determine whether speed table operation or torque (pressure) table opera- tion is being performed.				
16 to 31	Pressure Monitor	0 to 15	Pressure Feedback Detection Monitor [0.01%]			
101031	The pressure feedback detection value is stored here.					

## Maintenance

This chapter provides information on the meaning of, causes of, and corrections for alarms and warnings.

#### FT40 Specification ......5-2 5.1 5.1.1 5.1.2 5.1.3 Troubleshooting Alarms ..... 5-8 5.1.4 Warning Displays ..... 5-39 5.1.5 5.1.6 5.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor .....5-49 FT41 Specification .....5-58 5.2 Alarm Displays ..... 5-58 5.2.1 5.2.2 List of Alarms ..... 5-58 5.2.3 Troubleshooting Alarms ..... 5-64 5.2.4 Warning Displays ..... 5-95 5.2.5 List of Warnings ..... 5-95 5.2.6 Troubleshooting Warnings ..... 5-98 5.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor ..... 5-105

5.1.1 Alarm Displays

## 5.1 FT40 Specification

## 5.1.1 Alarm Displays

If an error occurs in the SERVOPACK, an alarm number will be displayed on the panel display. If there is an alarm, the display will change in the following order.

Example: Alarm A.E60

-	Status Indications	—► N	ot lit. —	<b>₽.</b> →	Not lit.——	- 6 -	→ Not lit	 	Not lit.——	- 0 —	► Not lit. 🥆	)
												J

## 5.1.2 List of Alarms

The list of alarms gives the alarm name, alarm meaning, alarm stopping method, and alarm reset possibility in order of the alarm numbers.

### Servomotor Stopping Method for Alarms

Refer to the following manual for information on the stopping method for alarms.  $\square$   $\Sigma$ -7-Series  $\Sigma$ -7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)

## Alarm Reset Possibility

Yes: You can use an alarm reset to clear the alarm. However, this assumes that the cause of the alarm has been removed. No: You cannot clear the alarm.

## List of Alarms

Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.020	Parameter Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No
A.021	Parameter Format Error	There is an error in the parameter data format in the SERVOPACK.	Gr.1	No
A.022	System Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No
A.024	System Alarm	An internal program error occurred in the SER- VOPACK.	Gr.1	No
A.025	System Alarm	An internal program error occurred in the SER- VOPACK.	Gr.1	No
A.030	Main Circuit Detector Error	There is an error in the detection data for the main circuit.	Gr.1	Yes
A.040	Parameter Setting Error	A parameter setting is outside of the setting range.	Gr.1	No
A.041	Encoder Output Pulse Setting Error	The setting of Pn212 (Number of Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Gr.1	No

#### 5.1 FT40 Specification

5.1.2 List of Alarms

Continued from previous page.

Error         The setting range.         Entry         The setting range.           A.044         Serror         Loop Control Parameter Setting Error         The setting of the Option Module and PhO02 – NZIDII (External Encoder Usage) do not match.         Gr.1         No           A.04A         Parameter Setting Error         There is an error in the bank members or bank data settings.         Gr.1         No           A.050         Combination Error         The capacities of the SERVOPACK and Servomo- tor do not match.         Gr.1         No           A.051         Alarm         An unsupported device was connected.         Gr.1         No           A.050         Encoder Pitch Setting Error         The connected motor is a different type of motor from the previously connected motor.         Gr.1         No           A.080         Linear Encoder Pitch Setting Error         The SV.ON (Servo ON) command was sert from mand Alarm         Gr.1         No           A.090         Overcurrent Detected         An overcurrent flowed through the power transis- tor or the heat sink overheated.         Gr.1         No           A.100         Overcurrent Detected         An egenerative overload occurred.         Gr.1         Yes           A.300         Regeneration Error         The run entor exceeded the allowable for or the heat sink overheated.         Gr.1         Yes           A.300	Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.044         Semi-Closed/Fully-Closed Loop Control Parameter string Error         The settings of the Option Module and Pn002 – n.X.DIDII External Encoder Usage) do not data settings.         Gr.1         No           A.044         Parameter Setting Error 2         There is an error in the bank members or bank data settings.         Gr.1         No           A.050         Combination Error         The capacities of the SERVOPACK and Servomo- tor do not match.         Gr.1         No           A.051         Unsupported Device Alarm         An unsupported device was connected.         Gr.1         No           A.050         Encoder Pitch Setting Error         The connected motor is a different type of motor from the previously connected motor.         Gr.1         No           A.060         Linear Encoder Pitch Setting Error         The setting of Pn282 (Linear Encoder Scale Pitch) has not been changed from the default setting.         Gr.1         No           A.000         Overcurrent Detected         An overcurrent flowed through the power transis- for or the heat sink overheated.         Gr.1         No           A.101         Motor Overcurrent Detected         There is an error related to regeneration.         Gr.1         Yes           A.300         Regenerative Overload         A regenerative overload         Gr.2         Yes           A.101         Motor Overcurrent Detected         A regenerative overload	A.042			Gr.1	No
AudaParameter Setting Error 2data settings.Car.1NoA.050Combination ErrorThe capacities of the SERVOPACK and Servomo- to do not match.Gr.1YesA.051Unsupported Device AarmAn unsupported device was connected.Gr.1NoA.070Motor Type Change DetectedThe connected motor is a different type of motor from the previously connected motor.Gr.1NoA.080Linear Encoder Pitch Setting ErrorThe setting of Pn282 (Linear Encoder Scale Pitch) has not been changed from the default setting.Gr.1NoA.080Invalid Servo ON Com- mand AlarmThe Survomotor was executed.Gr.1NoA.100Overcurrent DetectedAn overcurrent flowed through the power transis- tor or the heat sink overheated.Gr.1NoA.101Motor Overcurrent DetectedThere is an error related to regeneration.Gr.1YesA.300Regenerative OverloadA regenerative overload occurred.Gr.1YesA.300Regenerative DeverloadA regenerative overload occurred.Gr.1YesA.400OversourgeThe main circuit DC voltage is too high.Gr.1YesA.410UndervoltageThe main circuit DC voltage is too low.Gr.2YesA.510OverspeedThe motor exceeded the maximum speed.Gr.1YesA.511Vibration AlarmAbnormal oscillation was detected in the motor speed.Gr.1YesA.520Vibration AlarmAbnormal oscillation was detected in the motor speed. <t< td=""><td>A.044</td><td>Loop Control Parameter</td><td>The settings of the Option Module and Pn002 = n.XDDD (External Encoder Usage) do not</td><td>Gr.1</td><td>No</td></t<>	A.044	Loop Control Parameter	The settings of the Option Module and Pn002 = n.XDDD (External Encoder Usage) do not	Gr.1	No
A.050Containation Errortor do not match.Cal. 1YesA.051AlarmAn unsupported device was connected.Gr. 1NoA.070Motor Type Change DetectedThe connected motor is a different type of motor from the previously connected motor.Gr. 1NoA.080Lineard Encoder Pitch Setting ErrorThe sotting O PR282 (Linear Encoder Scale Pitch) has not been changed from the default setting.Gr. 1NoA.080Invalid Servo ON Com- mand AlarmThe SV_ON (Servo ON) command was sent from ON the Servomotor was executed.Gr. 1NoA.100Overcurrent DetectedAn overcurrent flowed through the power transis- tor or the heat sink overheated.Gr. 1NoA.101Motor Overcurrent DetectedThe current.Gr. 1NoA.300Regeneration ErrorThere is an error related to regeneration.Gr. 1YesA.330Main Circuit Power Supply Wiring Error* The AC power supply input setting or DC power supply input setting or DC power tors.)Gr. 1YesA.410UndervoltageThe main circuit DC voltage is too low.Gr. 2YesA.511Encoder Output Pulse OverspeedThe motor speed upper limit for the setting of Pn281 (Encoder Output Pulses) was exceeded. (This applies to Inear Servomotors.)Gr. 1YesA.520Vibration AlarmAbnormal oscillation was detected in the motor speed.Gr. 1YesA.511Encoder Output Pulse <br< td=""><td>A.04A</td><td>Parameter Setting Error 2</td><td></td><td>Gr.1</td><td>No</td></br<>	A.04A	Parameter Setting Error 2		Gr.1	No
AlornAll minimumAll unsupported device was connected.Gr. 1NoA.070DetectedThe connected motor is a different type of motor from the previously connected motor.Gr. 1NoA.080Linear Encoder Pitch Setting ErrorThe setting of Pn282 (Linear Encoder Scale Pitch) has not been changed from the default setting.Gr. 1NoA.080Invalid Servo ON Com- mand AlarmThe SV_ON (Servo ON) command was sent from the host controller after a utility function that turns ON the Servomotor was executed.Gr. 1YesA.100Overcurrent DetectedAn overcurrent flowed through the power transis- tor or the heat sink overheated.Gr. 1NoA.101DetectedThe current to the motor exceeded the allowable current.Gr. 1NoA.300Regenerative OverloadA regenerative overload occurred.Gr. 1YesA.300Regenerative OverloadA regenerative overload occurred.Gr. 1YesA.300Main Circuit Power Supply Wiring ErrorThe AC power supply input setting is not correct.Gr. 1YesA.400OvervoltageThe main circuit DC voltage is too low.Gr. 1YesA.511Encoder Output Pulse OverspeedThe motor exceeded the maximum speed.Gr. 1YesA.520Vibration AlarmAbnormal oscillation was detected in the motor speed.Gr. 1YesA.511Encoder Output Pulse OverspeedThe motor speed upper limit for the setting of Pn212 	A.050	Combination Error		Gr.1	Yes
A.010Detectedfrom the previously connected motor.Gr.1NOA.080Linear Encoder Pitch tas not been changed from the default setting.Gr.1NoA.080Invalid Servo ON Com- mand AlarmThe SV_ON (Servo ON) command was sent from the host controller after a utility function that turns to or the heat sink overheated.Gr.1NoA.100Overcurrent DetectedAn overcurrent flowed through the power transis- tor or the heat sink overheated.Gr.1NoA.101Motor Overcurrent DetectedThe current to the motor exceeded the allowable current.Gr.1NoA.300Regeneration ErrorThe regenerative overload occurred.Gr.1YesA.300Regenerative OverloadA regenerative overload occurred.Gr.1YesA.300Nergenerative OverloadThe power supply input setting or DC power supply input setting or DP 2012 (Number of Encoder Output Pulses) was exceeded. (This applies to totage is too high.Gr.1YesA.511Encoder Output Pulse OverspeedThe motor exceeded the maximum speed.Gr.1YesA.520Vibration AlarmAbnormal oscillation was detected in the motor speed.Gr.1YesA.511Maximum Speed Setting Error	A.051		An unsupported device was connected.	Gr.1	No
A.080Setting Errorhas not been changed from the default setting.Gr.1NoA.0b0Invalid Servo ON Command AlarmThe SV_ON (Servo ON) command was sent from the host controller after a ultily function that turns ON the Servomotor was executed.Gr.1YesA.100Overcurrent DetectedAn overcurrent flowed through the power transis- tor or the heat sink overheated.Gr.1NoA.101Motor Overcurrent DetectedThe current to the motor exceeded the allowable current.Gr.1NoA.300Regeneration ErrorThere is an error related to regeneration.Gr.1YesA.300Regenerative OverloadA regenerative overload occurred.Gr.2YesA.300Main Circuit Power Supply Wiring Error• The AC power supply input setting or DC power supply input setting is not correct.Gr.1YesA.400OversoltageThe main circuit DC voltage is too high.Gr.1YesA.410UndervoltageThe motor exceeded the maximum speed.Gr.1YesA.510OverspeedThe motor exceeded the maximum speed.Gr.1YesA.511Encoder Output Pulse Overspeed• The pulse output speed for the setting of Pn212 (Number of Encoder Output Pulses) was exceeded. (This applies to Linear Servomotors.)Gr.1YesA.521Autoning AlarmVibration was detected during autotuning for the tuning-less function.Gr.1YesA.550Maximum Speed Setting ErrorThe servomotor was operating for several sec- onds to several tens of seconds under a torque that large	A.070			Gr.1	No
A.0b0Invalid server of N contra- mand Alarmthe host controller after a utility function that turns ON the Servemotor was executed.Gr.1YesA.100Overcurrent DetectedAn overcurrent flowed through the power transis- tor or the heat sink overheated.Gr.1NoA.101Motor Overcurrent DetectedThe current to the motor exceeded the allowable current.Gr.1NoA.300Regenerative OverloadA regenerative overload occurred.Gr.2YesA.300Main Circuit Power Supply Wiring Error• The AC power supply input setting or DC power supply input setting is not correct.Gr.1YesA.400OvervoltageThe main circuit DC voltage is too high.Gr.1YesA.410UndervoltageThe main circuit DC voltage is too low.Gr.2YesA.410UndervoltageThe motor exceeded the maximum speed.Gr.1YesA.511Encoder Output Pulse Overspeed• The power supply uput setting or the setting of Pn281 (Encoder Output Pulses) was exceeded. (This applies to Inter Servomotors.)Gr.1YesA.520Vibration AlarmAbnormal oscillation was detected in the motor speed.Gr.1YesA.550Maximum Speed Setting ErrorThe setting of Pn385 (Maximum Motor Speed)Gr.1YesA.710Instantaneous OverloadThe Servomotor was operating for several sec- onds to several tens of seconds under a torque that largely exceeded the rating.Gr.1YesA.730Dynamic Brake OverloadThe setting of Innash for ke was applied, the rota- tio	A.080			Gr.1	No
A.100Overdument Detectedtor or the heat sink overheated.Gr.1NoA.101Motor Overcurrent DetectedThe current to the motor exceeded the allowable current.Gr.1NoA.300Regeneration ErrorThere is an error related to regeneration.Gr.1YesA.320Regenerative OverloadA regenerative overload occurred.Gr.2YesA.330Main Circuit Power Supply Wiring Error• The AC power supply input setting or DC power supply input setting is not correct.Gr.1YesA.400OvervoltageThe main circuit DC voltage is too high.Gr.1YesA.410UndervoltageThe motor exceeded the maximum speed.Gr.1YesA.410UndervoltageThe motor exceeded the maximum speed.Gr.1YesA.511Encoder Output Pulse Overspeed• The pulse output speed for the setting of Pn281 (Encoder Output Pulses) was exceeded. (This applies to Rotary Servomo- tors.)Gr.1YesA.520Vibration AlarmAbnormal oscillation was detected in the motor speed.Gr.1YesA.521Autotuning AlarmVibration was detected during autotuning for the greater than the maximum motor speed.Gr.1YesA.510Instantaneous OverloadThe Servomotor was operating for several sec- onds to several tens of seconds under a torque that largely exceeded the rating.Gr.1YesA.521Autotuning AlarmVibration was detected during autotuning for the greater than the maximum motor speed.Gr.1YesA.710Instantaneous	A.0b0		the host controller after a utility function that turns	Gr.1	Yes
A.101Detectedcurrent.Gr.1NoA.300Regeneration ErrorThere is an error related to regeneration.Gr.1YesA.320Regenerative OverloadA regenerative overload occurred.Gr.2YesA.330Main Circuit Power Supply Wiring ErrorThe AC power supply input setting or DC power supply input setting is not correct.Gr.1YesA.400OvervoltageThe main circuit DC voltage is too high.Gr.1YesA.410UndervoltageThe main circuit DC voltage is too low.Gr.2YesA.511OverspeedThe motor exceeded the maximum speed.Gr.1YesA.511Encoder Output Pulse OverspeedThe motor speed upper limit for the setting of Pn281 (Encoder Output Pulses) was exceeded. (This applies to Rotary Servomo- tors.)Gr.1YesA.520Vibration AlarmAbnormal oscillation was detected uning autotuning for the tuning-less function.Gr.1YesA.521Autotuning AlarmVibration was detected during autotuning for the tuning-less function.Gr.1YesA.710Instantaneous OverloadThe Servomotor was operating for several sec- onds to several tens of seconds under a torque that largely exceeded the rating.Gr.1YesA.730Dynamic Brake OverloadWhen the dynamic brake was applied, the rota- tional or linear kinetic energy exceeded the rating.Gr.1Yes	A.100	Overcurrent Detected		Gr.1	No
A.320Regenerative OverloadA regenerative overload occurred.Gr.2YesA.330Main Circuit Power Supply Wiring Error• The AC power supply input setting or DC power supply input setting is not correct. • The power supply wiring is not correct.Gr.1YesA.400OvervoltageThe main circuit DC voltage is too high.Gr.1YesA.410UndervoltageThe main circuit DC voltage is too low.Gr.2YesA.510OverspeedThe motor exceeded the maximum speed.Gr.1YesA.510OverspeedThe pulse output speed for the setting of Pn212 (Number of Encoder Output Pulses) was exceeded. (This applies to Rotary Servomo- tors.) • The motor speed upper limit for the setting of Pn281 (Encoder Output Resolution) was exceeded. (This applies to Linear Servomotors.)Gr.1YesA.520Vibration AlarmAbnormal oscillation was detected in the motor speed.Gr.1YesA.550Maximum Speed Setting ErrorThe Servomotor was operating for several sec- onds to several tens of seconds under a torque that largely exceeded the rating.Gr.1YesA.710Instantaneous OverloadThe Servomotor was operating continuously under a torque that exceeded the rating.Gr.1YesA.730Dynamic Brake OverloadThe Servomotor was operating continuously under a torque that exceeded the rating.Gr.1YesA.740Inrush Current LimitingThe main circuit power supply exceeded the ration.Gr.1Yes	A.101			Gr.1	No
A.330Main Circuit Power Supply Wiring Error• The AC power supply input setting or DC power supply input setting is not correct. • The power supply wiring is not correct.Gr.1YesA.400OvervoltageThe main circuit DC voltage is too high. UndervoltageGr.1YesA.410UndervoltageThe main circuit DC voltage is too low.Gr.2YesA.510OverspeedThe motor exceeded the maximum speed.Gr.1YesA.511Encoder Output Pulse Overspeed• The pulse output speed for the setting of Pn212 (Number of Encoder Output Pulses) was exceeded. (This applies to Rotary Servomo- tors.)Gr.1YesA.520Vibration AlarmAbnormal oscillation was detected in the motor speed.Gr.1YesA.550Maximum Speed Setting ErrorThe setting of Pn385 (Maximum Motor Speed) is greater than the maximum motor speed.Gr.1YesA.710Instantaneous OverloadThe Servomotor was operating for several sec- ond sto several tens of seconds under a torque that largely exceeded the rating.Gr.1YesA.730Dynamic Brake OverloadWhen the dynamic brake was applied, the rota- tonal or linear kinetic energy exceeded the rating.Gr.1YesA.740Inrush Current LimitingThe main circuit power supply was frequentlyGr.1Yes	A.300	Regeneration Error	There is an error related to regeneration.	Gr.1	Yes
A.330Main circuit Power Supply Wiring Errorsupply input setting is not correct.Gr.1YesA.400OvervoltageThe main circuit DC voltage is too high.Gr.1YesA.410UndervoltageThe main circuit DC voltage is too low.Gr.2YesA.510OverspeedThe motor exceeded the maximum speed.Gr.1YesA.511Encoder Output Pulse OverspeedThe motor speed upper limit for the setting of Pn212 (Number of Encoder Output Pulses) was exceeded. (This applies to Rotary Servomo- tors.)Gr.1YesA.520Vibration AlarmAbnormal oscillation was detected in the motor speed.Gr.1YesA.521Autotuning AlarmVibration was detected during autotuning for the tuning-less function.Gr.1YesA.550Maximum Speed Setting ErrorThe setting of Pn385 (Maximum Motor Speed) is greater than the maximum motor speed.Gr.1YesA.710Instantaneous OverloadThe Servomotor was operating for several sec- onds to several tens of seconds under a torque that largely exceeded the rating.Gr.1YesA.730Dynamic Brake OverloadThe Servomotor was operating continuously under a torque that exceeded the rating.Gr.1YesA.740Inrush Current LimitingThe main circuit power supply exceeded the capacity of the dynamic brake resistor.Gr.1Yes	A.320	Regenerative Overload	A regenerative overload occurred.	Gr.2	Yes
A.410UndervoltageThe main circuit DC voltage is too low.Gr.2YesA.510OverspeedThe motor exceeded the maximum speed.Gr.1YesA.511Encoder Output Pulse Overspeed• The pulse output speed for the setting of Pn212 (Number of Encoder Output Pulses) was exceeded. (This applies to Rotary Servomo- tors.)Gr.1YesA.520Vibration AlarmAbnormal oscillation was detected in the motor speed.Gr.1YesA.521Autotuning AlarmVibration was detected during autotuning for the tuning-less function.Gr.1YesA.550Maximum Speed Setting ErrorThe Servomotor was operating for several sec- onds to several tens of seconds under a torque that largely exceeded the rating.Gr.1YesA.710Instantaneous OverloadThe Servomotor was operating continuously under a torque that exceeded the rating.Gr.1YesA.730Dynamic Brake OverloadWhen the dynamic brake was applied, the rota- capacity of the dynamic brake resistor.Gr.1Yes	A.330		supply input setting is not correct.	Gr.1	Yes
A.510OverspeedThe motor exceeded the maximum speed.Gr.1YesA.511Encoder Output Pulse Overspeed• The pulse output speed for the setting of Pn212 (Number of Encoder Output Pulses) was exceeded. (This applies to Rotary Servomo- tors.) • The motor speed upper limit for the setting of Pn281 (Encoder Output Resolution) was exceeded. (This applies to Linear Servomotors.)Gr.1YesA.520Vibration AlarmAbnormal oscillation was detected in the motor speed.Gr.1YesA.521Autotuning AlarmVibration was detected during autotuning for the tuning-less function.Gr.1YesA.550Maximum Speed Setting ErrorThe setting of Pn385 (Maximum Motor Speed) is greater than the maximum motor speed.Gr.1YesA.710Instantaneous OverloadThe Servomotor was operating for several sec- onds to several tens of seconds under a torque that largely exceeded the rating.Gr.1YesA.730Dynamic Brake OverloadWhen the dynamic brake was applied, the rota- tional or linear kinetic energy exceeded the capacity of the dynamic brake resistor.Gr.1Yes	A.400	Overvoltage	The main circuit DC voltage is too high.	Gr.1	Yes
A.511Encoder Output Pulse Overspeed• The pulse output speed for the setting of Pn212 (Number of Encoder Output Pulses) was exceeded. (This applies to Rotary Servomo- tors.)Gr.1YesA.520Vibration AlarmAbnormal oscillation was detected in the motor speed.Gr.1YesA.521Autotuning AlarmVibration was detected during autotuning for the tuning-less function.Gr.1YesA.520Maximum Speed Setting ErrorThe setting of Pn385 (Maximum Motor Speed) is greater than the maximum motor speed.Gr.1YesA.710Instantaneous OverloadThe Servomotor was operating for several sec- onds to several tens of seconds under a torque that largely exceeded the rating.Gr.1YesA.730Dynamic Brake OverloadWhen the dynamic brake was applied, the rota- tional or linear kinetic energy exceeded the capacity of the dynamic brake resistor.Gr.1Yes	A.410	Undervoltage	The main circuit DC voltage is too low.	Gr.2	Yes
A.511Encoder Output Pulse Overspeed(Number of Encoder Output Pulses) was exceeded. (This applies to Rotary Servomo- tors.) • The motor speed upper limit for the setting of Pn281 (Encoder Output Resolution) was exceeded. (This applies to Linear Servomotors.)Gr.1YesA.520Vibration AlarmAbnormal oscillation was detected in the motor speed.Gr.1YesA.521Autotuning AlarmVibration was detected during autotuning for the tuning-less function.Gr.1YesA.550Maximum Speed Setting ErrorThe setting of Pn385 (Maximum Motor Speed) is greater than the maximum motor speed.Gr.1YesA.710Instantaneous OverloadThe Servomotor was operating for several sec- onds to several tens of seconds under a torque that largely exceeded the rating.Gr.1YesA.730Dynamic Brake OverloadWhen the dynamic brake was applied, the rota- tional or linear kinetic energy exceeded the capacity of the dynamic brake resistor.Gr.1YesA.740Inrush Current LimitingThe main circuit power supply was frequentlyGr.1Yes	A.510	Overspeed	The motor exceeded the maximum speed.	Gr.1	Yes
A.520Vibration Alarmspeed.Gr. 1YesA.521Autotuning AlarmVibration was detected during autotuning for the tuning-less function.Gr. 1YesA.520Maximum Speed Setting ErrorThe setting of Pn385 (Maximum Motor Speed) is greater than the maximum motor speed.Gr. 1YesA.710Instantaneous OverloadThe Servomotor was operating for several sec- onds to several tens of seconds under a torque that largely exceeded the rating.Gr. 2YesA.720Continuous OverloadThe Servomotor was operating continuously under a torque that exceeded the rating.Gr. 1YesA.730Dynamic Brake OverloadWhen the dynamic brake was applied, the rota- tional or linear kinetic energy exceeded the capacity of the dynamic brake resistor.Gr. 1YesA.740Inrush Current LimitingThe main circuit power supply was frequentlyGr. 1Yes	A.511		<ul> <li>(Number of Encoder Output Pulses) was exceeded. (This applies to Rotary Servomo- tors.)</li> <li>The motor speed upper limit for the setting of Pn281 (Encoder Output Resolution) was</li> </ul>	Gr.1	Yes
A.321Autotuning Alarmtuning-less function.Gi. 1YesA.550Maximum Speed Setting ErrorThe setting of Pn385 (Maximum Motor Speed) is greater than the maximum motor speed.Gr. 1YesA.710Instantaneous OverloadThe Servomotor was operating for several sec- onds to several tens of seconds under a torque that largely exceeded the rating.Gr. 2YesA.720Continuous OverloadThe Servomotor was operating continuously under a torque that exceeded the rating.Gr. 1YesA.730Dynamic Brake OverloadWhen the dynamic brake was applied, the rota- tional or linear kinetic energy exceeded the capacity of the dynamic brake resistor.Gr. 1YesA.740Inrush Current LimitingThe main circuit power supply was frequentlyGr. 1Yes	A.520	Vibration Alarm		Gr.1	Yes
A.330Errorgreater than the maximum motor speed.Gr. 1YesA.710Instantaneous OverloadThe Servomotor was operating for several seconds under a torque that largely exceeded the rating.Gr. 2YesA.720Continuous OverloadThe Servomotor was operating continuously under a torque that exceeded the rating.Gr. 1YesA.730Dynamic Brake OverloadWhen the dynamic brake was applied, the rota- tional or linear kinetic energy exceeded the capacity of the dynamic brake resistor.Gr. 1YesA.740Inrush Current LimitingThe main circuit power supply was frequentlyGr. 1Yes	A.521	Autotuning Alarm		Gr.1	Yes
A.710Instantaneous Overloadonds to several tens of seconds under a torque that largely exceeded the rating.Gr.2YesA.720Continuous OverloadThe Servomotor was operating continuously under a torque that exceeded the rating.Gr.1YesA.730Dynamic Brake OverloadWhen the dynamic brake was applied, the rota- tional or linear kinetic energy exceeded the capacity of the dynamic brake resistor.Gr.1YesA.740Inrush Current LimitingThe main circuit power supply was frequentlyGr.1Yes	A.550			Gr.1	Yes
A.720       Continuous Overload       under a torque that exceeded the rating.       Gr. 1       Yes         A.730       A.730       Dynamic Brake Overload       When the dynamic brake was applied, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.       Gr. 1       Yes         A.731       Inrush Current Limiting       The main circuit power supply was frequently       Gr. 1       Yes	A.710	Instantaneous Overload	onds to several tens of seconds under a torque	Gr.2	Yes
Dynamic Brake Overloadtional or linear kinetic energy exceeded the capacity of the dynamic brake resistor.Gr.1YesA 740Inrush Current LimitingThe main circuit power supply was frequently Circuit power supply was frequentlyGr.1Yes	A.720	Continuous Overload		Gr.1	Yes
	A.730 A.731	Dynamic Brake Overload	tional or linear kinetic energy exceeded the	Gr.1	Yes
	A.740			Gr.1	Yes

5

5.1.2 List of Alarms

Servo-Alarm motor Alarm Reset Alarm Name Alarm Meaning Stop-Number Possiping ble? Method Internal Temperature Error The surrounding temperature of the control PCB A.7A1 1 (Control Board Tempera-Gr.2 Yes is abnormal. ture Error) Internal Temperature Error The surrounding temperature of the power PCB A.7A2 2 (Power Board Tempera-Gr.2 Yes is abnormal. ture Error) Internal Temperature Sen-An error occurred in the temperature sensor cir-A.7A3 Gr.2 No sor Error cuit. SERVOPACK Built-in Fan A.7Ab The fan inside the SERVOPACK stopped. Gr.1 Yes Stopped The power supplies to the encoder all failed and A.810 Encoder Backup Alarm Gr 1 No the position data was lost. There is an error in the checksum results for A.820 Encoder Checksum Alarm Gr.1 No encoder memory. The battery voltage was lower than the specified A.830 **Encoder Battery Alarm** level after the control power supply was turned Gr.1 Yes ON. A.840 Encoder Data Alarm There is an internal data error in the encoder. Gr.1 No The encoder was operating at high speed when A.850 **Encoder Overspeed** Gr.1 No the power was turned ON. A.860 **Encoder Overheated** The internal temperature of encoder is too high. Gr.1 No A.861 Motor Overheated The internal temperature of motor is too high. Gr.1 No A.890 Encoder Scale Error Gr.1 A failure occurred in the linear encoder. No Encoder Module Error A.891 An error occurred in the linear encoder. Gr.1 No A.8A0 External Encoder Error An error occurred in the external encoder. Gr.1 Yes External Encoder Module A.8A1 An error occurred in the Serial Converter Unit. Gr 1 Yes Frror External Incremental A.8A2 An error occurred in the external encoder. Gr.1 Yes Encoder Sensor Error External Absolute Encoder An error occurred in the position data of the A.8A3 Gr.1 Yes Position Error external encoder. External Encoder Over-An overspeed error occurred in the external A.8A5 Gr.1 Yes encoder. speed External Encoder Over-An overheating error occurred in the external A.8A6 Gr 1 Yes heated encoder. A.b33 Current Detection Error 3 An error occurred in the current detection circuit. Gr.1 No MECHATROLINK Commu-ASIC error 1 occurred in MECHATROLINK com-A.b6A Gr.1 No nications ASIC Error 1 munications. MECHATROLINK Commu-ASIC error 2 occurred in MECHATROLINK com-A.b6b Gr.2 No munications. nications ASIC Error 2 Internal program error 0 occurred in the SERVO-A.bF0 Gr.1 System Alarm 0 No PACK. Internal program error 1 occurred in the SERVO-A.bF1 Gr.1 No System Alarm 1 PACK. Internal program error 2 occurred in the SERVO-A.bF2 Gr.1 System Alarm 2 No PACK. Internal program error 3 occurred in the SERVO-A.bF3 System Alarm 3 Gr.1 No PACK. Internal program error 4 occurred in the SERVO-A.bF4 System Alarm 4 Gr.1 No PACK. Internal program error 5 occurred in the SERVO-A.bF5 System Alarm 5 Gr.1 No PACK.

Continued on next page.

Continued from previous page.

#### 5.1 FT40 Specification

5.1.2 List of Alarms

Continued from previous page.

Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.bF6	System Alarm 6	Internal program error 6 occurred in the SERVO- PACK.	Gr.1	No
A.bF7	System Alarm 7	Internal program error 7 occurred in the SERVO- PACK.	Gr.1	No
A.bF8	System Alarm 8	Internal program error 8 occurred in the SERVO- PACK.	Gr.1	No
A.C10	Servomotor Out of Control	The Servomotor ran out of control.	Gr.1	Yes
A.C20	Phase Detection Error	The detection of the phase is not correct.	Gr.1	No
A.C21	Polarity Sensor Error	An error occurred in the polarity sensor.	Gr.1	No
A.C22	Phase Information Disagreement	The phase information does not match.	Gr.1	No
A.C50	Polarity Detection Failure	The polarity detection failed.	Gr.1	No
A.C51	Overtravel Detected during Polarity Detection	The overtravel signal was detected during polarity detection.	Gr.1	Yes
A.C52	Polarity Detection Not Completed	The servo was turned ON before the polarity was detected.	Gr.1	Yes
A.C53	Out of Range of Motion for Polarity Detection	The travel distance exceeded the setting of Pn48E (Polarity Detection Range).	Gr.1	No
A.C54	Polarity Detection Failure 2	The polarity detection failed.	Gr.1	No
A.C80	Encoder Clear Error or Multiturn Limit Setting Error	The multiturn data for the absolute encoder was not correctly cleared or set.	Gr.1	No
A.C90	Encoder Communications Error	Communications between the encoder and SER- VOPACK is not possible.	Gr.1	No
A.C91	Encoder Communications Position Data Acceleration Rate Error	An error occurred in calculating the position data of the encoder.	Gr.1	No
A.C92	Encoder Communications Timer Error	An error occurred in the communications timer between the encoder and SERVOPACK.	Gr.1	No
A.CA0	Encoder Parameter Error	The parameters in the encoder are corrupted.	Gr.1	No
A.Cb0	Encoder Echoback Error	The contents of communications with the encoder are incorrect.	Gr.1	No
A.CC0	Multiturn Limit Disagree- ment	Different multiturn limits have been set in the encoder and the SERVOPACK.	Gr.1	No
A.CF1	Reception Failed Error in Feedback Option Module Communications	Receiving data from the Feedback Option Mod- ule failed.	Gr.1	No
A.CF2	Timer Stopped Error in Feedback Option Module Communications	An error occurred in the timer for communica- tions with the Feedback Option Module.	Gr.1	No
A.d00	Position Deviation Over- flow	The setting of Pn520 (Position Deviation Overflow Alarm Level) was exceeded by the position deviation while the servo was ON.	Gr.1	Yes
A.d01	Position Deviation Over- flow Alarm at Servo ON	The servo was turned ON after the position devi- ation exceeded the setting of Pn526 (Position Deviation Overflow Alarm Level at Servo ON) while the servo was OFF.	Gr.1	Yes

Continued on next page.

5

5.1.2 List of Alarms

Continued from previous page. Servo-Alarm motor Alarm Reset Alarm Name Alarm Meaning Stop-Number Possiping ble? Method If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Position Deviation Over-Limit Level at Servo ON) limits the speed when flow Alarm for Speed Limit A.d02 the servo is turned ON. This alarm occurs if a Gr.2 Yes position reference is input and the setting of at Servo ON Pn520 (Position Deviation Overflow Alarm Level) is exceeded before the limit is cleared. The difference between the pressure feedback Pressure Feedback Loop reference and the feedback detection value A.d0A Gr.1 Yes **Deviation Overflow** exceeded Pn447 (Pressure Feedback Loop Deviation Overflow Level). There was too much position deviation between Motor-Load Position Devi-A.d10 the motor and load during fully-closed loop con-Gr.2 Yes ation Overflow trol. The position feedback data exceeded A.d30 Position Data Overflow Gr.1 No ±1,879,048,192. A synchronization error occurred during MECHA-MECHATROLINK Internal A.E02 TROLINK communications with the SERVO-Gr.1 Yes Synchronization Error 1 PACK. **MECHATROLINK Trans-**The setting of the MECHATROLINK communica-A.E40 mission Cycle Setting Gr.2 Yes tions transmission cycle is not correct. Error MECHATROLINK Commu-The setting of the MECHATROLINK communica-A.F41 nications Data Size Set-Gr.2 Yes tions data size is not correct. ting Error **MECHATROLINK Station** The setting of the MECHATROLINK station A.E42 Gr.2 No Address Setting Error address is not correct. **MECHATROLINK Syn-**A synchronization error occurred during MECHA-A.E50\* Gr.2 Yes TROLINK communications. chronization Error MECHATROLINK Syn-Synchronization failed during MECHATROLINK Gr.2 A.E51 Yes communications. chronization Failed Reception Error in Communications errors occurred continuously A.E60\* MECHATROLINK Commu-Gr.2 Yes during MECHATROLINK communications. nications Synchronization Interval An error occurred in the transmission cycle A.E61 Error in MECHATROLINK Gr.2 Yes during MECHATROLINK communications. Transmission Cycle MECHATROLINK Syn-Synchronization frames were continuously not A.E63 chronization Frame Not received during MECHATROLINK communica-Gr.2 Yes Received tions. Safety Option Module A.E71 Detection of the Safety Option Module failed. Gr.1 No **Detection Failure** Feedback Option Module A.E72 Detection of the Feedback Option Module failed. Gr.1 No **Detection Failure** Unsupported Safety An unsupported Safety Option Module was con-A.E74 Gr.1 No **Option Module** nected. Safety Function Signal An error occurred in the input timing of the safety A.Eb1 Gr. 1 No function signal. Input Timing Error A.EC8 Gate Drive Error 1 An error occurred in the gate drive circuit. Gr.1 No A.EC9 Gate Drive Error 2 An error occurred in the gate drive circuit. Gr.1 No Command Execution Tim-A timeout error occurred for a MECHATROLINK A.Ed1 Gr.2 Yes command. eout

5.1.2 List of Alarms

#### Continued from previous page.

		Continueu i		nus puge.
Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.F10	Power Supply Line Open Phase	The voltage was low for more than one second for phase R, S, or T when the main power supply was ON.	Gr.2	Yes
A.F50	Servomotor Main Circuit Cable Disconnection	The Servomotor did not operate or power was not supplied to the Servomotor even though the SV_ON (Servo ON) command was input when the Servomotor was ready to receive it.	Gr.1	Yes
FL-1*				
FL-2*		An internal program error occurred in the SER- VOPACK.		
FL-3*	Sustam Alarm			No
FL-4*	System Alarm		_	No
FL-5*				
FL-6*				
CPF00	Digital Operator Commu- nications Error 1	Communications were not possible between the		No
CPF01	Digital Operator Commu- nications Error 2	Digital Operator (model: JUSP-OP05A-1-E) and the SERVOPACK (e.g., a CPU error occurred).	_	No

\* These alarms are not stored in the alarm history. They are only displayed on the panel display.

Note: The A.Eb0, A.Eb2 to A.Eb9, and A.EC0 to A.EC2 alarms can occur when a Safety Module is connected.

Refer to the following manual for details.

 AC Servo Drive Σ-V-Series/Σ-V-Series for Large-Capacity Models/Σ-7-Series User's Manual Safety Module (Manual No.: SIEP C720829 06)

5

## 5.1.3 Troubleshooting Alarms

The causes of and corrections for the alarms are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	Set the power supply volt- age within the specified range, and initialize the parameter settings.	*1
	The power supply was shut OFF while writing parameter set- tings.	Check the timing of shutting OFF the power supply.	Initialize the parameter settings and then set the parameters again.	*1
<b>A.020:</b> Parameter	The number of times that parameters were written exceeded the limit.	Check to see if the parameters were fre- quently changed from the host controller.	The SERVOPACK may be faulty. Replace the SER- VOPACK. Reconsider the method for writing the parame- ters.	-
Checksum Error (There is an error in the parameter data in the SER- VOPACK.)	A malfunction was caused by noise from the AC power supply, ground, static elec- tricity, or other source.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, noise may be the cause.	Implement countermea- sures against noise.	*1
	Gas, water drops, or cutting oil entered the SERVOPACK and caused failure of the internal components.	Check the installation conditions.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
A.021: Parameter For- mat Error (There is an error in the parameter data format in the	The software version of the SERVOPACK that caused the alarm is older than the soft- ware version of the parameters specified to write.	Read the product infor- mation to see if the soft- ware versions are the same. If they are differ- ent, it could be the cause of the alarm.	Write the parameters from another SERVOPACK with the same model and the same software version, and then turn the power OFF and ON again.	*1
data format in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
A.022: System Check- sum Error (There is an error in the parameter data in the SER- VOPACK.)	The power supply was shut OFF while setting a utility func- tion.	Check the timing of shutting OFF the power supply.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-

Continued from previous page.

Continued from previous page.				
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.024: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
A.025: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
A.030: Main Circuit Detector Error	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
	The SERVOPACK and Servomotor capaci- ties do not match each other.	Check the combination of the SERVOPACK and Servomotor capacities.	Select a proper combina- tion of SERVOPACK and Servomotor capacities.	*1
<b>A.040:</b> Parameter Set-	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
ting Error (A parameter set- ting is outside of the setting	A parameter setting is outside of the setting range.	Check the setting ranges of the parame- ters that have been changed.	Set the parameters to values within the setting ranges.	-
range.)	The electronic gear ratio is outside of the setting range.	Check the electronic gear ratio. The ratio must be within the fol- lowing range: 0.001 < (Pn20E/Pn210) < 64,000.	Set the electronic gear ratio in the following range: 0.001 < (Pn20E/ Pn210) < 64,000.	*1
A.041: Encoder Output Pulse Setting Error	The setting of Pn212 (Number of Encoder Output Pulses) or Pn281 (Encoder Out- put Resolution) is out- side of the setting range or does not sat- isfy the setting condi- tions.	Check the setting of Pn212 or Pn281.	Set Pn212 or Pn281 to an appropriate value.	*1

Continued from previous page.

Alarm Number:	Possible Cause	Confirmation	Correction	Reference
Alarm Name		Committation	Conection	TEIEIEIICE
	The speed of program jogging went below the setting range when the electronic gear ratio (Pn20E/ Pn210) or the Servo- motor was changed.	Check to see if the detection conditions <sup>*2</sup> are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
A.042: Parameter Com- bination Error	The speed of program jogging went below the setting range when Pn533 or Pn585 (Program Jogging Movement Speed) was changed.	Check to see if the detection conditions <sup>*2</sup> are satisfied.	Increase the setting of Pn533 or Pn585.	*1
	The movement speed of advanced autotun- ing went below the setting range when the electronic gear ratio (Pn20E/ Pn210) or the Servomotor was changed.	Check to see if the detection conditions <sup>*3</sup> are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
A.044: Semi-Closed/ Fully-Closed Loop Control Parameter Setting Error	The setting of the Fully-Closed Module does not match the setting of Pn002 = n.X□□□ (External Encoder Usage).	Check the setting of Pn002 = $n.X\square\square\square$ .	Make sure that the setting of the Fully-closed Module agrees with the setting of Pn002 = $n.X\square\square\square$ .	*1
A.04A: Parameter Set-	For 4-byte parameter bank members, there are two consecutive members with nothing registered.	-	Change the number of bytes for bank members to an appropriate value.	-
ting Error 2	The total amount of bank data exceeds 64 (Pn900 × Pn901 > 64).	_	Reduce the total amount of bank data to 64 or less.	-
A.050: Combination Error (The capacities of	The SERVOPACK and Servomotor capaci- ties do not match each other.	Check the capacities to see if they satisfy the following condition: $1/4 \le \frac{\text{Servomotor capacity}}{\text{SERVOPACK capacity}} \le 4$	Select a proper combina- tion of the SERVOPACK and Servomotor capaci- ties.	*1
the SERVOPACK and Servomotor do not match.)	A failure occurred in the encoder.	Replace the encoder and check to see if the alarm still occurs.	Replace the Servomotor or encoder.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
<b>A.051:</b> Unsupported Device Alarm	The motor parameter file was not written to the linear encoder. (This applies only when not using a Serial Converter Unit.)	Check to see if the motor parameter file was written to the lin- ear encoder.	Write the motor parame- ter file to the linear encoder.	*1
	An unsupported Serial Converter Unit or encoder (e.g., an external encoder) is connected to the SERVOPACK.	Check the product combination specifica-tions.	Change to a correct com- bination of models.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.070: Motor Type Change Detected (The connected motor is a differ- ent type of motor from the previ- ously connected motor.)	A Rotary Servomotor was removed and a Linear Servomotor was connected.	_	Set the parameters for a Linear Servomotor and reset the motor type alarm. Then, turn the power supply to the SER- VOPACK OFF and ON again.	*1
	A Linear Servomotor was removed and a Rotary Servomotor was connected.	_	Set the parameters for a Rotary Servomotor and reset the motor type alarm. Then, turn the power supply to the SER- VOPACK OFF and ON again.	*1
A.080: Linear Encoder Pitch Setting Error	The setting of Pn282 (Linear Encoder Scale Pitch) has not been changed from the default setting.	Check the setting of Pn282.	Correct the setting of Pn282.	*1
<b>A.0b0:</b> Invalid Servo ON Command Alarm	The SV_ON (Servo ON) command was sent from the host controller after a util- ity function that turns ON the Servomotor was executed.	_	Turn the power supply to the SERVOPACK OFF and ON again. Or, execute a software reset.	*1

Continued on next page.

5

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	*1
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, and W.	The cable may be short- circuited. Replace the cable.	*1
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servo- motor.	*1
<b>A.100</b> : Overcurrent	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER- VOPACK, or between the ground and termi- nals U, V, or W.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	*1
Detected (An overcurrent flowed through the power tran-	The regenerative resistor is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	*1
sistor or the heat sink overheated.)	The dynamic brake (DB, emergency stop executed from the SERVOPACK) was frequently activated, or a DB overload alarm occurred.	Check the power con- sumed by the DB resis- tor to see how frequently the DB is being used. Or, check the alarm display to see if a DB overload alarm (A.730 or A.731) has occurred.	Change the SERVOPACK model, operating meth- ods, or the mechanisms so that the dynamic brake does not need to be used so frequently.	-
	The regenerative pro- cessing capacity was exceeded.	Check the regenerative load ratio in the Sig- maWin+ Motion Monitor Tab Page to see how frequently the regenera- tive resistor is being used.	Recheck the operating conditions and load.	*4
	The SERVOPACK regenerative resis- tance is too small.	Check the regenerative load ratio in the Sig- maWin+ Motion Monitor Tab Page to see how frequently the regenera- tive resistor is being used.	Change the regenerative resistance to a value larger than the SERVO- PACK minimum allowable resistance.	*4

Continued from previous page.

Alarm Number:	<b>D</b>		Continued from pr	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	A heavy load was applied while the Ser- vomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
A.100: Overcurrent Detected (An overcurrent flowed through the power tran- sistor or the heat	A malfunction was caused by noise.	Improve the noise envi- ronment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermea- sures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO- PACK's main circuit wire size.	-
sink overheated.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	*1
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across cable phases U, V, and W, or between the ground and cable phases U, V, and W.	The cable may be short- circuited. Replace the cable.	*1
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servo- motor.	*1
A.101: Motor Overcur- rent Detected (The current to the motor exceeded the	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER- VOPACK, or between the ground and termi- nals U, V, or W.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	*1
allowable cur- rent.)	A heavy load was applied while the Ser- vomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
	A malfunction was caused by noise.	Improve the noise envi- ronment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermea- sures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO- PACK's main circuit wire size.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued on next page.

5

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to one of the following SERVO- PACKs: SGD7S-R70A, -R90A, -1R6A, -2R8A, -R70F, -R90F, -2R1F, or -2R8F.	Check it see if an Exter- nal Regenerative Resis- tor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or set Pn600 (Regenerative Resistor Capacity) to 0 (setting unit: ×10 W) if no Regenerative Resistor is required.	*]
	An External Regener- ative Resistor is not connected to one of the following SERVO- PACKs: SGD7S- 470A, -550A, -590A, or -780A.	Check to see if an External Regenerative Resistor or a Regenera- tive Resistor Unit is con- nected and check the setting of Pn600.	Connect an External Regenerative Resistor and set Pn600 to an appropri- ate value, or connect a Regenerative Resistor Unit and set Pn600 to 0.	*1
A.300: Regeneration Error	The jumper between the regenerative resis- tor terminals (B2 and B3) was removed from one of the fol- lowing SERVO- PACKs: SGD7S- 3R8A, -5R5A, -7R6A, -120A, -180A, -200A, or -330A.	Check to see if the jumper is connected between power supply terminals B2 and B3.	Correctly connect a jumper.	*1
	The External Regener- ative Resistor is not wired correctly, or was removed or discon- nected.	Check the wiring of the External Regenerative Resistor.	Correct the wiring of the External Regenerative Resistor.	*1
	A failure occurred in the SERVOPACK.	-	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVO- PACK may be faulty. Replace the SERVO- PACK.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply volt- age within the specified range.	-
	The external regener- ative resistance value or regenerative resis- tor capacity is too small, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the Sig- maJunmaSize+ Capac- ity Selection Software or other means.	Change the regenerative resistance value or capac- ity. Reconsider the operating conditions using the Sig- maJunmaSize+ Capacity Selection Software or other means.	*4
	There was a continu- ous regeneration state because a negative load was continu- ously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
A.320: Regenerative Overload	The setting of Pn600 (Regenerative Resis- tor Capacity) is smaller than the capacity of the Exter- nal Regenerative Resistor.	Check to see if a Regenerative Resistor is connected and check the setting of Pn600.	Correct the setting of Pn600.	*1
	The setting of Pn603 (Regenerative Resis- tance) is smaller than the capacity of the External Regenerative Resistor.	Check to see if a Regenerative Resistor is connected and check the setting of Pn603.	Correct the setting of Pn603.	*1
	The external regener- ative resistance is too high.	Check the regenerative resistance.	Change the regenerative resistance to a correct value or use an External Regenerative Resistor of an appropriate capacity.	*4
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	_

Continued on next page.

5

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The regenerative resistor was discon- nected when the SERVOPACK power supply voltage was high.	Measure the resistance of the regenerative resistor using a measur- ing instrument.	If you are using the regen- erative resistor built into the SERVOPACK, replace the SERVOPACK. If you are using an Exter- nal Regenerative Resis- tor, replace the External Regenerative Resistor.	-
4 000	DC power was sup- plied when an AC power supply input was specified in the settings.	Check the power sup- ply to see if it is a DC power supply.	Correct the power supply setting to match the actual power supply.	*1
A.330: Main Circuit Power Supply Wiring Error (Detected when the main circuit power supply is turned ON.) AC power was sup- plied when a DC power supply input was specified in the settings. Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to one of the following SERVO- PACKs: SGD7S-R70A, -R90A, -1R6A, -2R8A, -R70F, -R90F, -2R1F, or -2R8F.	plied when a DC power supply input was specified in the	Check the power sup- ply to see if it is an AC power supply.	Correct the power supply setting to match the actual power supply.	*1
	Check it see if an Exter- nal Regenerative Resis- tor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or if an External Regenera- tive Resistor is not required, set Pn600 to 0.	*1	
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-

Continued from previous page.

	Continued from previous pa			
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the AC/DC power supply voltage within the specified range.	-
	The power supply is not stable or was influenced by a light- ning surge.	Measure the power supply voltage.	Improve the power sup- ply conditions, install a surge absorber, and then turn the power supply OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SER- VOPACK.	-
A.400: Overvoltage (Detected in the	The voltage for AC power supply was too high during accelera- tion or deceleration.	Check the power sup- ply voltage and the speed and torque during operation.	Set the AC power supply voltage within the speci- fied range.	-
main circuit power supply section of the SERVOPACK.)	The external regener- ative resistance is too high for the operating conditions.	Check the operating conditions and the regenerative resistance.	Select a regenerative resistance value that is appropriate for the oper- ating conditions and load.	*4
	The moment of inertia ratio or mass ratio exceeded the allow- able value.	Check to see if the moment of inertia ratio or mass ratio is within the allowable range.	Increase the deceleration time, or reduce the load.	-
	A failure occurred in the SERVOPACK.	_	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVO- PACK may be faulty. Replace the SERVO- PACK.	_
	The power supply voltage went below the specified range.	Measure the power supply voltage.	Set the power supply volt- age within the specified range.	-
	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	-
A.410: Undervoltage (Detected in the main circuit power supply section of the SERVOPACK.)	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momen- tary Power Interruption Hold Time), decrease the setting.	*1
	The SERVOPACK fuse is blown out.	-	Replace the SERVO- PACK and connect a reactor to the DC reactor terminals ( $\ominus$ 1 and $\ominus$ 2) on the SERVOPACK.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The order of phases U, V, and W in the motor wiring is not correct.	Check the wiring of the Servomotor.	Make sure that the Servo- motor is correctly wired.	-
A.510: Overspeed (The motor	A reference value that exceeded the over- speed detection level was input.	Check the input refer- ence.	Reduce the reference value. Or, adjust the gain.	
exceeded the maximum speed.)	The motor exceeded the maximum speed.	Check the waveform of the motor speed.	Reduce the speed refer- ence input gain and adjust the servo gain. Or, reconsider the operating conditions.	_
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
A.511:	The encoder output pulse frequency exceeded the limit.	Check the encoder out- put pulse setting.	Decrease the setting of Pn212 (Number of Encoder Output Pulses) or Pn281 (Encoder Out- put Resolution).	*1
Encoder Output Pulse Overspeed	The encoder output pulse frequency exceeded the limit because the motor speed was too high.	Check the encoder out- put pulse setting and the motor speed.	Reduce the motor speed.	-
	Abnormal oscillation was detected in the motor speed.	Check for abnormal motor noise, and check the speed and torque waveforms during oper- ation.	Reduce the motor speed. Or, reduce the setting of Pn100 (Speed Loop Gain).	*1
A.520: Vibration Alarm	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appro- priate value.	*1
	The vibration detec- tion level (Pn312 or Pn384) is not suitable.	Check that the vibra- tion detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*1
A.521: Autotuning Alarm (Vibration was detected while executing the custom tuning, Easy FFT, or the tuning-less func- tion.)	The Servomotor vibrated considerably while performing the tuning-less function.	Check the waveform of the motor speed.	Reduce the load so that the moment of inertia ratio is within the allowable value. Or increase the load level or reduce the rigidity level in the tuning- less level settings.	*1
	The Servomotor vibrated considerably while performing cus- tom tuning or Easy FFT.	Check the waveform of the motor speed.	Check the operating pro- cedure of corresponding function and implement corrections.	*1
A.550: Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum speed.	Check the setting of Pn385, and the upper limits of the maximum motor speed setting and the encoder output resolution setting.	Set Pn385 to a value that does not exceed the max- imum motor speed.	*1

Continued from previous page.

Alarm Number: Describe Occupation Continued from previo				
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The wiring is not cor- rect or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are correctly wired.	*1
	Operation was per- formed that exceeded the overload protec- tion characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
A.710: Instantaneous Overload A.720:	An excessive load was applied during operation because the Servomotor was not driven due to mechanical problems.	Check the operation reference and motor speed.	Correct the mechanical problem.	-
Continuous Overload	There is an error in the setting of Pn282 (Lin- ear Encoder Scale Pitch).	Check the setting of Pn282.	Correct the setting of Pn282.	*1
	There is an error in the setting of $Pn080 =$ n. $\Box\Box$ X $\Box$ (Motor Phase Sequence Selection).	Check the setting of Pn080 = $n.\Box\Box X\Box$ .	Set Pn080 = n.□□X□ to an appropriate value.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	_
A.730 and A.731: Dynamic Brake Overload (An excessive power consump- tion by the dynamic brake was detected.)	When the Servomo- tor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capac- ity of the dynamic brake resistor.	Check the power con- sumed by the DB resis- tor to see how frequently the DB is being used.	<ul> <li>Reconsider the following:</li> <li>Reduce the Servomotor command speed.</li> <li>Decrease the moment of inertia ratio or mass ratio.</li> <li>Reduce the frequency of stopping with the dynamic brake.</li> </ul>	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
A.740: Inrush Current Limiting Resistor Overload (The main circuit power supply was frequently	The allowable fre- quency of the inrush current limiting resis- tor was exceeded when the main circuit power supply was turned ON and OFF.	_	Reduce the frequency of turning the main circuit power supply ON and OFF.	-
was frequently turned ON and OFF.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
<b>A.7A1:</b> Internal Tempera- ture Error 1 (Control Board Temperature Error)	The surrounding tem- perature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surround- ing temperature by improving the SERVO- PACK installation condi- tions.	*1
	An overload alarm was reset by turning OFF the power sup- ply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
	There was an exces- sive load or operation was performed that exceeded the regen- erative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenera- tive load ratio to check the regenerative pro- cessing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVO- PACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifica- tions.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
A.7A2: Internal Tempera- ture Error 2 (Power Board Temperature Error)	The surrounding tem- perature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surround- ing temperature by improving the SERVO- PACK installation condi- tions.	*1
	An overload alarm was reset by turning OFF the power sup- ply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	_
	There was an exces- sive load or operation was performed that exceeded the regen- erative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenera- tive load ratio to check the regenerative pro- cessing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVO- PACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifica- tions.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER- VOPACK.	_
A.7A3: Internal Tempera- ture Sensor Error (An error occurred in the temperature sen- sor circuit.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-

Continued from previous page.

Continued from previous page				
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
<b>A.7Ab:</b> SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVOPACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SER- VOPACK.	-
	The power to the absolute encoder was turned ON for the first time.	Check to see if the power supply was turned ON for the first time.	Set up the encoder.	*1
A.810:	The Encoder Cable was disconnected and then connected again.	Check to see if the power supply was turned ON for the first time.	Check the encoder con- nection and set up the encoder.	*1
Encoder Backup Alarm (Detected at the encoder, but only when an abso- lute encoder is used.)	Power is not being supplied both from the control power supply (+5 V) from the SERVOPACK and from the battery power supply.	Check the encoder connector battery and the connector status.	Replace the battery or implement similar mea- sures to supply power to the encoder, and set up the encoder.	*1
	A failure occurred in the absolute encoder.	_	If the alarm still occurs after setting up the encoder again, replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
<b>A.820:</b> Encoder Check- sum Alarm (Detected at the encoder.)	A failure occurred in the encoder.	-	<ul> <li>When Using an Absolute Encoder</li> <li>Set up the encoder again.</li> <li>If the alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.</li> <li>When Using a Singleturn Absolute Encoder or Incremental Encoder</li> <li>The Servomotor may be faulty. Replace the Servomotor.</li> <li>The linear encoder may be faulty. Replace the linear encoder.</li> </ul>	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
A.830: Encoder Battery	The battery connec- tion is faulty or a bat- tery is not connected.	Check the battery con- nection.	Correct the battery con- nection.	*1
Alarm (The absolute encoder battery voltage was lower than the speci- fied level.)	The battery voltage is lower than the speci- fied value (2.7 V).	Measure the battery voltage.	Replace the battery.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-

Continued on next page.

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The encoder malfunc- tioned.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servo- motor or linear encoder.	_
	An error occurred in reading data from the linear encoder.	_	The linear encoder is not mounted within an appro- priate tolerance. Correct the mounting of the linear encoder.	-
A.840: Encoder Data Alarm (Detected at the encoder.)	Excessive speed occurred in the linear encoder.	_	Control the motor speed within the range specified by the linear encoder manufacturer and then turn ON the control power supply.	-
	The encoder malfunc- tioned due to noise.	_	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Cir- cuit Cable or by ground- ing the encoder.	-
	The polarity sensor is not wired correctly.	Check the wiring of the polarity sensor.	Correct the wiring of the polarity sensor.	_
	The polarity sensor failed.	-	Replace the polarity sen- sor.	-
A.850: Encoder Over- speed (Detected at the encoder when the control power supply is turned ON.)	Rotary Servomotor: The Servomotor speed was 200 min <sup>-1</sup> or higher when the control power supply was turned ON.	Check the motor speed when the power supply is turned ON.	Reduce the Servomotor speed to a value less than 200 min <sup>-1</sup> , and turn ON the control power supply.	-
	Linear Servomotor: The Servomotor exceeded the speci- fied speed when the control power supply was turned ON.	Check the motor speed when the power supply is turned ON.	Control the motor speed within the range specified by the linear encoder manufacturer and then turn ON the control power supply.	-
	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servo- motor or linear encoder.	_
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK. Continued o	-

Continued from previous page.

			Continued from pro	evious page.
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.860:	The surrounding air temperature around the Servomotor is too high.	Measure the surround- ing air temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40°C or less.	-
(Detected when a Rotary Servomo- tor, Absolute Lin- ear Encoder, or	The Servomotor load is greater than the rated load.	Use the accumulated load ratio to check the load.	Operate the Servo Drive so that the motor load remains within the speci- fied range.	*1
Direct Drive Ser- vomotor is con- nected. However, this alarm is not detected for SGMCS Servo- motors with Incremental	A failure occurred in the encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or absolute linear encoder may be faulty. Replace the Servomotor or absolute linear encoder.	-
Encoders.) (Detected at the encoder end.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The surrounding tem- perature around the Servomotor is too high.	Measure the surround- ing temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40° or less.	-
	The motor load is greater than the rated load.	Check the load with the accumulated load ratio on the Motion Monitor Tab Page on the SigmaWin+.	Operate the Servo Drive so that the motor load remains within the speci- fied range.	*1
A.861: Motor Over- heated	A failure occurred in the Serial Converter Unit.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Serial Con- verter Unit may be faulty. Replace the Serial Con- verter Unit.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.890: Encoder Scale Error	A failure occurred in the linear encoder.	-	The linear encoder may be faulty. Replace the linear encoder.	-
A.891: Encoder Module Error	A failure occurred in the linear encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the linear encoder may be faulty. Replace the linear encoder.	-
<b>A.8A0:</b> External Encoder Error	Setting the origin of the absolute linear encoder failed because the motor moved.	Before you set the ori- gin, use the fully-closed feedback pulse counter to confirm that the motor is not moving.	The motor must be stopped while setting the origin position.	*1
	A failure occurred in the external encoder.	_	Replace the external encoder.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.8A1:	A failure occurred in the external encoder.	-	Replace the external encoder.	-
External Encoder Module Error	A failure occurred in the Serial Converter Unit.	-	Replace the Serial Con- verter Unit.	-
A.8A2: External Incre- mental Encoder Sensor Error	A failure occurred in the external encoder.	-	Replace the external encoder.	-
A.8A3: External Abso- lute Encoder Position Error	A failure occurred in the external absolute encoder.	-	The external absolute encoder may be faulty. Refer to the encoder manufacturer's instruc- tion manual for correc- tions.	-
A.8A5: External Encoder Overspeed	An overspeed error was detected in the external encoder.	Check the maximum speed of the external encoder.	Keep the external encoder below its maxi- mum speed.	-
A.8A6: External Encoder Overheated	An overheating error was detected in the external encoder.	-	Replace the external encoder.	-
A.b33: Current Detec- tion Error 3	A failure occurred in the current detection circuit.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.b6A: MECHATROLINK Communications ASIC Error 1	There is a fault in the SERVOPACK MECHATROLINK communications sec- tion.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.b6b: MECHATROLINK Communications ASIC Error 2	A malfunction occurred in the MECHATROLINK communications sec- tion due to noise.	-	<ul> <li>Implement the following countermeasures against noise.</li> <li>Check the MECHA-TROLINK Communications Cable and FG wiring.</li> <li>Attach a ferrite core to the MECHATROLINK Communications Cable.</li> </ul>	-
	There is a fault in the SERVOPACK MECHATROLINK communications sec- tion.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
<b>A.bF0:</b> System Alarm 0	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF1: System Alarm 1	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued from previous page.

Continued from previous page				evious page.
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.bF2: System Alarm 2	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF3: System Alarm 3	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
<b>A.bF4:</b> System Alarm 4	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF5: System Alarm 5	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF6: System Alarm 6	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF7: System Alarm 7	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF8: System Alarm 8	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued on next page.

Continued from previous page.

Continued from previous page				l l l l l l l l l l l l l l l l l l l
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The order of phases U, V, and W in the motor wiring is not correct.	Check the Servomotor wiring.	Make sure that the Servo- motor is correctly wired.	-
A.C10:	There is an error in the setting of $Pn080 =$ n. $\Box\Box X\Box$ (Motor Phase Sequence Selection).	Check the setting of Pn080 = n.□□X□.	Set Pn080 = n.□□X□ to an appropriate value.	*1
Servomotor Out of Control (Detected when the servo is turned ON.)	A failure occurred in the encoder.	_	If the motor wiring is cor- rect and an alarm still occurs after turning the power supply OFF and ON again, the Servomotor or linear encoder may be faulty. Replace the Servo- motor or linear encoder.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The linear encoder signal level is too low.	Check the voltage of the linear encoder signal.	Fine-tune the mounting of the scale head. Or, replace the linear encoder.	-
A.C20: Phase Detection Error	The count-up direc- tion of the linear encoder does not match the forward direction of the Mov- ing Coil in the motor.	Check the setting of Pn080 = $n.\Box\Box X\Box$ (Motor Phase Sequence Selection). Check the installation orientation for the linear encoder and Moving Coil.	Change the setting of Pn080 = $n.\square\squareX\square$ . Cor- rectly reinstall the linear encoder or Moving Coil.	*1
	The polarity sensor signal is being affected by noise.	-	Correct the FG wiring. Implement countermea- sures against noise for the polarity sensor wiring.	-
	The polarity sensor is protruding from the Magnetic Way of the motor.	Check the polarity sen- sor.	Correctly reinstall the Moving Coil or Magnetic Way of the motor.	-
A.C21: Polarity Sensor Error	The setting of Pn282 (Linear Encoder Scale Pitch) is not correct.	Check the setting of Pn282 (Linear Encoder Scale Pitch).	Check the specifications of the linear encoder and set a correct value.	*1
	The polarity sensor is not wired correctly.	Check the wiring of the polarity sensor.	Correct the wiring of the polarity sensor.	-
	The polarity sensor failed.	-	Replace the polarity sen- sor.	-
A.C22: Phase Informa- tion Disagree- ment	The SERVOPACK phase information is different from the lin- ear encoder phase information.	-	Perform polarity detec- tion.	*1

Continued from previous page.

	Continued from previous page			
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The parameter set- tings are not correct.	Check the linear encoder specifications and feedback signal status.	The settings of Pn282 (Linear Encoder Scale Pitch) and Pn080 = n.□□X□ (Motor Phase Sequence Selection) may not match the installa- tion. Set the parameters to correct values.	*1
	There is noise on the scale signal.	Check to make sure that the frame grounds of the Serial Converter Unit and Servomotor are connected to the FG terminal on the SER- VOPACK and that the FG terminal on the SER- VOPACK is connected to the frame ground on the power supply. And, confirm that the shield is properly pro- cessed on the Linear Encoder Cable. Check to see if the detection reference is repeatedly output in one direction.	Implement appropriate countermeasures against noise for the Linear Encoder Cable.	_
A.C50: Polarity Detec- tion Failure	An external force was applied to the Moving Coil of the motor.	_	The polarity cannot be properly detected if the detection reference is 0 and the speed feedback is not 0 because of an external force, such as cable tension, applied to the Moving Coil. Implement measures to reduce the external force so that the speed feed- back goes to 0. If the external force can- not be reduced, increase the setting of Pn481 (Polarity Detection Speed Loop Gain).	_
	The linear encoder resolution is too low.	Check the linear encoder scale pitch to see if it is within 100 μm.	If the linear encoder scale pitch is 100 $\mu$ m or higher, the SERVOPACK cannot detect the correct speed feedback. Use a linear encoder scale pitch with higher resolu- tion. (We recommend a pitch of 40 $\mu$ m or less.) Or, increase the setting of Pn485 (Polarity Detection Reference Speed). How- ever, increasing the set- ting of Pn485 will increase the Servomotor move- ment range that is required for polarity detection.	_

Continued on next page.

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.C51: Overtravel Detected during Polarity Detection	The overtravel signal was detected during polarity detection.	Check the overtravel position.	Wire the overtravel sig- nals. Execute polarity detection at a position where an overtravel sig- nal would not be detected.	*1
A.C52: Polarity Detec- tion Not Com- pleted	The servo was turned ON when using an absolute linear encoder, Pn587 was set to n.DDD (Do not detect polarity), and the polarity had not been detected.	_	When using an absolute linear encoder, set Pn587 to n.DDD1 (Detect polar- ity)	-
A.C53: Out of Range of Motion for Polar- ity Detection	The travel distance exceeded the setting of Pn48E (Polarity Detection Range) in the middle of detec- tion.	_	Increase the setting of Pn48E (Polarity Detection Range). Or, increase the setting of Pn481 (Polarity Detection Speed Loop Gain).	-
A.C54: Polarity Detec- tion Failure 2	An external force was applied to the Servo- motor.	_	Increase the setting of Pn495 (Polarity Detection Confirmation Force Refer- ence). Increase the setting of Pn498 (Polarity Detection Allowable Error Range). Increasing the allowable error will also increase the motor temperature.	_
<b>A.C80:</b> Encoder Clear Error or Multiturn	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servo- motor or linear encoder.	-
Limit Setting Error	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued from previous page.

	Continued from previous pag				
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference	
	There is a faulty con- tact in the connector or the connector is not wired correctly for the encoder.	Check the condition of the encoder connector.	Reconnect the encoder connector and check the encoder wiring.	*1	
	There is a cable dis- connection or short- circuit in the encoder. Or, the cable imped- ance is outside the specified values.	Check the condition of the Encoder Cable.	Use the Encoder Cable within the specified specifications.	-	
A.C90: Encoder Commu- nications Error	One of the following has occurred: corro- sion caused by improper tempera- ture, humidity, or gas, a short-circuit caused by entry of water drops or cutting oil, or faulty contact in con- nector caused by vibration.	Check the operating environment.	Improve the operating environmental, and replace the cable. If the alarm still occurs, replace the SERVOPACK.	*1	
	A malfunction was caused by noise.	_	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Cir- cuit Cable or by ground- ing the encoder.	*1	
	A failure occurred in the SERVOPACK.	-	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If no alarm occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-	
A.C91: Encoder Commu- nications Posi- tion Data Acceleration Rate	Noise entered on the signal lines because the Encoder Cable is bent or the sheath is damaged.	Check the condition of the Encoder Cable and connectors.	Check the Encoder Cable to see if it is installed correctly.	*1	
	The Encoder Cable is bundled with a high- current line or installed near a high- current line.	Check the installation condition of the Encoder Cable.	Confirm that there is no surge voltage on the Encoder Cable.	-	
Error	There is variation in the FG potential because of the influ- ence of machines on the Servomotor side, such as a welder.	Check the installation condition of the Encoder Cable.	Properly ground the machine to separate it from the FG of the encoder.	-	

Continued on next page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Noise entered on the signal line from the encoder.	-	Implement countermea- sures against noise for the encoder wiring.	*1
	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibra- tion. Correctly install the Ser- vomotor or linear encoder.	-
A.C92: Encoder Commu- nications Timer Error	A failure occurred in the encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servo- motor or linear encoder.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.CA0: Encoder Parame- ter Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servo- motor or linear encoder.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued from previous page.

Continued from previous page.

			Continued from pro	evious page.
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The encoder is wired incorrectly or there is faulty contact.	Check the wiring of the encoder.	Make sure that the encoder is correctly wired.	*1
	The specifications of the Encoder Cable are not correct and noise entered on it.	_	Use a shielded twisted- pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	-
	The Encoder Cable is too long and noise entered on it.	_	<ul> <li>Rotary Servomotors: The Encoder Cable wir- ing distance must be 50 m max.</li> <li>Linear Servomotors: The Encoder Cable wir- ing distance must be 20 m max.</li> </ul>	-
A.Cb0: Encoder Echo- back Error	There is variation in the FG potential because of the influ- ence of machines on the Servomotor side, such as a welder.	Check the condition of the Encoder Cable and connectors.	Properly ground the machine to separate it from the FG of the encoder.	-
	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibra- tion. Correctly install the Ser- vomotor or linear encoder.	_
	A failure occurred in the encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servo- motor or linear encoder.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	When using a Direct Drive Servomotor, the setting of Pn205 (Mul- titurn Limit) does not agree with the encoder.	Check the setting of Pn205.	Correct the setting of Pn205 (0 to 65,535).	*1
A.CC0: Multiturn Limit Disagreement	The multiturn limit of the encoder is differ- ent from that of the SERVOPACK. Or, the multiturn limit of the SERVOPACK has been changed.	Check the setting of Pn205 in the SERVO- PACK.	Change the setting if the alarm occurs.	*1
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK. Continued o	-

Continued on next page.

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The cable between the Serial Converter Unit and SERVOPACK is not wired correctly or there is a faulty contact.	Check the wiring of the external encoder.	Correctly wire the cable between the Serial Con- verter Unit and SERVO- PACK.	*1
A.CF1: Reception Failed Error in Feed- back Option	A specified cable is not being used between Serial Con- verter Unit and SER- VOPACK.	Check the wiring speci- fications of the external encoder.	Use a specified cable.	-
Module Commu- nications	The cable between the Serial Converter Unit and SERVOPACK is too long.	Measure the length of the cable that connects the Serial Converter Unit.	The length of the cable between the Serial Con- verter Unit and SERVO- PACK must be 20 m or less.	-
	The sheath on cable between the Serial Converter Unit and SERVOPACK is bro- ken.	Check the cable that connects the Serial Converter Unit.	Replace the cable between the Serial Con- verter Unit and SERVO- PACK.	-
A.CF2: Timer Stopped Error in Feed-	Noise entered the cable between the Serial Converter Unit and SERVOPACK.	_	Correct the wiring around the Serial Converter Unit, e.g., separate I/O signal lines from the Main Circuit Cables or ground.	-
back Option Module Commu- nications	A failure occurred in the Serial Converter Unit.	_	Replace the Serial Con- verter Unit.	-
	A failure occurred in the SERVOPACK.	_	Replace the SERVO- PACK.	_
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Cir- cuit Cables.	Make sure that there are no faulty contacts in the wiring for the Servomotor and encoder.	-
	The position com- mand speed is too fast.	Reduce the position command speed and try operating the SER- VOPACK.	Reduce the position refer- ence speed or the refer- ence acceleration rate, or reconsider the electronic gear ratio.	*1
A.d00: Position Devia- tion Overflow (The setting of Pn520 (Position Deviation Over- flow Alarm Level) was exceeded by the position devi- ation while the servo was ON.)	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO- PACK.	Reduce the acceleration of the position reference using a MECHATROLINK command. Or, smooth the position reference accel- eration by selecting the position reference filter (ACCFIL) using a MECHA- TROLINK command.	-
	The setting of Pn520 (Position Deviation Overflow Alarm Level) is too low for the operating conditions.	Check Pn520 (Position Deviation Overflow Alarm Level) to see if it is set to an appropriate value.	Optimize the setting of Pn520.	*1
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued from previous page.

Continued from previous page				evious page.
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.d01: Position Devia- tion Overflow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Position Deviation Overflow Alarm Level at Servo ON) while the servo was OFF.	Check the position deviation while the servo is OFF.	Optimize the setting of Pn526 (Position Deviation Overflow Alarm Level at Servo ON).	*1
A.d02: Position Devia- tion Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the devia- tion counter, the set- ting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the set- ting of Pn520 (Posi- tion Deviation Overflow Alarm Level) is exceeded.	_	Optimize the setting of Pn520 (Position Deviation Overflow Alarm Level). Or, adjust the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON).	*1
A.d0A: Pressure Feedback Loop Deviation Overflow	The difference between the pressure feedback reference and the pressure feedback detection value exceeded the level set in Pn447 (Pressure Feedback Loop Deviation Over- flow Level).	Check the pressure feedback detection monitor or pressure feedback loop devia- tion monitor.	<ul> <li>Change the value of Pn447 (Pressure Feed- back Loop Deviation Overflow Level).</li> <li>Adjust the values of Pn442 (Pressure Feed- back Loop Integral Time) and other pres- sure feedback control parameters.</li> </ul>	3-20
A.d10: Motor-Load Posi- tion Deviation	The motor direction and external encoder installation orientation are backward.	Check the motor direc- tion and the external encoder installation ori- entation.	Install the external encoder in the opposite direction, or change the setting of Pn002 = n.XDDD (External Encoder Usage) to reverse the direction.	*1
Overflow	There is an error in the connection between the load (e.g., stage) and external encoder coupling.	Check the coupling of the external encoder.	Check the mechanical coupling.	-
A.d30: Position Data Overflow	The position data exceeded ±1,879,048,192.	Check the input refer- ence pulse counter.	Reconsider the operating specifications.	-
A.E02: MECHATROLINK Internal Synchro- nization Error 1	The MECHATROLINK transmission cycle fluctuated.	-	Remove the cause of transmission cycle fluctu- ation at the host control- ler.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.E40: MECHATROLINK Transmission Cycle Setting Error	The setting of MECHATROLINK transmission cycle is outside of the speci- fied range.	Check the setting of the MECHATROLINK trans- mission cycle.	Set the MECHATROLINK transmission cycle to an appropriate value.	-

Continued on next page.

5

Maintenance

Continued from previous page.

Alarm Number:				
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.E41: MECHATROLINK Communications Data Size Setting Error	The number of trans- mission bytes set on DIP switch S3 is not correct.	Check the MECHA- TROLINK communica- tions data size of the host controller.	Reset DIP switch S3 to change the number of transmission bytes to an appropriate value.	*1
<b>A.E42:</b> MECHATROLINK	The station address is outside of the setting range.	Check rotary switches S1 and S2 to see if the station address is between 03 and EF.	Check the setting of the station address of the host controller, and reset rotary switches S1 and S2 to change the address to an appropriate value between 03 and EF.	*1
Station Address Setting Error	Two or more stations on the communica- tions network have the same address.	Check to see if two or more stations on the communications net- work have the same address.	Check the setting of the station address of the host controller, and reset rotary switches S1 and S2 to change the address to an appropriate value between 03 and EF.	*1
A.E50 <sup>*4</sup> :	The WDT data in the host controller was not updated normally.	Check to see if the WDT data is being updated at the host controller.	Correctly update the WDT data at the host controller.	-
MECHATROLINK Synchronization Error	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.E51: MECHATROLINK Synchronization Failed	The WDT data at the host controller was not updated correctly at the start of syn- chronous communi- cations, so synchronous commu- nications could not be started.	Check to see if the WDT data is being updated in the host controller.	Correctly update the WDT data at the host controller.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued from previous page.

Alarm Number:				
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.E60 <sup>*4</sup> : Reception Error in MECHATROLINK Communications	MECHATROLINK wir- ing is not correct.	Check the MECHA- TROLINK wiring.	Correct the MECHA- TROLINK Communica- tions Cable wiring. Correctly connect the ter- minator.	-
	A MECHATROLINK data reception error occurred due to noise.	_	Implement countermea- sures against noise. (Check the MECHA- TROLINK Communica- tions Cable and FG wiring, and implement measures such as attach- ing a ferrite core to the MECHATROLINK Com- munications Cable.)	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.E61: Synchronization	The MECHATROLINK transmission cycle fluctuated.	Check the setting of the MECHATROLINK trans- mission cycle.	Remove the cause of transmission cycle fluctu- ation at the host control- ler.	-
Interval Error in MECHATROLINK Transmission Cycle	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	MECHATROLINK wir- ing is not correct.	Check the Servomotor wiring.	Correct the MECHA- TROLINK Communica- tions Cable wiring.	-
A.E63: MECHATROLINK Synchronization Frame Not Received	A MECHATROLINK data reception error occurred due to noise.	_	Implement countermea- sures against noise. (Check the MECHA- TROLINK Communica- tions Cable and FG wiring, and implement measures such as attach- ing a ferrite core to the MECHATROLINK Com- munications Cable.)	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued on next page.

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	There is a faulty con- nection between the SERVOPACK and the Safety Option Module.	Check the connection between the SERVO- PACK and the Safety Option Module.	Correctly connect the Safety Option Module.	_
A.E71: Safety Option Module Detec- tion Failure	The Safety Option Module was discon- nected.	_	Execute Fn014 (Reset Option Module Configura- tion Error) from the Digital Operator or SigmaWin+ and then turn the power supply to the SERVO- PACK OFF and ON again.	*1
	A failure occurred in the Safety Option Module.	-	Replace the Safety Option Module.	_
	A failure occurred in the SERVOPACK.	-	Replace the SERVO- PACK.	-
	There is a faulty con- nection between the SERVOPACK and the Feedback Option Module.	Check the connection between the SERVO- PACK and the Feed- back Option Module.	Correctly connect the Feedback Option Module.	_
A.E72: Feedback Option Module Detec- tion Failure	The Feedback Option Module was discon- nected.	-	Reset the Option Module configuration error and turn the power supply to the SERVOPACK OFF and ON again.	*1
	A failure occurred in the Feedback Option Module.	-	Replace the Feedback Option Module.	_
	A failure occurred in the SERVOPACK.	_	Replace the SERVO- PACK.	-
A.E74: Unsupported	A failure occurred in the Safety Option Module.	-	Replace the Safety Option Module.	-
Safety Option Module	An unsupported Safety Option Module was connected.	Refer to the catalog of the connected Safety Option Module.	Connect a compatible Safety Option Module.	-
<b>A.Eb1:</b> Safety Function Signal Input Tim- ing Error	The delay between activation of the /HWBB1 and /HWBB2 input sig- nals for the HWBB was ten second or longer.	Measure the time delay between the /HWBB1 and /HWBB2 signals.	The output signal circuits or devices for /HWBB1 and /HWBB2 or the SER- VOPACK input signal cir- cuits may be faulty. Alternatively, the input sig- nal cables may be discon- nected. Check to see if any of these items are faulty or have been dis- connected.	_
	A failure occurred in the SERVOPACK.	-	Replace the SERVO- PACK.	_
A.EC8: Gate Drive Error 1 (An error occurred in the gate drive circuit.) A.EC9: Gate Drive Error 2 (An error occurred in the gate drive circuit.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued from previous page.

Continued from previous page				evious page.
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
		Check the motor status when the command is executed.	Execute the SV_ON or SENS_ON command only when the motor is not operating.	-
A.Ed1: Command Exe- cution Timeout	A timeout error occurred for a MECHATROLINK command.	<ul> <li>For fully-closed loop control, check the status of the external encoder when the command is exe- cuted.</li> <li>For other types of control, check the status of the linear encoder when the command is exe- cuted.</li> </ul>	Execute the SENS_ON command only when an external rotary encoder or linear encoder is con- nected.	-
	The three-phase power supply wiring is not correct.	Check the power sup- ply wiring.	Make sure that the power supply is correctly wired.	*1
<b>A.F10:</b> Power Supply Line Open Phase	The three-phase power supply is unbalanced.	Measure the voltage for each phase of the three-phase power sup- ply.	Balance the power supply by changing phases.	-
(The voltage was low for more than one second for phase R, S, or T when the main power supply	A single-phase power supply was input with- out specifying a sig- nal-phase AC power supply input (Pn00B = $n.\Box 1\Box \Box$ ).	Check the power sup- ply and the parameter setting.	Match the parameter set- ting to the power supply.	*1
was ON.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.F50: Servomotor Main Circuit Cable Dis-	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	_
Circuit Cable Dis- connection (The Servomotor did not operate or power was not supplied to the Servomotor even though the SV_ON (Servo ON) command was input when the Servomotor was ready to receive it.)	The wiring is not cor- rect or there is a faulty contact in the motor wiring.	Check the wiring.	Make sure that the Servo- motor is correctly wired.	*1

Continued on next page.

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
FL-1 <sup>*5</sup> : System Alarm FL-2 <sup>*5</sup> : System Alarm FL-3 <sup>*5</sup> : System Alarm FL-4 <sup>*5</sup> : System Alarm FL-5 <sup>*5</sup> : System Alarm FL-6 <sup>*5</sup> : System Alarm	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
CPF00: Digital Operator	There is a faulty con- tact between the Digi- tal Operator and the SERVOPACK.	Check the connector contact.	Disconnect the connec- tor and insert it again. Or, replace the cable.	_
Communications Error 1	A malfunction was caused by noise.	_	Keep the Digital Operator or the cable away from sources of noise.	-
CPF01: Digital Operator	A failure occurred in the Digital Operator.	_	Disconnect the Digital Operator and then con- nect it again. If an alarm still occurs, the Digital Operator may be faulty. Replace the Digital Oper- ator.	-
Communications Error 2 *1. Refer to the follow	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Ω Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)

\*2. Detection Conditions

· Rotary Servomotors If either of the following conditions is detected, an alarm will occur. Pn533 [min<sup>-1</sup>] × \_\_\_\_\_\_ Encoder resolution \_\_\_\_\_ < Pn20E

Encoder resolution Pn20E Maximum motor speed [min<sup>-1</sup>] × —  $\geq$ Approx.  $3.66 \times 10^{12}$ Pn210

Linear Servomotors

If either of the following conditions is detected, an alarm will occur.

•	Pn585 [mm/s] Linear encoder pitch [μm]	×	Resolution of Serial Converter Unit10	≤	Pn20E Pn210
•	Pn385 [100 mm/s] Linear encoder pitch [µm]	×	Resolution of Serial Converter Unit Approx. 6.10×10 <sup>5</sup>	≥	Pn20E Pn210

\*3. Detection Conditions

Rotary Servomotors
 If either of the following conditions is detected, an alarm will occur.

• Rated motor speed [min<sup>-1</sup>] × 1/3 × 
$$\frac{\text{Encoder resolution}}{6 \times 10^5} \le \frac{\text{Pn20E}}{\text{Pn210}}$$

• Maximum motor speed [min<sup>-1</sup>] 
$$\times \frac{\text{Encoder resolution}}{\text{Approx. 3.66} \times 10^{12}} \ge \frac{\text{Pn2UE}}{\text{Pn210}}$$

5.1.4 Warning Displays

Linear Servomotors

If either of the following conditions is detected, an alarm will occur.

•	Rated motor speed [mm/s] × 1/3 Linear encoder pitch [μm]	$\times \frac{\text{Resolution of Serial Converter Unit}}{10} \leq$	Pn20E Pn210
•	Pn385 [100 mm/s] Linear encoder pitch [μm]	$\times \frac{\text{Resolution of Serial Converter Unit}}{\text{Approx. 6.10} \times 10^{5}} \ge$	Pn20E Pn210

\*4. Refer to the following manual for details.

Ω Σ-7-Series Peripheral Device Selection Manual (Manual No.: SIEP S800001 32)

\*5. These alarms are not stored in the alarm history. They are only displayed on the panel display.

# 5.1.4 Warning Displays

If a warning occurs in the SERVOPACK, a warning number will be displayed on the panel display. Warnings are displayed to warn you before an alarm occurs.

# 5.1.5 List of Warnings

The list of warnings gives the warning name and warning meaning in order of the warning numbers.

Warning Number	Warning Name	Meaning	Resetting
A.900	Position Deviation Overflow	The position deviation exceeded the parameter settings (Pn520 $\times$ Pn51E/100).	Required.
A.901	Position Deviation Overflow Alarm at Servo ON	The position deviation exceeded the parameter settings (Pn526 $\times$ Pn528/100) when the servo was turned ON.	Required.
A.910	Overload	This warning occurs before an overload alarm (A.710 or A.720) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Required.
A.911	Vibration	Abnormal vibration was detected during motor opera- tion. The detection level is the same as A.520. Set whether to output an alarm or a warning by setting Pn310 (Vibration Detection Selections).	Required.
A.912	Internal Temperature Warning 1 (Control Board Temperature Error)	The surrounding temperature of the control PCB is abnormal.	Required.
A.913	Internal Temperature Warning 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.	Required.
A.920	Regenerative Overload	This warning occurs before an A.320 alarm (Regenera- tive Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Required.
A.921	Dynamic Brake Over- load	This warning occurs before an A.731 alarm (Dynamic Brake Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Required.
A.922	Pressure Feedback Overflow	The pressure feedback detection value exceeded the level set in Pn44D (Pressure Feedback Overflow Detection Level) for the time set in Pn44E (Pressure Feedback Overflow Detection Time).	Required.
A.923	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Required.
A.930	Absolute Encoder Bat- tery Error	This warning occurs when the voltage of absolute encoder's battery is low.	Required.

Continued on next page.

5.1.5 List of Warnings

Warning Warning Name Meaning Resetting Number Speed Ripple Com-The speed ripple compensation information stored in A.942 pensation Information the encoder does not agree with the speed ripple com-Required. pensation information stored in the SERVOPACK. Disagreement Data Setting Warning 1 There is an error in the parameter number for a Data Automatically A.94A (Parameter Number Setting Warning 1 (Parameter Number) command. reset.\* Error) Data Setting Warning 2 Automatically A.94b The command data is out of range. (Out of Range) reset.\* Data Setting Warning 3 Automatically A.94C A calculation error was detected. (Calculation Error) reset.\* Data Setting Warning 4 Automatically A.94d The data sizes do not match. reset.\* (Parameter Size) Data Setting Warning 5 A.94E A latch mode error was detected. Required. (Latch Mode Error) Command Warning 1 A command was sent when the conditions for sending Automatically A.95A (Unsatisfied Coma command were not satisfied. reset.\* mand Conditions) Command Warning 2 Automaticallv A.95b (Unsupported Com-An unsupported command was sent. reset.\* mand) Command Warning 4 Automatically There was command interference, particularly latch A.95d (Command Interfercommand interference. reset.\* ence) Command Warning 5 The subcommand and main command interfere with Automatically A.95E (Subcommand Not reset.\* each other. Possible) Command Warning 6 Automatically A.95F An undefined command was sent. (Undefined Command) reset.\* MECHATROLINK A communications error occurred during MECHA-A.960 Communications Required. TROLINK communications. Warning This warning occurs before an A.410 alarm (Undervolt-A.971 Undervoltage age) occurs. If the warning is ignored and operation is Required. continued, an alarm may occur. Command Warning 7 A command that cannot be executed in the current Automatically A.97A phase was sent. reset.\* (Phase Error) Data Clamp Out of The set command data was clamped to the minimum or Automatically A.97b Range maximum value of the allowable setting range. reset.\* A.9A0 Overtravel Overtravel was detected while the servo was ON. Required. Preventative Mainte-One of the consumable parts has reached the end of its A.9b0 Required. nance Warning service life.

Continued from previous page.

\* If using the commands for the MECHATROLINK-III standard servo profile, the warning will automatically be cleared after the correct command is received.

Note: 1. A warning code is not output unless you set Pn001 to n.1 (Output both alarm codes and warning codes).

2. Use Pn008 =  $n.\Box X \Box \Box$  (Warning Detection Selection) to control warning detection.

However, the following warnings are not affected by the setting of  $Pn008 = n.\Box X \Box \Box$  and other parameter settings are required in addition to  $Pn008 = n.\Box X \Box \Box$ .

Warning	Parameters That Must Be Set to Select Warning Detection
A.911	$Pn310 = n.\square\square\squareX$ (Vibration Detection Selection)
A.923	− (Not affected by the setting of Pn008 = $n.\Box X \Box \Box$ .)
A.930	Pn008 = n. DDDX (Low Battery Voltage Alarm/Warning Selection)
A.942	Pn423 = n. DDXD (Speed Ripple Compensation Information Disagreement Warning Detection Selection)

#### 5.1 FT40 Specification

5.1.5 List of Warnings

Continued from previous page.

Warning	Parameters That Must Be Set to Select Warning Detection
A.94A to A.960 and A.97A to A.97b	Pn800=n.
A.971	Pn008 = $n.\Box \Box X \Box$ (Function Selection for Undervoltage) (Not affected by the setting of Pn008 = $n.\Box X \Box \Box$ .)
A.9A0	$Pn00D = n.X \square \square \square$ (Overtravel Warning Detection Selection) (Not affected by the setting of $Pn008 = n.\square X \square \square$ .)
A.9b0	$Pn00F = n.\Box\Box\BoxX$ (Preventative Maintenance Warning Selection)

# 5.1.6 Troubleshooting Warnings

The causes of and corrections for the warnings are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Cir- cuit Cables.	Make sure that there are no faulty connections in the wiring for the Servomotor and encoder.	-
	A SERVOPACK gain is too low.	Check the SERVO- PACK gains.	Increase the servo gain, e.g., by using autotuning without a host reference.	*
<b>A.900:</b> Position Deviation Overflow	The acceleration of the position ref- erence is too high.	Reduce the reference acceleration and try operating the SERVO- PACK.	Reduce the acceleration of the position reference using a MECHATROLINK com- mand. Or, smooth the posi- tion reference acceleration by selecting the position reference filter (ACCFIL) using a MECHATROLINK command.	-
	The excessive position deviation alarm level (Pn520 $\times$ Pn51E/100) is too low for the operating condi- tions.	Check excessive posi- tion deviation alarm level (Pn520 × Pn51E/ 100) to see if it is set to an appropriate value.	Optimize the settings of Pn520 and Pn51E.	*
	A failure occurred in the SERVO- PACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.901: Position Deviation Overflow Alarm at Servo ON	The position devi- ation exceeded the parameter set- tings (Pn526 × Pn528/100) when the servo was turned ON.	-	Optimize the setting of Pn528 (Position Deviation Overflow Warning Level at Servo ON).	-

Continued from previous page.

Continued from previous pa				evious page.
Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are cor- rectly wired.	-
	Operation was performed that exceeded the overload protec- tion characteris- tics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
A.910: Overload (warning before an A.710 or A.720 alarm occurs)	An excessive load was applied during operation because the Ser- vomotor was not driven because of mechanical prob- lems.	Check the operation reference and motor speed.	Remove the mechanical problem.	-
	The overload warning level (Pn52B) is not suitable.	Check that the over- load warning level (Pn52B) is suitable.	Set a suitable overload warning level (Pn52B).	*
	A failure occurred in the SERVO- PACK.	-	The SERVOPACK may be faulty. Replace the SERVO- PACK.	-
	Abnormal vibra- tion was detected during motor operation.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the servo gain with custom tuning.	*
A.911: Vibration	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Iner- tia Ratio) to an appropriate value.	*
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibra- tion detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*

Continued on next page.

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environ- ment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installa- tion conditions.	*
	An overload alarm was reset by turn- ing OFF the power supply too many times.	Check the alarm dis- play to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.912: Internal Tempera- ture Warning 1 (Control Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative pro- cessing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenera- tive load ratio to check the regenerative pro- cessing capacity.	Reconsider the load and operating conditions.	_
	The SERVOPACK installation orien- tation is not cor- rect or there is insufficient space around the SER- VOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO- PACK.	-	The SERVOPACK may be faulty. Replace the SERVO- PACK.	-
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environ- ment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installa- tion conditions.	*
	An overload alarm was reset by turn- ing OFF the power supply too many times.	Check the alarm dis- play to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.913: Internal Tempera- ture Warning 2 (Power Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative pro- cessing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenera- tive load ratio to check the regenerative pro- cessing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orien- tation is not cor- rect or there is insufficient space around the SER- VOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO- PACK.	_	The SERVOPACK may be faulty. Replace the SERVO- PACK.	-

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply volt- age within the specified range.	-
A.920: Regenerative Over- load (warning before an A.320 alarm occurs)	There is insuffi- cient external regenerative resis- tance, regenera- tive resistor capacity, or SER- VOPACK capac- ity, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the Sig- maJunmaSize+ Capac- ity Selection Software or another means.	Change the regenerative resistance value, regenera- tive resistance capacity, or SERVOPACK capacity. Reconsider the operating conditions using the Sigma- JunmaSize+ Capacity Selection Software or other means.	_
	There was a con- tinuous regenera- tion state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an exter- nal force.	-
A.921: Dynamic Brake Overload (warning before an A.731 alarm occurs)	When the Servo- motor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power con- sumed by the DB resis- tor to see how frequently the DB is being used.	<ul> <li>Reconsider the following:</li> <li>Reduce the Servomotor command speed.</li> <li>Decrease the moment of inertia or mass.</li> <li>Reduce the frequency of stopping with the dynamic brake.</li> </ul>	_
	A failure occurred in the SERVO- PACK.	-	The SERVOPACK may be faulty. Replace the SERVO- PACK.	-
	The pressure feedback detec- tion value	Check the output from the pressure sensor amplifier.	Adjust the pressure sensor amplifier.	-
A.922: Pressure Feedback Overflow	exceeded the level set in Pn44D (Pressure Feed- back Overflow Detection Level) for the time set in Pn44E (Pressure Feedback Over- flow Detection Time).	in Pn44D e Feed- erflow n Level) me set in Pressure k Over-	Change the setting of Pn449 (Pressure Feedback Sensor Gain).	-
A.923: SERVOPACK Built- in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign mat- ter inside the SERVO- PACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SER- VOPACK may be faulty. Replace the SERVOPACK. Continued of	-

Continued on next page.

Continued from previous page.

Warning Number:	Possible Cause	Confirmation	Continued from pre	Reference
Warning Name				
A.930: Absolute Encoder Battery Error (The	The battery con- nection is faulty or a battery is not connected.	Check the battery con- nection.	Correct the battery connec- tion.	*
absolute encoder battery voltage was lower than the spec- ified level.) (Detected only when an abso-	The battery volt- age is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*
lute encoder is con- nected.)	A failure occurred in the SERVO- PACK.	-	The SERVOPACK may be faulty. Replace the SERVO- PACK.	-
	The speed ripple	-	Reset the speed ripple compensation value on the SigmaWin+.	*
A.942: Speed Ripple Com- pensation Informa- tion Disagreement	compensation information stored in the encoder does not agree with the speed ripple compensa-	-	Set Pn423 to n. D 1 (Do not detect A.942 alarms). However, changing the set- ting may increase the speed ripple.	*
	tion information stored in the SER- VOPACK.	-	Set Pn423 to n. <b>DD</b> (Disable speed ripple com- pensation). However, changing the setting may increase the speed ripple.	*
A.94A: Data Setting Warn- ing 1 (Parameter Number Error)	An invalid param- eter number was used.	Check the command that caused the warn-ing.	Use the correct parameter number.	*
A.94b: Data Setting Warn- ing 2 (Out of Range)	The set com- mand data was clamped to the minimum or maxi- mum value of the setting range.	Check the command that caused the warn-ing.	Set the parameter within the setting range.	*
A.94C: Data Setting Warn- ing 3 (Calculation Error)	The calculation result of the set- ting is not correct.	Check the command that caused the warn-ing.	Set the parameter within the setting range.	*
A.94d: Data Setting Warn- ing 4 (Parameter Size)	The parameter size set in the command is not correct.	Check the command that caused the warn-ing.	Set the correct parameter size.	*
<b>A.94E:</b> Data Setting Warn- ing 5 (Latch Mode Error)	A latch mode error was detected.	Check the command that caused the warn-ing.	Change the setting of Pn850 or the LT_MOD data for the LTMOD_ON com- mand sent by the host con- troller to an appropriate value. (The applies when using the MECHATROLINK-II-com- patible profile.)	*
A.95A: Command Warning 1 (Unsatisfied Com- mand Conditions)	The command conditions are not satisfied.	Check the command that caused the warn-ing.	Send the command after the command conditions are satisfied.	*
A.95b: Command Warning 2 (Unsupported Command)	An unsupported command was received.	Check the command that caused the warn-ing.	Do not send unsupported commands.	*

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.95d: Command Warning 4 (Command Inter- ference)	The command sending condi- tions for latch- related com- mands was not satisfied.	Check the command that caused the warn-ing.	Send the command after the command conditions are satisfied.	*
A.95E: Command Warning 5 (Subcommand Not Possible)	The command sending condi- tions for subcom- mands was not satisfied.	Check the command that caused the warn-ing.	Send the command after the conditions are satisfied.	*
A.95F: Command Warning 6 (Undefined Com- mand)	An undefined command was sent.	Check the command that caused the warn-ing.	Do not send undefined commands.	*
	The MECHA- TROLINK Com- munications Cable is not wired cor- rectly.	Check the wiring con- ditions.	Correct the MECHA- TROLINK communications cable wiring.	*
A.960: MECHATROLINK Communications Warning	A MECHA- TROLINK data reception error occurred due to noise.	Confirm the installation conditions.	<ul> <li>Implement the following countermeasures against noise.</li> <li>Check the MECHA-TROLINK Communications Cable and FG wiring and implement countermeasures to prevent noise from entering.</li> <li>Attach a ferrite core to the MECHATROLINK Communications Cable.</li> </ul>	-
	A failure occurred in the SERVO- PACK.	-	The SERVOPACK may be faulty. Replace the SERVO- PACK.	-
	For a 200-V SER- VOPACK, the AC power supply volt- age dropped below 140 V.	Measure the power supply voltage.	Set the power supply volt- age within the specified range.	-
	For a 100-V SER- VOPACK, the AC power supply volt- age dropped below 60 V.	Measure the power supply voltage.	Set the power supply volt- age within the specified range.	-
A.971: Undervoltage	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	-
	A momentary power interrup- tion occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momen- tary Power Interruption Hold Time), decrease the setting.	*
	The SERVOPACK fuse is blown out.	-	Replace the SERVOPACK and connect a reactor.	*
	A failure occurred in the SERVO- PACK.	-	The SERVOPACK may be faulty. Replace the SERVO- PACK.	-

Continued from previous page.

Continued from previous page				svious page.
Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
<b>A.97A:</b> Command Warning 7 (Phase Error)	A command that cannot be exe- cuted in the cur- rent phase was sent.	-	Send the command after the command conditions are satisfied.	-
<b>A.97b:</b> Data Clamp Out of Range	The set com- mand data was clamped to the minimum or maxi- mum value of the setting range.	_	Set the command data within the setting ranges.	-
A.9A0: Overtravel (Over- travel status was detected.)	Overtravel was detected while the servo was ON.	Check the status of the overtravel signals on the input signal moni- tor.	<ul> <li>Even if an overtravel signal is not shown by the input signal monitor, momentary overtravel may have been detected. Take the following precautions.</li> <li>Do not specify move- ments that would cause overtravel from the host controller.</li> <li>Check the wiring of the overtravel signals.</li> <li>Implement countermea- sures against noise.</li> </ul>	*
A.9b0: Preventative Mainte- nance Warning	One of the con- sumable parts has reached the end of its service life.	-	Replace the part. Contact your Yaskawa representa- tive for replacement.	*

\* Refer to the following manual for details.

 Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)

This section provides troubleshooting based on the operation and conditions of the Servomotor, including causes and corrections.

Turn OFF the Servo System before troubleshooting the items shown in bold lines in the table.

Problem	Possible Cause	Confirmation	Correction	Reference
	The control power supply is not turned ON.	Measure the voltage between control power supply terminals.	Correct the wiring so that the control power supply is turned ON.	-
	The main circuit power sup- ply is not turned ON.	Measure the voltage across the main circuit power input terminals.	Correct the wiring so that the main circuit power supply is turned ON.	-
	The I/O signal connector (CN1) pins are not wired cor- rectly or are disconnected.	Check the wiring condi- tion of the I/O signal con- nector (CN1) pins.	Correct the wiring of the I/O signal connector (CN1) pins.	*
	The wiring for the Servomo- tor Main Circuit Cables or Encoder Cable is discon- nected.	Check the wiring condi- tions.	Wire the cable cor- rectly.	-
	There is an overload on the Servomotor.	Operate the Servomotor with no load and check the load status.	Reduce the load or replace the Servomo- tor with a Servomotor with a larger capacity.	-
	The type of encoder that is being used does not agree with the setting of $Pn002 = n.\Box X \Box \Box$ (Encoder Usage).	Check the type of the encoder that is being used and the setting of Pn002 = $n.\Box X \Box \Box$ .	Set Pn002 = $n.\Box X \Box \Box$ according to the type of the encoder that is being used.	*
Servomotor	There is a mistake in the input signal allocations (Pn50A, Pn50B, Pn511, and Pn516).	Check the input signal allocations (Pn50A, Pn50B, Pn511, and Pn516).	Correctly allocate the input signals (Pn50A, Pn50B, Pn511, and Pn516).	*
Does Not Start	The SV_ON command was not sent.	Check the commands sent from the host con- troller.	Send the SV_ON com- mand from the host controller.	-
	The SENS_ON (Turn ON Sensor) command was not sent.	Check the commands sent from the host con- troller.	Send the commands to the SERVOPACK in the correct sequence.	-
	The P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal is still OFF.	Check the P-OT and N- OT signals.	Turn ON the P-OT and N-OT signals.	*
	The safety input signals (/HWBB1 or /HWBB2) were not turned ON.	Check the /HWBB1 and /HWBB2 input signals.	Turn ON the /HWBB1 and /HWBB2 input sig- nals. If you are not using the safety func- tion, connect the Safety Jumper Connector (provided as an acces- sory) to CN8.	*
	The FSTP (Forced Stop Input) signal is still OFF.	Check the FSTP signal.	<ul> <li>Turn ON the FSTP signal.</li> <li>If you will not use the function to force the motor to stop, set Pn516 = n. DDX (FSTP (Forced Stop Input) Signal Allocation) to disable the signal.</li> </ul>	*

#### 5.1 FT40 Specification

5.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page. Problem **Possible Cause** Confirmation Correction Reference A failure occurred in the SER-Replace the SERVO-PACK. VOPACK. Check the setting of Correct the parameter Pn080 =n. \* setting. ity Sensor Selection). • If you are using an Servomotor incremental linear Does Not encoder, send the The polarity detection was Start SV ON (Servo ON) not executed. Check the inputs to the command from the SV\_ON (Servo ON) comhost controller. mand. · If you are using an absolute linear encoder, execute polarity detection. There is a mistake in the Ser-Wire the Servomotor Check the wiring. vomotor wiring. correctly. There is a mistake in the wir-Wire the Serial Coning of the encoder or Serial Check the wiring. verter Unit correctly. Converter Unit. There is a mistake in the lin-Wire the connections Check the wiring. ear encoder wiring. correctly. The setting of Pn282 (Linear Servomotor Check the setting of Correct the setting of \* Encoder Scale Pitch) is not Moves Pn282. Pn282. correct. Instanta-Change the setting of neously.  $Pn08\bar{0} = n.\Box\Box X\Box$ and Then The count-up direction of the linear encoder does not (Motor Phase Stops match the forward direction Sequence Selection). Check the directions. of the Moving Coil in the Match the linear motor. encoder direction and motor direction. Check to see if electrical Correct the settings for Polarity detection was not angle 2 (electrical angle the polarity detectionperformed correctly. from polarity origin) at any related parameters. position is between ±10° The connector connections for the power line Servomotor (U, V, and W phases) and Tighten any loose ter-There is a faulty connection Speed Is the encoder or Serial minals or connectors in the Servomotor wiring. Converter Unit may be and correct the wiring. Unstable unstable. Check the wiring. A failure occurred in the SER-Replace the SERVO-VOPACK. PACK. Change the setting of The count-up direction of the  $Pn080 = n.\Box\Box X\Box$ linear encoder does not (Motor Phase Servomotor match the forward direction Check the directions. Sequence Selection). Moves withof the Moving Coil in the Match the linear out a Referencoder direction and motor. ence Input Servomotor direction. Check to see if electrical Correct the settings for Polarity detection was not angle 2 (electrical angle the polarity detectionperformed correctly. from polarity origin) at any related parameters. position is between  $\pm 10^{\circ}$ .

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Referenc
	The setting of Pn001 = $n.\Box\Box\BoxX$ (Motor Stopping Method for Servo OFF and Group 1 Alarms) is not suit- able.	Check the setting of Pn001 = $n.\Box\Box\BoxX$ .	Set Pn001 = n.□□□X correctly.	_
Dynamic Brake Does Not Operate	The dynamic brake resistor is disconnected.	Check the moment of inertia, motor speed, and dynamic brake frequency of use. If the moment of inertia, motor speed, or dynamic brake frequency of use is excessive, the dynamic brake resis- tance may be discon- nected.	Replace the SERVO- PACK. To prevent dis- connection, reduce the load.	-
	There was a failure in the dynamic brake drive circuit.	_	There is a defective component in the dynamic brake circuit. Replace the SERVO- PACK.	-
	The Servomotor vibrated considerably while perform- ing the tuning-less function with the default settings.	Check the waveform of the motor speed.	Reduce the load so that the moment of inertia ratio or mass ratio is within the allow- able value, or increase the load level or reduce the rigidity level in the tuning-less level set- tings.	*
	The machine mounting is not secure.	Check to see if there are any loose mounting screws.	Tighten the mounting screws.	-
	The machine mounting is not secure.	Check to see if there is misalignment in the coupling.	Align the coupling.	-
		Check to see if the coupling is balanced.	Balance the coupling.	-
	The bearings are defective.	Check for noise and vibration around the bearings.	Replace the Servomo- tor.	-
Abnormal Noise from Servomotor	There is a vibration source at the driven machine.	Check for any foreign matter, damage, or defor- mation in the machine's moving parts.	Consult with the machine manufacturer.	-
	Noise interference occurred because of incorrect I/O signal cable specifications.	Check the I/O signal cables to see if they sat- isfy specifications. Use shielded twisted-pair wire cables or screened twisted-pair cables with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	Noise interference occurred because an I/O signal cable is too long.	Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	_
	Noise interference occurred because of incorrect Encoder Cable specifications.	Make sure that the rotary or Linear Encoder Cable satisfies the specifica- tions. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with a conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-

Maintenance

5

Continued from previous page.

Continued from previous pa				1 0
Problem	Possible Cause	Confirmation	Correction	Reference
	Noise interference occurred because the Encoder Cable is too long.	Check the length of the Encoder Cable.	<ul> <li>Rotary Servomotors: The Encoder Cable length must be 50 m max.</li> <li>Linear Servomotors: Make sure that the Serial Converter Unit cable is no longer than 20 m and that the Linear Encoder Cable and the Sensor Cable are no longer than 15 m each.</li> </ul>	-
	Noise interference occurred because the Encoder Cable is damaged.	Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
	The Encoder Cable was sub- jected to excessive noise interference.	Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-cur- rent line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
Abnormal Noise from Servomotor	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
	There is a SERVOPACK pulse counting error due to noise.	Check to see if there is noise interference on the signal line from the encoder.	Implement counter- measures against noise for the encoder wiring.	-
	The encoder was subjected to excessive vibration or shock.	Check to see if vibration from the machine occurred. Check the Ser- vomotor installation (mounting surface preci- sion, securing state, and alignment). Check the linear encoder installation (mounting sur- face precision and secur- ing method).	Reduce machine vibra- tion. Improve the mounting state of the Servomotor or linear encoder.	-
	A failure occurred in the encoder.	-	Replace the Servomo- tor.	-
	A failure occurred in the Serial Converter Unit.	_	Replace the Serial Con- verter Unit.	-
	A failure occurred in the linear encoder.	_	Replace the linear encoder.	-

Continued from previous page.

_		-	Continued from pre	
Problem	Possible Cause	Confirmation	Correction	Reference
	The servo gains are not bal- anced.	Check to see if the servo gains have been cor- rectly tuned.	Perform autotuning without a host reference.	*
Servomotor Vibrates at Erequency	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appro- priate value.	-
	The setting of Pn102 (Posi- tion Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	-
Hz.	The setting of Pn101 (Speed Loop Integral Time Con- stant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	-
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.Check the setting of Pn103.Set Pn103 to a priate value.	Set Pn103 to an appropriate value.	-	
	The servo gains are not bal- anced.	Check to see if the servo gains have been cor- rectly tuned.	Perform autotuning without a host reference.	*
	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appro- priate value.	-
Large Motor Speed	The setting of Pn102 (Posi- tion Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	-
Overshoot on Starting and Stop- ping	The setting of Pn101 (Speed Loop Integral Time Con- stant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appro- priate value.	-
ping	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appro- priate value.	-
	The torque reference is saturated.	Check the waveform of the torque reference.	Use the mode switch.	-
	The force limits (Pn483 and Pn484) are set to the default values.	The default values of the force limits are Pn483 = 30% and Pn484 = 30%.	Set Pn483 and Pn484 to appropriate values.	

Problem	Possible Cause	Confirmation	Continued from pre	
	Noise interference occurred because of incorrect Encoder Cable specifications.	Confirmation Check the Encoder Cable to see if it satisfies speci- fications. Use a shielded twisted- pair wire cable or a screened twisted-pair cable with conductors of	Use cables that satisfy the specifications.	Reference
Absolute Encoder Position	Noise interference occurred because the Encoder Cable is too long.	at least 0.12 mm <sup>2</sup> . Check the length of the Encoder Cable.	<ul> <li>Rotary Servomotors: The Encoder Cable length must be 50 m max.</li> <li>Linear Servomotors: Make sure that the Serial Converter Unit cable is no longer than 20 m and that the Linear Encoder Cable and the Sensor Cable are no longer than 15 m each.</li> </ul>	-
Deviation Error (The position that was	Noise interference occurred because the Encoder Cable is damaged.	Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
saved in the host con- troller when the power was turned	The Encoder Cable was sub- ject to excessive noise inter- ference.	Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-cur- rent line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
OFF is dif- ferent from the posi- tion when the power	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
was next turned ON.)	There is a SERVOPACK pulse counting error due to noise.	Check to see if there is noise interference on the I/O signal line from the encoder or Serial Con- verter Unit.	Implement counter- measures against noise for the encoder or Serial Converter Unit wiring.	-
to ex	The encoder was subjected to excessive vibration or shock.	Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting sur- face precision, securing state, and alignment). Check the linear encoder installation (mounting sur- face precision and secur- ing method).	Reduce machine vibra- tion. Or, improve the mounting state of the Servomotor or linear encoder.	-
	A failure occurred in the encoder.	-	Replace the Servomo- tor or linear encoder.	-
	A failure occurred in the SER- VOPACK.	_	Replace the SERVO- PACK.	-

Continued from previous page.

Possible Cause	Confirmation	Continued from pre	
Possible Cause			Reference
	Check the error detec- tion section of the host controller.	Correct the error detec- tion section of the host controller.	-
	Check to see if the host controller is executing data parity checks.	Perform parity checks for the multiturn data or absolute encoder posi- tion data.	-
Host Controller Multiturn Data or Absolute Encoder Position Data Reading Error	Check for noise interfer- ence in the cable between the SERVO- PACK and the host con- troller.	Implement counter- measures against noise and then perform parity checks again for the multiturn data or abso- lute encoder position data.	_
The P-OT/N-OT (Forward Drive Prohibit or Reverse	Check the external power supply (+24 V) voltage for the input signals.	Correct the external power supply (+24 V) voltage for the input signals.	_
	Check the operating con- dition of the overtravel limit switches.	Make sure that the overtravel limit switches operate correctly.	-
Drive Prohibit) signal was input.	Check the wiring of the overtravel limit switches.	Correct the wiring of the overtravel limit switches.	*
	Check the settings of the overtravel input signal allocations (Pn50A/Pn50B).	Set the parameters to correct values.	*
	Check for fluctuation in the external power supply (+24 V) voltage for the input signals.	Eliminate fluctuation from the external power supply (+24 V) voltage for the input signals.	-
The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal mal-	Check to see if the opera- tion of the overtravel limit switches is unstable.	Stabilize the operating condition of the over- travel limit switches.	-
functioned.	Check the wiring of the overtravel limit switches (e.g., check for cable damage and loose screws).	Correct the wiring of the overtravel limit switches.	-
	Data or Absolute Encoder Position Data Reading Error The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal was input. The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit or Reverse Drive Prohibit or Reverse Drive Prohibit or Reverse Drive Prohibit or Severse	Host Controller Multiturn Data or Absolute Encoder Position Data Reading ErrorCheck the error detec- tion section of the host controller.Host Controller Multiturn Data or Absolute Encoder Position Data Reading ErrorCheck for noise interfer- ence in the cable between the SERVO- PACK and the host con- troller.The P-OT/N-OT (Forward Drive Prohibit) signal was input.Check the external power supply (+24 V) voltage for the input signals.Check the operating con- dition of the overtravel limit switches.Check the overtravel limit switches.The P-OT/N-OT (Forward Drive Prohibit) signal was input.Check the settings of the overtravel limit switches.Check the settings of the overtravel limit switches.Check the settings of the overtravel limit switches.The P-OT/N-OT (Forward Drive Prohibit) signal mal- functioned.Check to see if the opera- tion of the overtravel limit switches is unstable.Check to see if the opera- tion of the overtravel limit switchesCheck to see if the opera- tion of the overtravel limit switches is unstable.Check to see if the opera- tion of the overtravel limit switchesCheck the wiring of the overtravel limit switchesCheck to see if the opera- tion of the overtravel limit switches is unstable.Check the opera- tion of the overtravel limit switches is unstable.	Host Controller Multiturn Data or Absolute Encoder Position Data Reading ErrorCheck to see if the host controller is executing data parity checks.Correct the error detec- tion section of the host controller.Host Controller Multiturn Data or Absolute Encoder Position Data Reading ErrorCheck for noise interfer- ence in the cable between the SERVO- PACK and the host con- troller.Implement counter- measures against noise and then perform parity checks again for the multiturn data or abso- lute encoder position data.The P-OT/N-OT (Forward Drive Prohibit) signal was input.Check the external power supply (+24 V) voltage for the input signals.Correct the external power supply (+24 V) voltage for the input signals.Correct the external power supply (+24 V) voltage for the input signals.The P-OT/N-OT (Forward Drive Prohibit) signal was input.Check the operating of the overtravel limit switches.Correct the wiring of the overtravel limit switches.The P-OT/N-OT (Forward Drive Prohibit) signal mai- functioned.Check the viring of the overtravel limit switches.Correct the wiring of the overtravel limit switches.The P-OT/N-OT (Forward Drive Prohibit) signal mai- functioned.Check the viring of the overtravel limit switches.Eliminate fluctuation from the external power supply (+24 V) voltage for the input signals.The P-OT/N-OT (Forward Drive Prohibit) signal mai- functioned.Check the wiring of the overtravel limit switchesCorrect the wiring of the overtravel limit 

Continued on next page.

			Continued from pre	vious page.
Problem	Possible Cause	Confirmation	Correction	Reference
Overtravel Occurred Improper Stop Posi- tion for Overtravel (OT) Signal	There is a mistake in the allo- cation of the P-OT or N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) sig- nal in Pn50A = $n.X\square\square\square$ or Pn50B = $n.\square\square\squareX$ .	Check to see if the P-OT signal is allocated in Pn50A = $n.X\Box\Box\Box$ .	If another signal is allo- cated in Pn50A =n.X□□□, allocate the P-OT signal instead.	*
		Check to see if the N-OT signal is allocated in Pn50B = $n.\Box\Box\BoxX$ .	If another signal is allo- cated in Pn50B =n.□□□X, allocate the N-OT signal instead.	*
	The selection of the Servo- motor stopping method is not correct.	Check the servo OFF stopping method set in Pn001 = $n.\Box\BoxX$ or Pn001 = $n.\Box\BoxX\Box$ .	Select a Servomotor stopping method other than coasting to a stop.	*
		Check the torque control stopping method set in Pn001 = $n.\Box\BoxX$ or Pn001 = $n.\Box\BoxX\Box$ .	Select a Servomotor stopping method other than coasting to a stop.	*
	The limit switch position and dog length are not appropriate.	-	Install the limit switch at the appropriate position.	-
	The overtravel limit switch position is too close for the coasting distance.	-	Install the overtravel limit switch at the appropriate position.	-
Position Deviation (without Alarm)	Noise interference occurred because of incorrect Encoder Cable specifications.	Check the Encoder Cable to see if it satisfies speci- fications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Check the length of the Encoder Cable.	<ul> <li>Rotary Servomotors: The Encoder Cable length must be 50 m max.</li> <li>Linear Servomotors: Make sure that the Serial Converter Unit cable is no longer than 20 m and that the Linear Encoder Cable and the Sensor Cable are no longer than 15 m each.</li> </ul>	-
	Noise interference occurred because the Encoder Cable is damaged.	Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	_
	The Encoder Cable was sub- jected to excessive noise interference.	Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-cur- rent line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
	There is a SERVOPACK pulse counting error due to noise.	Check to see if there is noise interference on the I/O signal line from the encoder or Serial Con- verter Unit.	Implement counter- measures against noise for the encoder wiring or Serial Converter Unit wiring.	-
	1			

#### 5.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	
Problem	Possible Cause		Correction	Reference
	The encoder was subjected to excessive vibration or shock.	Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting sur- face precision, securing state, and alignment). Check the linear encoder installation (mounting sur- face precision and secur- ing method).	Reduce machine vibra- tion. Or, improve the mounting state of the Servomotor or linear encoder.	-
Position	The coupling between the machine and Servomotor is not suitable.	Check to see if position offset occurs at the cou- pling between machine and Servomotor.	Correctly secure the coupling between the machine and Servomotor.	-
Deviation (without Alarm)	Noise interference occurred because of incorrect I/O signal cable specifications.	Check the I/O signal cables to see if they sat- isfy specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	Noise interference occurred because an I/O signal cable is too long.	Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	-
	An encoder fault occurred. (The pulse count does not change.)	_	Replace the Servomo- tor or linear encoder.	-
	A failure occurred in the SER- VOPACK.	-	Replace the SERVO- PACK.	-
	The surrounding air tempera- ture is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surround- ing air temperature to 40°C or less.	-
	The surface of the Servomo- tor is dirty.	Visually check the surface for dirt.	Clean dirt, dust, and oil from the surface.	-
Servomotor Overheated	There is an overload on the Servomotor.	Check the load status with a monitor.	If the Servomotor is overloaded, reduce the load or replace the Servo Drive with a SERVOPACK and Ser- vomotor with larger capacities.	-
	Polarity detection was not performed correctly.	Check to see if electrical angle 2 (electrical angle from polarity origin) at any position is between ±10°.	Correct the settings for the polarity detection- related parameters.	_

\* Refer to the following manual for details.

 Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)

5.2.1 Alarm Displays

# 5.2 FT41 Specification

## 5.2.1 Alarm Displays

If an error occurs in the SERVOPACK, an alarm number will be displayed on the panel display. If there is an alarm, the display will change in the following order.

Example: Alarm A.E60

Status Indications	→ Not lit. → <b>Я.</b> —	→ Not lit.— <b>→                                    </b>	→ Not lit. → <b>6</b>	→ Not lit.→	) Not lit.

# 5.2.2 List of Alarms

The list of alarms gives the alarm name, alarm meaning, alarm stopping method, and alarm reset possibility in order of the alarm numbers.

## Servomotor Stopping Method for Alarms

Refer to the following manual for information on the stopping method for alarms. Ω Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)

# Alarm Reset Possibility

Yes: You can use an alarm reset to clear the alarm. However, this assumes that the cause of the alarm has been removed. No: You cannot clear the alarm.

# List of Alarms

Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.020	Parameter Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No
A.021	Parameter Format Error	There is an error in the parameter data format in the SERVOPACK.	Gr.1	No
A.022	System Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No
A.024	System Alarm	An internal program error occurred in the SER- VOPACK.	Gr.1	No
A.025	System Alarm	An internal program error occurred in the SER- VOPACK.	Gr.1	No
A.030	Main Circuit Detector Error	There is an error in the detection data for the main circuit.	Gr.1	Yes
A.040	Parameter Setting Error	A parameter setting is outside of the setting range.	Gr.1	No
A.041	Encoder Output Pulse Setting Error	The setting of Pn212 (Number of Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Gr.1	No

#### 5.2 FT41 Specification

5.2.2 List of Alarms

#### Continued from previous page.

Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.042	Parameter Combination Error	The combination of some parameters exceeds the setting range.	Gr.1	No
A.044	Semi-Closed/Fully-Closed Loop Control Parameter Setting Error	The settings of the Option Module and Pn002 = n.XDDD (External Encoder Usage) do not match.	Gr.1	No
A.04A	Parameter Setting Error 2	There is an error in the bank members or bank data settings.	Gr.1	No
A.050	Combination Error	The capacities of the SERVOPACK and Servomo- tor do not match.	Gr.1	Yes
A.051	Unsupported Device Alarm	An unsupported device was connected.	Gr.1	No
A.070	Motor Type Change Detected	The connected motor is a different type of motor from the previously connected motor.	Gr.1	No
A.080	Linear Encoder Pitch Setting Error	The setting of Pn282 (Linear Encoder Scale Pitch) has not been changed from the default setting.	Gr.1	No
A.0b0	Invalid Servo ON Com- mand Alarm	The SV_ON (Servo ON) command was sent from the host controller after a utility function that turns ON the Servomotor was executed.	Gr.1	Yes
A.100	Overcurrent Detected	An overcurrent flowed through the power transis- tor or the heat sink overheated.	Gr.1	No
A.101	Motor Overcurrent Detected	The current to the motor exceeded the allowable current.	Gr.1	No
A.300	Regeneration Error	There is an error related to regeneration.	Gr.1	Yes
A.320	Regenerative Overload	A regenerative overload occurred.	Gr.2	Yes
A.330	Main Circuit Power Supply Wiring Error	<ul> <li>The AC power supply input setting or DC power supply input setting is not correct.</li> <li>The power supply wiring is not correct.</li> </ul>	Gr.1	Yes
A.400	Overvoltage	The main circuit DC voltage is too high.	Gr.1	Yes
A.410	Undervoltage	The main circuit DC voltage is too low.	Gr.2	Yes
A.510	Overspeed	The motor exceeded the maximum speed.	Gr.1	Yes
A.511	Encoder Output Pulse Overspeed	<ul> <li>The pulse output speed for the setting of Pn212 (Number of Encoder Output Pulses) was exceeded. (This applies to Rotary Servomo- tors.)</li> <li>The motor speed upper limit for the setting of Pn281 (Encoder Output Resolution) was exceeded. (This applies to Linear Servomotors.)</li> </ul>	Gr.1	Yes
A.520	Vibration Alarm	Abnormal oscillation was detected in the motor speed.	Gr.1	Yes
A.521	Autotuning Alarm	Vibration was detected during autotuning for the tuning-less function.	Gr.1	Yes
A.550	Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum motor speed.	Gr.1	Yes
A.710	Instantaneous Overload	The Servomotor was operating for several sec- onds to several tens of seconds under a torque that largely exceeded the rating.	Gr.2	Yes
A.720	Continuous Overload	The Servomotor was operating continuously under a torque that exceeded the rating.	Gr.1	Yes
A.730 A.731	Dynamic Brake Overload	When the dynamic brake was applied, the rota- tional or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Gr.1	Yes
A.740	Inrush Current Limiting Resistor Overload	The main circuit power supply was frequently turned ON and OFF.	Gr.1	Yes

5

5.2.2 List of Alarms

Servo-Alarm motor Alarm Reset Alarm Name Alarm Meaning Stop-Number Possiping ble? Method Internal Temperature Error The surrounding temperature of the control PCB A.7A1 1 (Control Board Tempera-Gr.2 Yes is abnormal. ture Error) Internal Temperature Error The surrounding temperature of the power PCB A.7A2 2 (Power Board Tempera-Gr.2 Yes is abnormal. ture Error) Internal Temperature Sen-An error occurred in the temperature sensor cir-A.7A3 Gr.2 No sor Error cuit. SERVOPACK Built-in Fan A.7Ab The fan inside the SERVOPACK stopped. Gr.1 Yes Stopped The power supplies to the encoder all failed and A.810 Encoder Backup Alarm Gr 1 No the position data was lost. There is an error in the checksum results for A.820 Encoder Checksum Alarm Gr.1 No encoder memory. The battery voltage was lower than the specified A.830 **Encoder Battery Alarm** level after the control power supply was turned Gr.1 Yes ON. A.840 Encoder Data Alarm There is an internal data error in the encoder. Gr.1 No The encoder was operating at high speed when A.850 **Encoder Overspeed** Gr.1 No the power was turned ON. A.860 **Encoder Overheated** The internal temperature of encoder is too high. Gr.1 No A.861 Motor Overheated The internal temperature of motor is too high. Gr.1 No A.890 Encoder Scale Error Gr.1 A failure occurred in the linear encoder. No Encoder Module Error A.891 An error occurred in the linear encoder. Gr.1 No A.8A0 External Encoder Error An error occurred in the external encoder. Gr.1 Yes External Encoder Module A.8A1 An error occurred in the Serial Converter Unit. Gr 1 Yes Frror External Incremental A.8A2 An error occurred in the external encoder. Gr.1 Yes Encoder Sensor Error External Absolute Encoder An error occurred in the position data of the A.8A3 Gr.1 Yes Position Error external encoder. External Encoder Over-An overspeed error occurred in the external A.8A5 Gr.1 Yes encoder. speed External Encoder Over-An overheating error occurred in the external A.8A6 Gr 1 Yes heated encoder. A.b33 Current Detection Error 3 An error occurred in the current detection circuit. Gr.1 No MECHATROLINK Commu-ASIC error 1 occurred in MECHATROLINK com-A.b6A Gr.1 No nications ASIC Error 1 munications. MECHATROLINK Commu-ASIC error 2 occurred in MECHATROLINK com-A.b6b Gr.2 No munications. nications ASIC Error 2 Internal program error 0 occurred in the SERVO-A.bF0 Gr.1 System Alarm 0 No PACK. Internal program error 1 occurred in the SERVO-A.bF1 Gr.1 No System Alarm 1 PACK. Internal program error 2 occurred in the SERVO-A.bF2 Gr.1 System Alarm 2 No PACK. Internal program error 3 occurred in the SERVO-A.bF3 System Alarm 3 Gr.1 No PACK. Internal program error 4 occurred in the SERVO-A.bF4 System Alarm 4 Gr.1 No PACK. Internal program error 5 occurred in the SERVO-A.bF5 System Alarm 5 Gr.1 No PACK.

Continued on next page.

Continued from previous page.

#### 5.2 FT41 Specification

5.2.2 List of Alarms

Continued	from	previous	page.
-----------	------	----------	-------

Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.bF6	System Alarm 6	Internal program error 6 occurred in the SERVO- PACK.	Gr.1	No
A.bF7	System Alarm 7	Internal program error 7 occurred in the SERVO- PACK.	Gr.1	No
A.bF8	System Alarm 8	Internal program error 8 occurred in the SERVO- PACK.	Gr.1	No
A.C10	Servomotor Out of Control	The Servomotor ran out of control.	Gr.1	Yes
A.C20	Phase Detection Error	The detection of the phase is not correct.	Gr.1	No
A.C21	Polarity Sensor Error	An error occurred in the polarity sensor.	Gr.1	No
A.C22	Phase Information Disagreement	The phase information does not match.	Gr.1	No
A.C50	Polarity Detection Failure	The polarity detection failed.	Gr.1	No
A.C51	Overtravel Detected during Polarity Detection	The overtravel signal was detected during polarity detection.	Gr.1	Yes
A.C52	Polarity Detection Not Completed	The servo was turned ON before the polarity was detected.	Gr.1	Yes
A.C53	Out of Range of Motion for Polarity Detection	The travel distance exceeded the setting of Pn48E (Polarity Detection Range).	Gr.1	No
A.C54	Polarity Detection Failure 2	The polarity detection failed.	Gr.1	No
A.C80	Encoder Clear Error or Multiturn Limit Setting Error	The multiturn data for the absolute encoder was not correctly cleared or set.	Gr.1	No
A.C90	Encoder Communications Error	Communications between the encoder and SER- VOPACK is not possible.	Gr.1	No
A.C91	Encoder Communications Position Data Acceleration Rate Error	An error occurred in calculating the position data of the encoder.	Gr.1	No
A.C92	Encoder Communications Timer Error	An error occurred in the communications timer between the encoder and SERVOPACK.	Gr.1	No
A.CA0	Encoder Parameter Error	The parameters in the encoder are corrupted.	Gr.1	No
A.Cb0	Encoder Echoback Error	The contents of communications with the encoder are incorrect.	Gr.1	No
A.CC0	Multiturn Limit Disagree- ment	Different multiturn limits have been set in the encoder and the SERVOPACK.	Gr.1	No
A.CF1	Reception Failed Error in Feedback Option Module Communications	Receiving data from the Feedback Option Mod- ule failed.	Gr.1	No
A.CF2	Timer Stopped Error in Feedback Option Module Communications	An error occurred in the timer for communica- tions with the Feedback Option Module.	Gr.1	No
A.d00	Position Deviation Over- flow	The setting of Pn520 (Position Deviation Overflow Alarm Level) was exceeded by the position deviation while the servo was ON.	Gr.1	Yes
A.d01	Position Deviation Over- flow Alarm at Servo ON	The servo was turned ON after the position devi- ation exceeded the setting of Pn526 (Position Deviation Overflow Alarm Level at Servo ON) while the servo was OFF.	Gr.1	Yes

Continued on next page.

5.2.2 List of Alarms

Continued from previous page. Servo-Alarm motor Alarm Reset Alarm Name Alarm Meaning Stop-Number Possiping ble? Method If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Position Deviation Over-Limit Level at Servo ON) limits the speed when flow Alarm for Speed Limit A.d02 the servo is turned ON. This alarm occurs if a Gr.2 Yes position reference is input and the setting of at Servo ON Pn520 (Position Deviation Overflow Alarm Level) is exceeded before the limit is cleared. The difference between the pressure feedback Pressure Feedback Loop reference and the feedback detection value A.d0A Gr.1 Yes **Deviation Overflow** exceeded Pn447 (Pressure Feedback Loop Deviation Overflow Level). There was too much position deviation between Motor-Load Position Devi-A.d10 the motor and load during fully-closed loop con-Gr.2 Yes ation Overflow trol. The position feedback data exceeded A.d30 Position Data Overflow Gr.1 No ±1,879,048,192. A synchronization error occurred during MECHA-MECHATROLINK Internal A.E02 TROLINK communications with the SERVO-Gr.1 Yes Synchronization Error 1 PACK. **MECHATROLINK Trans-**The setting of the MECHATROLINK communica-A.E40 mission Cycle Setting Gr.2 Yes tions transmission cycle is not correct. Error MECHATROLINK Commu-The setting of the MECHATROLINK communica-A.F41 nications Data Size Set-Gr.2 Yes tions data size is not correct. ting Error **MECHATROLINK Station** The setting of the MECHATROLINK station A.E42 Gr.2 No Address Setting Error address is not correct. **MECHATROLINK Syn-**A synchronization error occurred during MECHA-A.E50\* Gr.2 Yes TROLINK communications. chronization Error MECHATROLINK Syn-Synchronization failed during MECHATROLINK Gr.2 A.E51 Yes communications. chronization Failed Reception Error in Communications errors occurred continuously A.E60\* MECHATROLINK Commu-Gr.2 Yes during MECHATROLINK communications. nications Synchronization Interval An error occurred in the transmission cycle A.E61 Error in MECHATROLINK Gr.2 Yes during MECHATROLINK communications. Transmission Cycle MECHATROLINK Syn-Synchronization frames were continuously not A.E63 chronization Frame Not received during MECHATROLINK communica-Gr.2 Yes Received tions. Safety Option Module A.E71 Detection of the Safety Option Module failed. Gr.1 No **Detection Failure** Feedback Option Module A.E72 Detection of the Feedback Option Module failed. Gr.1 No **Detection Failure** Unsupported Safety An unsupported Safety Option Module was con-A.E74 Gr.1 No **Option Module** nected. Safety Function Signal An error occurred in the input timing of the safety A.Eb1 Gr. 1 No Input Timing Error function signal. A.EC8 Gate Drive Error 1 An error occurred in the gate drive circuit. Gr.1 No A.EC9 Gate Drive Error 2 An error occurred in the gate drive circuit. Gr.1 No Command Execution Tim-A timeout error occurred for a MECHATROLINK A.Ed1 Gr.2 Yes command. eout

5.2.2 List of Alarms

#### Continued from previous page.

	Continued from previous page.				
Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?	
A.F10	Power Supply Line Open Phase	The voltage was low for more than one second for phase R, S, or T when the main power supply was ON.	Gr.2	Yes	
A.F50	Servomotor Main Circuit Cable Disconnection	The Servomotor did not operate or power was not supplied to the Servomotor even though the SV_ON (Servo ON) command was input when the Servomotor was ready to receive it.	Gr.1	Yes	
FL-1*					
FL-2*				No	
FL-3*	Sustam Alarm	An internal program error occurred in the SER-			
FL-4*	System Alarm	VOPACK.	_	No	
FL-5*					
FL-6*					
CPF00	Digital Operator Commu- nications Error 1	Communications were not possible between the		No	
CPF01	Digital Operator Commu- nications Error 2	Digital Operator (model: JUSP-OP05A-1-E) and the SERVOPACK (e.g., a CPU error occurred).	_	INO	

\* These alarms are not stored in the alarm history. They are only displayed on the panel display.

Note: The A.Eb0, A.Eb2 to A.Eb9, and A.EC0 to A.EC2 alarms can occur when a Safety Module is connected.

Refer to the following manual for details.

 AC Servo Drive Σ-V-Series/Σ-V-Series for Large-Capacity Models/Σ-7-Series User's Manual Safety Module (Manual No.: SIEP C720829 06)

# 5.2.3 Troubleshooting Alarms

The causes of and corrections for the alarms are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	Set the power supply volt- age within the specified range, and initialize the parameter settings.	*1
	The power supply was shut OFF while writing parameter set- tings.	Check the timing of shutting OFF the power supply.	Initialize the parameter settings and then set the parameters again.	*1
<b>A.020:</b> Parameter	The number of times that parameters were written exceeded the limit.	Check to see if the parameters were fre- quently changed from the host controller.	The SERVOPACK may be faulty. Replace the SER- VOPACK. Reconsider the method for writing the parame- ters.	-
Checksum Error (There is an error in the parameter data in the SER- VOPACK.)	A malfunction was caused by noise from the AC power supply, ground, static elec- tricity, or other source.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, noise may be the cause.	Implement countermea- sures against noise.	*1
	Gas, water drops, or cutting oil entered the SERVOPACK and caused failure of the internal components.	Check the installation conditions.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
A.021: Parameter For- mat Error (There is an error in the parameter data format in the	The software version of the SERVOPACK that caused the alarm is older than the soft- ware version of the parameters specified to write.	Read the product infor- mation to see if the soft- ware versions are the same. If they are differ- ent, it could be the cause of the alarm.	Write the parameters from another SERVOPACK with the same model and the same software version, and then turn the power OFF and ON again.	*1
data format in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	_
A.022: System Check- sum Error (There is an error in the parameter data in the SER- VOPACK.)	The power supply was shut OFF while setting a utility func- tion.	Check the timing of shutting OFF the power supply.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-

Continued from previous page.

Continued from previous page.				
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.024: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
A.025: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
A.030: Main Circuit Detector Error	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
	The SERVOPACK and Servomotor capaci- ties do not match each other.	Check the combination of the SERVOPACK and Servomotor capacities.	Select a proper combina- tion of SERVOPACK and Servomotor capacities.	*1
<b>A.040:</b> Parameter Set-	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
ting Error (A parameter set- ting is outside of the setting	A parameter setting is outside of the setting range.	Check the setting ranges of the parame- ters that have been changed.	Set the parameters to values within the setting ranges.	-
range.)	The electronic gear ratio is outside of the setting range.	Check the electronic gear ratio. The ratio must be within the fol- lowing range: 0.001 < (Pn20E/Pn210) < 64,000.	Set the electronic gear ratio in the following range: 0.001 < (Pn20E/ Pn210) < 64,000.	*1
A.041: Encoder Output Pulse Setting Error	The setting of Pn212 (Number of Encoder Output Pulses) or Pn281 (Encoder Out- put Resolution) is out- side of the setting range or does not sat- isfy the setting condi- tions.	Check the setting of Pn212 or Pn281.	Set Pn212 or Pn281 to an appropriate value.	*1

Continued from previous page.

Alarm Number:	Possible Cause	Confirmation	Correction	Reference
Alarm Name		Committation	Conection	TEIEIEIICE
	The speed of program jogging went below the setting range when the electronic gear ratio (Pn20E/ Pn210) or the Servo- motor was changed.	Check to see if the detection conditions <sup>*2</sup> are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
A.042: Parameter Com- bination Error	The speed of program jogging went below the setting range when Pn533 or Pn585 (Program Jogging Movement Speed) was changed.	Check to see if the detection conditions <sup>*2</sup> are satisfied.	Increase the setting of Pn533 or Pn585.	*1
	The movement speed of advanced autotun- ing went below the setting range when the electronic gear ratio (Pn20E/ Pn210) or the Servomotor was changed.	Check to see if the detection conditions <sup>*3</sup> are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
A.044: Semi-Closed/ Fully-Closed Loop Control Parameter Setting Error	The setting of the Fully-Closed Module does not match the setting of Pn002 = n.X□□□ (External Encoder Usage).	Check the setting of Pn002 = $n.X\square\square\square$ .	Make sure that the setting of the Fully-closed Module agrees with the setting of Pn002 = $n.X\square\square\square$ .	*1
A.04A: Parameter Set-	For 4-byte parameter bank members, there are two consecutive members with nothing registered.	-	Change the number of bytes for bank members to an appropriate value.	-
ting Error 2	The total amount of bank data exceeds 64 (Pn900 × Pn901 > 64).	_	Reduce the total amount of bank data to 64 or less.	-
A.050: Combination Error (The capacities of	The SERVOPACK and Servomotor capaci- ties do not match each other.	Check the capacities to see if they satisfy the following condition: $1/4 \le \frac{\text{Servomotor capacity}}{\text{SERVOPACK capacity}} \le 4$	Select a proper combina- tion of the SERVOPACK and Servomotor capaci- ties.	*1
the SERVOPACK and Servomotor do not match.)	A failure occurred in the encoder.	Replace the encoder and check to see if the alarm still occurs.	Replace the Servomotor or encoder.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
A.051:	The motor parameter file was not written to the linear encoder. (This applies only when not using a Serial Converter Unit.)	Check to see if the motor parameter file was written to the lin- ear encoder.	Write the motor parame- ter file to the linear encoder.	*1
Unsupported Device Alarm	An unsupported Serial Converter Unit or encoder (e.g., an external encoder) is connected to the SERVOPACK.	Check the product combination specifica-tions.	Change to a correct com- bination of models.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.070: Motor Type Change Detected (The connected motor is a differ- ent type of motor from the previ- ously connected motor.)	A Rotary Servomotor was removed and a Linear Servomotor was connected.	_	Set the parameters for a Linear Servomotor and reset the motor type alarm. Then, turn the power supply to the SER- VOPACK OFF and ON again.	*1
	A Linear Servomotor was removed and a Rotary Servomotor was connected.	_	Set the parameters for a Rotary Servomotor and reset the motor type alarm. Then, turn the power supply to the SER- VOPACK OFF and ON again.	*1
A.080: Linear Encoder Pitch Setting Error	The setting of Pn282 (Linear Encoder Scale Pitch) has not been changed from the default setting.	Check the setting of Pn282.	Correct the setting of Pn282.	*1
<b>A.0b0:</b> Invalid Servo ON Command Alarm	The SV_ON (Servo ON) command was sent from the host controller after a util- ity function that turns ON the Servomotor was executed.	-	Turn the power supply to the SERVOPACK OFF and ON again. Or, execute a software reset.	*1

Continued on next page.

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	*1
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, and W.	The cable may be short- circuited. Replace the cable.	*1
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servo- motor.	*1
A.100: Overcurrent	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER- VOPACK, or between the ground and termi- nals U, V, or W.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	*1
Detected (An overcurrent flowed through the power tran-	The regenerative resistor is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	*1
sistor or the heat sink overheated.)	The dynamic brake (DB, emergency stop executed from the SERVOPACK) was frequently activated, or a DB overload alarm occurred.	Check the power con- sumed by the DB resis- tor to see how frequently the DB is being used. Or, check the alarm display to see if a DB overload alarm (A.730 or A.731) has occurred.	Change the SERVOPACK model, operating meth- ods, or the mechanisms so that the dynamic brake does not need to be used so frequently.	_
	The regenerative pro- cessing capacity was exceeded.	Check the regenerative load ratio in the Sig- maWin+ Motion Monitor Tab Page to see how frequently the regenera- tive resistor is being used.	Recheck the operating conditions and load.	*4
	The SERVOPACK regenerative resis- tance is too small.	Check the regenerative load ratio in the Sig- maWin+ Motion Monitor Tab Page to see how frequently the regenera- tive resistor is being used.	Change the regenerative resistance to a value larger than the SERVO- PACK minimum allowable resistance.	*4

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	A heavy load was applied while the Ser- vomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
A.100: Overcurrent Detected (An overcurrent flowed through the power tran- sistor or the heat	A malfunction was caused by noise.	Improve the noise envi- ronment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermea- sures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO- PACK's main circuit wire size.	_
sink overheated.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	*1
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across cable phases U, V, and W, or between the ground and cable phases U, V, and W.	The cable may be short- circuited. Replace the cable.	*1
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servo- motor.	*1
A.101: Motor Overcur- rent Detected (The current to the motor exceeded the	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER- VOPACK, or between the ground and termi- nals U, V, or W.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	*1
allowable cur- rent.)	A heavy load was applied while the Ser- vomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
	A malfunction was caused by noise.	Improve the noise envi- ronment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermea- sures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO- PACK's main circuit wire size.	_
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued on next page.

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to one of the following SERVO- PACKs: SGD7S-R70A, -R90A, -1R6A, -2R8A, -R70F, -R90F, -2R1F, or -2R8F.	Check it see if an Exter- nal Regenerative Resis- tor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or set Pn600 (Regenerative Resistor Capacity) to 0 (setting unit: ×10 W) if no Regenerative Resistor is required.	*1
	An External Regener- ative Resistor is not connected to one of the following SERVO- PACKs: SGD7S- 470A, -550A, -590A, or -780A.	Check to see if an External Regenerative Resistor or a Regenera- tive Resistor Unit is con- nected and check the setting of Pn600.	Connect an External Regenerative Resistor and set Pn600 to an appropri- ate value, or connect a Regenerative Resistor Unit and set Pn600 to 0.	*1
A.300: Regeneration Error	The jumper between the regenerative resis- tor terminals (B2 and B3) was removed from one of the fol- lowing SERVO- PACKs: SGD7S- 3R8A, -5R5A, -7R6A, -120A, -180A, -200A, or -330A.	Check to see if the jumper is connected between power supply terminals B2 and B3.	Correctly connect a jumper.	*]
	The External Regener- ative Resistor is not wired correctly, or was removed or discon- nected.	Check the wiring of the External Regenerative Resistor.	Correct the wiring of the External Regenerative Resistor.	*1
	A failure occurred in the SERVOPACK.	-	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVO- PACK may be faulty. Replace the SERVO- PACK.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply volt- age within the specified range.	-
	The external regener- ative resistance value or regenerative resis- tor capacity is too small, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the Sig- maJunmaSize+ Capac- ity Selection Software or other means.	Change the regenerative resistance value or capac- ity. Reconsider the operating conditions using the Sig- maJunmaSize+ Capacity Selection Software or other means.	*4
	There was a continu- ous regeneration state because a negative load was continu- ously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	_
A.320: Regenerative Overload	The setting of Pn600 (Regenerative Resis- tor Capacity) is smaller than the capacity of the Exter- nal Regenerative Resistor.	Check it see if a Regen- erative Resistor is con- nected and check the setting of Pn600.	Correct the setting of Pn600.	*1
	The setting of Pn603 (Regenerative Resis- tance) is smaller than the capacity of the External Regenerative Resistor.	Check to see if a Regenerative Resistor is connected and check the setting of Pn603.	Correct the setting of Pn603.	*1
	The external regener- ative resistance is too high.	Check the regenerative resistance.	Change the regenerative resistance to a correct value or use an External Regenerative Resistor of an appropriate capacity.	*4
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER- VOPACK.	_

Continued on next page.

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The regenerative resistor was discon- nected when the SERVOPACK power supply voltage was high.	Measure the resistance of the regenerative resistor using a measur- ing instrument.	If you are using the regen- erative resistor built into the SERVOPACK, replace the SERVOPACK. If you are using an Exter- nal Regenerative Resis- tor, replace the External Regenerative Resistor.	-
4 000	DC power was sup- plied when an AC power supply input was specified in the settings.	Check the power sup- ply to see if it is a DC power supply.	Correct the power supply setting to match the actual power supply.	*1
A.330: Main Circuit Power Supply Wiring Error (Detected when the main circuit power supply is turned ON.) AC pow was setti Pn6 Res not Exte Res nect follo PAC SGE -1Re	AC power was sup- plied when a DC power supply input was specified in the settings.	Check the power sup- ply to see if it is an AC power supply.	Correct the power supply setting to match the actual power supply.	*1
	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to one of the following SERVO- PACKs: SGD7S-R70A, -R90A, -1R6A, -2R8A, -R70F, -R90F, -2R1F, or -2R8F.	Check it see if an Exter- nal Regenerative Resis- tor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or if an External Regenera- tive Resistor is not required, set Pn600 to 0.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-

Continued from previous page.

Continued from previous p				evious page.
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the AC/DC power supply voltage within the specified range.	_
	The power supply is not stable or was influenced by a light- ning surge.	Measure the power supply voltage.	Improve the power sup- ply conditions, install a surge absorber, and then turn the power supply OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SER- VOPACK.	_
A.400: Overvoltage (Detected in the	The voltage for AC power supply was too high during accelera- tion or deceleration.	Check the power sup- ply voltage and the speed and torque during operation.	Set the AC power supply voltage within the speci- fied range.	-
main circuit power supply section of the SERVOPACK.)	The external regener- ative resistance is too high for the operating conditions.	Check the operating conditions and the regenerative resistance.	Select a regenerative resistance value that is appropriate for the oper- ating conditions and load.	*4
	The moment of inertia ratio or mass ratio exceeded the allow-able value.	Check to see if the moment of inertia ratio or mass ratio is within the allowable range.	Increase the deceleration time, or reduce the load.	_
	A failure occurred in the SERVOPACK.	_	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVO- PACK may be faulty. Replace the SERVO- PACK.	_
	The power supply voltage went below the specified range.	Measure the power supply voltage.	Set the power supply volt- age within the specified range.	_
	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	-
A.410: Undervoltage (Detected in the main circuit power supply section of the SERVOPACK.)	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momen- tary Power Interruption Hold Time), decrease the setting.	*1
	The SERVOPACK fuse is blown out.	_	Replace the SERVO- PACK and connect a reactor to the DC reactor terminals ( $\ominus$ 1 and $\ominus$ 2) on the SERVOPACK.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The order of phases U, V, and W in the motor wiring is not correct.	Check the wiring of the Servomotor.	Make sure that the Servo- motor is correctly wired.	-
A.510: Overspeed	A reference value that exceeded the over- speed detection level was input.	Check the input refer- ence.	Reduce the reference value. Or, adjust the gain.	
(The motor exceeded the maximum speed.)	The motor exceeded the maximum speed.	Check the waveform of the motor speed.	Reduce the speed refer- ence input gain and adjust the servo gain. Or, reconsider the operating conditions.	_
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
A.511:	The encoder output pulse frequency exceeded the limit.	Check the encoder out- put pulse setting.	Decrease the setting of Pn212 (Number of Encoder Output Pulses) or Pn281 (Encoder Out- put Resolution).	*1
Encoder Output Pulse Overspeed	The encoder output pulse frequency exceeded the limit because the motor speed was too high.	Check the encoder out- put pulse setting and the motor speed.	Reduce the motor speed.	-
	Abnormal oscillation was detected in the motor speed.	Check for abnormal motor noise, and check the speed and torque waveforms during oper- ation.	Reduce the motor speed. Or, reduce the setting of Pn100 (Speed Loop Gain).	*1
<b>A.520:</b> Vibration Alarm	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appro- priate value.	*1
	The vibration detec- tion level (Pn312 or Pn384) is not suitable.	Check that the vibra- tion detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*1
A.521: Autotuning Alarm (Vibration was detected while executing the custom tuning, Easy FFT, or the tuning-less func- tion.)	The Servomotor vibrated considerably while performing the tuning-less function.	Check the waveform of the motor speed.	Reduce the load so that the moment of inertia ratio is within the allowable value. Or increase the load level or reduce the rigidity level in the tuning- less level settings.	*1
	The Servomotor vibrated considerably while performing cus- tom tuning or Easy FFT.	Check the waveform of the motor speed.	Check the operating pro- cedure of corresponding function and implement corrections.	*1
A.550: Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum speed.	Check the setting of Pn385, and the upper limits of the maximum motor speed setting and the encoder output resolution setting.	Set Pn385 to a value that does not exceed the max- imum motor speed.	*1

Continued from previous page.

Alarm Number:	_		Continued from pro	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The wiring is not cor- rect or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are correctly wired.	*1
	Operation was per- formed that exceeded the overload protec- tion characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
A.710: Instantaneous Overload A.720:	An excessive load was applied during operation because the Servomotor was not driven due to mechanical problems.	Check the operation reference and motor speed.	Correct the mechanical problem.	-
Continuous Overload	There is an error in the setting of Pn282 (Lin- ear Encoder Scale Pitch).	Check the setting of Pn282.	Correct the setting of Pn282.	*1
	There is an error in the setting of $Pn080 =$ n. $\Box\Box X\Box$ (Motor Phase Sequence Selection).	Check the setting of Pn080 = $n.\Box\BoxX\Box$ .	Set Pn080 = n.□□X□ to an appropriate value.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	-
A.730 and A.731: Dynamic Brake Overload (An excessive power consump- tion by the dynamic brake was detected.)	When the Servomo- tor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capac- ity of the dynamic brake resistor.	Check the power con- sumed by the DB resis- tor to see how frequently the DB is being used.	<ul> <li>Reconsider the following:</li> <li>Reduce the Servomotor command speed.</li> <li>Decrease the moment of inertia ratio or mass ratio.</li> <li>Reduce the frequency of stopping with the dynamic brake.</li> </ul>	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
A.740: Inrush Current Limiting Resistor Overload (The main circuit power supply was frequently turned ON and OFF.)	The allowable fre- quency of the inrush current limiting resis- tor was exceeded when the main circuit power supply was turned ON and OFF.	_	Reduce the frequency of turning the main circuit power supply ON and OFF.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding tem- perature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surround- ing temperature by improving the SERVO- PACK installation condi- tions.	*1
	An overload alarm was reset by turning OFF the power sup- ply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.7A1: Internal Tempera- ture Error 1 (Control Board Temperature Error)	There was an exces- sive load or operation was performed that exceeded the regen- erative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenera- tive load ratio to check the regenerative pro- cessing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVO- PACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifica- tions.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
	The surrounding tem- perature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surround- ing temperature by improving the SERVO- PACK installation condi- tions.	*1
	An overload alarm was reset by turning OFF the power sup- ply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.7A2: Internal Tempera- ture Error 2 (Power Board Temperature Error)	There was an exces- sive load or operation was performed that exceeded the regen- erative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenera- tive load ratio to check the regenerative pro- cessing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVO- PACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifica- tions.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
A.7A3: Internal Tempera- ture Sensor Error (An error occurred in the temperature sen- sor circuit.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-

Continued from previous page.

Continued from previous page.				
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
<b>A.7Ab:</b> SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVOPACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SER- VOPACK.	-
	The power to the absolute encoder was turned ON for the first time.	Check to see if the power supply was turned ON for the first time.	Set up the encoder.	*1
A.810:	The Encoder Cable was disconnected and then connected again.	Check to see if the power supply was turned ON for the first time.	Check the encoder con- nection and set up the encoder.	*1
Encoder Backup Alarm (Detected at the encoder, but only when an abso- lute encoder is used.)	Power is not being supplied both from the control power supply (+5 V) from the SERVOPACK and from the battery power supply.	Check the encoder connector battery and the connector status.	Replace the battery or implement similar mea- sures to supply power to the encoder, and set up the encoder.	*1
	A failure occurred in the absolute encoder.	_	If the alarm still occurs after setting up the encoder again, replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
<b>A.820:</b> Encoder Check- sum Alarm (Detected at the encoder.)	A failure occurred in the encoder.	-	<ul> <li>When Using an Absolute Encoder</li> <li>Set up the encoder again.</li> <li>If the alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.</li> <li>When Using a Singleturn Absolute Encoder or Incremental Encoder</li> <li>The Servomotor may be faulty. Replace the Servomotor.</li> <li>The Inear encoder may be faulty. Replace the linear encoder.</li> </ul>	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
A.830: Encoder Battery Alarm	The battery connec- tion is faulty or a bat- tery is not connected.	Check the battery con- nection.	Correct the battery con- nection.	*1
(The absolute encoder battery voltage was lower than the speci- fied level.)	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-

Continued on next page.

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The encoder malfunc- tioned.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servo- motor or linear encoder.	-
	An error occurred in reading data from the linear encoder.	-	The linear encoder is not mounted within an appro- priate tolerance. Correct the mounting of the linear encoder.	-
A.840: Encoder Data Alarm (Detected at the encoder.)	Excessive speed occurred in the linear encoder.	-	Control the motor speed within the range specified by the linear encoder manufacturer and then turn ON the control power supply.	-
	The encoder malfunc- tioned due to noise.	_	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Cir- cuit Cable or by ground- ing the encoder.	-
	The polarity sensor is not wired correctly.	Check the wiring of the polarity sensor.	Correct the wiring of the polarity sensor.	-
	The polarity sensor failed.	_	Replace the polarity sen- sor.	-
A.850: Encoder Over- speed (Detected at the encoder when the control power supply is turned ON.)	Rotary Servomotor: The Servomotor speed was 200 min <sup>-1</sup> or higher when the control power supply was turned ON.	Check the motor speed when the power supply is turned ON.	Reduce the Servomotor speed to a value less than 200 min <sup>-1</sup> , and turn ON the control power supply.	-
	Linear Servomotor: The Servomotor exceeded the speci- fied speed when the control power supply was turned ON.	Check the motor speed when the power supply is turned ON.	Control the motor speed within the range specified by the linear encoder manufacturer and then turn ON the control power supply.	-
	A failure occurred in the encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servo- motor or linear encoder.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK. Continued o	-

Continued from previous page.

Continued from previous page.				
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.860:	The surrounding air temperature around the Servomotor is too high.	Measure the surround- ing air temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40°C or less.	-
(Detected when a Rotary Servomo- tor, Absolute Lin- ear Encoder, or	The Servomotor load is greater than the rated load.	Use the accumulated load ratio to check the load.	Operate the Servo Drive so that the motor load remains within the speci- fied range.	*1
Direct Drive Ser- vomotor is con- nected. However, this alarm is not detected for SGMCS Servo- motors with Incremental	A failure occurred in the encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or absolute linear encoder may be faulty. Replace the Servomotor or absolute linear encoder.	-
Encoders.) (Detected at the encoder end.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The surrounding tem- perature around the Servomotor is too high.	Measure the surround- ing temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40° or less.	-
	The motor load is greater than the rated load.	Check the load with the accumulated load ratio on the Motion Monitor Tab Page on the SigmaWin+.	Operate the Servo Drive so that the motor load remains within the speci- fied range.	*1
A.861: Motor Over- heated	A failure occurred in the Serial Converter Unit.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Serial Con- verter Unit may be faulty. Replace the Serial Con- verter Unit.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.890: Encoder Scale Error	A failure occurred in the linear encoder.	-	The linear encoder may be faulty. Replace the linear encoder.	-
A.891: Encoder Module Error	A failure occurred in the linear encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the linear encoder may be faulty. Replace the linear encoder.	-
A.8A0: External Encoder Error	Setting the origin of the absolute linear encoder failed because the motor moved.	Before you set the ori- gin, use the fully-closed feedback pulse counter to confirm that the motor is not moving.	The motor must be stopped while setting the origin position.	*1
	A failure occurred in the external encoder.	_	Replace the external encoder.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.8A1:	A failure occurred in the external encoder.	-	Replace the external encoder.	-
External Encoder Module Error	A failure occurred in the Serial Converter Unit.	-	Replace the Serial Con- verter Unit.	-
A.8A2: External Incre- mental Encoder Sensor Error	A failure occurred in the external encoder.	-	Replace the external encoder.	-
A.8A3: External Abso- lute Encoder Position Error	A failure occurred in the external absolute encoder.	_	The external absolute encoder may be faulty. Refer to the encoder manufacturer's instruc- tion manual for correc- tions.	-
A.8A5: External Encoder Overspeed	An overspeed error was detected in the external encoder.	Check the maximum speed of the external encoder.	Keep the external encoder below its maxi- mum speed.	-
A.8A6: External Encoder Overheated	An overheating error was detected in the external encoder.	-	Replace the external encoder.	-
A.b33: Current Detec- tion Error 3	A failure occurred in the current detection circuit.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.b6A: MECHATROLINK Communications ASIC Error 1	There is a fault in the SERVOPACK MECHATROLINK communications sec- tion.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.b6b: MECHATROLINK Communications ASIC Error 2	A malfunction occurred in the MECHATROLINK communications sec- tion due to noise.	_	<ul> <li>Implement the following countermeasures against noise.</li> <li>Check the MECHA-TROLINK Communications Cable and FG wiring.</li> <li>Attach a ferrite core to the MECHATROLINK Communications Cable.</li> </ul>	_
	There is a fault in the SERVOPACK MECHATROLINK communications sec- tion.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
<b>A.bF0:</b> System Alarm 0	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF1: System Alarm 1	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued from previous page.

	Continued from previous page.				
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference	
A.bF2: System Alarm 2	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-	
A.bF3: System Alarm 3	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-	
<b>A.bF4:</b> System Alarm 4	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-	
A.bF5: System Alarm 5	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_	
A.bF6: System Alarm 6	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-	
A.bF7: System Alarm 7	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-	
A.bF8: System Alarm 8	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-	

Continued on next page.

Continued from previous page.

Continued from previous pag				
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The order of phases U, V, and W in the motor wiring is not correct.	Check the Servomotor wiring.	Make sure that the Servo- motor is correctly wired.	-
A.C10:	There is an error in the setting of Pn080 = n.	Check the setting of Pn080 = n.□□X□.	Set Pn080 = n.□□X□ to an appropriate value.	*1
Servomotor Out of Control (Detected when the servo is turned ON.)	A failure occurred in the encoder.	_	If the motor wiring is cor- rect and an alarm still occurs after turning the power supply OFF and ON again, the Servomotor or linear encoder may be faulty. Replace the Servo- motor or linear encoder.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The linear encoder signal level is too low.	Check the voltage of the linear encoder signal.	Fine-tune the mounting of the scale head. Or, replace the linear encoder.	-
A.C20: Phase Detection Error	The count-up direc- tion of the linear encoder does not match the forward direction of the Mov- ing Coil in the motor.	Check the setting of Pn080 = $n.\Box\Box X\Box$ (Motor Phase Sequence Selection). Check the installation orientation for the linear encoder and Moving Coil.	Change the setting of Pn080 = n.□□X□. Cor- rectly reinstall the linear encoder or Moving Coil.	*1
	The polarity sensor signal is being affected by noise.	-	Correct the FG wiring. Implement countermea- sures against noise for the polarity sensor wiring.	-
	The polarity sensor is protruding from the Magnetic Way of the motor.	Check the polarity sen- sor.	Correctly reinstall the Moving Coil or Magnetic Way of the motor.	-
A.C21: Polarity Sensor Error	The setting of Pn282 (Linear Encoder Scale Pitch) is not correct.	Check the setting of Pn282 (Linear Encoder Scale Pitch).	Check the specifications of the linear encoder and set a correct value.	*1
	The polarity sensor is not wired correctly.	Check the wiring of the polarity sensor.	Correct the wiring of the polarity sensor.	-
	The polarity sensor failed.	_	Replace the polarity sen- sor.	-
A.C22: Phase Informa- tion Disagree- ment	The SERVOPACK phase information is different from the lin- ear encoder phase information.	-	Perform polarity detec- tion.	*1

Continued from previous page.

Continued from previous page				evious page.
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The parameter set- tings are not correct.	Check the linear encoder specifications and feedback signal status.	The settings of Pn282 (Linear Encoder Scale Pitch) and Pn080 = n.□□X□ (Motor Phase Sequence Selection) may not match the installa- tion. Set the parameters to correct values.	*1
	There is noise on the scale signal.	Check to make sure that the frame grounds of the Serial Converter Unit and Servomotor are connected to the FG terminal on the SER- VOPACK and that the FG terminal on the SER- VOPACK is connected to the frame ground on the power supply. And, confirm that the shield is properly pro- cessed on the Linear Encoder Cable. Check to see if the detection reference is repeatedly output in one direction.	Implement appropriate countermeasures against noise for the Linear Encoder Cable.	
A.C50: Polarity Detec- tion Failure	An external force was applied to the Moving Coil of the motor.	_	The polarity cannot be properly detected if the detection reference is 0 and the speed feedback is not 0 because of an external force, such as cable tension, applied to the Moving Coil. Implement measures to reduce the external force so that the speed feed- back goes to 0. If the external force can- not be reduced, increase the setting of Pn481 (Polarity Detection Speed Loop Gain).	_
	The linear encoder resolution is too low.	Check the linear encoder scale pitch to see if it is within 100 μm.	If the linear encoder scale pitch is 100 $\mu$ m or higher, the SERVOPACK cannot detect the correct speed feedback. Use a linear encoder scale pitch with higher resolu- tion. (We recommend a pitch of 40 $\mu$ m or less.) Or, increase the setting of Pn485 (Polarity Detection Reference Speed). How- ever, increasing the set- ting of Pn485 will increase the Servomotor move- ment range that is required for polarity detection.	_

Continued on next page.

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.C51: Overtravel Detected during Polarity Detection	The overtravel signal was detected during polarity detection.	Check the overtravel position.	Wire the overtravel sig- nals. Execute polarity detection at a position where an overtravel sig- nal would not be detected.	*1
A.C52: Polarity Detec- tion Not Com- pleted	The servo was turned ON when using an absolute linear encoder, Pn587 was set to n. DDD (Do not detect polarity), and the polarity had not been detected.	_	When using an absolute linear encoder, set Pn587 to n.	_
A.C53: Out of Range of Motion for Polar- ity Detection	The travel distance exceeded the setting of Pn48E (Polarity Detection Range) in the middle of detec- tion.	_	Increase the setting of Pn48E (Polarity Detection Range). Or, increase the setting of Pn481 (Polarity Detection Speed Loop Gain).	-
A.C54: Polarity Detec- tion Failure 2	An external force was applied to the Servo- motor.	_	Increase the setting of Pn495 (Polarity Detection Confirmation Force Refer- ence). Increase the setting of Pn498 (Polarity Detection Allowable Error Range). Increasing the allowable error will also increase the motor temperature.	_
A.C80: Encoder Clear	A failure occurred in the encoder.		Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servo- motor or linear encoder.	_
Error or Multiturn Limit Setting Error	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued from previous page.

Alarm Number: Describe Occupation Continued from				
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	There is a faulty con- tact in the connector or the connector is not wired correctly for the encoder.	Check the condition of the encoder connector.	Reconnect the encoder connector and check the encoder wiring.	*1
	There is a cable dis- connection or short- circuit in the encoder. Or, the cable imped- ance is outside the specified values.	Check the condition of the Encoder Cable.	Use the Encoder Cable within the specified specifications.	-
A.C90: Encoder Commu- nications Error	One of the following has occurred: corro- sion caused by improper tempera- ture, humidity, or gas, a short-circuit caused by entry of water drops or cutting oil, or faulty contact in con- nector caused by vibration.	Check the operating environment.	Improve the operating environmental, and replace the cable. If the alarm still occurs, replace the SERVOPACK.	*1
	A malfunction was caused by noise.	_	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Cir- cuit Cable or by ground- ing the encoder.	*1
	A failure occurred in the SERVOPACK.	-	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If no alarm occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.C91: Encoder Commu- nications Posi- tion Data Acceleration Rate	Noise entered on the signal lines because the Encoder Cable is bent or the sheath is damaged.	Check the condition of the Encoder Cable and connectors.	Check the Encoder Cable to see if it is installed correctly.	*1
	The Encoder Cable is bundled with a high- current line or installed near a high- current line.	Check the installation condition of the Encoder Cable.	Confirm that there is no surge voltage on the Encoder Cable.	-
Error	There is variation in the FG potential because of the influ- ence of machines on the Servomotor side, such as a welder.	Check the installation condition of the Encoder Cable.	Properly ground the machine to separate it from the FG of the encoder.	-

Continued on next page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Noise entered on the signal line from the encoder.	-	Implement countermea- sures against noise for the encoder wiring.	*1
	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibra- tion. Correctly install the Ser- vomotor or linear encoder.	-
A.C92: Encoder Commu- nications Timer Error	A failure occurred in the encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servo- motor or linear encoder.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.CA0: Encoder Parame- ter Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servo- motor or linear encoder.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued from previous page.

Continued from previous page.

Alarm Number:	Possible Cause	Confirmation	Correction	Reference
Alarm Name	The encoder is wired incorrectly or there is faulty contact.	Check the wiring of the encoder.	Make sure that the encoder is correctly wired.	*1
	The specifications of the Encoder Cable are not correct and noise entered on it.	-	Use a shielded twisted- pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	_
	The Encoder Cable is too long and noise entered on it.	_	<ul> <li>Rotary Servomotors: The Encoder Cable wir- ing distance must be 50 m max.</li> <li>Linear Servomotors: The Encoder Cable wir- ing distance must be 20 m max.</li> </ul>	-
<b>A.Cb0:</b> Encoder Echo- back Error	There is variation in the FG potential because of the influ- ence of machines on the Servomotor side, such as a welder.	Check the condition of the Encoder Cable and connectors.	Properly ground the machine to separate it from the FG of the encoder.	-
	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibra- tion. Correctly install the Ser- vomotor or linear encoder.	-
	A failure occurred in the encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servo- motor or linear encoder.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.CC0: Multiturn Limit Disagreement	When using a Direct Drive Servomotor, the setting of Pn205 (Mul- titurn Limit) does not agree with the encoder.	Check the setting of Pn205.	Correct the setting of Pn205 (0 to 65,535).	*1
	The multiturn limit of the encoder is differ- ent from that of the SERVOPACK. Or, the multiturn limit of the SERVOPACK has been changed.	Check the setting of Pn205 in the SERVO- PACK.	Change the setting if the alarm occurs.	*1
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK. Continued o	-

Continued on next page.

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The cable between the Serial Converter Unit and SERVOPACK is not wired correctly or there is a faulty contact.	Check the wiring of the external encoder.	Correctly wire the cable between the Serial Con- verter Unit and SERVO- PACK.	*1
A.CF1: Reception Failed Error in Feed- back Option	A specified cable is not being used between Serial Con- verter Unit and SER- VOPACK.	Check the wiring speci- fications of the external encoder.	Use a specified cable.	_
Module Commu- nications	The cable between the Serial Converter Unit and SERVOPACK is too long.	Measure the length of the cable that connects the Serial Converter Unit.	The length of the cable between the Serial Con- verter Unit and SERVO- PACK must be 20 m or less.	-
	The sheath on cable between the Serial Converter Unit and SERVOPACK is bro- ken.	Check the cable that connects the Serial Converter Unit.	Replace the cable between the Serial Con- verter Unit and SERVO- PACK.	-
A.CF2: Timer Stopped Error in Feed-	Noise entered the cable between the Serial Converter Unit and SERVOPACK.	_	Correct the wiring around the Serial Converter Unit, e.g., separate I/O signal lines from the Main Circuit Cables or ground.	-
back Option Module Commu- nications	A failure occurred in the Serial Converter Unit.	-	Replace the Serial Con- verter Unit.	-
	A failure occurred in the SERVOPACK.	-	Replace the SERVO- PACK.	-
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Cir- cuit Cables.	Make sure that there are no faulty contacts in the wiring for the Servomotor and encoder.	-
	The position com- mand speed is too fast.	Reduce the position command speed and try operating the SER- VOPACK.	Reduce the position refer- ence speed or the refer- ence acceleration rate, or reconsider the electronic gear ratio.	*1
A.d00: Position Devia- tion Overflow (The setting of Pn520 (Position Deviation Over- flow Alarm Level) was exceeded by the position devi- ation while the servo was ON.)	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO- PACK.	Reduce the acceleration of the position reference using a MECHATROLINK command. Or, smooth the position reference accel- eration by selecting the position reference filter (ACCFIL) using a MECHA- TROLINK command.	-
	The setting of Pn520 (Position Deviation Overflow Alarm Level) is too low for the operating conditions.	Check Pn520 (Position Deviation Overflow Alarm Level) to see if it is set to an appropriate value.	Optimize the setting of Pn520.	*1
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued from previous page.

Continued from previous page.				
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.d01: Position Devia- tion Overflow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Position Deviation Overflow Alarm Level at Servo ON) while the servo was OFF.	Check the position deviation while the servo is OFF.	Optimize the setting of Pn526 (Position Deviation Overflow Alarm Level at Servo ON).	*1
A.d02: Position Devia- tion Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the devia- tion counter, the set- ting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the set- ting of Pn520 (Posi- tion Deviation Overflow Alarm Level) is exceeded.	_	Optimize the setting of Pn520 (Position Deviation Overflow Alarm Level). Or, adjust the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON).	*1
A.d0A: Pressure Feedback Loop Deviation Overflow	The difference between the pressure feedback reference and the pressure feedback detection value exceeded the level set in Pn447 (Pressure Feedback Loop Deviation Over- flow Level).	Check the pressure feedback detection monitor or pressure feedback loop devia- tion monitor.	<ul> <li>Change the value of Pn447 (Pressure Feed- back Loop Deviation Overflow Level).</li> <li>Adjust the values of Pn442 (Pressure Feed- back Loop Integral Time) and other pres- sure feedback control parameters.</li> </ul>	3-18
A.d10: Motor-Load Posi- tion Deviation	The motor direction and external encoder installation orientation are backward.	Check the motor direc- tion and the external encoder installation ori- entation.	Install the external encoder in the opposite direction, or change the setting of Pn002 = n.X□□□ (External Encoder Usage) to reverse the direction.	*1
Overflow	There is an error in the connection between the load (e.g., stage) and external encoder coupling.	Check the coupling of the external encoder.	Check the mechanical coupling.	-
A.d30: Position Data Overflow	The position data exceeded ±1,879,048,192.	Check the input refer- ence pulse counter.	Reconsider the operating specifications.	-
A.E02: MECHATROLINK Internal Synchro- nization Error 1	The MECHATROLINK transmission cycle fluctuated.	-	Remove the cause of transmission cycle fluctu- ation at the host control- ler.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued on next page.

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The MECHATROLINK Communications Cable is not wired correctly.	Check the wiring condi- tions.	Correct the MECHA- TROLINK Communica- tions Cable wiring.	-
A.E30: MECHATROLINK Other Station Monitor Recep- tion Error	A MECHATROLINK data reception error occurred due to noise.	Check the installation conditions.	<ul> <li>Implement the following countermeasures against noise.</li> <li>Check the MECHA-TROLINK Communications Cable and FG wiring and implement countermeasures to prevent noise from entering.</li> <li>Attach a ferrite core to the MECHATROLINK Communications Cable.</li> </ul>	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
A.E31: MECHATROLINK Other Station Monitor Setting Error	There is a mistake in the settings for other station monitoring.	Check the parameters related to other station monitoring.	Correct the settings of Pn9B1 to Pn9C0.	3-10
A.E32: MECHATROLINK Other Station Monitor Error	An error occurred in a monitored station.	Check the status of the monitored stations.	Eliminate the cause of the error at the monitored station.	-
A.E40: MECHATROLINK Transmission Cycle Setting Error	The setting of MECHATROLINK transmission cycle is outside of the speci- fied range.	Check the setting of the MECHATROLINK transmission cycle.	Set the MECHATROLINK transmission cycle to an appropriate value.	-
A.E41: MECHATROLINK Communications Data Size Setting Error	The number of trans- mission bytes set on DIP switch S3 is not correct.	Check the MECHA- TROLINK communica- tions data size of the host controller.	Reset DIP switch S3 to change the number of transmission bytes to an appropriate value.	*1
<b>A.E42:</b> MECHATROLINK	The station address is outside of the setting range.	Check rotary switches S1 and S2 to see if the station address is between 03 and EF.	Check the setting of the station address of the host controller, and reset rotary switches S1 and S2 to change the address to an appropriate value between 03 and EF.	*1
Station Address Setting Error	Two or more stations on the communica- tions network have the same address.	Check to see if two or more stations on the communications net- work have the same address.	Check the setting of the station address of the host controller, and reset rotary switches S1 and S2 to change the address to an appropriate value between 03 and EF.	*1
A.E50 <sup>*4</sup> :	The WDT data in the host controller was not updated normally.	Check to see if the WDT data is being updated at the host controller.	Correctly update the WDT data at the host controller.	-
MECHATROLINK Synchronization Error	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued from previous page.

Continued from previous pag				evious page.
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.E51: MECHATROLINK Synchronization Failed	The WDT data at the host controller was not updated correctly at the start of syn- chronous communi- cations, so synchronous commu- nications could not be started.	Check to see if the WDT data is being updated in the host controller.	Correctly update the WDT data at the host controller.	-
Falled	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	MECHATROLINK wir- ing is not correct.	Check the MECHA- TROLINK wiring.	Correct the MECHA- TROLINK Communica- tions Cable wiring. Correctly connect the ter- minator.	-
A.E60 <sup>*4</sup> : Reception Error in MECHATROLINK Communications	A MECHATROLINK data reception error occurred due to noise.	_	Implement countermea- sures against noise. (Check the MECHA- TROLINK Communica- tions Cable and FG wiring, and implement measures such as attach- ing a ferrite core to the MECHATROLINK Com- munications Cable.)	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.E61: Synchronization Interval Error in MECHATROLINK Transmission Cycle	The MECHATROLINK transmission cycle fluctuated.	Check the setting of the MECHATROLINK trans- mission cycle.	Remove the cause of transmission cycle fluctu- ation at the host control- ler.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	MECHATROLINK wir- ing is not correct.	Check the Servomotor wiring.	Correct the MECHA- TROLINK Communica- tions Cable wiring.	-
A.E63: MECHATROLINK Synchronization Frame Not Received	A MECHATROLINK data reception error occurred due to noise.	_	Implement countermea- sures against noise. (Check the MECHA- TROLINK Communica- tions Cable and FG wiring, and implement measures such as attach- ing a ferrite core to the MECHATROLINK Com- munications Cable.)	_
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	There is a faulty con- nection between the SERVOPACK and the Safety Option Module.	Check the connection between the SERVO- PACK and the Safety Option Module.	Correctly connect the Safety Option Module.	-
A.E71: Safety Option Module Detec- tion Failure	The Safety Option Module was discon- nected.	_	Execute Fn014 (Reset Option Module Configura- tion Error) from the Digital Operator or SigmaWin+ and then turn the power supply to the SERVO- PACK OFF and ON again.	*1
	A failure occurred in the Safety Option Module.	_	Replace the Safety Option Module.	-
	A failure occurred in the SERVOPACK.	-	Replace the SERVO- PACK.	-
	There is a faulty con- nection between the SERVOPACK and the Feedback Option Module.	Check the connection between the SERVO- PACK and the Feed- back Option Module.	Correctly connect the Feedback Option Module.	_
A.E72: Feedback Option Module Detec- tion Failure	The Feedback Option Module was discon- nected.	_	Reset the Option Module configuration error and turn the power supply to the SERVOPACK OFF and ON again.	*1
	A failure occurred in the Feedback Option Module.	_	Replace the Feedback Option Module.	-
	A failure occurred in the SERVOPACK.	-	Replace the SERVO- PACK.	-
A.E74: Unsupported	A failure occurred in the Safety Option Module.	_	Replace the Safety Option Module.	-
Safety Option Module	An unsupported Safety Option Module was connected.	Refer to the catalog of the connected Safety Option Module.	Connect a compatible Safety Option Module.	-

5.2.3 Troubleshooting Alarms

Continued from previous page.

Continued from previous pag				evious page.
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.Eb1: Safety Function Signal Input Tim- ing Error	The delay between activation of the /HWBB1 and /HWBB2 input sig- nals for the HWBB was ten second or longer.	Measure the time delay between the /HWBB1 and /HWBB2 signals.	The output signal circuits or devices for /HWBB1 and /HWBB2 or the SER- VOPACK input signal cir- cuits may be faulty. Alternatively, the input sig- nal cables may be discon- nected. Check to see if any of these items are faulty or have been dis- connected.	_
	A failure occurred in the SERVOPACK.	-	Replace the SERVO- PACK.	-
A.EC8: Gate Drive Error 1 (An error occurred in the gate drive circuit.) A.EC9: Gate Drive Error 2 (An error occurred in the gate drive circuit.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
		Check the motor status when the command is executed.	Execute the SV_ON or SENS_ON command only when the motor is not operating.	-
A.Ed1: Command Exe- cution Timeout	A timeout error occurred for a MECHATROLINK command.	<ul> <li>For fully-closed loop control, check the status of the external encoder when the command is exe- cuted.</li> <li>For other types of control, check the status of the linear encoder when the command is exe- cuted.</li> </ul>	Execute the SENS_ON command only when an external rotary encoder or linear encoder is con- nected.	_
	The three-phase power supply wiring is not correct.	Check the power sup- ply wiring.	Make sure that the power supply is correctly wired.	*1
A.F10: Power Supply	The three-phase power supply is unbalanced.	Measure the voltage for each phase of the three-phase power sup- ply.	Balance the power sup- ply by changing phases.	_
Line Open Phase (The voltage was low for more than one second for phase R, S, or T when the main power supply was ON.)	A single-phase power supply was input with- out specifying a sig- nal-phase AC power supply input (Pn00B = $n.\Box 1\Box \Box$ ).	Check the power sup- ply and the parameter setting.	Match the parameter set- ting to the power supply.	*1
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued on next page.

#### 5.2.3 Troubleshooting Alarms

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.F50: Servomotor Main Circuit Cable Dis-	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER- VOPACK.	-
connection (The Servomotor did not operate or power was not supplied to the Servomotor even though the SV_ON (Servo ON) command was input when the Servomotor was ready to receive it.)	The wiring is not cor- rect or there is a faulty contact in the motor wiring.	Check the wiring.	Make sure that the Servo- motor is correctly wired.	*1
FL-1*5:System AlarmFL-2*5:System AlarmFL-3*5:System AlarmFL-4*5:System AlarmFL-5*5:System AlarmFL-6*5:System Alarm	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
CPF00: Digital Operator Communications Error 1	There is a faulty con- tact between the Digi- tal Operator and the SERVOPACK.	Check the connector contact.	Disconnect the connec- tor and insert it again. Or, replace the cable.	_
	A malfunction was caused by noise.	_	Keep the Digital Operator or the cable away from sources of noise.	-
<b>CPF01:</b> Digital Operator Communications Error 2	A failure occurred in the Digital Operator.	_	Disconnect the Digital Operator and then con- nect it again. If an alarm still occurs, the Digital Operator may be faulty. Replace the Digital Oper- ator.	-
	A failure occurred in the SERVOPACK. ing manual for details.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

\*1. Refer to the following manual for details.

 <sup>Δ</sup> Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)

\*2. Detection Conditions
• Rotary Servomotors If either of the following conditions is detected, an alarm will occur.

• Pn533 [min<sup>-1</sup>] × 
$$\frac{\text{Encoder resolution}}{6 \times 10^5} \leq \frac{\text{Pn20E}}{\text{Pn210}}$$

• Maximum motor speed [min<sup>-1</sup>] × 
$$\frac{\text{Encoder resolution}}{\text{Approx. } 3.66 \times 10^{12}} \ge \frac{\text{Pn20E}}{\text{Pn210}}$$

5.2.4 Warning Displays

<ul> <li>Linear Servomotors If either of the following conditions is detected, an alarm will occur.</li> </ul>
$\cdot \frac{\text{Pn585 [mm/s]}}{\text{Ligger encoder nitch [um]}} \times \frac{\text{Resolution of Serial Converter Unit10}}{\text{Pn210}} \leq \frac{\text{Pn20E}}{\text{Pn210}}$
Linear encoder pitch [µm]
• $\frac{\text{Pn385 [100 mm/s]}}{\text{Linear encoder pitch [µm]}} \times \frac{\text{Resolution of Serial Converter Unit}}{\text{Approx. 6.10 \times 10}^{5}} \geq \frac{\text{Pn20E}}{\text{Pn210}}$
<ul> <li>*3. Detection Conditions</li> <li>• Rotary Servomotors         If either of the following conditions is detected, an alarm will occur.     </li> </ul>
• Rated motor speed [min <sup>-1</sup> ] $\times 1/3 \times \frac{\text{Encoder resolution}}{6 \times 10^5} \leq \frac{\text{Pn20E}}{\text{Pn210}}$
• Maximum motor speed [min <sup>-1</sup> ] $\times \frac{\text{Encoder resolution}}{\text{Approx. } 3.66 \times 10^{12}} \geq \frac{\text{Pn20E}}{\text{Pn210}}$
<ul> <li>Linear Servomotors         If either of the following conditions is detected, an alarm will occur.     </li> </ul>
$\frac{\text{Rated motor speed [mm/s] \times 1/3}}{\text{Hater ansatz and a motor speed [mm/s] \times 1/3}} \times \frac{\text{Resolution of Serial Converter Unit}}{10} \leq \frac{\text{Pn20E}}{\text{Pn210}}$
Linear encoder pitch [µm] 10 <sup>2</sup> Pn210
$\label{eq:resultion} \begin{array}{c} \begin{array}{c} \mbox{Pn385 [100 mm/s]} \\ \hline \mbox{Linear encoder pitch [\mum]} \end{array} & x \\ \begin{array}{c} \mbox{Resolution of Serial Converter Unit} \\ \hline \mbox{Approx. 6.10 \times 10}^5 \end{array} \geq \\ \begin{array}{c} \mbox{Pn20E} \\ \hline \mbox{Pn20E} \end{array}$
*4. Refer to the following manual for details.

 $\bigcap$   $\Sigma$ -7-Series Peripheral Device Selection Manual (Manual No.: SIEP S800001 32)

\*5. These alarms are not stored in the alarm history. They are only displayed on the panel display.

### 5.2.4 Warning Displays

If a warning occurs in the SERVOPACK, a warning number will be displayed on the panel display. Warnings are displayed to warn you before an alarm occurs.

# 5.2.5 List of Warnings

The list of warnings gives the warning name and warning meaning in order of the warning numbers.

Warning Number	Warning Name	Meaning	Resetting
A.900	Position Deviation Overflow	The position deviation exceeded the parameter settings (Pn520 $\times$ Pn51E/100).	Required.
A.901	Position Deviation Overflow Alarm at Servo ON	The position deviation exceeded the parameter settings (Pn526 $\times$ Pn528/100) when the servo was turned ON.	Required.
A.910	Overload	This warning occurs before an overload alarm (A.710 or A.720) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Required.
A.911	Vibration	Abnormal vibration was detected during motor opera- tion. The detection level is the same as A.520. Set whether to output an alarm or a warning by setting Pn310 (Vibration Detection Selections).	Required.
A.912	Internal Temperature Warning 1 (Control Board Temperature Error)	The surrounding temperature of the control PCB is abnormal.	Required.
A.913	Internal Temperature Warning 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.	Required.

Continued on next page.

#### 5.2 FT41 Specification

5.2.5 List of Warnings

Continued from previous page.

Warning Number	Warning Name	Meaning	Resetting
A.920	Regenerative Overload	This warning occurs before an A.320 alarm (Regenera- tive Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Required.
A.921	Dynamic Brake Over- load	This warning occurs before an A.731 alarm (Dynamic Brake Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Required.
A.922	Pressure Feedback Overflow	The pressure feedback detection value exceeded the level set in Pn44D (Pressure Feedback Overflow Detection Level) for the time set in Pn44E (Pressure Feedback Overflow Detection Time).	Required.
A.923	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Required.
A.930	Absolute Encoder Bat- tery Error	This warning occurs when the voltage of absolute encoder's battery is low.	Required.
A.942	Speed Ripple Com- pensation Information Disagreement	The speed ripple compensation information stored in the encoder does not agree with the speed ripple com- pensation information stored in the SERVOPACK.	Required.
A.94A	Data Setting Warning 1 (Parameter Number Error)	There is an error in the parameter number for a Data Setting Warning 1 (Parameter Number) command.	Automatically reset.*
A.94b	Data Setting Warning 2 (Out of Range)	The command data is out of range.	Automatically reset.*
A.94C	Data Setting Warning 3 (Calculation Error)	A calculation error was detected.	Automatically reset.*
A.94d	Data Setting Warning 4 (Parameter Size)	The data sizes do not match.	Automatically reset.*
A.94E	Data Setting Warning 5 (Latch Mode Error)	A latch mode error was detected.	Required.
A.95A	Command Warning 1 (Unsatisfied Com- mand Conditions)	A command was sent when the conditions for sending a command were not satisfied.	Automatically reset.*
A.95b	Command Warning 2 (Unsupported Com- mand)	An unsupported command was sent.	Automatically reset.*
A.95d	Command Warning 4 (Command Interfer- ence)	There was command interference, particularly latch command interference.	Automatically reset.*
A.95E	Command Warning 5 (Subcommand Not Possible)	The subcommand and main command interfere with each other.	Automatically reset.*
A.95F	Command Warning 6 (Undefined Command)	An undefined command was sent.	Automatically reset.*
A.960	MECHATROLINK Communications Warning	A communications error occurred during MECHA- TROLINK communications.	Required.
A.964	Other Station Monitor Data Communications Warning	A communications error occurred during MECHA- TROLINK communications.	Required.
A.971	Undervoltage	This warning occurs before an A.410 alarm (Undervolt- age) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Required.
A.97A	Command Warning 7 (Phase Error)	A command that cannot be executed in the current phase was sent.	Automatically reset.*
A.97b	Data Clamp Out of Range	The set command data was clamped to the minimum or maximum value of the allowable setting range.	Automatically reset.*
A.9A0	Overtravel	Overtravel was detected while the servo was ON.	Required.

5.2.5 List of Warnings

#### Continued from previous page.

Warning Number	Warning Name	Meaning	Resetting
A.9b0	Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	Required.

\* If using the commands for the MECHATROLINK-III standard servo profile, the warning will automatically be cleared after the correct command is received.

Note: 1. A warning code is not output unless you set Pn001 to n.1 (Output both alarm codes and warning codes).

2. Use Pn008 = n.□X□□ (Warning Detection Selection) to control warning detection. However, the following warnings are not affected by the setting of Pn008 = n.□X□□ and other parameter settings are required in addition to Pn008 = n.□X□□.

Warning	Parameters That Must Be Set to Select Warning Detection
A.911	$Pn310 = n.\Box\Box\BoxX$ (Vibration Detection Selection)
A.923	$_{-}$ (Not affected by the setting of Pn008 = n.□X□□.)
A.930	Pn008 = n. DDDX (Low Battery Voltage Alarm/Warning Selection)
A.942	Pn423 = n. DIXI (Speed Ripple Compensation Information Disagreement Warning Detection Selection)
A.94A to A.960 and A.97A to A.97b	Pn800=n.
A.971	Pn008 = $n.\Box\Box\BoxX$ (Low Battery Voltage Alarm/Warning Selection) (Not affected by the setting of Pn008 = $n.\BoxX\Box\Box$ .)
A.9A0	Pn00D = $n.X\square\square\square$ (Overtravel Warning Detection Selection) (Not affected by the setting of Pn008 = $n.\squareX\square\square$ .)
A.9b0	Pn00F = $n.\Box\Box\BoxX$ (Preventative Maintenance Warning Selection)

## 5.2.6 Troubleshooting Warnings

The causes of and corrections for the warnings are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Cir- cuit Cables.	Make sure that there are no faulty connections in the wiring for the Servomotor and encoder.	-
	A SERVOPACK gain is too low.	Check the SERVO- PACK gains.	Increase the servo gain, e.g., by using autotuning without a host reference.	*
<b>A.900:</b> Position Deviation Overflow	The acceleration of the position ref- erence is too high.	Reduce the reference acceleration and try operating the SERVO- PACK.	Reduce the acceleration of the position reference using a MECHATROLINK com- mand. Or, smooth the posi- tion reference acceleration by selecting the position reference filter (ACCFIL) using a MECHATROLINK command.	-
	The excessive position deviation alarm level (Pn520 $\times$ Pn51E/100) is too low for the operating condi- tions.	Check excessive posi- tion deviation alarm level (Pn520 × Pn51E/ 100) to see if it is set to an appropriate value.	Optimize the settings of Pn520 and Pn51E.	*
	A failure occurred in the SERVO- PACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.901: Position Deviation Overflow Alarm at Servo ON	The position devi- ation exceeded the parameter set- tings (Pn526 × Pn528/100) when the servo was turned ON.	-	Optimize the setting of Pn528 (Position Deviation Overflow Warning Level at Servo ON).	-

Continued from previous page.

Continued from previous				
Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are cor- rectly wired.	-
	Operation was performed that exceeded the overload protec- tion characteris- tics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
A.910: Overload (warning before an A.710 or A.720 alarm occurs)	An excessive load was applied during operation because the Ser- vomotor was not driven because of mechanical prob- lems.	Check the operation reference and motor speed.	Remove the mechanical problem.	-
	The overload warning level (Pn52B) is not suitable.	Check that the over- load warning level (Pn52B) is suitable.	Set a suitable overload warning level (Pn52B).	*
	A failure occurred in the SERVO- PACK.	-	The SERVOPACK may be faulty. Replace the SERVO- PACK.	-
A.911: Vibration	Abnormal vibra- tion was detected during motor operation.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the servo gain with custom tuning.	*
	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Iner- tia Ratio) to an appropriate value.	*
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibra- tion detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*

Continued on next page.

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environ- ment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installa- tion conditions.	*
	An overload alarm was reset by turn- ing OFF the power supply too many times.	Check the alarm dis- play to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.912: Internal Tempera- ture Warning 1 (Control Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative pro- cessing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenera- tive load ratio to check the regenerative pro- cessing capacity.	Reconsider the load and operating conditions.	_
	The SERVOPACK installation orien- tation is not cor- rect or there is insufficient space around the SER- VOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO- PACK.	_	The SERVOPACK may be faulty. Replace the SERVO- PACK.	_
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environ- ment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installa- tion conditions.	*
	An overload alarm was reset by turn- ing OFF the power supply too many times.	Check the alarm dis- play to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.913: Internal Tempera- ture Warning 2 (Power Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative pro- cessing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenera- tive load ratio to check the regenerative pro- cessing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orien- tation is not cor- rect or there is insufficient space around the SER- VOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO- PACK.	-	The SERVOPACK may be faulty. Replace the SERVO- PACK.	-

Continued from previous page.

Warning Number: Describle Cause Confirmation Correction Defi				
Warning Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply volt- age within the specified range.	-
A.920: Regenerative Over- load (warning before an A.320 alarm occurs)	There is insuffi- cient external regenerative resis- tance, regenera- tive resistor capacity, or SER- VOPACK capac- ity, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the Sig- maJunmaSize+ Capac- ity Selection Software or another means.	Change the regenerative resistance value, regenera- tive resistance capacity, or SERVOPACK capacity. Reconsider the operating conditions using the Sigma- JunmaSize+ Capacity Selection Software or other means.	-
	There was a con- tinuous regenera- tion state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
A.921: Dynamic Brake Overload (warning before an A.731 alarm occurs)	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an exter- nal force.	-
	When the Servo- motor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power con- sumed by the DB resis- tor to see how frequently the DB is being used.	<ul> <li>Reconsider the following:</li> <li>Reduce the Servomotor command speed.</li> <li>Decrease the moment of inertia or mass.</li> <li>Reduce the frequency of stopping with the dynamic brake.</li> </ul>	_
	A failure occurred in the SERVO- PACK.	-	The SERVOPACK may be faulty. Replace the SERVO- PACK.	-
	The pressure feedback detec- tion value	Check the output from the pressure sensor amplifier.	Adjust the pressure sensor amplifier.	-
A.922: Pressure Feedback Overflow	exceeded the level set in Pn44D (Pressure Feed- back Overflow Detection Level) for the time set in Pn44E (Pressure Feedback Over- flow Detection Time).	Check the setting of Pn449 (Pressure Feed- back Sensor Gain).	Change the setting of Pn449 (Pressure Feedback Sensor Gain).	_
A.923: SERVOPACK Built- in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign mat- ter inside the SERVO- PACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SER- VOPACK may be faulty. Replace the SERVOPACK. Continued or	-

Continued on next page.

Continued from previous page.

Warning Number: Describle Course Confirmation Correction Peters				
Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.930: Absolute Encoder Battery Error (The	The battery con- nection is faulty or a battery is not connected.	Check the battery con- nection.	Correct the battery connec- tion.	*
absolute encoder battery voltage was lower than the spec- ified level.) (Detected only when an abso-	The battery volt- age is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*
lute encoder is con- nected.)	A failure occurred in the SERVO- PACK.	_	The SERVOPACK may be faulty. Replace the SERVO- PACK.	-
	The speed ripple	-	Reset the speed ripple compensation value on the SigmaWin+.	*
A.942: Speed Ripple Com- pensation Informa- tion Disagreement	compensation information stored in the encoder does not agree with the speed ripple compensa-	_	Set Pn423 to n. <b>D</b> 1 <b>D</b> (Do not detect A.942 alarms). However, changing the set- ting may increase the speed ripple.	*
tion Disagreement	tion information stored in the SER- VOPACK.	-	Set Pn423 to n. DDD (Disable speed ripple com- pensation). However, changing the setting may increase the speed ripple.	*
A.94A: Data Setting Warn- ing 1 (Parameter Number Error)	An invalid param- eter number was used.	Check the command that caused the warn- ing.	Use the correct parameter number.	*
A.94b: Data Setting Warn- ing 2 (Out of Range)	The set com- mand data was clamped to the minimum or maxi- mum value of the setting range.	Check the command that caused the warn-ing.	Set the parameter within the setting range.	*
A.94C: Data Setting Warn- ing 3 (Calculation Error)	The calculation result of the set- ting is not correct.	Check the command that caused the warn-ing.	Set the parameter within the setting range.	*
A.94d: Data Setting Warn- ing 4 (Parameter Size)	The parameter size set in the command is not correct.	Check the command that caused the warn-ing.	Set the correct parameter size.	*
A.94E: Data Setting Warn- ing 5 (Latch Mode Error)	A latch mode error was detected.	Check the command that caused the warn-ing.	Change the setting of Pn850 or the LT_MOD data for the LTMOD_ON com- mand sent by the host con- troller to an appropriate value. (The applies when using the MECHATROLINK-II-com- patible profile.)	*
A.95A: Command Warning 1 (Unsatisfied Com- mand Conditions)	The command conditions are not satisfied.	Check the command that caused the warn-ing.	Send the command after the command conditions are satisfied.	*
A.95b: Command Warning 2 (Unsupported Command)	An unsupported command was received.	Check the command that caused the warn-ing.	Do not send unsupported commands.	*

Continued from previous page.

Continued from previo					
Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference	
A.95d: Command Warning 4 (Command Inter- ference)	The command sending condi- tions for latch- related com- mands was not satisfied.	Check the command that caused the warn- ing.	Send the command after the command conditions are satisfied.	*	
A.95E: Command Warning 5 (Subcommand Not Possible)	The command sending condi- tions for subcom- mands was not satisfied.	Check the command that caused the warn- ing.	Send the command after the conditions are satisfied.	*	
A.95F: Command Warning 6 (Undefined Com- mand)	An undefined command was sent.	Check the command that caused the warn-ing.	Do not send undefined commands.	*	
	The MECHA- TROLINK Com- munications Cable is not wired cor- rectly.	Check the wiring con- ditions.	Correct the MECHA- TROLINK communications cable wiring.	*	
<b>A.960:</b> MECHATROLINK Communications Warning	A MECHA- TROLINK data reception error occurred due to noise.	Confirm the installation conditions.	<ul> <li>Implement the following countermeasures against noise.</li> <li>Check the MECHA-TROLINK Communications Cable and FG wiring and implement countermeasures to prevent noise from entering.</li> <li>Attach a ferrite core to the MECHATROLINK Communications Cable.</li> </ul>	_	
	A failure occurred in the SERVO- PACK.	-	The SERVOPACK may be faulty. Replace the SERVO- PACK.	-	
	The MECHA- TROLINK Com- munications Cable is not wired cor- rectly.	Check the wiring con- ditions.	Correct the MECHA- TROLINK communications cable wiring.	*	
A.964: Other Station Moni- tor Data Communi- cations Warning	A MECHA- TROLINK data reception error occurred due to noise.	Confirm the installation conditions.	<ul> <li>Implement the following countermeasures against noise.</li> <li>Check the MECHA-TROLINK Communications Cable and FG wiring and implement countermeasures to prevent noise from entering.</li> <li>Attach a ferrite core to the MECHATROLINK Communications Cable.</li> </ul>	-	
	A failure occurred in the SERVO- PACK.	-	The SERVOPACK may be faulty. Replace the SERVO- PACK.	-	

Continued from previous page.

Warning Number:	Possible Cause	Confirmation	Continued from pre	
Warning Name		Confirmation	Correction	Reference
	For a 200-V SER- VOPACK, the AC power supply volt- age dropped below 140 V.	Measure the power supply voltage.	Set the power supply volt- age within the specified range.	-
	For a 100-V SER- VOPACK, the AC power supply volt- age dropped below 60 V.	Measure the power supply voltage.	Set the power supply volt- age within the specified range.	-
A.971: Undervoltage	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	-
	A momentary power interrup- tion occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momen- tary Power Interruption Hold Time), decrease the setting.	*
	The SERVOPACK fuse is blown out.	_	Replace the SERVOPACK and connect a reactor.	*
	A failure occurred in the SERVO- PACK.	-	The SERVOPACK may be faulty. Replace the SERVO- PACK.	-
<b>A.97A:</b> Command Warning 7 (Phase Error)	ommand Warning cuted in the cur-		Send the command after the command conditions are satisfied.	-
<b>A.97b:</b> Data Clamp Out of Range	A.97b: Data Clamp Out of		Set the command data within the setting ranges.	-
A.9A0: Overtravel (Over- travel status was detected.)	Overtravel was detected while the servo was ON.	Check the status of the overtravel signals on the input signal moni- tor.	<ul> <li>Even if an overtravel signal is not shown by the input signal monitor, momentary overtravel may have been detected. Take the following precautions.</li> <li>Do not specify move- ments that would cause overtravel from the host controller.</li> <li>Check the wiring of the overtravel signals.</li> <li>Implement countermea- sures against noise.</li> </ul>	*
A.9b0: Preventative Mainte- nance Warning	One of the con- sumable parts has reached the end of its service life.	-	Replace the part. Contact your Yaskawa representa- tive for replacement.	*

\* Refer to the following manual for details.

 Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)

This section provides troubleshooting based on the operation and conditions of the Servomotor, including causes and corrections.

Turn OFF the Servo System before troubleshooting the items shown in bold lines in the table.

Problem	Possible Cause	Confirmation	Correction	Reference
	The control power supply is not turned ON.	Measure the voltage between control power supply terminals.	Correct the wiring so that the control power supply is turned ON.	-
	The main circuit power sup- ply is not turned ON.	Measure the voltage across the main circuit power input terminals.	Correct the wiring so that the main circuit power supply is turned ON.	-
	The I/O signal connector (CN1) pins are not wired cor- rectly or are disconnected.	Check the wiring condi- tion of the I/O signal con- nector (CN1) pins.	Correct the wiring of the I/O signal connector (CN1) pins.	*
	The wiring for the Servomo- tor Main Circuit Cables or Encoder Cable is discon- nected.	Check the wiring condi- tions.	Wire the cable cor- rectly.	-
	There is an overload on the Servomotor.	Operate the Servomotor with no load and check the load status.	Reduce the load or replace the Servomo- tor with a Servomotor with a larger capacity.	-
	The type of encoder that is being used does not agree with the setting of $Pn002 = n.\Box X \Box \Box$ (Encoder Usage).	Check the type of the encoder that is being used and the setting of $Pn002 = n.\Box X \Box \Box$ .	Set Pn002 = $n.\Box X \Box \Box$ according to the type of the encoder that is being used.	*
Servomotor	There is a mistake in the input signal allocations (Pn50A, Pn50B, Pn511, and Pn516).	Check the input signal allocations (Pn50A, Pn50B, Pn511, and Pn516).	Correctly allocate the input signals (Pn50A, Pn50B, Pn511, and Pn516).	*
Does Not Start	The SV_ON command was not sent.	Check the commands sent from the host con- troller.	Send the SV_ON com- mand from the host controller.	-
	The SENS_ON (Turn ON Sensor) command was not sent.	Check the commands sent from the host con- troller.	Send the commands to the SERVOPACK in the correct sequence.	-
	The P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal is still OFF.	Check the P-OT and N- OT signals.	Turn ON the P-OT and N-OT signals.	*
	The safety input signals (/HWBB1 or /HWBB2) were not turned ON.	Check the /HWBB1 and /HWBB2 input signals.	Turn ON the /HWBB1 and /HWBB2 input sig- nals. If you are not using the safety func- tion, connect the Safety Jumper Connector (provided as an acces- sory) to CN8.	*
	The FSTP (Forced Stop Input) signal is still OFF.	Check the FSTP signal.	<ul> <li>Turn ON the FSTP signal.</li> <li>If you will not use the function to force the motor to stop, set Pn516 = n. DDX (FSTP (Forced Stop Input) Signal Allocation) to disable the signal.</li> </ul>	*

Continued on next page.

#### 5.2 FT41 Specification

5.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page. Problem **Possible Cause** Confirmation Correction Reference A failure occurred in the SER-Replace the SERVO-PACK. VOPACK. Check the setting of Correct the parameter Pn080 =n. \* setting. ity Sensor Selection). • If you are using an Servomotor incremental linear Does Not encoder, send the The polarity detection was Start SV\_ON (Servo ON) not executed. Check the inputs to the command from the SV\_ON (Servo ON) comhost controller. mand. · If you are using an absolute linear encoder, execute polarity detection. Wire the Servomotor There is a mistake in the Ser-Check the wiring. vomotor wiring. correctly. There is a mistake in the wir-Wire the Serial Coning of the encoder or Serial Check the wiring. verter Unit correctly. Converter Unit. There is a mistake in the lin-Wire the connections Check the wiring. ear encoder wiring. correctly. The setting of Pn282 (Linear Servomotor Check the setting of Correct the setting of \* Encoder Scale Pitch) is not Moves Pn282. Pn282. correct. Instanta-Change the setting of neously. and Then The count-up direction of the  $Pn080 = n.\Box\Box X\Box$ linear encoder does not (Motor Phase Stops match the forward direction Sequence Selection). Check the directions. of the Moving Coil in the Match the linear motor. encoder direction and motor direction. Check to see if electrical Correct the settings for Polarity detection was not angle 2 (electrical angle the polarity detectionperformed correctly. from polarity origin) at any related parameters. position is between ±10° The connector connections for the power line Servomotor (U, V, and W phases) and Tighten any loose ter-There is a faulty connection Speed Is the encoder or Serial minals or connectors in the Servomotor wiring. Converter Unit may be and correct the wiring. Unstable unstable. Check the wiring. A failure occurred in the SER-Replace the SERVO-VOPACK. PACK. Change the setting of The count-up direction of the  $Pn080 = n.\Box\Box X\Box$ (Motor Phase linear encoder does not Servomotor match the forward direction Check the directions. Sequence Selection). Moves withof the Moving Coil in the Match the linear out a Referencoder direction and motor. ence Input Servomotor direction. Check to see if electrical Correct the settings for Polarity detection was not angle 2 (electrical angle the polarity detectionperformed correctly. from polarity origin) at any related parameters. position is between  $\pm 10^{\circ}$ .

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Referenc
	The setting of Pn001 = $n.\square\square\squareX$ (Motor Stopping Method for Servo OFF and Group 1 Alarms) is not suit- able.	Check the setting of Pn001 = $n.\Box\Box\BoxX$ .	Set Pn001 = n.□□□X correctly.	_
Dynamic Brake Does Not Operate	The dynamic brake resistor is disconnected.	Check the moment of inertia, motor speed, and dynamic brake frequency of use. If the moment of inertia, motor speed, or dynamic brake frequency of use is excessive, the dynamic brake resis- tance may be discon- nected.	Replace the SERVO- PACK. To prevent dis- connection, reduce the load.	-
	There was a failure in the dynamic brake drive circuit.	_	There is a defective component in the dynamic brake circuit. Replace the SERVO- PACK.	-
	The Servomotor vibrated considerably while perform- ing the tuning-less function with the default settings.	Check the waveform of the motor speed.	Reduce the load so that the moment of inertia ratio or mass ratio is within the allow- able value, or increase the load level or reduce the rigidity level in the tuning-less level set- tings.	*
	The machine mounting is not secure.	Check to see if there are any loose mounting screws.	Tighten the mounting screws.	-
	The machine mounting is not secure.	Check to see if there is misalignment in the coupling.	Align the coupling.	-
		Check to see if the coupling is balanced.	Balance the coupling.	-
	The bearings are defective.	Check for noise and vibration around the bearings.	Replace the Servomo- tor.	-
Abnormal Noise from Servomotor	There is a vibration source at the driven machine.	Check for any foreign matter, damage, or defor- mation in the machine's moving parts.	Consult with the machine manufacturer.	-
	Noise interference occurred because of incorrect I/O signal cable specifications.	Check the I/O signal cables to see if they sat- isfy specifications. Use shielded twisted-pair wire cables or screened twisted-pair cables with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	Noise interference occurred because an I/O signal cable is too long.	Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	_
	Noise interference occurred because of incorrect Encoder Cable specifications.	Make sure that the rotary or Linear Encoder Cable satisfies the specifica- tions. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with a conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-

Maintenance

5

Continued from previous page.

Continued from previo						
Problem	Possible Cause	Confirmation	Correction	Reference		
	Noise interference occurred because the Encoder Cable is too long.	Check the length of the Encoder Cable.	<ul> <li>Rotary Servomotors: The Encoder Cable length must be 50 m max.</li> <li>Linear Servomotors: Make sure that the Serial Converter Unit cable is no longer than 20 m and that the Linear Encoder Cable and the Sensor Cable are no longer than 15 m each.</li> </ul>	-		
	Noise interference occurred because the Encoder Cable is damaged.	Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-		
	The Encoder Cable was sub- jected to excessive noise interference.	Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-cur- rent line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-		
Abnormal Noise from Servomotor	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-		
	There is a SERVOPACK pulse counting error due to noise.	Check to see if there is noise interference on the signal line from the encoder.	Implement counter- measures against noise for the encoder wiring.	-		
	The encoder was subjected to excessive vibration or shock.	Check to see if vibration from the machine occurred. Check the Ser- vomotor installation (mounting surface preci- sion, securing state, and alignment). Check the linear encoder installation (mounting sur- face precision and secur- ing method).	Reduce machine vibra- tion. Improve the mounting state of the Servomotor or linear encoder.	-		
	A failure occurred in the encoder.	-	Replace the Servomo- tor.	-		
	A failure occurred in the Serial Converter Unit.	-	Replace the Serial Con- verter Unit.	-		
	A failure occurred in the linear encoder.	-	Replace the linear encoder.	-		

Continued from previous page.

			Continued from pre	
Problem	Possible Cause	Confirmation	Correction	Reference
Servomotor	The servo gains are not bal- anced.	Check to see if the servo gains have been cor- rectly tuned.	Perform autotuning without a host reference.	*
	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	-
Vibrates at Frequency of Approx. 200 to 400	The setting of Pn102 (Posi- tion Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	-
Hz.	The setting of Pn101 (Speed Loop Integral Time Con- stant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	-
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	-
	The servo gains are not bal- anced.	Check to see if the servo gains have been cor- rectly tuned.	Perform autotuning without a host reference.	*
	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	-
Large Motor Speed	The setting of Pn102 (Posi- tion Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appro- priate value.	-
Overshoot on Starting and Stop- ping	The setting of Pn101 (Speed Loop Integral Time Con- stant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	-
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appro- priate value.	-
	The torque reference is saturated.	Check the waveform of the torque reference.	Use the mode switch.	-
	The force limits (Pn483 and Pn484) are set to the default values.	The default values of the force limits are Pn483 = 30% and Pn484 = 30%.	Set Pn483 and Pn484 to appropriate values.	

	Continued from previo           Possible Cause         Confirmation         Correction         R							
Problem	Possible Cause		Correction	Reference				
Absolute Encoder	Noise interference occurred because of incorrect Encoder Cable specifications.	Check the Encoder Cable to see if it satisfies speci- fications. Use a shielded twisted- pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-				
	Noise interference occurred because the Encoder Cable is too long.	Check the length of the Encoder Cable.	<ul> <li>Rotary Servomotors: The Encoder Cable length must be 50 m max.</li> <li>Linear Servomotors: Make sure that the Serial Converter Unit cable is no longer than 20 m and that the Linear Encoder Cable and the Sensor Cable are no longer than 15 m each.</li> </ul>	-				
Position Deviation Error (The position that was	Noise interference occurred because the Encoder Cable is damaged.	Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-				
saved in the host con- troller when the power was turned	Replace the Encoder Cable and correct the cable instal- lation environment.	Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-cur- rent line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-				
OFF is dif- ferent from the posi- tion when the power	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-				
was next turned ON.)	There is a SERVOPACK pulse counting error due to noise.	Check to see if there is noise interference on the I/O signal line from the encoder or Serial Con- verter Unit.	Implement counter- measures against noise for the encoder or Serial Converter Unit wiring.	-				
	The encoder was subjected to excessive vibration or shock.	Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting sur- face precision, securing state, and alignment). Check the linear encoder installation (mounting sur- face precision and secur- ing method).	Reduce machine vibra- tion. Or, improve the mounting state of the Servomotor or linear encoder.	-				
	A failure occurred in the encoder.	-	Replace the Servomo- tor or linear encoder.	-				
	A failure occurred in the SER- VOPACK.	_	Replace the SERVO- PACK.	-				

Continued from previous page.

<b>-</b>			Continued from pre	
Problem	Possible Cause	Confirmation	Correction	Reference
Absolute Encoder Position		Check the error detec- tion section of the host controller.	Correct the error detec- tion section of the host controller.	-
Deviation Error (The position that was		Check to see if the host controller is executing data parity checks.	Perform parity checks for the multiturn data or absolute encoder posi- tion data.	-
saved in the host con- troller when the power was turned OFF is dif- ferent from the posi- tion when the power was next turned ON.)	Host Controller Multiturn Data or Absolute Encoder Position Data Reading Error	Check for noise interfer- ence in the cable between the SERVO- PACK and the host con- troller.	Implement counter- measures against noise and then perform parity checks again for the multiturn data or abso- lute encoder position data.	_
		Check the external power supply (+24 V) voltage for the input signals.	Correct the external power supply (+24 V) voltage for the input signals.	-
	The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal was input. The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal mal-	Check the operating con- dition of the overtravel limit switches.	Make sure that the overtravel limit switches operate correctly.	-
		Check the wiring of the overtravel limit switches.	Correct the wiring of the overtravel limit switches.	*
Overtravel Occurred		Check the settings of the overtravel input signal allocations (Pn50A/Pn50B).	Set the parameters to correct values.	*
		Check for fluctuation in the external power supply (+24 V) voltage for the input signals.	Eliminate fluctuation from the external power supply (+24 V) voltage for the input signals.	-
		Check to see if the opera- tion of the overtravel limit switches is unstable.	Stabilize the operating condition of the over- travel limit switches.	-
	functioned.	Check the wiring of the overtravel limit switches (e.g., check for cable damage and loose screws).	Correct the wiring of the overtravel limit switches.	-
			Continued or	novt nado

Continued on next page.

		<b>A H H</b>	Continued from pre	
Problem	Possible Cause	Confirmation	Correction	Reference
Overtravel	There is a mistake in the allo- cation of the P-OT or N-OT (Forward Drive Prohibit or	Check to see if the P-OT signal is allocated in Pn50A = n.X□□□.	If another signal is allo- cated in Pn50A =n.X□□□, allocate the P-OT signal instead.	*
	Reverse Drive Prohibit) sig- nal in Pn50A = $n.X\square\square\square$ or Pn50B = $n.\square\square\squareX$ .	Check to see if the N-OT signal is allocated in Pn50B = $n.\square\square\squareX$ .	If another signal is allo- cated in Pn50B =n.□□□X, allocate the N-OT signal instead.	*
Occurred	The selection of the Servo- motor stopping method is	Check the servo OFF stopping method set in $Pn001 = n.\Box\BoxX$ or $Pn001 = n.\Box\BoxX\Box$ .	Select a Servomotor stopping method other than coasting to a stop.	*
	not correct.	Check the torque control stopping method set in Pn001 = $n.\Box\BoxX$ or Pn001 = $n.\Box\BoxX\Box$ .	Select a Servomotor stopping method other than coasting to a stop.	*
Improper Stop Posi- tion for	The limit switch position and dog length are not appropriate.	_	Install the limit switch at the appropriate position.	-
Overtravel (OT) Signal	The overtravel limit switch position is too close for the coasting distance.	-	Install the overtravel limit switch at the appropriate position.	-
Position Deviation	Noise interference occurred because of incorrect Encoder Cable specifications.	Check the Encoder Cable to see if it satisfies speci- fications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Check the length of the Encoder Cable.	<ul> <li>Rotary Servomotors: The Encoder Cable length must be 50 m max.</li> <li>Linear Servomotors: Make sure that the Serial Converter Unit cable is no longer than 20 m and that the Linear Encoder Cable and the Sensor Cable are no longer than 15 m each.</li> </ul>	-
(without Alarm)	Noise interference occurred because the Encoder Cable is damaged.	Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
	The Encoder Cable was sub- jected to excessive noise interference.	Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-cur- rent line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
	There is a SERVOPACK pulse counting error due to noise.	Check to see if there is noise interference on the I/O signal line from the encoder or Serial Con- verter Unit.	Implement counter- measures against noise for the encoder wiring or Serial Converter Unit wiring.	-

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	
Problem	Possible Cause		Correction	Reference
	The encoder was subjected to excessive vibration or shock.	Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting sur- face precision, securing state, and alignment). Check the linear encoder installation (mounting sur- face precision and secur- ing method).	Reduce machine vibra- tion. Or, improve the mounting state of the Servomotor or linear encoder.	-
Position	The coupling between the machine and Servomotor is not suitable.	Check to see if position offset occurs at the cou- pling between machine and Servomotor.	Correctly secure the coupling between the machine and Servomotor.	-
Deviation (without Alarm)	Noise interference occurred because of incorrect I/O signal cable specifications.	Check the I/O signal cables to see if they sat- isfy specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	Noise interference occurred because an I/O signal cable is too long.	Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	-
	An encoder fault occurred. (The pulse count does not change.)	_	Replace the Servomo- tor or linear encoder.	-
	A failure occurred in the SER- VOPACK.	-	Replace the SERVO- PACK.	-
	The surrounding air tempera- ture is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surround- ing air temperature to 40°C or less.	-
	The surface of the Servomo- tor is dirty.	Visually check the surface for dirt.	Clean dirt, dust, and oil from the surface.	-
Servomotor Overheated	There is an overload on the Servomotor.	Check the load status with a monitor.	If the Servomotor is overloaded, reduce the load or replace the Servo Drive with a SERVOPACK and Ser- vomotor with larger capacities.	-
	Polarity detection was not performed correctly.	Check to see if electrical angle 2 (electrical angle from polarity origin) at any position is between ±10°.	Correct the settings for the polarity detection- related parameters.	_

\* Refer to the following manual for details.

 Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)

# **Parameter Lists**

6.1 6.1.1 List of MECHATROLINK-III Common 6.1.2 6.2 List of Servo Parameters ..... 6-4 6.2.1 6.2.2 List of MECHATROLINK-III Common 6.2.3 Parameter Recording Table ..... 6-56 FT41 Specification .....6-69 6.3 6.3.1 List of Servo Parameters ..... 6-69 6.3.2 List of MECHATROLINK-III Common Parameters ..... 6-115 6.3.3 Parameter Recording Table ..... 6-123

This chapter provides information on the parameters.

6.1.1 Interpreting the Parameter Lists

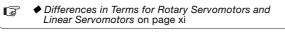
# 6.1 List of Servo Parameters

# 6.1.1 Interpreting the Parameter Lists

The types of motors to which the parameter applies.

- All: The parameter is used for both Rotary Servomotors and Linear Servomotors.
- Rotary: The parameter is used for only Rotary Servomotors.
  Linear: The parameter is used for only Linear Servomotors.

Rotary Servomotor terms are used for parameters that are applicable to all Servomotors. If you are using a Linear Servomotor, you need to interpret the terms accordingly. Refer to the following section for details.



Parameter No.	Size	Ν	lame		Setting Range	Setting Unit	Default Setting	Applica- ble Motors	Whr n Enabled	Classi- fication	Refer- ence
	2	Basic Funct	ion Selectior	ns 0	0000 to 10B1	-	0000	All	After restart	Setup	_
		Servo provid • To	motor and Li ed for both. o row: For Ro ttom row: Fo Rotation D	near otary or Line Direc	n the paramete Servomotor, inf Servomotors ear Servomotor tion Selection section Selection	s	• S     • T     Refe	etup uning er to the follow Σ-7-Series Σ MECHATRO References	wing two class ving section for C-7S SERVOP LINK-III Com Product Manu : SIEP S80000	details. ACK with nunication al	ns
Pn000		n.000X	0 (	Jse ( Jse t	CCW as the for he direction in direction.	orward dire		oder counts	up as the for-		
M3			1	1 (	Jse t	CW as the for he direction ir ard direction. (	n which the	e linear enc	oder counts	,	_
Symbols	are	provided when	a parameter	is va	lid only for a spe	ecific profile.					
	Parameters that are valid only for a MECHATROLINK-II-compatible profile. Parameters that are valid only for a MECHATROLINK-III standard servo profile.										
					ervomotor Sta			Encoder Is N	ot Connected	Referer	nce
		n.X000		When an encoder is not connected, start as SERVOPACK for Rotary Servomotor.							
					n an encoder i ervomotor.	is not conr	ected, star	t as SERVO	PACK for Lin-		
	-										

"After restart" indicates parameters

that will be effective after one of the

The power supply is turned OFF and ON again.The CONFIG command is sent.

• A software reset is executed.

7

following is executed.

#### 6.1.2 List of MECHATROLINK-III Common Parameters

#### List of MECHATROLINK-III Common Parameters 6.1.2

The types of motors to which the parameter applies.

- All: The parameter is used for both Rotary Servomotors and Linear Servomotors.
- Rotary: The parameter is used for only Rotary Servomotors.
- Linear: The parameter is used for only Linear Servomotors.

Rotary Servomotor terms are used for parameters that are applicable to all Servomotors. If you are using a Linear Servomotor, you need to interpret the terms accordingly. Refer to the following section for details.

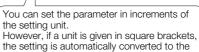
F ◆ Differences in Terms for Rotary Servomotors and Linear Servomotors on page xi

Indicates when a change to the parameter will be effective. "After restart" indicates parameters that will be effective after one of the following is executed.

The power supply is turned OFF and ON again.The CONFIG command is sent.

A software reset is executed. •

Parameter	Size	Name	Setting	Setting Unit	Default	Applicable	When	Classi-
No.	).   Size	Name	Range	[Resolution]	Setting	Motors	Enabled	fication
61 PnAC2	4	Speed Loop Gain	1,000 to 2,000,000	0.001 Hz [0.1 Hz]	40000	All	Immedi- ately	Tuning
				1				



resolution given in the square brackets.

#### **FT40 Specification** 6.2

#### 6.2.1 **List of Servo Parameters**

The following table lists the parameters.

- Note: Do not change the following parameters from their default settings. Reserved parameter Parameters not given in this manual Parameters that are not valid for the Servomotor that you are using, as given in the parameter table

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence				
	2	Basic Fund tions 0	ction Selec-	0000 to 10B1	-	0000	All	After restart	Setup	*1				
			<b>.</b>											
				Direction Selectio										
			Movemen	t Direction Select	ion									
				Use CCW as the f	orward dir	ection.								
		n.000X		Use the direction i tion.	n which th	ne linear er	ncoder counts	s up as the fo	orward dire	∋C-				
				Use CW as the for	ward dire	ction. (Rev	erse Rotation	Mode)						
Pn000				Use the direction in which the linear encoder counts down as the forward direction. (Reverse Movement Mode)										
		n.DDXD	Reserved	Reserved parameter (Do not change.)										
		n.🗆X🗆	Reserved	parameter (Do no	ot change	)								
			Rotary/Lir	ear Servomotor S	Startup Se	election W	hen Encoder	Is Not Conr	nected					
		n.X000		When an encoder motor.	is not cor	nected, st	art as SERVC	PACK for R	otary Serv	0-				
				When an encoder is not connected, start as SERVOPACK for Linear Servo- motor.										
	-		-											

Continued from previous page.

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Application Selections	n Function 1	0000 to 1142	-	0000	All	After restart	Setup	*1		
			1									
			Motor Sto	pping Method fo	r Servo Of	FF and Gro	oup 1 Alarms					
			0	Stop the motor by	/ applying	the dynam	ic brake.					
		n.□□□X		Stop the motor by brake.	/ the apply	ing dynam	ic brake and	then release	the dynan	nic		
			2	2 Coast the motor to a stop without the dynamic brake.								
			Overtrave	I Stopping Metho	d							
				Apply the dynami method set in Pn			motor to a sto	op (use the s	topping			
		n.00X0	1	Decelerate the mo torque and then s	otor to a ste ervo-lock t	op using th the motor.	ne torque set i	in Pn406 as	the maxim	um		
Pn001				Decelerate the mo torque and then le			ne torque set i	in Pn406 as	the maxim	um		
				Decelerate the motor to a stop using the deceleration time set in Pn30, then servo-lock the motor.								
				Decelerate the motor		op using t	he deceleratio	on time set ir	n Pn30A ai	nd		
			Main Circ	uit Power Supply	AC/DC In	put Select	ion					
		n.¤X¤¤	0	Input AC power a minals (do not us			wer supply us	ing the L1, L	2, and L3	ter-		
			1	Input DC power a terminals or the B shared converter)	1 and $\ominus$ 2			0		2		
		n.XDDD	Reserved	parameter (Do no	ot change.	)						
					<b>y</b>							

				Cont	tinued from	previou	s page				
Parameter No.	Size	N	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Selections	n Function 2		0000 to 4213	-	0011	-	After restart	Setup	-
	-										
			MECHAT Option	ROL	INK Comman	d Position	and Spee	ed Control	Applicable Motors	Refere	ence
		n.DDDX	0		erved setting (						
			1		TLIM as the to				All	*2	
			2		erved setting (				_		
			3	Res	erved setting (	Do not us	e.)				
			Torque C	Contro	ol Option				Applicable Motors	Refere	ence
		n.🗆🗆 X 🗆	0	Res	erved setting (	Do not us	e.)				
			1	VLIM) as the	All	*2					
Pn002			Encoder Usage					Applicable Motors	Refere	ence	
		n.¤X¤¤	0	Use the encoder according to encoder specifica- tions.					All *1		
			1	Use	the encoder a	coder.		*1			
			2	Use	the encoder a	as a single	-turn abso	lute encoder.	Rotary		
			External	Enco	der Usage				Applicable Motors	Refere	ence
			0	Do r	not use an exte	ernal enco	der.				
		n.X000	1		external enco CCW motor ro		in the forv	ward direction			
			2	Res	erved setting (	Do not us	e.)		Rotary	*1	
			3		external enco CCW motor ro		s in the rev	erse direction			
			4	Res	erved setting (	Do not us	e.)				

Continued from previous page.

Parameter No.	Size	1	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refe enc	
	2	Application	n Function	0000 to 105F	_	0002	All	Immedi- ately	Setup	*1	
		Colocitoria						atory			
	L 1		Analog Ma	pitor 1 Signal S	alaction						
			Analog Mc	onitor 1 Signal S		-:1\					
			00	Motor speed (1 Motor speed (1							
						,					
			01	Speed reference Speed reference	•	,					
			Torque reference	<b>v</b> ,	,	rauo)					
			02	Force reference	<u>\</u>		1 )				
		03	Position deviati								
			Position amplifi			,	0.05 V/encc	der nulse	unit)		
		04	Position amplifi (0.05 V/linear e	er deviatior	n (after ele	0,1			unit)		
				Position referen	ice speed (	1 V/1.000	min <sup>-1</sup> )				
			05	Position referer							
			06	Reserved settir	ig (Do not i	use.)					
			07	Load-motor po	sition devia	ation (0.01	V/reference u	init)			
		n.□□XX	08	Positioning con (positioning cor		V, position	ing not comp	leted: 0 V)			
			00	Speed feedforv	vard (1 V/1	,000 min <sup>-1</sup>	)				
n006			09	Speed feedforv	vard (1 V/1	,000 mm/s	3)				
			0A	Torque feedforv	vard (1 V/1	00% ratec	l torque)				
				Force feedforward (1 V/100% rated force)							
			0B	Active gain (1st gain: 1 V, 2nd gain: 2 V)							
			0C	Completion of ( (completed: 5 \							
			0D	External encod	er speed (1	V/1,000 r	min <sup>-1</sup> : value at	the motor s	shaft)		
			0E	Reserved settir	ιg (Do not ι	use.)					
			OF	Reserved settin	ιg (Do not ι	use.)					
			10	Main Circuit DC	Ũ						
			11 to 29	Reserved settin							
			30	Pressure feedb							
			01	Pressure feedb							
			31	Pressure feedb							
			32	Pressure feedb							
			33	Pressure feedb Pressure feedb							
			34 to 5F	Reserved settir			JIIIOI				
			0-100								
		n.¤X¤¤	Reserved	parameter (Do n	ot change	.)					
		n.XDDD Reserved parameter (Do not change.)									

Continued on next page.

Devenenter				C atting a	O attine as	Defeuilt		tinued fror	1	1 0	
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refe ence	
	2	Application Selections	n Function	0000 to 105F	_	0000	All	Immedi- ately	Setup	*1	
		4		<b>I</b>		I.	1	1	1	1	
			Analog Mo	onitor 2 Signal Se	election						
			00	Motor speed (1	V/1,000 m	nin <sup>-1</sup> )					
			00	Motor speed (1	V/1,000 m	nm/s)					
			01	Speed reference	e (1 V/1,00	)0 min⁻¹)					
				Speed reference	e (1 V/1,00	)0 mm/s)					
			02	Torque referenc			1 ,				
				Force reference							
			03	Position deviation			,	0.05.1//		- 11)	
			04	Position amplifie				0.05 V/encc	der pulse	unit)	
				Position amplifie (0.05 V/linear er	ncoder pul	se unit)					
			05	Position referen							
			06	Position referen			mm/s)				
			06	Reserved settin		,	V/reference u	unit)			
			08	Positioning com (positioning con	pletion			,			
				Speed feedforw	-		• ·	10100. 0 1)			
Pn007		n.🗆🗆 XX	09	Speed feedforw							
11007				Torque feedforw							
			0A	Force feedforward (1 V/100% rated force)							
			0B	Active gain (1st	-	-					
			0C	Completion of p (completed: 5 V							
			0D	External encode	er speed (1	V/1,000 r	nin <sup>-1</sup> : value at	the motor s	shaft)		
			0E	Reserved settin	g (Do not i	use.)					
			OF	Reserved settin		use.)					
			10	Main Circuit DC							
			11 to 29	Reserved settin	0 (	,	monitor				
			30	Pressure feedba Pressure feedba							
			31	Pressure feedba							
				Pressure feedba							
			32	Pressure feedba							
			33	Pressure feedba							
			34 to 5F	Reserved settin	gs (Do not	use.)					
		n.¤X¤¤	Reserved parameter (Do not change.)								
		n.XDDD	Reserved	parameter (Do no	ot change	.)					

Continued from previous page.

No.         Name         Range         Unit         Setting         Motors         Enabled         fication         ence           2         Application Function Selections 8         0000 to 7121         -         4000         Rotary         After restart         Setup         *1           n         Image         0         Output alarm (A.830) for low battery voltage.         -         4000         Rotary         After restart         Setup         *1           Pn008         Image         0         Output alarm (A.830) for low battery voltage.         - <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Cor</th> <th>ntinued fron</th> <th>n previou</th> <th>s page</th>								Cor	ntinued fron	n previou	s page	
Pn008         Current Control Mode Selection         Notary         restant         Getup         1           Pn008         0         Output alarm (A.830) for low battery voltage.         0         Output alarm (A.830) for low battery voltage.           Pn008         0         Do not detect undervoltage         0         Do not detect undervoltage.           1         Detect undervoltage warning and limit torque at host controller.         2         Detect undervoltage warning and limit torque at host controller.           2         Detect undervoltage warning second for A.971.         0         Detect warnings.           1         Detect warnings.         1         Do not detect warnings except for A.971.           n.XDDD         Reserved parameter (Do not change.)         0000 to         0121         0010         All         After restant         Tuning         *1           n.DDDX         Reserved parameter (Do not change.)         0000 to         0121         0010         All         After restant         Tuning         *1           n.DDDX         Reserved parameter (Do not change.)         0         Use current control mode 1.         *1         *1         *1           n.DDX         Reserved parameter (Do not change.)         0         Use current control mode 1.         *5ERVOPACK Models SGD7S-R70A, -R90A, -1R6A, -2R8A, -5R5A, and		Size	N	lame	0						Refer- ence	
Pn008 <ul> <li>O</li> <li>Output alarm (A.830) for low battery voltage.</li> <li>I</li> <li>Output warning (A.930) for low battery voltage.</li> </ul> Pn008 <ul> <li>Function Selection for Undervoltage</li> <li>Do not detect undervoltage.</li> <li>I</li> <li>Detect undervoltage warning and limit torque at host controller.</li> <li>2</li> <li>Detect undervoltage warning and limit torque with Pn424 and Pn425 (i.e., only in SERVOPACK).</li> </ul> n. IIXIII         O         Detect warnings.           1         Do not detect warnings except for A.971.           n.XIIIII         Reserved parameter (Do not change.)           Reserved parameter (Do not change.)           Reserved parameter (Do not change.)           Image: Current Control Mode Selection           0         Use current control mode 1.           • SERVOPACK Models SGDTS-RT0A, -R90A, -1R6A, -2R8A, -5R5A, and -7R6A: Use current control mode 1.           • SERVOPACK Models SGDTS-RT0A, -180A, -200A, -330A, -470A, -550A, -590A, and -780A: Use current control mode 2.           2         Use current control mode 2.           2 <td></td> <td>2</td> <td>Application Selections</td> <td>n Function 8</td> <td></td> <td>-</td> <td>4000</td> <td>Rotary</td> <td></td> <td>Setup</td> <td>*1</td>		2	Application Selections	n Function 8		-	4000	Rotary		Setup	*1	
Pn008 <ul> <li>O</li> <li>Output alarm (A.830) for low battery voltage.</li> <li>I</li> <li>Output warning (A.930) for low battery voltage.</li> </ul> Pn008 <ul> <li>Function Selection for Undervoltage</li> <li>Do not detect undervoltage.</li> <li>I</li> <li>Detect undervoltage warning and limit torque at host controller.</li> <li>2</li> <li>Detect undervoltage warning and limit torque with Pn424 and Pn425 (i.e., only in SERVOPACK).</li> </ul> n. IIXIII         O         Detect warnings.           1         Do not detect warnings except for A.971.           n.XIIIII         Reserved parameter (Do not change.)           Reserved parameter (Do not change.)           Reserved parameter (Do not change.)           Image: Current Control Mode Selection           0         Use current control mode 1.           • SERVOPACK Models SGDTS-RT0A, -R90A, -1R6A, -2R8A, -5R5A, and -7R6A: Use current control mode 1.           • SERVOPACK Models SGDTS-RT0A, -180A, -200A, -330A, -470A, -550A, -590A, and -780A: Use current control mode 2.           2         Use current control mode 2.           2 <td></td>												
Pn008 <ul> <li>O</li> <li>Output alarm (A.830) for low battery voltage.</li> <li>I</li> <li>Output warning (A.930) for low battery voltage.</li> </ul> Pn008 <ul> <li>Function Selection for Undervoltage</li> <li>Do not detect undervoltage.</li> <li>I</li> <li>Detect undervoltage warning and limit torque at host controller.</li> <li>2</li> <li>Detect undervoltage warning and limit torque with Pn424 and Pn425 (i.e., only in SERVOPACK).</li> </ul> n. IIXIII         O         Detect warnings.           1         Do not detect warnings except for A.971.           n.XIIIII         Reserved parameter (Do not change.)           Reserved parameter (Do not change.)           Reserved parameter (Do not change.)           Image: Current Control Mode Selection           0         Use current control mode 1.           • SERVOPACK Models SGDTS-RT0A, -R90A, -1R6A, -2R8A, -5R5A, and -7R6A: Use current control mode 1.           • SERVOPACK Models SGDTS-RT0A, -180A, -200A, -330A, -470A, -550A, -590A, and -780A: Use current control mode 2.           2         Use current control mode 2.           2 <td></td> <td></td> <td></td> <td>Low Batterv</td> <td>Voltage Alarm</td> <td>/Warning :</td> <td>Selection</td> <td></td> <td></td> <td></td> <td></td>				Low Batterv	Voltage Alarm	/Warning :	Selection					
Pn008       Function       Selection for Undervoltage         0       Do not detect undervoltage.         1       Detect undervoltage warning and limit torque at host controller.         2       Detect undervoltage warning and limit torque with Pn424 and Pn425 (i.e., only in SERVOPACK).         N.IIII       Warning Detection Selection         0       Detect warnings.         1       Do not detect warnings except for A.971.         n.IIIII       Reserved parameter (Do not change.)         1       Do not detect warnings except for A.971.         n.XIIIII       Reserved parameter (Do not change.)         1       Do not detect warnings except for A.971.         n.IIIIIX       Reserved parameter (Do not change.)         1       Do not detect warnings.         1       Do not change.)         1       Selections 9         1       O0000 to 0121         1       O100         1       Selection         0       Use current control mode 1.         • SERVOPACK Models SGD7S-R70A, -R90A, -1R6A, -2R8A, -5R5A, and -7R6A, -580A, and -780A: Use current control mode 1.         • SERVOPACK Models SGD7S-120A, -180A, -200A, -330A, -470A, -550A, -590A, and -780A: Use current control mode 2.         2       Use current control mode 2.         2       Us			n.🗆 🗆 🗆 X		-			oltage.				
Pn008 <ul> <li>Do not detect undervoltage.</li> <li>Detect undervoltage warning and limit torque at host controller.</li> <li>Detect undervoltage warning and limit torque with Pn424 and Pn425 (i.e., only in SERVOPACK).</li> </ul> m.DXDD <ul> <li>Detect undervoltage warning and limit torque with Pn424 and Pn425 (i.e., only in SERVOPACK).</li> </ul> m.DXDD <ul> <li>Detect undervoltage warnings and limit torque with Pn424 and Pn425 (i.e., only in SERVOPACK).</li> <li>Detect warnings.</li> <li>Do not detect warnings except for A.971.</li> <li>m.XDDD             Reserved parameter (Do not change.)</li> </ul> n.XDDD          Reserved parameter (Do not change.)                n.DDDX          Reserved parameter (Do not change.)                n.DDDX               Current Control Mode Selection                 n.DDDX               Current Control Mode Selection                 viscurrent control mode 1.               viscurrent control mode 1.                 viscurrent control mode 1.              viscurrent control mode 1.                 viscurrent control mode 2.                 viscurrent control mode 2.                viscurrent control mode 2.				1 Ou	tput warning (A	.930) for I	ow battery	voltage.				
Pn008 <ul> <li>D on ot detect undervoltage.</li> <li>Detect undervoltage warning and limit torque at host controller.</li> <li>Detect undervoltage warning and limit torque with Pn424 and Pn425 (i.e., only in SERVOPACK).</li> </ul> m.DXDD <ul> <li>Detect undervoltage warning and limit torque with Pn424 and Pn425 (i.e., only in SERVOPACK).</li> </ul> m.DXDD <ul> <li>D etect warnings.</li> <li>D on ot detect warnings except for A.971.</li> <li>m.XDDD             Reserved parameter (Do not change.)</li> </ul> n.DDDX          Reserved parameter (Do not change.)                Pn009               Use current control mode 1. <ul> <li>SERVOPACK Models SGD7S-R70A, -R90A, -1R6A, -2R8A, -5R5A, and -7R6A: Use current control mode 1.             <ul> <li>SERVOPACK Models SGD7S-120A, -180A, -200A, -330A, -470A, -550A, -590A, and -780A: Use current control mode 2.             2             U</li></ul></li></ul>												
Pn008       n.□X□       1       Detect undervoltage warning and limit torque at host controller.         2       Detect undervoltage warning and limit torque with Pn424 and Pn425 (i.e., only in SERVOPACK).         N.□X□□       0       Detect warnings.         1       Do not detect warnings except for A.971.         N.X□□□       Reserved parameter (Do not change.)         2       Application Function Selections 9       0000 to 0121       -       0010       All       After restart       Tuning       *1         N.□□□X□       Reserved parameter (Do not change.)       0010       All       After restart       Tuning       *1         N.□□□X□       Reserved parameter (Do not change.)       0       Use current control mode 1.       *1         Pn009       0       Use current control mode 1.       *1       *180A, -280A, -470A, -550A, -590A, and -780A: Use current control mode 1.         *SERVOPACK Models SGD75-120A, -180A, -200A, -330A, -470A, -550A, -590A, and -780A: Use current control mode 2.       2       Use current control mode 2.         2       Use current control mode 2.       2       Use current control mode 2.       2         2       Use current control mode 2.       2       Use current control mode 2.         2       Use current control mode 2.       2       Use current control mode 2.						-						
Image: Second United Voltage Warming and limit forque of Host Controller.         2       Detect Undervoltage warning and limit forque with Pn424 and Pn425 (i.e., only in SERVOPACK).         Marning Detection Selection       0       Detect warnings.         1       Do not detect warnings except for A.971.         n.IXIII       Reserved parameter (Do not change.)         2       Application Function 0000 to 0121 - 0010 All After restart Tuning *1         N.IIIIIXI       Reserved parameter (Do not change.)         1       Use current control mode 1.         0       Use current control mode 1.         0       Use current control mode 1.         1       SERVOPACK Models SGD7S-R70A, -R90A, -1R6A, -2R8A, -5R5A, and -7R6A: Use current control mode 1.         1       SERVOPACK Models SGD7S-R70A, -R90A, -1R6A, -2R8A, -5R5A, and -7R6A: Use current control mode 1.         1       SERVOPACK Models SGD7S-R70A, -R90A, -1R6A, -2R8A, -5R5A, and -7R6A: Use current control mode 1.         1       SERVOPACK Models SGD7S-R70A, -R90A, -1R6A, -2R8A, -5R5A, and -7R6A: Use current control mode 2.         2       Use current control mode 1.         2       Use current control mode 2.         2       Use current control mode 2.         2       Use current control mode 2.         2       Use speed detection 1.         1       Use speed detection	Pn008					· · ·		torque et bec	t controllor			
Pn009       2       in SERVOPACK).       0       0       1			11.00/0			<b>°</b>	0			105 (i.o. c		
n.IIXIII       0       Detect warnings.         1       Do not detect warnings except for A.971.         n.XIIIII       Reserved parameter (Do not change.)         2       Application Function Selections 9       0000 to 0121       -       0010       All       After restart       Tuning       *1         n.IIIIXIX       Reserved parameter (Do not change.)       0       Use current control mode 1.       *1         n.IIIXII       0       Use current control mode 1.       *1         n.IIIXII       *SERVOPACK Models SGD7S-R70A, -R90A, -1R6A, -2R8A, -5R5A, and -7R6A: Use current control mode 1.       *SERVOPACK Models SGD7S-120A, -180A, -200A, -330A, -470A, -550A, -590A, and -780A: Use current control mode 2.         2       Use current control mode 2.       Use current control mode 2.         2       Use speed detection 1.         1       Use speed detection 2.				- 2		ge warning	y and imit	lorque with Pi	11424 and Ph	425 (I.e., C	riiy	
Image: Construction of the end of t				Warning Det	ection Selectio	n						
Image of the product			n.🗆X🗆	0 De	tect warnings.							
2       Application Function Selections 9       0000 to 0121       -       0010       All       After restart       Tuning       *1         n.□□□X       Reserved parameter (Do not change.)         Implicit       Current Control Mode Selection 0       Use current control mode 1.         ·       SERVOPACK Models SGD7S-R70A, -R90A, -1R6A, -2R8A, -5R5A, and -7R6A: Use current control mode 1.         ·       SERVOPACK Models SGD7S-120A, -180A, -200A, -330A, -470A, -550A, -590A, and -780A: Use current control mode 2.         2       Use current control mode 2.				1 Do	not detect war	nings exc	ept for A.9	71.				
2       Application Function Selections 9       0000 to 0121       -       0010       All       After restart       Tuning       *1         n.□□□X       Reserved parameter (Do not change.)         Implicit       Current Control Mode Selection 0       Use current control mode 1.         ·       SERVOPACK Models SGD7S-R70A, -R90A, -1R6A, -2R8A, -5R5A, and -7R6A: Use current control mode 1.         ·       SERVOPACK Models SGD7S-120A, -180A, -200A, -330A, -470A, -550A, -590A, and -780A: Use current control mode 2.         2       Use current control mode 2.				December			1					
Pn009       2       Selections 9       0121       -       0010       All       restart       Iulling       1         n.□□X       Reserved parameter (Do not change.)         n.□□X□       0       Use current control Mode Selection         0       Use current control mode 1.         •       SERVOPACK Models SGD7S-R70A, -R90A, -1R6A, -2R8A, -5R5A, and -7R6A: Use current control mode 1.         •       SERVOPACK Models SGD7S-120A, -180A, -200A, -330A, -470A, -550A, -590A, and -780A: Use current control mode 2.         2       Use current control mode 2.         2       Use current control mode 2.         2       Use current control mode 2.         1       Use speed detection 1.         1       Use speed detection 2.				Reserved pa	rameter (Do no	ot change.	.)					
Pn009       2       Selections 9       0121       -       0010       All       restart       Iulling       1         n.□□X       Reserved parameter (Do not change.)         n.□□X□       0       Use current control Mode Selection         0       Use current control mode 1.         •       SERVOPACK Models SGD7S-R70A, -R90A, -1R6A, -2R8A, -5R5A, and -7R6A: Use current control mode 1.         •       SERVOPACK Models SGD7S-120A, -180A, -200A, -330A, -470A, -550A, -590A, and -780A: Use current control mode 2.         2       Use current control mode 2.         2       Use current control mode 2.         2       Use current control mode 2.         1       Use speed detection 1.         1       Use speed detection 2.					1	1	1	1	1	1		
Pn009       Current Control Mode Selection         0       Use current control mode 1.         • SERVOPACK Models SGD7S-R70A, -R90A, -1R6A, -2R8A, -5R5A, and         -7R6A: Use current control mode 1.         • SERVOPACK Models SGD7S-120A, -180A, -200A, -330A, -470A, -550A,         -590A, and -780A: Use current control mode 2.         2       Use current control mode 2.         2       Use current control mode 2.         1       Use speed detection 1.         1       Use speed detection 1.		2	Application Selections	n Function ; 9		-	0010	All		Tuning	*1	
Pn009       Current Control Mode Selection         0       Use current control mode 1.         • SERVOPACK Models SGD7S-R70A, -R90A, -1R6A, -2R8A, -5R5A, and         -7R6A: Use current control mode 1.         • SERVOPACK Models SGD7S-120A, -180A, -200A, -330A, -470A, -550A,         -590A, and -780A: Use current control mode 2.         2       Use current control mode 2.         2       Use current control mode 2.         1       Use speed detection 1.         1       Use speed detection 1.												
Pn009       Current Control Mode Selection         0       Use current control mode 1.         • SERVOPACK Models SGD7S-R70A, -R90A, -1R6A, -2R8A, -5R5A, and         -7R6A: Use current control mode 1.         • SERVOPACK Models SGD7S-120A, -180A, -200A, -330A, -470A, -550A,         -590A, and -780A: Use current control mode 2.         2       Use current control mode 2.         2       Use current control mode 2.         1       Use speed detection         0       Use speed detection 1.         1       Use speed detection 2.												
n.□□X□       0       Use current control mode 1.         -7R6A: Use current control mode 1.       -7R6A: Use current control mode 1.         -7R6A: Use current control mode 1.       -7R6A: Use current control mode 1.         ·590A, and -780A: Use current control mode 2.       2         2       Use current control mode 2.         2       Use current control mode 2.         0       Use speed detection 1.         1       Use speed detection 2.			n.🗆 🗆 🗆 X	Reserved pa	rameter (Do no	ot change.	)					
n.□□X□       0       Use current control mode 1.         1       • SERVOPACK Models SGD7S-R70A, -R90A, -1R6A, -2R8A, -5R5A, and         -7R6A: Use current control mode 1.       • SERVOPACK Models SGD7S-120A, -180A, -200A, -330A, -470A, -550A,         -590A, and -780A: Use current control mode 2.       2         2       Use current control mode 2.         0       Use speed detection 1.         1       Use speed detection 2.				Current Cont	rol Mode Sele	ction						
n.□□X□       1       • SERVOPACK Models SGD7S-R70A, -R90A, -1R6A, -2R8A, -5R5A, and -7R6A: Use current control mode 1. • SERVOPACK Models SGD7S-120A, -180A, -200A, -330A, -470A, -550A, -590A, and -780A: Use current control mode 2.         2       Use current control mode 2.         2       Use current control mode 2.         0       Use speed detection 1.         1       Use speed detection 2.												
n.□□X□       1       -7R6A: Use current control mode 1.         · SERVOPACK Models SGD7S-120A, -180A, -200A, -330A, -470A, -550A, -590A, and -780A: Use current control mode 2.         2       Use current control mode 2.         2       Use current control mode 2.         0       Use speed detection 1.         1       Use speed detection 2.								D00A 1D6	A 200A 5	P5A and		
Pn009       1       • SERVOPACK Models SGD7S-120A, -180A, -200A, -330A, -470A, -550A, -590A, and -780A: Use current control mode 2.         2       Use current control mode 2.         2       Use current control mode 2.         0       Use speed detection 1.         1       Use speed detection 2.			n.🗆🗆 X 🗆	-7				-n90A, - In0/	R, -ZNOA, -J	noA, anu		
2     Use current control mode 2.       n.□X□□     Speed Detection Method Selection       0     Use speed detection 1.       1     Use speed detection 2.	Pn009							-180A, -200A	, -330A, -47	'0A, -550A	١,	
Speed Detection Method Selection       0     Use speed detection 1.       1     Use speed detection 2.				-5	90A, and -780	A: Use cu	rrent contr	ol mode 2.				
n.DXDD 0 Use speed detection 1. 1 Use speed detection 2.				2 Use	e current contro	ol mode 2.						
n.DXDD 0 Use speed detection 1. 1 Use speed detection 2.				Speed Detec	tion Method S	election						
1     Use speed detection 2.			n. 🗆 X 🗆 🗆	-								
n.XDDD Reserved parameter (Do not change.)					•						_	
			n.XDDD	Reserved pa	rameter (Do no	ot change.	)					

Continued on next page.

n.□□□X       0       method set in Pn001 =         1       Decelerate the motor to torque. Use the setting         2       Decelerate the motor to torque and then let the         3       Decelerate the motor to torque and then let the         3       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting         0       Apply the dynamic brake method set in Pn001 =         1       Decelerate the motor to to torque. Use the setting         2       Decelerate the motor to to torque and then let the         3       Decelerate the motor to to torque and then let the         3       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =	Setting       Motors       Enabled       fication       er         0001       All       After restart       Setup       a         2 Alarms       Setup       a         or coast the motor to a stop (use the stopping DDDX).       stop using the torque set in Pn406 as the maximum Pn001 = n.DDDX for the status after stopping.         stop using the torque set in Pn406 as the maximum otor coast.       stop using the deceleration time set in Pn30A. Use DDDX for the status after stopping.         stop using the deceleration time set in Pn30A and       stop using the torque set in Pn406 as the maximum pn001 = n.DDDX for the status after stopping.         stop using the torque set in Pn406 as the maximum Pn001 = n.DDDX for the status after stopping.         stop using the torque set in Pn406 as the maximum Pn001 = n.DDDX for the status after stopping.         stop using the torque set in Pn406 as the maximum Pn001 = n.DDDX for the status after stopping.         stop using the torque set in Pn406 as the maximum pn001 = n.DDDX for the status after stopping.         stop using the torque set in Pn406 as the maximum pn001 = n.DDDX for the status after stopping.         stop using the torque set in Pn406 as the maximum pn001 = n.DDDX for the status after stopping.         stop using the torque set in Pn406 as the maximum         pn001 = n.DDDX for the status after stopping.         stop using the deceleration time set in Pn30A. Use										
2       Selections A       0044       -         0       Apply the dynamic brak method set in Pn001 =       0       Apply the dynamic brak method set in Pn001 =         1       Decelerate the motor to torque. Use the setting       2       Decelerate the motor to torque and then let the         3       Decelerate the motor to the setting of Pn001 =       4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =       1       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =       1       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =       1       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =       1       Decelerate the motor to the setting of Pn001 =         2       Decelerate the motor to the setting of Pn001 =       1       Decelerate the motor to the setting of Pn001 =         3       Decelerate the motor coas       1       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor coas       1       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor coas       1       Decelerate the motor coas         1       Decelerate the motor coas	OUD1       All       restart       Setup         2 Alarms         or coast the motor to a stop (use the stopping         DDDX).         stop using the torque set in Pn406 as the maximum         Pn001 = n.DDDX for the status after stopping.         stop using the torque set in Pn406 as the maximum otor coast.         stop using the deceleration time set in Pn30A. Use         DDX for the status after stopping.										
Motor Stopping Method for Grow         0       Apply the dynamic brakemethod set in Pn001 =         1       Decelerate the motor to torque. Use the setting         2       Decelerate the motor to torque and then let the         3       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor case         0       Apply the dynamic brakemethod the setting of Pn001 =         1       Decelerate the motor to torque and then let the         3       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor case         0       Apply the dynamic brakemethod set in Pn001 =         1       Decelerate the motor to torque. Use the setting         1       Decelerate the motor to torque. Use the setting         2       Decelerate the motor to torque and then let the         3       Decelerate the motor to torque and then let the         3       Decelerate the motor to torque and then let the         3       Decelerate the motor to torque and then let the         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Dece	2 Alarms or coast the motor to a stop (use the stopping □□□X). stop using the torque set in Pn406 as the maximum Pn001 = n.□□□X for the status after stopping. stop using the torque set in Pn406 as the maximum otor coast. stop using the deceleration time set in Pn30A. Use □□□X for the status after stopping. stop using the deceleration time set in Pn30A and so or coast the motor to a stop (use the stopping □□□X). stop using the torque set in Pn406 as the maximum Pn001 = n.□□□X for the status after stopping. stop using the torque set in Pn406 as the maximum Pn001 = n.□□□X for the status after stopping. stop using the torque set in Pn406 as the maximum pn001 = n.□□□X for the status after stopping. stop using the torque set in Pn406 as the maximum pn001 = n.□□□X for the status after stopping. stop using the torque set in Pn406 as the maximum pn001 = n.□□□X for the status after stopping. stop using the torque set in Pn406 as the maximum pn001 = n.□□□X for the status after stopping.										
Pn00A       Apply the dynamic brake method set in Pn001 =         1       Decelerate the motor to torque. Use the setting         2       Decelerate the motor to torque and then let the         3       Decelerate the motor to torque and then let the         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the net the motor coast         0       Apply the dynamic brake method set in Pn001 =         1       Decelerate the motor to to torque. Use the setting         2       Decelerate the motor to to torque and then let the         3       Decelerate the motor to to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =         3       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         6       Reserved parameter (D	or coast the motor to a stop (use the stopping DDX). stop using the torque set in Pn406 as the maximum Pn001 = n.DDX for the status after stopping. stop using the torque set in Pn406 as the maximum otor coast. stop using the deceleration time set in Pn30A. Use DDX for the status after stopping. stop using the deceleration time set in Pn30A and coast the motor to a stop (use the stopping DDX). stop using the torque set in Pn406 as the maximum Pn001 = n.DDX for the status after stopping. stop using the torque set in Pn406 as the maximum Pn001 = n.DDX for the status after stopping. stop using the torque set in Pn406 as the maximum otor coast. stop using the torque set in Pn406 as the maximum pn001 = n.DDX for the status after stopping. stop using the torque set in Pn406 as the maximum pn001 = n.DDX for the status after stopping. stop using the torque set in Pn406 as the maximum process.										
Pn00A       0       method set in Pn001 =         1       Decelerate the motor to torque. Use the setting         2       Decelerate the motor to torque and then let the         3       Decelerate the motor to torque and then let the         3       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor coast         0       Apply the dynamic brak method set in Pn001 =         1       Decelerate the motor to torque. Use the setting         2       Decelerate the motor to torque. Use the setting         1       Decelerate the motor to torque. Use the setting         2       Decelerate the motor to torque and then let the         3       Decelerate the motor to torque and then let the         3       Decelerate the motor to torque and then let the         3       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =	<ul> <li>a construction of the status after stopping.</li> <li>b construction of the status after stopping.</li> <li>c construction of the status after stopping.</li> </ul>										
n.□□□X       1       torque. Use the setting         2       Decelerate the motor to torque and then let the         3       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor coast         0       Apply the dynamic brack method set in Pn001 =         1       Decelerate the motor to torque and then let the         0       Apply the dynamic brack method set in Pn001 =         1       Decelerate the motor to torque. Use the setting         2       Decelerate the motor to torque and then let the         3       Decelerate the motor to torque and then let the         3       Decelerate the motor to torque and then let the         3       Decelerate the motor to torque and then let the         3       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         1       Reserved parameter (Do not chase the setting of Pn001 =         1       Application Function       00000 to<	Pn001 = n. I I X for the status after stopping. stop using the torque set in Pn406 as the maximum otor coast. stop using the deceleration time set in Pn30A. Use I X for the status after stopping. stop using the deceleration time set in Pn30A and or coast the motor to a stop (use the stopping I I X). stop using the torque set in Pn406 as the maximum Pn001 = n. I X for the status after stopping. stop using the torque set in Pn406 as the maximum pn001 = n. I X for the status after stopping. stop using the torque set in Pn406 as the maximum otor coast. stop using the torque set in Pn406 as the maximum otor coast.										
Pn00A       2       Decelerate the motor for the setting of Pn001 = 14         3       Decelerate the motor to the setting of Pn001 = 14         4       Decelerate the motor to then let the motor coast         9       Apply the dynamic brack method set in Pn001 = 1         1       Decelerate the motor to to rouge and then let the dynamic brack method set in Pn001 = 1         1       Decelerate the motor to to rouge and then let the dynamic brack method set in Pn001 = 1         2       Decelerate the motor to to rouge and then let the dynamic brack method set in Pn001 = 1         2       Decelerate the motor to to rouge and then let the dynamic brack method set in Pn001 = 1         3       Decelerate the motor to to rouge and then let the dynamic brack method set in Pn001 = 1         4       Decelerate the motor to to rouge and then let the dynamic brack method set in Pn001 = 1         3       Decelerate the motor to to rouge and then let the dynamic brack method set in Pn001 = 1         4       Decelerate the motor to the setting of Pn001 = 1         4       Decelerate the motor coast         n	otor coast. stop using the deceleration time set in Pn30A. Use DDX for the status after stopping. stop using the deceleration time set in Pn30A and or coast the motor to a stop (use the stopping DDX). stop using the torque set in Pn406 as the maximum Pn001 = n.DDX for the status after stopping. stop using the torque set in Pn406 as the maximum otor coast. stop using the deceleration time set in Pn30A. Use										
Pn00A       Stopping Method for Forced Stophing Method for Forced Stophing Method for Forced Stophing Method set in Pn001 =         n.□□X□       Apply the dynamic brakemethod set in Pn001 =         1       Decelerate the motor to torque. Use the setting         2       Decelerate the motor to torque and then let the         3       Decelerate the motor to torque and then let the         4       Decelerate the motor to torque and then let the         1       Decelerate the motor to torque and then let the         2       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =         2       Application Function       0000 to	☐ □ X for the status after stopping.     stop using the deceleration time set in Pn30A and     s     or coast the motor to a stop (use the stopping     □□ X).     stop using the torque set in Pn406 as the maximum     Pn001 = n.□□□X for the status after stopping.     stop using the torque set in Pn406 as the maximum     otor coast.     stop using the deceleration time set in Pn30A. Use										
Pn00A       Stopping Method for Forced Stop         0       Apply the dynamic brakmethod set in Pn001 =         1       Decelerate the motor to torque. Use the setting         2       Decelerate the motor to torque and then let the         3       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to torque and then let the         1       Decelerate the motor to the setting of Pn001 =         2       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to the setting of Pn001 =         2       Application Function       0000 to	s or coast the motor to a stop (use the stopping DDX). stop using the torque set in Pn406 as the maximum Pn001 = n.DDX for the status after stopping. stop using the torque set in Pn406 as the maximum otor coast. stop using the deceleration time set in Pn30A. Use										
n.□□X□       0       Apply the dynamic brak method set in Pn001 =         1       Decelerate the motor to torque. Use the setting         2       Decelerate the motor to torque and then let the         3       Decelerate the motor to torque and then let the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         1       Decelerate the motor to torque and then let the         3       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to the setting of Pn001 =         1       Reserved parameter (Do not chase)         n.□X□□       Reserved parameter (Do not chase)         1       0000 to	or coast the motor to a stop (use the stopping DDX). stop using the torque set in Pn406 as the maximum Pn001 = n.DDX for the status after stopping. stop using the torque set in Pn406 as the maximum otor coast. stop using the deceleration time set in Pn30A. Use										
n.□□X□       0       method set in Pn001 =         1       Decelerate the motor to torque. Use the setting         2       Decelerate the motor to torque and then let the         3       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor coast         n.□X□□       Reserved parameter (Do not chast         n.X□□□       Reserved parameter (Do not chast         n.X□□□       Reserved parameter (Do not chast	Import										
n.□□X□       1       torque. Use the setting         2       Decelerate the motor to torque and then let the         3       Decelerate the motor to the setting of Pn001 =         4       Decelerate the motor to then let the motor coast         n.□X□□       Reserved parameter (Do not chast         n.X□□□       Reserved parameter (Do not chast         n.2       Application Function       0000 to	$Pn001 = n.\square\square\squareX$ for the status after stopping. stop using the torque set in Pn406 as the maximum otor coast. stop using the deceleration time set in Pn30A. Use										
2     Decelerate the motor to the setting of Pn001 = 1       3     Decelerate the motor to the setting of Pn001 = 1       4     Decelerate the motor to then let the motor coas       n.□X□□     Reserved parameter (Do not chase       n.X□□□     Reserved parameter (Do not chase       2     Application Function     0000 to	otor coast. stop using the deceleration time set in Pn30A. Use										
3       the setting of Pn001 =         4       Decelerate the motor to then let the motor coast         n.□X□□       Reserved parameter (Do not chaster)         n.X□□□       Reserved parameter (Do not chaster)         2       Application Function       0000 to											
4     then let the motor coas       n.□X□□     Reserved parameter (Do not chan       n.X□□□     Reserved parameter (Do not chan       2     Application Function     0000 to	The setting of Phull = $h$ . LILLX for the status after stopping.										
n.X□□□ Reserved parameter (Do not cha	stop using the deceleration time set in Pn30A and										
Application Function 0000 to _	n.□X□□ Reserved parameter (Do not change.)										
	0000 All After restart Setup										
Operator Parameter Display Sele	on										
n. DDX 0 Display only setup paran	ters.										
1 Display all parameters.											
Motor Stopping Method for Grou	2 Alarms										
	Motor Stopping Method for Group 2 Alarms										
Pn00B											
2 Set the stopping method	the speed reference to 0. or coast the motor to a stop (use the stopping										
Power Input Selection for Three-p	the speed reference to 0. or coast the motor to a stop (use the stopping □□□X).										
n.□X□□ 0 Use a three-phase powe	the speed reference to 0. or coast the motor to a stop (use the stopping $\square \square X$ ). with Pn00A = n. $\square \square \square X$ .										
	the speed reference to 0. or coast the motor to a stop (use the stopping DDX). vith Pn00A = n.DDX. ase SERVOPACK										
n.XDDD Reserved parameter (Do not char	the speed reference to 0. or coast the motor to a stop (use the stopping DDX). vith Pn00A = n.DDX. ase SERVOPACK										
	the speed reference to 0. or coast the motor to a stop (use the stopping DDX). with Pn00A = n.DDX. ase SERVOPACK supply input. supply input as a single-phase power supply input.										

Continued from previous page.

Continued from previous page.

							Con	tinued from	n previou:	s page
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Selections	n Function C	0000 to 0131	-	0000	-	After restart	Setup	*1
			Function Sele	ection for Test	without a	Motor			Applical Motor	
		n.□□□X		able tests witho ble tests witho					All	
			Encoder Res	olution for Test	ts without	a Motor			Applical Motor	
Pn00C		n.00X0		e 13 bits.					_	
		11.00/0		20 bits.					Rotary	ý
				e 24 bits.					-	
		n.OXOO	Encoder Type	e Selection for	Tests with	nout a Mot	or		Applical Motor	
				an incrementa an absolute e					All	
	-		I USE	an absolute e	ncouer.					
	2	Application Selections	n Function D	0000 to 1001	-	0000	All	After restart	Setup	*1
		n.DDDX	Reserved pa	rameter (Do no	ot change	)				
Pn00D		n.DDXD	Reserved pa	rameter (Do no	ot change	)				
THOOD		n.¤X¤¤	Reserved pa	rameter (Do no	ot change	)				
				arning Detecti						
		n.XDDD		not detect ove		rnings.				
					warnings.					
	2	Application Selections	r Function F	0000 to 2011	-	0000	All	After restart	Setup	*1
				Maintenance	-					
Pn00F		n.□□□X		ot detect preve ct preventative			0			
111001		n.00X0		rameter (Do no			.9			
	.	n.0X00	•	rameter (Do no	<b>.</b>	,				
						·				
		n.XDDD	Reserved pa	rameter (Do no	or change.	)				
Pn021	2	Reserved p	parameter (Do e.)	-	-	0000	All	-	-	_
Pn040	2	•	parameter (Do	_	_	0000	_	_	_	-
	1		- /		l		1	Continue	ed on nex	t nade

							Con	tinued from	n previou	s page.			
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Application Selections		0000 to 1111	_	0000	Linear	After restart	Setup	-			
			Polarity Sens	sor Selection									
		n.🗆🗆 🛛 X		e polarity sense	or.								
			1 Do	not use polarit	y sensor.								
			Motor Phase	Sequence Se	lection								
Pn080		n.🗆🗆 X 🗆	0 Set	a phase-A lea	d as a pha	ase sequer	nce of U, V, ar	nd W.					
			1 Set	a phase-B lea	d as a pha	ase sequer	nce of U, V, ar	nd W.					
		n.¤X¤¤	Reserved pa	rameter (Do no	ot change.	)							
			Calculation N	Nethod for Max	ximum Sp	eed or En	coder Output	Pulses					
		n.XDDD		culate the enco			0						
			1 Cal	culate the max	imum spe	ed for a fix	ed encoder o	utput pulse	setting.				
		Application	Function	0000 to	1		1	After	1				
	2	Application Selections		0000 to 1111	-	0000	All	After restart	Setup	*1			
	;			<u> </u>									
		n.DDDX	1	se Output Sele tput phase-C p		in the for	ward direction						
5.00/		11.0007		tput phase C p	,				าร.				
Pn081		n.DDXD	Reserved pa	served parameter (Do not change.)									
		n.🗆X🗆	Reserved pa	rameter (Do no	ot change.	)							
		n.XDDD	Reserved pa	served parameter (Do not change.)									
			•	, , , , , , , , , , , , , , , , , , ,		,							
Pn100	2	Speed Loc	op Gain	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1			
Pn101	2	Speed Loc Time Cons	op Integral stant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1			
Pn102	2	Position Lo	oop Gain	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1			
Pn103	2	Moment of	f Inertia Ratio	0 to 20,000	1%	100	All	Immedi- ately	Tuning	*1			
Pn104	2	Second Sp Gain	beed Loop	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1			
Pn105	2	Second Sp Integral Tir	beed Loop me Constant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1			
Pn106	2	Second Po Gain	osition Loop	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1			
Pn109	2	Feedforwa		0 to 100	1%	0	All	Immedi- ately	Tuning	*1			
Pn10A	2	Feedforwa Constant	rd Filter Time	0 to 6,400	0.01 ms	0	All	Immedi- ately	Tuning	*1			

الممين مناجم ~

Continued from previous page.

	Contin									
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Gain Applie tions	cation Selec	- 0000 to 5334	-	0000	All	_	Setup	*1
			Mode Swi	tching Selection					Whe Enab	
				Jse the internal to Pn10C).	orque refer	ence as th	e condition (le	evel setting:		
			1 ⊢	Jse the speed ref Jse the speed ref				8 /		
		n.🗆🗆 🛛 X		Jse the accelerat				<b>0</b> ,	Imme	
			2	Pn10E). Use the accelerat	ion referen	ce as the	condition (leve	el setting:	atel	У
Pn10B				Pn182). Use the position o	deviation a	s the cond	lition (level set	ting: Pn10F)		
			4	Do not use mode	switching.					
			Speed Lo	op Control Metho	od				Whe Enab	
		n.🗆🗆 X 🗆		PI control -P control					Afte	er
				Reserved settings	(Do not u	se.)			resta	ırt
		n.¤X¤¤	Reserved	parameter (Do no	ot change	)				
	_	n.XDDD	Reserved	parameter (Do no		,		Immedi-		
Pn10C	2	for Torque	Reference	0 to 800	1%	200	All	ately	Tuning	*1
Pn10D	2	for Speed		0 to 10,000	1 min <sup>-1</sup>	0	Rotary	Immedi-		
Pn10E	2	Mode Swit for Acceler	ching Loval			-		ately	Tuning	*1
Pn10F	2			0 to 30,000	1 min <sup>-1</sup> /s	0	Rotary		Tuning Tuning	*1 *1
				0 to 30,000 0 to 10,000	1 min <sup>-1</sup> /s 1 refer- ence unit	-	-	ately Immedi-		
Pn11F	2	for Positior	ching Level	0 10 30,000	1 refer- ence	0	Rotary	ately Immedi- ately Immedi-	Tuning	*1
Pn11F Pn121	2	for Position Position In Constant	ching Level	0 to 10,000 0 to 10,000 0 to 50,000	1 refer- ence unit	0	Rotary	ately Immedi- ately Immedi- ately Immedi-	Tuning	*1 *1
		for Position Position In Constant Friction Co Gain	ration ching Level n Deviation tegral Time ompensatior iction Com-	0 to 10,000 0 to 10,000 0 to 50,000 1 10 to 1,000	1 refer- ence unit 0.1 ms	0	All All	ately Immedi- ately Immedi- ately Immedi- ately	Tuning Tuning Tuning	*1 *1 *1
Pn121	2	for Position In Constant Friction Cc Gain Second Fri pensation	ration ching Level n Deviation tegral Time pompensatior dain mpensatior	0 to 30,000 0 to 10,000 0 to 50,000 1 10 to 1,000 10 to 1,000	1 refer- ence unit 0.1 ms 1%	0 0 0 100	All All All	ately Immedi- ately Immedi- ately Immedi- ately Immedi-	Tuning Tuning Tuning Tuning	*1 *1 *1 *1
Pn121 Pn122	2	for Position In Constant Friction Co Gain Second Fri pensation Friction Co Coefficient Friction Co	ration ching Level n Deviation tegral Time pompensatior dain mpensatior	0 to 30,000 0 to 10,000 0 to 50,000 1 0 to 1,000 1 0 to 1,000 1 0 to 100	1 reference unit 0.1 ms 1%	0 0 0 100 100	All All All All All All	ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi-	Tuning Tuning Tuning Tuning Tuning	*1 *1 *1 *1 *1
Pn121 Pn122 Pn123	2 2 2	for Position Position In Constant Friction Co Gain Second Fri pensation Friction Co Coefficient Friction Co Frequency	ration ching Level n Deviation tegral Time pompensatior compensation pompensation correction pompensation	0 to 30,000           0 to 10,000           0 to 50,000           10 to 1,000           10 to 1,000           10 to 100           10,000 to 10,000	1 reference unit 0.1 ms 1% 1% 1%	0 0 100 100 0	All All All All All All All All	ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi-	Tuning Tuning Tuning Tuning Tuning Tuning	*1 *1 *1 *1 *1 *1
Pn121 Pn122 Pn123 Pn124	2 2 2 2	for Position Position In Constant Friction Cc Gain Second Fri pensation Friction Cc Coefficient Friction Cc Frequency Friction Cc Gain Corre	ration ching Level n Deviation tegral Time pompensatior compensation pompensation correction pompensation	0 to 30,000         0 to 10,000         0 to 50,000         10 to 1,000         10 to 1,000         10 to 1,000         10 to 100         -10,000 to 10,000         1 to 1,000	1 refer- ence unit 0.1 ms 1% 1% 1% 0.1 Hz	0 0 100 100 0 0	Rotary       All       All       All       All       All       All       All       All       All       All	ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately	Tuning Tuning Tuning Tuning Tuning Tuning Tuning	*1 *1 *1 *1 *1 *1 *1
Pn121 Pn122 Pn123 Pn124 Pn125	2 2 2 2 2 2	for Position Position In Constant Friction Cc Gain Second Fri pensation Friction Cc Coefficient Friction Cc Frequency Friction Cc Gain Corre Gain Switc	ration ching Level n Deviation tegral Time ompensation compensation correction ompensation correction	0 to 30,000         0 to 10,000         0 to 50,000         10 to 1,000         10 to 1,000         0 to 100         10 to 100         11 to 1,000         10 to 50,000         10 to 100         10 to 1000         10 to 100         10 to 100	1 reference unit 0.1 ms 1% 1% 1% 0.1 Hz 1%	0 0 100 100 0 0 100	Rotary       All       All       All       All       All       All       All       All       All       All	ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately	Tuning Tuning Tuning Tuning Tuning Tuning Tuning	*1 *1 *1 *1 *1 *1 *1 *1 *1
Pn121 Pn122 Pn123 Pn124 Pn125 Pn131	2 2 2 2 2 2 2 2	for Position In Constant Friction Cc Gain Second Fri pensation Friction Cc Coefficient Friction Cc Frequency Friction Cc Gain Corre Gain Switc Gain Switc	ration reching Level n Deviation tegral Time ompensation Gain ompensation Correction ompensation correction correction	0 to 30,000           0 to 10,000           0 to 50,000           10 to 1,000           11 to 65,535           11 to 65,535	1 refer- ence unit 0.1 ms 1% 1% 0.1 Hz 1% 1 ms	0 0 100 100 0 100 0 100	Rotary All All All All All All All All All	ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately	Tuning Tuning Tuning Tuning Tuning Tuning Tuning Tuning Tuning	*1 *1 *1 *1 *1 *1 *1 *1 *1

			Continued from previous page.									
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2		Gain Switch-	0000 to 0052	_	0000	All	Immedi- ately	Tuning	*1		
Pn139			Gain Switch 0 Th na 1 Re 2 Th Switch 0 /C 1 /C 2 /N 3 /N	ing Selection ie manual gain s ie gain is switch is (SVCMD_IO). served setting ( ie gain is switch itching condition A OIN (Positioning OIN (Positioning OIN (Positioning EAR (Near Outp EAR (Near Outp	ed manua Do not us n switchir ed automa n A is sati e first gain g Complet g Complet g Complet but) signal	lly with G- e.) g pattern stically fron sfied. The when swit on Output on Output turns ON. turns OFF.	SEL in the ser 1. n the first gair gain is switch ching condition ) signal turns ) signal turns	ately vo comman to the seco ed automati on A is not s ON. OFF.	d output s ond gain wi cally from atisfied.	ig-		
		» DVDD	5 Po	osition reference	input is C	N.	position rele	rence input i				
		n.¤X¤¤	Reserved parameter (Do not change.)									
	_	n.XDDD	Reserved pa									
Pn13D	2	Current Ga	in Level	100 to 2,000	1%	2000	All	Immedi- ately	Tuning	*1		
	2		owing Con- d Selections	0000 to 1121	-	0100	All	Immedi- ately	Tuning	*1		
Pn140	-	n.□□□X n.□□X□ n.□X□□	0         Do n           1         Use           0         Do n           1         Perf           2         Perf           Vibration         Super           0         Do n           1         Perf           2         Perf           0         Do n           1         Perf           0         Do n           1         Acc           0         No           Speed         Feed           0         Do no	wing Control Se not use model for model following ppression Sele not perform vibr form vibration su form vibration su ppression Adju o not adjust vibration ning without a host ning. ljust vibration su thout a host refe g. forward (VFF)/T o not use model se model following	ollowing c g control. ction ation supp uppression uppression stment So ation supp ost referer uppression erence, au	oression. I for a special for two special election pression autoression autores automatic totuning w edforward control and	tomatically du ning with a ho cally during ex ith a host refe (TFF) Selecti d speed/torqu	uring executiost reference eccution of a perence, and o on ue feedforwa	e, and cust utotuning custom tur urd togethe	om n-		
Pn141	2	Model Follo trol Gain	owing Con-	10 to 20,000	0.1/s	500	All	Immedi-	Tuning	*1		
Pn142	2		owing Con- orrection	500 to 2,000	0.1%	1000	All	ately Immedi- ately	Tuning	*1		
Pn143	2		el Following Con- Bias in the Forward 0 to 10,000 0.1% 1000 All Immedi- ately Tuning *1									

Continued from previo

		Continued from previous page.									
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
Pn144	2		owing Con- the Reverse	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1	
Pn145	2	Vibration S Frequency	Suppression 1 A	10 to 2,500	0.1 Hz	500	All	Immedi- ately	Tuning	*1	
Pn146	2	Vibration S Frequency	Suppression 1 B	10 to 2,500	0.1 Hz	700	All	Immedi- ately	Tuning	*1	
Pn147	2		owing Con- Feedforward ation	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1	
Pn148	2	Second Me ing Contro	odel Follow- I Gain	10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*1	
Pn149	2		odel Follow- I Gain Correc-	500 to 2,000	0.1%	1000	All	Immedi- ately	Tuning	*1	
Pn14A	2	Vibration S Frequency	Vibration Suppression 2 Frequency		0.1 Hz	800	All	Immedi- ately	Tuning	*1	
Pn14B	2	Vibration S Correction	Suppression 2	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1	
	2	Control-Re tions	elated Selec-	0000 to 0021	-	0021	All	After restart	Tuning	*1	
			Model Follow	ving Control Ty	pe Select	ion					
		n.🗆🗆 🗆 X	0 Us	e model followi	ng control	type 1.					
			1 Us	e model followi	ng control	type 2.					
Pn14F			Tuning-less	Type Selection							
PIII4F			0 Us	e tuning-less ty	pe 1.						
		n.DDXD	1 Us	e tuning-less ty	pe 2.						
			2 Us	e tuning-less ty	ре 3.						
		n.¤X¤¤	Reserved pa	rameter (Do no	ot change.	)					
		n.X000	Reserved parameter (Do not change.)								
		1			I				1		
	1		0		1	1	1		1	1	

	2		nance Con- ed Selections	0000 to 0011	_	0010	All	Immedi- ately	Tuning	*1	
Pn160											
		n.000X	Anti-Resonance Control Selection								
			0 Do	Do not use anti-resonance control.							
			1 Us	Use anti-resonance control.							
		n.00X0	Anti-Resonance Control Adjustment Selection								
			0 tur	Do not adjust anti-resonance control automatically during execution of auto- tuning without a host reference, autotuning with a host reference, and custom tuning.							
			1 wit	Adjust anti-resonance control automatically during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.							
		n.¤X¤¤	Reserved parameter (Do not change.)								
		n.XDDD Reserved p		parameter (Do not change.)							
Pn161	2	Anti-Resonance Fre- quency		10 to 20,000	0.1 Hz	1000	All	Immedi- ately	Tuning	*1	
Pn162	2	Anti-Resonance Gain Correction		1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1	
Pn163	2	Anti-Reso ing Gain	nance Damp-	0 to 300	1%	0	All	Immedi- ately	Tuning	*1	

Continued on next page.

							Con	tinued fron	n previou	s page.
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn164	2		nance Filter stant 1 Cor-	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1
Pn165	2		nance Filter stant 2 Cor-	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1
Pn166	2	Anti-Resor ing Gain 2	nance Damp-	0 to 1,000	1%	0	All	Immedi- ately	Tuning	*1
	2	Tuning-less Related Se	s Function- elections	0000 to 2711	-	1400	All	-	Setup	*1
	Ī		Tuning-less	Selection					Whe	
		n.DDDX	0 D	isable tuning-les	s function				Afte	
				nable tuning-less					resta	
			Speed Con	trol Method					Whe Enab	
Pn170		n.□□X□		se for speed cor					Afte	
			1 U	se for speed cor	ntrol and u	se host co	ntroller for po	sition contro	ol. resta	art
		n.¤X¤¤	Rigidity Lev	vel					Whe Enab	led
			0 to 7 S	et the rigidity lev	el.				Imme ate	
		n.XOOO	Tuning-less	Load Level					Whe Enab	
			0 to 2 S	et the load level	for the tun	ing-less fu	nction.		Imme ate	
Pn181	2	Mode Swit for Speed	ching Level Reference	0 to 10,000	1 mm/s	0	Linear	Immedi- ately	Tuning	*1
Pn182	2	Mode Swit for Acceler	ching Level ation	0 to 30,000	1 mm/ s <sup>2</sup>	0	Linear	Immedi- ately	Tuning	*1
Pn205	2	Multiturn L	imit	0 to 65,535	1 rev	65535	Rotary	After restart	Setup	*1
	2	Position C tion Select	ontrol Func- ions	0000 to 2210	-	0010	All	After restart	Setup	*1
	-		-			<u>,                                     </u>				
		n.DDDX	Reserved p	arameter (Do no	ot change.	)				
		n.DDXD	Reserved p	arameter (Do no	ot change.	)				
		n.¤X¤¤	Reserved p	arameter (Do no	ot change.	)				
Pn207			/COIN (Pos	itioning Comple	tion Outp	ut) Signal	Output Timin	g		
			th th	utput when the a name of the setting	f Pn522 (P	ositioning	Completed W	/idth).		
		n.XDDD	1 th	utput when the a le setting of Pn5 le position refere	22 (Positic	ning Com				
				utput when the a le setting of Pn5						
Pn20A	4	Number of Encoder S	External cale Pitches	4 to 1,048,576	1 scale pitch/ revolu- tion	32768	Rotary	After restart	Setup	*1
Pn20E	4	Electronic (Numerato	Gear Ratio r)	1 to 1,073,741,824	1	16	All	After restart	Setup	*1
		(inditional)	'/	1,010,141,024	I				ed on nex	t page

Continued from	previous	page.
----------------	----------	-------

							Con	itinued from	n previou	s page.
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn210	4	Electronic (Denomina		1 to 1,073,741,824	1	1	All	After restart	Setup	*1
Pn212	4	Number of Output Pul		16 to 1,073,741,824	1 P/Rev	2048	Rotary	After restart	Setup	*1
	2	Fully-close Selections	d Control	0000 to 1003	-	0000	Rotary	After restart	Setup	*1
			<b>D</b>			<b>`</b>				
		n.□□□X	•	rameter (Do no	0	,				
Pn22A		n.□□X□		rameter (Do no	0	•				
	.	n.¤X¤¤	Reserved par	rameter (Do no	ot change.	)				
				Control Speed		k Selectio	n			
		n.X□□□		e motor encode	•	1				
	.		I USE	external enco	iaei sheeu	•				
	2		ontrol Expan-	0000 to 0001	-	0000	All	After restart	Setup	*1
	1		Backlash Cor	mpensation Di	rection					
		n.DDDX	0 Cor	npensate forw	ard referer	nces.				
Pn230			1 Cor	mpensate reve	rse referen	ices.				
		n.🗆🗆 X 🗆	Reserved par	rameter (Do no	ot change.	)				
		n.🗆X🗆 🗆	Reserved par	rameter (Do no	ot change.	)				
		n.XDDD	Reserved par	rameter (Do no	ot change.	)				
						,				
Pn231	4	Backlash C	Compensation	-500,000 to 500,000	0.1 ref- erence units	0	All	Immedi- ately	Setup	*1
Pn233	2	Backlash C tion Time C		0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	*1
Pn281	2	Encoder O tion	utput Resolu-	1 to 4,096	1 edge/ pitch	20	All	After restart	Setup	*1
Pn282	4	Linear Enc Pitch	oder Scale	0 to 6,553,600	0.01 μm	0	Linear	After restart	Setup	*1
Pn304	2	Jogging Sp	beed	0 to 10,000	Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup>	500	Rotary	Immedi- ately	Setup	*1
Pn305	2	Soft Start A Time	Acceleration	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*2
Pn306	2	Soft Start I Time	Deceleration	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*2
Pn308	2	Speed Fee Time Cons	dback Filter tant	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	*1
Pn30A	2	Stops	and Forced	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1
	1	Speed Fee	dforward					Immedi-		I

							Con	tinued from	n previou:	s page.
Parameter No.	Size	Nar	ne	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Vibration Det Selections	tection	0000 to 0002	_	0000	All	Immedi- ately	Setup	*1
			filmentine Dell							_
		V		ection Selection						
		n.000X		put a warning		ibration is	datacted			
Pn310		-		put a warning put an alarm (/	. ,					
			2 000	put an alarmy	¬.∪20) II VI					
		n.OOXO F	Reserved par	ameter (Do no	ot change.	)				
		n.OXOO F	Reserved par	ameter (Do no	ot change.	)				
		n.XDDD F	Reserved par	ameter (Do no	ot change.	)				
	-									
Pn311	2	Vibration Det sitivity	tection Sen-	50 to 500	1%	100	All	Immedi- ately	Tuning	*1
Pn312	2	Vibration Det Level	tection	0 to 5,000	1 min <sup>-1</sup>	50	Rotary	Immedi- ately	Tuning	*1
Pn316	2	Maximum Mo	otor Speed	0 to 65,535	1 min <sup>-1</sup>	10000	Rotary	After restart	Setup	*1
Pn324	2	Moment of Ir culation Star		0 to 20,000	1%	300	All	Immedi- ately	Setup	*1
Pn383	2	Jogging Spe	ed	0 to 10,000	1 mm/s	50	Linear	Immedi- ately	Setup	*1
Pn384	2	Vibration Det Level	tection	0 to 5,000	1 mm/s	10	Linear	Immedi- ately	Tuning	*1
Pn385	2	Maximum Mo	otor Speed	1 to 100	100 mm/s	50	Linear	After restart	Setup	*1
Pn401	2	First Stage F Reference Fi Constant	irst Torque Iter Time	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1
Pn402	2	Forward Torc	que Limit	0 to 800	1% <sup>*3</sup>	800	Rotary	Immedi- ately	Setup	*1
Pn403	2	Reverse Torc	que Limit	0 to 800	1% <sup>*3</sup>	800	Rotary	Immedi- ately	Setup	*1
Pn404	2	Forward Exte	ernal Torque	0 to 800	1%*3	100	All	Immedi- ately	Setup	*1
Pn405	2	Reverse Exte Limit	ernal Torque	0 to 800	1%*3	100	All	Immedi- ately	Setup	*1
Pn406	2	Emergency S	Stop Torque	0 to 800	1%*3	800	All	Immedi- ately	Setup	*1
Pn407	2	Speed Limit Torque Conti		0 to 10,000	1 min <sup>-1</sup>	100	Rotary	Immedi- ately	Setup	*1

Continued from previous page.

			Continue								
Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer ence
	2	Torque-Re tion Select	lated Func ions	-	0000 to 1111	-	0000	All	_	Setup	*1
		~ <b> V</b>	Notch Fi	ter S	Selection 1					Whe Enabl	
		n.000X	0		able first stage able first stage					Imme atel	
					Selection					Whe	
					the smaller of 107 as the spe		num moto	r speed and t	he setting of	Enabl	ea
2 . 400		n.00X0	0		e the smaller of 180 as the spe		num moto	r speed and t	he setting of	Afte	
Pn408			1	sett	the smaller of ing of Pn407 a	as the spee	ed limit.				rt
					e the smaller of ing of Pn480 a			n detection sp	beed and the		
		n.OXOO	-		Selection 2					Whe Enable	
		11.0700	0		able second st able second sta					Immeo ately	
			Friction (	Com	pensation Fun	ction Sele	ection			Whe Enabl	
		n.XDDD	0		able friction co	•				Imme	
			1	Ena	ble friction cor	npensatio	า.			ately	
Pn409	2	First Stage Frequency		er	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn40A	2	First Stage Q Value	Notch Filt	er	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn40B	2	First Stage Depth	Notch Filt	er	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn40C	2	Second St ter Freque		Fil-	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn40D	2	Second St ter Q Value		Fil-	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn40E	2	Second St ter Depth	0		0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn40F	2	Second St Torque Ref Frequency	ference Filt		100 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn410	2	Second St Notch Filte		nd	50 to 100	0.01	50	All	Immedi- ately	Tuning	*1
Pn412	2	First Stage Torque Ref Time Cons	ference Filt	er	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1

Continued on next page.

							Con	tinued fron	n previou	s page.
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Torque-Re tion Select	lated Func- ions 2	0000 to 1111	_	0000	All	Immedi- ately	Setup	*1
						I	I			
	1		Notch Filter	Selection 3						
		n.🗆 🗆 🗆 X	0 Di	sable third stage	e notch filt	er.				_
			1 Er	hable third stage	e notch filte	er.				
			Notch Filter	Selection 4						
Pn416		n.□□X□		sable fourth sta	0					
			1   Er	hable fourth stag	ge notch fi	ter.				
				Selection 5	a a ha la Cillia					
		n.¤X¤¤		sable fifth stage hable fifth stage						
										_
		n.XDDD	Reserved p	arameter (Do no	ot change.	.)				
		Third Ota -	Notob Filter					Immodi		
Pn417	2	Frequency	e Notch Filter	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn418	2	Third Stag Q Value	e Notch Filter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn419	2	Depth	e Notch Filter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn41A	2	Fourth Sta ter Freque	ge Notch Fil- ncy	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn41B	2	Fourth Sta ter Q Value	ge Notch Fil- 9	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn41C	2	Fourth Sta ter Depth	ge Notch Fil-	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn41D	2	Frequency	Notch Filter	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn41E	2	Q Value	Notch Filter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn41F	2	Depth	Notch Filter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
	2	Speed Rip sation Sele	ple Compen- ections	0000 to 1111	-	0000	Rotary	-	Setup	*1
	Ī		Speed Ripp	le Compensatio	on Functic	n Selectio	'n		Whe Enab	
		n.🗆🗆 🛛 X	0 Di	sable speed rip	ole compe	nsation.			Imme	
			1 Er	nable speed ripp	le compei	nsation.			ate	
B 400			Speed Ripp	le Compensatio	on Informa	tion Disag	preement War	rning Detec-	- Whe Enab	
Pn423		n.🗆🗆 X 🗆		etect A.942 alar	ms.				Afte	
			1 D	o not detect A.9	42 alarms				resta	art
			Speed Ripp	le Compensatio	on Enable	Condition	Selection		Whe Enab	
		n.¤X¤¤	0 Sr	beed reference					Afte	
			1 M	otor speed					resta	
		n.XDDD	Reserved p	arameter (Do no	ot change	)				
Pn424	2	Torque Lim cuit Voltag	iit at Main Cir e Drop	- 0 to 100	1%*2	50	All	Immedi- ately	Setup	*1
								Continue		

								Con	tinued from	n previou	s page.
Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn425	2	Release Tir Limit at Ma Voltage Dre	ain Circuit	que	0 to 1,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn426	2	Torque Fee Average M Time			0 to 5,100	0.1 ms	0	All	Immedi- ately	Setup	*1
Pn427	2	Speed Rip sation Ena	ple Compe ble Speed	en-	0 to 10,000	1 min <sup>-1</sup>	0	Rotary	Immedi- ately	Tuning	*1
	2	Pressure F Selection S			0000 to 1111	-	0000	All	After restart	Setup	3-14
		n.000X	Pressure 0	Disa	<b>Iback Enable S</b> able pressure f ble pressure fe	eedback o		l perform norr	nal torque co	ontrol.	
Pn440		n.□□X□	Pressure 0 1	Do	back Polarity standard to the polarity standar	e polarity.					
		n.¤X¤¤	Reserved	para	ameter (Do not	change.)					
		n.XDDD	Torque/Fo	orce	Control Gravity	/ Compens	sation Swit	ch			
			0		able gravity co	•					
			1	Ena	ble gravity cor	npensatio	n.				
	_										
Pn441	2	Reserved p not change	e.)	Do	-	-	100	All	-	-	-
Pn442	2	Pressure F Control 1 F Feedback Time	Pressure	ıral	0 to 51,200	0.01 ms	2000	All	Immedi- ately	Setup	3-20
Pn444	2	Pressure F Control 1 F Feedback forward	Pressure	1-	0 to 1,000	1%	100	All	Immedi- ately	Setup	3-20
Pn445	2	Reserved p not change		Do	_	-	0	All	-	-	-
Pn446	2	Reserved p not change		Do	-	-	95	All	-	-	-
Pn447	2	Pressure F Loop Devia Level		ow	0 to 800	1%	100	All	Immedi- ately	Setup	3-20
Pn448	2	Pressure F set	eedback C	Off-	-10,000 to 10,000	0.01%	0	All	Immedi- ately	Setup	3-16
Pn449	2	Pressure F Sensor Ga			0 to 10,000	0.01 V/ rated torque or 0.01 V/rated force	0	All	Immedi- ately	Setup	3-13
Pn44A	2	Pressure F ter	eedback F	il-	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	3-16
Pn44C	2	Pressure F Enable Lev			0 to 10,000	0.01%	1000	All	Immedi- ately	Setup	3-6
Pn44D	2	Pressure F Overflow D Level			0 to 800	1%	300	All	Immedi- ately	Setup	3-16
Pn44E	2	Pressure F Overflow D Time			0 to 5,000	0.1 ms	0	All	Immedi- ately	Setup	3-16
Pn450	2	Pressure F Control 1 F Feedback ential Time	Pressure Loop Diffe	r-	0 to 51,200	0.1 ms	0	All	Immedi- ately	Setup	3-20

Continued on next page.

							Con	tinued fron	n previou	s page.
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn451	2	Pressure F Control 1 F Feedback ential Filter	Pressure Loop Differ-	0 to 10,000	1%	100	All	Immedi- ately	Setup	3-20
Pn452	2	Pressure F Control 1 F Feedback tional Gain	Pressure Loop Propor-	0 to 10,000	1%	100	All	Immedi- ately	Setup	3-20
Pn456	2	Sweep Tor ence Ampl		1 to 800	1%	15	All	Immedi- ately	Tuning	*1
	2	Pressure F Selection S		0000 to 0011	_	0011	All	After restart	Setup	3-17
					Ľ					
		n.DDDX	Pressure Fee	dback Control I	Mode Sele	ction Swite	ch			
			0 5	Set mode 1.						
			1 S	Set mode 2.						
Pn458		n.□□X□		dback Type Sel						
				Set pressure fee						
			1 S	Set pressure fee	dback cor	ntrol 2.				
		n.🗆X🗆 🗆	Reserved par	rameter (Do not	change.)					
		n.X000	Reserved par	rameter (Do not	change.)					
Pn459	2	Gravity Con Reference Torque Con		0 to 10,000	0.01%	500	All	Immedi- ately	Setup	-
Pn45A	2	Pressure F able Level	eedback Dis-	0 to 10,000	0.01%	1000	All	Immedi- ately	Setup	3-6
Pn45B	2	Reserved p not change	parameter (Do e.)	-	_	50	All	_	-	-
Pn45C	2	Reserved p not change	parameter (Do e.)	-	-	150	All	-	-	-
Pn45D	2	not change	,	-	_	100	All	-	-	-
Pn45E	2		eedback Ref- er Time Con-	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	-
	2	Notch Filte Selections	r Adjustment 1	0000 to 0101	_	0101	All	Immedi- ately	Tuning	*1
			Notch Filter	Adjustment Se	lection 1					
		n.000X	Do 0 tur	not adjust the ning without a h ning.	first stage					
			_ Ad	just the first sta hout a host refe	ge notch t erence, au	filter autom totuning w	natically during	g execution erence, and o	of autotun custom tur	ing ning.
Pn460		n.DDXD	Reserved pa	arameter (Do no	ot change.	)				
			Notch Filter	Adjustment Se	lection 2					
		n.OXOO	Do 0 au	o not adjust the totuning withou stom tuning.	second st					
			Ad 1 ing	just the second without a host ning.	stage not reference	ch filter au , autotunin	itomatically du ig with a host	uring executi reference, a	ion of auto Ind custon	ntun-
		n.X000	Reserved pa	arameter (Do no	ot change.	.)				
	"					,				
Pn480	2	Speed Lim Force Cont		0 to 10,000	1 mm/s	100	Linear	Immedi- ately	Setup	*1

Continued from previous page.

						Con	itinued from	i previou	s page.
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn481	2	Polarity Detection Speed Loop Gain	10 to 20,000	0.1 Hz	400	Linear	Immedi- ately	Tuning	_
Pn482	2	Polarity Detection Speed Loop Integral Time Constant	15 to 51,200	0.01 ms	3000	Linear	Immedi- ately	Tuning	_
Pn483	2	Forward Force Limit	0 to 800	1% <sup>*3</sup>	30	Linear	Immedi- ately	Setup	*1
Pn484	2	Reverse Force Limit	0 to 800	1% <sup>*3</sup>	30	Linear	Immedi- ately	Setup	*1
Pn485	2	Polarity Detection Reference Speed	0 to 100	1 mm/s	20	Linear	Immedi- ately	Tuning	_
Pn486	2	Polarity Detection Refer- ence Acceleration/ Deceleration Time	0 to 100	1 ms	25	Linear	Immedi- ately	Tuning	-
Pn487	2	Polarity Detection Con- stant Speed Time	0 to 300	1 ms	0	Linear	Immedi- ately	Tuning	_
Pn488	2	Polarity Detection Refer- ence Waiting Time	50 to 500	1 ms	100	Linear	Immedi- ately	Tuning	_
Pn48E	2	Polarity Detection Range	1 to 65,535	1 mm	10	Linear	Immedi- ately	Tuning	_
Pn490	2	Polarity Detection Load Level	0 to 20,000	1%	100	Linear	Immedi- ately	Tuning	_
Pn495	2	Polarity Detection Con- firmation Force Refer- ence	0 to 200	1%	100	Linear	Immedi- ately	Tuning	-
Pn498	2	Polarity Detection Allow- able Error Range	0 to 30	1 deg	10	Linear	Immedi- ately	Tuning	-
Pn49F	2	Speed Ripple Compen- sation Enable Speed	0 to 10,000	1 mm/s	0	Linear	Immedi- ately	Tuning	*1
Pn4A0	2	Pressure Feedback One-Parameter Gain Level	1 to 65,535	_	1000	All	Immedi- ately	Setup	3-18
Pn4A3	2	Reserved parameter (Do not change.)	-	-	100	All	-	-	-
Pn4A7	2	Pressure Feedback Control 2 Stability Gain	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Setup	3-18
Pn4A8	2	Pressure Feedback Control 2 Stability Inte- gral Time	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Setup	3-18
Pn4A9	2	Reserved parameter (Do not change.)	_	_	400	All	_	-	_
Pn4AA	2	Reserved parameter (Do not change.)	_	_	2000	All	_	-	_
Pn4AB	2	Reserved parameter (Do not change.)	_	-	0	All	_	-	-
Pn4AC	2	Pressure Feedback Moment of Inertia Ratio	0 to 20,000	1%	100	All	Immedi- ately	Setup	3-18
Pn4AD	2	Reserved parameter (Do not change.)	_	-	0000	All	_	-	-
Pn4D0	2	Reserved parameter (Do not change.)	-	-	0	All	-	-	_
Pn4D1	2	Reserved parameter (Do not change.)	-	-	0	All	-	-	_
Pn502	2	Rotation Detection Level	1 to 10,000	1 min <sup>-1</sup>	20	Rotary	Immedi- ately	Setup	*1
Pn503	2	Speed Coincidence Detection Signal Output Width	0 to 100	1 min <sup>-1</sup>	10	Rotary	Immedi- ately	Setup	*1
Pn506	2	Brake Reference-Servo OFF Delay Time	0 to 50	10 ms	0	All	Immedi- ately	Setup	*1
Pn507	2	Brake Reference Out- put Speed Level	0 to 10,000	1 min <sup>-1</sup>	100	Rotary	Immedi- ately	Setup	*1
Pn508	2	Servo OFF-Brake Com- mand Waiting Time	10 to 100	10 ms	50	All	Immedi- ately	Setup	*1
Pn509	2	Momentary Power Inter- ruption Hold Time	20 to 50,000	1 ms	20	All	Immedi- ately	Setup	*1

Continued on next page.

Parameter No.	Size	N	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Input Sign 1	al Selec	ctions	0000 to FFF2	-	1881	All	After restart	Setup	*1
	-		Data				<u>,</u>				_
		n.000X	Reser	ved par	ameter (Do no	ot change.	.)				
		n.🗆🗆 X 🗆	Reser	ved par	ameter (Do no	ot change.	)				
		n.¤X¤¤	Reser	ved par	ameter (Do no	ot change.	)				
			P-OT	(Forwar	d Drive Prohil	oit) Signal	Allocation	l			
			0	Enable	forward drive	when CN1	-13 input	signal is ON (	closed).		
			1	Enable	forward drive	when CN1	-7 input si	gnal is ON (cl	osed).		
			2	Enable	forward drive	when CN1	-8 input si	gnal is ON (cl	osed).		
			3	Enable	forward drive	when CN1	-9 input si	gnal is ON (cl	osed).		
Pn50A			4	Enable	forward drive	when CN1	-10 input	signal is ON (	closed).		
			5	Enable	forward drive	when CN1	-11 input	signal is ON (	closed).		
			6	Enable	forward drive	when CN1	-12 input	signal is ON (	closed).		
		n.XDDD	7	Set the	signal to alwa	ys prohibi <sup>.</sup>	t forward c	lrive.			
			8		signal to alwa	·					
			9		forward drive			÷			
			A		forward drive			÷ :			
			В		forward drive			0 (	1 /		
			C		forward drive			0 (	1 )		
			DE		forward drive			0	<b>NI</b> /		
			F		forward drive forward drive			0	( 1 )		
			F	Enable	iorwaru urive		- i z input	signal is OFF	(open).		

Continued from previous page.

Continued from previous page.

	0 1 2 3 4 5 6	Range         S       0000 to         FFFF       FFFF         verse Drive Prohi         Enable reverse dr         Enable reverse dr	ive when ( ive when ( ive when (	CN1-13 inp CN1-7 inpu	ut signal is O	Enabled After restart N (closed).	fication Setup	*1
-	N-OT (Re) 0 1 2 3 4 5 6	verse Drive Prohi Enable reverse dr Enable reverse dr Enable reverse dr Enable reverse dr Enable reverse dr	ive when ( ive when ( ive when (	Allocation CN1-13 inp CN1-7 inpu	ut signal is O	restart	Setup	*1
пх	0 1 2 3 4 5 6	Enable reverse dr Enable reverse dr Enable reverse dr Enable reverse dr Enable reverse dr	ive when ( ive when ( ive when (	CN1-13 inp CN1-7 inpu	ut signal is O	N (closed).		
пх	1 2 3 4 5 6	Enable reverse dr Enable reverse dr Enable reverse dr Enable reverse dr	ive when ( ive when (	CN1-7 inpu		N (closed).		
ПХ	2 3 4 5 6	Enable reverse dr Enable reverse dr Enable reverse dr	ive when (	· · · · ·				
ПХ	3 4 5 6	Enable reverse dr Enable reverse dr		NII O Innu	0	, ,		
ΩX	4 5 6	Enable reverse dr			0	<b>\</b>		
ПХ	5 6		ive when (		-			
ПХ	6				8	, ,		
ПХ		Enable reverse dr			0	,		
	7	Set the signal to a						
		Set the signal to a	, i					
		Enable reverse dr				FF (open).		
	A	Enable reverse dr	ive when (	CN1-7 inpu	t signal is OF	F (open).		
	В	Enable reverse dr	ive when (	CN1-8 inpu	t signal is OF	F (open).		
	С	Enable reverse dr	ive when (	CN1-9 inpu	t signal is OF	F (open).		
	D	Enable reverse dr	ive when (	CN1-10 inp	ut signal is O	FF (open).		
		Enable reverse dr	ive when (	CN1-11 inp	ut signal is O	FF (open).		
	F	Enable reverse dr	ive when (	CN1-12 inp	ut signal is O	FF (open).		
ХП	Reserved	parameter (Do n	ot change	.)				
	/P-CL (Fo	ward External To	orque Limi	t Input) Sid	anal Allocatio	'n		
		Active when CN1	-		-			
	1 .	Active when CN1	-7 input sig	gnal is ON	(closed).			
	2	Active when CN1	-8 input sig	gnal is ON	(closed).			
	3	Active when CN1	-9 input sig	gnal is ON	(closed).			
	4	Active when CN1	-10 input s	signal is ON	l (closed).			
	5	Active when CN1	-11 input s	signal is ON	l (closed).			
	6	Active when CN1	-12 input s	signal is ON	l (closed).			
	7	The signal is alwa	ys active.					
		The signal is alwa	-					
	9	Active when CN1	-13 input s	signal is OF	F (open).			
		Active when CN1		<b>,</b>	· · · /			
		Active when CN1		5	(1)			
	-	Active when CN1		<b>,</b>	,			
		Active when CN1		-				
				0	,			
		Active when CN1	-12 input s	signal is OF	r⊢ (open).			
			-		•			
				e as the /P	-CL (Forward	External Tor	rque Limit	
		/N-CL (Re	F Active when CN1 /N-CL (Reverse External To 0 to E The allocations ar	F Active when CN1-12 input s /N-CL (Reverse External Torque Limi	F       Active when CN1-12 input signal is OF         /N-CL (Reverse External Torque Limit Input) Signal is OF         0 to E	F       Active when CN1-12 input signal is OFF (open).         /N-CL (Reverse External Torque Limit Input) Signal Allocation         0 to F         The allocations are the same as the /P-CL (Forward	F       Active when CN1-12 input signal is OFF (open).         /N-CL (Reverse External Torque Limit Input) Signal Allocation         0 to E       The allocations are the same as the /P-CL (Forward External Torque Limit Input)	F       Active when CN1-12 input signal is OFF (open).         /N-CL (Reverse External Torque Limit Input) Signal Allocation         0 to F       The allocations are the same as the /P-CL (Forward External Torque Limit

Continued on next page.

	-								tinued fron	n previou.	s page
Parameter No.	Size	N	lame		ting nge	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer ence
	2	Output Sig tions 1	gnal Selec-	000 66	0 to 66	-	0000	All	After restart	Setup	*1
			COIN (P	ositioning	Complet	tion Outro	ut) Signal	Allocation			_
			0	Disabled (1	•		, 0				
		n.DDDX	1			0		N1-2 output	terminal.		
			2	Output the	signal f	rom the C	N1-23 or	CN1-24 outp	ut terminal.		
			3	Output the	signal f	rom the C	N1-25 or	CN1-26 outp	ut terminal.		
			4 to 6	Reserved	setting (I	Do not us	e.)				
Pn50E			/V-CMP (	Speed Coi	ncidenc	e Detecti	on Output	) Signal Alloc	ation		
		n.□□X□	0 to 6	The alloca allocations		the same	e as the /C	OIN (Position	ing Complet	ion) signal	
			/TGON (F	Rotation De	tection	Output) S	Signal Allo	cation			
		n.¤X¤¤	0 to 6	The alloca allocations		e the same	e as the /C	OIN (Position	ing Complet	ion) signal	
			/S-RDY (	Servo Read	dy) Sign	al Allocat	ion				
		n.XDDD	0 to 6	The alloca allocations		the same	e as the /C	OIN (Position	ing Complet	ion) signal	
	2	Output Sig tions 2	gnal Selec-		0 to 66	_	0100	All	After restart	Setup	*1
			/CLT (Tor	aue Limit [	Detectio	n Output)	Signal All	ocation			
			/021 (101	900 =							
			0	Disabled (1	he abov	re signal c	output is no	ot used).			
			· · ·	Disabled (1		Ū		ot used). N1-2 output	terminal.		
		n.DDDX	0 1 2	Disabled (i Output the Output the	signal f signal f	rom the C rom the C	N1-1 or C N1-23 or	CN1-2 output CN1-24 outp	ut terminal.		
		n.000X	0 1 2 3	Disabled (i Output the Output the Output the	signal f signal f signal f	rom the C rom the C rom the C	N1-1 or C N1-23 or N1-25 or	N1-2 output	ut terminal.		
		n.000X	0 1 2	Disabled (i Output the Output the	signal f signal f signal f	rom the C rom the C rom the C	N1-1 or C N1-23 or N1-25 or	CN1-2 output CN1-24 outp	ut terminal.		
Pn50F			0 1 2 3 4 to 6	Disabled (i Output the Output the Output the	signal f signal f signal f setting (l	rom the C from the C from the C Do not us	2N1-1 or C 2N1-23 or 2N1-25 or e.)	CN1-2 output CN1-24 outp	ut terminal.		
Pn50F		n.000X	0 1 2 3 4 to 6	Disabled (t Output the Output the Output the Reserved	e signal f e signal f e signal f setting (I etection tions are	rom the C from the C from the C Do not us	2N1-1 or C 2N1-23 or 2N1-25 or e.) Allocation	CN1-2 output CN1-24 outp	ut terminal. ut terminal.	n Output) s	sig-
Pn50F			0 1 2 3 4 to 6 /VLT (Spe 0 to 6	Disabled (t Output the Output the Output the Reserved a reed Limit D The alloca	e signal f e signal f setting (I etection tions are ons.	rom the C rom the C rom the C Do not us n) Signal A e the same	2N1-1 or C 2N1-23 or 2N1-25 or e.) Allocation	N1-2 output CN1-24 outp CN1-26 outp	ut terminal. ut terminal.	n Output) s	sig-
Pn50F			0 1 2 3 4 to 6 /VLT (Spe 0 to 6	Disabled (t Output the Output the Output the Reserved 3 Reserved 3	signal f signal f signal f setting (I etection cions are ons. Signal A cions are	rom the C rom the C rom the C Do not us ) Signal / e the same	CN1-1 or C CN1-23 or CN1-25 or e.) Allocation e as the /C	N1-2 output CN1-24 outp CN1-26 outp	ut terminal. ut terminal. mit Detection		
Pn50F		n.===X=	0 1 2 3 4 to 6 /VLT (Spe 0 to 6 /BK (Brak 0 to 6	Disabled (f Output the Output the Output the Reserved The allocat nal allocat <b>ce Output</b> ) The alloca	signal f signal f signal f setting (l etections are ons. Signal A tions are ons.	rom the C rom the C rom the C Do not us a) Signal A the same Allocation	CN1-1 or C CN1-23 or CN1-25 or e.) Allocation e as the /C	N1-2 output CN1-24 outp CN1-26 outp CN1-26 outp	ut terminal. ut terminal. mit Detection		

Continued from previous page.

Continued from previous page.

Parameter No.	Size	Ν	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refe enc
	2	Output Sig tions 3	nal Selec-		0000 to 0666	-	0000	All	After restart	Setup	*1
											_
			-		Output) Signa						
			0		bled (the abo	Ŭ		,			
		n.🗆🗆 🗆 X	1		out the signal						
			2		out the signal						
n510			3		out the signal			CN1-26 outp	ut terminal.		
			4 to 6	Res	erved setting	Do not us	e.)				
		n.DDXD	Reserved	d par	ameter (Do no	ot change	.)				
		n.¤X¤¤	Reserved	d par	ameter (Do no	ot change	.)				
		n.XDDD	Reserved	d par	ameter (Do no	ot change	.)				
	2	Input Signa	al Selection	ns	0000 to FFFF	_	6543	All	After restart	Setup	*1
		0							· oota. t		
			/DEC (Or	rigin l	Return Decele	eration Sw	vitch Input)	) Signal Alloc	ation		
			0	Acti	ve when CN1	-13 input s	signal is ON	V (closed).			
			1	Acti	ve when CN1	•7 input się	gnal is ON	(closed).			
			2	Acti	ve when CN1	-8 input się	gnal is ON	(closed).			
			3	Acti	ve when CN1	9 input sig	gnal is ON	(closed).			
			4	Acti	ve when CN1	10 input s	signal is ON	V (closed).			
			5	Acti	ve when CN1	11 input s	signal is ON	V (closed).			
			6	Acti	ve when CN1	12 input s	signal is ON	V (closed).			
		n.🗆🗆 🗆 X	7	The	signal is alwa	ys active.					
			8	The	signal is alwa	ys inactive					
			9		ve when CN1		-				
			A		ve when CN1		-				
			В		ve when CN1		-				
			С		ve when CN1		-				
			D		ve when CN1						
n511			E F		ve when CN1- ve when CN1-		0	( 1 )			
					al Latch Inpu			,			
			0 to 3		signal is alwa			•			
			4		ve when CN1.	-		l (closed)			
			5		ve when CN1-		-				
		n.🗆 🗆 X 🗆	6		ve when CN1.		-				
			D		ve when CN1		-				
			E		ve when CN1		-				
			F		ve when CN1		-				
			7 to C	The	signal is alwa	ys inactive					
			/EXT2 (E	xtern	al Latch Inpu	t 2) Signal	Allocation	<u></u>			
		n.¤X¤¤	0 to F		allocations ar				Latch Input	1) signal a	allo-
			/EXT3 (F	xtern	al Latch Inpu	t 3) Signal	Allocation	٦			
		n.X000		-	allocations ar				Latab Input	1) alamal d	

6

							Con	tinued fron	n previou	s page.
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Output Sig Settings	inal Inverse	0000 to 1111	-	0000	All	After restart	Setup	*1
				nal Inversion for		nd CN1-2	Terminals			
		n.🗆 🗆 🛛 X		The signal is not i						
			1	The signal is inver	ted.					
			Output Sig	nal Inversion for	CN1-23 a	and CN1-2	4 Terminals			
Pn512		n.🗆🗆 X 🗆	0	The signal is not i	nverted.					
			1 -	The signal is inver	ted.					
			Output Sig	anal Inversion for	CN1-25 a	and CN1-2	6 Terminals			
		n.🗆X🗆 🗆	0	The signal is not i	nverted.					
			1 -	The signal is inver	ted.					
		n.XDDD	Reserved	parameter (Do no	ot change	)				
			riccorrou		or onlange	•/				
					1	T.			1	T.
	2	Output Sig tions 4	inal Selec-	0000 to 0666	-	0000	All	After restart	Setup	*1
		n.DDDX	Reserved	parameter (Do no	ot change	.)				
		n.🗆🗆 X 🗆	Reserved	parameter (Do no	ot change	.)				
Pn514				entative Mainten	-					
FII314				Disabled (the abo	-					
		n.🗆X🗆 🗆		Output the signal Output the signal						
				Dutput the signal			-			
				Reserved setting				ut terrinidi.		
			4 I	-	•					_
		n.XDDD	Reserved	parameter (Do no	ot change	.)				
	I							<b>A</b>	d on nov	

Continued from previous page.

Parameter No.	Size	1	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Input Sigr 7	nal Selections	0000 to FFFF	-	8888	All	After restart	Setup	*1
Pn516			FSTP (Forced0Er1Er2Er3Er4Er5Er6Er7Se8St9ErAErCErDEr		CN1-13 CN1-7 ir CN1-8 ir CN1-8 ir CN1-9 ir CN1-10 CN1-10 CN1-11 CN1-12 always pro- always ena CN1-13 n CN1-13 n CN1-7 ir n CN1-8 ir n CN1-8 ir n CN1-9 ir n CN1-10	ation input signal nput signal nput signal input signal input signal input signa hibit drive ( input signal nput signal nput signal input signal	al is ON (close is ON (closed is ON (closed is ON (closed al is OFF (open is OFF (open al is OFF (open al is OFF (open al is OFF (open	restart ed). d). d). d). ed). ed). ed). ed). the motor to e forcing the n). ). ). ).	o stop).	
			-		change)					
	n	.00X0 .0X00 .X000		ameter (Do not rameter (Do not rameter (Do not	change.)					
Pn518 <sup>*3</sup>	n	.0X00	Reserved par Reserved par dule-Related	ameter (Do not	change.)		All	_	_	
	n	X	Reserved part Reserved part odule-Related ers ad Position Overflow	ameter (Do not	change.)		All	- Immedi- ately	- Setup	- *1
Pn518 <sup>*3</sup> Pn51B Pn51E		Safety Mo Parameter Motor-Lo Deviation Detection	Reserved part Reserved part odule-Related ers ad Position Overflow Level Deviation Over-	rameter (Do not ameter (Do not – 0 to	t change.) t change.)	_			- Setup Setup	- *1 *1
Pn51B	4		Reserved par Reserved par Reserved par odule-Related ad Position Overflow Level Deviation Over- ning Level Deviation Over-		t change.) t change.)	- 1000	Rotary	ately Immedi-		
Pn51B Pn51E	   	. DXDD .XDDD Safety Mo Parameter Motor-Lo Deviation Detection Position I flow Warr Position I flow Alarr	Reserved par Reserved par Reserved par odule-Related ad Position Overflow Level Deviation Over- ning Level Deviation Over-	ameter (Do not           ameter (Do not           ameter (Do not           0 to           1,073,741,824           10 to 100           1 to	change.) cha	- 1000 100 524288	Rotary All	ately Immedi- ately Immedi-	Setup	*1
Pn51B Pn51E Pn520	  4  4	. DXDD .XDDD Safety Ma Parameter Motor-Lo Deviation Detection Position I flow Warr Position I flow Alarr Positionir Width Near Sigr	Reserved part Reserved part Reserved part odule-Related ad Position Overflow Level Deviation Over- ning Level Deviation Over- n Level Deviation Over- n Level Deviation Over- n Level Deviation Over- n Level Deviation Over- n Level	Commeter (Do not           ameter (Do not           ameter (Do not           0 to           1,073,741,824           10 to 100           1,073,741,823           0 to	change.) cha	- 1000 524288 0	Rotary All All	ately Immedi- ately Immedi- ately Immedi-	Setup	*1 *1
Pn51B Pn51E Pn520 Pn522	- - 4 2 4 4	. DXDD .XDDD .XDDD Safety Mo Parameter Motor-Lo Deviation I flow Warr Position I flow Alarr Position I flow Alarr Width Near Sigr Position I flow Alarr Servo ON	Reserved part Reserved part Reserved part Dedule-Related ad Position Overflow Level Deviation Over- ning Level Deviation Over- n Level ag Completed nal Width Deviation Over- n Level at	ameter (Do not         ameter (Do not         ameter (Do not         0 to         1,073,741,824         10 to 100         1,073,741,823         0 to         1,073,741,824         1 to         1,073,741,824         1 to         1,073,741,824         1 to         1,073,741,824         1 to	t change.) t change.) t change.) t change.) t refer- ence unit 1 refer- ence unit 1 refer- ence unit 1 refer- ence unit	- 1000 100 524288 0 7 107374	Rotary All All All	ately Immedi- ately Immedi- ately Immedi- Immedi-	Setup Setup Setup	*1 *1 *1
Pn51B Pn51E Pn520 Pn522 Pn524	n       n <t< td=""><td>. DX D D . X D D</td><td>Reserved par Reserved par Reserved par Deviation Deviation Deviation Over- ning Level Deviation Over- n Level ng Completed nal Width Deviation Over- n Level at Deviation Over- n Level at Deviation Over- n Level at</td><td>rameter (Do not rameter (Do not rameter (Do not not 1,073,741,824 10 to 100 1,073,741,823 0 to 1,073,741,824 1,073,741,824 1,073,741,824 1 to</td><td>change.) cha</td><td>- 1000 524288 0 7 107374 1824 524288</td><td>Rotary All All All All</td><td>ately Immedi- ately Immedi- ately Immedi- ately Immedi-</td><td>Setup Setup Setup Setup</td><td>*1 *1 *1 *1</td></t<>	. DX D D . X D D	Reserved par Reserved par Reserved par Deviation Deviation Deviation Over- ning Level Deviation Over- n Level ng Completed nal Width Deviation Over- n Level at Deviation Over- n Level at Deviation Over- n Level at	rameter (Do not rameter (Do not rameter (Do not not 1,073,741,824 10 to 100 1,073,741,823 0 to 1,073,741,824 1,073,741,824 1,073,741,824 1 to	change.) cha	- 1000 524288 0 7 107374 1824 524288	Rotary All All All All	ately Immedi- ately Immedi- ately Immedi- ately Immedi-	Setup Setup Setup Setup	*1 *1 *1 *1
Pn51B Pn51E Pn520 Pn522 Pn524 Pn526	n       n <t< td=""><td>. DXDD XDDD XAFENDA Safety Mo Paramete Motor-Lo Deviation Detection Position I flow Warr Position I flow Alarr Width Near Sigr Position I flow Alarr Servo ON Position I flow Warr</td><td>Reserved par Reserved par Reserved par Podule-Related ad Position Overflow Deviation Over- ning Level Deviation Over- n Level and Width Deviation Over- n Level at Deviation Over- n Level at Deviation Over- n Level at Deviation Over- n Level at</td><td>Construction         Construction         O to         1,073,741,824         10 to 100         1,073,741,823         0 to         1,073,741,824         1,073,741,824         1,073,741,824         1,073,741,824         1,073,741,824         1,073,741,824         1,073,741,823</td><td>c change.) c c c c change.) c c c c c change.) c c c c c c c c c c c c c c c c c c c</td><td>- 1000 100 524288 0 7 107374 1824 524288 0</td><td>Rotary All All All All All</td><td>ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately</td><td>Setup Setup Setup Setup Setup</td><td>*1 *1 *1 *1 *1</td></t<>	. DXDD XDDD XAFENDA Safety Mo Paramete Motor-Lo Deviation Detection Position I flow Warr Position I flow Alarr Width Near Sigr Position I flow Alarr Servo ON Position I flow Warr	Reserved par Reserved par Reserved par Podule-Related ad Position Overflow Deviation Over- ning Level Deviation Over- n Level and Width Deviation Over- n Level at Deviation Over- n Level at Deviation Over- n Level at Deviation Over- n Level at	Construction         Construction         O to         1,073,741,824         10 to 100         1,073,741,823         0 to         1,073,741,824         1,073,741,824         1,073,741,824         1,073,741,824         1,073,741,824         1,073,741,824         1,073,741,823	c change.) c c c c change.) c c c c c change.) c c c c c c c c c c c c c c c c c c c	- 1000 100 524288 0 7 107374 1824 524288 0	Rotary All All All All All	ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately	Setup Setup Setup Setup Setup	*1 *1 *1 *1 *1
Pn51B Pn51E Pn520 Pn522 Pn524 Pn526 Pn528	n       n <t< td=""><td>. DXDD .XDDD .XDDD Safety Mo Paramete Motor-Lo Deviation Detection Position I flow Warr Positionir Width Near Sigr Position I flow Alarr Servo ON Position I flow Alarr Servo ON Speed Lin</td><td>Reserved par Reserved par Reserved par Produle-Related ad Position Overflow Deviation Over- ning Level Deviation Over- n Level and Width Deviation Over- n Level at Deviation Over- n Level at Deviation Over- ning Level at Deviation Over- ning Level at Deviation Over- ning Level at Deviation Over-</td><td>ameter (Do not         ameter (Do not         ameter (Do not         0 to         1,073,741,824         10 to 100         1,073,741,823         0 to         1,073,741,824         1,073,741,824         1,073,741,824         1,073,741,824         1,073,741,824         1,073,741,824         1,073,741,824         1,073,741,823         10 to 100</td><td>change.) cha</td><td>- 1000 100 524288 0 7 107374 1824 524288 0 100</td><td>Rotary All All All All All All</td><td>ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi-</td><td>Setup Setup Setup Setup Setup Setup</td><td>*1 *1 *1 *1 *1 *1</td></t<>	. DXDD .XDDD .XDDD Safety Mo Paramete Motor-Lo Deviation Detection Position I flow Warr Positionir Width Near Sigr Position I flow Alarr Servo ON Position I flow Alarr Servo ON Speed Lin	Reserved par Reserved par Reserved par Produle-Related ad Position Overflow Deviation Over- ning Level Deviation Over- n Level and Width Deviation Over- n Level at Deviation Over- n Level at Deviation Over- ning Level at Deviation Over- ning Level at Deviation Over- ning Level at Deviation Over-	ameter (Do not         ameter (Do not         ameter (Do not         0 to         1,073,741,824         10 to 100         1,073,741,823         0 to         1,073,741,824         1,073,741,824         1,073,741,824         1,073,741,824         1,073,741,824         1,073,741,824         1,073,741,824         1,073,741,823         10 to 100	change.) cha	- 1000 100 524288 0 7 107374 1824 524288 0 100	Rotary All All All All All All	ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi-	Setup Setup Setup Setup Setup Setup	*1 *1 *1 *1 *1 *1

-

Continued on next page.

No. $\overrightarrow{ab}$ NameRangeUnitSettingMotorsEnabledficationencodePh32C2Base Current Derating at Motor Overload10 to 1001%100AllAller relatedSetup12Program Jogging- Related Salections0000 to 0000 to 0000 to 1-0000AllImmedi- related Salections12Program Jogging- Related Salections0000 to 0000 to 1-0000AllImmedi- related Salections13Program Jogging- Program Jogging- Provements in Pris33-Forward by travel distance in Pris31 × Number of movements in Pris33-Provad by travel distance in Pris31 × Number of movements in Pris339Program Jogging- Program Jogging Press-Provad by travel distance in Pris31 × Number of movements in Pris33-9Walting time in Pris33 = Serverse by travel distance in Pris31 × Number of movements in Pris33 = -Forward by travel distance in Pris31 = Walting time movements in Pris33 =9Walting time in Pris33 = -Forward by travel distance in Pris31 = -Walting time in Pris35 =9Malting time in Pris33 = -Forward by travel distance in Pris31 = -Walting time in Pris35 =9Malting time in Pris35 = -Forward by travel distance in Pris31 = -Walting time in Pris35 =9Malting time in Pris35 = -Forward by travel distance in Pris31 = -Walting time in Pris35 =9Malting time in					-		_		tinued from	· · · · · · · · · · · · · · · · · · ·	
PnS2C         2         al More Overlead         10 to 100         1%         100         All         Attain         Setup         *1           2         Program Jogging- Prelated Selections         0000 to 00005         -         0000         All         Immedi- stely         Setup         *1           2         Program Jogging Operation Pattern 0         0         All in in PhS35         Forward by travel distance in PhS31 × Number of movements in PhS36         Forward by travel distance in PhS31 × Number of movements in PhS35         Forward by travel distance in PhS31 × Number of movements in PhS35         Forward by travel distance in PhS31 × Number of movements in PhS35         Forward by travel distance in PhS31 × Number of movements in PhS35         Forward by travel distance in PhS31 × Number of movements in PhS35         Forward by travel distance in PhS31 × Number of movements in PhS35         Forward by travel distance in PhS31 × Number of movements in PhS35         Forward by travel distance in PhS31 × Number of movements in PhS35         Forward by travel distance in PhS31 × Number of movements in PhS35         Forward by travel distance in PhS31 × Number of movements in PhS35         Forward by travel distance in PhS31 × Number of movements in PhS35         Forward by travel distance in PhS31 × Number of movements in PhS36         Forward by travel distance in PhS31 × Number of movements in PhS36         Forgan Jogging Move- in PhS36         Forgan Jogging Move- in PhS36         Forgan Jogging Move- in PhS36         Forgan Jogging Move- in PhS36         Forgan Jogging Move- in P	Parameter No.	Size	N	ame	0	Setting Unit		Applicable Motors	-		Refer- ence
2         Related Selections         0.005         -         0.000         All         ately         Setup         1           Program Jogging Operation Pattern         0         (Wating time in Ph535 → Forward by travel distance in Ph531) × Number of movements in Ph535 → Forward by travel distance in Ph531) × Number of movements in Ph535 → Forward by travel distance in Ph531) × Number of movements in Ph535 → Forward by travel distance in Ph531) × Number of movements in Ph535 → Forward by travel distance in Ph531) × Number of movements in Ph535 → Forward by travel distance in Ph531) × Number of movements in Ph535 → Forward by travel distance in Ph531) × Number of movements in Ph535 → Forward by travel distance in Ph531) × Number of movements in Ph535 → Forward by travel distance in Ph531 → Wating time in Ph536 → Forward by travel distance in Ph531 → Wating time in Ph536 → Forward by travel distance in Ph531 → Wating time in Ph536 → Forward by travel distance in Ph531 → Wating time in Ph536 → Forward by travel distance in Ph531 → Wating time in Ph536 → Forward by travel distance in Ph531 → Wating time in Ph536 → Forward by travel distance in Ph531 → Wating time in Ph536 → Forward by travel distance in Ph531 → Wating time in Ph536 → Forward by travel distance in Ph531 → Wating time in Ph536 → Forward by travel distance in Ph531 → Wating time in Ph536 → Forward by travel distance in Ph531 → Wating time in Ph536 → Forward by travel distance in Ph531 → Wating time in Ph536 → Forward by travel distance in Ph531 → Wating time in Ph536 ↓ Forgram Jogging Move in Ph536 ↓ Forgram Jogging Move in to 10,000 ↓ 1 for 0 to 10,000 For inn in 1         Immedi- ately         Immedi- ately         Immedi- ately         Immedi- ately         Immedi- ately         Immedi- ately         Immedi- ately         Immedi- ately	Pn52C	2	at Motor O		10 to 100	1%	100	All		Setup	*1
Pn530         Program Jogging Travel         1 to 10,000         1 modernetistic         2768 Atl         1 mmedi- tately         Setup         *1           Pn533         2         Program Jogging Move- ment Signameter (Do not change.)         1 to 10,000         1 mmedi- traver         32768         Atl         Immedi- tately         Setup         *1           Pn534         2         Program Jogging Move- traver         1 to 10,000         1 ms         100         Atl         Immedi- tately         Setup         *1           Pn534         2         Program Jogging Move- traver of the of 10,000         1 ms         100         Atl         Immedi- tately         Setup         *1           Pn535         2         Program Jogging Move- traver of the of 10,000         1 ms         100         Atl         Immedi- tately         Setup         *1           Pn534         2         Program Jogging Move- traver of the of 10,000         1 ms         100         Atl         Immedi- tately         Setup         *1           Pn536         2         Program Jogging Move- traver of the of Novements         1 to 10,000         1 ms         100         Atl         Immedi- tately         Setup         *1           Pn536         2         Program Jogging Move- traver of Novements         1 t		2				-	0000	All		Setup	*1
Pn530         Program Jogging Travel         1 to 10,000         1 modernetistic         2768 Atl         1 mmedi- tately         Setup         *1           Pn533         2         Program Jogging Move- ment Signameter (Do not change.)         1 to 10,000         1 mmedi- traver         32768         Atl         Immedi- tately         Setup         *1           Pn534         2         Program Jogging Move- traver         1 to 10,000         1 ms         100         Atl         Immedi- tately         Setup         *1           Pn534         2         Program Jogging Move- traver of the of 10,000         1 ms         100         Atl         Immedi- tately         Setup         *1           Pn535         2         Program Jogging Move- traver of the of 10,000         1 ms         100         Atl         Immedi- tately         Setup         *1           Pn534         2         Program Jogging Move- traver of the of 10,000         1 ms         100         Atl         Immedi- tately         Setup         *1           Pn536         2         Program Jogging Move- traver of the of Novements         1 to 10,000         1 ms         100         Atl         Immedi- tately         Setup         *1           Pn536         2         Program Jogging Move- traver of Novements         1 t											
Pn530       0       investigation in Pn536 $\rightarrow$ Reverse by travel distance in Pn531 $\times$ Number of movements in Pn536 $\rightarrow$ Reverse by travel distance in Pn531 $\times$ Number of movements in Pn536 $\rightarrow$ Reverse by travel distance in Pn531 $\times$ Number of movements in Pn536 $\rightarrow$ Reverse by travel distance in Pn531 $\times$ Number of movements in Pn536 $\rightarrow$ Reverse by travel distance in Pn531 $\times$ Number of movements in Pn536 $\rightarrow$ Reverse by travel distance in Pn531 $\times$ Number of movements in Pn536 $\rightarrow$ Reverse by travel distance in Pn531 $\times$ Number of movements in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\times$ Number of movements in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\times$ Number of movements in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting tin Pn536 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Wa				0 0	0 0 1						
Pn530         1         movements in Pn535         Forward by travel distance in Pn531 × Number of movements in Pn535           Pn530         2         Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number of movements in Pn535 → Reverse by travel distance in Pn531) × Number of movements in Pn535 → Reverse by travel distance in Pn531 → Waiting time in Pn535 → Reverse by travel distance in Pn531 → Waiting time in Pn535 → Reverse by travel distance in Pn531 → Waiting time in Pn535 → Reverse by travel distance in Pn531 → Waiting time in Pn535 → Reverse by travel distance in Pn531 → Waiting time in Pn535 → Reverse by travel distance in Pn531 → Waiting time in Pn535 → Reverse by travel distance in Pn531 → Waiting time in Pn535 → Reverse by travel distance in Pn531 → Waiting time in Pn535 → Reverse by travel distance in Pn531 → Waiting time in Pn536           Pn531         4         Program Jogging Travel Distance         1 to 1,073,741,824         1 refer- eration 0,000         32768         All         Immedi- ately         Setup         *1           Pn533         2         Program Jogging Move- ment Speed         1 to 10,000         1 ms         500         Rotary 0,16         Immedi- ately         Setup         *1           Pn535         2         Program Jogging Move- ing Time         1 to 10,000         1 ms         100         All         Immedi- ately         Setup         *1           Pn535         2         Program Jogging Num- ing Time         0 to 10,000         1 ms         100         All							prward by	travel distanc	e in Pn531)>	< Number	of
Pn5302 $\frac{2}{\text{movements in Ph536}}$ $\frac{2}{\text{movements in Ph536}}$ $\frac{2}{\text{movements in Ph536}}$ $\frac{2}{\text{movements in Ph536}}$ Pn530 $\frac{3}{\text{movements in Ph536}}$ $\frac{3}{\text{movements in Ph536}}$ $\frac{3}{\text{movements in Ph536}}$ $\frac{3}{\text{movements in Ph536}}$ Pn530 $\frac{3}{\text{movements in Ph536}}$ $\frac{3}{\text{movements in Ph536}}$ $\frac{3}{\text{movements in Ph536}}$ $\frac{3}{\text{movements in Ph536}}$ Pn535 $\frac{3}{\text{movements in Ph536}}$ $\frac{3}{\text{movements in Ph536}}$ $\frac{3}{\text{movements in Ph536}}$ $\frac{3}{\text{movements in Ph536}}$ Pn535 $\frac{3}{\text{movements in Ph536}}$ $\frac{3}{\text{movements in Ph536}}$ $\frac{3}{\text{movements in Ph536}}$ $\frac{3}{\text{movements in Ph536}}$ $\frac{1}{100}$ $\frac{1}{1000}$ $\frac{1}{1000}$ $\frac{1}{1000}$ $\frac{1}{100}$ $\frac{1}{100}$ $\frac{1}{100}$ $\frac{1}{100}$ $\frac{1}{1000}$ $\frac{1}{10000}$ $\frac{1}{1000}$ $\frac{1}{1000}$ $\frac{1}{100}$ </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>everse by t</td> <td>travel distance</td> <td>e in Pn531) &gt;</td> <td>&lt; Number</td> <td>of</td>							everse by t	travel distance	e in Pn531) >	< Number	of
Pn530         Image: state in the intervence of the state in the state inthe state in the state in the				2 mo (Wa	vements in Pn& iiting time in Pr	536 1535 → Re			,		
Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Reverse by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Reverse by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn536 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn536 $\rightarrow$ Forward by travel distance in Pn531) $\times$ Number of movements in Pn536n.□□X□Reserved parameter (Do not change.)n.□□X□Reserved parameter (Do not change.)n.□X□□Reserved parameter (Do not change.)n.□X□□Reserved parameter (Do not change.)Pn5314Program Jogging Travel Distance1 to 1,073,741,8241 refer- ment Direct <br< td=""><td>Pn530</td><td></td><td>n.□□□X</td><td>3 mor (Wa</td><td>vements in Pn&amp; liting time in Pr</td><td>536 1535 → Fo</td><td>2</td><td></td><td>,</td><td></td><td></td></br<>	Pn530		n.□□□X	3 mor (Wa	vements in Pn& liting time in Pr	536 1535 → Fo	2		,		
1       5       in Pn536       > Forward by travel distance in Pn531) × Number of movements in Pn530         n.□DXD       Reserved parameter (Do not change.)       n.□XDDD       Reserved parameter (Do not change.)         n.XDDD       Reserved parameter (Do not change.)       n.XDDD       Reserved parameter (Do not change.)         n.XDDD       Reserved parameter (Do not change.)       n.XDDD       Reserved parameter (Do not change.)         Pn531       4       Program Jogging Travel Distance       1 to 10,073,741,824       1 reference of the program distance in Pn531)       All       Immediately       Setup       *1         Pn533       2       Program Jogging Move-free for the program Jogging Move-free for the program Jogging Move-free for the program Jogging Wait-free for the program Jogging Num-free for the program Jog Monitor 1 Offset for 10,000 to 10,1V       All       Immediately       Setup       *1         Pn553       2       Analog Monitor 2 Offset for the program Jog00 to 10,000 to 10,000 to 10,000 to 10,000 All       All       Immediately       Setup       *1         Pn554       2       Analog Monitor 1 Offset for the program Jog00 to 10,000 to 10,000 to 10,000 All       All       Immediately       Setup       *1 <td></td> <td></td> <td></td> <td>(Wa 4 in F</td> <td>uiting time in Pr Pn535 <math>\rightarrow</math> Rever</td> <td><math>1535 \rightarrow Fc</math></td> <td></td> <td></td> <td></td> <td></td> <td></td>				(Wa 4 in F	uiting time in Pr Pn535 $\rightarrow$ Rever	$1535 \rightarrow Fc$					
n.IXIII         Reserved parameter (Do not change.)           n.XIIII         Reserved parameter (Do not change.)           n.XIIII         Reserved parameter (Do not change.)           Pn531         4         Program Jogging Travel Distance         1 to 1,073,741,824         1 refer- ence unit         32768         All         Immedi- ately         Setup         *1           Pn533         2         Program Jogging Move- ment Speed         1 to 10,000         Twini <sup>-1</sup> Direct 0,1         500         Rotary         Immedi- ately         Setup         *1           Pn534         2         Program Jogging Accel- eration/Deceleration Time         2 to 10,000         1 ms         100         All         Immedi- ately         Setup         *1           Pn536         2         Program Jogging Wait- ing Time         0 to 10,000         1 ms         100         All         Immedi- ately         Setup         *1           Pn536         2         Program Jogging Num- ber of Movements         0 to 10,000         1 ms         100         All         Immedi- ately         Setup         *1           Pn550         2         Analog Monitor 1 Offset voltage         -10,000 to 10,000         0.1 V         0         All         Immedi- ately         Setup         *1				5 in F	n535 → Forwa	$1535 \rightarrow Re$	everse by t el distance	ravel distance e in Pn531) ×	e in Pn531 – Number of r	<ul> <li>Waiting t novements</li> </ul>	ime s in
n.X□□□         Reserved parameter (Do not change.)           Pn531         4         Program Jogging Travel Distance         1 to 1.073,741,824         1 refer- ence unit         32768         All         Immedi- ately         Setup         *1           Pn533         2         Program Jogging Move- ment Speed         1 to 10,000         Rotary: Direct Drive: 0,1         32768         All         Immedi- ately         Setup         *1           Pn534         2         Program Jogging Accel- eration/Deceleration Time         2 to 10,000         1 ms         100         All         Immedi- ately         Setup         *1           Pn536         2         Program Jogging Num- ing Time         0 to 10,000         1 ms         100         All         Immedi- ately         Setup         *1           Pn536         2         Program Jogging Num- ber of Movements         0 to 1,000         Times         1         All         Immedi- ately         Setup         *1           Pn550         2         Analog Monitor 1 Offset Voltage         -10,000 to 10,000         0.1 V         0         All         Immedi- ately         Setup         *1           Pn552         2         Analog Monitor 1 Mag- nification         -10,000 to 10,000         x 0.01         100         All         I			n.DDXD	Reserved par	rameter (Do no	ot change.	)				
Pn531       4       Program Jogging Travel Distance       1 to 1,073,741,824       1 refer- ence unit       32768       All       Immedi- ately       Setup       *1         Pn533       2       Program Jogging Move- ment Speed       1 to 10,000       Rotary: Direct 0.1       500       Rotary       Immedi- ately       Setup       *1         Pn533       2       Program Jogging Accel- eration/Deceleration       1 to 10,000       1 ms       100       All       Immedi- ately       Setup       *1         Pn534       2       Program Jogging Move- ment Speed       2 to 10,000       1 ms       100       All       Immedi- ately       Setup       *1         Pn536       2       Program Jogging Num- ber of Movements       0 to 10,000       1 ms       100       All       Immedi- ately       Setup       *1         Pn550       2       Analog Monitor 1 Offset Voitage       -10,000 to 10,000       0.1 V       0       All       Immedi- ately       Setup       *1         Pn551       2       Analog Monitor 2 Mag- nification       -10,000 to 10,000       0.1 V       0       All       Immedi- ately       Setup       *1         Pn553       2       Analog Monitor 2 Mag- nification       -10,000 to 10,000       x 0.01       100<			n.🗆X🗆 🗆	Reserved par	rameter (Do no	ot change.	)				
Pn5314Program Jogging Iravel Distance1.073,741,824ence unit32768AllImmedi- atelySetup*1Pn5332Program Jogging Move- ment Speed1 to 10,000Rotary; Drivet, 0.1500Rotary; timin <sup>-1</sup> 500Rotary; atelySetup*1Pn5342Program Jogging Accel- eration/Deceleration Time2 to 10,0001 ms100AllImmedi- atelySetup*1Pn5352Program Jogging Wait- image0 to 10,0001 ms100AllImmedi- atelySetup*1Pn5362Program Jogging Num- ber of Movements0 to 1,000Times1AllImmedi- atelySetup*1Pn5502Analog Monitor 1 Offset unification-10,000 to 10,0000.1 V0AllImmedi- atelySetup*1Pn5512Analog Monitor 2 Offset unification-10,000 to 10,0000.1 V0AllImmedi- atelySetup*1Pn5532Analog Monitor 2 Mag- infication-10,000 to 10,000x 0.01100AllImmedi- atelySetup*1Pn5542Rotary Mainer 1 Mag- infication-10,000 to 10,000x 0.01100AllImmedi- atelySetup*1Pn5532Ratag Monitor 2 Mag- infication-10,000 to 10,000x 0.01100AllImmedi- atelySetup*1Pn5542Resid			n.XDDD	Reserved par	rameter (Do no	ot change.	)				
Pn5314Program Jogging Iravel Distance1.073,741,824ence unit32768AllImmedi- atelySetup*1Pn5332Program Jogging Move- ment Speed1 to 10,000Rotary; Drivet, 0.1500Rotary; timin <sup>-1</sup> 500Rotary; atelySetup*1Pn5342Program Jogging Accel- eration/Deceleration Time2 to 10,0001 ms100AllImmedi- atelySetup*1Pn5352Program Jogging Wait- image0 to 10,0001 ms100AllImmedi- atelySetup*1Pn5362Program Jogging Num- ber of Movements0 to 1,000Times1AllImmedi- atelySetup*1Pn5502Analog Monitor 1 Offset unification-10,000 to 10,0000.1 V0AllImmedi- atelySetup*1Pn5512Analog Monitor 2 Offset unification-10,000 to 10,0000.1 V0AllImmedi- atelySetup*1Pn5532Analog Monitor 2 Mag- infication-10,000 to 10,000x 0.01100AllImmedi- atelySetup*1Pn5542Rotary Mainer 1 Mag- infication-10,000 to 10,000x 0.01100AllImmedi- atelySetup*1Pn5532Ratag Monitor 2 Mag- infication-10,000 to 10,000x 0.01100AllImmedi- atelySetup*1Pn5542Resid											
Pn5332Program Jogging Movement Speed1 to 10,000 $\frac{1}{1}$ timent Direct Direc	Pn531	4		ogging Travel		ence	32768	All		Setup	*1
Pn5342eration/Deceleration Time2 to 10,0001 ms100AllIIIIIedi- atelySetup*1Pn5352Program Jogging Wait- ing Time0 to 10,0001 ms100AllImmedi- atelySetup*1Pn5362Program Jogging Num- ber of Movements0 to 1,000Times1AllImmedi- atelySetup*1Pn5362Analog Monitor 1 Offset Voltage-10,000 to 10,0000.1 V0AllImmedi- atelySetup*1Pn5512Analog Monitor 2 Offset voltage-10,000 to 10,0000.1 V0AllImmedi- atelySetup*1Pn5522Analog Monitor 1 Mag- nification-10,000 to 10,0000.1 V0AllImmedi- atelySetup*1Pn5532Analog Monitor 2 Mag- nification-10,000 to 10,000× 0.01100AllImmedi- atelySetup*1Pn5532Analog Monitor 2 Mag- nification-10,000 to 10,000× 0.01100AllImmedi- atelySetup*1Pn5542Power Consumption Monitor Unit Time1 to 1,4401 min1AllImmedi- atelySetup*1Pn5602Residual Vibration Detection Width1 to 3,0000.1%400AllImmedi- atelySetup*1Pn5612Overshoot Detection Level0 to 1001%100AllImmedi- <b< td=""><td>Pn533</td><td>2</td><td></td><td></td><td>1 to 10,000</td><td>1 min<sup>-1</sup> Direct Drive: 0.1</td><td>500</td><td>Rotary</td><td></td><td>Setup</td><td>*1</td></b<>	Pn533	2			1 to 10,000	1 min <sup>-1</sup> Direct Drive: 0.1	500	Rotary		Setup	*1
Ph5352ing Time0.00.101.0001.11s1.00Allatelysetup*1Ph5362Program Jogging Number of Movements0 to 1,000Times1AllImmediatelySetup*1Ph5502Analog Monitor 1 Offset Voltage-10,000 to 10,0000.1 V0AllImmediatelySetup*1Ph5512Analog Monitor 2 Offset Voltage-10,000 to 10,0000.1 V0AllImmediatelySetup*1Ph5522Analog Monitor 1 Mag- nification-10,000 to 10,0000.1 V0AllImmediatelySetup*1Ph5532Analog Monitor 2 Mag- nification-10,000 to 10,000× 0.01100AllImmediatelySetup*1Ph5532Residual Vibration Detection Width1 to 1,4401 min1AllImmediatelySetup*1Ph5612Overshoot Detection 	Pn534	2	eration/Dec		2 to 10,000	1 ms	100	All		Setup	*1
Pn5502ber of Movements0 to 1,000nmes1AnatelySetup1Pn5502Analog Monitor 1 Offset Voltage-10,000 to 10,0000.1 V0AllImmedi- atelySetup*1Pn5512Analog Monitor 2 Offset Voltage-10,000 to 10,0000.1 V0AllImmedi- atelySetup*1Pn5512Analog Monitor 2 Offset Voltage-10,000 to 10,0000.1 V0AllImmedi- atelySetup*1Pn5522Analog Monitor 1 Mag- nification-10,000 to 10,000× 0.01100AllImmedi- atelySetup*1Pn5532Analog Monitor 2 Mag- nification-10,000 to 10,000× 0.01100AllImmedi- atelySetup*1Pn5542Power Consumption Monitor Unit Time1 to 1,4401 min1AllImmedi- atelySetup-Pn5602Residual Vibration Detection Width1 to 3,0000.1%400AllImmedi- atelySetup*1Pn5612Overshoot Detection Level0 to 1001%100AllImmedi- atelySetup*1Pn5812Zero Speed Level1 to 10,0001 mm/s20LinearImmedi- atelySetup*1	Pn535	2		ogging Wait-	0 to 10,000	1 ms	100	All		Setup	*1
Pn5502Voltage10,0000.1 V0AllatelySetup1Pn5512Analog Monitor 2 Offset Voltage-10,000 to 10,0000.1 V0AllImmedi- atelySetup*1Pn5522Analog Monitor 1 Mag- nification-10,000 to 10,000× 0.01100AllImmedi- atelySetup*1Pn5532Analog Monitor 2 Mag- nification-10,000 to 10,000× 0.01100AllImmedi- atelySetup*1Pn5532Analog Monitor 2 Mag- nification-10,000 to 10,000× 0.01100AllImmedi- atelySetup*1Pn5542Power Consumption Monitor Unit Time1 to 1,4401 min1AllImmedi- atelySetup-Pn5602Residual Vibration Detection Width1 to 3,0000.1%400AllImmedi- atelySetup*1Pn5612Overshoot Detection Level0 to 1001%100AllImmedi- atelySetup*1Pn5812Zero Speed Level1 to 10,0001 mm/s20LinearImmedi- atelySetup*1	Pn536	2			0 to 1,000	Times	1	All		Setup	*1
Pn5512Voltage10,0000.1 V0AllatelySetup*1Pn5522Analog Monitor 1 Mag- nification-10,000 to 10,000× 0.01100AllImmedi- atelySetup*1Pn5532Analog Monitor 2 Mag- nification-10,000 to 10,000× 0.01100AllImmedi- atelySetup*1Pn5532Analog Monitor 2 Mag- nification-10,000 to 10,000× 0.01100AllImmedi- atelySetup*1Pn5542Power Consumption Monitor Unit Time1 to 1,4401 min1AllImmedi- atelySetup-Pn5602Residual Vibration Detection Width1 to 3,0000.1%400AllImmedi- atelySetup*1Pn5612Overshoot Detection Level0 to 1001%100AllImmedi- atelySetup*1Pn5812Zero Speed Level1 to 10,0001 mm/s20LinearImmedi- atelySetup*1	Pn550	2		nitor 1 Offset		0.1 V	0	All		Setup	*1
Pn5522nification10,000× 0.01100AllatelySetup1Pn5532Analog Monitor 2 Mag- nification-10,000 to 10,000× 0.01100AllImmedi- atelySetup*1Pn55A2Power Consumption Monitor Unit Time1 to 1,4401 min1AllImmedi- atelySetup*1Pn5602Residual Vibration Detection Width1 to 3,0000.1%400AllImmedi- atelySetup*1Pn5612Overshoot Detection Level0 to 1001%100AllImmedi- atelySetup*1Pn5812Zero Speed Level1 to 10,0001 mm/s20LinearImmedi- atelySetup*1	Pn551	2		nitor 2 Offset		0.1 V	0	All		Setup	*1
Pn5532nification310,000× 0.01100AllatelySetup*1Pn55A2Power Consumption Monitor Unit Time1 to 1,4401 min1AllImmediatelySetup-Pn5602Residual Vibration Detection Width1 to 3,0000.1%400AllImmediatelySetup*1Pn5612Overshoot Detection Level0 to 1001%100AllImmediatelySetup*1Pn5812Zero Speed Level1 to 10,0001 mm/s20LinearImmediatelySetup*1	Pn552	2	Analog Mo nification	nitor 1 Mag-		× 0.01	100	All		Setup	*1
Pn5602Residual Vibration Detection Width1 to 3,0000.1%400AllImmedi- atelySetup*1Pn5612Overshoot Detection Level0 to 1001%100AllImmedi- 	Pn553	2		nitor 2 Mag-		× 0.01	100	All		Setup	*1
Pn561       2       Overshoot Detection Level       0 to 100       1%       100       All       Immedi- ately       Setup       *1         Pn561       2       Overshoot Detection Level       0 to 100       1%       100       All       Immedi- ately       Setup       *1	Pn55A	2			1 to 1,440	1 min	1	All		Setup	-
Ph361         2         Level         0 to 100         1%         100         All         ately         Setup         *1           Ph361         2         Zero Speed Level         1 to 10 000         1 mm/s         20         Linear         Immedi-         Setup         *1	Pn560	2			1 to 3,000	0.1%	400	All		Setup	*1
	Pn561	2		Detection	0 to 100	1%	100	All		Setup	*1
	Pn581	2	Zero Speed	d Level	1 to 10,000	1 mm/s	20	Linear		Setup	*1

			Continued from previous page.							
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn582	2	Speed Coi Detection S Width	ncidence Signal Output	0 to 100	1 mm/s	10	Linear	Immedi- ately	Setup	*1
Pn583	2	Brake Refe put Speed	erence Out- Level	0 to 10,000	1 mm/s	10	Linear	Immedi- ately	Setup	*1
Pn584	2	Speed Lim Servo ON	it Level at	0 to 10,000	1 mm/s	10000	Linear	Immedi- ately	Setup	*1
Pn585	2	Program J ment Spee	ogging Move- ed	1 to 10,000	1 mm/s	50	Linear	Immedi- ately	Setup	*1
Pn586	2	Motor Run Ratio	ning Cooling	0 to 100	1%/ Max. speed	0	Linear	Immedi- ately	Setup	-
	2	cution Sele	etection Exe- ection for inear Encoder	0000 to 0001	-	0000	Linear	Immedi- ately	Setup	*1
Pn587		n.000X n.00X0 n.0X00 n.X000	0 Do 1 Det Reserved par Reserved par	ction Selection not detect pola ect polarity. rameter (Do no rameter (Do no rameter (Do no	arity. ot change. ot change.	)	r Encoder			

Pn600	2	Regenerative Resistor Capacity <sup>*5</sup>	Depends on model. <sup>*6</sup>	10 W	0	All	Immedi- ately	Setup	*1
Pn601	2	Dynamic Brake Resis- tor Allowable Energy Consumption	0 to 65,535	10 J	0	All	After restart	Setup	*7
Pn603	2	Regenerative Resis- tance	0 to 65,535	10 m $\Omega$	0	All	Immedi- ately	Setup	*1
Pn604	2	Dynamic Brake Resis- tance	0 to 65,535	10 m $\Omega$	0	All	After restart	Setup	*7
Pn621 to Pn628 <sup>*4</sup>	-	Safety Module-Related Parameters	_	_	_	All	_	-	_

								tinued from		s page
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Table Oper eter Setting	ation Param- gs	0000 to 15A1	-	0000	All	Immedi- ately	Setup	4-4
			-						1	
			Table Operati	on Control Swit	ching Cor	dition Sele	ection			
		n.000X	0 the	itch from speed pressure feed tor position exc	back deteo	ction value				en
			1 the	itch from speed pressure feedk sition exceeds f	back deter	eration to t ction value	orque (pressu exceeds Pn6	ure) table ope A7 × Pn6D2	eration wh or the mo	en otor
			Speed Table	Reference Sel	ection					
				not perform sp						
				e speed table re						£
				e speed table re ed table opera		(PN6AC) a	ind speed tab	ne reference	2 (PN6AE)	TOP
			<sup>3</sup> for	e speed table re speed table op	eration.	. ,	0.1			·
			4 for	e speed table re speed table op	eration.	,	0 1		,	,
		n.00X0		e speed table re speed table op		(Pn6AC) tł	nrough speed	table referer	nce 5 (Pn6	B4)
				e speed table re speed table op		(Pn6AC) tł	nrough speed	table referer	nce 6 (Pn6	B6)
Pn6A4				e speed table re speed table op		(Pn6AC) tł	nrough speed	table referer	nce 7 (Pn6	B8)
				e speed table re speed table op		(Pn6AC) tł	nrough speed	table referer	nce 8 (Pn6	BA)
				e speed table re 6BC) for speec			hrough speed	table refere	nce 9	
				e speed table re 6BE) for speed			hrough speed	table refere	nce 10	
			Torque (Pres	sure) Referenc	e Selectio	'n				
			0 Do	not perform to	rque (pres	sure) table	operation.			
				e torque (pressi eration.	ure) table i	reference 1	(Pn6D2) for	torque (pres	sure) table	
		n.¤X¤¤		e torque (pressi erence 2 (Pn6D					ssure) tabl	е
			3 tab	e torque (pressi le reference 3 (	Pn6D6) fo	r torque (p	rèssure) table	operation.		
			<sup>4</sup> tab	e torque (pressi le reference 4 (	Pn6D8) fo	r torque (p	rèssure) table	operation.		
			5 Use tab	e torque (pressi le reference 5 (	ure) table i Pn6DA) fo	reference 1 r torque (p	(Pn6D2) thro pressure) table	ough torque operation.	(pressure)	
			Speed Table	Operation Cor	ntrol Meth	od Switch	ing Selection			
		n.XDDD	· ·	able Pn6A5 and			•			
			1 Dis	able Pn6A4 = r	n.000X a	and enable	Pn6A5.			
							1			
Pn6A5	4	Torque (Pre ence during Table Oper		0 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-8
Pn6A7	2	Pressure C		0 to 10,000	0.01%	0	All	Immedi- ately	Setup	4-8
Pn6A8	4	Table Oper ing Position	ation Switch- n	0 to 2,147,483,647	1 refer- ence unit	0	All	Immedi- ately	Setup	4-8
Pn6AA	4		it for Torque Table Opera-	0 to 2,147,483,647	1 refer- ence	0	All	Immedi- ately	Setup	4-11

Continued from previous page.

Continued from previous page.

						Con	itinued from	n previou	s page.
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn6AC	4	Speed Table Reference	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-5
Pn6AE	4	Speed Table Reference 2	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-5
Pn6B0	4	Speed Table Reference 3	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-5
Pn6B2	4	Speed Table Reference	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-5
Pn6B4	4	Speed Table Reference 5	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-5
Pn6B6	4	Speed Table Reference 6	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-5
Pn6B8	4	Speed Table Reference 7	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-5
Pn6BA	4	Speed Table Reference 8	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-5
Pn6BC	4	Speed Table Reference 9	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-5
Pn6BE	4	Speed Table Reference	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6C0	4	Speed Table Switching Position 1	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6C2	4	Speed Table Switching Position 2	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6C4	4	Speed Table Switching Position 3	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6C6	4	Speed Table Switching Position 4	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6C8	4	Speed Table Switching Position 5	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6CA	4	Speed Table Switching Position 6	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6CC	4	Speed Table Switching Position 7	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6CE	4	Speed Table Switching Position 8	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6D0	4	Speed Table Switching Position 9	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6D2	4	Torque (Pressure) Refer- ence 1	-1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-8, 4-11
Pn6D4	4	Torque (Pressure) Refer- ence 2	-1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-11
Pn6D6	4	Torque (Pressure) Refer- ence 3	-1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-11
Pn6D8	4	Torque (Pressure) Refer- ence 4	-1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-11

Parameter No. Pn6DA	Size	N								
Pn6DA		IN	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	4	Torque (Pre ence 5	essure) Re	er- 1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-11
Pn6DC	4	Torque (Pre ence Time		er- 0 to 180,000	0.01 s	0	All	Immedi- ately	Setup	4-11
Pn6DE	4	Torque (Pre ence Time		er- 0 to 180,000	0.01 s	0	All	Immedi- ately	Setup	4-11
Pn6E0	4	Torque (Pre ence Time		er- 0 to 180,000	0.01 s	0	All	Immedi- ately	Setup	4-11
Pn6E2	4	Torque (Pre ence Time	essure) Re 4	er- 0 to 180,000	0.01 s	0	All	Immedi- ately	Setup	4-11
	2	Communic trols	ations Cor	n- 0000 to 1FF3	_	1040	All	Immedi- ately	Setup	_
			MECHAT	ROLINK Communi	ications C	heck Mas	k for Debugg	ing		Ī
			0 E	o not mask.						-
	r	1.000X	1 lạ	nore MECHATRO	_INK comr	nunication	s errors (A.E6	60).		-
		1.0007	2 l <u>í</u>	gnore WDT errors (	A.E50).					-
				gnore both MECHA rrors (A.E50).	TROLINK	communic	ations errors	(A.E60) and	WDT	_
	Ī		Warning	Check Masks						Ī
			0 C	o not mask.						_
			1 lạ	gnore data setting	warnings (	A.94 <b>□</b> ).				_
			2 l	gnore command wa	arnings (A	95 <b>口</b> ).				_
			3 l <u>í</u>	gnore both A.94□	and A.95 <b>E</b>	] warnings	S.			_
				gnore communicati		0 (	,			_
Pn800				gnore both A.94□		v				_
				gnore both A.95□		0				_
	r	1.00X0		gnore A.94 <b>□</b> , A.95			0			_
				gnore data setting	0 (		,			_
				gnore A.94 <b>□</b> , A.97	,		0			_
				gnore A.95 <b>□</b> , A.97			0			_
				gnore A.94 <b>□</b> , A.95			•			_
				gnore A.96 <b>□</b> , A.97			0			_
				gnore A.94 <b>□</b> , A.96			-			_
				gnore A.95 <b>□</b> , A.96			-			_
			F l	gnore A.94 <b>□</b> , A.95	□, A.96□	, A.97A, a	nd A.97b war	nings.		_
	r	n.0X00	Reserved	parameter (Do no	ot change.	)				[
	r	n.X000	Automati	c Warning Clear S	election fo	or Debugg	ing <sup>*7</sup>			[
		M3 <sup>*7</sup>		letain warnings for		-				_
			1 A	utomatically clear	warnings (	MECHATF	OLINK-III spe	ecification).		

Continued from previous page.

Parameter	Size	N	ame	Setting	Setting	Default	Applicable	When	Classi-	Refer-
No.	ග 2	Application Selections	Function 6 (Software	Range 0000 to 0103	Unit –	Setting 0003	Motors All	Enabled Immedi- ately	fication Setup	ence *1
<sup>2</sup> n801		nX	1 Disal 2 Disal 3 Disal	hit Selection ble both forward ble forward soft ble reverse soft ble both forwar rameter (Do no	ware limit ware limit. d and reve	erse softwa				 - - -
		n.¤X¤¤	Software Lin	nit Check for R ot perform soft prm software lin	eferences ware limit	, checks for				-
		n.XDDD	Reserved pa	rameter (Do no	ot change.	)				
Pn803	2	Origin Ran	ge	0 to 250	1 refer- ence unit	10	All	Immedi- ately	Setup	*2
Pn804	4	Forward S	oftware Limit	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	107374 1823	All	Immedi- ately	Setup	*1
Pn806	4	Reverse So	oftware Limit	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	-10737 41823	All	Immedi- ately	Setup	*1
Pn808	4	Absolute E Offset	ncoder Origin	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	0	All	Immedi- ately <sup>*9</sup>	Setup	*1
Pn80A	2	First Stage eration Co	Linear Accel- nstant	1 to 65,535	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn80B	2	Second St Acceleratio	age Linear on Constant	1 to 65,535	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn80C	2	Acceleratic Switching	on Constant Speed	0 to 65,535	100 ref- erence units/s	0	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn80D	2	First Stage Deceleratio	Linear on Constant	1 to 65,535	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn80E	2	Second St Deceleratio	age Linear on Constant	1 to 65,535	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn80F	2	Deceleration Switching	on Constant Speed	0 to 65,535	100 ref- erence units/s	0	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn810	2	tion/Decele	al Accelera- eration Bias	0 to 65,535	100 ref- erence units/s	0	All	Immedi- ately <sup>*11</sup>	Setup	*2
Pn811	2		al Accelera- eration Time	0 to 5,100	0.1 ms	0	All	Immedi- ately <sup>*11</sup>	Setup	*2
Pn812	2	Movement Time		0 to 5,100	0.1 ms	0	All	Immedi- ately <sup>*11</sup>	Setup	*2
Pn814	4	External Po Final Trave		-1,073,741,823 to 1,073,741,823	1 refer- ence unit	100	All	Immedi- ately	Setup	*2

6

_								001	itinued fron	i previou:	s page
Parameter No.	Size	N	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Origin Ret tings	urn Mode	e Set-	0000 to 0001	-	0000	All	Immedi- ately	Setup	*12
					<b></b>						-
			-		Direction						
Pn816		n.🗆 🗆 🛛 X	0		n in forward di						-
M2 *13	_			Retur	n in reverse di	rection.					-
M2 <sup>-13</sup>		n.🗆🗆 X 🗆	Reserv	ed pa	rameter (Do no	ot change.	)				I
	I	n.¤X¤¤	Reserv	ed pai	rameter (Do no	ot change.	)				I
	I	n.XDDD	Reserv	ed pai	rameter (Do no	ot change.	)				I
Pn817		Origin App	proach Sr	bood		100 ref-			Immedi-		
*14	2	1		Jeeu	0 to 65,535	erence units/s	50	All	ately *10	Setup	*2
Pn818 *15	2	Origin App 2	proach Sp	beed	0 to 65,535	100 ref- erence units/s	5	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn819	4	Final Trave Origin Ret		e for	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	100	All	Immedi- ately	Setup	*2
	2	Input Sign Selections	al Monitc	or	0000 to 7777	-	0000	All	Immedi- ately	Setup	*12
	1		1012 S	ignal N	/apping						[
			0	Do no	ot map.						-
			1	Moni	tor CN1-13 inp	out termina	ıl.				_
			2		tor CN1-7 inpu						_
		n.DDDX	3		tor CN1-8 inpu						_
Pn81E			4		tor CN1-9 inpu						_
THOTE			5		tor CN1-10 inp						_
M2 *13			6		tor CN1-11 inp tor CN1-12 inp						-
			1	IVIOIII							_
		n.🗆 🗆 X 🗆	1013 S	ignal N	/lapping						
			0 to 7	The r	nappings are t	he same a	s the IO12	signal mappi	ings.		_
	Ī		1014 S	ignal N	/apping						[
		n.¤X¤¤	0 to 7	-	nappings are t	he same a	s the IO12	signal mappi	ngs.		-
	Ī	n.X000	1015 S		Aapping						I
			0 to 7	The r	nappings are t	he same a	s the IO12	signal mappi	ings.		_

Continued from previous page.

Parameter	Size	N	ame	Setting	Setting	Default	Applicable	When	Classi-	Refer-
No.	S		ame	Range	Unit	Setting	Motors	Enabled	fication	ence
	2	Command tions	Data Alloca-	0000 to 1111	-	0010	All	After restart	Setup	*12
	_									_
			Option Field	Allocation						
		n.🗆 🗆 🗆 X	0 Disat	ole option field	allocation.					_
Pn81F			1 Enab	le option field a	allocation.					-
1 110 11	-									-
M2 *13			Position Con	trol Command	TFF/TLIN	1 Allocatio	n			
IVIZ		n.🗆🗆 X 🗆	0 Disat	ole allocation.						_
			1 Enab	le allocation.						_
	Ī	n.¤X¤¤	Reserved pa	rameter (Do no	ot change.	.)				
						•				-
		n.XDDD	Reserved pa	rameter (Do no	ot change.	.)				
Pn820	4	Forward La	atching Area	-2,147,483,648 to 2,147,483,647	1 refer- ence unit	0	All	Immedi- ately	Setup	*2
Pn822	4	Reverse La	atching Area	-2,147,483,648 to 2,147,483,647	1 refer- ence unit	0	All	Immedi- ately	Setup	*2
								Continuo		

Continued on next page.

							Cor	ntinued from	n previou	s page
Parameter No.	Size		Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Option N tion	Ionitor 1 Selec-	0000 to FFFF	-	0000	-	Immedi- ately	Setup	*2
		Setting			Moni	tor			Applic Mote	
	Н	igh-Speed	Monitor Regior	ו					1	
		000 hex	Motor speed [1						AI	
		001 hex	Speed referenc			ed detecti	on speed]		AI	
		002 hex	Torque [100000						Al	
		003 hex	Position deviati	,					Al	
		004 hex	Position deviation		<i>,</i> .				AI	
		00A hex	Encoder count		, .				Al	
		00B hex	Encoder count		/ .				AI	
		00C hex	FPG count (low			-			Al	
		00D hex	FPG count (upp	, :	eterence un	Itsj			AI	1
		•	Monitor Region							
		010 hex	Un000: Motor s						AI	
	0	011 hex	Un001: Speed						Al	1
	0	012 hex	Un002: Torque	-	-				Al	1
	O	013 hex	Un003: Rotatio Number of enco in decimal	oder pulses fr	om origin v	vithin one	encoder rotat	ion displayec	AI	I
			Un003: Electric Linear encoder	pulses from t	he polarity		layed in decir	mal		
	0	014 hex	Un004: Rotatio Electrical angle	from polarity	origin				— AI	I
n824			Un004: Electric Electrical angle							
M3 *8	0	015 hex	Un005: Input S	gnal Monitor					AI	
	0	016 hex	Un006: Output	Signal Monito	or				Al	
	0	017 hex	Un007: Input R	eference Spe	ed [min <sup>-1</sup> ]				AI	I
	0	018 hex	Un008: Positior	Deviation [re	eference un	its]			AI	
	0	019 hex	Un009: Accum	ulated Load R	Ratio [%]				AI	
	0	01A hex	Un00A: Regene						AI	
	0	01B hex	Un00B: Dynam	c Brake Resis	stor Power	Consump	tion [%]		AI	
	0	01C hex	Un00C: Input F	eference Puls	se Counter	[reference	units]		Al	
	0	01D hex	Un00D: Feedba		-		-		Al	1
	0	01E hex	Un00E: Fully-clc	sed Loop Fee	dback Puls	e Counter [	external enco	der resolution	] Rota	ary
	_0	023 hex	Initial multiturn						Rota	
		024 hex	Initial increment		-				Rota	ary
		025 hex	Initial absolute			, .,			Line	
		026 hex	Initial absolute				-		Line	
	—	040 hex	Un025: SERVO						Al	
		041 hex	Un026: Servor				tor		Al	
		042 hex	Un027: Built-in		-	0			Al	
		043 hex	Un028: Capacit						AI	
		044 hex	Un029: Surge F			-			AI	
		045 hex	Un02A: Dynam			ng Lite Rat	10		AI	
		046 hex	Un032: Instanta		r				AI	
		047 hex	Un033: Power		**	_			AI	
		048 hex	Un034: Cumula			1			Al	
		050 hex	Pressure feedba						AI	
		052 hex	Control method	_					AI	
		100 hex	Speed/torque (	pressure) tabl	e operatior	monitor			AI	l

Continued from previous page.

Continued from previous page.

Pn824 M3 <sup>*8</sup>	) () () ()	0081 hex	Previous Previous			Moni	ter		1	Applic	ahlo
	) () () ()	0080 hex 0081 hex 0084 hex	Previous Previous				lor			Moto	
	) () ()	0081 hex	Previous		nly						
M3 <sup>*8</sup>	() () ()	0084 hex		value	of latched feed	dback pos	ition (LPOS	S1) [encoder p	oulses]	All	
[ <u>M3</u> ]*8	Α				of latched feed		ition (LPOS	S2) [encoder p	oulses]	All	
	(	II Areas	Continuo	ous Lat	ch Status (EX	STATUS)				All	
		Dula a									
		Other values	Reserve	d settir	ngs (Do not use	ə.)				All	
	2	Option Mo tion	onitor 2 S	Selec-	0000 to FFFF	-	0000	All	Immedi- ately	Setup	*2
Pn825	-	0000 hex to	D The s	ettings	are the same	as those f	or the Opt	ion Monitor 1	Selection.		
	-	0084 hex		3-							_
Pn827	2	Linear Dec Constant			1 to 65,535	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn829	2	SVOFF Wa SVOFF at to Stop)	aiting Tim Decelera	ne (for ation	0 to 65,535	10 ms	0	All	Immedi- ately <sup>*10</sup>	Setup	*2
	2	Option Fie 1	eld Alloca	itions	0000 to 1E1E	_	1813	All	After restart	Setup	*12
Pn82A M2 <sup>*13</sup>		n	0 1 G_SEL 0 to E	Alloca Alloca	ate bits 0 and ate bits 1 and 3 ate bits 2 and 3 ate bits 2 and 3 ate bits 2 and 3 ate bits 2 and 3 ate bits 3 and 4 ate bits 4 and 3 ate bits 6 and 3 ate bits 7 and 3 ate bits 7 and 3 ate bits 9 and ate bits 10 and ate bits 11 and ate bits 12 and ate bits 12 and ate bits 14 and ate bi	2 to ACCF 3 to ACCF 4 to ACCF 5 to ACCF 6 to ACCF 7 to ACCF 8 to ACCF 9 to ACCF 9 to ACCF 10 to ACCF 10 to ACCF 11 to ACC 11 to ACC 12 to ACC 13 to ACC 14 to ACC 14 to ACC 15 to ACC	ilL.         cFilL.         CFIL.         CFIL.         CFIL.         CFIL.         OFIL.         offil.         offil.	CFIL allocatio	ns.		

							Cor	ntinued from	n previou:	s page
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Option Fie	ld Allocations	0000 to 1F1F	_	1D1C	All	After restart	Setup	*12
		2						rootart		
			V PPI Alloc	ation (Option)						
				cate bit 0 to V_F	PPI.					
				cate bit 1 to V_F						_
			2 Allo	cate bit 2 to V_F	PPI.					-
			3 Allo	cate bit 3 to V_F	PPI.					_
			4 Allo	cate bit 4 to V_F	PPI.					_
				cate bit 5 to V_F						
				cate bit 6 to V_F						_
		n.🗆 🗆 🗆 X		cate bit 7 to V_F						_
				cate bit 8 to V_F						
				cate bit 9 to V_F						
Pn82B				cate bit 10 to V	_					
M2 *13				cate bit 12 to V						_
IVIZ				cate bit 13 to V						_
			E Allo	cate bit 14 to V	PPI.					_
			F Allo	cate bit 15 to V	_PPI.					
				ation Enable/Di	sable Sel	oction				-
		n.DDXD		able V_PPI alloc						-
				ble V_PPI alloca						_
	-			-						
		n.¤X¤¤	P_PI_CLR A	Ilocation (Optio	on)					
			0 to F The	settings are the	e same as	for the V_F	PPI allocation	s.		_
	-			Ilocation Enabl		Soloction				
		n.XDDD		able P_PI_CLR a		Selection				
				ble P_PI_CLR a						-
	-									_
		Option Fie	d Allocations	0000 to				After		
	2	3		1F1F	-	1F1E	All	restart	Setup	*12
	_									
			P_CL Alloca	ation (Option)						
		n.000X		ation (Option) settings are the	e same as	for the V_F	PPI allocation	S.		
		n.DDDX	0 to F The	settings are the			PPI allocation	S.		_
2=920			0 to F The P_CL Alloca	settings are the ation Enable/Dis	sable Sele		PPI allocation	5.		
Pn82C		n.000X	0 to F The P_CL Alloca 0 Disa	settings are the ation Enable/Dis	sable Sele ation.		PPI allocation	S.		
			0 to F The P_CL Alloca 0 Disa	settings are the ation Enable/Dis	sable Sele ation.		PPI allocation:	5.		
		n.00X0	0 to F The P_CL Alloca 0 Disa 1 Ena	settings are the ation Enable/Dis	sable Sele ation.		PPI allocation:	S.		- - - -
			0 to F The P_CL Alloca 0 Disa 1 Ena N_CL Alloca	settings are the ation Enable/Dis able P_CL alloca ble P_CL alloca	sable Sele ation. tion.	ction				
		n.00X0	0 to F     The       P_CL Alloca       0     Disa       1     Ena       N_CL Alloca       0 to F     The	settings are the ation Enable/Dis able P_CL alloca ble P_CL alloca ation (Option) settings are the	sable Sele ation. tion. e same as	ction for the V_F				
		n.00X0	0 to F     The       P_CL Alloca       0     Disa       1     Ena       N_CL Alloca       0 to F     The       N_CL Alloca	settings are the ation Enable/Dis able P_CL alloca ble P_CL alloca ation (Option) settings are the ation Enable/Dis	sable Sele ation. tion. e same as sable Sele	ction for the V_F				
Pn82C M2 <sup>*13</sup>		n.00X0	0 to F     The       P_CL Alloca       0     Disa       1     Ena       N_CL Alloca       0 to F     The       N_CL Alloca       0     Disa	settings are the ation Enable/Dis able P_CL alloca ble P_CL alloca ation (Option) settings are the	ation. tion. e same as sable Sele ation.	ction for the V_F				

Continued from previous page.

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	itinued from When Enabled	Classi- fication	Refer- ence
	2	Option Fiel 4	d Allocat	ions	0000 to 1F1C	-	0000	All	After restart	Setup	*12
			BANK_S	SEL1	Allocation (Op	tion)					
			0	Alloca	ate bits 0 to 3 t	to BANK_	SEL1.				
			1	Alloca	ate bits 1 to 4 t	to BANK_	SEL1.				_
					ate bits 2 to 5 t	-					_
					ate bits 3 to 6 t						
					ate bits 4 to 7 t						_
		n.🗆 🗆 🗆 X	5		ate bits 5 to 8 t						_
			-		ate bits 6 to 9 t						_
			-		ate bits 7 to 10		-				_
			8		ate bits 8 to 11		-				
Pn82D					ate bits 9 to 12		-				_
M2 *13			A B		ate bits 10 to 1 ate bits 11 to 1						
IVIZ **					ate bits 12 to 1						_
			U	7 41000			(_OLLI)				_
			BANK_	SEL1	Allocation Ena	ble/Disab	le Selectio	on			
		n.🗆🗆 X 🗆	0	Disab	le BANK_SEL	1 allocatio	n.				-
			1	Enab	le BANK_SEL1	allocation	۱.				_
											_
		n.¤X¤¤	LT_DIS/	ABLE	Allocation (Op	otion)					
			0 to F	The s	ettings are the	same as	for the V_F	PPI allocations	6.		_
											_
			_		Allocation Ena			on			
		n.XDDD	0		IN LT_DISABLE						-
			1	⊏nab	le LT_DISABLE	anocation	1.				_

								tinued fror	n previou	s page.	
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Option Fie	ld Allocations	_	_	0000	All	After restart	Setup	*12	
		0		1011				Tootart			
		n.DDDX	Reserved p	arameter (Do no	ot change.	)				T	
		n.DDXD	Reserved p	arameter (Do no	ot change.	)					
				AL Allocation (C	ntion)						
			_	cate bits 0 to 2	. ,	GNAL.					
			1 Allo	cate bits 1 to 3	to OUT_SI	GNAL.				_	
				cate bits 2 to 4						_	
				cate bits 3 to 5						_	
Pn82E		4       Allocate bits 4 to 6 to OUT_SIGNAL.         5       Allocate bits 5 to 7 to OUT_SIGNAL.         6       Allocate bits 6 to 8 to OUT_SIGNAL.         7       Allocate bits 7 to 9 to OUT_SIGNAL.									
*13											
M2 *13											
			8 Allo	cate bits 8 to 10	) to OUT_S	SIGNAL.				_	
				cate bits 9 to 11	-					_	
				cate bits 10 to 1		_				_	
				cate bits 11 to 1 cate bits 12 to 1		-				_	
				cate bits 12 to 1						_	
	-		1							-	
		n.X000		AL Allocation Er			ion				
				able OUT_SIGNA						_	
										_	
	-			0000 to				After			
	2	Motion Se	ttings	0001	-	0000	All	restart	Setup	*2	
			Linear Acc	eleration/Decele	ration Cor	netant Solu	oction				
				Pn80A to Pn80				221 to Dn81	0. ara		
		n.DDDX	<sup>0</sup> ign	ored.)		527. UHES		004 IU F1104	u are		
Pn833							-			_	
				e Pn834 to Pn84 pred.)	0. (The se		-			_	
			l ign	e Pn834 to Pn84 pred.)	·	ttings of Pr	-			-	
		n.OOXO	Reserved p	Pn834 to Pn84 ored.) arameter (Do no	ot change.	ttings of Pr	-			-	
		n.00X0 n.0X00	Reserved p	e Pn834 to Pn84 pred.)	ot change.	ttings of Pr	-			- - [ [	
			Reserved p	Pn834 to Pn84 ored.) arameter (Do no	ot change. ot change.	ttings of Pr ) )	-			-     	
		n.OXOO	Reserved p	Pn834 to Pn84 pred.) arameter (Do no arameter (Do no	ot change. ot change.	ttings of Pr ) )	-			- [ [ ]	
		n.0X00	Reserved p	Pn834 to Pn84 pred.) arameter (Do no arameter (Do no arameter (Do no	ot change. ot change. ot change.	ttings of Pr ) )	-	F and Pn82		-	
Pn834		n.0X00	Reserved p Reserved p Reserved p	Pn834 to Pn84 pred.) arameter (Do no arameter (Do no arameter (Do no	ot change. ot change. ot change. 10,000 refer- ence	ttings of Pr ) )	-			*2	
Pn834		n.□X□□ n.X□□□ First Stage	Reserved p Reserved p Reserved p	Pn834 to Pn84 pred.) arameter (Do no arameter (Do no arameter (Do no arameter (Do no	ot change. ot change. ot change. 10,000 refer- ence units/s <sup>2</sup>	ttings of Pr ) )	n80A to Pn8C	F and Pn82	7 are	*2	
	4	n.□X□□ n.X□□□ First Stage eration Co	Reserved p Reserved p Reserved p	Pn834 to Pn84 pred.) arameter (Do no arameter (Do no arameter (Do no arameter (Do no	ot change. ot change. 10,000 refer- ence units/s <sup>2</sup> 10,000 refer-	ttings of Pr ) ) ) 100	All	F and Pn82	7 are		
Pn834 Pn836		n.□X□□ n.X□□□ First Stage eration Co Second St	Reserved p Reserved p Reserved p Reserved p e Linear Acce instant 2	Pn834 to Pn84 pred.) arameter (Do no arameter (Do no arameter (Do no 20,971,520	ot change. ot change. 10,000 refer- ence units/s <sup>2</sup> 10,000 refer- ence	ttings of Pr ) )	n80A to Pn8C	F and Pn82	7 are	*2	
	4	n. 🗆 X 🗆 🗆 n. X 🗆 🗆 First Stage eration Co Second St Acceleratio	Reserved p Reserved p Reserved p Linear Acce instant 2 tage Linear con Constant 2	<ul> <li>Pn834 to Pn84 pred.)</li> <li>arameter (Do no arameter (Do no arameter (Do no 20,971,520</li> <li>1 to 20,971,520</li> <li>2 20,971,520</li> </ul>	ot change. ot change. ot change. 10,000 refer- ence units/s <sup>2</sup> 10,000 refer- ence units/s <sup>2</sup>	ttings of Pr ) ) ) 100	All	F and Pn82	7 are		
	4	n. 🗆 X 🗆 🗆 n. X 🗆 🗆 First Stage eration Co Second St Acceleratio	Reserved p Reserved p Reserved p Reserved p e Linear Acce instant 2 tage Linear on Constant 2	Pn834 to Pn84 pred.) arameter (Do no arameter (Do no arameter (Do no 20,971,520	ot change. ot change. ot change. 10,000 refer- ence units/s <sup>2</sup> 10,000 refer- ence units/s <sup>2</sup> 1 refer- ence	ttings of Pr ) ) ) 100	All	F and Pn82	7 are		
Pn836	4	n. DXDD n. XDDD First Stage eration Co Second St Acceleration Acceleration	Reserved p Reserved p Reserved p Reserved p e Linear Acce instant 2 tage Linear on Constant 2	<ul> <li>Pn834 to Pn84 bred.)</li> <li>arameter (Do no arameter (Do no arameter (Do no arameter (Do no arameter (Do no 20,971,520</li> <li>1 to 20,971,520</li> <li>2 20,971,520</li> <li>0 to</li> </ul>	ot change. ot change. 10,000 refer- ence units/s <sup>2</sup> 10,000 refer- ence units/s <sup>2</sup> 10,000 refer- ence units/s <sup>2</sup> 10,000 refer- ence units/s <sup>2</sup>	ttings of Pr ) ) 100 100	All	F and Pn82	7 are	*2	
Pn836	4	n. 🗆 X 🗆 🗆 n. X 🗆 🗆 First Stage eration Co Second St Acceleratio Switching First Stage	Reserved p Reserved p Reserved p Reserved p Linear Acce instant 2 tage Linear con Constant 2 con Constant 2	<ul> <li>Pn834 to Pn84 pred.)</li> <li>arameter (Do not arameter (Do not arameter (Do not 20,971,520</li> <li>1 to 20,971,520</li> <li>2 20,971,520</li> <li>0 to 2,097,152,000</li> <li>1 to</li> </ul>	ot change. ot change. 10,000 refer- ence units/s <sup>2</sup> 10,000 refer- ence units/s <sup>2</sup> 1 refer- ence units/s <sup>2</sup>	ttings of Pr ) ) 100 100	All	F and Pn82	7 are	*2	

Continued	from	previous	page.

		1					Cor	tinued fron	i previou	s page.
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn83C	4	Second St Deceleratio	age Linear on Constant 2	1 to 20,971,520	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn83E	4	Deceleration	on Constant Speed 2	0 to 2,097,152,000	1 refer- ence unit/s	0	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn840	4	Linear Dec Constant 2	eleration ? for Stopping	1 to 20,971,520	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn842 *14	4	Second Or Approach		0 to 20,971,520	100 ref- erence units/s	0	All	Immedi- ately <sup>*10</sup>	Setup	*2
<b>Pn844</b> *15	4	Second Or Approach		0 to 20,971,520	100 ref- erence units/s	0	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn846	2	POSING C Scurve Acc Deceleration	celeration/	0 to 50	1%	0	All	Immedi- ately <sup>*10</sup>	Setup	_
Pn850	2	Number of Sequences		0 to 8	-	0	All	Immedi- ately	Setup	*2
Pn851	2	Continuous Sequence		0 to 255	-	0	All	Immedi- ately	Setup	*2
	2	Latch Sequence Settings	uence 1 to 4	0000 to 3333	-	0000	All	Immedi- ately	Setup	*2
Pn852		n.000X	0Phase1EXT2EXT3EXT3EXTLatch Seque0 to 3The tion.Latch Seque0 to 3The tion.Latch SequeThe tion.	1 signal 2 signal 3 signal ence 2 Signal S settings are the ence 3 Signal S settings are the	election same as election same as election	those for t	he Latch Seq	uence 1 Sigr	nal Selec-	
			0 to 3 tion.		same as	tnose for t	ne Latch Seq	uence 1 Sigr	nal Selec-	_
								Continue		

								Cor	ntinued from	n previou:	s page
Parameter No.	Size	Ν	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Latch Seq Settings	luence 5	to 8	0000 to 3333	_	0000	All	Immedi- ately	Setup	*2
			<b>.</b>								-
					nce 5 Signal S	election					
		- 000V	0	Phas	e C signal						-
		n.□□□X	1		signal						-
			3		signal						_
					3						-
Pn853		n.DDXD		1	nce 6 Signal S settings are the		those for t	he Latch Seq	uence 5 Sigr	nal Selec-	
			0 to 3	tion.	5						-
			Latch S	Seque	nce 7 Signal S	election					
		n.¤X¤¤	0 to 3	The stion.	settings are the	e same as	those for t	he Latch Seq	uence 5 Sigr	nal Selec-	_
			Latch S	Seque	nce 8 Signal S	election					I
		n.X000	0 to 3	The stion.	settings are the	e same as	those for t	he Latch Seq	uence 5 Sigr	nal Selec-	
											_
	2	SVCMD_IC	O Input S	ignal	0000 to	_	0000	All	Immedi-	Setup	*2
	2	SVCMD_IC Monitor Al	O Input S Ilocations	ignal 1	0000 to 1717	-	0000	All	Immedi- ately	Setup	*2
	2	SVCMD_I0 Monitor Al	llocations	51	1717	-				Setup	*2
	2	SVCMD_I Monitor Al	Ilocations	ignal	1717 Monitor Alloca		N1-13 (SV	CMD_IO)	ately	Setup	*2
	2	SVCMD_I Monitor Al	Input S	ignal Alloc	1717 Monitor Alloca ate bit 24 (IO_3	STS1) to C	N1-13 (SV N1-13 inp	CMD_IO) ut signal mon	ately	Setup	*2
	2	SVCMD_IC Monitor Al	Ilocations	ignal Alloc Alloc	1717 Monitor Alloca	STS1) to C STS2) to C	N1-13 (SV :N1-13 inp :N1-13 inp	CMD_IO) ut signal mon ut signal mon	ately nitor.	Setup	*2
	2	SVCMD_IC Monitor Al	Input S	ignal Alloc Alloc Alloc	1717 Monitor Alloca ate bit 24 (IO_s ate bit 25 (IO_s	STS1) to C STS2) to C STS3) to C	N1-13 (SV N1-13 inp N1-13 inp N1-13 inp	CMD_IO) ut signal mon ut signal mon ut signal mon	ately iitor. iitor. iitor.	Setup	*2
	2	Monitor Al	Input S 0 1 2	ignal Alloc Alloc Alloc Alloc	1717 Monitor Alloca ate bit 24 (IO_t ate bit 25 (IO_t ate bit 26 (IO_t	STS1) to C STS2) to C STS3) to C STS4) to C	N1-13 (SV N1-13 inp N1-13 inp N1-13 inp N1-13 inp	CMD_IO) ut signal mon ut signal mon ut signal mon ut signal mon	ately nitor. nitor. nitor. nitor.	Setup	*2
	2	Monitor Al	Input S 0 1 2 3	ignal Alloc Alloc Alloc Alloc Alloc	1717 Monitor Alloca ate bit 24 (IO_1) ate bit 25 (IO_2) ate bit 26 (IO_3) ate bit 27 (IO_2)	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C	N1-13 (SV N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp	CMD_IO) ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon	ately nitor. nitor. nitor. nitor. nitor.	Setup	*2
 Pn860	2	Monitor Al	Input S 0 1 2 3 4	ignal Alloc Alloc Alloc Alloc Alloc Alloc	1717 Monitor Alloca ate bit 24 (IO_1 ate bit 25 (IO_1 ate bit 26 (IO_2 ate bit 27 (IO_3 ate bit 28 (IO_2	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS5) to C	N1-13 (SV N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp iN1-13 inp	CMD_IO) ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon	ately iitor. iitor. iitor. iitor. iitor. iitor.	Setup	*2
	2	Monitor Al	Input S 0 1 2 3 4 5	ignal Alloc Alloc Alloc Alloc Alloc Alloc Alloc	1717 Monitor Alloca ate bit 24 (IO_4 ate bit 25 (IO_4 ate bit 26 (IO_5 ate bit 26 (IO_5 ate bit 28 (IO_5 ate bit 28 (IO_5	GTS1) to C GTS2) to C GTS3) to C GTS4) to C GTS5) to C GTS6) to C GTS6) to C GTS7) to C	N1-13 (SV N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp	CMD_IO) ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon	ately iitor. iitor. iitor. iitor. iitor. iitor. iitor.	Setup	*2
	2	n.DDDX	Input S           0           1           2           3           4           5           6           7           CN1-13	ignal Alloc Alloc Alloc Alloc Alloc Alloc Alloc Alloc Alloc <b>3 Inpu</b>	1717 Monitor Alloca ate bit 24 (IO_4 ate bit 25 (IO_5 ate bit 26 (IO_5 ate bit 27 (IO_5 ate bit 29 (IO_5 ate bit 29 (IO_5 ate bit 30 (IO_5 ate bit 31 (IO_5 ate bit 31 (IO_5) ate bit 31 (IO_5)	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS6) to C STS7) to C STS8) to C STS8) to C	N1-13 (SV N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp	CMD_IO) ut signal mon ut signal mon	ately iitor. iitor. iitor. iitor. iitor. iitor. iitor.	Setup	*2
	2	Monitor Al	Input S           0           1           2           3           4           5           6           7           CN1-13           0	ignal Alloc Alloc Alloc Alloc Alloc Alloc Alloc Alloc <b>3 Inpu</b> Disat	1717 Monitor Alloca ate bit 24 (IO_1) ate bit 25 (IO_2) ate bit 26 (IO_2) ate bit 27 (IO_2) ate bit 28 (IO_2) ate bit 29 (IO_2) ate bit 30 (IO_2) ate bit 31 (IO_2) ate bit 31 (IO_2) ate bit 31 (IO_2)	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS6) to C STS7) to C STS8) to C STS8) to C or Enable/ or CN1-13	N1-13 (SV N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp <b>/Disable S</b> input sign	CMD_IO) ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon election al monitor.	ately iitor. iitor. iitor. iitor. iitor. iitor. iitor.	Setup	*2
	2	n.DDDX	Input S           0           1           2           3           4           5           6           7           CN1-13	ignal Alloc Alloc Alloc Alloc Alloc Alloc Alloc Alloc <b>3 Inpu</b> Disat	1717 Monitor Alloca ate bit 24 (IO_4 ate bit 25 (IO_5 ate bit 26 (IO_5 ate bit 27 (IO_5 ate bit 29 (IO_5 ate bit 29 (IO_5 ate bit 30 (IO_5 ate bit 31 (IO_5 ate bit 31 (IO_5) ate bit 31 (IO_5)	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS6) to C STS7) to C STS8) to C STS8) to C or Enable/ or CN1-13	N1-13 (SV N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp <b>/Disable S</b> input sign	CMD_IO) ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon election al monitor.	ately iitor. iitor. iitor. iitor. iitor. iitor. iitor.	Setup	*2
	2	n.DDDX	Input S           0           1           2           3           4           5           6           7           CN1-13           0           1	ignal Alloc Alloc Alloc Alloc Alloc Alloc Alloc Alloc Alloc <b>3 Inpu</b> Disat	1717 Monitor Alloca ate bit 24 (IO_1) ate bit 25 (IO_2) ate bit 26 (IO_2) ate bit 27 (IO_2) ate bit 28 (IO_2) ate bit 29 (IO_2) ate bit 30 (IO_2) ate bit 31 (IO_2) ate bit 31 (IO_2) ate bit 31 (IO_2)	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS6) to C STS7) to C STS8) to C or Enable/ or CN1-13 r CN1-13	N1-13 (SV N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp (Disable S input signa	CMD_IO) ut signal mon ut signal mon election al monitor.	ately iitor. iitor. iitor. iitor. iitor. iitor. iitor.	Setup	*2
	2	n.DDDX	Input S           0           1           2           3           4           5           6           7           CN1-13           0           1	ignal Alloc Alloc Alloc Alloc Alloc Alloc Alloc Alloc <b>3 Inpu</b> Disat Enab	1717 Monitor Alloca ate bit 24 (IO_4) ate bit 25 (IO_4) ate bit 26 (IO_4) ate bit 26 (IO_4) ate bit 27 (IO_5) ate bit 29 (IO_5) ate bit 30 (IO_5) ate bit 31	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS5) to C STS6) to C STS7) to C STS7) to C STS8) to C or Enable/ or CN1-13 r CN1-13	N1-13 (SV N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp <b>(Disable S</b> input signation)	CMD_IO) ut signal mon ut signal mon election al monitor. al monitor.	ately hitor. hitor. hitor. hitor. hitor. hitor. hitor. hitor.	Setup	*2
	2	Monitor Al	Input S           0           1           2           3           4           5           6           7           CN1-13           0           1           0           1           0           1           Input S           0 to 7           CN1-7	ignal Alloc Alloc Alloc Alloc Alloc Alloc Alloc Alloc Alloc Alloc <b>3 Inpu</b> Disat Enab <b>3 Inpu</b> The s <b>1</b>	1717 Monitor Alloca ate bit 24 (IO_1) ate bit 25 (IO_2) ate bit 26 (IO_2) ate bit 26 (IO_2) ate bit 28 (IO_2) ate bit 29 (IO_2) ate bit 30 (IO_2) ate bit 30 (IO_2) ate bit 31 (IO_3) t Signal Monito Monitor Alloca settings are the Signal Monito	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS6) to C STS7) to C STS7) to C STS8) to C or Enable/ or CN1-13 tion for C a same as r Enable/E	N1-13 (SV N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp <b>Disable S</b> input signa <b>N1-7 (SVC</b> the CN1-1	CMD_IO) ut signal mon ut signal mon election al monitor. CMD_IO) 3 allocations. lection	ately hitor. hitor. hitor. hitor. hitor. hitor. hitor. hitor.	Setup	*2
	2	n.DDDX	Input S           0           1           2           3           4           5           6           7           CN1-13           0           1           Unput S           0           1	ignal Alloc Alloc Alloc Alloc Alloc Alloc Alloc Alloc Alloc Alloc <b>3 Inpu</b> Disat <b>3 Inpu</b> The s <b>1</b> <b>1</b> <b>1</b> <b>1</b> <b>1</b> <b>1</b> <b>1</b> <b>1</b> <b>1</b> <b>1</b>	1717 Monitor Alloca ate bit 24 (IO_1) ate bit 25 (IO_2) ate bit 26 (IO_3) ate bit 26 (IO_3) ate bit 27 (IO_3) ate bit 28 (IO_3) ate bit 29 (IO_3) ate bit 30 (IO_3) ate bit 31 (IO_4) ate bit 31 (IO_4) t Signal Monit ble allocation for le allocation for Monitor Alloca settings are the	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS6) to C STS7) to C STS7) to C STS8) to C or Enable/ or CN1-13 r CN1-13 tion for C e same as r Enable/E or CN1-7 in	N1-13 (SV N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp input signa <b>Disable Se</b> nput signa	CMD_IO) ut signal mon ut signal mon tor. al monitor. CMD_IO) 3 allocations. lection I monitor.	ately hitor. hitor. hitor. hitor. hitor. hitor. hitor. hitor.	Setup	*2

Continued from previous page.

							Con	tinued fron	n previou	s page.
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	SVCMD_IC Monitor Al	D Input Signal locations 2	0000 to 1717	-	0000	All	Immedi- ately	Setup	*2
		n.DDDX		Monitor Alloca			,			1
			0 to 7 The s	ettings are the	same as	the CN1-1	3 allocations.			_
Pn861		n.🗆🗆 X 🗆		Signal Monitor						
**			1 Enab	le allocation fo	r CN1-8 ir	iput signal	monitor.			
<u>M3</u> *8		n.¤X¤¤		Monitor Alloca						
										-
				Signal Monito						
		n.XDDD		le allocation fo						-
			I Ellap		1 0101-9 1	iput signai	monitor.			_
	2		D Input Signal locations 3	0000 to 1717	-	0000	All	Immedi- ately	Setup	*2
			Input Signal I	Monitor Alloca	tion for C	N1-10 (SV	CMD IO)			
		n.🗆 🗆 🗆 X		ettings are the						-
			CNI1 10 Innut	Cignal Manit	or Frabla		alaatian			-
Pn862		n.🗆 🗆 X 🗆	· · · · ·	t Signal Monite						
				le allocation fo						-
M3 *6			L							-
		n.¤X¤¤		Monitor Alloca			_ ,			
			0 to 7 The s	ettings are the	e same as	the CIVI-I	3 anocations.			_
			· · · ·	t Signal Monit						
		n.XDDD		le allocation fo						_
			1 Enab	le allocation fo	r CN1-11	input signa	al monitor.			_
	2		D Input Signal locations 4	0000 to 1717	_	0000	All	Immedi- ately	Setup	*2
		n.DDDX	Input Signal I	Monitor Alloca	tion for C	N1-12 (SV	CMD_IO)			
			0 to 7 The s	ettings are the	same as	the CN1-1	3 allocations.			_
Pn863			CN1-12 Input	t Signal Monit	or Enable	/Disable S	election			1
M3 *8		n.🗆 🗆 X 🗆	· · ·	le allocation fo						-
MO				le allocation fo						-
		n.¤X¤¤	Reserved par	ameter (Do no	ot change.	)				Ī
		n.XDDD	Reserved par	ameter (Do no	ot change.	)				
										-

	Continued from previous patter   Setting Setting Default Applicable When Classi- Be									s page.
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	SVCMD_IC nal Monito 1	) Output Sig- r Allocations	0000 to 1717	-	0000	All	Immedi- ately	Setup	*2
										_
				al Monitor Allo			•	- ,		
				ate bit 24 (IO_S ate bit 25 (IO S	1		1 0			_
				ate bit 25 (IO_0	,		1 0			-
		n.DDDX		ate bit 27 (IO_S						_
				ate bit 28 (IO_S	,					_
Pn868				ate bit 29 (IO_S	,					_
M3 *8				ate bit 30 (IO_5 ate bit 31 (IO_5						_
			CN1-1/CN1-	2 Output Sign	al Monitor	Enable/Di	sable Selecti	ion		-
		n.🗆🗆 X 🗆		ole allocation for						
			1 Enab	le allocation fo	r CN1-1/C	N1-2 outp	ut signal mor	nitor.		_
			Output Signa	al Monitor Allo	cation for	CN1-23 a	nd CN1-24 (S	SVCMD_IO)		
		n.¤X¤¤	0 to 7 The s	settings are the	e same as	the CN1-1	/CN1-2 alloca	ations.		_
			CN1-23/CN1	-24 Output Sig	gnal Moni <sup>.</sup>	tor Enable	/Disable Sele	ection		Ī
		n.XDDD		ole allocation fo						_
			1 Enab	le allocation fo	r CN1-23/	CN1-24 ot	utput signal m	nonitor.		_
	2		) Output Sig- r Allocations	0000 to 1717	-	0000	All	Immedi- ately	Setup	*2
			Output Signa	al Monitor Allo	cation for	CN1-25 a	nd CN1-26 (S			
D=960		n.🗆 🗆 🗆 X		settings are the						_
Pn869			CN1-25/CN1	-26 Output Si	gnal Moni <sup>.</sup>	tor Enable	/Disable Sele	ection		
M3 *8		n.🗆🗆 X 🗆	0 Disat	ole allocation fo	or CN1-25,	/CN1-26 o	utput signal n	nonitor.		-
			1 Enab	le allocation fo	r CN1-25/	CN1-26 ot	utput signal m	nonitor.		_
		n.¤X¤¤	Reserved pa	rameter (Do no	ot change	)				
		n.XDDD	Reserved pa	rameter (Do no	ot change	)				
Pn880	2	Station Ad tor (for ma read only)	dress Moni- intenance,	03 to EF	-	0	All	Immedi- ately	Setup	-
Pn881	2	Count Mor	nission Byte hitor [bytes] nance, read	17, 32, 48	-	0	All	Immedi- ately	Setup	_
Pn882	2	ting Monito	on Cycle Set- or [× 0.25 μs] nance, read	0 to FFFF	-	0	All	Immedi- ately	Setup	_
Pn883	2	Setting Mc mission cy	ations Cycle onitor [trans- cles] (for ce, read only)	0 to 32	-	0	All	Immedi- ately	Setup	_

Continued from previous page

						001	tinued from	i pieviou	s page
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Communications Con- trols 2	0000 to 0001	_	0000	All	Immedi- ately	Setup	*2
Pn884 M3 <sup>*8</sup>	n. n.	MECH	ain the status s IATROLINK cor the holding bra ameter (Do not ameter (Do not	et by the E mmunication ake when a change.)	BRK_ON o	r BRK_OFF co occurs.	ommand wh		
Pn88A	2	MECHATROLINK Receive Error Counter Monitor (for maintenance, read only)	0 to 65,535	-	0	All	Immedi- ately	Setup	_
Pn890 to Pn8A6	4	Command Data Moni- tor during Alarm/Warn- ing (for maintenance, read only)	0 to FFFFFFFF	-	0	All	Immedi- ately	Setup	*2
Pn8A8 to Pn8BE	4	Response Data Monitor during Alarm/Warning (for maintenance, read only)	0 to FFFFFFFF	-	0	All	Immedi- ately	Setup	*2
Pn900	2	Number of Parameter Banks	0 to 16	-	0	All	After restart	Setup	*2
Pn901	2	Number of Parameter Bank Members	0 to 15	-	0	All	After restart	Setup	*2
Pn902 to Pn910	2	Parameter Bank Mem- ber Definition	0000 to 08FF	-	0	All	After restart	Setup	*2
Pn920 to Pn95F	2	Parameter Bank Data (Not saved in nonvolatile memory.)	0000 to FFFF	-	0	All	Immedi- ately	Setup	*2

Ω Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)

\*2. Refer to the following manual for details.

Ω Σ-7-Series MECHATROLINK-III Communications Standard Servo Profile Command Manual (Manual No.: SIEP S800001 31)

\*3. Set a percentage of the motor rated torque.

\*4. These parameters are for SERVOPACKs with a Safety Module. Refer to the following manual for details. Ω Σ-V-Series/Σ-V-Series for Large-Capacity Models/Σ-7-Series User's Manual Safety Module (Manual No.: SIEP C720829 06)

- \*5. Normally set this parameter to 0. If you use an External Regenerative Resistor, set the capacity (W) of the External Regenerative Resistor.
- \*6. The upper limit is the maximum output capacity (W) of the SERVOPACK.
- \*7. These parameters are for SERVOPACKs with the dynamic brake option. Refer to the following manual for details.

Ω Σ-7-Series Σ-7S/Σ-7W SERVOPACK with Hardware Option Specifications Dynamic Brake Product Manual (Manual No.: SIEP S800001 73)

- \*8. This parameter is valid only when the MECHATROLINK-III standard servo profile is used.
- \*9. The parameter setting is enabled after SENS\_ON command execution is completed.
- \*10.Change the setting when the reference is stopped (i.e., while DEN is set to 1). If you change the setting during operation, the reference output will be affected.
- \*11. The settings are updated only if the reference is stopped (i.e., only if DEN is set to 1).

\*12.Refer to the following manual for details.

- Ω Σ-7-Series MECHATROLINK-II Communications Command Manual (Manual No.: SIEP S800001 30)
- \*13. This parameter is valid only when the MECHATROLINK-II-compatible profile is used.
- \*14.The setting of Pn842 is valid while Pn817 is set to 0.
- \*15.The setting of Pn844 is valid while Pn818 is set to 0.

6.2.2 List of MECHATROLINK-III Common Parameters

# 6.2.2 List of MECHATROLINK-III Common Parameters

The following table lists the common MECHATROLINK-III parameters. These common parameters are used to make settings from the host controller via MECHATROLINK communications. Do not change the settings with the Digital Operator or any other device.

Parameter No.	Size	Nar	ne	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication
	4	Encoder Ty only)	rpe (read	0 hex or 1 hex	_	_	All	_	_
01									
PnA02		0000 hex 0001 hex	Absolute Incremen	tal encoder					
			Incrontion						
	4	Motor Type only)	e (read	0 hex or 1 hex	-	-	All	_	-
02			T						ç
PnA04		0000 hex		ervomotor					Jatio
		0001 hex	Linear Se	ervomotor					Jforn
	4	Semi-close closed Type only)	ed/Fully- e (read	0 hex or 1 hex	_	_	All	_	Device information
03				1	1	L	1		
PnA06		0000 hex	Semi-clo	sed					
		0001 hex	Fully-clos	sed					
				1		[			_
04 PnA08	4	Rated Spee only)	ed (read	0 hex to FFFFFFF hex	1 min <sup>-1</sup>	-	All	-	
05 PnA0A	4	Maximum ( Speed (rea		0 hex to FFFFFFF hex	1 min <sup>-1</sup>	-	All	-	
06 PnA0C	4	Speed Mul (read only)	tiplier	-1,073,741,823 to 1,073,741,823	-	-	All	-	
07 PnA0E	4	Rated Torq (read only)	ue	0 hex to FFFFFFF hex	1 N∙m	-	All	_	
08 PnA10	4	Maximum ( Torque (rea	Dutput d only)	0 hex to FFFFFFF hex	1 N∙m	-	All	_	nation
09 PnA12	4	Torque Mul (read only)	tiplier	-1,073,741,823 to 1,073,741,823	-	-	All	-	Device information
0A PnA14	4	Resolution (read only)		0 hex to FFFFFFF hex	1 pulse/rev	-	Rotary	_	Devi
0B PnA16	4	Linear Scal	e Pitch	0 to 65,536,000	1 nm [0.01 μm]	0	Linear	After restart	]
0C PnA18	4	Pulses per Pitch (read		0 hex to FFFFFFF hex	1 pulse/ pitch	-	Linear	_	]

## 6.2.2 List of MECHATROLINK-III Common Parameters

		Continued from previou										
Parameter No.	Size Name		Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication				
21 PnA42	4	Electronic G (Numerator)	ear Ratio	1 to 1,073,741,824	-	16	All	After restart				
22 PnA44	4	Electronic Gear Ratio (Denominator)		1 to 1,073,741,824	-	1	All	After restart				
23 PnA46	4	Absolute Encoder Origin Offset		-1,073,741,823 to 1,073,741,823	1 reference unit	0	All	Immedi- ately <sup>*1</sup>				
24 PnA48	4	Multiturn Limit		0 to 65,535	1 Rev	65535	Rotary	After restart	-			
25 PnA4A	4	Limit Setting	]	0 hex to 33 hex	-	0000 hex	All	After restart				
		Bit 0 Bit 1 Bit 2		(0: Enabled, 1: D (0: Enabled, 1: D rved.	,				Machine specifications			
		Bit 3	Rese	rved.					sp(			
		Bit 4	P-SC	T (0: Disabled, 1:	Enabled)				ine			
		Bit 5	N-SC	DT (0: Disabled, 1:	Enabled)				achi			
		Bits 6 to 31	Rese	rved.					Ŭ			
			I									
		T										
26 PnA4C	4	Forward Software		-1,073,741,823	1 reference	10737418	A 11	Immedi-				
		Limit		to 1,073,741,823	unit	23	All	ately				
27		Reserved pa	arameter	.,,,			A.11	Immedi-	-			
PnA4E	4	(Do not change.)		-	-	0	All	ately				
28	4	Reverse Softw	tware	-1,073,741,823	1 reference unit	-1073741 823	All	Immedi-	1			
PnA50		Limit	tware	to 1,073,741,823				ately				
29				1,073,741,023				Immedi-	-			
PnA52	4	Reserved pa (Do not chai	nge.)	-	-	0	All	ately				
	4	Speed Unit		0 hex to 4 hex	-	0 hex	All	After restart				
	0000 hex Reference units/s											
44												
41 PnA82		0001 hex		e units/min	1*3							
11/102		0002 hex		ge (%) of rated spe	eed							
		0003 hex	min <sup>-1*3</sup>									
		0004 hex	Maximum	n motor speed/400	000000 hex <sup>*4</sup>				SĆ			
									ttinę			
42 PnA84	4						After restart	Unit settings				
	4	Position Uni	t	0 hex	-	0 hex	All	After restart				
43												
PnA86		0000 hex Reference units										
	1								1			

Continued from previous page.

Parameter Lists

## 6.2.2 List of MECHATROLINK-III Common Parameters

Parameter					Setting Unit	Default	Applicable	When	us page Classi-	
No.	Size	Name		Setting Range	[Resolution]	Setting	Motors	Enabled	fication	
44 PnA88	4	Position Base Unit (Set the value of n from the following formula: Position unit (43 PnA86) × 10 <sup>n</sup> )		0	_	0	All	After restart		
	4	Acceleration Un	it	0 hex	-	0 hex	All	After restart		
45 PnA8A		0000 hex Reference units/s <sup>2</sup>								
46 PnA8C	4	Acceleration Base Unit (Set the value of n from the following formula: Acceleration unit (45 PnA8A) × 10 <sup>n</sup> )		4 to 6	_	4	All	After restart		
	4	Torque Unit		1 hex or 2 hex	_	1 hex	All	After restart		
47 PnA8E		0001 hexPercentage (%) of rated torque0002 hexMaximum torque/40000000 hex*5								
48 PnA90	4	Torque Base Un (Set the value of from the followir formula: Torque (47 PnA8E) × 10	f n ng unit	-5 to 0	_	0	All	After restart	Unit settings	
	4	Supported Unit (read only)         _         0601011F hex         All         _							Unit s	
		Speed Units								
		Bit 0	Re	ference units/s (1:	Enabled)					
		Bit 1		ference units/min (						
		Bit 2 Percentage (%) of rated speed (1: Enabled					bled)			
	Bit 2     Forechage (%) of faced speed (1. Enabled)       Bit 3     min <sup>-1</sup> (rpm) (1: Enabled)       Bit 4     Maximum motor speed/4000000 hex (1: Enabled)									
		Bit 4 Maximum motor speed/4000000 flex (1: Enabled) Bits 5 to 7 Reserved (0: Disabled).								
	Position Units Bit 8 Reference units (1: Enabled)									
49										
PnA92	Bits 9 to 15 Reserved (0: Disabled).									
		Acceleration Units     Reference units/s <sup>2</sup> (1: Enabled)								
	Bit 17         ms (acceleration time required to reach rated speed) (0: Disabled)							oled)		
		Bits 18 to 23     Reserved (0: Disabled).       Torque Units								
	Bit 24     N·m (0: Disabled)       Bit 25     Percentage (%) of rated torque (1: Enabled)									
		Bit 26 Maximum torque/40000000 hex								
		Bits 27 to 31 Reserved (0: Disabled).								
					- /				1	

## 6.2 FT40 Specification

#### 6.2.2 List of MECHATROLINK-III Common Parameters

Continued from previous page.

		Continued from prev						
Parameter No.	Size	Name	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication
61 PnAC2	4	Speed Loop Gain	1,000 to 2,000,000	0.001 Hz [0.1 Hz]	40000	All	Immedi- ately	
62 PnAC4	4	Speed Loop Integral Time Constant	150 to 512,000	1 μs [0.01 ms]	20000	All	Immedi- ately	
63 PnAC6	4	Position Loop Gain	1,000 to 2,000,000	0.001/s [0.1/s]	40000	All	Immedi- ately	
64 PnAC8	4	Feed Forward Com- pensation	0 to 100	1%	0	All	Immedi- ately	
65 PnACA	4	Position Loop Inte- gral Time Constant	0 to 5,000,000	1 μs [0.1 ms]	0	All	Immedi- ately	
66 PnACC	4	In-position Range	0 to 1,073,741,824	1 reference unit	7	All	Immedi- ately	-
67 PnACE	4	Near-position Range	1 to 1,073,741,824	1 reference unit	10737418 24	All	Immedi- ately	
81 PnB02	4	Exponential Func- tion Acceleration/ Deceleration Time Constant	0 to 510,000	1 μs [0.1 ms]	0	All	Immedi- ately <sup>*6</sup>	
82 PnB04	4	Movement Average Time	0 to 510,000	1 μs [0.1 ms]	0	All	Immedi- ately <sup>*6</sup>	
83 PnB06	4	Final Travel for Exter- nal Input Positioning	-1,073,741,823 to 1,073,741,823	1 reference unit	100	All	Immedi- ately	-
84 PnB08	4	Zero Point Return Approach Speed	0 hex to 3FFFFFFF hex	10 <sup>-3</sup> min <sup>-1</sup>	× 5,000 hex refer- ence units/s con- verted to 10 <sup>-3</sup> min <sup>-1</sup>	All	Immedi- ately	
85 PnB0A	4	Zero Point Return Creep Speed	0 hex to 3FFFFFFF hex	10 <sup>-3</sup> min <sup>-1</sup>	× 500 hex reference units/s con- verted to 10 <sup>-3</sup> min <sup>-1</sup>	All	Immedi- ately	Tuning
86 PnB0C	4	Final Travel for Zero Point Return	-1,073,741,823 to 1,073,741,823	1 reference unit	100	All	Immedi- ately	_
	4	Monitor Select 1	0 hex to F hex	-	1 hex	All	Immedi- ately	
87 PnB0E		000B hexReserved000C hexCMN1 (c000D hexCMN2 (c000E hexOMN1 (o	I (undefined value). I (undefined value). ommon monitor 1) ommon monitor 2) ptional monitor 1) ptional monitor 2)					

						(	Continued fr	rom previo
Parameter No.	Size	Nan	ne	Setting Range	e Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled
	4	Monitor Se	lect 2	0 hex to F he	< –	0 hex	All	Immedi- ately
B10		0000 to 000F hex	The setting	gs are the same	e as those for Fixed	d Monitor S	election 1.	
	4	Monitor Sel SEL_MON1		0 hex to 9 he	< _	0 hex	All	Immedi- ately
		_						,
		0000 hex	TPOS (tar	rget position in	reference coordina	ate system)		
		0001 hex		•	in reference coord		,	
		0002 hex		-	in POS_SET (Set	Coordinate	System) con	nmand)
		0003 hex		get speed)				
		0004 hex		(speed limit)				
		0005 hex	_	(torque limit)	perating status)			
			00 hex: 01 hex: 02 hex: 03 hex: Byte 2: C 00 hex: 01 hex: 02 hex: Byte 3: Ro	Phase 1 Phase 2 Phase 3 urrent control n Position contro Speed control r Torque control	node I mode mode mode			
			Bit	Name	Description	Value		0
		0006 hex	Bit 0	LT_RDY1	Processing status latch detection for	or	Latch dete not yet pro cessed.	)-
) 1B12					LT_REQ1 in SVC D_CTRL region	M- 1	Processing detection i progress.	
			Bit 1	LT RDY1	Processing status latch detection fo	or	Latch dete not yet pro cessed.	)-
			Dit i		LT_REQ2 in SVC D_CTRL region	M- 1	Processing detection i progress.	
						0	Phase C	
						1	External in signal 1	put
			Bits 2 and 3	LT_SEL1R	Latch signal	2	External in signal 2	put
						3	External in signal 3	put
						0	Phase C	
			Bits 4			1	External in signal 1	put
			and 5	LT_SEL2R	Latch signal	2	External in signal 2	
						3	External in signal 3	put
		0007 hex	Bit 6	Reserved (0	).			
		0007 nex 0008 hex	Reserved		Lower 32 bits verted to 64-b			
		0009 hex	INIT_PGP		Upper 32 bits			

Continued from previous page.

Continued from previous page.

Parameter					Setting Unit	Default	Applicable	When	Classi-
No.	Size	Name		Setting Range	[Resolution]	Setting	Motors	Enabled	fication
	4	Monitor Select for SEL_MON2		0 hex to 9 hex	-	0 hex	All	Immedi- ately	
8A PnB14		0000 to 0009 The se hex	ttings	are the same as	those for SEL	_MON Moni	tor Selection	1.	
8B PnB16	4	Zero Point Detect Range	ion	0 to 250	1 reference unit	10	All	Immedi- ately	
8C PnB18	4	Forward Torque L	imit	0 to 800	1%	100	All	Immedi- ately	
8D PnB1A	4	Reverse Torque Limit		0 to 800	1%	100	All	Immedi- ately	
8E PnB1C	4	Zero Speed Detec- tion Range		1,000 to 10,000,000	10 <sup>-3</sup> min <sup>-1</sup>	20000	All	Immedi- ately	ers
8F PnB1E	4	Speed Match Signal Detection Range		0 to 100,000	10 <sup>-3</sup> min <sup>-1</sup>	10000	All	Immedi- ately	ramete
	4	SVCMD_ CTRL bi Enabled/Disabled (read only)	it	-	-	0FFF3F3F hex	All	_	Command-related parameters
			1						d-re
		Bit 0	СМ	D_PAUSE (1: Ena	abled)				nan
		Bit 1	CM	CMD_CANCEL (1: Enabled)					Juc
		Bits 2 and 3	STO	STOP_MODE (1: Enabled)					
		Bits 4 and 5	AC	ACCFIL (1: Enabled)					
		Bits 6 and 7	Res	Reserved (0: Disabled).					
90		Bit 8	LT_	LT_REQ1 (1: Enabled)					
PnB20		Bit 9	_	LT_REQ2 (1: Enabled)					
		Bits 10 and 11		LT_SEL1 (1: Enabled)					
		Bits 12 and 13	_	SEL2 (1: Enabled					
		Bits 14 and 15	_	erved (0: Disable					
		Bits 16 to 19	SEL	MON1 (1: Enab	led)				
		Bits 20 to 23		MON2 (1: Enab	,				
		Bits 24 to 27		MON3 (1: Enab					
		Bits 28 to 31	Res	erved (0: Disable	d).				

Parameter Lists

Continued on next page.

					(	Continued fr	om previo	us page.
Parameter No.	Size	Name	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication
	4	SVCMD_STAT bit Enabled/Disabled (read only)	-	0 hex	0FFF3F33 hex	All	-	
		Bit 0	CMD_PAUSE_CMP	(1: Enabled)				
		Bit 1	CMD_CANCEL_CM	(1: Enabled)				
		Bit 2 and 3	Reserved (0: Disable	ed).				
		Bits 4 and 5	ACCFIL (1: Enabled)					
		Bits 6 and 7	Reserved (0: Disable	ed).				
		Bit 8	L_CMP1 (1: Enabled	4)				
91		Bit 9	L_CMP2 (1: Enabled	4)				
PnB22		Bit 10	POS_RDY (1: Enable	ed)				
		Bit 11	PON (1: Enabled)					
		Bit 12	M_RDY (1: Enabled)					
		Bit 13	SV_ON (1: Enabled)					
		Bits 14 and 15	Reserved (0: Disable	ed).				Ś
		Bits 16 to 19	SEL_MON1 (1: Enak	oled)				eter
		Bits 20 to 23	SEL_MON2 (1: Enak	oled)				am
		Bits 24 to 27	SEL_MON3 (1: Enak	oled)				par
		Bits 28 to 31	Reserved (0: Disable	ed).				ted
					1			Command-related parameters
	4	I/O Bit Enabled/Dis abled (Output) (read only)		-	007F01F0 hex	All	-	Comm
		Bits 0 to 3	Reserved (0: Disable	ed).				
		Bit 4	V_PPI (1: Enabled)					
		Bit 5	P_PPI (1: Enabled)					
		Bit 6	P_CL (1: Enabled)					
92		Bit 7	N_CL (1: Enabled)					
PnB24		Bit 8	G_SEL (1: Enabled)					
		Bits 9 to 11	G_SEL (0: Disabled)					
		Bits 12 to 15	Reserved (0: Disable	ed).				
		Bits 16 to 19	BANK_SEL (1: Enab	led)				
		Bits 20 to 22	SO1 to SO3 (1: Ena	bled)				
		Bit 23	Reserved (0: Disable	ed).				
		Bits 24 to 31	Reserved (0: Disable	ed).				
		¥						

Continued from previous page.

Parameter No.	Size	Name	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication
	4	I/O Bit Enabled/Dis- abled (Input) (read only)		_	FF0FFEFE hex	All	_	
93 PnB26		Bit 0         Bit 1         Bit 2         Bit 3         Bit 4         Bit 5         Bit 6         Bit 7         Bit 8         Bit 9         Bit 10         Bit 12         Bit 13         Bit 14         Bit 15         Bit 16         Bit 17         Bit 18         Bit 17         Bit 18         Bit 19         Bit 20 to 23         Bits 24 to 31	Reserved (0: Disable DEC (1: Enabled) P-OT (1: Enabled) EXT1 (1: Enabled) EXT2 (1: Enabled) EXT2 (1: Enabled) EXT3 (1: Enabled) EXT3 (1: Enabled) ESTP (1: Enabled) Reserved (0: Disable BRK_ON (1: Enabled) N-SOT (1: Enabled) DEN (1: Enabled) DEN (1: Enabled) PSET (1: Enabled) ZPOINT (1: Enabled) ZPOINT (1: Enabled) V_LIM (1: Enabled) V_CMP (1: Enabled) ZSPD (1: Enabled) ZSPD (1: Enabled) Reserved (0: Disable I0_STS1 to I0_STS8	ed). ) ed).				Command-related parameters

Continued from previous page.

\*1. The parameter setting is enabled after SENS\_ON command execution is completed.

\*2. When using fully-closed loop control, set the reference units/s.

\*3. If you set the Speed Unit Selection (parameter 41) to either 0002 hex or 0003 hex, set the Speed Base Unit Selection (parameter 42) to a number between -3 and 0.

\*4. If you set the Speed Unit Selection (parameter 41) to 0004 hex, set the Speed Base Unit Selection (parameter 42) to 0.

\*5. If you set the Torque Unit Selection (parameter 47) to 0002 hex, set the Torque Base Unit Selection (parameter 48) to 0.

\*6. Change the setting when the reference is stopped (i.e., while DEN is set to 1). If you change the setting during operation, the reference output will be affected.

# 6.2.3 Parameter Recording Table

Use the following table to record the settings of the parameters.

Parameter No.	Default Setting	Name	When Enabled
Pn000	0000	Basic Function Selections 0	After restart
Pn001	0000	Application Function Selec- tions 1	After restart
Pn002	0011	Application Function Selec- tions 2	After restart
Pn006	0002	Application Function Selec- tions 6	Immediately
Pn007	0000	Application Function Selec- tions 7	Immediately
Pn008	4000	Application Function Selec- tions 8	After restart
Pn009	0010	Application Function Selec- tions 9	After restart
Pn00A	0001	Application Function Selec- tions A	After restart
Pn00B	0000	Application Function Selec- tions B	After restart
Pn00C	0000	Application Function Selec- tions C	After restart
Pn00D	0000	Application Function Selec- tions D	After restart
Pn00F	0000	Application Function Selec- tions F	After restart
Pn021	0000	Reserved parameter	-
Pn040	0000	Reserved parameter	_
Pn080	0000	Application Function Selec- tions 80	After restart
Pn081	0000	Application Function Selec- tions 81	After restart
Pn100	400	Speed Loop Gain	Immediately
Pn101	2000	Speed Loop Integral Time Constant	Immediately
Pn102	400	Position Loop Gain	Immediately
Pn103	100	Moment of Inertia Ratio	Immediately
Pn104	400	Second Speed Loop Gain	Immediately
Pn105	2000	Second Speed Loop Inte- gral Time Constant	Immediately
Pn106	400	Second Position Loop Gain	Immediately
Pn109	0	Feedforward	Immediately
Pn10A	0	Feedforward Filter Time Constant	Immediately
Pn10B	0000	Gain Application Selections	*1
Pn10C	200	Mode Switching Level for Torque Reference	Immediately
Pn10D	0	Mode Switching Level for Speed Reference	Immediately
Pn10E	0	Mode Switching Level for Acceleration	Immediately
Pn10F	0	Mode Switching Level for Position Deviation	Immediately
Pn11F	0	Position Integral Time Con- stant	Immediately

Continued from previous page.

Der		Continued from p	1 0
Parameter No.	Default Setting	Name	When Enabled
Pn121	100	Friction Compensation Gain	Immediately
Pn122	100	Second Friction Compen- sation Gain	Immediately
Pn123	0	Friction Compensation Coefficient	Immediately
Pn124	0	Friction Compensation Fre- quency Correction	Immediately
Pn125	100	Friction Compensation Gain Correction	Immediately
Pn131	0	Gain Switching Time 1	Immediately
Pn132	0	Gain Switching Time 2	Immediately
Pn135	0	Gain Switching Waiting Time 1	Immediately
Pn136	0	Gain Switching Waiting Time 2	Immediately
Pn139	0000	Automatic Gain Switching Selections 1	Immediately
Pn13D	2000	Current Gain Level	Immediately
Pn140	0100	Model Following Control- Related Selections	Immediately
Pn141	500	Model Following Control Gain	Immediately
Pn142	1000	Model Following Control Gain Correction	Immediately
Pn143	1000	Model Following Control Bias in the Forward Direc- tion	Immediately
Pn144	1000	Model Following Control Bias in the Reverse Direc- tion	Immediately
Pn145	500	Vibration Suppression 1 Frequency A	Immediately
Pn146	700	Vibration Suppression 1 Frequency B	Immediately
Pn147	1000	Model Following Control Speed Feedforward Com- pensation	Immediately
Pn148	500	Second Model Following Control Gain	Immediately
Pn149	1000	Second Model Following Control Gain Correction	Immediately
Pn14A	800	Vibration Suppression 2 Frequency	Immediately
Pn14B	100	Vibration Suppression 2 Correction	Immediately
Pn14F	0021	Control-Related Selections	After restart
Pn160	0010	Anti-Resonance Control- Related Selections	Immediately
Pn161	1000	Anti-Resonance Frequency	Immediately
Pn162	100	Anti-Resonance Gain Cor- rection	Immediately
Pn163	0	Anti-Resonance Damping Gain	Immediately
Pn164	0	Anti-Resonance Filter Time Constant 1 Correction	Immediately

6

	Continued from previous pag				
Parameter No.	Default Setting	Name	When Enabled		
Pn165	0	Anti-Resonance Filter Time Constant 2 Correction	Immediately		
Pn166	0	Anti-Resonance Damping Gain 2	Immediately		
Pn170	1400	Tuning-less Function- Related Selections	*1		
Pn181	0	Mode Switching Level for Speed Reference	Immediately		
Pn182	0	Mode Switching Level for Acceleration	Immediately		
Pn205	65535	Multiturn Limit	After restart		
Pn207	0010	Position Control Function Selections	After restart		
Pn20A	32768	Number of External Scale Pitches	After restart		
Pn20E	16	Electronic Gear Ratio (Numerator)	After restart		
Pn210	1	Electronic Gear Ratio (Denominator)	After restart		
Pn212	2048	Number of Encoder Output Pulses	After restart		
Pn22A	0000	Fully-closed Control Selec- tions	After restart		
Pn230	0000	Position Control Expansion Function Selections	After restart		
Pn231	0	Backlash Compensation	Immediately		
Pn233	0	Backlash Compensation Time Constant	Immediately		
Pn281	20	Encoder Output Resolution	After restart		
Pn282	0	Linear Encoder Scale Pitch	After restart		
Pn304	500	Jogging Speed	Immediately		
Pn305	0	Soft Start Acceleration Time	Immediately		
Pn306	0	Soft Start Deceleration Time	Immediately		
Pn308	0	Speed Feedback Filter Time Constant	Immediately		
Pn30A	0	Deceleration Time for Servo OFF and Forced Stops	Immediately		
Pn30C	0	Speed Feedforward Aver- age Movement Time	Immediately		
Pn310	0000	Vibration Detection Selec- tions	Immediately		
Pn311	100	Vibration Detection Sensi- tivity	Immediately		
Pn312	50	Vibration Detection Level	Immediately		
Pn316	10000	Maximum Motor Speed	After restart		
Pn324	300	Moment of Inertia Calcula- tion Starting Level	Immediately		
Pn383	50	Jogging Speed	Immediately		
Pn384	10	Vibration Detection Level	Immediately		
Pn385	50	Maximum Motor Speed	After restart		
Pn401	100	First Stage First Torque Reference Filter Time Con- stant	Immediately		

Continued from previous page.

Continued from previous page.

Continued from previous					
Parameter No.	Default Setting	Name	When Enabled		
Pn402	800	Forward Torque Limit	Immediately		
Pn403	800	Reverse Torque Limit	Immediately		
Pn404	100	Forward External Torque Limit	Immediately		
Pn405	100	Reverse External Torque Limit	Immediately		
Pn406	800	Emergency Stop Torque	Immediately		
Pn407	100	Speed Limit during Torque Control	Immediately		
Pn408	0000	Torque-Related Function Selections	*1		
Pn409	5000	First Stage Notch Filter Fre- quency	Immediately		
Pn40A	70	First Stage Notch Filter Q Value	Immediately		
Pn40B	0	First Stage Notch Filter Depth	Immediately		
Pn40C	5000	Second Stage Notch Filter Frequency	Immediately		
Pn40D	70	Second Stage Notch Filter Q Value	Immediately		
Pn40E	0	Second Stage Notch Filter Depth	Immediately		
Pn40F	5000	Second Stage Second Torque Reference Filter Fre- quency	Immediately		
Pn410	50	Second Stage Second Notch Filter Q Value	Immediately		
Pn412	100	First Stage Second Torque Reference Filter Time Con- stant	Immediately		
Pn416	0000	Torque-Related Function Selections 2	Immediately		
Pn417	5000	Third Stage Notch Filter Frequency	Immediately		
Pn418	70	Third Stage Notch Filter Q Value	Immediately		
Pn419	0	Third Stage Notch Filter Depth	Immediately		
Pn41A	5000	Fourth Stage Notch Filter Frequency	Immediately		
Pn41B	70	Fourth Stage Notch Filter Q Value	Immediately		
Pn41C	0	Fourth Stage Notch Filter Depth	Immediately		
Pn41D	5000	Fifth Stage Notch Filter Fre- quency	Immediately		
Pn41E	70	Fifth Stage Notch Filter Q Value	Immediately		
Pn41F	0	Fifth Stage Notch Filter Depth	Immediately		
Pn423	0000	Speed Ripple Compensa- tion Selections	*1		
Pn424	50	Torque Limit at Main Circuit Voltage Drop	Immediately		

Continued from previous page. Parameter When **Default Setting** Name No. Enabled Release Time for Torque Pn425 100 Limit at Main Circuit Voltage Immediately Drop Torque Feedforward Aver-Pn426 0 Immediately age Movement Time Speed Ripple Compensa-Pn427 0 Immediately tion Enable Speed Pressure Feedback Selec-Pn440 0000 After restart tion Switches Pn441 100 Reserved parameter Pressure Feedback Control Pn442 2000 1 Pressure Feedback Loop Immediately Integral Time Pressure Feedback Control Pn444 100 1 Pressure Feedback Loop Immediately Feedforward Pn445 0 Reserved parameter \_ Pn446 95 Reserved parameter \_ Pressure Feedback Loop Pn447 100 Immediately **Deviation Overflow Level** Pn448 0 Pressure Feedback Offset Immediately Pressure Feedback Sensor Pn449 0 Immediatelv Gain Pn44A 0 Pressure Feedback Filter Immediately Pressure Feedback Enable Pn44C 1000 Immediately l evel Pressure Feedback Over-Pn44D 300 Immediately flow Detection Level Pressure Feedback Over-Pn44E 0 Immediately flow Detection Time Pressure Feedback Control Pn450 1 Pressure Feedback Loop 0 Immediately **Differential Time** Pressure Feedback Control 1 Pressure Feedback Loop Pn451 100 Immediately **Differential Filter Rate** Pressure Feedback Control Pn452 1 Pressure Feedback Loop 100 Immediately Proportional Gain 2 Sweep Torque Reference Pn456 15 Immediately Amplitude Pressure Feedback Selec-Pn458 0011 After restart tion Switch 2 Gravity Compensation Ref-Pn459 500 erence Level for Torque Immediately Control Pressure Feedback Disable Pn45A 1000 Immediately Level Pn45B 50 Reserved parameter \_ Pn45C 150 Reserved parameter \_ Pn45D 100 Reserved parameter \_ Pressure Feedback Refer-0 Pn45E Immediately ence Filter Time Constant Notch Filter Adjustment Pn460 0101 Immediately Selections 1

Continued from previous page.

Parameter No.	Default Setting	Continued from p	When Enabled
Pn480	100	Speed Limit during Force Control	Immediately
Pn481	400	Polarity Detection Speed Loop Gain	Immediately
Pn482	3000	Polarity Detection Speed Loop Integral Time Con- stant	Immediately
Pn483	30	Forward Force Limit	Immediately
Pn484	30	Reverse Force Limit	Immediately
Pn485	20	Polarity Detection Refer- ence Speed	Immediately
Pn486	25	Polarity Detection Refer- ence Acceleration/Deceler- ation Time	Immediately
Pn487	0	Polarity Detection Con- stant Speed Time	Immediately
Pn488	100	Polarity Detection Reference Waiting Time	Immediately
Pn48E	10	Polarity Detection Range	Immediately
Pn490	100	Polarity Detection Load Level	Immediately
Pn495	100	Polarity Detection Confir- mation Force Reference	Immediately
Pn498	10	Polarity Detection Allowable Error Range	Immediately
Pn49F	0	Speed Ripple Compensa- tion Enable Speed	Immediately
Pn4A0	1000	Pressure Feedback One- Parameter Gain Level	Immediately
Pn4A3	100	Reserved parameter	_
Pn4A7	400	Pressure Feedback Control 2 Stability Gain	Immediately
Pn4A8	2000	Pressure Feedback Control 2 Stability Integral Time	Immediately
Pn4A9	400	Reserved parameter	_
Pn4AA	2000	Reserved parameter	_
Pn4AB	0	Reserved parameter	_
Pn4AC	100	Pressure Feedback Moment of Inertia Ratio	Immediately
Pn4AD	0000	Reserved parameter	-
Pn4D0	0	Reserved parameter	_
Pn4D1	0	Reserved parameter	-
Pn502	20	Rotation Detection Level	Immediately
Pn503	10	Speed Coincidence Detec- tion Signal Output Width	Immediately
Pn506	0	Brake Reference-Servo OFF Delay Time	Immediately
Pn507	100	Brake Reference Output Speed Level	Immediately
Pn508	50	Servo OFF-Brake Com- mand Waiting Time	Immediately
Pn509	20	Momentary Power Interrup- tion Hold Time	Immediately
Pn50A	1881	Input Signal Selections 1	After restart
Pn50B	8882	Input Signal Selections 2	After restart

Continued on next page.

Parameter No.			
	Default Setting	Name	When Enabled
Pn50E	0000	Output Signal Selections 1	After restart
Pn50F	0100	Output Signal Selections 2	After restart
Pn510	0000	Output Signal Selections 3	After restart
Pn511	6543	Input Signal Selections 5	After restart
Pn512	0000	Output Signal Inverse Set- tings	After restart
Pn514	0000	Output Signal Selections 4	After restart
Pn516	8888	Input Signal Selections 7	After restart
Pn51B	1000	Motor-Load Position Devia- tion Overflow Detection Level	Immediately
Pn51E	100	Position Deviation Over- flow Warning Level	Immediately
Pn520	5242880	Position Deviation Over- flow Alarm Level	Immediately
Pn522	7	Positioning Completed Width	Immediately
Pn524	1073741824	Near Signal Width	Immediately
Pn526	5242880	Position Deviation Over- flow Alarm Level at Servo ON	Immediately
Pn528	100	Position Deviation Over- flow Warning Level at Servo ON	Immediately
Pn529	10000	Speed Limit Level at Servo ON	Immediately
Pn52A	20	Multiplier per Fully-closed Rotation	Immediately
Pn52B	20	Overload Warning Level	Immediately
Pn52C	100	Base Current Derating at Motor Overload Detection	After restart
Pn530	0000	Program Jogging-Related Selections	Immediately
Pn531	32768	Program Jogging Travel Distance	Immediately
Pn533	500	Program Jogging Move- ment Speed	Immediately
Pn534	100	Program Jogging Accelera- tion/Deceleration Time	Immediately
Pn535	100	Program Jogging Waiting Time	Immediately
Pn536	1	Program Jogging Number of Movements	Immediately
Pn550	0	Analog Monitor 1 Offset Voltage	Immediately
Pn551	0	Analog Monitor 2 Offset Voltage	Immediately
Pn552	100	Analog Monitor 1 Magnifi- cation	Immediately
Pn553	100	Analog Monitor 2 Magnifi- cation	Immediately
Pn55A	1	Power Consumption Moni- tor Unit Time	Immediately
Pn560	400	Residual Vibration Detec- tion Width	Immediately

Continued from previous page.

Parameter No.	Default Setting	Continued from p	When Enabled
Pn561	100	Overshoot Detection Level	Immediately
Pn581	20	Zero Speed Level	Immediately
Pn582	10	Speed Coincidence Detec- tion Signal Output Width	Immediately
Pn583	10	Brake Reference Output Speed Level	Immediately
Pn584	10000	Speed Limit Level at Servo ON	Immediately
Pn585	50	Program Jogging Move- ment Speed	Immediately
Pn586	0	Motor Running Cooling Ratio	Immediately
Pn587	0000	Polarity Detection Execu- tion Selection for Absolute Linear Encoder	Immediately
Pn600	0	Regenerative Resistor Capacity	Immediately
Pn601	0	Dynamic Brake Resistor Allowable Energy Con- sumption	After restart
Pn603	0	Regenerative Resistance	Immediately
Pn604	0	Dynamic Brake Resistance	After restart
Pn6A4	0000	Table Operation Parameter           Settings	Immediately
Pn6A5	0	Torque (Pressure) Refer- ence during Speed Table Operation	Immediately
Pn6A7	0	Pressure Control Switching Pressure Percentage	Immediately
Pn6A8	0	Table Operation Switching           Position	Immediately
Pn6AA	0	Speed Limit for Torque (Pressure) Table Operation	Immediately
Pn6AC	0	Speed Table Reference 1	Immediately
Pn6AE	0	Speed Table Reference 2	Immediately
Pn6B0	0	Speed Table Reference 3	Immediately
Pn6B2	0	Speed Table Reference 4	Immediately
Pn6B4	0	Speed Table Reference 5	Immediately
Pn6B6	0	Speed Table Reference 6	Immediately
Pn6B8	0	Speed Table Reference 7	Immediately
Pn6BA	0	Speed Table Reference 8	Immediately
Pn6BC	0	Speed Table Reference 9	Immediately
Pn6BE	0	Speed Table Reference 10	Immediately
Pn6C0	0	Speed Table Switching Position 1	Immediately
Pn6C2	0	Speed Table Switching Position 2	Immediately
Pn6C4	0	Speed Table Switching Position 3	Immediately
Pn6C6	0	Speed Table Switching Position 4	Immediately
Pn6C8	0	Speed Table Switching Position 5	Immediately
Pn6CA	0	Speed Table Switching Position 6	Immediately

6

	Continued from previous pag					
Parameter No.	Default Setting	Name	When Enabled			
Pn6CC	0	Speed Table Switching Position 7	Immediately			
Pn6CE	0	Speed Table Switching Position 8	Immediately			
Pn6D0	0	Speed Table Switching Position 9	Immediately			
Pn6D2	0	Torque (Pressure) Refer- ence 1	Immediately			
Pn6D4	0	Torque (Pressure) Refer- ence 2	Immediately			
Pn6D6	0	Torque (Pressure) Refer- ence 3	Immediately			
Pn6D8	0	Torque (Pressure) Reference 4	Immediately			
Pn6DA	0	Torque (Pressure) Refer- ence 5	Immediately			
Pn6DC	0	Torque (Pressure) Refer- ence Time 1	Immediately			
Pn6DE	0	Torque (Pressure) Refer- ence Time 2	Immediately			
Pn6E0	0	Torque (Pressure) Refer- ence Time 3	Immediately			
Pn6E2	0	Torque (Pressure) Refer- ence Time 4	Immediately			
Pn800	1040	Communications Controls	Immediately			
Pn801	0003	Application Function Selec- tions 6 (Software Limits)	Immediately			
Pn803	10	Origin Range	Immediately			
Pn804	1073741823	Forward Software Limit	Immediately			
Pn806	-1073741823	Reverse Software Limit	Immediately			
Pn808	0	Absolute Encoder Origin Offset	Immedi- ately <sup>*2</sup>			
Pn80A	100	First Stage Linear Accelera- tion Constant	Immedi- ately <sup>*3</sup>			
Pn80B	100	Second Stage Linear Acceleration Constant	Immedi- ately <sup>*3</sup>			
Pn80C	0	Acceleration Constant Switching Speed	Immedi- ately <sup>*3</sup>			
Pn80D	100	First Stage Linear Decelera- tion Constant	Immedi- ately <sup>*3</sup>			
Pn80E	100	Second Stage Linear Deceleration Constant	Immedi- ately <sup>*3</sup>			
Pn80F	0	Deceleration Constant Switching Speed	Immedi- ately <sup>*3</sup>			
Pn810	0	Exponential Acceleration/ Deceleration Bias	Immedi- ately <sup>*3</sup>			
Pn811	0	Exponential Acceleration/ Deceleration Time Constant	Immedi- ately <sup>*3</sup>			
Pn812	0	Movement Average Time	Immedi- ately <sup>*3</sup>			
Pn814	100	External Positioning Final Travel Distance	Immedi- ately <sup>*3</sup>			
Pn816	0000	Origin Return Mode Set- tings	Immedi- ately <sup>*3</sup>			
	1		· · ·			

Continued from previous page.

Continued from previous page.

_		Continued from p	
Parameter No.	Default Setting	Name	When Enabled
Pn817	50	Origin Approach Speed 1	Immedi- ately <sup>*3</sup>
Pn818	5	Origin Approach Speed 2	Immedi- ately <sup>*3</sup>
Pn819	100	Final Travel Distance for Origin Return	Immedi- ately <sup>*3</sup>
Pn81E	0000	Input Signal Monitor Selec- tions	Immediately
Pn81F	0010	Command Data Allocations	After restart
Pn820	0	Forward Latching Area	Immediately
Pn822	0	Reverse Latching Area	Immediately
Pn824	0000	Option Monitor 1 Selection	Immediately
Pn825	0000	Option Monitor 2 Selection	Immediately
Pn827	100	Linear Deceleration Con- stant 1 for Stopping	Immedi- ately <sup>*3</sup>
Pn829	0	SVOFF Waiting Time (for SVOFF at Deceleration to Stop)	Immediately
Pn82A	1813	Option Field Allocations 1	After restart
Pn82B	1D1C	Option Field Allocations 2	After restart
Pn82C	1F1E	Option Field Allocations 3	After restart
Pn82D	0000	Option Field Allocations 4	After restart
Pn82E	0000	Option Field Allocations 5	After restart
Pn833	0000	Motion Settings	After restart
Pn834	100	First Stage Linear Accelera- tion Constant 2	Immedi- ately <sup>*3</sup>
Pn836	100	Second Stage Linear Acceleration Constant 2	Immedi- ately <sup>*3</sup>
Pn838	0	Acceleration Constant Switching Speed 2	Immedi- ately <sup>*3</sup>
Pn83A	100	First Stage Linear Decelera- tion Constant 2	Immedi- ately <sup>*3</sup>
Pn83C	100	Second Stage Linear Deceleration Constant 2	Immedi- ately <sup>*3</sup>
Pn83E	0	Deceleration Constant Switching Speed 2	Immedi- ately <sup>*3</sup>
Pn840	100	Linear Deceleration Con- stant 2 for Stopping	Immedi- ately <sup>*3</sup>
Pn842	0	Second Origin Approach Speed 1	Immedi- ately <sup>*3</sup>
Pn844	0	Second Origin Approach Speed 2	Immedi- ately <sup>*3</sup>
Pn846	0	POSING Command Scurve Acceleration/Deceleration Rate	Immedi- ately <sup>*3</sup>
Pn850	0	Number of Latch           Sequences	Immediately
Pn851	0	Continuous Latch Sequence Count	Immediately
Pn852	0000	Latch Sequence 1 to 4 Set- tings	Immediately
Pn853 0000		Latch Sequence 5 to 8 Set- tings	Immediately

Continued on next page.

		Continued from p	
Parameter No.	Default Setting	Name	When Enabled
Pn860	0000	SVCMD_IO Input Signal Monitor Allocations 1	Immediately
Pn861	0000	SVCMD_IO Input Signal Monitor Allocations 2	Immediately
Pn862	0000	SVCMD_IO Input Signal Monitor Allocations 3	Immediately
Pn863	0000	SVCMD_IO Input Signal Monitor Allocations 4	Immediately
Pn868	0000	SVCMD_IO Output Signal Monitor Allocations 1	Immediately
Pn869	0000	SVCMD_IO Output Signal Monitor Allocations 2	Immediately
Pn880	0	Station Address Monitor (for maintenance, read only)	Immediately
Pn881	0	Set Transmission Byte Count Monitor [bytes] (for maintenance, read only)	Immediately
Pn882	0	Transmission Cycle Setting Monitor [× 0.25 μs] (for maintenance, read only)	Immediately
Pn883	0	Communications Cycle Setting Monitor [transmis- sion cycles] (for mainte- nance, read only)	Immediately
Pn884	0000	Communications Controls 2	Immediately
Pn88A	0	MECHATROLINK Receive Error Counter Monitor (for maintenance, read only)	Immediately
Pn890 to Pn8A6	0	Command Data Monitor during Alarm/Warning (for maintenance, read only)	Immediately
Pn8A8 to Pn8BE	0	Response Data Monitor during Alarm/Warning (for maintenance, read only)	Immediately
Pn900	0	Number of Parameter Banks	After restart
Pn901	0	Number of Parameter Bank Members	After restart
Pn902 to Pn910	0	Parameter Bank Member Definition	After restart
Pn920 to Pn95F	0	Parameter Bank Data (Not saved in nonvolatile mem- ory.)	Immediately
01 PnA02	_	Encoder Type Selection (read only)	_
02 PnA04	_	Motor Type Selection (read only)	_
03 PnA06	_	Semi-closed/Fully-closed Selection (read only)	_
04 PnA08	_	Rated Motor Speed (read only)	_
05 PnA0A	_	Maximum Output Speed (read only)	_
06 PnA0C	_	Speed Multiplier (read only)	_
07 PnA0E	_	Rated Torque (read only)	_
		Continued	on next page.

Continued from previous page.

Continued from previous page.

			previous page.
Parameter No.	Default Setting	Name	When Enabled
08 PnA10	_	Maximum Output Torque (read only)	-
09 PnA12	-	Torque Multiplier (read only)	-
0A PnA14	_	Resolution (read only)	_
0B PnA16	0	Scale Pitch	After restart
0C PnA18	-	Pulses per Scale Pitch (read only)	_
21 PnA42	16	Electronic Gear Ratio (Numerator)	After restart
22 PnA44	1	Electronic Gear Ratio (Denominator)	After restart
23 PnA46	0	Absolute Encoder Origin Offset	Immedi- ately <sup>*2</sup>
24 PnA48	65535	Multiturn Limit Setting	After restart
25 PnA4A	0000 hex	Limit Setting	After restart
26 PnA4C	1073741823	Forward Software Limit	Immediately
27 PnA4E	0	Reserved parameter (Do not change.)	Immediately
28 PnA50	-1073741823	Reverse Software Limit	Immediately
29 PnA52	0	Reserved parameter (Do not change.)	Immediately
41 PnA82	0	Speed Unit Selection	After restart
42 PnA84	0	Speed Base Unit Selection	After restart
43 PnA86	0	Position Unit Selection	After restart
44 PnA88	0	Position Base Unit Selec- tion	After restart
45 PnA8A	0	Acceleration Unit Selection	After restart
46 PnA8C	4	Acceleration Base Unit Selection	After restart
47 PnA8E	1	Torque Unit Selection	After restart
48 PnA90	0	Torque Base Unit Selection	After restart
49 PnA92	0601011F hex	Supported Unit Systems (read only)	_
61 PnAC2	40000	Speed Loop Gain	Immediately
62 PnAC4	20000	Speed Loop Integral Time Constant	Immediately
63 PnAC6	40000	Position Loop Gain	Immediately
64 PnAC8	0	Feedforward Compensation	Immediately

6

Parameter No.	Default Setting	Name	When Enabled
65 PnACA	0	Position Loop Integral Time Constant	Immediately
66 PnACC	7	Positioning Completed Width	Immediately
67 PnACE	1073741824	Near Signal Width	Immediately
81 PnB02	0	Exponential Acceleration/ Deceleration Time Constant	Immedi- ately <sup>*3</sup>
82 PnB04	0	Movement Average Time	Immedi- ately <sup>*3</sup>
83 PnB06	100	External Positioning Final Travel Distance	Immediately
84 PnB08	$\times$ 5,000 reference units/s converted to $10^{-3}$ min <sup>-1</sup>	Origin Approach Speed	Immediately
85 PnB0A	$\times$ 500 reference units/s converted to $10^{-3}$ min <sup>-1</sup>	Origin Return Creep Speed	Immediately
86 PnB0C	100	Final Travel Distance for Origin Return	Immediately
87 PnB0E	1	Fixed Monitor Selection 1	Immediately
88 PnB10	0	Fixed Monitor Selection 2	Immediately
89 PnB12	0	SEL_MON (CMN1) Monitor Selection 1	Immediately
8A PnB14	0	SEL_MON (CMN2) Monitor Selection 2	Immediately
8B PnB16	10	Origin Detection Width	Immediately
8C PnB18	100	Forward Torque Limit	Immediately
8D PnB1A	100	Reverse Torque Limit	Immediately
8E PnB1C	20000	Zero Speed Detection Range	Immediately
8F PnB1E	10000	Speed Coincidence Signal Detection Width	Immediately
90 PnB20	0FFF3F3F hex	Servo Command Control Field Enable/Disable Selec- tions (read only)	_
91 PnB22	0FFF3F33 hex	Servo Status Field Enable/ Disable Selections (read only)	_
92 PnB24	007F01F0 hex	Output Bit Enable/Disable Selections (read only)	_
93 PnB26	FF0FFEFE hex	Input Bit Enable/Disable Selections (read only)	-

Continued from previous page.

\*1. The enable timing depends on the digit that is changed. Refer to the following section for details.
 6.2.1 List of Servo Parameters on page 6-4

3 6.2.2 List of MECHATROLINK-III Common Parameters on page 6-48

\*2. The parameter setting is enabled after SENS\_ON command execution is completed.

\*3. Change the setting when the reference is stopped (i.e., while DEN is set to 1). If you change the setting during operation, the reference output will be affected.

### **FT41 Specification** 6.3

#### 6.3.1 List of Servo Parameters

The following table lists the parameters.

- Note: Do not change the following parameters from their default settings.
  Reserved parameter
  Parameters not given in this manual
  Parameters that are not valid for the Servomotor that you are using, as given in the parameter table

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Basic Function Selec- tions 0	0000 to 10B1	-	0000	All	After restart	Setup	*1

		Rotatio	n Direction Selection
		Movem	ent Direction Selection
			Use CCW as the forward direction.
	n.□□□X	0	Use the direction in which the linear encoder counts up as the forward direction.
			Use CW as the forward direction. (Reverse Rotation Mode)
000		1	Use the direction in which the linear encoder counts down as the forward direction. (Reverse Movement Mode)
	n.	Pasany	ed parameter (Do not change.)
	11.0070	116361 0	eu parameter (Do not change.)
	n.🗆X🗆 🗆	Reserve	ed parameter (Do not change.)
		Rotary/	Linear Servomotor Startup Selection When Encoder Is Not Connected
	n.X000	0	When an encoder is not connected, start as SERVOPACK for Rotary Servo- motor.
		1	When an encoder is not connected, start as SERVOPACK for Linear Servo- motor.

Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Application Selections	n Function 1	0000 to 1142	-	All	After restart	Setup	*1				
										_			
				oping Method for									
		n.□□□X	-	0 Stop the motor by applying the dynamic brake.									
				1 Stop the motor by the applying dynamic brake and then release the dynamic brake.									
			2 (	Coast the motor t	o a stop w	vithout the	dynamic brak	æ.					
			Overtravel	Stopping Metho	d								
		n.□□X□		Apply the dynamic brake or coast the motor to a stop (use the stopping method set in Pn001 = $n.\Box\Box\Box$ X).									
				Decelerate the motor to a stop using the torque set in Pn406 as the maximum torque and then servo-lock the motor.									
Pn001				Decelerate the motor to a stop using the torque set in Pn406 as the maxi torque and then let the motor coast.									
				Decelerate the mo hen servo-lock th		op using tl	he deceleratio	on time set ir	n Pn30A ai	nd			
				Decelerate the mo hen let the motor		op using t	he deceleratio	on time set ir	n Pn30A ai	nd			
			Main Circu	it Power Supply	AC/DC In	put Select	ion						
				nput AC power as ninals (do not use			ver supply us	ing the L1, L	2, and L3	ter-			
		n.¤X¤¤	1 t	nput DC power a erminals or the B shared converter).	1 and $\ominus$ 2			0		2			
		n.XDDD	Reserved	parameter (Do no	ot change.	.)							

Continued from previous page.

Parameter No.	Size	Ν	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refe enc
	2	Applicatio Selections	n Functior 3 2	١	0000 to 4213	-	0011	-	After restart	Setup	_
		n.000X	Option           0           1           2           3	Res Use Res Res	INK Comman erved setting ( TLIM as the tr erved setting ( erved setting (	Do not us orque limit Do not us	e.) e.)	ed Control	Applicabl Motors All Applicabl	*2	
		n.□□X□	0 1	Res Use	ol Option erved setting ( the speed lim ed limit.	VLIM) as the	All	*2			
n002			Encoder	Encoder Usage						e Refere	ence
		n.□X□□	0	tion	the encoder a s. the encoder a	All	*1				
			2	Use	the encoder a	Rotary					
			External	Enco	oder Usage				Applicabl Motors	e Refere	ence
			0	Do	not use an ext	ernal enco	der.				
		n.X000	1		external enco CCW motor ro		in the forv	vard direction			
			2	Res	erved setting (	Do not us	ə.)		Rotary	*1	
			3		external enco CCW motor ro		in the rev	erse direction			
			4	Res	erved setting (	Do not us	ə.)				

Continued from previous page.

Continued on next page.

								tinued fror	· ·	s page			
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer ence			
	2	Application Selections		0000 to 105F	-	0002	All	Immedi- ately	Setup	*1			
			Analog Mo	alog Monitor 1 Signal Selection									
			00	Motor speed (1	V/1,000 m	nin⁻¹)							
				Motor speed (1	V/1,000 n	nm/s)							
			01	Speed reference	e (1 V/1,00	)0 min⁻¹)							
					Speed reference (1 V/1,000 mm/s)								
			02	Torque reference (1 V/100% rated torque)									
				Force reference (1 V/100% rated force) Position deviation (0.05 V/reference unit)									
			03	Position deviation			,	0.05.1/0000		upit)			
			04	Position amplifie (0.05 V/linear er	er deviatio	n (after ele	0,1	0.05 V/encc	ider pulse	unit)			
				Position referen	•	,	min <sup>-1</sup> )						
		05	Position referen	•		,							
			06										
			07	Load-motor pos	Load-motor position deviation (0.01 V/reference unit)								
			08	Positioning com (positioning con		V, position	ing not comp	leted: 0 V)					
	n.□□XX	09	Speed feedforw	ard (1 V/1	,000 min <sup>-1</sup>	)							
Pn006			03	Speed feedforw	ard (1 V/1	,000 mm/s	3)						
			0A	Torque feedforward (1 V/100% rated torque)									
				Force feedforward (1 V/100% rated force)									
			0B	Active gain (1st gain: 1 V, 2nd gain: 2 V) Completion of position reference distribution									
			0C	(completed: 5 V	, not comp	pleted: 0 V	)						
			0D	External encode			min <sup>-1</sup> : value at	the motor s	shaft)				
			0E	Reserved settin		,							
			0F	Reserved settin	0 (	use.)							
			10 11 to 29	Main Circuit DC Reserved settin	U	1100							
			111029	Pressure feedba	0 1	,	monitor						
			30	Pressure feedba									
			31	Pressure feedba									
				Pressure feedba	ack output	torque mo	onitor						
			32	Pressure feedba	ack output	force mor	nitor						
			33	Pressure feedba	ack loop d	eviation m	onitor						
			34 to 5F	Reserved settin	gs (Do not	use.)							
		n.¤X¤¤	Reserved	parameter (Do no	ot change	.)							
		n.XDDD	Reserved	parameter (Do no	ot change	.)							

Continued from previous page.

Continued from previous page.

	2		lame	Range	Setting Unit	Default Setting	Applicable Motors	Enabled	fication	Refe ence			
		Application Selections	n Function	0000 to 105F	-	0000	All	Immedi- ately	Setup	*1			
						I							
			Analog Mo	Analog Monitor 2 Signal Selection									
			00	Motor speed (1 V/1,000 min <sup>-1</sup> )									
				Motor speed (1	V/1,000 m	nm/s)							
			01	Speed reference (1 V/1,000 min <sup>-1</sup> )									
				Speed reference (1 V/1,000 mm/s)									
			02	Torque reference (1 V/100% rated torque)									
				Force reference (1 V/100% rated force) Position deviation (0.05 V/reference unit)									
			03	Position deviati	,		,	0 05 Wenco	dor pulso	unit)			
			04	Position amplifi (0.05 V/linear e	er deviatio	n (after ele	0,1	0.05 776100					
				Position reference speed (1 V/1,000 min <sup>-1</sup> )									
			05	Position reference speed (1 V/1,000 mm/s)									
			06	Reserved setting (Do not use.)									
			07	Load-motor po	sition devia	ation (0.01	V/reference u	ınit)					
			08	Positioning con (positioning cor		V, position	ing not comp	leted: 0 V)					
		n.□□XX	09	Speed feedforv	vard (1 V/1	,000 min <sup>-1</sup> )	)						
Pn007				Speed feedforv			,						
			0A	Torque feedforv			1 1						
			0.0	Force feedforw									
			OB	Active gain (1st gain: 1 V, 2nd gain: 2 V) Completion of position reference distribution									
			0C	(completed: 5 V, not completed: 0 V)									
			0D	External encoder speed (1 V/1,000 min <sup>-1</sup> : value at the motor sha									
			0E	Reserved settin	0 (	,							
			0F	Reserved settin	0 (	use.)							
			10	Main Circuit DC	-								
			11 to 29	Reserved settir Pressure feedb	0 (	,	monitor						
			30	Pressure feedb									
			31	Pressure feedb									
				Pressure feedb									
			32	Pressure feedb	ack output	force mor	nitor						
			33	Pressure feedb			onitor						
			34 to 5F	Reserved settir	gs (Do not	use.)							
		n.¤X¤¤	Reserved	parameter (Do n	ot change	.)							
	1	n.XDDD	Reserved	parameter (Do n	ot change	.)							

Continued on next page.

			lame	Setting	Setting	Default	Applicable	When	Classi-	Refer			
No.	Size			Range	Unit	Setting	Motors	Enabled	fication	ence			
	2	Applicatio Selections	n Function 8	0000 to 7121	-	4000	Rotary	After restart	Setup	*1			
			Low Battery	Voltage Alarm	/Warning	Selection							
		n.🗆 🗆 🗆 X	0 0	utput alarm (A.8	30) for low	v battery vo	oltage.						
			1 0	utput warning (A	.930) for I	ow battery	voltage.						
			Function Se	Function Selection for Undervoltage									
<b>D</b> 000			0 Do	o not detect und	lervoltage.								
Pn008		n.🗆🗆 X 🗆			t undervoltage warning and limit torque at host controller. t undervoltage warning and limit torgue with Pn424 and Pn425 (i.e., only								
				etect undervolta SERVOPACK).	ge warning	g and limit	torque with Pr	1424 and Pn	425 (i.e., c	only			
	Warning Detection Selection												
		n.¤X¤¤	0 De	etect warnings.									
			1 Do	o not detect war	rnings exc	ept for A.9	71.						
		n.X000	Reserved p	arameter (Do no	ot change	)							
	2	Applicatio Selections	n Function 9	0000 to 0121	-	0010	All	After restart	Tuning	*1			
		n.DDDX	Decembed	warmatar (Da na	tohongo	<b>\</b>							
			neserveu pa	arameter (Do no	ot change.	)							
			Current Cor	trol Mode Sele	ction								
			0 Us	e current contro	ol mode 1.								
				SERVOPACK Mo		,	-R90A, -1R6A	A, -2R8A, -5	R5A, and				
Pn009		n.🗆 🗆 X 🗆	1	7R6A: Use curr SERVOPACK Mo			-1804 -2004	-3304 -47	0.0 -550/	<b>`</b>			
111000				590A, and -780				, -000A, -47	UA, -000 <i>r</i>	٦,			
			2 Us	e current contro	ol mode 2.								
			Speed Dete	ction Method S	election								
		n.¤X¤¤	0 Us	e speed detecti	on 1.								
			1 Us	e speed detecti	on 2.								
	n.XDDD Reserved parameter (Do not change.)												

Continued from previous page.

									tinued from		s page			
Parameter No.	Size	Na	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer ence			
	2	Application Selections	Function A		0000 to 0044	-	0001	All	After restart	Setup	*1			
			<u> </u>											
			Motor Sto	ppi	ing Method fo	r Group 2	Alarms							
					bly the dynamic thod set in Pn			motor to a st	op (use the s	stopping				
			1	Dec torc	celerate the mo que. Use the se	otor to a st etting of P	op using tl n001 = n. <b>l</b>	ne torque set ⊐□□X for the	in Pn406 as e status aftei	the maxim stopping	ium			
		n.□□□X			Decelerate the motor to a stop using the torque set in Pn406 as the maximum orque and then let the motor coast.									
			3 .	Deo the	Decelerate the motor to a stop using the deceleration time set in Pn30A. Use he setting of Pn001 = $n.\Box\Box\Box\Box$ for the status after stopping.									
				Decelerate the motor to a ston using the deceleration time set in Ph30A and										
Pn00A			Stopping	Me	thod for Force	d Stops								
				App	bly the dynamic thod set in Pn(	c brake or		motor to a st	op (use the s	stopping				
				Decelerate the motor to a stop using the torque set in Pn406 as the maximum torque. Use the setting of Pn001 = $n.\square\square\squareX$ for the status after stopping.										
		n.□□X□			celerate the mo que and then le			he torque set	in Pn406 as	the maxin	านท			
			3	Dec the	celerate the mo setting of Pn0	otor to a s 01 = n. <b>⊡I</b>	top using t ⊐□X for th	he decelerations after	on time set i <sup>r</sup> stopping.	n Pn30A.	Use			
					celerate the mo n let the motor		top using t	he decelerati	on time set i	n Pn30A a	Ind			
		n.¤X¤¤	Reserved	Reserved parameter (Do not change.)										
		n.XDDD	Reserved parameter (Do not change.)											
	2	Application Selections	Function B		0000 to 1121	-	0000	All	After restart	Setup	*1			
			Operator P	ara	meter Displav	Selection	I							
				ator Parameter Display Selection Display only setup parameters.										
		n.000X		Disp	lay only setup	parameter	ſS.							
		+	0 [	· ·	lay only setup lay all paramet	•	ſS.							
	_	n.000X	0 C 1 C	)isp	, , ,	ers.								
Da00B		n.000X	0 D 1 D	)isp pin	lay all paramet	Group 2 /	Alarms	ference to 0.						
Pn00B		n.000X	0 D 1 D Motor Stop 0 S	)isp opin Stop	lay all paramet	ers. Group 2 / setting th brake or	Alarms e speed re coast the r		op (use the s	topping				
Pn00B		n.000X	0 D 1 D Motor Stop 0 S 1 Å	)isp opin Stop App neth	ay all paramet	Group 2 / setting th brake or 01 = n.□[	Alarms e speed re coast the r DDX).	notor to a sto	pp (use the s	topping				
Pn00B		n.000X	0 [2] 1 [2] Motor Stop 0 [5] 1 [7] 2 [5]	Disp Disp Stop App neth Set	ay all paramet ag Method for the motor by by the dynamic hod set in Pn0	Group 2 / setting th brake or 01 = n.□[	Alarms e speed re coast the r I I X). h Pn00A =	notor to a sto n.□□□X.	op (use the s	topping				
Pn00B		n.000X	0 C 1 C Motor Stop 0 S 1 Å r 2 S Power Input	opin Stop App neth Set	g Method for b the motor by ly the dynamic hod set in Pn0 the stopping n	Group 2 / setting th brake or 01 = n.□I nethod wit	Alarms e speed re coast the r DX). h Pn00A = e SERVOF	notor to a sto ⊨n.□□□X. PACK	op (use the s	topping				
Pn00B		n.000X	0 C 1 C Motor Stop 0 S 1 Å r 2 S Power Inpu 0 U	Disp Disp Stop App Meth Set	g Method for b the motor by ly the dynamic hod set in Pn0 the stopping m election for Th	Group 2 / setting th brake or 01 = n. nethod wit	Alarms e speed re coast the r DX). h Pn00A = e SERVOF oply input.	notor to a sto = n.□□□X. PACK			ut.			
Pn00B		n.000X	0         D           1         C           Motor Stop         S           0         S           1         A           2         S           Power Inpu         0           0         L           1         L	ppin Stop App Meth Set Use Jse	g Method for b the motor by by the dynamic nod set in Pn0 the stopping m election for Th a three-phase	Group 2 / setting th brake or 01 = n.□I nethod wit nree-phas power su power su	Alarms e speed re coast the r DX). h Pn00A = e SERVOF oply input. oply input.	notor to a sto = n.□□□X. PACK						

								Con	itinued fror	n previou:	s page.	
Parameter No.	0 NameNameSetting RangeSetting UnitDefault 								-	Classi- fication	Refer-	
NO.	2	Applicatio Selections	n Function		0000 to 0131	-	0000	-	After restart	Setup	ence *1	
	-		<b>_</b>							Applical	ble	
		n.000X			ction for Test					Motors		
			0		ble tests with ole tests withc					All		
5 000			Encoder	Resc	lution for Tes	ts without	a Motor			Applical Motor		
Pn00C		n.¤¤X¤	0		13 bits.					_		
		11.00/0	1		20 bits.					Rotary	ý	
			2		22 bits. 24 bits.							
			3									
		n.¤X¤¤			Selection for			tor		Applical Motor		
			0     Use an incremental encoder.       1     Use an absolute encoder.									
	2	Applicatio Selections		d par	0000 to 1001 ameter (Do no	- ot change	0000	All	After restart	Setup	*1	
	1	n.🗆 🗆 X 🗆	Reserved	d par	ameter (Do no	ot change	.)					
Pn00D		n.🗆X🗆 🗆	Reserved	d par	ameter (Do no	ot change	.)					
	Ī		Overtrave	el Wa	arning Detecti	on Select	ion					
		n.XDDD	0	Do	not detect ove	ertravel wa	rnings.					
			1	Det	ect overtravel	warnings.						
	2	Applicatio Selections	n Function		0000 to 2011	_	0000	All	After restart	Setup	*1	
			-	tive	Maintenance	Warning S	selection					
		n.🗆 🗆 🗆 X			ot detect preve	-		warnings.				
Pn00F					t preventative			8				
		n.DDXD	Reserved	d par	ameter (Do no	ot change	.)					
		n.¤X¤¤	Reserved	d par	ameter (Do no	ot change	.)					
	n.XDDD Reserved parameter (Do not change.)											
Pn021	2	Reserved not chang	parameter ( e.)	(Do	_	-	0000	All	_	-	-	
Pn040	2	Reserved not chang	parameter ( e.)	(Do	-	_	0000	-	-	-	_	

Continued from previous page.

	Continued from previous page.						s page.			
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Selections		0000 to 1111	_	0000	Linear	After restart	Setup	_
		Selections	00					Testart		
			Polarity Sens							
		n.🗆 🗆 🛛 X		e polarity senso not use polarit						
				•						
Pn080				Sequence Se						
1 11000		n.□□X□		t a phase-A lea t a phase-B lea	-	-				
				•				iu vv.		_
		n.¤X¤¤	Reserved pa	rameter (Do no	ot change.	)				
			Calculation N	Method for Max	kimum Sp	eed or En	coder Output	Pulses		
		n.XDDD		culate the enco			0		•	
			1 Ca	lculate the max	imum spe	ed for a fix	ed encoder o	utput pulse	setting.	
		Application	Eurotion	0000 to				After	1	
	2	Selections		1111	-	0000	All	restart	Setup	*1
			Phase-C Pul	se Output Sele	ection					
		n.🗆🗆 🛛 X		tput phase-C p	,					
Pn081			1 Ou	tput phase-C p	ulses in be	oth the for	ward and reve	erse directior	18.	
		n.🗆🗆 X 🗆	Reserved pa	rameter (Do no	ot change.	)				
		n.¤X¤¤	Reserved pa	rameter (Do no	ot change.	)				
		n.XDDD	Reserved pa	rameter (Do no	ot change.	)				
			·			,				
Pn100	2	Speed Loc	op Gain	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1
Pn101	2	Speed Loc Time Cons		15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1
Pn102	2	Position Lo	oop Gain	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1
Pn103	2		Inertia Ratio	0 to 20,000	1%	100	All	Immedi- ately	Tuning	*1
Pn104	2	Second Sp Gain		10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1
Pn105	2	0	ne Constant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1
Pn106	2	Second Po Gain	sition Loop	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1
Pn109	2	Feedforwa		0 to 100	1%	0	All	Immedi- ately	Tuning	*1
Pn10A	2	Feedforwa Constant	rd Filter Time	0 to 6,400	0.01 ms	0	All	Immedi- ately	Tuning	*1

Continued on next page.

								Cor	tinued from	n previou	s page.
Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Gain Applic tions	cation Sele	eC-	0000 to 5334	-	0000	All	-	Setup	*1
			Mode Sw	/itchi	ng Selection					Whe Enab	
			0	Use Pn1(	the internal to 0C).	orque refer	ence as th	e condition (l	evel setting:		
			1 -		the speed ref				<b>o</b> ,	_	
		n.DDDX		Use	the accelerati			<b>v</b>	0 ,	Imme	
			2 -	Pn10E). Use the acceleration reference as the condition (level setting: Pn182)						atel	у
Pn10B			3	Pn182). Use the position deviation as the condition (level setting: Pn10F).							
			4	Do r	not use mode	switching.					
			Speed Lo	oop C	Control Metho	d				Whe Enab	
		n.DDXD	0		ontrol					Afte	
			1 2 and 3		control erved settings	(Do not u	se.)			resta	
		n.¤X¤¤	Reserved	l para	ameter (Do no	ot change.	)			I	
		n.XDDD	Reserved	nar	ameter (Do no	ot change	)				
	-		.10001780	pure		e enange.					
Pn10C	2	Mode Swit for Torque	ching Leve Reference	el	0 to 800	1%	200	All	Immedi- ately	Tuning	*1
Pn10D	2	Mode Swit for Speed	ching Leve		0 to 10,000	1 min <sup>-1</sup>	0	Rotary	Immedi- ately	Tuning	*1
Pn10E	2	Mode Swit for Acceler		el	0 to 30,000	1 min <sup>-1</sup> /s	0	Rotary	Immedi- ately	Tuning	*1
Pn10F	2	Mode Swit for Positior			0 to 10,000	1 refer- ence unit	0	All	Immedi- ately	Tuning	*1
Pn11F	2	Position Int Constant	tegral Time	9	0 to 50,000	0.1 ms	0	All	Immedi- ately	Tuning	*1
Pn121	2	Friction Co Gain	mpensatio	n	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn122	2	Second Fri		-	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn123	2	Friction Co Coefficient		n	0 to 100	1%	0	All	Immedi- ately	Tuning	*1
Pn124	2	Friction Co Frequency			-10,000 to 10,000	0.1 Hz	0	All	Immedi- ately	Tuning	*1
Pn125	2	Friction Co Gain Corre		n	1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn131	2	Gain Switc	hing Time	1	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn132	2	Gain Switc	hing Time	2	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn135	2	Gain Switc Time 1	hing Waitir	ng	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn136	2	Gain Switc Time 2	hing Waitir	ng	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
								·		· .	

Continued from previous page.

Continued from previous page.

							001	itinued from	i previou	s page.	
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Automatic ing Selection	Gain Switch- ons 1	0000 to 0052	-	0000	All	Immedi- ately	Tuning	*1	
			Gain Switch	ning Selection							
			U 0 TI	se manual gain s ne gain is switch als (SVCMD_IO).		lly with G-	SEL in the se	vo comman	d output s	ig-	
		n.🗆🗆 🗆 X	1 R	eserved setting (	Do not us	e.)					
			2 TI	se automatic gai ne gain is switch witching conditio econd gain to the	ed automa n A is sati	atically fron sfied. The	n the first gair gain is switch	ed automati	cally from	hen the	
Pn139			Gain Switch	ning Condition A	١						
			0 /0	COIN (Positioning	Completi	ion Output	) signal turns	ON.			
			1 /0	COIN (Positioning	Completi	ion Output	) signal turns	OFF.			
		n.🗆🗆 X 🗆	2 /N	NEAR (Near Outp	out) signal	turns ON.					
			3 /N	NEAR (Near Outp	out) signal	turns OFF.					
			4 P	osition reference	filter outp	ut is 0 and	position refe	rence input i	s OFF.		
			5 P	osition reference	input is C	N.					
		n.¤X¤¤	Reserved p	Reserved parameter (Do not change.)							
		n.XDDD	Reserved p	arameter (Do no	t change.	)					
					1	1	1	1	1		
Pn13D	2	Current Ga	ain Level	100 to 2,000	1%	2000	All	Immedi- ately	Tuning	*1	
	2		owing Con- d Selections	0000 to 1121	-	0100	All	Immedi- ately	Tuning	*1	
		n.000X	0 Do 1 Use Vibration Si 0 Do	owing Control Se not use model fo e model following uppression Sele not perform vibr	ollowing co g control. ction ation supp	pression.					
				form vibration su				,			
Pn140			2 Per	form vibration su	ppressior	tor two sp	Decitic treque	ncies.			
			Vibration S	uppression Adju	stment Se	election					
		n.¤X¤¤	0 tu	o not adjust vibra Ining without a ha Ining.	ation supp ost referer	pression au lice, autotu	tomatically dening with a ho	uring executi ost reference	on of auto , and cust	)- OM	
				djust vibration su ithout a host refe g.						n-	
			Speed Feed	dforward (VFF)/1	orque Fee	edforward	(TFF) Selecti	on			
		n.XDDD	· ·	o not use model	•		· · /		rd togethe	er.	
			1 U	se model followi	ng control	and speed	d/torque feed	forward toge	ther.		
Pn141	2	Model Follo trol Gain	owing Con-	10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*1	
Pn142	2		owing Con- orrection	500 to 2,000	0.1%	1000	All	Immedi- ately	Tuning	*1	
Pn143	2		owing Con- the Forward	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1	
	1	1	Direction Continued on payt page								

Continued on next page.

							Cor	tinued from	n previou	s page.
Parameter No.	Size	Na	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn144	2	Model Follo trol Bias in t Direction		0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn145	2	Vibration Su Frequency	appression 1 A	10 to 2,500	0.1 Hz	500	All	Immedi- ately	Tuning	*1
Pn146	2	Vibration Su Frequency I	uppression 1 B	10 to 2,500	0.1 Hz	700	All	Immedi- ately	Tuning	*1
Pn147	2	Model Follo trol Speed F Compensat	-eedforward	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn148	2	Second Mo ing Control		10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*1
Pn149	2	Second Mo ing Control tion	del Follow- Gain Correc-	500 to 2,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn14A	2	Vibration Su Frequency	uppression 2	10 to 2,000	0.1 Hz	800	All	Immedi- ately	Tuning	*1
Pn14B	2	Vibration Su Correction	uppression 2	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
	2	Control-Rel tions	ated Selec-	0000 to 0021	_	0021	All	After restart	Tuning	*1
Pn14F		n.00X0	0 Use 1 Use 2 Use Reserved par	ype Selection tuning-less type tuning-less typ	pe 2. pe 3. ot change.	,				
	2	Anti-Resona trol-Related		0000 to 0011	_	0010	All	Immedi- ately	Tuning	*1
		n.000X	0 Do	nce Control Se not use anti-re anti-resonanc	sonance c	control.				
			Anti-Resonar	nce Control Ad	justment	Selection				
Pn160		n.00X0		not adjust anti- ing without a ho ing.						
				ust anti-resona nout a host refe						
		n.¤X¤¤	Reserved par	rameter (Do no	t change.	)				
		n.X000	Reserved par	rameter (Do no	t change.	)				
	-									
Pn161	2	Anti-Resona quency	ance Fre-	10 to 20,000	0.1 Hz	1000	All	Immedi- ately	Tuning	*1
Pn162	2	Anti-Resona Correction	ance Gain	1 to 1,000	1%	100	All	Immedi-	Tuning	*1
		00110011011	ا		l ı			ately	1.0111.05	

							Con	ntinued fron	n previou	s page.	
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
Pn164	2		nance Filter stant 1 Cor-	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1	
Pn165	2		nance Filter stant 2 Cor-	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1	
Pn166	2	Anti-Resor ing Gain 2	nance Damp-	0 to 1,000	1%	0	All	Immedi- ately	Tuning	*1	
	2	Tuning-less Related Se	s Function- elections	0000 to 2711	-	1400	All	-	Setup	*1	
	Ī		Tuning-less	Selection					Whe		
		n.DDDX		able tuning-les	s function				Enab		
				able tuning-less					resta		
		n.00X0	Speed Cont	peed Control Method						en led	
Pn170				<ul> <li>Use for speed control.</li> <li>Use for speed control and use host controller for position control</li> </ul>					Afte		
				Use for speed control and use host controller for position control						en	
		n.OXOO	Rigidity Leve	igidity Level							
			0 to 7 Se	0 to 7 Set the rigidity level.						edi- ly	
			Tuning-less	Tuning-less Load Level						en led	
		n.X000	0 to 2 Se	t the load level	for the tun	ing-less fu	inction.		Imme ate		
Pn181	2	Mode Swit for Speed	ching Level Reference	0 to 10,000	1 mm/s	0	Linear	Immedi- ately	Tuning	*1	
Pn182	2	Mode Swit for Acceler	ching Level ation	0 to 30,000	1 mm/ s <sup>2</sup>	0	Linear	Immedi- ately	Tuning	*1	
Pn205	2	Multiturn L	imit	0 to 65,535	1 rev	65535	Rotary	After restart	Setup	*1	
	2	Position Control tion Select	ontrol Func- ions	0000 to 2210	-	0010	All	After restart	Setup	*1	
					-		•	•	1		
		n.DDDX	Reserved pa	rameter (Do no	ot change.	)					
		n.DDXD	Reserved pa	rameter (Do no	ot change.	)					
		n.¤X¤¤	Reserved pa	rameter (Do no	ot change.	)					
Pn207			/COIN (Posit	ioning Comple	tion Outp	ut) Signal	Output Timin	g			
				tput when the a					same or le	SS	
		n.XDDD	Ou 1 the	Output when the absolute value of the position error is the same or less than							
			Ou 2 the	2 Output when the absolute value of the position error is the same or less that the setting of Pn522 (Positioning Completed Width) and the reference input 0.							
Pn20A	4	Number of Encoder S	of External 4 to pitch/ Scale Pitches 1,048,576 revolu- tion 32768 Rotary After setart Se						Setup	*1	
Pn20E	4	Electronic (Numerato	Gear Ratio r)	1 to 1,073,741,824	1	16	All	After restart	Setup	*1	
			· /	.,,,	L		I	Continue	 		

Continued on next page.

							Con	tinued from	n previou	s page.
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn210	4	Electronic (Denomina	Gear Ratio itor)	1 to 1,073,741,824	1	1	All	After restart	Setup	*1
Pn212	4	Number of Output Pu		16 to 1,073,741,824	1 P/Rev	2048	Rotary	After restart	Setup	*1
	2	Fully-close Selections		0000 to 1003	-	0000	Rotary	After restart	Setup	*1
		n.DDDX	Reserved par	ameter (Do no	ot change.	)				
Pn22A		n.🗆🗆 X 🗆	Reserved par	ameter (Do no	ot change.	)				
		n.🗆X🗆 🗆	Reserved par	ameter (Do no	ot change.	)				
		n.XDDD	0 Use	Control Speed motor encode external enco	er speed.		n			
	2		ontrol Expan- ion Selections	0000 to 0001	-	0000	All	After restart	Setup	*1
Pn230		n.000X n.00X0 n.0X00 n.X000	1     Cor       Reserved par       Reserved par	npensate forw npensate rever rameter (Do no rameter (Do no rameter (Do no	rse referen ot change. ot change.	) )				
Pn231	4	Backlash (	Compensation	-500,000 to 500,000	0.1 ref- erence units	0	All	Immedi- ately	Setup	*1
Pn233	2	Backlash ( tion Time (	Compensa- Constant	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	*1
Pn281	2	Encoder C tion	utput Resolu-	1 to 4,096	1 edge/ pitch	20	All	After restart	Setup	*1
Pn282	4	Linear Enc Pitch	oder Scale	0 to 6,553,600	0.01 μm	0	Linear	After restart	Setup	*1
Pn304	2	Jogging S	peed	0 to 10,000	Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup>	500	Rotary	Immedi- ately	Setup	*1
Pn305	2	Soft Start A	Acceleration	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*2
Pn306	2	Soft Start Time	Deceleration	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*2
Pn308	2	Time Cons		0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	*1
Pn30A	2	Servo OFF Stops	on Time for and Forced	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1
Pn30C	2	Speed Fee Average M Time		0 to 5,100	0.1 ms	0	All	Immedi- ately	Setup	*1

Continued from previous page.

	Continued from previous par						s paye.			
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Vibration D Selections		0000 to 0002	-	0000	All	Immedi- ately	Setup	*1
			Vibration Det	ection Selection	on					
		n.DDDX		not detect vibr	ration.					
Pn310				put a warning	. ,					
111010			2 Out	put an alarm (/	A.520) if vi	bration is (	detected.			
		n.🗆🗆 X🗆	Reserved par	rameter (Do no	ot change.	)				
		n.¤X¤¤	Reserved par	rameter (Do no	ot change.	)				
	1	n.XDDD	Reserved par	rameter (Do no	ot change.	)				
				, and the second s						
Pn311	2	Vibration D sitivity	Detection Sen-	50 to 500	1%	100	All	Immedi- ately	Tuning	*1
Pn312	2	Vibration D Level	Detection	0 to 5,000	1 min <sup>-1</sup>	50	Rotary	Immedi- ately	Tuning	*1
Pn316	2	Maximum	Motor Speed	0 to 65,535	1 min <sup>-1</sup>	10000	Rotary	After restart	Setup	*1
Pn324	2		f Inertia Cal- arting Level	0 to 20,000	1%	300	All	Immedi- ately	Setup	*1
Pn383	2	Jogging Sp	peed	0 to 10,000	1 mm/s	50	Linear	Immedi- ately	Setup	*1
Pn384	2	Vibration D Level	Detection	0 to 5,000	1 mm/s	10	Linear	Immedi- ately	Tuning	*1
Pn385	2	Maximum	Motor Speed	1 to 100	100 mm/s	50	Linear	After restart	Setup	*1
Pn401	2		e First Torque Filter Time	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1
Pn402	2	Forward To	orque Limit	0 to 800	1%*3	800	Rotary	Immedi- ately	Setup	*1
Pn403	2	Reverse To	orque Limit	0 to 800	1%*3	800	Rotary	Immedi- ately	Setup	*1
Pn404	2	Forward Ex Limit	xternal Torque	0 to 800	1%*3	100	All	Immedi- ately	Setup	*1
Pn405	2	Reverse Ex Limit	kternal Torque	0 to 800	1%*3	100	All	Immedi- ately	Setup	*1
Pn406	2	Emergency	y Stop Torque	0 to 800	1%*3	800	All	Immedi- ately	Setup	*1
Pn407	2	Speed Lim Torque Co		0 to 10,000	1 min <sup>-1</sup>	100	Rotary	Immedi- ately	Setup	*1

				_					itinued from		
Parameter No.	Size		ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Torque-Rel tion Select	ated Func ions	-	0000 to 1111	-	0000	All	-	Setup	*1
			Notch Fi	ter S	Selection 1					Whe Enabl	
		n.□□□X	0		able first stage able first stage					Imme atelv	
											_
			Speed Li	mit \$	Selection					Whe Enable	
			0	Use the smaller of the maximum motor speed and the setting of Pn407 as the speed limit.							
<b>D</b> (00		n.🗆🗆 X 🗆		Use the smaller of the maximum motor speed and the setting of Pn480 as the speed limit.						After	
Pn408			1	Use the smaller of the overspeed alarm detection speed and the setting of Pn407 as the speed limit.							rt
				Use the smaller of the overspeed alarm detection speed and the setting of Pn480 as the speed limit.						1	
	Notch Filter Selection 2									When Enable	
		n.¤X¤¤	0		able second st able second sta	0				Immeo ately	
			Friction (	ction Compensation Function Selection							
		n.XDDD	0		able friction co					Immed ately	
			1	Ena	able friction cor	npensatio	n.			atery	·
Pn409	2	First Stage Frequency	Notch Filf	er	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn40A	2	First Stage Q Value	Notch Filt	er	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn40B	2	First Stage Depth	Notch Filt	er	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn40C	2	Second Sta ter Frequer		Fil-	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn40D	2	Second Stater Q Value	0	Fil-	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn40E	2	Second Stater Depth	age Notch	Fil-	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn40F	2	Second Sta Torque Ref Frequency			100 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn410	2	Second Sta Notch Filte		nd	50 to 100	0.01	50	All	Immedi- ately	Tuning	*1
Pn412	2	Torque Ref	otch Filter Q Value     Store 100     0.01     Store 100     All     ately       rst Stage Second orque Reference Filter     0 to 65,535     0.01 ms     100     All     Immediately						Tuning	*1	

Continued from previous page.

Continued from previous page.

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Torque-Rel tion Select		0000 to	_	0000	All	Immedi-	Setup	*1
	-	tion Select	IONS 2	1111				ately		L
		n.DDDX	Notch Filter	Selection 3 able third stage	e notch filt	er				
				able third stage						
			Notch Filter	Selection 4						
Pn416		n.🗆🗆 X 🗆	0 Dis	able fourth sta	ge notch f	ilter.				
			1 Ena	able fourth stag	ge notch fi	ter.				
			Notch Filter							
		n.¤X¤¤		able fifth stage able fifth stage						
		n.XDDD	Reserved pa	rameter (Do no	ot change	.)				
		Third Ctoo	Notob Filtor			[		Immedi		
Pn417	2	Frequency	e Notch Filter	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn418	2	Third Stage Q Value	e Notch Filter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn419	2	Third Stage Depth	e Notch Filter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn41A	2	Fourth State ter Frequer	ge Notch Fil- ncy	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn41B	2	Fourth State ter Q Value	ge Notch Fil-	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn41C	2	Fourth State ter Depth	ge Notch Fil-	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn41D	2	Fifth Stage Frequency	Notch Filter	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn41E	2	Fifth Stage Q Value	Notch Filter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn41F	2	Fifth Stage Depth	Notch Filter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
	2	Speed Rip sation Sele	ple Compen- ections	0000 to 1111	-	0000	Rotary	-	Setup	*1
			Speed Ripple	e Compensatio	on Functio	on Selectio	n		Whe Enab	
		n.DDDX	0 Dis	able speed ripp	ole compe	nsation.			Imme	
			1 Ena	able speed ripp	le compe	nsation.			atel	У
Pn423			Speed Ripple tion Selection	e Compensatio	on Informa	ation Disag	greement Wa	rning Detec-	Whe Enab	
1 11420		n.□□X□		ect A.942 alar					Afte	
			1 Do	not detect A.9	42 alarms				resta	art
			Speed Ripple	e Compensatio	on Enable	Condition	Selection		Whe Enabl	
		n.¤X¤¤	0 Sp	eed reference					Afte	er
			1 Mo	tor speed					resta	ırt
		n.XDDD	Reserved pa	rameter (Do no	ot change	.)				
		1			1	1		I	1	
Pn424	2	Torque Lim cuit Voltage	iit at Main Cir- e Drop	0 to 100	1% <sup>*2</sup>	50	All	Immedi- ately	Setup	*1
								Continue	· .	

Continued on next page.

		1					Cor	tinued fron	n previou	s page.
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn425	2	Release Ti Limit at Ma Voltage Dr		ue 0 to 1,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn426	2	Torque Feedforward Average Movement Time Speed Ripple Compen-		0 to 5,100	0.1 ms	0	All	Immedi- ately	Setup	*1
Pn427	2	Speed Rip sation Ena	ple Compe ble Speed	<sup>n-</sup> 0 to 10,000	1 min <sup>-1</sup>	0	Rotary	Immedi- ately	Tuning	*1
	2	Pressure F Selection S		0000 to 1111	-	0000	All	After restart	Setup	3-14
		n.000X	0	eedback Enable S Disable pressure Enable pressure f	feedback o		l perform norr	nal torque c	ontrol.	
Pn440		n.DDXD	Pressure F	eedback Polarity Do not reverse th Reverse the polar	Switch e polarity.					
		n.OXOO	Reserved	parameter (Do not	t change.)					
		n.XDDD	Torque/Fo	rce Control Gravit	y Compens	sation Swit	tch			
				Disable gravity co	•					
			1	Enable gravity co	mpensatio	n.				
Pn441	2	Reserved p not change	oarameter ([ e.)	Do _	_	100	All	_	-	-
Pn442	2	Pressure F Control 1 F Feedback Time		al 0 to 51,200	0.01 ms	2000	All	Immedi- ately	Setup	3-20
Pn444	2	Pressure F Control 1 F Feedback forward		0 to 1,000	1%	100	All	Immedi- ately	Setup	3-20
Pn445	2	Reserved p not change	parameter ([ e.)	Do _	_	0	All	_	_	-
Pn446	2	Reserved p not change	parameter ([ e.)	- oc	-	95	All	-	-	_
Pn447	2	Pressure F Loop Devia Level	eedback ation Overflo	ow 0 to 800	1%	100	All	Immedi- ately	Setup	3-20
Pn448	2	Pressure F set	eedback O	ff10,000 to 10,000	0.01%	0	All	Immedi- ately	Setup	3-16
Pn449	2	Reserved p not change	oarameter ([ e.)	Do _	-	0	All	-	-	_
Pn44A	2	Pressure F ter	eedback Fi	<sup>l-</sup> 0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	3-16
Pn44C	2	Pressure F Enable Lev		0 to 10,000	0.01%	1000	All	Immedi- ately	Setup	3-6
Pn44D	2	Pressure F Overflow E Level		0 to 800	1%	300	All	Immedi- ately	Setup	3-16
Pn44E	2	Pressure F Overflow D Time	Detection	0 to 5,000	0.1 ms	0	All	Immedi- ately	Setup	3-16
Pn450	2	Pressure F Control 1 F Feedback ential Time	Pressure Loop Differ	0 to 51,200	0.1 ms	0	All	Immedi- ately	Setup	3-20
Pn451	2	Pressure F Control 1 F Feedback ential Filter	Pressure Loop Differ	0 to 10,000	1%	100	All	Immedi- ately	Setup	3-20

Continued	from	previous	nage
Continucu	nom	provious	puge.

	Continued from previous pag										
Parameter No.	Size	Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
Pn452	2	Pressure Feedback Control 1 Pressure Feedback Loop Propor- tional Gain 2		0 to 10,000	1%	100	All	Immedi- ately	Setup	3-20	
Pn456	2	Sweep Torque Refer- ence Amplitude		1 to 800	1%	15	All	Immedi- ately	Tuning	*1	
	2	Pressure F Selection S		0000 to 0011	-	0011	All	After restart	Setup	3-17	
Pn458	n.000X		Pressure Feedback Control Mode Selection Switch         0       Set mode 1.         1       Set mode 2.         Pressure Feedback Type Selection Switch         0       Set pressure feedback control 1.								
			1 Set pressure feedback control 2.								
	n.DXDD		Reserved parameter (Do not change.)								
	n.XDDD Reserved parameter (Do not change.)										
Pn459	2	Gravity Co Reference Torque Co		0 to 10,000	0.01%	500	All	Immedi- ately	Setup	-	
Pn45A	2	Pressure Feedback Dis- able Level		0 to 10,000	0.01%	1000	All	Immedi- ately	Setup	3-6	
Pn45B	2	Reserved parameter (Do not change.)		-	-	50	All	_	-	_	
Pn45C	2	Reserved parameter (Do not change.)		-	-	150	All	-	-	-	
Pn45D	2	Reserved parameter (Do not change.)		-	-	100	All	-	-	-	
Pn45E	2		eedback Ref- er Time Con-	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	-	
	2	Notch Filte Selections	r Adjustment 1	0000 to 0101	-	0101	All	Immedi- ately	Tuning	*1	
D= 400		n.000X	Notch Filter Adjustment Selection 1         0       Do not adjust the first stage notch filter automatically during execution of auto- tuning without a host reference, autotuning with a host reference, and custom tuning.         1       Adjust the first stage notch filter automatically during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.         Beserved parameter (Do not change )								
Pn460											
		n.0X00	0 Do aut cus 1 ing	Adjustment Selection 2 o not adjust the second stage notch filter automatically during execution of atotuning without a host reference, autotuning with a host reference, and astom tuning. djust the second stage notch filter automatically during execution of autotun- g without a host reference, autotuning with a host reference, and custom ning.							
	n.XDDD Reserved parameter (Do not change.)										
Pn467	2	Pressure Feedback Sensor Gain 1		0 to 10,000	1%	0	Rotary	Immedi- ately	Setup	3-13	
Pn468	2	Pressure Feedback Sensor Gain 2		0 to 10,000	1%	0	Rotary	Immedi- ately	Setup	3-13	
Pn469	2	Pressure Feedback Sensor Gain 3		0 to 10,000	1%	0	Rotary	Immedi- ately	Setup	3-13	
	1	1		1	1		1		1	1	

Continued on next page.

							tinued fron	· ·	
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn46A	2	Pressure Feedback Sensor Gain 4	0 to 10,000	1%	0	Rotary	Immedi- ately	Setup	3-13
Pn46B	2	Pressure Feedback Sensor Gain 5	0 to 10,000	1%	0	Rotary	Immedi- ately	Setup	3-13
Pn480	2	Speed Limit during Force Control	0 to 10,000	1 mm/s	100	Linear	Immedi- ately	Setup	*1
Pn481	2	Polarity Detection Speed Loop Gain	10 to 20,000	0.1 Hz	400	Linear	Immedi- ately	Tuning	-
Pn482	2	Polarity Detection Speed Loop Integral Time Constant	15 to 51,200	0.01 ms	3000	Linear	Immedi- ately	Tuning	_
Pn483	2	Forward Force Limit	0 to 800	1% <sup>*3</sup>	30	Linear	Immedi- ately	Setup	*1
Pn484	2	Reverse Force Limit	0 to 800	1%*3	30	Linear	Immedi- ately	Setup	*1
Pn485	2	Polarity Detection Reference Speed	0 to 100	1 mm/s	20	Linear	Immedi- ately	Tuning	-
Pn486	2	Polarity Detection Refer- ence Acceleration/ Deceleration Time	0 to 100	1 ms	25	Linear	Immedi- ately	Tuning	-
Pn487	2	Polarity Detection Con- stant Speed Time	0 to 300	1 ms	0	Linear	Immedi- ately	Tuning	-
Pn488	2	Polarity Detection Refer- ence Waiting Time	50 to 500	1 ms	100	Linear	Immedi- ately	Tuning	_
Pn48E	2	Polarity Detection Range	1 to 65,535	1 mm	10	Linear	Immedi- ately	Tuning	_
Pn490	2	Polarity Detection Load Level	0 to 20,000	1%	100	Linear	Immedi- ately	Tuning	-
Pn495	2	Polarity Detection Con- firmation Force Refer- ence	0 to 200	1%	100	Linear	Immedi- ately	Tuning	_
Pn498	2	Polarity Detection Allow- able Error Range	0 to 30	1 deg	10	Linear	Immedi- ately	Tuning	-
Pn49F	2	Speed Ripple Compen- sation Enable Speed	0 to 10,000	1 mm/s	0	Linear	Immedi- ately	Tuning	*1
Pn4A0	2	Pressure Feedback One-Parameter Gain Level	1 to 65,535	_	1000	All	Immedi- ately	Setup	3-18
Pn4A3	2	Reserved parameter (Do not change.)	-	-	100	All	-	-	-
Pn4A7	2	Pressure Feedback Control 2 Stability Gain	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Setup	3-18
Pn4A8	2	Pressure Feedback Control 2 Stability Inte- gral Time	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Setup	3-18
Pn4A9	2	Reserved parameter (Do not change.)	-	-	400	All	-	-	-
Pn4AA	2	Reserved parameter (Do not change.)	-	-	2000	All	-	-	-
Pn4AB	2	Reserved parameter (Do not change.)	-	-	0	All	-	-	-
Pn4AC	2	Pressure Feedback Moment of Inertia Ratio	0 to 20,000	1%	100	All	Immedi- ately	Setup	3-18
Pn4AD	2	Reserved parameter (Do not change.)	-	-	0000	All	-	-	-
Pn4D0	2	Reserved parameter (Do not change.)	_	-	0	All	_	-	-
Pn4D1	2	Reserved parameter (Do not change.)	_	-	0	All	-	-	-
Pn502	2	Rotation Detection Level	1 to 10,000	1 min <sup>-1</sup>	20	Rotary	Immedi- ately	Setup	*1
Pn503	2	Speed Coincidence Detection Signal Output Width	0 to 100	1 min <sup>-1</sup>	10	Rotary	Immedi- ately	Setup	*1
Pn506	2	Brake Reference-Servo OFF Delay Time	0 to 50	10 ms	0	All	Immedi- ately	Setup	*1

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn507	2	Brake Refe put Speed	erence Out- Level	0 to 10,000	1 min <sup>-1</sup>	100	Rotary	Immedi- ately	Setup	*1
Pn508	2	Servo OFF mand Wait	-Brake Cor ing Time	<sup>n-</sup> 10 to 100	10 ms	50	All	Immedi- ately	Setup	*1
Pn509	2	Momentary ruption Ho		er- 20 to 50,000	1 ms	20	All	Immedi- ately	Setup	*1
	2	Input Signa 1	al Selection	s 0000 to FFF2	-	1881	All	After restart	Setup	*1
		n.000X n.00X0	Reserved	parameter (Do no parameter (Do no parameter (Do no	ot change	.)				
Pn50A	1	n.X000	0Ena1Ena2Ena3Ena4Ena5Ena6Ena7Set8Set9EnaAEnaCEnaDEna	ward Drive Prohil able forward drive able forward drive able forward drive able forward drive able forward drive able forward drive able forward drive the signal to alwa able forward drive able forward drive	when CN1 when CN1	-13 input -7 input si -8 input si -9 input si -10 input -11 input -12 input t forward di -13 input -7 input si -9 input si -10 input	signal is ON (c ignal is ON (cl ignal is ON (cl ignal is ON (cl signal is ON (c signal is ON ( signal is ON ( drive. rive. signal is OFF (c ignal is OFF (c ignal is OFF (c signal is OFF (c	losed). losed). close		

Continued on next page.

No.	Size	IN	ame	Setting	Setting	Default	Applicable	When	Classi-	Refe
				Range	Unit	Setting	Motors	Enabled	fication	enc
	2	Input Signa	al Selection	s 0000 to FFFF	-	8882	All	After restart	Setup	*1
						I	I	I		
	.									_
			· · ·	v <mark>erse Drive Proh</mark> il Enable reverse dr	, 0			N (alagad)		
			-	Enable reverse dr			9	, ,		
				Enable reverse dr			0	、 ,		
				Enable reverse dr			0	, ,		
			4	Enable reverse dr	ive when C	N1-10 inp	out signal is O	N (closed).		
			5	Enable reverse dr	ive when C	CN1-11 inp	out signal is O	N (closed).		
				Enable reverse dr		•	0	N (closed).		
		n.🗆 🗆 🗆 X		Set the signal to a						
				Set the signal to a Enable reverse dr	-			EE (opon)		
				Enable reverse dr			-			
			-	Enable reverse dr		1	0	(1)		
			С	Enable reverse dr	ive when C	N1-9 inpu	it signal is OF	F (open).		
			D	Enable reverse dri	ve when C	CN1-10 inp	out signal is O	FF (open).		
				Enable reverse dr	ve when C	CN1-11 inp	out signal is O	FF (open).		
			F	Enable reverse dr	ve when C	CN1-12 inp	out signal is O	FF (open).		
		n.🗆🗆 X 🗆	Reserved	parameter (Do no	ot change	.)				
150B			/P-CL (Fo	rward External To	orque Limi	t Input) Sid	gnal Allocatio	n		
				Active when CN1			-			
			1.	Active when CN1	-7 input si	gnal is ON	(closed).			
				Active when CN1		<i>,</i>	, ,			
				Active when CN1						
				Active when CN1		0	, ,			
				Active when CN1		0	, ,			
		n.¤X¤¤		The signal is alwa						
				The signal is alwa	-					
				Active when CN1			F (open).			
			A	Active when CN1	-7 input si	gnal is OFF	(open).			
			B.	Active when CN1	-8 input si	gnal is OFF	(open).			
			С	Active when CN1	-9 input si	gnal is OFF	(open).			
				Active when CN1		0				
				Active when CN1	· ·	0	( ,			
			F	Active when CN1	- 12 input s	signal is OF	r (open).			
				verse External To	-		-			
		n.XDDD		The allocations ar		e as the /F	-CL (Forward	External To	rque Limit	

Continued from previous page.

Continued from previous page.

								Con	itinued fron	n previou	s page
Parameter No.	Size	N	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Output Sig	gnal Selec-	-	0000 to	_	0000	All	After	Setup	*1
		tions 1			6666				restart		
			/COIN (F	Positi	oning Comple	tion Outp	ut) Signal	Allocation			
			0	Disa	abled (the abov	/e signal c	output is no	ot used).			
		n.🗆🗆 🗆 X	1	Out	put the signal	from the C	N1-1 or C	N1-2 output	terminal.		
			2		put the signal						
			3		put the signal			CN1-26 outpu	ut terminal.		
			4 to 6	Res	erved setting (	Do not us	e.)				
Pn50E			/V-CMP	(Spe	ed Coincidend	e Detecti	on Output	) Signal Alloc	ation		
		n.□□X□	0 to 6		allocations are cations.	e the same	e as the /C	OIN (Position	ing Complet	ion) signal	
			/TGON (	Rota	tion Detection	Output) S	Signal Allo	cation			
		n.¤X¤¤	0 to 6	The	allocations are cations.		-		ing Complet	ion) signal	
			/S-RDY	(Serv	o Ready) Sign	al Allocat	ion				
		n.X000	0 to 6	The	allocations are			OIN (Position	ing Complet	ion) signal	
	2	Output Sig tions 2	gnal Selec-	-	0000 to 6666	-	0100	All	After restart	Setup	*1
			/CLT (To	raue	Limit Detectio	n Output)	Signal All	ocation			
					abled (the abov	. ,	•				
			1		put the signal	-			terminal.		
		n.🗆 🗆 🗆 X	2	Out	put the signal	from the C	N1-23 or	CN1-24 outpu	ut terminal.		
			3	Out	put the signal	from the C	N1-25 or	CN1-26 outpu	ut terminal.		
			4 to 6	Res	erved setting (	Do not us	e.)				
Pn50F			/V/LT (Sp	eed	Limit Detection	h) Signal A	Allocation				
		n.🗆 🗆 X 🗆	0 to 6	The	allocations are			LT (Torque Li	mit Detection	n Output) :	sig-
			/BK (Bra	ιke Ο	utput) Signal A	Allocation					
		n.¤X¤¤	0 to 6	The	allocations are allocations.		e as the /C	LT (Torque Li	mit Detectio	n Output) :	sig-
			/WARN (	(Warr	ning Output) S	ignal Allo	cation				
		n.XDDD		1	<u> </u>						

Parameter No.	Size	N	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refe ence
140.		Output Sig	nal Selec-		0000 to	Onit	-		After		
	2	tions 3			0666	-	0000	All	restart	Setup	*1
							I			1	I
			/NFAR (N	lear (	Dutput) Signa	al Allocatio	n				
			0		bled (the abo			ot used).			
			1			0		N1-2 output t	erminal.		
		n.🗆🗆 🗆 X	2	•	0			CN1-24 outpu			
n510			3					CN1-26 outpu			
			4 to 6	Rese	erved setting	(Do not us	e.)				
			Decemica		matar (Da n	at abanga	١				
		n.🗆 🗆 X 🗆	Reserved	a para	ameter (Do no	ot change.	.)				
		n.¤X¤¤	Reserved	d para	ameter (Do no	ot change	)				
		n.XDDD	Reserved	d para	ameter (Do no	ot change	.)				
				•	, ,		,				
	2	Input Sign	al Selection	ns	0000 to		05.40	A.II.	After	Oatur	*1
	2	5			FFFF	_	6543	All	restart	Setup	*1
			/DEC (Or	rigin F	Return Decele	eration Sw	vitch Input)	Signal Alloca	ation		
			0	Activ	ve when CN1	-13 input s	ignal is ON	I (closed).			
			1	Activ	ve when CN1	-7 input się	gnal is ON	(closed).			
			2	Activ	ve when CN1	-8 input się	gnal is ON	(closed).			
			3	Activ	ve when CN1	-9 input się	gnal is ON	(closed).			
			4	Activ	ve when CN1	-10 input s	ignal is ON	l (closed).			
			5	Activ	ve when CN1	-11 input s	ignal is ON	l (closed).			
			6	Activ	ve when CN1	-12 input s	ignal is ON	l (closed).			
		n.🗆🗆 🛛 X	7	The	signal is alwa	ys active.					
			8		signal is alwa	-					
			9	Activ	ve when CN1	-13 input s	ignal is OF	F (open).			
			A		ve when CN1						
			В		ve when CN1						
			С	Activ	ve when CN1	-9 input się	gnal is OFF	(open).			
			D		ve when CN1		•	,			
n511			E		ve when CN1		0	(1)			
			F	Activ	ve when CN1	-12 input s	ignal is OF	F (open).			
			/EXT1 (E	xterna	al Latch Inpu	t 1) Signal	Allocation	า			
			0 to 3	The	signal is alwa	ys inactive					
			4	Activ	ve when CN1	-10 input s	ignal is ON	l (closed).			
			5	Activ	ve when CN1	-11 input s	ignal is ON	l (closed).			
		n.🗆🗆 X 🗆	6	Activ	ve when CN1	-12 input s	ignal is ON	l (closed).			
			D	Activ	ve when CN1	-10 input s	ignal is OF	F (open).			
			E	Activ	ve when CN1	-11 input s	ignal is OF	F (open).			
			F	Activ	ve when CN1	-12 input s	ignal is OF	F (open).			
			7 to C	The	signal is alwa	ys inactive					
			/EXT2 (F	xtern	al Latch Inpu	t 2) Signal	Allocation	1			
		n.¤X¤¤	0 to F		allocations ar			XT1 (External	Latch Input	1) signal a	allo-
			/EXT3 (F	xtern	al Latch Inpu	t 3) Sianal	Allocation	1			
					u	-, -, giiai					
		n.XDDD	0 to F		allocations ar	e the same	as the /F	XT1 (External	Latch Input	1) signal a	3ll0-

Continued from previous page.

	-				1				tinued from		- 1 3 -
Parameter No.	Size	N	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Output Sig Settings	gnal Inverse	9	0000 to 1111	-	0000	All	After restart	Setup	*1
			Output S		I Inversion for		nd CN1-2	Terminals			
		n.DDDX	0		e signal is not ir						
			1	The	e signal is inver	ted.					
			Output S	igna	I Inversion for	<sup>•</sup> CN1-23 a	and CN1-2	4 Terminals			
Pn512		n.🗆🗆 X 🗆	0		e signal is not ir						
			1	The	e signal is inver	ted.					
			Output S	igna	I Inversion for	CN1-25 a	and CN1-2	6 Terminals			
		n.¤X¤¤	0	The	signal is not ir	nverted.					
			1	The	signal is inver	ted.					
				1 0 0	romotor (Do no	at ahanga	1				
		n.XDDD	Reserved	l pai	rameter (Do no	ot change.	.)				
			Reserved	l pai	rameter (Do no	ot change.	.)				
	2		Reserved		0000 to	ot change.	.) 0000	All	After restart	Setup	*1
	2	Output Sig			0000 to	ot change.	·	All		Setup	*1
	2	Output Sig tions 4	gnal Selec-		0000 to 0666	-	0000	All		Setup	*1
	2	Output Sig	gnal Selec-		0000 to	-	0000	All		Setup	*1
	2	Output Sig tions 4	gnal Selec-	l pai	0000 to 0666	- ot change.	0000	All		Setup	*1
	2	Output Sig tions 4	gnal Selec-	l pai	0000 to 0666 rameter (Do no	- bt change.	)			Setup	*1
Pn514	2	Output Sig tions 4	gnal Selec- Reserved Reserved /PM (Pre	l pai l pai	0000 to 0666 rameter (Do no rameter (Do no ative Maintena	- bt change. bt change. ance Outp	0000 ) ) ut) Signal	Allocation		Setup	*1
Pn514	2	Output Sig tions 4 n.□□□X n.□□X	gnal Selec-	l pai l pai vent Dis	0000 to 0666 rameter (Do no rameter (Do no ative Maintena abled (the abo	- ot change. ot change. ance Outp ve signal c	0000 ) ) ut) Signal utput is no	Allocation ot used).	restart	Setup	*1
Pn514	2	Output Sig tions 4	Reserved Reserved PM (Pre 0	I par I par Disa Out	0000 to 0666 rameter (Do no rameter (Do no ative Maintena	- ot change. ot change. ance Outp ve signal c from the C	0000 ) ) ut) Signal utput is no CN1-1 or C	Allocation ot used). N1-2 output t	restart	Setup	*1
Pn514	2	Output Sig tions 4 n.□□□X n.□□X	Reserved Reserved /PM (Pre 0 1	I par I par Vent Dis Out	0000 to 0666 rameter (Do no rameter (Do no ative Maintena abled (the abov put the signal	ot change. ot change. ance Outp ve signal c from the C from the C	0000 ) ) ut) Signal utput is no CN1-1 or C CN1-23 or	Allocation of used). N1-2 output t CN1-24 output	restart erminal.	Setup	*1
Pn514	2	Output Sig tions 4 n.□□□X n.□□X	Reserved Reserved PM (Pre 0 1 2	I par I par Disa Out Out	0000 to 0666 rameter (Do no rameter (Do no ative Maintena abled (the abor put the signal put the signal	- ot change. ance Outp ve signal c from the C from the C from the C	0000 ) () () () () () () () () () () () () (	Allocation of used). N1-2 output t CN1-24 output	restart erminal.	Setup	*1
Pn514	2	Output Sig tions 4 n.□□□X n.□□X	Reserved Reserved /PM (Pre 0 1 2 3 4 to 6	I par J par Vent Disa Out Out Res	0000 to 0666 rameter (Do no rameter (Do no ative Maintena abled (the abor put the signal put the signal put the signal	- ot change. ance Outp ve signal co from the C from the C from the C from the C	0000 ) ) () () () () () () () ()	Allocation of used). N1-2 output t CN1-24 output	restart erminal.	Setup	*1

Continued on next page.

									· · · · · · · · · · · · · · · · · · ·								
Parameter No.	Size		Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence							
	2	Input Sig 7	nal Selections	0000 to FFFF	_	8888	All	After restart	Setup	*1							
Pn516			0         En           1         En           2         En           3         En           4         En           5         En           6         En           7         Se           8         Se           9         En           A         En           B         En	Stop Input) Si able drive wher able drive wher able drive wher able drive wher able drive wher able drive wher able drive wher t the signal to a t the signal to a p). able drive wher able drive wher able drive wher able drive wher	CN1-13 CN1-7 ir CN1-8 ir CN1-9 ir CN1-9 ir CN1-10 CN1-11 CN1-12 always pro always ena CN1-13 CN1-7 ir CN1-8 ir	input signal aput signal aput signal input signal input signa input signa hibit drive able drive (a input signal aput signal	is ON (closed is ON (closed is ON (closed il is ON (closed il is ON (closed il is ON (closed il is ON (closed always force always force always disabl il is OFF (open is OFF (open	ed). d). d). ed). ed). ed). ed). the motor to e forcing the m). ).	17								
			D En	able drive wher	n CN1-10	input signa	l is OFF (ope	, n).									
				able drive wher		1 0	· ·	,		<u> </u>							
		F Enable drive when CN1-12 input signal is OFF (open).															
	n	n.□□X□ Reserved parameter (Do not change.)															
			•	X	<b>,</b>												
	n		Reserved par	X	change.)												
Pn518 <sup>*3</sup>	n	.0X00	Reserved par	ameter (Do not	change.)		All		_								
	n	Safety M Paramete Motor-Lc Deviation	Reserved par Reserved par odule-Related ers ad Position	ameter (Do not	c change.) c change.) c change.) 1 refer- ence	- 1000	All	- Immedi- ately	- Setup	- *1							
Pn51B	n 	Safety M Parameter Motor-Lc Deviation Detection	Reserved par Reserved par odule-Related ers ad Position	ameter (Do not ameter (Do not - 0 to	c change.) c change.) c change.) 1 refer-				- Setup Setup	- *1 *1							
Pn51B Pn51E	4	Safety M Paramete Motor-Lc Deviation Detection flow War	Reserved par Reserved par Reserved par odule-Related ers ad Position Overflow Deviation Over- ning Level Deviation Over-	ameter (Do not ameter (Do not - 0 to 1,073,741,824	c change.) c change.) c change.) 1 refer- ence unit	- 1000	Rotary	ately Immedi-									
Pn51B Pn51E Pn520	<u>n</u> n - 4	Safety M Parameter Motor-Lc Deviation Detection flow War Position flow Alard	Reserved par Reserved par Reserved par odule-Related ers ad Position Overflow Deviation Over- ning Level Deviation Over-	ameter (Do not ameter (Do not - 0 to 1,073,741,824 10 to 100 1 to	change.) cha	- 1000 100 524288	Rotary All	ately Immedi- ately Immedi-	Setup	*1							
Pn51B Pn51E Pn520 Pn522	n n - 4 2 4	Safety M Paramete Motor-Lc Deviation Detection flow War Position flow Alarn Positionin Width Near Sig	Reserved par Reserved par Reserved par Reserved par edule-Related ers ad Position Overflow beviation Over- ning Level Deviation Over- m Level Deviation Over- m Level Deviation Over- m Level Deviation Over- m Level Deviation Over- m Level Deviation Over- m Level	ameter (Do not ameter (Do not ameter (Do not 1,073,741,824 10 to 100 1,073,741,823 0 to	change.) cha	- 1000 524288 0	Rotary All All	ately Immedi- ately Immedi- ately Immedi-	Setup	*1 *1							
Pn51B Pn51E Pn520 Pn522 Pn524	n n - 4 2 4 4 4	Safety M Parameter Motor-Lc Deviation Detection flow War Position flow Alarn Width Near Sign Position flow Alarn Servo ON	Reserved par Reserved R	ameter (Do not ameter (Do not ameter (Do not 0 to 1,073,741,824 10 to 100 1,073,741,823 0 to 1,073,741,824 1 to	c change.) c change.)	- 1000 524288 0 7 107374	Rotary All All All	ately Immedi- ately Immedi- ately Immedi- ately	Setup Setup Setup	*1 *1 *1							
Pn51B Pn51E Pn520 Pn522 Pn524 Pn526	n n - 4 2 4 4 4 4	Safety M Parameter Motor-Lc Deviation Detection Position flow War Position flow Alarn Width Near Sign Position flow Alarn Servo ON Position flow War	Reserved par Reserved par Reserved par Reserved par Reserved par edule-Related ers ad Position Overflow Deviation Over- ning Level Deviation Over- m Level nal Width Deviation Over- m Level at Deviation Over- ning Level at N	ameter (Do not ameter (Do not ameter (Do not 0 to 1,073,741,824 10 to 100 1,073,741,823 0 to 1,073,741,824 1 to 1,073,741,824 1 to	c change.) c change.)	- 1000 524288 0 7 107374 1824 524288	Rotary All All All All	ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately	Setup Setup Setup Setup	*1 *1 *1 *1							
Pn51B Pn51E Pn520 Pn522 Pn524 Pn526 Pn528	n n - 4 2 4 4 4 4 4	Safety M Paramete Motor-Lc Deviation Detection Position flow War Positionin Width Near Sign Position flow Alarn Servo ON Position flow War Servo ON Speed Li Servo ON	Reserved par Reserved Reserve	ameter (Do not ameter (Do not ameter (Do not 1,073,741,824 10 to 100 1,073,741,823 0 to 1,073,741,824 1 to 1,073,741,824 1 to 1,073,741,823	c change.) c change.)	- 1000 100 524288 0 7 107374 1824 524288 0	Rotary All All All All All	ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately	Setup Setup Setup Setup Setup	*1 *1 *1 *1 *1							
Pn518*3 Pn51B Pn51E Pn520 Pn522 Pn524 Pn526 Pn528 Pn529 Pn52A	n n - 4 2 4 4 4 4 4 2	Safety M Paramete Motor-Lc Deviation Detection Position flow War Positionin Width Near Sign Position flow Alarn Servo ON Position flow War Servo ON Speed Li Servo ON	Reserved par Reserved Reserve	ameter (Do not ameter (Do not ameter (Do not 0 to 1,073,741,824 10 to 100 1,073,741,823 0 to 1,073,741,824 1,073,741,824 1,073,741,823 10 to 100	change.) cha	- 1000 100 524288 0 7 107374 1824 524288 0 100	Rotary All All All All All All	ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi-	Setup Setup Setup Setup Setup Setup	*1 *1 *1 *1 *1 *1							

Continued from previous page.

							Con			
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn52C	2	Base Curre at Motor O Detection	ent Derating verload	10 to 100	1%	100	All	After restart	Setup	*1
	2	Program Je Related Se		0000 to 0005	-	0000	All	Immedi- ately	Setup	*1
Pn530		n.□□□X n.□□X□ n.□X□	0 1 2 3 4 5 Reserved	ogging Operatio Waiting time in P novements in Pn Waiting time in P n Pn535 → Reve Pn536 Waiting time in P n Pn535 → Forw Pn536 parameter (Do n	$\begin{array}{c} n535 \rightarrow Fc\\ 536\\ n535 \rightarrow Fc\\ rse by trav\\ n535 \rightarrow Fc\\ rad by trav\\ ot change\\ \hline \end{array}$	everse by t prward by t everse by t everse by t prward by t prward by t rel distance everse by t rel distance	ravel distance ravel distance ravel distance ravel distance ravel distance avel distance in Pn531) × ravel distance	e in Pn531) > e in Pn531 - Number of r	< Number < Number < Number < Number < Number > Waiting t > Waiting t	of of of of of ime s in
		n.XDDD	Reserved	parameter (Do n	0	.)				
Pn531	4		Reserved	parameter (Do n	ot change	32768	All	Immedi- ately	Setup	*1
	4	Program Je Distance	ogging Trav	el 1 to 1,073,741,824	1 refer- ence unit Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1	,	All Rotary		Setup	*1
Pn533		Program Ju Distance Program Ju ment Spee	ogging Trav ogging Mov d	parameter (Do n           el         1 to           1,073,741,824           e-         1 to 10,000	1 refer- ence unit Rotary: 1 min <sup>-1</sup> Direct Drive:	32768		ately Immedi-		
Pn533 Pn534	2	Program Ju Distance Program Ju ment Spee Program Ju eration/Dea Time	ogging Trav ogging Mov d	parameter (Do n           el         1 to           1,073,741,824           e-         1 to 10,000           el-         2 to 10,000	1 refer- ence unit Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup>	32768 500	Rotary	ately Immedi- ately Immedi-	Setup	*1
Pn533 Pn534 Pn535	2	Program Ju Distance Program Ju ment Spee Program Ju eration/Dea Time Program Ju ing Time	ogging Trav ogging Mov d ogging Acc celeration ogging Wait	parameter (Do n         el       1 to         1,073,741,824         e-       1 to 10,000         el-       2 to 10,000         el-       0 to 10,000	1 refer- ence unit Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup> 1 ms	32768 500 100	Rotary All	ately Immedi- ately Immedi- ately Immedi-	Setup	*1
Pn533 Pn534 Pn535 Pn536	2 2 2 2	Program Ju Distance Program Ju ment Spee Program Ju eration/De Time Program Ju ing Time Program Ju ber of Mov Analog Mo	ogging Trav ogging Mov d ogging Acc celeration ogging Wait ogging Wait ogging Nun ements nitor 1 Offs	parameter (Do n           el         1 to           1,073,741,824           e-         1 to 10,000           el-         2 to 10,000           el-         0 to 10,000           el-         0 to 1,000           el-         1,000 to 1,000	1 refer- ence unit Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup> 1 ms 1 ms	32768 500 100 100	Rotary All All	ately Immedi- ately Immedi- ately Immedi- ately	Setup Setup Setup	*1 *1 *1
Pn533 Pn534 Pn535 Pn536 Pn550	2 2 2 2 2 2	Program Ju Distance Program Ju ment Spee Program Ju eration/Der Time Program Ju ing Time Program Ju ber of Mov Analog Mov Voltage	ogging Trav ogging Mov d ogging Acc celeration ogging Wait ogging Wait ogging Nun ements nitor 1 Offs nitor 2 Offs	parameter (Do n           el         1 to           1,073,741,824           e-         1 to 10,000           el-         2 to 10,000           el-         0 to 10,000           el-         0 to 1,000           el-         -10,000 to           10,000         -10,000 to	1 refer- ence unit Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup> 1 ms 1 ms Times	32768 500 100 1	Rotary All All All	ately Immedi- ately Immedi- ately Immedi- ately Immedi-	Setup Setup Setup Setup	*1 *1 *1 *1
Pn533 Pn534 Pn535 Pn536 Pn550 Pn551	2 2 2 2 2 2	Program Ju Distance Program Ju ment Spee Program Ju eration/Der Time Program Ju ing Time Program Ju ber of Mov Analog Mov Voltage	ogging Trav ogging Mov d ogging Acc celeration ogging Wait ogging Wait ogging Nun ements nitor 1 Offs	parameter (Do n           el         1 to           1,073,741,824           e-         1 to 10,000           2 to 10,000           -         0 to 10,000           -         0 to 1,000           et         -10,000 to           10,000         -10,000 to           -         -10,000 to	1 refer- ence unit Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup> 1 ms 1 ms 1 ms Times 0.1 V	32768 500 100 1 0	Rotary All All All All	ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi-	Setup Setup Setup Setup Setup	*1 *1 *1 *1
Pn533 Pn534 Pn535 Pn536 Pn550 Pn551 Pn552	2 2 2 2 2 2 2 2 2	Program Ju         Distance         Program Ju         ment Speed         Program Ju         eration/Dec         Time         Program Ju         eration/Dec         Time         Program Ju         ing Time         Program Ju         ber of Mov         Analog Mo         Voltage         Analog Mo         Analog Mo         nification         Analog Mo         nification	ogging Trav ogging Mov d ogging Acc celeration ogging Wait ogging Wait ogging Nun ements nitor 1 Offs nitor 2 Offs nitor 1 Mag nitor 1 Mag	parameter (Do n           el         1 to           1,073,741,824           e-         1 to 10,000           2 to 10,000           -         0 to 10,000           -         0 to 1,000           et         -10,000 to 10,000           et         -10,000 to 10,000           -         -10,000 to 10,000           -         -10,000 to 10,000	1 refer- ence unit Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup> 1 ms 1 ms 1 ms 0.1 V 0.1 V	32768 500 100 100 1 0 0	Rotary All All All All All All	ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately	Setup Setup Setup Setup Setup Setup	*1 *1 *1 *1 *1
Pn533 Pn534 Pn535 Pn536 Pn550 Pn551 Pn552 Pn553	2 2 2 2 2 2 2 2 2 2 2	Program Ju         Distance         Program Ju         ment Spee         Program Ju         eration/Der         Time         Program Ju         eration/Der         Time         Program Ju         ing Time         Program Ju         ber of Mov         Analog Mo         Voltage         Analog Mo         Nalog Mo         nification         Power Cor         Monitor Ur	ogging Trav ogging Mov d ogging Acc celeration ogging Wait ogging Wait ogging Wait nitor 1 Offs nitor 2 Offs nitor 2 Offs nitor 1 Mag nitor 2 Mag nitor 2 Mag	parameter (Do n           parameter (Do no)           parameter (Do n	1 refer- ence unit Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup> 1 ms 1 ms 1 ms 0.1 V 0.1 V 0.1 V × 0.01	32768 500 100 100 1 0 100 100	Rotary All All All All All All	ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately	Setup Setup Setup Setup Setup Setup Setup	*1 *1 *1 *1 *1 *1
Pn533 Pn534 Pn535 Pn536 Pn550 Pn551 Pn552 Pn553 Pn55A	2 2 2 2 2 2 2 2 2 2 2 2 2	Program Junc         Distance         Program Junc         ment Speed         Program Junc         Program Junc	ogging Trav ogging Mov ogging Acc celeration ogging Wait ogging Wait ogging Wait ogging Nun ements nitor 1 Offs nitor 2 Offs nitor 2 Offs nitor 2 Mag nitor 1 Mag nitor 2 Mag isumption it Time ibration <i>W</i> idth	parameter (Do n           el         1 to           1,073,741,824           e-         1 to 10,000           2 to 10,000           -         0 to 10,000           -         0 to 1,000           et         -10,000 to           10,000         -10,000 to           -         -	1 refer- ence unit Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup> 1 ms 1 ms 1 ms 0.1 V 0.1 V × 0.01 × 0.01	32768 500 100 100 1 0 100 100	Rotary All All All All All All All All	ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately	Setup Setup Setup Setup Setup Setup Setup Setup	*1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *
Pn531 Pn533 Pn533 Pn534 Pn535 Pn536 Pn550 Pn551 Pn552 Pn553 Pn553 Pn55A Pn560 Pn561	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Program January         Distance         Program January         ment Speed         Program January         Program January         eration/Detrime         Program January         Program January         eration/Detrime         Program January         Analog Monury         Analog Monury         Power Cor         Monitor Ur         Residual V	ogging Trav ogging Mov ogging Acc celeration ogging Wait ogging Wait ogging Wait ogging Nun ements nitor 1 Offs nitor 2 Offs nitor 2 Offs nitor 2 Mag nitor 1 Mag nitor 2 Mag isumption it Time ibration <i>W</i> idth	parameter (Do n           el         1 to           1,073,741,824           e-         1 to 10,000           2 to 10,000           -         0 to 10,000           -         0 to 1,000           et         -10,000 to           1,0,000         -10,000 to           -         -10,000 to           -         -10,000 to           -         -10,000 to           1,0,000         -10,000 to           -         -10,000 to           1,0,000         -           -         -10,000 to           1,0,000         -           -         -           -         -           -         1,0,000           -         -           -         -           -         -           -         -           -         -           -         -           -         1           -         1           -         1           -         1           -         1	t refer- ence unit Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 1 ms 1 ms 1 ms 0.1 V 0.1 V × 0.01 × 0.01 1 min	32768 500 100 100 1 0 100 100 100 1	Rotary All All All All All All All All All	ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately Immedi- ately	Setup Setup Setup Setup Setup Setup Setup Setup	*1 *1 *1 *1 *1 *1 *1 *1 *1

Parametric         Setting Barting         Default         Applicable Setting         When Default         Constraint         Notice Instraint         Refer- Instraint           Pn582         2         Speed Conscience Detection Signal Output         0 to 10,000         1 mm/s         10         Linear         Immedi- isely         Stup         *1           Pn582         2         Speed Linear         0 to 10,000         1 mm/s         100         Linear         Immedi- isely         Setup         *1           Pn583         2         Speed Linear Instrained Speed Unit         0 to 10,000         1 mm/s         50         Linear         Immedi- isely         Setup         *1           Pn585         2         Program Jogging Move- mat Speed         1 to 10,000         1 mm/s         50         Linear         Immedi- isely         Setup         *1           Pn585         2         Poartiny Detection Ex- mation         0 to 100         1 mm/s         0         Linear         Immedi- isely         Setup         *1           Pn586         2         Poartiny Detection Ex- mation         00000 to 0000 to 0000 to          00000         Linear         Immedi- isely         Setup         *1           Pn587         -         Poarti detect polarity.									tinued fron	1	
Pn582         2         Detection Signal Output Width         0 to 10 00         1 mm/s         10         Linear         Immade Midby         Setup         *1           Pn583         2         Brake Reference Out- put Speed Limit Lavel at Serve ON         0 to 10,000         1 mm/s         10         Linear         Immedia Immedia         Setup         *1           Pn586         2         Program Jogging Move- ment Speed Serve ON         10 to 10,000         1 mm/s         60         Linear         Immedia         Setup         *1           Pn586         2         Program Jogging Move- ment Speed         0 to 10,000         1 mm/s         60         Linear         Immedia- staty         Setup         *1           Pn586         2         Motor Running Cooling Ratio         0 to 10000         -         0000         Linear         Immedia- staty         Setup         *1           Pn586         2         Motor Running Cooling Ratio         0 to 10000         -         00000         Linear         Immedia- staty         Setup         *1           Pn586         2         Polarity Detection Selection for Absolute Linear Encoder         Immedia- staty         Setup         *1           Pn587         2         Reserved parameter (Do not change.)         Immedia- model.		Size			Ŭ	Setting Unit			-		
PhBs3         2         put Speed Level         0 to 10.000         1 mm/s         1 0         Linear         ataly         Servel         1           Ph584         2         Speed Linuel at Speed Dim Level at Speed Dim Speed         0 to 10.000         1 mm/s         600         Linear         Immedi- Item at by         Setup         1           Ph585         2         Program Jogging Move Ratio         1 to 10.000         1 mm/s         600         Linear         Immedi- Item at by         Setup         1           Ph586         2         Motor Purning Cooling Ratio         0 to 10.000         1 mm/s         600         Linear         Immedi- Item at by         Setup         1           Ph587         Pintip Detection Selection For Absoluta Linear Encoder         0000 to 0001         -         0000         Linear         Immedi- Item at by         Setup         *1           Ph587         Pintip Detection Selection Item Peison (n.DCCL         Pintip Detection Selection to change.)         -	Pn582	2	Detection S		0 to 100	1 mm/s	10	Linear		Setup	*1
Prisod         2         Servo ON         Other Double         Timits'         Todou         Linear         atter         atter         Serup         -1           Pn585         2         Program Jogqing Move- ment Speed         1 to 10,000         1 mm/s         50         Linear         Immedi- tately         Setup         •1           Pn586         2         Motor Running Cooling Ratio         0 to 100         1/3/4         0         Linear         Immedi- tately         Setup            2         Polarity Detection Exe- oution Station for Absolute Linear Encoder         0         1         0<	Pn583	2			0 to 10,000	1 mm/s	10	Linear		Setup	*1
Priso         2         ment Speed         1         1         0         0         1         1         ately         setup         -1           Pn586         2         Motor Running Cooling Ratio         0         0         10         0         0         1         immedi- speed         0         1         immedi- speed         0         1         immedi- speed         0         1         immedi- stely         Setup         -1           Pn587         Polarity Detection Kac- Absolute Linear Encoder         0         0         Do not detect polarity.         1         Detect polarity.           n.DDDX         Reserved parameter (Do not change.)	Pn584	2	Servo ON		0 to 10,000	1 mm/s	10000	Linear		Setup	*1
Pn586         2         Motion Rulting Cooling         0 to 100         Max. speed         0         Linear         Immedia takey         Setup         -           2         Polarity Detection Exe- obsolute Linear Encoder         0000 to 0001         -         0000         Linear         Immedia takey         Setup         •1           Pn587         0         Do not detect polarity.         -         0000         n.         -         0000         Linear         Immedia takey         Setup         •1           Pn587         0         Do not detect polarity.         -         0000 not change.)         -         .	Pn585	2			1 to 10,000	1 mm/s	50	Linear		Setup	*1
PnS87         Polarity Detection Selection for Absolute Linear Coder Absolute Linear Encoder         Immedia (ately)         Setup         *1           Pn587         Polarity Detection Selection for Absolute Linear Encoder (1)         Do not detect polarity.	Pn586	2		ning Cooling	0 to 100	Max.	0	Linear		Setup	-
Pn587         n.□□□X         0         Do not detect polarity.           n.□□X□         Reserved parameter (Do not change.)           n.□X□□         Reserved parameter (Do not change.)           n.□X□□         Reserved parameter (Do not change.)           n.□X□□         Reserved parameter (Do not change.)           n.X□□□         Reserved parameter (Do not change.)           Pn600         2         Regenerative Resistor Consumption         Depends on model.*6         10 W         0         All         Immedi- tately         Setup         *1           Pn601         2         Dynamic Brake Resis- tance         0 to 65,535         10 mΩ         0         All         Immedi- tately         Setup         *7           Pn621 to Pn628 to tance         Safety Module-Related         -         -         All         -         -         -         -           Pn639 2         Reserved parameter (Do not change.)         Immedi- tance         Immedi- tately         Imm		2	cution Sele	ection for		-	0000	Linear		Setup	*1
Pn587         n.□□□X         0         Do not detect polarity.           n.□□X□         Reserved parameter (Do not change.)           n.□X□□         Reserved parameter (Do not change.)           n.□X□□         Reserved parameter (Do not change.)           n.□X□□         Reserved parameter (Do not change.)           n.X□□□         Reserved parameter (Do not change.)           Pn600         2         Regenerative Resistor Consumption         Depends on model.*6         10 W         0         All         Immedi- tately         Setup         *1           Pn601         2         Dynamic Brake Resis- tance         0 to 65,535         10 mΩ         0         All         Immedi- tately         Setup         *7           Pn621 to Pn628 to tance         Safety Module-Related         -         -         All         -         -         -         -           Pn639 2         Reserved parameter (Do not change.)         Immedi- tance         Immedi- tately         Imm				Polarity Dete	ction Selection	n for Abso	lute Linea	r Encoder			
Pn587         I         Detect polarity.           n.IIIXI         Reserved parameter (Do not change.)           n.IIXIII         Reserved parameter (Do not change.)           n.IIXIIII         Reserved parameter (Do not change.)           Pn600         2         Regenerative Resistor Capacity <sup>15</sup> Depends on model. <sup>16</sup> 10 W         0         All         Immedi- ately         Setup         *1           Pn601         2         Dynamic Brake Resis- tance         0 to 65,535         10 J         0         All         Immedi- restart         Setup         *1           Pn603         2         Regenerative Resis- tance         0 to 65,535         10 mΩ         0         All         Immedi- restart         Setup         *7           Pn604         2         Dynamic Brake Resis- tance         0 to 65,535         10 mΩ         0         All         -         -         -         -         -         -         -         -         -         -         -         - <th< td=""><td></td><td></td><td>n.DDDX</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>			n.DDDX								
n.IXIII         Reserved parameter (Do not change.)           n.XIIIII         Reserved parameter (Do not change.)           n.XIIIII         Reserved parameter (Do not change.)           Pn600         2         Regenerative Resistor Capacity <sup>15</sup> Depends on model. <sup>46</sup> 10 W         0         All         Immedi- ately         Setup         *1           Pn601         2         Dynamic Brake Resis- Consumption         0 to 65,535         10 J         0         All         Immedi- ately         Setup         *1           Pn603         2         Regenerative Resis- Consumption         0 to 65,535         10 mΩ         0         All         Immedi- ately         Setup         *1           Pn603         2         Regenerative Resis- tance         0 to 65,535         10 mΩ         0         All         Immedi- restart         Setup         *1           Pn624         2         Dynamic Brake Resis- tance         0 to 65,535         10 mΩ         0         All             Pn628         4         Reserved parameter (Do not change.)                Pn690         2         Reserved parameter (Do not change.)          0         Rotary	Pn587					,					
Pn600         2         Regenerative Resistor Capacity <sup>5</sup> Depends on model. <sup>46</sup> 10 W         0         All         Immedi- ately         Setup         *1           Pn601         2         Dynamic Brake Resis- tor Allowable Energy Consumption         0 to 65,535         10 J         0         All         After restart         Setup         *1           Pn603         2         Regenerative Resis- tor Allowable Energy Consumption         0 to 65,535         10 mΩ         0         All         After restart         Setup         *1           Pn603         2         Regenerative Resis- tance         0 to 65,535         10 mΩ         0         All         After restart         Setup         *1           Pn624         2         Dynamic Brake Resis- tance         0 to 65,535         10 mΩ         0         All         After restart         Setup         *7           Pn624         -         -         -         -         All         - <td></td> <td></td> <td>n.DDXD</td> <td>Reserved pa</td> <td>rameter (Do no</td> <td>ot change.</td> <td>)</td> <td></td> <td></td> <td></td> <td></td>			n.DDXD	Reserved pa	rameter (Do no	ot change.	)				
Pn600       2       Regenerative Resistor Capacity*       Depends on model.*       10 W       0       All       Immedi- ately       Setup       *1         Pn601       2       Dynamic Brake Resis- tor Allowable Energy Consumption       0 to 65,535       10 J       0       All       After restart       Setup       *7         Pn603       2       Regenerative Resis- tor Allowable Energy Consumption       0 to 65,535       10 mΩ       0       All       Immedi- ately       Setup       *1         Pn603       2       Regenerative Resis- tance       0 to 65,535       10 mΩ       0       All       Immedi- ately       Setup       *1         Pn604       2       Dynamic Brake Resis- tance       0 to 65,535       10 mΩ       0       All       After restart       Setup       *1         Pn624*       -       Safety Module-Related Pne28*4       -       -       -       All       - <td< td=""><td></td><td></td><td>n.DXDD</td><td>Reserved pa</td><td>rameter (Do no</td><td>ot change.</td><td>)</td><td></td><td></td><td></td><td></td></td<>			n.DXDD	Reserved pa	rameter (Do no	ot change.	)				
Pn6002Capacity*5model.*610 W0AllatelySetup*1Pn6012Capacity*50 to 65,53510 J0AllAfter restartSetup*7Pn6032torAllowable Energy Consumption0 to 65,53510 mQ0AllAfter restartSetup*1Pn6042Dynamic Brake Resis- tance0 to 65,53510 mQ0AllImmedi- atterSetup*1Pn6042Dynamic Brake Resis- tance0 to 65,53510 mQ0AllAfter restartSetup*1Pn621 to Pn628*4-Safety Module-Related not change.)AllPn6844Reserved parameter (Do not change.)0RotaryPn6902Reserved parameter (Do not change.)-0RotaryPn6942Reserved parameter (Do not change.)-0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6982Reserved		1	n.XDDD	Reserved pa	rameter (Do no	ot change.	.)				
Pn6002Capacity*5model.*610 W0AllatelySetup*1Pn6012Capacity*50 to 65,53510 J0AllAfter restartSetup*7Pn6032torAllowable Energy Consumption0 to 65,53510 mQ0AllAfter restartSetup*1Pn6042Dynamic Brake Resis- tance0 to 65,53510 mQ0AllImmedi- atterSetup*1Pn6042Dynamic Brake Resis- tance0 to 65,53510 mQ0AllAfter restartSetup*1Pn621 to Pn628*4-Safety Module-Related not change.)AllPn6844Reserved parameter (Do not change.)0RotaryPn6902Reserved parameter (Do not change.)-0RotaryPn6942Reserved parameter (Do not change.)-0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6982Reserved				-							
Pn6002Capacity*5model.*610 W0AllatelySetup*1Pn6012Capacity*50 to 65,53510 J0AllAfter restartSetup*7Pn6032torAllowable Energy Consumption0 to 65,53510 mQ0AllAfter restartSetup*1Pn6042Dynamic Brake Resis- tance0 to 65,53510 mQ0AllImmedi- atterSetup*1Pn6042Dynamic Brake Resis- tance0 to 65,53510 mQ0AllAfter restartSetup*1Pn621 to Pn628*4-Safety Module-Related not change.)AllPn6844Reserved parameter (Do not change.)0RotaryPn6902Reserved parameter (Do not change.)-0RotaryPn6942Reserved parameter (Do not change.)-0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6982Reserved	Decoo	0				10.14/	0	All	Immedi-	Coture	* 1
Pn6012tor Allowable Energy Consumption0 to 65,53510 J0AllInterstartSetup*7Pn6032Regenerative Resis- tance0 to 65,53510 mΩ0AllInterstartSetup*1Pn6042Dynamic Brake Resis- tance0 to 65,53510 mΩ0AllAfter restartSetup*7Pn6042Dynamic Brake Resis- tance0 to 65,53510 mΩ0AllAfter restartSetup*7Pn621 to Pn628*4-Safety Module-Related ParametersAllPn6844Reserved parameter (Do not change.)0RotaryPn6902Reserved parameter (Do not change.)-0RotaryPn6942Reserved parameter (Do not change.)-0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6972Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn699<	P1600	2	. ,		model.*6	10 VV	0	All	ately	Setup	*1
PriodS2tance0 to 65,33310 mΩ0AllatelySetup*1Pn6042Dynamic Brake Resis- tance0 to 65,53510 mΩ0AllAfter restartSetup*7Pn621 to Pn628*4-Safety Module-Related ParametersAllPn68E4Reserved parameter (Do not change.)0RotaryPn6902Reserved parameter (Do not change.)0RotaryPn6922Reserved parameter (Do not change.)0RotaryPn6942Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)-0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)-	Pn601	2	tor Allowat	ole Energy	0 to 65,535	10 J	0	All		Setup	*7
Priod2tance0.000,00010 mility0AllrestartSetup17Pn621 to Pn628*4-Safety Module-Related ParametersAllPn68E4Reserved parameter (Do not change.)0RotaryPn6902Reserved parameter (Do not change.)0RotaryPn6922Reserved parameter (Do not change.)0RotaryPn6942Reserved parameter (Do not change.)0RotaryPn6942Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0R	Pn603	2		ive Resis-	0 to 65,535	10 m $\Omega$	0	All		Setup	*1
Pn628*4-ParametersAllPn68E4Reserved parameter (Do not change.)0RotaryPn6902Reserved parameter (Do not change.)0RotaryPn6922Reserved parameter (Do not change.)0RotaryPn6942Reserved parameter (Do not change.)0RotaryPn6942Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)-0RotaryPn6972Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6972Reserved	Pn604	2		brake Resis-	0 to 65,535	10 m $\Omega$	0	All		Setup	*7
Priose4not change.)Pn6902Reserved parameter (Do not change.)0RotaryPn6922Reserved parameter (Do not change.)0RotaryPn6942Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6992Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6972Res		_			_	_	_	All	-	_	-
Prideo2not change.)Pn6922Reserved parameter (Do not change.)0RotaryPn6942Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)-0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6972Reserved parameter (Do not change.)0Rotary<	Pn68E	4					0	Rotary	-	-	_
Pri6922not change.)Pn6942Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6982Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6962Reserved parameter (Do not change.)0RotaryPn6402Reserved parameter (Do not change.)0RotaryPn6422Reserved parameter (Do not change.)0RotaryPn6422Reserved parameter (Do not change.)0Rotary <td>Pn690</td> <td>2</td> <td>not change</td> <td>ə.)</td> <td></td> <td></td> <td>0</td> <td>Rotary</td> <td>-</td> <td>-</td> <td>-</td>	Pn690	2	not change	ə.)			0	Rotary	-	-	-
Ph6942not change.)Image: Constraint of the charge of the charge.)Image: Constraint of the charge of the charge of the charge.)Image: Constraint of the charge of the charge of the charge of the charge.)Image: Constraint of the charge of the	Pn692	2	not change	ə.)			0	Rotary	-	-	-
Pn6902not change.)Pn6982Reserved parameter (Do not change.)0RotaryPn69A2Reserved parameter (Do not change.)0RotaryPn69A2Reserved parameter (Do not change.)0RotaryPn69C2Reserved parameter (Do not change.)0RotaryPn69E2Reserved parameter (Do not change.)0RotaryPn6A02Reserved parameter (Do not change.)0RotaryPn6A02Reserved parameter (Do not change.)0RotaryPn6A02Reserved parameter (Do not change.)0RotaryPn6A22Reserved parameter (Do not change.)0Rotary	Pn694	2	not change	e.)			0	Rotary	-	-	-
Pn6902not change.)0RotaryPn69A2Reserved parameter (Do not change.)0RotaryPn69C2Reserved parameter (Do not change.)0RotaryPn69E2Reserved parameter (Do not change.)0RotaryPn69E2Reserved parameter (Do not change.)0RotaryPn6A02Reserved parameter (Do not change.)0RotaryPn6A22Reserved parameter (Do not change.)0Rotary	Pn696	2	not change	ə.)			0	Rotary	-	-	-
Pn69C       2       Reserved parameter (Do not change.)       -       -       0       Rotary       -       -       -         Pn69C       2       Reserved parameter (Do not change.)       -       -       0       Rotary       -	Pn698	2	not change	ə.)			0	Rotary	-	-	-
Pn69E       2       Reserved parameter (Do not change.)       -       -       0       Rotary       -       -       -         Pn640       2       Reserved parameter (Do not change.)       -       -       0       Rotary       -	Pn69A	2	not change	ə.)	_	-	0	Rotary	-	-	-
Phose     2     not change.)     -     -     0     Rotary     -     -     -       Pn6A0     2     Reserved parameter (Do not change.)     -     -     0     Rotary     -     -     -       Pn6A2     2     Reserved parameter (Do     -     -     0     Rotary     -     -     -	Pn69C	2	not change	e.)	_	-	0	Rotary	-	-	-
PrioA0     2     not change.)     -     -     0     Rotary     -     -     -       PrioA0     2     Reserved parameter (Do     0     Rotary     -     -     -     -	Pn69E	2	not change	e.)	_	-	0	Rotary	-	-	-
	Pn6A0	2	not change	e.)	-	-	0	Rotary	-	-	-
	Pn6A2	2			_	-	0	Rotary	-	-	-

Continued from previous page.

								Cor	tinued fron	n previou	s page
Parameter No.	Size	N	ame		tting Inge	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Table Oper eter Setting			00 to 5A1	-	0000	All	Immedi- ately	Setup	4-4
		n.□□□X	0 1 Speed Ta 0 1	Switch fro the pressu- motor pos Switch fro the pressu- position e <b>ble Refere</b> Do not pe Use speed	m speed ure feedl sition exo m speed ure feedl xceeds ence Sel rform sp d table r	d table op back detec ceeds Pn6 d table op back detec Pn6A8. ection beed table eference 1	ction value A8. eration to t ction value operation. (Pn6AC) f	orque (pressi exceeds Pn6 orque (pressi exceeds Pn6	A7 × Pn6D2 ure) table op A7 × Pn6D2 e operation.	and the eration wh or the mo	ien otor
			3	for speed	table re table op	eference 1 peration.	· · ·	nrough speed			
			5	for speed Use speed	table op d table re	peration. eference 1	· · ·	nrough speed			
		n.□□X□	6	for speed Use speed for speed	table re	eference 1	(Pn6AC) tl	nrough speed	table referer	nce 6 (Pn6	) B6)
Pn6A4	5A4	1	for speed	table op	peration.	. ,	nrough speed				
			Use speed for speed			(Pn6AC) tł	nrough speed	table referer	nce 8 (Pn6	iBA)	
			9	Use speed (Pn6BC) fo	d table r or speed	eference 1 d table ope	(Pn6AC) t eration.	hrough speed	d table refere	ence 9	
						eference 1 I table ope		hrough speed	d table refere	ence 10	
	Ī		Torque (P	ressure) R	leferenc	e Selectio	n				
			0	Do not pe	rform to	rque (pres	sure) table	operation.			
				Use torqu operation.		ure) table	reference -	I (Pn6D2) for	torque (pres	sure) table	9
		n.¤X¤¤	2	reference	2 (̈Pn6D	4) for torq	ue (pressu	I (Pn6D2) and re) table oper	ation.	,	
			3	table refer	ence 3 (	(Pn6D6) fo	r torque (p	I (Pn6D2) thro ressure) table	operation.	u ,	
			4	table refer	ence 4	(Pn6D8) fo	r torque (p	I (Pn6D2) three ressure) table	operation.		
								I (Pn6D2) thro pressure) table		(pressure)	
			Speed Ta	ole Opera	tion Co	ntrol Meth	od Switch	ing Selectior	1		
		n.XDDD	0	Disable Pr	n6A5 an	d enable F	n6A4 = n.	DDDX.			
			1	Disable Pr	16A4 = I	n. <b>DDD</b> X &	and enable	Pn6A5.			
Pn6A5	4	Torque (Pre ence during Table Oper	g Speed		) to 741,824	1%	0	All	Immedi- ately	Setup	4-8
Pn6A7	2	Pressure C Switching F centage		er- 0 to	10,000	0.01%	0	All	Immedi- ately	Setup	4-8
Pn6A8	4	Table Oper ing Positior			) to 483,647	1 refer- ence unit	0	All	Immedi- ately	Setup	4-8
Pn6AA	4	Speed Lim (Pressure) tion			) to 483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-11

Continued on next page.

						Con	tinued from	n previou	s page.
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn6AC	4	Speed Table Reference 1	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-5
Pn6AE	4	Speed Table Reference 2	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-5
Pn6B0	4	Speed Table Reference	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-5
Pn6B2	4	Speed Table Reference	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-5
Pn6B4	4	Speed Table Reference 5	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-5
Pn6B6	4	Speed Table Reference 6	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-5
Pn6B8	4	Speed Table Reference 7	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-5
Pn6BA	4	Speed Table Reference 8	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-5
Pn6BC	4	Speed Table Reference 9	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-5
Pn6BE	4	Speed Table Reference	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6C0	4	Speed Table Switching Position 1	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6C2	4	Speed Table Switching Position 2	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6C4	4	Speed Table Switching Position 3	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6C6	4	Speed Table Switching Position 4	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6C8	4	Speed Table Switching Position 5	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6CA	4	Speed Table Switching Position 6	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6CC	4	Speed Table Switching Position 7	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6CE	4	Speed Table Switching Position 8	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6D0	4	Speed Table Switching Position 9	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-6
Pn6D2	4	Torque (Pressure) Refer- ence 1	-1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-8, 4-11
Pn6D4	4	Torque (Pressure) Refer- ence 2	-1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-11
Pn6D6	4	Torque (Pressure) Refer- ence 3	-1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-11
Pn6D8	4	Torque (Pressure) Refer- ence 4	-1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-11

Continued from previous page.

								001		i pieviou	s page.
Parameter No.	Size	N	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn6DA	4	Torque (Pr ence 5	essure) I	Refer-	-1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-11
Pn6DC	4	Torque (Pr ence Time		Refer-	0 to 180,000	0.01 s	0	All	Immedi- ately	Setup	4-11
Pn6DE	4	Torque (Pr ence Time		Refer-	0 to 180,000	0.01 s	0	All	Immedi- ately	Setup	4-11
Pn6E0	4	Torque (Pr ence Time		Refer-	0 to 180,000	0.01 s	0	All	Immedi- ately	Setup	4-11
Pn6E2	4	Torque (Pr ence Time		Refer-	0 to 180,000	0.01 s	0	All	Immedi- ately	Setup	4-11
	2	Communio trols	cations (	Con-	0000 to 1FF3	-	1040	All	Immedi- ately	Setup	-
			MECH	ATROL	INK Communi	cations C	heck Mas	k for Debugg	ing		
			0	Do n	ot mask.						-
		n.000X	1	Ignor	e MECHATROI	INK com	nunication	s errors (A.E6	60).		-
			2	Ignor	e WDT errors (	A.E50).					_
			3		e both MECHA s (A.E50).	TROLINK	communic	ations errors	(A.E60) and	WDT	_
			Warnir	ng Che	ck Masks						1
			0	Do n	ot mask.						-
			1	Ignor	e data setting	warnings (	A.94 <b>□</b> ).				-
			2	Ignor	e command wa	arnings (A.	95□).				-

		0	Do not mask.
		1	Ignore data setting warnings (A.94□).
		2	Ignore command warnings (A.95 <sup>1</sup> ).
		3	Ignore both A.94□ and A.95□ warnings.
		4	Ignore communications warnings (A.96D).
Pn800		5	Ignore both A.94□ and A.96□ warnings.
111000		6	Ignore both A.95□ and A.96□ warnings.
	n.🗆🗆 X 🗆	7	Ignore A.94, A.95, and A.96 warnings.
		8	Ignore data setting warnings (A.97A and A.97b).
		9	Ignore A.94 <sup>1</sup> , A.97A, and A.97b warnings.
		Α	Ignore A.95 <sup>[]</sup> , A.97A, and A.97b warnings.
		В	Ignore A.94, A.95, A.97A, and A.97b warnings.
		С	Ignore A.96 <sup>1</sup> , A.97A, and A.97b warnings.
		D	Ignore A.94 <sup>1</sup> , A.96 <sup>1</sup> , A.97A, and A.97b warnings.
		E	Ignore A.95, A.96, A.97A, and A.97b warnings.
		F	Ignore A.94□, A.95□, A.96□, A.97A, and A.97b warnings.
	n.□X□□	Reserv	ved parameter (Do not change.)
			*7
	n.XDDD		atic Warning Clear Selection for Debugging <sup>*7</sup>
	M3 *7	0	Retain warnings for debugging.
		1	Automatically clear warnings (MECHATROLINK-III specification).

								tinued fron	n previou	s page.
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Selections Limits)	n Function 6 (Software	0000 to 0103	-	0003	All	Immedi- ately	Setup	*1
										_
			Software Lin	nit Selection						
				le both forward			re limits.			-
		n.🗆 🗆 🛛 X		ole forward soft						_
Pn801				ble feverse son			are limite			-
										_
		n.🗆 🗆 X 🗆	Reserved pa	rameter (Do no	ot change.	)				
			Software Lin	nit Check for R	eferences					
		n.¤X¤¤		ot perform soft						_
			1 Perfo	orm software lin	nit checks	for referer	ices.			-
		n.XDDD	Reserved pa	rameter (Do no	ot change.	)				I
Pn803	2	Origin Ran	ige	0 to 250	1 refer- ence unit	10	All	Immedi- ately	Setup	*2
Pn804	4	Forward S	oftware Limit	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	107374 1823	All	Immedi- ately	Setup	*1
Pn806	4	Reverse S	oftware Limit	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	-10737 41823	All	Immedi- ately	Setup	*1
Pn808	4	Absolute E Offset	ncoder Origin	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	0	All	Immedi- ately <sup>*9</sup>	Setup	*1
Pn80A	2	First Stage eration Co	e Linear Accel- nstant	1 to 65,535	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn80B	2		age Linear on Constant	1 to 65,535	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn80C	2	Acceleration Switching	on Constant Speed	0 to 65,535	100 ref- erence units/s	0	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn80D	2	First Stage Deceleration	e Linear on Constant	1 to 65,535	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn80E	2	Second St Deceleration	age Linear on Constant	1 to 65,535	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn80F	2	Deceleration Switching	on Constant Speed	0 to 65,535	100 ref- erence units/s	0	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn810	2		al Accelera- eration Bias	0 to 65,535	100 ref- erence units/s	0	All	Immedi- ately <sup>*11</sup>	Setup	*2
Pn811	2		al Accelera- eration Time	0 to 5,100	0.1 ms	0	All	Immedi- ately <sup>*11</sup>	Setup	*2
Pn812	2	Movement Time	Average	0 to 5,100	0.1 ms	0	All	Immedi- ately <sup>*11</sup>	Setup	*2
Pn814	4	External P Final Trave		-1,073,741,823 to 1,073,741,823	1 refer- ence unit	100	All	Immedi- ately	Setup	*2

Continued from previous page.

_								itinued fron	· ·	
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Origin Retu tings	urn Mode Set-	0000 to 0001	_	0000	All	Immedi- ately	Setup	*12
		-					J			
	1		Origin Retur	n Direction						
Pn816		n.🗆 🗆 🗆 X	-	rn in forward di	irection.					-
1 110 10			1 Retu	rn in reverse di	rection.					-
M2 *13		n.DDXD	Reserved pa	rameter (Do no	ot change.	)				
	]	n.¤X¤¤	Reserved pa	rameter (Do no	ot change.	)				
	1	n.XDDD	Reserved pa	rameter (Do no	ot change.	)				
										-
Pn817 *14	2	Origin App 1	roach Speed	0 to 65,535	100 ref- erence units/s	50	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn818 *15	2	Origin App 2	roach Speed	0 to 65,535	100 ref- erence units/s	5	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn819	4	Final Trave Origin Retu	l Distance for urn	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	100	All	Immedi- ately	Setup	*2
	2	Input Signa Selections	al Monitor	0000 to 7777	-	0000	All	Immedi- ately	Setup	*12
	-		IO12 Signal	Mapping						1
			0 Dor	ot map.						_
			1 Mon	itor CN1-13 inp	out termina	d.				_
			2 Mon	itor CN1-7 inpu	it terminal.					_
		n.DDDX		itor CN1-8 inpu						_
Pn81E				itor CN1-9 inpu						_
FIIOTE				itor CN1-10 inp						_
M2 *13				itor CN1-11 inp						-
<b></b>			7 Mon	itor CN1-12 inp	out termina	u.				_
		n.DDXD	IO13 Signal	Mapping						
		11.00/0	0 to 7 The	mappings are t	he same a	s the IO12	signal mapp	ings.		_
	1		IO14 Signal	Mapping						
		n.¤X¤¤		mappings are t	he same a	s the IO12	signal mapp	ings.		
	1		IO15 Signal	Mapping						
		n.XDDD		mappings are t	he same a	s the IO12	signal mapp	ings.		-
				11 0 0			0 -1-14	5		_

Continued on next page.

								Con	ntinued from	n previou	s page.
Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Command tions	Data Alloo	a-	0000 to 1111	-	0010	All	After restart	Setup	*12
			Option F	ield A	Allocation						
		n.🗆🗆 🗆 X	0 [	Disab	le option field	allocation.					_
Pn81F			1 E	nabl	e option field a	allocation.					_
M2 *13			Position	Cont	rol Command	TFF/TLIN	1 Allocatio	n			T .
M2 13		n.🗆🗆 X 🗆	0	Disab	le allocation.						-
			1 E	Inabl	e allocation.						_
		n.¤X¤¤	Reserved	d para	ameter (Do no	ot change.	)				
		n.XDDD	Reserved	l para	ameter (Do no	ot change.	)				
Pn820	4	Forward La	atching Are		-2,147,483,648 to 2,147,483,647	1 refer- ence unit	0	All	Immedi- ately	Setup	*2
Pn822	4	Reverse La	atching Are	a	-2,147,483,648 to 2,147,483,647	1 refer- ence unit	0	All	Immedi- ately	Setup	*2
						•			Continue		

Parameter No.	Size		Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer ence
	2	Option tion	Monitor 1 Selec-	0000 to FFFF	-	0000	-	Immedi- ately	Setup	*2
	S	Setting			Monito	or			Applicable	Motors
	Hig	gh-Speed	Monitor Region							
	00	00 hex	Motor speed [10	00000 hex/ov	erspeed d	etection sp	beed]		All	
	00	01 hex	Speed reference	[1000000 he	x/overspee	d detectio	n speed]		All	
	00	02 hex	Torque [1000000	) hex/maximu	m torque]				All	
	00	03 hex	Position deviatio	n (lower 32 bi	ts) [referen	ce units]			All	
	00	04 hex	Position deviatio	n (upper 32 bi	its) [referer	ce units]			All	
	00	0A hex	Encoder count (I	ower 32 bits)	[reference	units]			All	
	00	0B hex	Encoder count (	upper 32 bits)	[reference	units]			All	
	00	0C hex	FPG count (lowe	r 32 bits) [refe	rence unit	s]			All	
	00	0D hex	FPG count (uppe	er 32 bits) [refe	erence unit	s]			All	
	Lo	w-Speed	Monitor Region							
	00	10 hex	Un000: Motor sp	beed [min <sup>-1</sup> ]					All	
	00	11 hex	Un001: Speed F	eference [min	-1]				All	
	00	12 hex	Un002: Torque F	Reference [%]	-				All	
	00	13 hex	Un003: Rotation Number of enco in decimal Un003: Electrica Linear encoder p	der pulses from	m origin wi	thin one e			All	
	00	14 hex	Un004: Rotation Electrical angle f Un004: Electrica Electrical angle f	rom polarity o I Angle 2 [deg	rigin ]				- All	
n824		15 hex	Un005: Input Sig	. ,	ngin				All	
		16 hex	Un006: Output S						All	
M3 *8		17 hex	· · ·	•	d Imin <sup>-1</sup> 1				All	
		18 hex	Un007: Input Re Un008: Position	•					All	
		19 hex	Un009: Accumu			5]			All	
		1A hex	Un00A: Regener						All	
		1B hex	Un00A: Regener			Concumpti	on [%]		All	
		1C hex	Un00B: Dynamic Un00C: Input Re						All	
		1D hex	Un00D: Feedbac				n ntoj		All	
		1E hex	Un00E: Fully-clos				vternal encode	or resolution]	Rota	
		23 hex	Initial multiturn d						Rota	
		24 hex	Initial incrementa		1				Rota	
		25 hex	Initial absolute p			s) [pulses]			Line	
		26 hex	Initial absolute p				1		Line	
		40 hex	Un025: SERVOF						All	
		41 hex	Un026: Servomo						All	
		42 hex	Un027: Built-in F						All	
		43 hex	Un028: Capacito	-					All	
		44 hex	Un029: Surge Pi			na Life Ra	tio		All	
		45 hex	Un02A: Dynamic						All	
		46 hex	Un032: Instantar						All	
		47 hex	Un033: Power C						All	
		48 hex	Un034: Cumulat		nsumption				All	
		50 hex	Pressure feedba		•				All	
		52 hex	Control method						All	
		00 hex	Speed/torque (p	-		monitor			All	
		01 hex	Other station mo		(				All	

6

							Cor	ntinued from	n previous	s page
Parameter No.	Size		Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
		Setting			Moni	tor			Applic Moto	
	С	Communica	ations Module	Only					I	
Pn824	C	080 hex	Previous valu	e of latched feed	back pos	ition (LPOS	S1) [encoder p	oulses]	All	
	C	0081 hex		e of latched feed		ition (LPOS	S2) [encoder p	oulses]	All	
M3 *8		0084 hex	Continuous L	atch Status (EX	STATUS)				All	
		II Areas								
		Other values	Reserved set	tings (Do not use	e.)				All	
	2	Option M tion	Ionitor 2 Selec	- 0000 to FFFF	-	0000	All	Immedi- ately	Setup	*2
Pn825	-	0000 hex t 0084 hex	The settin	gs are the same	as those f	or the Opt	ion Monitor 1	Selection.		
Pn827	2		eceleration 1 for Stoppin	g 1 to 65,535	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately *10	Setup	*2
Pn829	2		/aiting Time (fc t Deceleration	r 0 to 65,535	10 ms	0	All	Immedi- ately <sup>*10</sup>	Setup	*2
	2	Option Fi 1	eld Allocations	s 0000 to 1E1E	-	1813	All	After restart	Setup	*12
				ocation (Option)						
				ocate bits 1 and						-
			2 Allo	ocate bits 2 and	3 to ACCF	IL.				-
			3 Allo	ocate bits 3 and	4 to ACCF	ïL.				-
			4 Allo	ocate bits 4 and	5 to ACCF	IL.				_
			5 Allo	ocate bits 5 and	6 to ACCF	IL.				_
		n.000X		ocate bits 6 and						_
				ocate bits 7 and						_
				ocate bits 8 and 9						_
				ocate bits 9 and						-
Pn82A				ocate bits 11 and		-				-
M2 *13				ocate bits 12 and						_
IVIZ			D Allo	ocate bits 13 and	14 to AC	CFIL.				_
			E Allo	ocate bits 14 and	15 to AC	CFIL.				_
			ACCFIL AII	ocation Enable/I	Disable Se	election				
		n.DDXD		able ACCFIL allo						-
			1 Ena	able ACCFIL allo	cation.					_
				option (Option)						
		n.¤X¤¤		cation (Option) e settings are the	same as	for the AC	CFIL allocatio	ins.		_
				cation Enable/D		lection				
		n. X000		able G_SEL alloc						_
			1 Ena	able G_SEL alloc	ation.					_

								tinued fron	n previou	s page
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Option Fie	ld Allocations	0000 to 1F1F	-	1D1C	All	After restart	Setup	*12
		2		11 11				Testart		
				tion (Ontion)						-
			V_PPI Alloca	ate bit 0 to V_F	וחנ					
				ate bit 1 to V_F						_
				ate bit 1 to V_I ate bit 2 to V F						
				ate bit 3 to V_F						
				 ate bit 4 to V_F						
				ate bit 5 to V_F						_
			6 Alloc	ate bit 6 to V_F	PPI.					_
		n.🗆🗆 🗆 X	7 Alloc	ate bit 7 to V_F	PI.					_
			8 Alloc	ate bit 8 to V_F	PPI.					
				ate bit 9 to V_F						
Pn82B				ate bit 10 to V_						_
				ate bit 11 to V_						
M2 *13				ate bit 12 to V	-					_
				ate bit 13 to V_	-					_
				ate bit 14 to V_ ate bit 15 to V_						_
			F Alloc							_
			V_PPI Alloca	tion Enable/Di	sable Sele	ection				
		n.🗆🗆 X 🗆	0 Disak	ole V_PPI alloca	ation.					
			1 Enab	le V_PPI alloca	tion.					_
					- )					-
		n.¤X¤¤		location (Optic		for the \/ [				
				settings are the	same as	IOF THE V_F	-FI allocations	5.		_
			P_PI_CLR AI	location Enabl	e/Disable	Selection				
		n.XDDD	0 Disat	ble P_PI_CLR a	llocation.					-
			1 Enab	le P_PI_CLR a	llocation.					_
	0	Option Fie	ld Allocations	0000 to		1 - 1 -	A 11	After	Catura	*10
	2	3		1F1F	-	1F1E	All	restart	Setup	*12
		n.🗆 🗆 🗆 X	P_CL Allocat							
		11.000	0 to F The s	settings are the	same as	for the V_F	PPI allocations	3.		
										-
				ion Enable/Dis		ction				_
Pn82C		n.□□X□		ole P_CL allocate						
M2 *13			I Enab	le P_CL alloca	lion.					_
			N_CL Allocat	ion (Option)						
		n.¤X¤¤		settings are the	same as	for the V. F	PPI allocations	3.		_
				0						
			N_CL Allocat	ion Enable/Dis	sable Sele	ction				
		n.XDDD	0 Disat	ole N_CL alloca	ation.					
		n.XDDD		ole N_CL alloca le N_CL alloca						_

								Con	itinued from	n previou	s page.
Parameter No.	Size	N	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Option Fie 4	ld Allocat	tions	0000 to 1F1C	-	0000	All	After restart	Setup	*12
			BANK_	SEL1	Allocation (Op	tion)					
			0	Alloca	ate bits 0 to 3	to BANK_	SEL1.				
			1		ate bits 1 to 4	-					_
			2		ate bits 2 to 5						
			3		ate bits 3 to 6						
			4		ate bits 4 to 7						
		n.🗆 🗆 🗆 X	5		ate bits 5 to 8						
			6		ate bits 6 to 9						
			7		ate bits 7 to 10		-				_
			8		ate bits 8 to 11						_
Pn82D			9		ate bits 9 to 12						_
M2 *13			A		ate bits 10 to 1		-				_
M2 13			B		ate bits 11 to 1		-				_
			С	Alloca	ate bits 12 to 1	5 to BAIN	A_SELT.				_
			BANK_	SEL1	Allocation Ena	able/Disab	le Selectio	on			
		n.🗆🗆 X 🗆	0	Disab	le BANK_SEL	1 allocatio	n.				
			1	Enab	e BANK_SEL1	allocatior	۱.				_
											_
		n.¤X¤¤	-		Allocation (Op						
	_		0 to F	The s	ettings are the	same as	for the V_F	PPI allocations	3.		_
					Allocation Ena	blo/Dicch	la Salacti	00			
		n.XDDD	0		le LT DISABLI						
			1		e LT_DISABLE						_
	-			LIIU		- 41004101					_

Continued from previous page.

							Con	tinued fron	n previou	s page.
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Option Fiel 5	ld Allocatior	ns 0000 to 1D1F	-	0000	All	After restart	Setup	*12
		n.000X	Reserved	parameter (Do no	ot change.	)				
		n.DDXD	Reserved	parameter (Do no	ot change.	)				
			-	VAL Allocation (C						
				locate bits 0 to 2 locate bits 1 to 3						_
				locate bits 2 to 4						-
				locate bits 3 to 5						_
				locate bits 4 to 6						_
Pn82E				locate bits 5 to 7						
M2 *13		n.¤X¤¤		locate bits 6 to 8						
IVIZ 13				locate bits 7 to 9						
				locate bits 8 to 10						
				locate bits 9 to 11	_					
				locate bits 10 to 1						_
				locate bits 11 to 1						
			C AI	locate bits 12 to 1	4 to OUT	SIGNAL.				
			D AI	locate bits 13 to 1	5 to OUT	_SIGNAL.				
										_
				NAL Allocation Er			lion			_
		n.XDDD		sable OUT_SIGN						_
			1 Er	nable OUT_SIGNA	L allocatio	on.				_
	2	Motion Set	ttings	0000 to 0001	_	0000	All	After restart	Setup	*2
	-		-	0001				Testart		
	l i		Linear Ac	celeration/Decele	ration Cor	nstant Sele	ection			
				se Pn80A to Pn80				334 to Pn84	0 are	-
		n.🗆🗆 🗆 X	U .	nored.)		21. (110 6			o alo	
Pn833			1 U	se Pn834 to Pn84	0. (The se	ttings of P	n80A to Pn80	F and Pn82	7 are	_
			Ig	nored.)						-
		n.DDXD	Reserved	parameter (Do no	ot change.	)				
	Ιī	n.¤X¤¤	Reserved	parameter (Do no	ot change.	)				
			1	•		,				_
		n.XDDD	Reserved	parameter (Do no	ot change.	.)				
Pn834	4	First Stage eration Co	Linear Acc nstant 2	el- 1 to 20,971,520	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn836	4	Second St	age Linear	1 to 2 20,971,520	10,000 refer- ence	100	All	Immedi- ately *10	Setup	*2
			on Constant	20,811,020	units/s <sup>2</sup>			atery		
	1			0 to	1 refer-	0	All	Immedi-	Setup	*2
Pn838	4	Acceleration Switching		2,097,152,000	ence unit/s	0		ately *10	Ootop	*2

Continued on next page.

							Con	tinued fron	n previou	s page.
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn83C	4	Second Sta Deceleratio	age Linear on Constant 2	1 to 20,971,520	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn83E	4	Deceleration Switching S	on Constant Speed 2	0 to 2,097,152,000	1 refer- ence unit/s	0	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn840	4	Linear Dec Constant 2	eleration for Stopping	1 to 20,971,520	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn842 *14	4	Second Or Approach S		0 to 20,971,520	100 ref- erence units/s	0	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn844 *15	4	Second Or Approach S		0 to 20,971,520	100 ref- erence units/s	0	All	Immedi- ately <sup>*10</sup>	Setup	*2
Pn846	2	POSING C Scurve Acc Deceleration	celeration/	0 to 50	1%	0	All	Immedi- ately <sup>*10</sup>	Setup	_
Pn850	2	Number of Sequences		0 to 8	-	0	All	Immedi- ately	Setup	*2
Pn851	2	Continuous Sequence		0 to 255	-	0	All	Immedi- ately	Setup	*2
	2	Latch Sequ Settings	uence 1 to 4	0000 to 3333	-	0000	All	Immedi- ately	Setup	*2
Pn852		n.000X n.00X0 n.0X00	0 Pha 1 EXT 2 EXT 3 EXT Latch Seque 0 to 3 The tion Latch Seque 0 to 3 The tion	ence 3 Signal S settings are the ence 4 Signal S settings are the	election e same as election e same as election	those for t	he Latch Seq	uence 1 Sig	nal Selec-	

Continued from previous page.

_				-	-			ntinued from	1	
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Reference
	2	Latch Sequences	uence 5 to 8	0000 to 3333	-	0000	All	Immedi- ately	Setup	*2
						1	I	1		_
			Latch Sequ	ence 5 Signal S	Selection					
				se C						_
		n.🗆🗆 🗆 X		1 signal						_
				2 signal						_
			3 EXT	3 signal						_
Pn853				ence 6 Signal S						
		n.□□X□	0 to 3 The tion	settings are the	e same as	those for t	he Latch Seq	uence 5 Sigr	nal Selec-	_
			Latch Sequ	ence 7 Signal S	Selection					
		n.¤X¤¤	0 to 3 The tion	settings are the	e same as	those for t	he Latch Seq	uence 5 Sigr	nal Selec-	
			Latch Sequ	ence 8 Signal S	Selection					
		n.XOOO		settings are the		those for t	he Latch Seq	uence 5 Sigr	nal Selec-	-
	2	SVCMD_IC Monitor All	D Input Signal locations 1	0000 to 1717	-	0000	All	Immedi- ately	Setup	*2
	2		locations 1	1717	-				Setup	*2
	2		Input Signa	1717		N1-13 (SV	CMD_IO)	ately	Setup	*2
	2		Input Signa	1717 Monitor Alloca cate bit 24 (IO_	STS1) to C	N1-13 (SV N1-13 inp	CMD_IO) ut signal mon	ately itor.	Setup	*2
	2		Input Signa 0 Allo 1 Allo	Monitor Alloca cate bit 24 (IO_ cate bit 25 (IO_	STS1) to C STS2) to C	N1-13 (SV N1-13 inp N1-13 inp	CMD_IO) ut signal mon ut signal mon	ately iitor. iitor.	Setup	*2
	2		Input Signa 0 Allo 1 Allo 2 Allo	Monitor Alloca cate bit 24 (IO_ cate bit 25 (IO_ cate bit 26 (IO_	STS1) to C STS2) to C STS3) to C	N1-13 (SV 2N1-13 inp 2N1-13 inp 2N1-13 inp	CMD_IO) ut signal mon ut signal mon ut signal mon	itor. itor. itor.	Setup	*2
	2	Monitor All	Input Signa 0 Allo 1 Allo 2 Allo 3 Allo	Monitor Alloca cate bit 24 (IO_ cate bit 25 (IO_	STS1) to C STS2) to C STS3) to C STS4) to C	N1-13 (SV CN1-13 inp CN1-13 inp CN1-13 inp CN1-13 inp	CMD_IO) ut signal mon ut signal mon ut signal mon ut signal mon	itor. itor. itor. itor. itor.	Setup	*2
	2	Monitor All	Input Signa 0 Allo 1 Allo 2 Allo 3 Allo 4 Allo	1717 Monitor Alloca cate bit 24 (IO_ cate bit 25 (IO_ cate bit 26 (IO_ cate bit 27 (IO_	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C	N1-13 (SV N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp	CMD_IO) ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon	ately nitor. nitor. nitor. nitor. nitor.	Setup	*2
 Pn860	2	Monitor All	Input Signa 0 Allo 1 Allo 2 Allo 3 Allo 4 Allo 5 Allo	1717 Monitor Alloca cate bit 24 (IO_ cate bit 25 (IO_ cate bit 26 (IO_ cate bit 27 (IO_ cate bit 28 (IO_	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS5) to C	N1-13 (SV N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp	CMD_IO) ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon	ately itor. iitor. iitor. iitor. iitor. iitor.	Setup	*2
**	2	Monitor All	Input Signa 0 Allo 1 Allo 2 Allo 3 Allo 3 Allo 4 Allo 5 Allo 6 Allo	1717 Monitor Alloca cate bit 24 (IO_ cate bit 25 (IO_ cate bit 26 (IO_ cate bit 27 (IO_ cate bit 28 (IO_ cate bit 28 (IO_ cate bit 29 (IO_	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS6) to C	N1-13 (SV CN1-13 inp CN1-13 inp CN1-13 inp CN1-13 inp CN1-13 inp CN1-13 inp CN1-13 inp	CMD_IO) ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon	ately iitor. iitor. iitor. iitor. iitor. iitor. iitor.	Setup	*2
	2	n.□□□X	Input Signa 0 Allo 1 Allo 2 Allo 3 Allo 4 Allo 5 Allo 6 Allo 7 Allo CN1-13 Inp	1717 Monitor Alloca cate bit 24 (IO_ cate bit 25 (IO_ cate bit 26 (IO_ cate bit 27 (IO_ cate bit 27 (IO_ cate bit 28 (IO_ cate bit 29 (IO_ cate bit 30 (IO_ cate bit 31 (IO_ cate bit 31 (IO_	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS7) to C STS7) to C STS8) to C	N1-13 (SV CN1-13 inp CN1-13 inp CN1-13 inp CN1-13 inp CN1-13 inp CN1-13 inp CN1-13 inp CN1-13 inp CN1-13 inp	CMD_IO) ut signal mon ut signal mon	ately iitor. iitor. iitor. iitor. iitor. iitor. iitor.	Setup	*2
**	2	Monitor All	Input Signa 0 Allo 1 Allo 2 Allo 3 Allo 4 Allo 5 Allo 6 Allo 7 Allo 7 Allo 0 Dise	1717 Monitor Alloca cate bit 24 (IO_ cate bit 25 (IO_ cate bit 26 (IO_ cate bit 26 (IO_ cate bit 27 (IO_ cate bit 28 (IO_ cate bit 29 (IO_ cate bit 30 (IO_ cate bit 31 (IO_ ut Signal Monitable allocation f	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS5) to C STS6) to C STS7) to C STS8) to C STS8) to C STS8) to C	N1-13 (SV N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp V1-13 inp <b>/Disable S</b> input sign	CMD_IO) ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon election al monitor.	ately iitor. iitor. iitor. iitor. iitor. iitor. iitor.	Setup	*2
**	2	n.□□□X	Input Signa 0 Allo 1 Allo 2 Allo 3 Allo 4 Allo 5 Allo 6 Allo 7 Allo 7 Allo 0 Dise	1717 Monitor Alloca cate bit 24 (IO_ cate bit 25 (IO_ cate bit 26 (IO_ cate bit 27 (IO_ cate bit 27 (IO_ cate bit 28 (IO_ cate bit 29 (IO_ cate bit 30 (IO_ cate bit 31 (IO_ cate bit 31 (IO_	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS5) to C STS6) to C STS7) to C STS8) to C STS8) to C STS8) to C	N1-13 (SV N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp V1-13 inp <b>/Disable S</b> input sign	CMD_IO) ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon ut signal mon election al monitor.	ately iitor. iitor. iitor. iitor. iitor. iitor. iitor.	Setup	*2
**	2	Monitor All	Input Signa 0 Allo 1 Allo 2 Allo 3 Allo 4 Allo 5 Allo 6 Allo 7 Allo 7 Allo 0 Disa 1 Ena	1717 Monitor Alloca cate bit 24 (IO_ cate bit 25 (IO_ cate bit 26 (IO_ cate bit 26 (IO_ cate bit 27 (IO_ cate bit 28 (IO_ cate bit 29 (IO_ cate bit 30 (IO_ cate bit 31 (IO_ ut Signal Monitable allocation f	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS7) to C STS7) to C STS8) to C STS8) to C tor Enable, or CN1-13 or CN1-13	N1-13 (SV CN1-13 inp CN1-13 inp	CMD_IO) ut signal mon ut signal mon election al monitor.	ately iitor. iitor. iitor. iitor. iitor. iitor. iitor.	Setup	*2
**	2	n.□□□X	Input Signa 0 Allo 1 Allo 2 Allo 3 Allo 4 Allo 5 Allo 6 Allo 7 Allo CN1-13 Inp 0 Disa 1 Ena Input Signa	1717 Monitor Alloca cate bit 24 (IO_ cate bit 25 (IO_ cate bit 26 (IO_ cate bit 26 (IO_ cate bit 27 (IO_ cate bit 28 (IO_ cate bit 29 (IO_ cate bit 30 (IO_ cate bit 31 (IO_ ut Signal Moni- able allocation for	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS7) to C STS7) to C STS8) to C STS8) to C tor Enable or CN1-13 or CN1-13 ation for C	N1-13 (SV N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp (Disable S input signa N1-7 (SVC	CMD_IO) ut signal mon ut signal mon al monitor. al monitor. CMD_IO)	ately nitor. nitor. nitor. nitor. nitor. nitor. nitor. nitor.	Setup	*2
**	2	Monitor All	Input Signa 0 Allo 1 Allo 2 Allo 3 Allo 4 Allo 5 Allo 6 Allo 7 Allo 7 Allo 0 Disa 1 Ena Input Signa 0 to 7 The CN1-7 Inpu	1717 Monitor Alloca cate bit 24 (IO_ cate bit 25 (IO_ cate bit 26 (IO_ cate bit 26 (IO_ cate bit 27 (IO_ cate bit 28 (IO_ cate bit 29 (IO_ cate bit 30 (IO_ cate bit 30 (IO_ cate bit 31 (IO_ ut Signal Monitor ble allocation for Monitor Alloca settings are the t Signal Monitor	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS7) to C STS7) to C STS7) to C STS8) to C STS8) to C tor Enable, or CN1-13 ation for C e same as or Enable/[	N1-13 (SV N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp input sign input sign N1-7 (SVC the CN1-1 Disable Se	CMD_IO) ut signal mon ut signal mon election al monitor. al monitor. SMD_IO) 3 allocations. election	ately nitor. nitor. nitor. nitor. nitor. nitor. nitor. nitor.	Setup	*2
**	2	Monitor All	Input Signa 0 Allo 1 Allo 2 Allo 3 Allo 4 Allo 5 Allo 6 Allo 7 Allo 6 Allo 7 Allo 0 Disa 1 Ena 0 to 7 The 0 Disa 0 to 7 The	1717 Monitor Alloca cate bit 24 (IO_ cate bit 25 (IO_ cate bit 26 (IO_ cate bit 26 (IO_ cate bit 27 (IO_ cate bit 28 (IO_ cate bit 29 (IO_ cate bit 30 (IO_ cate bit 30 (IO_ cate bit 31 (IO_ ut Signal Monitor able allocation for ble allocation for settings are the	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS6) to C STS7) to C STS7) to C STS8) to C STS8) to C tor Enable, ation for C e same as or Enable/[ or CN1-7 in content of the content	N1-13 (SV N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp N1-13 inp CN1-13 inp disable S N1-7 (SVC the CN1-1 Disable Se nput signal	CMD_IO) ut signal mon ut signal mon election al monitor. CMD_IO) 3 allocations. lection monitor.	ately nitor. nitor. nitor. nitor. nitor. nitor. nitor. nitor.	Setup	*2

							Con	tinued fron	-	s page.
Parameter No.	Size	Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	SVCMD_IO Inp Monitor Allocat	ut Signal ions 2	0000 to 1717	_	0000	All	Immedi- ately	Setup	*2
		n.□□□X Inp 0 to	-	Monitor Alloca						
Pn861		n.□□X□ (CN 1	) Disat	Signal Monito ble allocation for le allocation for	or CN1-8 ii	nput signal	monitor.			-
		n.□X□□ Inp 0 to		Monitor Alloca settings are the			_ ,			_
		n.X000 (CN	) Disat	Signal Monito ble allocation for le allocation for	or CN1-9 ii	nput signal	monitor.			-
	2	SVCMD_IO Inp Monitor Allocat	ut Signal ions 3	0000 to 1717	_	0000	All	Immedi- ately	Setup	*2
		n.DDDX Inp 0 to		Monitor Alloca settings are the		•	_ ,			_
Pn862		n.□□X□ (0	) Disat	t Signal Monit	or CN1-10	input sign	al monitor.			-
<u></u>		n.□X□□ Inp 0 to	-	Monitor Alloca settings are the						_
		n.XDDD (C)	) Disat	t Signal Monit	or CN1-11	input sign	al monitor.			-
	2	SVCMD_IO Inp Monitor Allocat	. 0	0000 to 1717	_	0000	All	Immedi- ately	Setup	*2
D 000		n.□□□X Inp 0 to		Monitor Alloca settings are the						_
Pn863		n.□□X□ (0	) Disab	t Signal Monit	or CN1-12	input sign	al monitor.			-
		n. 🗆 X 🗆 🛛 Res	served pa	rameter (Do no	ot change.	)				I
		n.XDDD Res	served pa	rameter (Do no	ot change.	)				I
								Oratia	d on nex	

Continued from previous page.

		Continued from previous page								s page
Parameter	Size	N	ame	Setting	Setting	Default	Applicable	When	Classi-	Refer-
No.	S			Range	Unit	Setting	Motors	Enabled	fication	ence
	2	nal Monito	) Output Signal	9- 0000 to s 1717	-	0000	All	Immedi- ately	Setup	*2
		1		17.17				atory		
	Ιī		Output Si	gnal Monitor Allo	cation for	CN1-1 and	d CN1-2 (SV	CMD IO)		
				locate bit 24 (IO_						
				locate bit 25 (IO_	,					_
				locate bit 26 (IO_						_
		n.🗆🗆 🗆 X	3 A	locate bit 27 (IO_	STS4) to C	N1-1/CN1	-2 output sig	nal monitor.		-
			4 A	locate bit 28 (IO_	STS5) to C	N1-1/CN1	-2 output sig	nal monitor.		_
			5 A	locate bit 29 (IO_	STS6) to C	N1-1/CN1	-2 output sig	nal monitor.		_
Pn868			6 A	locate bit 30 (IO_	STS7) to C	N1-1/CN1	-2 output sig	nal monitor.		
M3 *8			7 A	locate bit 31 (IO_	STS8) to C	N1-1/CN1	-2 output sig	nal monitor.		_
	L 1		CN1-1/CN	I1-2 Output Sign	al Monitor	· Enable/D	isable Select	ion		
		n.DDXD		sable allocation for						
				hable allocation fo			0			-
			Output Signal Monitor Allocation for CN1-23 and CN1-24 (SVCMD_IO)							
		n.¤X¤¤	IXDD         Output Signal Monitor Allocation for CN1-23 and CN1-24 (SVCMD_IO)           0 to 7         The settings are the same as the CN1-1/CN1-2 allocations.							
			0 to 7 11	ne settings are the	e same as	the CN1-1	/CN1-2 alloca	ations.		_
			CN1-23/C	N1-24 Output Si	gnal Moni	tor Enable	/Disable Sele	ection		
		n.XDDD	0 D	sable allocation for	or CN1-23	/CN1-24 o	utput signal r	nonitor.		-
			1 Ei	nable allocation fo	or CN1-23/	CN1-24 oi	utput signal m	nonitor.		_
		SVCMD IC	) Output Si	7-						
	2	nal Monito	r Allocation		-	0000	All	Immedi- ately	Setup	*2
		2								
			Output Si	gnal Monitor Allo	cation for	CN1-25 a	nd CN1-26 (S	SVCMD_IO)		
_		n.🗆🗆 🗆 X	0 to 7 TI	ne settings are the	e same as	the CN1-1	/CN1-2 alloca	ations.		-
Pn869						E h l .				_
M3 *8		n.DDXD		N1-26 Output Si						_
		0.0070		sable allocation for						_
			1  Ei	hable allocation fo	I GNT-20/	GN1-20 00	atput signal n			-
		n.¤X¤¤	Reserved	parameter (Do n	ot change	.)				
	l i	n.XDDD	Reserved	parameter (Do n	ot change	)				
	-		110001100		oronango	•)				
					1			1	1	r
Pn880	2	Station Ad tor (for ma	dress Moni	03 to EF		0	All	Immedi-	Setup	
FII000	2	read only)	intenance,	03 10 11	_	0	All	ately	Setup	_
			nission Byte							
Pn881	2		nitor [bytes] nance, read		-	0	All	Immedi- ately	Setup	-
		only)								
			on Cycle Se	6]				Immedi-		
Pn882	2	(for mainte	or [× 0.25 μ nance, read		-	0	All	ately	Setup	-
		only)								
D:::000			ations Cyclonitor [trans				A !!	Immedi-		
Pn883	2	mission cy	cles] (for	0 10 32	-	0	All	ately	Setup	-
	1	maintenan	ce, read on	·y/	1	1			1	1

Continued on next page.

							Cor	itinued fron	n previou	s page.
Parameter No.	Size		Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Commun trols 2	ications Cor	- 0000 to 0001	-	0000	All	Immedi- ately	Setup	*2
	_		MECHATR	OLINK Communic	cations Err	or Holding	g Brake Signa			
Pn884	n.			intain the status s CHATROLINK co				ommand wh	en a	
*				ply the holding bra				munications	error occu	Jrs.
M3 *8	n.	.00X0	· · ·	parameter (Do not						
	n.		Reserved p	arameter (Do not	change.)					
	n.	XDDD	Reserved	parameter (Do not	change.)					
					g,					
Pn88A	2	Monitor	ROLINK Error Counte tenance, rea	0 to 65,535	_	0	All	Immedi- ately	Setup	_
Pn890 to Pn8A6	4	tor during	id Data Moni g Alarm/Warr tenance, rea	1- 0 to	_	0	All	Immedi- ately	Setup	*2
Pn8A8 to Pn8BE	4	during Al	e Data Monit arm/Warning tenance, rea	0 to	_	0	All	Immedi- ately	Setup	*2
Pn900	2	Number Banks	of Parameter	0 to 16	_	0	All	After restart	Setup	*2
Pn901	2	Number Bank Me	of Parameter mbers	0 to 15	_	0	All	After restart	Setup	*2
Pn902 to Pn910	2	Paramete ber Defin	er Bank Merr ition	- 0000 to 08FF	_	0	All	After restart	Setup	*2
Pn920 to Pn95F	2		er Bank Data ed in nonvola )		-	0	All	Immedi- ately	Setup	*2
Pn9B1	2	Other Sta Station A	ation Monitor ddress	1: 0002 to FEEF	-	0002	All	After restart	Setup	3-11
	2		ation Monitor of Transmis- es	1: 0000 to 0004	-	0003	All	After restart	Setup	3-11
		n.000X	Address (							
				eserved paramete	r (Do not s	set.)				_
				6 bytes 2 bytes						_
Pn9B2				2 bytes 8 bytes						_
				eserved paramete	r (Do not s	set.)				_
		n.DDXD	Reserved	parameter (Do no	t change.)					
		n.DXDD	Reserved	parameter (Do no	t change.)					
		n.XOOO	Reserved	parameter (Do no	t change.)					

Continued from previous page.

Parameter No.	Size	N	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	tinued fron When Enabled	Classi- fication	Refer- ence
	2	Other Stati Monitor Inf ting			0000 to 14FF	-	1000	All	After restart	Setup	3-11
						1	I.				
	-	n.DDXX	Addres		ot						
			00	1	nand: 20, Res	nonse: 20					_
			01		mand: 0, Resp	•					_
			02	0							
			03	Comr	mand: CMD_C	TRL, Resp	onse: CM	D_STAI			
			04	Comr	mand: 0, Resp	onse: Tota	al input low	er 8 bits			_
			05		mand: 0, Resp						_
			06		mand: 0, Resp						_
			07		mand: 0, Resp						_
			08		mand: 0, Resp mand: 0, Resp						
Pn9B3			10		nand: 0, Resp		it i upper	O DIIS			
			11		nand: 0, Resp						_
			12		nand: 0, Resp						_
			13	Comr	nand: 0, Resp	onse: 0					_
			14	Comr	mand: 0, Resp	onse: 0					_
			15	Comr	mand: 0, Resp	onse: 0					_
	1	n.¤X¤¤	Data S	ize (Ur	it: Bytes)						
			0	0 byte	, ,						_
			1	1 byte	Э						_
			2	2 byte	es						_
			3 <sup>*16</sup>	3 byte	es						
			4	4 byte	es						_
	1	n.X000	Reserv	ed par	ameter (Do no	ot change.	.)				
	-					g	/				-
Pn9B4	2	Other Stati Station Ad		tor 2:	0002 to FEEF	_	0002	All	After restart	Setup	3-12
Pn9B5	2	Other Stati Number of sion Bytes	f Transm		0 to 4	_	3	All	After restart	Setup	3-12
Pn9B6	2	Other Stati Monitor Inf ting			0000 to 14FF	-	1000	All	After restart	Setup	3-12
Pn9B7	2	Other Stati Station Ad		tor 3:	0002 to FEEF	-	0002	All	After restart	Setup	3-12
Pn9B8	2	Other Stati Number of sion Bytes	f Transm		0 to 4	-	3	All	After restart	Setup	3-12
Pn9B9	2	Other Stati Monitor Inf ting			0000 to 14FF	_	1000	All	After restart	Setup	3-12
Pn9BA	2	Other Stati Station Ad		tor 4:	0002 to FEEF	-	0002	All	After restart	Setup	3-12
Pn9BB	2	Other Stati Number of sion Bytes	f Transm		0 to 4	_	3	All	After restart	Setup	3-12
Pn9BC	2	Other Stati Monitor Inf ting			0000 to 14FF	-	1000	All	After restart	Setup	3-12
Pn9BD	2	Other Stati Station Ad	ldress		0002 to FEEF	_	0002	All	After restart	Setup	3-12
Pn9BE	2	Other Stati Number of sion Bytes	f Transm		0 to 4	_	3	All	After restart	Setup	3-12

Parameter Lists

6

								Con	itinued from	n previou	s page.
Parameter No.	Size	N	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn9BF	2	Other Stati Monitor Inf ting			0000 to 14FF	-	1000	All	After restart	Setup	3-12
	2	Other Stat Target Stat			0000 to 0F55	-	0000	All	After restart	Setup	3-12
		n.000X	Other S	Statior	Monitor Targe	et Station	Selection	1			
			0	No se	election						_
			1	CH1							_
			2	CH2							_
			3	CH3							_
			4	CH4							
			5	CH5							_
Pn9C0	1	n.DDXD	Other \$	Statior	Monitor Targe	et Station	Selection	2			
			0	No se	election						_
			1	CH1							_
			2	CH2							
			3	CH3							_
			4	CH4							_
			5	CH5							_
	I	n.OXOO	Reserv	ved pai	rameter (Do no	ot change.	)				
	I	n.XDDD	Reserv	ved pai	rameter (Do no	ot change.	)				

\*1. Refer to the following manual for details.

- Ω Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)
- \*2. Refer to the following manual for details.
  - Ω Σ-7-Series MECHATROLINK-III Communications Standard Servo Profile Command Manual (Manual No.: SIEP S800001 31)
- \*3. Set a percentage of the motor rated torque.
- \*4. These parameters are for SERVOPACKs with a Safety Module. Refer to the following manual for details.

   <sup>Δ</sup> Σ-V-Series/Σ-V-Series for Large-Capacity Models/Σ-7-Series User's Manual Safety Module
   (Manual No.: SIEP C720829 06)
- \*5. Normally set this parameter to 0. If you use an External Regenerative Resistor, set the capacity (W) of the External Regenerative Resistor.
- \*6. The upper limit is the maximum output capacity (W) of the SERVOPACK.
- \*7. These parameters are for SERVOPACKs with the dynamic brake option. Refer to the following manual for details.
  - Ω Σ-7-Series Σ-7S/Σ-7W SERVOPACK with Hardware Option Specifications Dynamic Brake Product Manual (Manual No.: SIEP S800001 73)
- \*8. This parameter is valid only when the MECHATROLINK-III standard servo profile is used.
- \*9. The parameter setting is enabled after SENS\_ON command execution is completed.
- \*10.Change the setting when the reference is stopped (i.e., while DEN is set to 1). If you change the setting during operation, the reference output will be affected.
- \*11. The settings are updated only if the reference is stopped (i.e., only if DEN is set to 1).
- \*12.Refer to the following manual for details.
- Ω Σ-7-Series MECHATROLINK-II Communications Command Manual (Manual No.: SIEP S800001 30)
- \*13. This parameter is valid only when the MECHATROLINK-II-compatible profile is used.
- \*14. The setting of Pn842 is valid while Pn817 is set to 0.
- \*15.The setting of Pn844 is valid while Pn818 is set to 0.

The following table lists the common MECHATROLINK-III parameters. These common parameters are used to make settings from the host controller via MECHATROLINK communications. Do not change the settings with the Digital Operator or any other device.

Parameter No.	Size	Name		Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication
	4	Encoder Type only)	(read	0 hex or 1 hex	-	-	All	-	
01 PnA02		0000 hex A	bsolute	encoder					
111/02		0001 hex In	crement	al encoder					
	4	Motor Type (re only)	ead	0 hex or 1 hex	_	_	All	_	-
02 PnA04			,	ervomotor					nation
		0001 hex L	inear Se	rvomotor					inforn
	4	Semi-closed/F closed Type (r only)	Fully- read	0 hex or 1 hex	_	_	All	_	Device information
03 PnA06		0000 hex S	Semi-clos	sed					
		0001 hex F	ully-clos	ed					
04 PnA08	4	Rated Speed only)	(read	0 hex to FFFFFFF hex	1 min <sup>-1</sup>	_	All	_	_
05 PnA0A	4	Maximum Out Speed (read c	tput only)	0 hex to FFFFFFF hex	1 min <sup>-1</sup>	-	All	_	-
06 PnA0C	4	Speed Multipl (read only)	ier	-1,073,741,823 to 1,073,741,823	_	_	All	_	
07 PnA0E	4	Rated Torque (read only)		0 hex to FFFFFFF hex	1 N·m	-	All	_	
08 PnA10	4	Maximum Out Torque (read o	tput only)	0 hex to FFFFFFF hex	1 N·m	_	All	_	nation
09 PnA12	4	Torque Multipl (read only)	lier	-1,073,741,823 to 1,073,741,823	_	_	All	_	Device information
0A PnA14	4	Resolution (read only)		0 hex to FFFFFFF hex	1 pulse/rev	_	Rotary	_	Devic
0B PnA16	4	Linear Scale F	Pitch	0 to 65,536,000	1 nm [0.01 μm]	0	Linear	After restart	1
0C PnA18	4	Pulses per Sc Pitch (read on	ale lly)	0 hex to FFFFFFF hex	1 pulse/ pitch	-	Linear	-	1

						(	Continued fr	om previou	us page.
Parameter No.	Size	Name	е	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication
21 PnA42	4	Electronic Ge (Numerator)	ear Ratio	1 to 1,073,741,824	-	16	All	After restart	
22 PnA44	4	Electronic Ge (Denominato		1 to 1,073,741,824	-	1	All	After restart	
23 PnA46	4	Absolute End Origin Offset		-1,073,741,823 to 1,073,741,823	1 reference unit	0	All	Immedi- ately <sup>*1</sup>	
24 PnA48	4	Multiturn Lim	nit	0 to 65,535	1 Rev	65535	Rotary	After restart	
	4	Limit Setting		0 hex to 33 hex	-	0000 hex	All	After restart	
		Bit 0		0: Enabled, 1: Di	,				Machine specifications
		Bit 1		(0: Enabled, 1: D	isabled)				icat
25		Bit 2	Rese	rved.					ecif
PnA4A		Bit 3	Rese						ds e
		Bit 4	P-SC	T (0: Disabled, 1:	Enabled)				nine
		Bit 5	N-SC	DT (0: Disabled, 1:	Enabled)				lach
		Bits 6 to 31	Rese	rved.					2
				1 070 744 000	[				-
26 PnA4C	4	Forward Soft Limit	tware	-1,073,741,823 to 1,073,741,823	1 reference unit	10737418 23	All	Immedi- ately	
27 PnA4E	4	Reserved pa (Do not chan	rameter 1ge.)	-	-	0	All	Immedi- ately	
28 PnA50	4	Reverse Soft Limit	tware	-1,073,741,823 to 1,073,741,823	1 reference unit	-1073741 823	All	Immedi- ately	
29 PnA52	4	Reserved pa (Do not chan	rameter nge.)	-	-	0	All	Immedi- ately	
	4	Speed Unit *	2	0 hex to 4 hex	-	0 hex	All	After restart	
		0000 hex	Referenc	e units/s				<u> </u>	
41		0001 hex	Referenc	e units/min				<u> </u>	
PnA82		0002 hex	Percenta	ge (%) of rated spe	eed <sup>*3</sup>				
		0003 hex	min <sup>-1*3</sup>						
		0004 hex	Maximum	n motor speed/400	)00000 hex <sup>*4</sup>				~
				I					Unit settings
		Speed Base	Unit						t se
42		*3, *4 (Set the value						After	Uni
PnA84	4	from the follo	owing	-3 to 3	-	0	All	restart	
		formula: Spe (41 PnA82) >							
	4	Position Unit	- /	0 hex	_	0 hex	All	After restart	-
43		1		l	1.	1		I	-
PnA86		0000 hex	Reference	a unite					
		JUUU HEX	I IEIEIEIICI						
							Contir	nued on ne	vt nade

Continued from previous page.

							Sontinued fr		1 0
Parameter No.	Size	Name		Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication
44 PnA88	4	Position Base Un (Set the value of f from the following formula: Position (43 PnA86) × 10 <sup>n</sup>	n g unit	0	-	0	All	After restart	
	4	Acceleration Unit		0 hex	-	0 hex	All	After restart	
45 PnA8A		0000 hex Refere	ence	units/s <sup>2</sup>					-
46 PnA8C	4	Acceleration Base Unit (Set the value of f from the following formula: Accelera unit (45 PnA8A) > 10 <sup>n</sup> )	n J tion	4 to 6	_	4	All	After restart	
	4	Torque Unit		1 hex or 2 hex	-	1 hex	All	After restart	
47 PnA8E			-	ge (%) of rated toro torque/40000000		·			
48 PnA90	4	Torque Base Unit (Set the value of from the following formula: Torque u (47 PnA8E) × 10 <sup>n</sup>	n J Init	-5 to 0	_	0	All	After restart	Unit settings
	4	Supported Unit (re only)	ead	-	-	0601011F hex	All	_	Unit s
49 PnA92		Speed Units Bit 0 Bit 1 Bit 2 Bit 3 Bit 4 Bits 5 to 7 Position Units Bit 8 Bits 9 to 15 Acceleration Unit	Rei Pei Ma Rei Rei	ference units/s (1: ference units/min ( rcentage (%) of rat n <sup>-1</sup> (rpm) (1: Enable ximum motor spec served (0: Disabled ference units (1: En served (0: Disabled	1: Enabled) ed speed (1: E ed) ed/4000000 he d). nabled)		:d)		
		Bit 16         Bit 17         Bits 18 to 23         Torque Units         Bit 24         Bit 25         Bit 26         Bits 27 to 31	ms     Res     N·r     Per     Ma	ference units/s <sup>2</sup> (1 (acceleration time served (0: Disabled) m (0: Disabled) rcentage (%) of rat ximum torque/400 served (0: Disabled)	e required to re d). ed torque (1: E 000000 hex		peed) (0: Disa	bled)	
				•					

Parameter Lists

Continued on next page.

Parameter	Size	Name	Setting Range	Setting Unit	Default	Applicable	When	Class
<u>No.</u> 61			1,000 to	[Resolution] 0.001 Hz	Setting	Motors	Enabled	ficatio
PnAC2	4	Speed Loop Gain	2,000,000	[0.1 Hz]	40000	All	ately	
62 PnAC4	4	Speed Loop Integral Time Constant	150 to 512,000	1 μs [0.01 ms]	20000	All	Immedi- ately	
63 PnAC6	4	Position Loop Gain	1,000 to 2,000,000	0.001/s [0.1/s]	40000	All	Immedi- ately	
64 PnAC8	4	Feed Forward Com- pensation	0 to 100	1%	0	All	Immedi- ately	
65 PnACA	4	Position Loop Inte- gral Time Constant	0 to 5,000,000	1 μs [0.1 ms]	0	All	Immedi- ately	_
66 PnACC	4	In-position Range	0 to 1,073,741,824	1 reference unit	7	All	Immedi- ately	
67 PnACE	4	Near-position Range	1 to 1,073,741,824	1 reference unit	10737418 24	All	Immedi- ately	
81 PnB02	4	Exponential Func- tion Acceleration/ Deceleration Time Constant	0 to 510,000	1 μs [0.1 ms]	0	All	Immedi- ately <sup>*6</sup>	
82 PnB04	4	Movement Average Time	0 to 510,000	1 μs [0.1 ms]	0	All	Immedi- ately <sup>*6</sup>	_
83 PnB06	4	Final Travel for Exter- nal Input Positioning	-1,073,741,823 to 1,073,741,823	1 reference unit	100	All	Immedi- ately	
84 PnB08	4	Zero Point Return Approach Speed	0 hex to 3FFFFFFF hex	10 <sup>-3</sup> min <sup>-1</sup>	× 5,000 hex refer- ence units/s con- verted to 10 <sup>-3</sup> min <sup>-1</sup>	All	Immedi- ately	-
85 PnB0A	4	Zero Point Return Creep Speed	0 hex to 3FFFFFFF hex	10 <sup>-3</sup> min <sup>-1</sup>	× 500 hex reference units/s con- verted to 10 <sup>-3</sup> min <sup>-1</sup>	All	Immedi- ately	Tuning
86 PnB0C	4	Final Travel for Zero Point Return	-1,073,741,823 to 1,073,741,823	1 reference unit	100	All	Immedi- ately	
	4	Monitor Select 1	0 hex to F hex	-	1 hex	All	Immedi- ately	
87 PnB0E		000B hexReserved000C hexCMN1 (cd000D hexCMN2 (cd000E hexOMN1 (od	I (undefined value). I (undefined value). ommon monitor 1) ommon monitor 2) ptional monitor 1) ptional monitor 2)					

Continued from previous page.

							Continued fr	rom previo
Parameter No.	Size	Nar	ne	Setting Rang	e Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled
	4	Monitor Se	lect 2	0 hex to F he	x –	0 hex	All	Immedi- ately
8 nB10		0000 to 000F hex	The setting	gs are the same	e as those for Fixe	ed Monitor S	election 1.	
	4	Monitor Se SEL_MON		0 hex to 9 he	x –	0 hex	All	Immedi- ately
		0000 hex	TPOS (tar	get position in	reference coordin	ate system)		
		0001 hex			in reference coord	-		
		0002 hex		-	in POS_SET (Set	Coordinate	System) con	nmand)
		0003 hex		get speed)				
		0004 hex 0005 hex		(speed limit) (torque limit)				
			00 hex: 01 hex: 02 hex: 03 hex: Byte 2: C 00 hex: 01 hex: 02 hex: Byte 3: R	Phase 0 Phase 1 Phase 2 Phase 3 urrent control n Position contro Speed control Torque control	l mode mode mode			
			Bit	Name	Description	Value	e Settin	g
			Bit 0	LT_RDY1	Processing statu latch detection fr	or	Latch dete not yet pro cessed.	
39 PnB12					LT_REQ1 in SVC D_CTRL region	CM- 1	Processing detection i progress.	
HB IL		0006 hex	Bit 1	LT RDY1	Processing statu latch detection for	or	Latch dete not yet pro cessed.	-
			DIL		LT_REQ2 in SVC D_CTRL region	CM-	Processing detection i progress.	
						0	Phase C	
			Ditte O			1	External in signal 1	put
			Bits 2 and 3	LT_SEL1R	Latch signal	2	External in signal 2	put
						3	External in signal 3	put
						0	Phase C	
						1	External in signal 1	put
			Bits 4 and 5	LT_SEL2R	Latch signal	2	External in	put
							signal 2 External in	put
					1	3	signal 3	
				Deer st (2	)			
		0007 hex	Bit 6 Reserved	Reserved (0	).			
		0007 hex 0008 hex		•	Lower 32 bits			

6

6-119

Parameter No.	Size	Name	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Class
	4	Monitor Select for SEL_MON2	0 hex to 9 hex	_	0 hex	All	Immedi- ately	
8A PnB14		0000 to 0009 The set hex	tings are the same as	those for SEL	_MON Monit	tor Selection	1.	
8B PnB16	4	Zero Point Detection Range	on 0 to 250	1 reference unit	10	All	Immedi- ately	_
8C PnB18	4	Forward Torque Lir	nit 0 to 800	1%	100	All	Immedi- ately	
8D PnB1A	4	Reverse Torque Lir	nit 0 to 800	1%	100	All	Immedi- ately	
8E PnB1C	4	Zero Speed Detec- tion Range	- 1,000 to 10,000,000	10 <sup>-3</sup> min <sup>-1</sup>	20000	All	Immedi- ately	irs
8F PnB1E	4	Speed Match Sign Detection Range	al 0 to 100,000	10 <sup>-3</sup> min <sup>-1</sup>	10000	All	Immedi- ately	ramete
	4	SVCMD_CTRL bit Enabled/Disabled (read only)	-	_	0FFF3F3F hex	All	_	Command-related parameters
								nd-rel
		Bit 0	CMD_PAUSE (1: En	,				mar
		Bit 1	CMD_CANCEL (1: E	,				Eo
		Bits 2 and 3	STOP_MODE (1: En	,				0
		Bits 4 and 5	ACCFIL (1: Enabled)					
		Bits 6 and 7	Reserved (0: Disable					
90 D D D D D D D D D D D D D D D D D D D		Bit 8	LT_REQ1 (1: Enable	,				
PnB20		Bit 9 Bits 10 and 11	LT_REQ2 (1: Enable LT_SEL1 (1: Enable	,				
		Bits 10 and 11 Bits 12 and 13	LT_SEL1 (1: Enabled	,				
		Bits 12 and 13 Bits 14 and 15	Reserved (0: Disable	-				
		Bits 16 to 19	SEL MON1 (1: Enat	,				
		Bits 20 to 23	SEL_MON2 (1: Enat	1				
		Bits 24 to 27	SEL_MON3 (1: Enat	,				
		Bits 28 to 31	Reserved (0: Disable					

#### 6.3 FT41 Specification

#### 6.3.2 List of MECHATROLINK-III Common Parameters

Continued from previous page.

Parameter No.	Size	Name	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Class ficatio
	4	SVCMD_STAT bit Enabled/Disabled (read only)	-	0 hex	0FFF3F33 hex	All	_	_
		Bit 0	CMD_PAUSE_CMP	(1. Enabled)				
			CMD_CANCEL_CM					
			Reserved (0: Disable	,				
			ACCFIL (1: Enabled)	,				
			Reserved (0: Disable					
			L_CMP1 (1: Enabled	,				
			L_CMP2 (1: Enabled	,				
91 D= D00			POS_RDY (1: Enable					
PnB22			POS_RD1 (1: Enabled)	July				
			M_RDY (1: Enabled)					
			SV_ON (1: Enabled)					
			Reserved (0: Disable					
			SEL_MON1 (1: Enat	,				ers
			SEL_MON2 (1: Enat					met
			SEL_MON3 (1: Enat					ara
			Reserved (0: Disable	,				d p
		I/O Bit Enabled/Dis-		,	00750/50			Command-related parameters
	4	abled (Output) (read only)		-	007F01F0 hex	All	_	Comn
		Bits 0 to 3	Reserved (0: Disable	ed).				
		Bit 4	V_PPI (1: Enabled)					
		Bit 5	P_PPI (1: Enabled)					
		Bit 6	P_CL (1: Enabled)					
92		Bit 7	N_CL (1: Enabled)					
PnB24		Bit 8	G_SEL (1: Enabled)					
		Bits 9 to 11	G_SEL (0: Disabled)					
		Bits 12 to 15	Reserved (0: Disable	ed).				
		DII3 12 10 13						
			BANK_SEL (1: Enab	oled)				
		Bits 16 to 19	BANK_SEL (1: Enab SO1 to SO3 (1: Ena					
		Bits 16 to 19 Bits 20 to 22		bled)				

Continued on next page.

-	Continued from previous							
Parameter No.	Size	Name	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication
93 PnB26	4	I/O Bit Enabled/Dis- abled (Input) (read only)	_	_	FF0FFEFE hex	All	_	
		Bit 0	Reserved (0: Disable	ad)				
		Bit 1	DEC (1: Enabled)	suj.				
		Bit 2	P-OT (1: Enabled)					
		Bit 3	N-OT (1: Enabled)					
		Bit 4	EXT1 (1: Enabled)					
		Bit 5	EXT2 (1: Enabled)					
		Bit 6	EXT3 (1: Enabled)					ters
		Bit 7	ESTP (1: Enabled)					Command-related parameters
		Bit 8	Reserved (0: Disabled).					ara
		Bit 9	BRK_ON (1: Enable	K_ON (1: Enabled)				
		Bit 10	P-SOT (1: Enabled)					elate
		Bit 11	N-SOT (1: Enabled)					r-b
		Bit 12	DEN (1: Enabled)					nan
		Bit 13	NEAR (1: Enabled)					Juc
		Bit 14	PSET (1: Enabled) ZPOINT (1: Enabled) T_LIM (1: Enabled) V_LIM (1: Enabled) V_CMP (1: Enabled)					ŏ
		Bit 15						
		Bit 16						
		Bit 17						
		Bit 18						
		Bit 19	ZSPD (1: Enabled)					
		Bits 20 to 23	Reserved (0: Disabled).					
		Bits 24 to 31	_STS1 to I0_STS8 (1: Enabled)					

Continued for .

\*1. The parameter setting is enabled after SENS\_ON command execution is completed.

\*2. When using fully-closed loop control, set the reference units/s.

\*3. If you set the Speed Unit Selection (parameter 41) to either 0002 hex or 0003 hex, set the Speed Base Unit Selection (parameter 42) to a number between -3 and 0.

\*4. If you set the Speed Unit Selection (parameter 41) to 0004 hex, set the Speed Base Unit Selection (parameter 42) to 0.

\*5. If you set the Torque Unit Selection (parameter 47) to 0002 hex, set the Torque Base Unit Selection (parameter 48) to 0.

\*6. Change the setting when the reference is stopped (i.e., while DEN is set to 1). If you change the setting during operation, the reference output will be affected.

# 6.3.3 Parameter Recording Table

Parameter No.	Default Setting	Name	When Enabled	
Pn000	0000	Basic Function Selections 0	After restart	
Pn001	0000	Application Function Selec- tions 1	After restart	
Pn002	0011	Application Function Selec- tions 2	After restart	
Pn006	0002	Application Function Selec- tions 6	Immediately	
Pn007	0000	Application Function Selec- tions 7	Immediately	
Pn008	4000	Application Function Selec- tions 8	After restart	
Pn009	0010	Application Function Selec- tions 9	After restart	
Pn00A	0001	Application Function Selec- tions A	After restart	
Pn00B	0000	Application Function Selec- tions B	After restart	
Pn00C	0000	Application Function Selec- tions C	After restart	
Pn00D	0000	Application Function Selec- tions D	After restart	
Pn00F	0000	Application Function Selec- tions F	After restart	
Pn021	0000	Reserved parameter	_	
Pn040	0000	Reserved parameter	_	
Pn080	0000	Application Function Selec- tions 80	After restart	
Pn081	0000	Application Function Selec- tions 81	After restart	
Pn100	400	Speed Loop Gain	Immediately	
Pn101	2000	Speed Loop Integral Time Constant	Immediately	
Pn102	400	Position Loop Gain	Immediately	
Pn103	100	Moment of Inertia Ratio	Immediately	
Pn104	400	Second Speed Loop Gain	Immediately	
Pn105	2000	Second Speed Loop Inte- gral Time Constant	Immediately	
Pn106	400	Second Position Loop Gain	Immediately	
Pn109	0	Feedforward	Immediately	
Pn10A	0	Feedforward Filter Time Constant	Immediately	
Pn10B	0000	Gain Application Selections	*1	
Pn10C	200	Mode Switching Level for Torque Reference	Immediately	
Pn10D	0	Mode Switching Level for Speed Reference	Immediately	
Pn10E	0	Mode Switching Level for Acceleration	Immediately	
Pn10F	0	Mode Switching Level for Position Deviation	Immediately	
Pn11F	0	Position Integral Time Con- stant	Immediately	

Use the following table to record the settings of the parameters.

Continued on next page.

		Continued from p	previous page.
Parameter No.	Default Setting	Name	When Enabled
Pn121	100	Friction Compensation Gain	Immediately
Pn122	100	Second Friction Compen- sation Gain	Immediately
Pn123	0	Friction Compensation Coefficient	Immediately
Pn124	0	Friction Compensation Fre- quency Correction	Immediately
Pn125	100	Friction Compensation Gain Correction	Immediately
Pn131	0	Gain Switching Time 1	Immediately
Pn132	0	Gain Switching Time 2	Immediately
Pn135	0	Gain Switching Waiting Time 1	Immediately
Pn136	0	Gain Switching Waiting Time 2	Immediately
Pn139	0000	Automatic Gain Switching Selections 1	Immediately
Pn13D	2000	Current Gain Level	Immediately
Pn140	0100	Model Following Control- Related Selections	Immediately
Pn141	500	Model Following Control Gain	Immediately
Pn142	1000	Model Following Control Gain Correction	Immediately
Pn143	1000	Model Following Control Bias in the Forward Direc- tion	Immediately
Pn144	1000	Model Following Control Bias in the Reverse Direc- tion	Immediately
Pn145	500	Vibration Suppression 1 Frequency A	Immediately
Pn146	700	Vibration Suppression 1 Frequency B	Immediately
Pn147	1000	Model Following Control Speed Feedforward Com- pensation	Immediately
Pn148	500	Second Model Following Control Gain	Immediately
Pn149	1000	Second Model Following Control Gain Correction	Immediately
Pn14A	800	Vibration Suppression 2 Frequency	Immediately
Pn14B	100	Vibration Suppression 2 Correction	Immediately
Pn14F	0021	Control-Related Selections	After restart
Pn160	0010	Anti-Resonance Control- Related Selections	Immediately
Pn161	1000	Anti-Resonance Frequency	Immediately
Pn162	100	Anti-Resonance Gain Cor- rection	Immediately
Pn163	0	Anti-Resonance Damping Gain	Immediately
Pn164	0	Anti-Resonance Filter Time Constant 1 Correction	Immediately

Continued from previous page.

Continued from previous page			
Parameter No.	Default Setting	Name	When Enabled
Pn165	0	Anti-Resonance Filter Time Constant 2 Correction	Immediately
Pn166	0	Anti-Resonance Damping Gain 2	Immediately
Pn170	1400	Tuning-less Function- Related Selections	*1
Pn181	0	Mode Switching Level for Speed Reference	Immediately
Pn182	0	Mode Switching Level for Acceleration	Immediately
Pn205	65535	Multiturn Limit	After restart
Pn207	0010	Position Control Function Selections	After restart
Pn20A	32768	Number of External Scale Pitches	After restart
Pn20E	16	Electronic Gear Ratio (Numerator)	After restart
Pn210	1	Electronic Gear Ratio (Denominator)	After restart
Pn212	2048	Number of Encoder Output Pulses	After restart
Pn22A	0000	Fully-closed Control Selec- tions	After restart
Pn230	0000	Position Control Expansion Function Selections	After restart
Pn231	0	Backlash Compensation	Immediately
Pn233	0	Backlash Compensation Time Constant	Immediately
Pn281	20	Encoder Output Resolution	After restart
Pn282	0	Linear Encoder Scale Pitch	After restart
Pn304	500	Jogging Speed	Immediately
Pn305	0	Soft Start Acceleration Time	Immediately
Pn306	0	Soft Start Deceleration Time	Immediately
Pn308	0	Speed Feedback Filter Time Constant	Immediately
Pn30A	0	Deceleration Time for Servo OFF and Forced Stops	Immediately
Pn30C	0	Speed Feedforward Aver- age Movement Time	Immediately
Pn310	0000	Vibration Detection Selec- tions	Immediately
Pn311	100	Vibration Detection Sensi- tivity	Immediately
Pn312	50	Vibration Detection Level	Immediately
Pn316	10000	Maximum Motor Speed	After restart
Pn324	300	Moment of Inertia Calcula- tion Starting Level	Immediately
Pn383	50	Jogging Speed	Immediately
Pn384	10	Vibration Detection Level	Immediately
Pn385	50	Maximum Motor Speed	After restart
Pn401	100	First Stage First Torque Reference Filter Time Con- stant	Immediately

Continued on next page.

6

		Continued from p	previous page.
Parameter No.	Default Setting	Name	When Enabled
Pn402	800	Forward Torque Limit	Immediately
Pn403	800	Reverse Torque Limit	Immediately
Pn404	100	Forward External Torque Limit	Immediately
Pn405	100	Reverse External Torque Limit	Immediately
Pn406	800	Emergency Stop Torque	Immediately
Pn407	100	Speed Limit during Torque Control	Immediately
Pn408	0000	Torque-Related Function Selections	*1
Pn409	5000	First Stage Notch Filter Fre- quency	Immediately
Pn40A	70	First Stage Notch Filter Q Value	Immediately
Pn40B	0	First Stage Notch Filter Depth	Immediately
Pn40C	5000	Second Stage Notch Filter Frequency	Immediately
Pn40D	70	Second Stage Notch Filter Q Value	Immediately
Pn40E	0	Second Stage Notch Filter Depth	Immediately
Pn40F	5000	Second Stage Second Torque Reference Filter Fre- quency	Immediately
Pn410	50	Second Stage Second Notch Filter Q Value	Immediately
Pn412	100	First Stage Second Torque Reference Filter Time Con- stant	Immediately
Pn416	0000	Torque-Related Function Selections 2	Immediately
Pn417	5000	Third Stage Notch Filter Frequency	Immediately
Pn418	70	Third Stage Notch Filter Q Value	Immediately
Pn419	0	Third Stage Notch Filter Depth	Immediately
Pn41A	5000	Fourth Stage Notch Filter Frequency	Immediately
Pn41B	70	Fourth Stage Notch Filter Q Value	Immediately
Pn41C	0	Fourth Stage Notch Filter Depth	Immediately
Pn41D	5000	Fifth Stage Notch Filter Fre- quency	Immediately
Pn41E	70	Fifth Stage Notch Filter Q Value	Immediately
Pn41F	0	Fifth Stage Notch Filter Depth	Immediately
Pn423	0000	Speed Ripple Compensa- tion Selections	*1
Pn424	50	Torque Limit at Main Circuit Voltage Drop	Immediately

Continued from previous page.

Pn425         100         Release Time for Torque Limit at Main Circuit Voitage Drop         Immediat Drogue Feedforward Aver- age Movement Time- age Movement Time- age Movement Time- age Movement Time- ton Enable Speed In Enable Speed	Continued from previous page.			
Pn425         100         Limit at Main Circuit Voltage Drop         Immediat Drop           Pn426         0         Torque Feedforward Aver- age Movement Time         Immediat           Pn427         0         Speed Ripple Compensa- tion Enable Speed         Immediat           Pn440         0000         Pressure Feedback Selec- tion Switches         After rest           Pn441         100         Reserved parameter         -           Pn442         2000         Pressure Feedback Coop Integral Time         Immediat           Pn442         2000         Pressure Feedback Coop Integral Time         Immediat           Pn442         100         Pressure Feedback Coop Integral Time         Immediat           Pn445         0         Reserved parameter         -           Pn446         95         Reserved parameter         -           Pn445         0         Pressure Feedback Loop Deviation Overflow Level         Immediat           Pn446         0         Pressure Feedback Coot Gain         Immediat           Pn448         0         Pressure Feedback Coot Can         Immediat           Pn449         0         Pressure Feedback Coot flow Detection Level         Immediat           Pn440         0         Pressure Feedback Cover- flow Detection Time		Default Setting		When Enabled
Pha2b     0     age Movement Time     Immediat       Pn427     0     Speed Ripple Compensa- tion Enable Speed     Immediat       Pn440     0000     Pressure Feadback Selec- tion Switches     After rest       Pn441     100     Reserved parameter     -       Pn442     2000     Pressure Feadback Control 1 Pressure Feadback Coop Integral Time     Immediat       Pn442     00     Pressure Feadback Coop Integral Time     Immediat       Pn448     0     Pressure Feadback Coop Feedforward     Immediat       Pn447     100     Pressure Feadback Coop Pressure Feadback Coop Feedforward     Immediat       Pn448     0     Pressure Feadback Coop Pressure Feadback Coop Deviation Overflow Level     Immediat       Pn448     0     Pressure Feadback Coop Pressure Feadback Coop Cain     Immediat       Pn449     0     Pressure Feadback Coop Pressure Feadback Coret Immediat     Immediat       Pn440     0     Pressure Feadback Coret Immediat     Immediat       Pn441     1000     Pressure Feadback Coret Immediat     Immediat       Pn442     0     Pressure Feadback Coret Immediat     Immediat       Pn444     0     Pressure Feadback Coret Immediat     Immediat       Pn445     0     Pressure Feadback Coret Immediat     Immediat       Pn446     0<	Pn425	100	Limit at Main Circuit Voltage	Immediately
Pri42/       0       tion Enable Speed       Initiation         Pn440       0000       Pressure Feedback Selection       After rest         Pn441       100       Reserved parameter       -         Pn442       2000       1 Pressure Feedback Control       Immediat         Pn442       2000       1 Pressure Feedback Control       Immediat         Pn444       100       Pressure Feedback Control       Immediat         Pn444       00       Pressure Feedback Loop       Immediat         Pn445       0       Reserved parameter       -         Pn446       95       Reserved parameter       -         Pn447       100       Pressure Feedback Loop       Immediat         Pn448       0       Pressure Feedback Cotop       Immediat         Pn449       0       Pressure Feedback Cotop       Immediat         Pn440       0       Pressure Feedback Cotop       Immediat	Pn426	0		Immediately
Pn440     0000     tion Switches     Atter rest       Pn41     100     Reserved parameter     -       Pn442     2000     Pressure Feedback Control 1 Pressure Feedback Loop Integral Time     Immediat Pressure Feedback Loop       Pn444     100     Pressure Feedback Loop Feedforward     Immediat       Pn445     0     Reserved parameter     -       Pn446     95     Reserved parameter     -       Pn447     100     Pressure Feedback Loop Deviation Overlow Level     Immediat       Pn448     0     Pressure Feedback Conp Deviation Overlow Level     Immediat       Pn449     0     Reserved parameter     -       Pn440     1000     Pressure Feedback Control Gain     Immediat       Pn440     0     Pressure Feedback Control Level     Immediat       Pn440     1000     Pressure Feedback Control Level     Immediat       Pn440     0     Pressure Feedback Control 1 Press	Pn427	0		Immediately
Pn442         2000         Pressure Feedback Control 1 Pressure Feedback Control 1 Pressure Feedback Control 1 Pressure Feedback Loop         Immediat           Pn444         100         Pressure Feedback Control 1 Pressure Feedback Loop         Immediat           Pn445         0         Reserved parameter         -           Pn446         95         Reserved parameter         -           Pn446         95         Reserved parameter         -           Pn447         100         Pressure Feedback Control 1 Pressure Feedback Control Deviation Overflow Level         Immediat           Pn448         0         Pressure Feedback Sensor Gain         Immediat           Pn449         0         Pressure Feedback Cover flow Detection Level         Immediat           Pn440         000         Pressure Feedback Cover flow Detection Level         Immediat           Pn440         300         Pressure Feedback Cover flow Detection Level         Immediat           Pn450         0         Pressure Feedback Control 1 Pressure Feedback Loop         Immediat           Pn451         100         Pressure Feedback Control 1 Pressure Feedback Loop         Immediat           Pn456         15         Sweep Torque Reference Amplitude         After rest           Pn458         0011         Pressure Feedback Control 1 Pressur	Pn440	0000		After restart
Pn442       2000       1 Pressure Feedback Loop Integral Time       Immediat Integral Time         Pn444       100       Pressure Feedback Control 1 Pressure Feedback Loop Feedforward       Immediat         Pn445       0       Reserved parameter       -         Pn446       95       Reserved parameter       -         Pn446       95       Reserved parameter       -         Pn447       100       Pressure Feedback Coop Deviatio Overflow Level       Immediat         Pn448       0       Pressure Feedback Sensor Gain       Immediat         Pn449       0       Pressure Feedback Over- flow Detection Level       Immediat         Pn440       300       Pressure Feedback Control Level       Immediat         Pn440       0       Pressure Feedback Over- flow Detection Time       Immediat         Pn441       0       Pressure Feedback Control 1 Pressure Feedback Selec- ton Switch 2       Immediat         Pn450       100       1 Pressure Feedback Control 1 Pressure Feedback Control 1 Pressure Feedback Selec- ton Switch 2       Immediat         Pn458       0011       Pressure Feedback Control 1 Pressure Feedback	Pn441	100	Reserved parameter	_
Pn444       100       1 Pressure Feedback Loop Feedforward       Immediat Reserved parameter         Pn446       95       Reserved parameter       -         Pn446       95       Reserved parameter       -         Pn447       100       Pressure Feedback Loop Deviation Overflow Level       Immediat         Pn448       0       Pressure Feedback Loop Deviation Overflow Level       Immediat         Pn449       0       Pressure Feedback Sensor Gain       Immediat         Pn440       0       Pressure Feedback Over- flow Detection Level       Immediat         Pn440       300       Pressure Feedback Over- flow Detection Level       Immediat         Pn44E       0       Pressure Feedback Cover- flow Detection Level       Immediat         Pn450       0       Pressure Feedback Cover- flow Detection Level       Immediat         Pn450       0       Pressure Feedback Cover- flow Detection Level       Immediat         Pn451       100       Pressure Feedback Cover- flow Detection Tevel       Immediat         Pn452       100       Pressure Feedback Cover flow Detection Tevel       Immediat         Pn458       0011       Pressure Feedback Cover flow Detection Tevel       Immediat         Pn458       0011       Pressure Feedback Selec- tion Switch 2	Pn442	2000	1 Pressure Feedback Loop	Immediately
Pn446       95       Reserved parameter       -         Pn447       100       Pressure Feedback Loop Deviation Overflow Level       Immediat         Pn448       0       Pressure Feedback Offset       Immediat         Pn449       0       Pressure Feedback Sensor Gain       Immediat         Pn444       0       Pressure Feedback Filter       Immediat         Pn44A       0       Pressure Feedback Chashe       Immediat         Pn440       300       Pressure Feedback Chashe       Immediat         Pn442       0       Pressure Feedback Chashe       Immediat         Pn44E       0       Pressure Feedback Cover- flow Detection Level       Immediat         Pn450       0       Pressure Feedback Cover- flow Detection Time       Immediat         Pn451       100       Pressure Feedback Cover- flow Detection Time       Immediat         Pn452       100       Pressure Feedback Cover flow Detection Level       Immediat         Pn453       100       Pressure Feedback Cover flow Detection Level       Immediat         Pn456       15       Sweep Torque Reference Amplitude       Immediat         Pn458       0011       Pressure Feedback Doop Proportional Gain 2       Immediat         Pn458       50       Rese	Pn444	100	1 Pressure Feedback Loop	Immediately
Pn447       100       Pressure Feedback Loop Deviation Overflow Level       Immediat         Pn448       0       Pressure Feedback Offset       Immediat         Pn449       0       Pressure Feedback Sensor Gain       Immediat         Pn449       0       Pressure Feedback Sensor Gain       Immediat         Pn44A       0       Pressure Feedback Sensor Gain       Immediat         Pn44C       1000       Pressure Feedback Cover- flow Detection Level       Immediat         Pn44D       300       Pressure Feedback Cover- flow Detection Level       Immediat         Pn44E       0       Pressure Feedback Cover- flow Detection Time       Immediat         Pn450       0       Pressure Feedback Control 1 Pressu	Pn445	0	Reserved parameter	_
Pn447100Deviation Overflow LevelInfinitedialPn4480Pressure Feedback OffsetImmediatPn4490Pressure Feedback Sensor GainImmediatPn4400Pressure Feedback FilterImmediatPn4401000Pressure Feedback Cover flow Detection LevelImmediatPn44D300Pressure Feedback Cover flow Detection LevelImmediatPn44E0Pressure Feedback Cover flow Detection TimeImmediatPn4500Pressure Feedback Cover flow Detection TimeImmediatPn451100Pressure Feedback Control 1 Pressure Feedback Loop Differential TimeImmediatPn452100Pressure Feedback Control 1 Pressure Feedback Loop Differential Filter RateImmediatPn4580011Pressure Feedback Selec- tion Switch 2ImmediatPn4580011Pressure Feedback Selec- tion Switch 2ImmediatPn4581000Pressure Feedback Dop Proportional Gain 2ImmediatPn4580011Pressure Feedback Disable erence Level for Torque ControlImmediatPn4501000Pressure Feedback Disable erence Level parameterImmediatPn4580Reserved parameter-Pn45950Reserved parameter-Pn450100Reserved parameter-Pn4500Reserved parameter-Pn4500Reserved parameter-Pn450100Reserved parameter- <td>Pn446</td> <td>95</td> <td>Reserved parameter</td> <td>_</td>	Pn446	95	Reserved parameter	_
Pn4490Pressure Feedback Sensor GainImmediatPn44A0Pressure Feedback FilterImmediatPn44C1000Pressure Feedback Enable LevelImmediatPn44D300Pressure Feedback Over- flow Detection TimeImmediatPn44E0Pressure Feedback Over- flow Detection TimeImmediatPn4500Pressure Feedback Control 1 Pressure Feedback Loop Differential TimeImmediatPn451100Pressure Feedback Control 1 Pressure Feedback Control 1 Pressure Feedback Loop Differential Filter RateImmediatPn452100Pressure Feedback Control 1 Pressure Feedback Loop Differential Filter RateImmediatPn45615Sweep Torque Reference armitudeImmediatPn4580011Pressure Feedback Selec- tion Switch 2ImmediatPn4581000Pressure Feedback Disable LevelImmediatPn4580011Pressure Feedback Disable arence Level for Torque ControlImmediatPn45850Reserved parameter-Pn45D100Reserved parameter-Pn45D100Reserved parameter-Pn45B50Reserved parameter-Pn45D100Reserved parameter-Pn45D100Reserved parameter-Pn45D100Reserved parameter-Pn45D100Reserved parameter-Pn45D100Reserved parameter-Pn45D100 <td>Pn447</td> <td>100</td> <td></td> <td>Immediately</td>	Pn447	100		Immediately
Pn449       0       Gain       Immediat         Pn44A       0       Pressure Feedback Filter       Immediat         Pn44C       1000       Pressure Feedback Enable Level       Immediat         Pn44D       300       Pressure Feedback Over- flow Detection Level       Immediat         Pn44D       0       Pressure Feedback Over- flow Detection Level       Immediat         Pn44E       0       Pressure Feedback Over- flow Detection Time       Immediat         Pn450       0       Pressure Feedback Cover- flow Detection Time       Immediat         Pn451       100       Pressure Feedback Control 1 Pressure Feedback Loop Differential Filter Rate       Immediat         Pn452       100       Pressure Feedback Control 1 Pressure Feedback Loop       Immediat         Pn456       15       Sweep Torque Reference Amplitude       Immediat         Pn458       0011       Pressure Feedback Selec- ton Switch 2       After rest         Pn458       500       Gravity Compensation Reference Amplitude       Immediat         Pn458       1000       Pressure Feedback Disable Level       Immediat         Pn459       500       Reserved parameter       -         Pn450       100       Pressure Feedback Disable Level       Immediat	Pn448	0	Pressure Feedback Offset	Immediately
Pn44C1000Pressure Feedback Enable LevelImmediatPn44D300Pressure Feedback Over- flow Detection LevelImmediatPn44E0Pressure Feedback Over- flow Detection TimeImmediatPn4500Pressure Feedback Coort Differential TimeImmediatPn451100Pressure Feedback Control 1 Pressure Feedback Loop Differential Filter RateImmediatPn451100Pressure Feedback Control 1 Pressure Feedback Loop Differential Filter RateImmediatPn452100Pressure Feedback Control 1 Pressure Feedback Loop Differential Filter RateImmediatPn45815Sweep Torque Reference AmplitudeImmediatPn4580011Pressure Feedback Selec- tion Switch 2ImmediatPn4581000Pressure Feedback Disable LevelImmediatPn45850Reserved parameter-Pn45B50Reserved parameter-Pn45D100Pressure Feedback Disable LevelImmediatPn4500Pressure Feedback Disable LevelImmediatPn4500Reserved parameter-Pn4500Reserved parameter-Pn4500Reserved parameter-Pn4500Reserved parameter-Pn4500Reserved parameter-Pn4500Reserved parameter-Pn4500Reserved parameter-Pn4500Reserved parameter- <t< td=""><td>Pn449</td><td>0</td><td></td><td>Immediately</td></t<>	Pn449	0		Immediately
Pn44C1000LevelIntributed at Intributed at Pressure Feedback Over- flow Detection LevelImmediat ImmediatPn44E0Pressure Feedback Over- flow Detection TimeImmediat ImmediatPn4500Pressure Feedback Control 1 Pressure Feedback Control Differential Filter RateImmediatPn451100Pressure Feedback Control 1 Pressure Feedback Loop Differential Filter RateImmediatPn452100Pressure Feedback Control 1 Pressure Feedback Loop Differential Filter RateImmediatPn45615Sweep Torque Reference AmplitudeImmediatPn4580011Pressure Feedback Selec- tion Switch 2ImmediatPn459500Gravity Compensation Ref- erence Level for Torque ControlImmediatPn4581000Pressure Feedback Disable LevelImmediatPn4580Reserved parameter-Pn450100Reserved parameter-Pn4550Reserved parameter-Pn4560Reserved paramet	Pn44A	0	Pressure Feedback Filter	Immediately
Pn44D300ImmediatPn44E0ImmediatPn44E0Pressure Feedback Over- flow Detection TimeImmediatPn4500Pressure Feedback Control 1 Pressure Feedback Loop Differential TimeImmediatPn451100Pressure Feedback Control 1 Pressure Feedback Loop Differential TimeImmediatPn452100Pressure Feedback Control 1 Pressure Feedback Loop Differential Filter RateImmediatPn452100Pressure Feedback Loop Proportional Gain 2ImmediatPn45615Sweep Torque Reference AmplitudeImmediatPn4580011Pressure Feedback Selec- torswitch 2After restPn459500Gravity Compensation Ref- erence Level for Torque ControlImmediatPn4581000Pressure Feedback Disable LevelImmediatPn4580Reserved parameter-Pn455100Reserved parameter-Pn456150Reserved parameter-Pn4550Pressure Feedback Refer- ence Filter Time ConstantImmediatPn4560Pressure Feedback Refer- ence Filter Time ConstantImmediatPn4500101Notch Filter AdjustmentImmediat	Pn44C	1000		Immediately
Pn44E0flowDetection TimeImmediatPn4500Pressure Feedback Control 1 Pressure Feedback Loop Differential TimeImmediatPn451100Pressure Feedback Control 1 Pressure Feedback Loop Differential Filter RateImmediatPn452100Pressure Feedback Control 1 Pressure Feedback Loop Proportional Gain 2ImmediatPn45615Sweep Torque Reference AmplitudeImmediatPn4580011Pressure Feedback Selec- tion Switch 2ImmediatPn459500Gravity Compensation Reference Level for Torque ControlImmediatPn4581000Pressure Feedback Disable LevelImmediatPn45950Reserved parameter-Pn450100Reserved parameter-Pn450100Reserved parameter-Pn4500100Reserved parameter-Pn4500Notch Filter AdjustmentImmediat	Pn44D	300		Immediately
Pn45001 Pressure Feedback Loop Differential TimeImmediatPn451100Pressure Feedback Control 1 Pressure Feedback Loop Differential Filter RateImmediatPn452100Pressure Feedback Control 1 Pressure Feedback Loop Proportional Gain 2ImmediatPn45615Sweep Torque Reference AmplitudeImmediatPn4580011Pressure Feedback Selec- tion Switch 2After restPn459500Gravity Compensation Ref- erence Level for Torque ControlImmediatPn4581000Pressure Feedback Disable LevelImmediatPn459500Reserved parameter-Pn450100Reserved parameter-Pn452100Reserved parameter-Pn4540011Reserved parameter-Pn4550Reserved parameter-Pn4560Pressure Feedback Refer- ence Filter Time ConstantImmediatPn4560ImmediatPressure Feedback Refer- ence Filter Time ConstantImmediatPn4500.0101Motch Filter AdjustmentImmediat	Pn44E	0		Immediately
Pn4511001 Pressure Feedback Loop Differential Filter RateImmediatPn452100Pressure Feedback Control 1 Pressure Feedback Loop Proportional Gain 2ImmediatPn45615Sweep Torque Reference AmplitudeImmediatPn4580011Pressure Feedback Selec- tion Switch 2After restPn459500Gravity Compensation Ref- erence Level for Torque ControlImmediatPn4581000Pressure Feedback Disable LevelImmediatPn45850Reserved parameter-Pn450100Reserved parameter-Pn451100Reserved parameter-Pn4520Reserved parameter-Pn4550Reserved parameter-Pn4560Reserved parameter-Pn4570Reserved parameter-Pn4580Reserved parameter-Pn4550Reserved parameter-Pn4560Reserved parameter-Pn4550Reserved parameter-Pn4560Reserved parameter-Pn4560Reserved parameter-Pn4560Reserved parameter-Pn4560Reserved parameter-Pn4560Reserved parameter-Pn4560Reserved parameter-Pn4560Reserved parameter-Pn4560Reserved parameter-Pn4560 </td <td>Pn450</td> <td>0</td> <td>1 Pressure Feedback Loop</td> <td>Immediately</td>	Pn450	0	1 Pressure Feedback Loop	Immediately
Pn4521001 Pressure Feedback Loop Proportional Gain 2ImmediatPn45615Sweep Torque Reference AmplitudeImmediatPn4580011Pressure Feedback Selec- tion Switch 2After restPn459500Gravity Compensation Ref- erence Level for Torque ControlImmediatPn459500Pressure Feedback Disable LevelImmediatPn4581000Pressure Feedback Disable LevelImmediatPn45B50Reserved parameter-Pn45C150Reserved parameter-Pn45D100Reserved parameter-Pn45E0Notch Filter AdjustmentImmediat	Pn451	100	1 Pressure Feedback Loop	Immediately
Pn45615AmplitudeInfinediatPn4580011Pressure Feedback Selection Switch 2After restPn459500Gravity Compensation Reference Level for Torque ControlImmediatPn4541000Pressure Feedback Disable LevelImmediatPn45550Reserved parameter-Pn45C150Reserved parameter-Pn45D100Pressure Feedback Reference Feedback Reference-Pn4550Reserved parameter-Pn4560Reserved parameter-Pn457100Reserved parameter-Pn4580Reserved parameter-Pn4550Reserved parameter-Pn4560Reserved parameter-Pn4560Reserved parameter-Pn4560Reserved parameter-Pn4560Reserved parameter-Pn4600101Notch Filter AdjustmentImmediat	Pn452	100	1 Pressure Feedback Loop	Immediately
Pn4580011tionSwitch 2After restPn459500Gravity Compensation Reference Level for Torque ControlImmediatPn45A1000Pressure Feedback Disable LevelImmediatPn45B50Reserved parameter-Pn45C150Reserved parameter-Pn45D100Pressure Feedback Reference Filter Time ConstantImmediatPn45E0Immediat-Pn45E0Immediat-Pn4600101Immediat-	Pn456	15		Immediately
Pn459500erence Level for Torque ControlImmediatPn45A1000Pressure Feedback Disable LevelImmediatPn45B50Reserved parameter-Pn45C150Reserved parameter-Pn45D100Reserved parameter-Pn45E0Pressure Feedback Reference Filter Time ConstantImmediatPn4600101Notch Filter AdjustmentImmediat	Pn458	0011	tion Switch 2	After restart
Pn45A     1000     Level     Immediat       Pn45B     50     Reserved parameter     -       Pn45C     150     Reserved parameter     -       Pn45D     100     Reserved parameter     -       Pn45E     0     Pressure Feedback Reference Filter Time Constant     Immediat       Pn460     0101     Notch Filter Adjustment     Immediat	Pn459	500	erence Level for Torque	Immediately
Pn45C     150     Reserved parameter     -       Pn45D     100     Reserved parameter     -       Pn45E     0     Pressure Feedback Reference Filter Time Constant     Immediate       Pn460     0101     Notch Filter Adjustment     Immediate	Pn45A	1000		Immediately
Pn45D       100       Reserved parameter       -         Pn45E       0       Pressure Feedback Reference Filter Time Constant       Immediat         Pn460       0101       Notch Filter Adjustment       Immediat	Pn45B	50	Reserved parameter	_
Pn45E     0     Pressure Feedback Reference Filter Time Constant     Immediat       Pn460     0101     Notch Filter Adjustment     Immediat	Pn45C	150	Reserved parameter	_
Pn45E     0     ence Filter Time Constant     Immediat       Pn460     0101     Notch Filter Adjustment     Immediat	Pn45D	100	Reserved parameter	_
	Pn45E	0	ence Filter Time Constant	Immediately
Selections 1	Pn460	0101	Notch Filter Adjustment Selections 1	Immediately

Parameter Lists

	Continued from previous page			
Parameter No.	Default Setting	Name	When Enabled	
Pn467	0	Pressure Feedback Sensor Gain 1	Immediately	
Pn468	0	Pressure Feedback Sensor Gain 2	Immediately	
Pn469	0	Pressure Feedback Sensor Gain 3	Immediately	
Pn46A	0	Pressure Feedback Sensor Gain 4	Immediately	
Pn46B	0	Pressure Feedback Sensor Gain 5	Immediately	
Pn480	100	Speed Limit during Force Control	Immediately	
Pn481	400	Polarity Detection Speed Loop Gain	Immediately	
Pn482	3000	Polarity Detection Speed Loop Integral Time Con- stant	Immediately	
Pn483	30	Forward Force Limit	Immediately	
Pn484	30	Reverse Force Limit	Immediately	
Pn485	20	Polarity Detection Refer- ence Speed	Immediately	
Pn486	25	Polarity Detection Refer- ence Acceleration/Deceler- ation Time	Immediately	
Pn487	0	Polarity Detection Con- stant Speed Time	Immediately	
Pn488	100	Polarity Detection Refer- ence Waiting Time	Immediately	
Pn48E	10	Polarity Detection Range	Immediately	
Pn490	100	Polarity Detection Load Level	Immediately	
Pn495	100	Polarity Detection Confir- mation Force Reference	Immediately	
Pn498	10	Polarity Detection Allowable Error Range	Immediately	
Pn49F	0	Speed Ripple Compensa- tion Enable Speed	Immediately	
Pn4A0	1000	Pressure Feedback One- Parameter Gain Level	Immediately	
Pn4A3	100	Reserved parameter	_	
Pn4A7	400	Pressure Feedback Control 2 Stability Gain	Immediately	
Pn4A8	2000	Pressure Feedback Control 2 Stability Integral Time	Immediately	
Pn4A9	400	Reserved parameter	_	
Pn4AA	2000	Reserved parameter	_	
Pn4AB	0	Reserved parameter	_	
Pn4AC	100	Pressure Feedback Moment of Inertia Ratio	Immediately	
Pn4AD	0000	Reserved parameter	_	
Pn4D0	0	Reserved parameter	_	
Pn4D1	0	Reserved parameter	_	
Pn502	20	Rotation Detection Level	Immediately	
Pn503	10	Speed Coincidence Detec- tion Signal Output Width	Immediately	

Continued from previous page.

Continued from previous page.

Parameter No.	Default Setting	Continued from p	When Enabled
Pn506	0	Brake Reference-Servo OFF Delay Time	Immediately
Pn507	100	Brake Reference Output Speed Level	Immediately
Pn508	50	Servo OFF-Brake Com- mand Waiting Time	Immediately
Pn509	20	Momentary Power Interrup- tion Hold Time	Immediately
Pn50A	1881	Input Signal Selections 1	After restart
Pn50B	8882	Input Signal Selections 2	After restart
Pn50E	0000	Output Signal Selections 1	After restart
Pn50F	0100	Output Signal Selections 2	After restart
Pn510	0000	Output Signal Selections 3	After restart
Pn511	6543	Input Signal Selections 5	After restart
Pn512	0000	Output Signal Inverse Set- tings	After restart
Pn514	0000	Output Signal Selections 4	After restart
Pn516	8888	Input Signal Selections 7	After restart
Pn51B	1000	Motor-Load Position Devia- tion Overflow Detection Level	Immediately
Pn51E	100	Position Deviation Over- flow Warning Level	Immediately
Pn520	5242880	Position Deviation Over- flow Alarm Level	Immediately
Pn522	7	Positioning Completed Width	Immediately
Pn524	1073741824	Near Signal Width	Immediately
Pn526	5242880	Position Deviation Over- flow Alarm Level at Servo ON	Immediately
Pn528	100	Position Deviation Over- flow Warning Level at Servo ON	Immediately
Pn529	10000	Speed Limit Level at Servo ON	Immediately
Pn52A	20	Multiplier per Fully-closed Rotation	Immediately
Pn52B	20	Overload Warning Level	Immediately
Pn52C	100	Base Current Derating at Motor Overload Detection	After restart
Pn530	0000	Program Jogging-Related Selections	Immediately
Pn531	32768	Program Jogging Travel Distance	Immediately
Pn533	500	Program Jogging Move- ment Speed	Immediately
Pn534	100	Program Jogging Accelera- tion/Deceleration Time	Immediately
Pn535	100	Program Jogging Waiting Time	Immediately
Pn536	1	Program Jogging Number of Movements	Immediately
Pn550	0	Analog Monitor 1 Offset Voltage	Immediately

Continued on next page.

Parameter Lists

	Continued from previous page			
Parameter No.	Default Setting	Name	When Enabled	
Pn551	0	Analog Monitor 2 Offset Voltage	Immediately	
Pn552	100	Analog Monitor 1 Magnifi- cation	Immediately	
Pn553	100	Analog Monitor 2 Magnifi- cation	Immediately	
Pn55A	1	Power Consumption Moni- tor Unit Time	Immediately	
Pn560	400	Residual Vibration Detec- tion Width	Immediately	
Pn561	100	Overshoot Detection Level	Immediately	
Pn581	20	Zero Speed Level	Immediately	
Pn582	10	Speed Coincidence Detec- tion Signal Output Width	Immediately	
Pn583	10	Brake Reference Output Speed Level	Immediately	
Pn584	10000	Speed Limit Level at Servo ON	Immediately	
Pn585	50	Program Jogging Move- ment Speed	Immediately	
Pn586	0	Motor Running Cooling Ratio	Immediately	
Pn587	0000	Polarity Detection Execu- tion Selection for Absolute Linear Encoder	Immediately	
Pn600	0	Regenerative Resistor Capacity	Immediately	
Pn601	0	Dynamic Brake Resistor Allowable Energy Con- sumption	After restart	
Pn603	0	Regenerative Resistance	Immediately	
Pn604	0	Dynamic Brake Resistance	After restart	
Pn6A4	0000	Table Operation Parameter           Settings	Immediately	
Pn6A5	0	Torque (Pressure) Refer- ence during Speed Table Operation	Immediately	
Pn6A7	0	Pressure Control Switching Pressure Percentage	Immediately	
Pn6A8	0	Table Operation Switching Position	Immediately	
Pn6AA	0	Speed Limit for Torque (Pressure) Table Operation	Immediately	
Pn6AC	0	Speed Table Reference 1	Immediately	
Pn6AE	0	Speed Table Reference 2	Immediately	
Pn6B0	0	Speed Table Reference 3	Immediately	
Pn6B2	0	Speed Table Reference 4	Immediately	
Pn6B4	0	Speed Table Reference 5	Immediately	
Pn6B6	0	Speed Table Reference 6	Immediately	
Pn6B8	0	Speed Table Reference 7	Immediately	
Pn6BA	0	Speed Table Reference 8	Immediately	
Pn6BC	0	Speed Table Reference 9	Immediately	
Pn6BE	0	Speed Table Reference 10	Immediately	
Pn6C0	0	Speed Table Switching Position 1	Immediately	

Continued from previous page.

Continued from previous page.

	Continued from previous page.			
Parameter No.	Default Setting	Name	When Enabled	
Pn6C2	0	Speed Table Switching Position 2	Immediately	
Pn6C4	0	Speed Table Switching Position 3	Immediately	
Pn6C6	0	Speed Table Switching Position 4	Immediately	
Pn6C8	0	Speed Table Switching Position 5	Immediately	
Pn6CA	0	Speed Table Switching Position 6	Immediately	
Pn6CC	0	Speed Table Switching Position 7	Immediately	
Pn6CE	0	Speed Table Switching Position 8	Immediately	
Pn6D0	0	Speed Table Switching Position 9	Immediately	
Pn6D2	0	Torque (Pressure) Reference 1	Immediately	
Pn6D4	0	Torque (Pressure) Refer- ence 2	Immediately	
Pn6D6	0	Torque (Pressure) Refer- ence 3	Immediately	
Pn6D8	0	Torque (Pressure) Reference 4	Immediately	
Pn6DA	0	Torque (Pressure) Refer- ence 5	Immediately	
Pn6DC	0	Torque (Pressure) Refer- ence Time 1	Immediately	
Pn6DE	0	Torque (Pressure) Refer- ence Time 2	Immediately	
Pn6E0	0	Torque (Pressure) Refer- ence Time 3	Immediately	
Pn6E2	0	Torque (Pressure) Refer- ence Time 4	Immediately	
Pn800	1040	Communications Controls	Immediately	
Pn801	0003	Application Function Selec- tions 6 (Software Limits)	Immediately	
Pn803	10	Origin Range	Immediately	
Pn804	1073741823	Forward Software Limit	Immediately	
Pn806	-1073741823	Reverse Software Limit	Immediately	
Pn808	0	Absolute Encoder Origin Offset	Immedi- ately <sup>*2</sup>	
Pn80A	100	First Stage Linear Accelera- tion Constant	Immedi- ately <sup>*3</sup>	
Pn80B	100	Second Stage Linear Acceleration Constant	Immedi- ately <sup>*3</sup>	
Pn80C	0	Acceleration Constant Switching Speed	Immedi- ately <sup>*3</sup>	
Pn80D	100	First Stage Linear Decelera- tion Constant	Immedi- ately <sup>*3</sup>	
Pn80E	100	Second Stage Linear Deceleration Constant	Immedi- ately <sup>*3</sup>	
Pn80F	0	Deceleration Constant Switching Speed	Immedi- ately <sup>*3</sup>	

6

Continued from previous pag			
Parameter No.	Default Setting	Name	When Enabled
Pn810	0	Exponential Acceleration/ Deceleration Bias	Immedi- ately <sup>*3</sup>
Pn811	0	Exponential Acceleration/ Deceleration Time Constant	Immedi- ately <sup>*3</sup>
Pn812	0	Movement Average Time	Immedi- ately <sup>*3</sup>
Pn814	100	External Positioning Final Travel Distance	Immedi- ately <sup>*3</sup>
Pn816	0000	Origin Return Mode Set- tings	Immedi- ately <sup>*3</sup>
Pn817	50	Origin Approach Speed 1	Immedi- ately <sup>*3</sup>
Pn818	5	Origin Approach Speed 2	Immedi- ately <sup>*3</sup>
Pn819	100	Final Travel Distance for Origin Return	Immedi- ately <sup>*3</sup>
Pn81E	0000	Input Signal Monitor Selec- tions	Immediately
Pn81F	0010	Command Data Allocations	After restart
Pn820	0	Forward Latching Area	Immediately
Pn822	0	Reverse Latching Area	Immediately
Pn824	0000	Option Monitor 1 Selection	Immediately
Pn825	0000	Option Monitor 2 Selection	Immediately
Pn827	100	Linear Deceleration Con- stant 1 for Stopping	Immedi- ately <sup>*3</sup>
Pn829	0	SVOFF Waiting Time (for SVOFF at Deceleration to Stop)	Immediately
Pn82A	1813	Option Field Allocations 1	After restart
Pn82B	1D1C	Option Field Allocations 2	After restart
Pn82C	1F1E	Option Field Allocations 3	After restart
Pn82D	0000	Option Field Allocations 4	After restart
Pn82E	0000	Option Field Allocations 5	After restart
Pn833	0000	Motion Settings	After restart
Pn834	100	First Stage Linear Accelera- tion Constant 2	Immedi- ately <sup>*3</sup>
Pn836	100	Second Stage Linear Acceleration Constant 2	Immedi- ately <sup>*3</sup>
Pn838	0	Acceleration Constant Switching Speed 2	Immedi- ately <sup>*3</sup>
Pn83A	100	First Stage Linear Decelera- tion Constant 2	Immedi- ately <sup>*3</sup>
Pn83C	100	Second Stage Linear Deceleration Constant 2	Immedi- ately <sup>*3</sup>
Pn83E	0	Deceleration Constant Switching Speed 2	Immedi- ately <sup>*3</sup>
Pn840	100	Linear Deceleration Con- stant 2 for Stopping	Immedi- ately <sup>*3</sup>
Pn842	0	Second Origin Approach Speed 1	Immedi- ately <sup>*3</sup>
Pn844	0	Second Origin Approach Speed 2	Immedi- ately <sup>*3</sup>
		· · · · · · · · · · · · · · · · · · ·	*

Continued from previous page.

Continued from previous page.

	Continued from previous page			
Parameter No.	Default Setting	Name	When Enabled	
Pn846	0	POSING Command Scurve Acceleration/Deceleration Rate	Immedi- ately <sup>*3</sup>	
Pn850	0	Number of Latch Sequences	Immediately	
Pn851	0	Continuous Latch Sequence Count	Immediately	
Pn852	0000	Latch Sequence 1 to 4 Set- tings	Immediately	
Pn853	0000	Latch Sequence 5 to 8 Set- tings	Immediately	
Pn860	0000	SVCMD_IO Input Signal Monitor Allocations 1	Immediately	
Pn861	0000	SVCMD_IO Input Signal Monitor Allocations 2	Immediately	
Pn862	0000	SVCMD_IO Input Signal Monitor Allocations 3	Immediately	
Pn863	0000	SVCMD_IO Input Signal Monitor Allocations 4	Immediately	
Pn868	0000	SVCMD_IO Output Signal Monitor Allocations 1	Immediately	
Pn869	0000	SVCMD_IO Output Signal Monitor Allocations 2	Immediately	
Pn880	0	Station Address Monitor (for maintenance, read only)	Immediately	
Pn881	0	Set Transmission Byte Count Monitor [bytes] (for maintenance, read only)	Immediately	
Pn882	0	Transmission Cycle Setting Monitor [× 0.25 μs] (for maintenance, read only)	Immediately	
Pn883	0	Communications Cycle Setting Monitor [transmis- sion cycles] (for mainte- nance, read only)	Immediately	
Pn884	0000	Communications Controls 2	Immediately	
Pn88A	0	MECHATROLINK Receive Error Counter Monitor (for maintenance, read only)	Immediately	
Pn890 to Pn8A6	0	Command Data Monitor during Alarm/Warning (for maintenance, read only)	Immediately	
Pn8A8 to Pn8BE	0	Response Data Monitor during Alarm/Warning (for maintenance, read only)	Immediately	
Pn900	0	Number of Parameter Banks	After restart	
Pn901	0	Number of Parameter Bank Members	After restart	
Pn902 to Pn910	0	Parameter Bank Member Definition	After restart	
Pn920 to Pn95F	0	Parameter Bank Data (Not saved in nonvolatile mem- ory.)	Immediately	
Pn9B1	0002	Other Station Monitor 1: Station Address	After restart	

Continued on next page.

6

Continued from previous page. Parameter When **Default Setting** Name No. Enabled Other Station Monitor 1: Pn9B2 Number of Transmission 0003 After restart **Bytes** Other Station Monitor 1: Pn9B3 1000 After restart Monitor Information Setting Other Station Monitor 2: Pn9B4 0002 After restart Station Address Other Station Monitor 2: Pn9B5 З Number of Transmission After restart **Bytes** Other Station Monitor 2: Pn9B6 1000 After restart Monitor Information Setting Other Station Monitor 3: Pn9B7 0002 After restart Station Address Other Station Monitor 3: Pn9B8 З Number of Transmission After restart Bytes Other Station Monitor 3: Pn9B9 1000 After restart Monitor Information Setting Other Station Monitor 4: Pn9BA 0002 After restart Station Address Other Station Monitor 4: Pn9BB З Number of Transmission After restart Bytes Other Station Monitor 4: Pn9BC 1000 After restart Monitor Information Setting Other Station Monitor 5: Pn9BD 0002 After restart Station Address Other Station Monitor 5: Pn9BE З Number of Transmission After restart Bvtes Other Station Monitor 5: Pn9BF 1000 After restart Monitor Information Setting Other Station Monitor Tar-Pn9C0 0000 Immediately get Station Selection 01 Encoder Type Selection PnA02 (read only) Motor Type Selection 02 \_ (read only) PnA04 03 Semi-closed/Fully-closed Selection (read only) PnA06 04 Rated Motor Speed \_ PnA08 (read only) 05 Maximum Output Speed PnA0A (read only) 06 Speed Multiplier (read only) \_ PnA0C 07 Rated Torque (read only) PnA0E 08 Maximum Output Torque \_ \_ PnA10 (read only) 09 Torque Multiplier (read only) PnA12 0A Resolution (read only) \_ PnA14

Continued from previous page.

		Continued from p	
Parameter No.	Default Setting	Name	When Enabled
0B PnA16	0	Scale Pitch	After restart
0C PnA18	_	Pulses per Scale Pitch (read only)	_
21 PnA42	16	Electronic Gear Ratio (Numerator)	After restart
22 PnA44	1	Electronic Gear Ratio (Denominator)	After restart
23 PnA46	0	Absolute Encoder Origin Offset	Immedi- ately <sup>*2</sup>
24 PnA48	65535	Multiturn Limit Setting	After restart
25 PnA4A	0000 hex	Limit Setting	After restart
26 PnA4C	1073741823	Forward Software Limit	Immediately
27 PnA4E	0	Reserved parameter (Do not change.)	Immediately
28 PnA50	-1073741823	Reverse Software Limit	Immediately
29 PnA52	0	Reserved parameter (Do not change.)	Immediately
41 PnA82	0	Speed Unit Selection	After restart
42 PnA84	0	Speed Base Unit Selection	After restart
43 PnA86	0	Position Unit Selection	After restart
44 PnA88	0	Position Base Unit Selec- tion	After restart
45 PnA8A	0	Acceleration Unit Selection	After restart
46 PnA8C	4	Acceleration Base Unit Selection	After restart
47 PnA8E	1	Torque Unit Selection	After restart
48 PnA90	0	Torque Base Unit Selection	After restart
49 PnA92	0601011F hex	Supported Unit Systems (read only)	_
61 PnAC2	40000	Speed Loop Gain	Immediately
62 PnAC4	20000	Speed Loop Integral Time Constant	Immediately
63 PnAC6	40000	Position Loop Gain	Immediately
64 PnAC8	0	Feedforward Compensation	Immediately
65 PnACA	0	Position Loop Integral Time Constant	Immediately
66 PnACC	7	Positioning Completed Width	Immediately
67 PnACE	1073741824	Near Signal Width	Immediately

Parameter Lists

6

		Continued from	orevious page.
Parameter No.	Default Setting	Name	When Enabled
81 PnB02	0	Exponential Acceleration/ Deceleration Time Constant	Immedi- ately <sup>*3</sup>
82 PnB04	0	Movement Average Time	Immedi- ately <sup>*3</sup>
83 PnB06	100	External Positioning Final Travel Distance	Immediately
84 PnB08	× 5,000 reference units/s converted to 10 <sup>-3</sup> min <sup>-1</sup>	Origin Approach Speed	Immediately
85 PnB0A	× 500 reference units/s converted to 10 <sup>-3</sup> min <sup>-1</sup>	Origin Return Creep Speed	Immediately
86 PnB0C	100	Final Travel Distance for Origin Return	Immediately
87 PnB0E	1	Fixed Monitor Selection 1	Immediately
88 PnB10	0	Fixed Monitor Selection 2	Immediately
89 PnB12	0	SEL_MON (CMN1) Monitor Selection 1	Immediately
8A PnB14	0	SEL_MON (CMN2) Monitor Selection 2	Immediately
8B PnB16	10	Origin Detection Width	Immediately
8C PnB18	100	Forward Torque Limit	Immediately
8D PnB1A	100	Reverse Torque Limit	Immediately
8E PnB1C	20000	Zero Speed Detection Range	Immediately
8F PnB1E	10000	Speed Coincidence Signal Detection Width	Immediately
90 PnB20	0FFF3F3F hex	Servo Command Control Field Enable/Disable Selec- tions (read only)	_
91 PnB22	0FFF3F33 hex	Servo Status Field Enable/ Disable Selections (read only)	-
92 PnB24	007F01F0 hex	Output Bit Enable/Disable Selections (read only)	_
93 PnB26	FF0FFEFE hex	Input Bit Enable/Disable Selections (read only)	_

\*1. The enable timing depends on the digit that is changed. Refer to the following section for details.
 6.2.1 List of Servo Parameters on page 6-4

6.2.2 List of MECHATROLINK-III Common Parameters on page 6-48

\*2. The parameter setting is enabled after SENS\_ON command execution is completed.

\*3. Change the setting when the reference is stopped (i.e., while DEN is set to 1). If you change the setting during operation, the reference output will be affected.

# $\langle$ Index angle

## A automatic offset adjustment for pressure feedback

detection input signal (Fn009)
В
base block (BB)xi
С
coefficient of speed fluctuation 2-8
control block diagrams 3-7
I input signal connections 3-4
L
Linear Servomotor
list of alarms 5-2, 5-58
list of parameters 6-4, 6-69
list of warnings

## Μ

Main Circuit Cable	Main Circuit Cable	-	-	-	_	-	-	-	_	-	-	-	-	_	-	-	-	-	-	_	_	-	_	-	- X	i
--------------------	--------------------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-----	---

## 0

operation patterns for pressure feedback control	3-5
operation patterns for speed/torque (pressure)	
table operation	4-3

## Ρ

## R

Rotary Servomotor
-------------------

## S

÷
Servo Drive xi
servo lock xi
servo OFF xi
servo ONxi
Servo System xi
Servomotor xi
SERVOPACK
model designations 1-3

SigmaWin+xi
speed/torque (pressure) table operation4-2
monitoring4-14
operating procedure 4-13
table parameter settings 4-4
storage humidity
storage temperature 2-6
surrounding air humidity 2-6
surrounding air temperature2-6

## т

troubleshooting alarms 5-8	, 5-64
troubleshooting warnings 5-42	, 5-98

## **Revision History**

The revision dates and numbers of the revised manuals are given on the bottom of the back cover.

MANUAL NO. SIEP S800001 94B <1>-0 WEB revision number Published in Japan <u>November 2016</u> Date of publication

Date of Publication	Rev. No.	Web Rev. No.	Section	Revised Contents
November 2016	<1>	0	All chapters	Addition: FT41 Specification
May 2016	Ι	-	_	First edition

# $\Sigma$ -7-Series AC Servo Drive $\Sigma$ -7S SERVOPACK with FT/EX Specification for Press and Injection Molding Application **Product Manual**

#### **IRUMA BUSINESS CENTER (SOLUTION CENTER)**

480, Kamifujisawa, Iruma, Saitama, 358-8555, Japan Phone 81-4-2962-5151 Fax 81-4-2962-6138 http://www.yaskawa.co.jp

YASKAWA AMERICA, INC. 2121, Norman Drive South, Waukegan, IL 60085, U.S.A. Phone 1-800-YASKAWA (927-5292) or 1-847-887-7000 Fax 1-847-887-7310 http://www.yaskawa.com

#### YASKAWA ELÉTRICO DO BRASIL LTDA.

777, Avenida Piraporinha, Diadema, São Paulo, 09950-000, Brasil Phone 55-11-3585-1100 Fax 55-11-3585-1187 http://www.yaskawa.com.br

#### YASKAWA EUROPE GmbH

185, Hauptstraβe, Eschborn, 65760, Germany Phone 49-6196-569-300 Fax 49-6196-569-398 http://www.yaskawa.eu.com

#### YASKAWA ELECTRIC KOREA CORPORATION

9F, Kyobo Securities Bldg. 26-4, Yeouido-dong, Yeongdeungpo-gu, Seoul, 150-737, Korea Phone 82-2-784-7844 Fax 82-2-784-8495 http://www.yaskawa.co.kr

#### YASKAWA ELECTRIC (SINGAPORE) PTE. LTD.

151, Lorong Chuan, #04-02À, New Tech Park, 556741, Singapore Phone 65-6282-3003 Fax 65-6289-3003

## http://www.yaskawa.com.sg

http://www.yaskawa.com.cn

YASKAWA ELECTRIC (THAILAND) CO., LTD. 59, 1st-5th Floor, Flourish Building, Soi Ratchadapisek 18, Ratchadapisek Road, Huaykwang, Bangkok, 10310, Thailand Phone 66-2-017-0099 Fax 66-2-017-0799 http://www.yaskawa.co.th

### YASKAWA ELECTRIC (CHINA) CO., LTD.

22F, One Corporate Avenue, No.222, Hubin Road, Shanghai, 200021, China Phone 86-21-5385-2200 Fax 86-21-5385-3299

YASKAWA ELECTRIC (CHINA) CO., LTD. BEIJING OFFICE Room 1011, Tower W3 Oriental Plaza, No.1, East Chang An Ave., Dong Cheng District, Beijing, 100738, China Phone 86-10-8518-4086 Fax 86-10-8518-4082

### YASKAWA ELECTRIC TAIWAN CORPORATION

9F, 16, Nanking E. Rd., Sec. 3, Taipei, 104, Taiwan Phone 886-2-2502-5003 Fax 886-2-2505-1280



YASKAWA ELECTRIC CORPORATION

In the event that the end user of this product is to be the military and said product is to be employed in any weapons systems or the manufacture thereof, the export will fall under the relevant regulations as stipulated in the Foreign Exchange and Foreign Trade Regulations. Therefore, be sure to follow all procedures and submit all relevant documentation according to any and all rules, regulations and laws that may apply. Specifications are subject to change without notice for ongoing product modifications and improvements

© 2016 YASKAWA ELECTRIC CORPORATION

MANUAL NO. SIEP S800001 94B<1>-0 Published in Japan November 2016 15-8-11 Original instructions