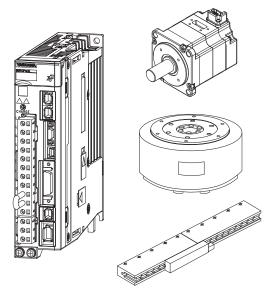
YASKAWA

 Σ -7-Series AC Servo Drive

Σ-7S SERVOPACK with FT/EX Specification for Press and Injection Molding Application Product Manual

Model: SGD7S-DDDDDDDDDDF40, and -DDDDDDDDDDF41





Basic	Information on
	SERVOPACKs

SERVOPACK Ratings and Specifications

Pressure Feedback Control

Speed/Torque (Pressure) Table Operation

Maintenance

Parameter Lists

MANUAL NO. SIEP S800001 94M

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About this Manual

This manual describes the press and injection molding application option for Σ -7-Series AC Servo Drive Σ -7S SERVOPACKs.

Read and understand this manual to ensure correct usage of the Σ -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 Σ -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	-
Selecting a SER- VOPACK	SERVOPACK Overload Protection Characteristics	2.2	-
	Specifications	2.3	_
	Block Diagrams	_	2.2
	External Dimensions	_	2.3
	Examples of Standard Connections between SERVOPACKs and Peripheral Devices	_	2.4
SERVOPACK Instal	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
	Monitoring Product Information	_	9.1
	Monitoring SERVOPACK Status	_	9.2
Monitor	Monitoring Machine Operation Status and Signal Waveforms	3.7, 4.5	9.3
	Monitoring Product Life	_	9.4
			Continued on next page.

	ltem	This Manual	Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)
Safety Function		_	Chapter 11
	Introduction	3.1	-
	Input Signal Connections	3.2	-
5 5 1	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 (Pressure) 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	_
	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.

System Components Servo Drives Machine Controllers (1) Catalogs Machine (3) Controller MP3300 Σ -7-Series and Servo Drive Catalog Catalog General Catalog Machine Controllers (5) SERVOPACKs with Built-in Controllers: Σ -7C Built-in Option Function Module User's 7 8 Manuals 4 Manuals Enclosed Σ-7-Series Built-in Σ -7-Series **Documents** Σ-7C Function Σ-7C SERVOPACK SERVOPACK Manuals SERVOPACKs: Σ -7S and Σ -7W Troubleshooting Product Manual Manual Enclosed Σ -7-Series Σ-7-Series Σ-7-Series Documents Σ-7S/Σ-7W Σ-7S/Σ-7W Σ-7S/Σ-7W SERVOPACK SERVOPACK SERVOPACK Product Hardware Option FT/EX Manuals Product Manuals Manuals Product Manuals (This manual) Servomotors Enclosed Σ -7-Series Servomotor Documents Product Manuals Other Documents Distributed Σ-7-Series Σ -7-Series Σ -7-Series Programming MECHATROLINK Operation I/O Module Peripheral Manuals Communications Interface Device User's Manual Command Operation Selection Manuals Manuals Manual

Classification	Document Name	Document No.	Description
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 Σ -7-Series AC Servo Drives.
② MP3300 Catalog	Machine Controller MP3300	KAEP C880725 03	Provides detailed information on MP3300 Machine Controllers, including features and specifications.
③ Σ-7-Series Catalog	AC Servo Drives Σ-7 Series	KAEP S800001 23	Provides detailed information on Σ -7-Series AC Servo Drives, including features and specifications.
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 configuration, and application methods of the Motion Control Function Modules (SVD, SVC4, and SVR4) for Σ -7-Series Σ -7C SERVOPACKs.
	Machine Controller MP3000 Series Communications User's Manual	SIEP C880725 12	Provides detailed information on the specifications, system configuration, and communications connection methods for the Ethernet communications that are used with MP3000-Series Machine Controllers and Σ -7-Series Σ -7C SERVO-PACKs.
	Machine Controller MP2000 Series Communication Module User's Manual	SIEP C880700 04	Provide detailed information on the specifications and communications methods for the Communications Modules that can be mounted to MP3000-Series Machine Controllers and Σ-7-Series Σ-7C
⑤ Option Module User's Manuals	Machine Controller MP2000 Series 262IF-01 FL-net Communication Module User's Manual	SIEP C880700 36	
	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 communications methods for the I/O Modules that can be mounted to MP3000-Series Machine Controllers and Σ -7-Series Σ -7C SERVOPACKs.
	Machine Controller MP2000 Series Counter Module CNTR-01 User's Manual	SIEP C880700 27	Continued on payt page

Classification	Document Name	Document No.	Description
© Enclosed Documents	Σ -7-Series AC Servo Drive Σ -7S, Σ -7W, and Σ -7C SERVOPACK Safety Precautions	TOMP C710828 00	Provides detailed information for the safe usage of Σ-7-Series SERVOPACKs.
	Σ-V-Series/Σ-V-Series for Large-Capacity Models/ Σ-7-Series Safety Precautions Option Module	TOBP C720829 00	Provides detailed information for the safe usage of Option Modules.
	Σ-V-Series/Σ-V-Series for Large-Capacity Models/ Σ-7-Series Installation Guide Command Option Module	TOBP C720829 01	Provides detailed procedures for installing the Command Option Module in a SERVOPACK.
	Σ-V-Series/Σ-V-Series for Large-Capacity Models/ Σ-7-Series Installation Guide INDEXER Module	TOBP C720829 02	Provides detailed procedures for installing the INDEXER Module in a SERVOPACK.
	Σ-V-Series/Σ-V-Series for Large-Capacity Models/ Σ-7-Series Installation Guide DeviceNet Module	TOBP C720829 07	Provides detailed procedures for installing the DeviceNet Module in a SERVOPACK.
⑦ Σ-7-Series Σ-7C SERVOPACK Product Manual	Σ-7-Series AC Servo Drive Σ-7C SERVOPACK Product Manual	SIEP S800002 04	Provides detailed information on selecting Σ -7-Series Σ -7C SERVO-PACKs; installing, connecting, setting, testing in trial operation, and tuning Servo Drives; writing, monitoring, and maintaining programs; and other information.
SΣ-7-SeriesΣ-7C SERVOPACKTroubleshootingManual	Σ-7-Series AC Servo Drive Σ-7C SERVOPACK Troubleshooting Manual	SIEP S800002 07	Provides detailed troubleshooting information for Σ -7-Series Σ -7C SERVOPACKs.

Classification	Dogument Name	Dogument No	Continued from previous page.
Classification	Document Name	Document No.	Description
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with MECHATROLINK-4 Communications References Product Manual	SIEP S800002 31	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual	SIEP S800001 28	Provide detailed information on selecting Σ -7-Series Σ -7S and Σ -7W SERVOPACKs; installing, connecting, setting, testing in trial operation, tuning, monitoring, and maintaining Servo Drives; and other information.
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with MECHATROLINK-II Communications References Product Manual	SIEP S800001 27	
Σ-7-Series Σ-7S/Σ-7W SERVOPACK Product Manuals	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual	SIEP S800001 26	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual	SIEP S800001 64	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK Command Option Attachable Type with DeviceNet Module Product Manual	SIEP S800001 70	
	Σ-7-Series AC Servo Drive Σ-7W SERVOPACK with MECHATROLINK-III Communications References Product Manual	SIEP S800001 29	
[®] Σ-7-Series Σ-7S/Σ-7W SERVOPACK with Hardware Option Specifications Product Manuals	Σ-7-Series AC Servo Drive Σ-7S/Σ-7W SERVOPACK with Hardware Option Specifications Dynamic Brake Product Manual	SIEP S800001 73	Provide detailed information on
	Σ-7-Series AC Servo Drive Σ-7W/Σ-7C SERVOPACK with Hardware Option Specifications HWBB Function Product Manual	SIEP S800001 72	Hardware Options for Σ-7-Series SERVOPACKs.

Classification	Document Name	Document No.	Continued from previous page. Description
[®] Σ-7-Series Σ-7S/Σ-7W SERVO-PACK FT/EX Product Manuals	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Indexing Application Product Manual	SIEP S800001 84	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Tracking Application Product Manual	SIEP S800001 89	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Application with Special Motor, SGM7D Motor Product Manual	SIEP S800001 91	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Press and Injection Molding Application Product Manual	This manual (SIEP S800001 94)	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Transfer and Alignment Application Product Manual	SIEP S800001 95	Provide detailed information on the FT/EX Option for Σ-7-Series SERVOPACKs.
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Torque/Force Assistance for Conveyance Application Product Manual	SIEP S800002 09	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Cutting Application Feed Shaft Motor Product Manual	SIEP S800002 10	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Three-Point Latching for Conveyance Application Product Manual	SIEP S800002 17	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Semi-/Fully-Closed Loop Control Online Switching for Conveyance Application Product Manual	SIEP S800002 27	
	Σ-7-Series AC Servo Drive Σ-7W SERVOPACK with FT/EX Specification for Gantry Applications Product Manual	SIEP S800002 29	

Classification	Document Name	Document No.	Continued from previous page. Description
Classification	Document Name	Document No.	Description
® 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 Servomotors.
	Σ-7-Series AC Servo Drive Rotary Servomotor Product Manual	SIEP S800001 36	
[®] 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 Σ -7-Series Servomotors.
	Σ-7-Series AC Servo Drive Direct Drive Servomotor Product Manual	SIEP S800001 38	
[®] Σ-7-Series Peripheral Device Selection Manual	Σ-7-Series AC Servo Drive Peripheral Device Selection Manual	SIEP S800001 32	 Provides the following information in detail for Σ-7-Series Servo Systems. Cables: Models, dimensions, wiring materials, connector models, and connection specifications Peripheral devices: Models, specifications, diagrams, and selection (calculation) methods
[®] 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 Σ -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 communications standard servo profile commands that are used for a Σ -7-Series Servo System.
	Σ-7-Series AC Servo Drive MECHATROLINK-4 Communications Standard Servo Profile Command Manual	SIEP S800002 32	Provides detailed information on the MECHATROLINK-4 communications standard servo profile commands that are used for a Σ -7-Series Servo System.
® Programming Manuals	Machine Controller MP3000 Series Ladder Programming Manual	SIEP C880725 13	Provides detailed information on the ladder programming specifications and instructions for MP3000-Series Machine Controllers and Σ -7-Series Σ -7C SERVOPACKs.
	Machine Controller MP3000 Series Motion Programming Manual	SIEP C880725 14	Provides detailed information on the motion programming and sequence programming specifications and instructions for MP3000-Series Machine Controllers and Σ-7-Series Σ-7C SERVOPACKs.

Classification	Document Name	Document No.	Description
[®] Σ-7-Series Operation Interface Operating Manuals	System Integrated 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 procedures for a Digital Operator for a Σ -7-Series Servo System.
	AC Servo Drive Engineering Tool SigmaWin+ Operation Manual	SIET S800001 34	Provides detailed operating procedures for the SigmaWin+ Engineering Tool for a Σ-7-Series Servo System.
® Distributed I/O Module User's Manuals	MECHATROLINK-III Compatible I/O Module User's Manual	SIEP C880781 04	Describes the functions, specifications, operating methods, and MECHATROLINK-III communications for the Remote I/O Modules for MP2000/MP3000-Series Machine Controllers.
	MECHATROLINK-4 Compatible I/O Module User's Manual	SIEP C880782 01	Describes the functions, specifications, operating methods, and MECHATROLINK-4 communications for the Remote I/O Modules for 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 Σ-7-Series Rotary Servomotor, Direct Drive Servomotor, or Linear Servomotor.
Rotary Servomotor	A generic term used for a Σ -7-Series Rotary Servomotor (SGM7M, SGM7J, SGM7A, SGM7P, SGM7G, or SGMMV) 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 Σ -7-Series Linear Servomotor (SGLG, SGLF, or SGLT).
SERVOPACK	A Σ -7-Series Σ -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 ⁻¹	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.

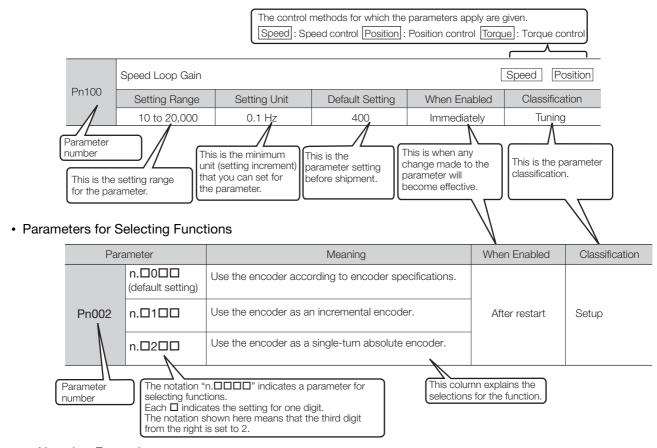
Notation Example

BK is written as /BK.

■ Notation for Parameters

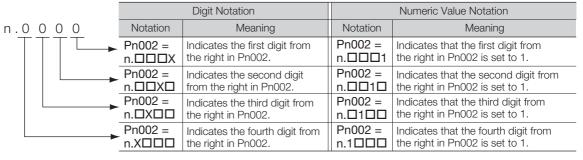
The notation depends on whether the parameter requires a numeric setting (parameter for numeric setting) or requires the selection of a function (parameter for selecting functions).

Parameters for Numeric Settings



Notation Example

Notation Examples for Pn002



◆ 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.



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.

DANGER

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

WARNING

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

M CAUTION

• 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

DANGER

- 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.

⚠ WARNING

- 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 Ω or less for a SERVOPACK with a 100-VAC or 200-VAC power supply, and 10 Ω 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.

CAUTION

- 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.

- 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

CAUTION

 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

A CAUTION

- 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.

- 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

M CAUTION

- 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.

- 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

DANGER

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

MARNING

- 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/ \oplus and \ominus 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.

M CAUTION

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.
- The maximum wiring length is 3 m for I/O Signal Cables, and 50 m for Encoder Cables or Servomotor Main Circuit 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 connector screws and lock mechanisms.
 Insufficient tightening may result in 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

MARNING

- 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, Origin Search, or Easy FFT 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 counterweight) to prevent the moving parts of the machine from falling.
- 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:
 - 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 with the Dynamic Brake Hardware Option, the Servomotor stopping methods will be different from the stopping methods used without the Option or with other Hardware Options. For details, refer to the following manual.
 - $\ \square$ Σ -7-Series Σ -7S/ Σ -7W SERVOPACK with Dynamic Brake Hardware Option Specifications Product Manual (Manual No.: SIEP S800001 73)
- 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.

- 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 quickly.
- 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

A DANGER

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

⚠ WARNING

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

⚠ CAUTION

- 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

DANGER

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.

MARNING

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.

↑ CAUTION

- 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

 Correctly discard the product as stipulated by regional, local, and municipal laws and regulations. Be sure to include these contents in all labelling and warning notifications on the final product as necessary.



■ 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, UK Regulations, 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. Refer to the Servomotor manual for compliant standards of Servomotors.

North American Safety Standards (UL)



Product	Model	North American Safety Standards (UL File No.)
SERVOPACK	SGD7S	UL 61800-5-1 (E147823) CSA C22.2 No.274

◆ EU Directives



Product	Model	EU Directives	Harmonized Standards
SERVOPACK	SGD7S	Machinery Directive 2006/42/EC	EN ISO 13849-1: 2015 EN IEC 62061 EN 61800-5-2
		EMC Directive 2014/30/EU	EN 55011 Group 1, Class A EN 61000-6-2 EN 61000-6-4 EN 61800-3 (Category C2, Second environment)
		Low Voltage Directive 2014/35/EU	EN 61800-5-1
		RoHS Directive 2011/65/EU (EU)2015/863	EN IEC 63000

Note: 1. We declared the CE Marking based on the harmonized standards in the above table.

^{2.} These products are for industrial use. In home environments, these products may cause electromagnetic interference and additional noise reduction measures may be necessary.

♦ UK Conformity Assessed (UKCA)



Product	Model	UK Regulations	Designated Standards
	SGD7S	Supply of Machinery (Safety) Regulations S.I. 2008/1597	EN ISO 13849-1: 2015 EN IEC 62061 EN 61800-5-2
SERVOPACK		Electromagnetic Compatibility Regulations S.I. 2016/1091	EN 55011 Group 1, Class A EN 61000-6-2 EN 61000-6-4 EN 61800-3 (Category C2, Second environ- ment)
		Electrical Equipment (Safety) Regulations S.I. 2016/1101	EN 61800-5-1
		Restriction of the Use of Certain Hazardous Sub- stances in Electrical and Electronic Equipment Reg- ulations S.I. 2012/3032	EN IEC 63000

Note: We declared the UKCA marking based on the designated standards in the above table.

◆ Safety Standards

Product	Model	Safety Standards	Standards
SERVOPACK	SGD7S	Safety of Machinery	EN ISO 13849-1: 2015 EN 60204-1
		Functional Safety	EN 61508 series EN IEC 62061 EN 61800-5-2
		Functional Safety EMC	EN 61326-3-1 EN 61000-6-7

■ Safety Parameters

Item	Standards	Performance Level	
Safaty Integrity Lavel	EN 61508	SIL3	
Safety Integrity Level	EN IEC 62061	maximum SIL 3	
Mission Time	EN 61508	10 years	20 years
Probability of Dangerous Failure per Hour	EN 61508 EN IEC 62061	PFH = 4.04×10^{-9} [1/h] (4.04% of SIL3)	PFH = 4.05×10 ⁻⁹ [1/h] (4.05% 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	EN 60204-1	Stop category 0	
Safety Function	EN 61800-5-2	STO	
Hardware Fault Tolerance	EN 61508	HFT = 1	
Subsystem	EN 61508	В	

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Basic Information on SERVOPACKs

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

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1.1

Product Introduction

The SERVOPACKs described in this manual 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	The value input from a pressure sensor is used to perform pressure feedback control of a torque reference. For the values input from a pressure sensor, you can select either of the following two types. • FT40 (11th to 13th digits in SERVOPACK model number: F40): Analog signals • FT41 (11th to 13th digits in SERVOPACK model number: F41): Data via network connected with MECHATROLINK-III	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

Interpreting SERVOPACK Model Numbers with the FT40 Specification 1.2.1



1st+2nc	l+3rd digi	Maximum Applicable Motor Capacity
Voltage	Code	Specification
	R70*1	0.05 kW
	R90*1	0.1 kW
	1R6*1	0.2 kW
	2R8*1	0.4 kW
	3R8	0.5 kW
	5R5*1	0.75 kW
Three-Pha	7R6	1.0 kW
se, 200	120	1.5 kW
VACC	180	2.0 kW
	200	3.0 kW
	330	5.0 kW
	470	6.0 kW
	550	7.5 kW
	590	11 kW
	780	15 kW
	R70	0.05 kW
Sin-	R90	0.1 kW
gle-Phase 100 VAC	2R1	0.2 kW
100 1/00	2R8	0.4 kW

4th digit Voltage		
Code	Specification	
Α	200 VAC	
F	100 VAC	

5th+6th digits Interface*2				
	Code	Specification		
	20	MECHATROLINK-III communications references		



مانوناه والمراكب والمراكب	Hardware Options
8th+9th+10th digits	Specification

1.2.1 Interpreting SERVOPACK Model Numbers with the FT40 Specification

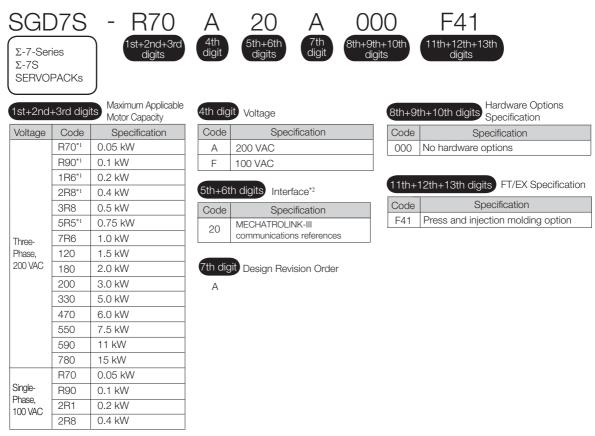
Code	Specification	Applicable Models
023	Analog sensor input	All models

11th+12th+13th digits FT/EX Specification				
	Code	Specification		
	F40 Press and injection molding option			

- *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.

1.2.2 Interpreting SERVOPACK Model Numbers with the FT41 Specification

1.2.2 Interpreting SERVOPACK Model Numbers with the FT41 Specification



- *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.

1.2.3 Interpreting Servomotor Model Numbers

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

- Ω Σ-7-Series Rotary Servomotor Product Manual (Manual No.: SIEP S800001 36)
- 💭 Σ-7-Series Linear Servomotor Product Manual (Manual No.: SIEP S800001 37)
- 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 Σ -7-Series Servomotors.

- Ω Σ-7-Series Rotary Servomotor Product Manual (Manual No.: SIEP S800001 36)
- Ω Σ-7-Series Linear Servomotor Product Manual (Manual No.: SIEP S800001 37)
- $\ \square$ Σ -7-Series Direct Drive Servomotor Product Manual (Manual No.: SIEP S800001 38)

1.4

Functions

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

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.

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
Safety Functions
External Latches

· Functions Related to the Host Controller

Function
Electronic Gear Settings
I/O Signal Allocations
ALM (Servo Alarm) Signal
/WARN (Warning) Signal
/TGON (Rotation Detection) Signal
/S-RDY (Servo Ready) Signal
/V-CMP (Speed Coincidence Detection) Signal
/COIN (Positioning Completion) Signal
/NEAR (Near) Signal
Speed Limit during Torque Control
/VLT (Speed Limit Detection) 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
Autotuning without a Host Reference
Autotuning with a Host Reference
Custom Tuning
Anti-Resonance Control Adjustment
Vibration Suppression
Gain Selection
Friction Compensation
Backlash Compensation
Gravity Compensation
Model Following Control
Compatible Adjustment Functions
Mechanical Analysis
Easy FFT

• Functions for Trial Operation during Setup

Function						
Software Reset						
Trial Operation for the 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 the SERVOPACKs described in this manual are used.

Function Name	Restriction						
Tuning-Less Function	You cannot use this function when pressure feedback control is enabled (Pn440 = $n.\square\square\square$ 1).						
Tuning-Less Level Setting	You cannot use this function when pressure feedback control is enabled (Pn440 = $n.\square\square\square$ 1).						
Mechanical Analysis	You cannot use this function when pressure feedback control is enabled (Pn440 = $n.\square\square\square$ 1).						

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-ventilated models.					
I/O Signals	Linear Servomotor Overheat Protection 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

2

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

2.1	Ratings2-2
2.2	SERVOPACK Overload Protection Characteristics 2-6
2.3	Specifications2-7

2.1 Ratings

This section gives the ratings of SERVOPACKs.

Three-Phase, 200 VAC

Model SGD7S-			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
	taneous M t Current [/		2.1	3.2	5.9	9.3	11	16.9	17	28	42	56	84
	Power St	upply				200 V	AC to 2	40 VAC	, 50 Hz	/60 Hz			
Main Circuit	Permitted Fluctuation	d Voltage on		-15% to +10%									
	Input Curr	ent [Arms]*	0.4	0.8	1.3	2.5	3.0	4.1	5.7	7.3	10	15	25
	Power St	upply			•	200 VA	AC to 2	40 VAC	, 50 Hz	/60 Hz		•	
Con- trol	Permitted Voltage Fluctuation			-15% to +10%									
	Input Current [Arms]*		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.25	0.25	0.3
Power	Supply Cap	acity [kVA]*	0.2	0.3	0.5	1.0	1.3	1.6	2.3	3.2	4.0	5.9	7.5
	Main Circ Loss [W]	cuit Power	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	12	12	12	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-	Resistance $[\Omega]$	-	-	-	_	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						Ш					

^{*} This is the net value at the rated load.

	Model SGD7S-	470A	550A	590A	780A	
Maximum Applic	able Motor Capacity [kW]	6.0	7.5	11	15	
Continuous Outp	out Current [Arms]	46.9	54.7	58.6	78.0	
Instantaneous M	aximum Output Current [Arms]	110	130	140	170	
	Power Supply	200	VAC to 240 \	AC, 50 Hz/60	Hz	
Main Circuit	Permitted Voltage Fluctuation		-15% to	+10%		
	Input Current [Arms]*1	29	37	54	73	
	Power Supply	200) VAC to 240 \	/AC, 50 Hz/60	Hz	
Control	Permitted Voltage Fluctuation					
	Input Current [Arms]*1	0.3	0.3	0.4	0.4	
Power Supply C	apacity [kVA]*1	10.7	10.7 14.6 21.7 29.6			
	Main Circuit Power Loss [W]	271.7	326.9	365.3	501.4	
	Control Circuit Power Loss [W]	21	21	28	28	
Power Loss*1	External Regenerative Resistor Unit Power Loss [W]	180 ^{*2}	350* ³	350*3	350*³	
	Total Power Loss [W]	292.7	347.9	393.3	529.4	
External Regen-	Resistance $[\Omega]$	6.25*2	3.13* ³	3.13*3	3.13*3	
erative Resistor	Capacity [W]	880*2	1760 ^{*3}	1760*3	1760*3	
Unit	Minimum Allowable External Resistance $[\Omega]$	5.8	2.9	2.9	2.9	
Overvoltage Cate	egory		I	I		

^{*1.} This is the net value at the rated load.

Single-Phase, 200 VAC

	Model SGD7S-		R70A	R90A	1R6A	2R8A	5R5A				
Maximum App	olicable Motor Capa	city [kW]	0.05	0.1	0.2	0.4	0.75				
Continuous O	utput Current [Arms	5]	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				
	Power Supply		200 VAC to 240 VAC, 50 Hz/60 Hz								
Main Circuit	Permitted Voltage	Fluctuation		-1	5% to +10°	%					
	Input Current [Arn	าร]*	0.8	1.6	2.4	5.0	8.7				
Control	Power Supply			200 VAC to	240 VAC, 5	60 Hz/60 Hz					
	Permitted Voltage	-15% to +10%									
	Input Current [Arms	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 Regenerat Power Loss [W]	_	_	_	_	8					
	Total Power Loss [W]		17.0	19.1	24.1	35.7	61.2				
	Built-In Regener-	Resistance $[\Omega]$	_	_	_	_	40				
Regenera- tive Resistor	ative Resistor	Capacity [W]	_	_	_	-	40				
	Minimum Allowable Ex	40	40	40	40	40					
Overvoltage C	Overvoltage Category				III						

^{*} This is the net value at the rated load.

st2. 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.

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 C	output Current [Arms]	0.66	0.91	1.6	2.8	3.8	5.5	7.6	11.6		
Instantaneous	Maximum Output Current [Arms]	2.1	3.2	5.9	9.3	11.0	16.9	17.0	28.0		
	Power Supply			27	O VDC to	324 V	DC				
Main Circuit	Permitted Voltage Fluctuation	-15% to +10%									
	Input Current [Arms]*	0.5	1.0	1.5	3.0	3.8	4.9	6.9	11		
	Power Supply	270 VDC to 324 VDC									
Control	Permitted Voltage Fluctuation				-15% to	+10%					
	Input Current [Arms]*	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		
Power Supply	Capacity [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		•	•			

^{*} This is the net value at the rated load.

	Model SGD7S-	180A	200A	330A	470A	550A	590A	780A	
Maximum App	olicable Motor Capacity [kW]	2.0	3.0	5.0	6.0	7.5	11.0	15.0	
Continuous O	utput Current [Arms]	18.5	19.6	32.9	46.9	54.7	58.6	78.0	
Instantaneous	Maximum Output Current [Arms]	42.0	56.0	84.0	110	130	140	170	
	Power Supply			270 VI	OC to 32	4 VDC			
Main Circuit	Permitted Voltage Fluctuation			-15	5% to +10	0%			
Input Current [Arms]*		14	20	34	36	48	68	92	
	Power Supply		270 VDC to 324 VDC						
Control	Permitted Voltage Fluctuation			-15	5% to +10	0%			
	Input Current [Arms]*	0.25	0.25	0.3	0.3	0.3	0.4	0.4	
Power Supply	Capacity [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 [W]		98.7	99.5	165.2	232.6	276.3	271.6	371.4	
Overvoltage C	ategory				III				

^{*} This is the net value at the rated load.

Single-Phase, 100 VAC

	Model SGD7S-	R70F	R90F	2R1F	2R8F		
Maximum Ap	plicable Motor Capacity [kW]	0.05	0.1	0.2	0.4		
Continuous C	Output Current [Arms]	0.66	0.91	2.1	2.8		
Instantaneous	Maximum Output Current [Arms]	2.1	3.2	6.5	9.3		
	Power Supply	10	00 VAC to 120 V	/AC, 50 Hz/60 H	Hz		
Main Circuit	Permitted Voltage Fluctuation		-15% to	+10%			
	Input Current [Arms]*	1.5	2.5	5	10		
Power Supply		100 VAC to 120 VAC, 50 Hz/60 Hz					
Control	Permitted Voltage Fluctuation	-15% to +10%					
	Input Current [Arms]*	0.38	0.38	0.38	0.38		
Power Supply	Capacity [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		
2000	Total Power Loss [W]		19.8	26.2	38.2		
Regenera- tive Resistor	Minimum Allowable Resistance $[\Omega]$	40	40	40	40		
Overvoltage (Category		- 11	l			

^{*} This is the net value at the rated load.

2.2

SERVOPACK Overload Protection Characteristics

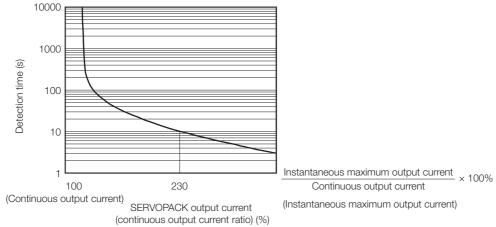
The overload detection level is set for hot start conditions with a SERVOPACK surrounding air temperature of 55°C.

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.

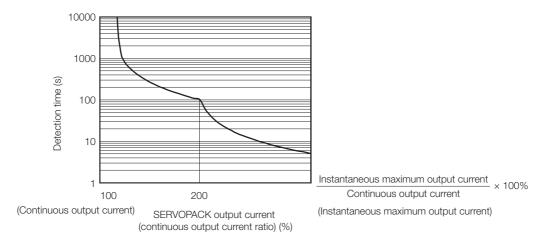
• SGD7S-R70A, -R90A, -1R6A, -2R8A, -R70F, -R90F, -2R1F, and -2R8F



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.

 SGD7S-3R8A, -5R5A, -7R6A, -120A, -180A, -200A, -330A, -470A, -550A, -590A, and -780A



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

This section gives the general specifications of SERVOPACKs.

	Item	Specification				
Control Met	hod	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	Absolute linear encoder (The signal resolution depends on the absolute linear encoder.) Incremental linear encoder (The signal resolution depends on the incremental linear encoder or Serial Converter Unit.)				
	Surrounding Air Temperature*1	-5°C to 55°C (With derating, usage is possible between 55°C and 60°C.) Refer to the following manual for derating specifications. Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)				
	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)				
	Vibration Resistance	4.9 m/s ²				
	Shock Resistance	19.6 m/s ²				
Environ- mental Conditions	Degree of Protection	Degree SERVOPACK Model: SGD7S- IP20 R70A, R90A, 1R6A, 2R8A, 3R8A, 5R5A, 7R6A, 120A, R70F, R90F, 2R1F, 2R8F IP10 180A, 200A, 330A, 470A, 550A, 590A, 780A				
	Pollution Degree	 Must be no corrosive or flammable gases. Must be no exposure to water, oil, or chemicals. Must be no dust, salts, or iron dust. 				
	Altitude*1	1,000 m max. (With derating, usage is possible between 1,000 m and 2,000 m.) Refer to the following manual for derating specifications. Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)				
	Others	Do not use the SERVOPACK in the following locations: Locations subject to static electricity noise, strong electromagnetic/magnetic fields, or radioactivity				
Compliant S	Standards	Refer to the following section for details. © Compliance with UL Standards, EU Directives, UK Regulations, and Other Safety Standards on page xxvii				
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.)				
		±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*2	±0.1% of rated speed max. (for a temperature fluctuation of 25°C ±25°C)				
	Torque Control Precision (Repeatability)	±1%				
	Soft Start Time Setting	0 s to 10 s (Can be set separately for acceleration and deceleration.)				
		Continued on next page.				

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ľ	Item		Specification
	ncoder Div ulse Outpu		Phase A, phase B, phase C: Line-driver output Number of divided output pulses: Any setting is allowed.
	ressure Fe		Number of input points: 1 Input voltage range: -12 V to 12 V
Inp	equence put gnals	Input Signals That Can Be Allo- cated	Allowable voltage range: 24 VDC ±20% Number of input points: 7 (Input method: Sink inputs or source inputs) Input Signals • P-OT (Forward Drive Prohibit) and N-OT (Reverse Drive Prohibit) signals • /P-CL (Forward External Torque Limit) and /N-CL (Reverse External Torque Limit) signals • /DEC (Origin Return Deceleration Switch) signal • /EXT1 to /EXT3 (External Latch Input 1 to 3) signals • FSTP (Forced Stop Input) signal A signal can be allocated and the positive and negative logic can be changed.
I/O Signals		Fixed Output	Allowable voltage range: 5 VDC to 30 VDC Number of output points: 1 (A photocoupler output (isolated) is used.)
Ou	equence utput gnals	Output Signals That Can Be Allo- cated	Output signal: ALM (Servo Alarm) signal 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 • /S-RDY (Servo Ready) signal • /CLT (Torque Limit Detection) signal • /VLT (Speed Limit Detection) signal • /WARN (Warning) signal • /WARN (Warning) signal • /NEAR (Near) signal A signal can be allocated and the positive and negative logic can be changed.
Co	S-422A ommuni- ations	Interfaces 1:N Communications	Digital Operator (JUSP-OP05A-1-E) and personal computer (with SigmaWin+) Up to N = 15 stations possible for RS-422A port
	CN3)	Axis Address Setting	Set with parameters.
US	SB	Interface	Personal computer (with SigmaWin+)
Co	ommuni- ations CN7)	Commu- nications Standard	Conforms to USB2.0 standard (12 Mbps).
Displays/Indicato	tors		CHARGE, PWR, CN, L1, and L2 indicators, and one-digit seven-segment display

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	Item	Specification
	Communications Protocol	MECHATROLINK-III
MECHATR	Station Address Settings	03h to EFh (maximum number of slaves: 62) The rotary switches (S1 and S2) are used to set the station address.
OLINK-III Communi-	Baud Rate	100 Mbps
cations	Transmission Cycle	125 μs, 250 μs, 500 μs, 750 μs, 1.0 ms to 4.0 ms (multiples of 0.5 ms)
	Number of Transmission Bytes	32 or 48 bytes/station A DIP switch (S3) is used to select the number of transmission bytes.
D (Performance	Position, speed, or torque control with MECHATROLINK-III communications
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	Switches	Number of DIP switch (S3) pins: 4
Analog Moni	tor (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 Bra	ake (DB)	Activated when a servo alarm or overtravel (OT) occurs, or when the power supply to the main circuit or servo is OFF.
Regenerative	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 (C	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 Fu	unctions	Overcurrent, overvoltage, low voltage, overload, regeneration error, etc.
Utility Function	ons	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	Compliant Standards*3	ISO13849-1 PLe (Category 3), IEC61508 SIL3
Applicable C	ption Modules	None

^{*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.

 $\label{eq:coefficient} \mbox{Coefficient of speed fluctuation} = \frac{\mbox{No-load motor speed - Total-load motor speed}}{\mbox{Rated motor speed}} \times 100\%$

^{*2.} The coefficient of speed fluctuation for load fluctuation is defined as follows:

^{*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.

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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.

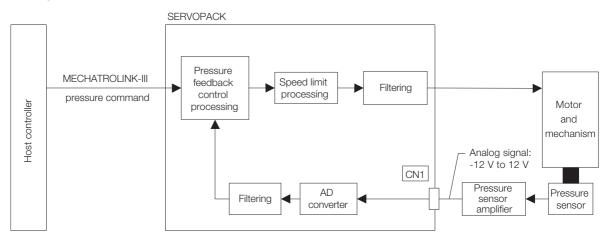
For the FT41 (11th to 13th digits in SERVOPACK model number: F41), MECHATROLINK-III data from a pressure sensor built into the control target is passed through a pressure sensor amplifier and through MECHATROLINK-III distributed I/O, then directly input to the CN6A and CN6B connectors on the SERVOPACK.

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

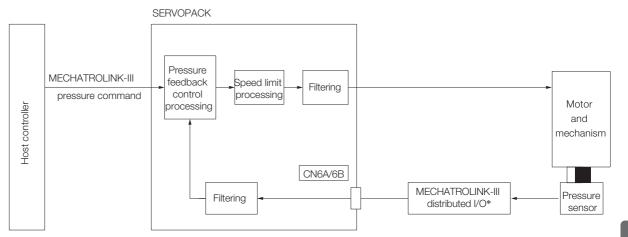
Pressure feedback control is performed in Torque Control Mode. It cannot be used in Speed Control Mode or Position Control Mode. In pressure feedback control, you can only use positive torque references. You cannot use a negative torque reference. Change $Pn000 = n.\Box\Box\Box X$ (rotation direction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

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

• FT40



• FT41



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

3.2.1 FT40

3.2

Connecting Pressure Sensor Amplifiers

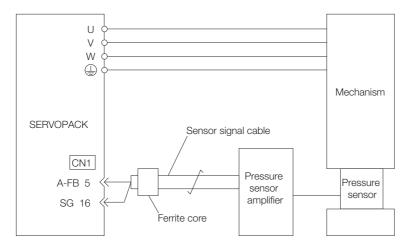
3.2.1 FT40

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		
	SG	16	Signal ground	amplifier.		

The input specifications are as follows:

- Maximum input voltage: ±12 V
 Input voltage resolution: ±12 bits
- Input impedance: 30 k Ω



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

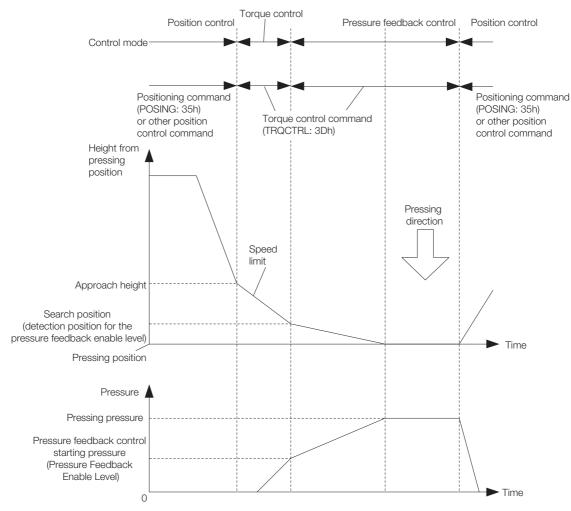
Connect the pressure sensor amplifiers and the R7G4HML3-6-LC2 I/O Modules from M-System Co., Ltd. for MECHATROLINK-III distributed I/O to the CN6A and CN6B connectors on the SERVOPACK with MECHATROLINK-III Communications Cables.

3.3 Operation Patterns for Pressure Feedback Control



- Pressure feedback control will be performed if the TRQCTRL (Torque Control) command (3Dh) is executed while pressure feedback control is enabled (Pn440 = n.□□□1) and the pressure feedback detection value exceeds the pressure feedback enable level.
- To suppress shock when changing the control method, change the control method under the following conditions.
 - 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.
- 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.
 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.

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 = $n.\square\square\square\square X$ (Pressure Feedback Control Mode Selection Switch).

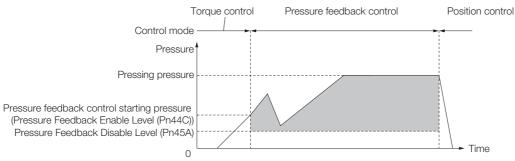
However, if the pressure feedback type is set to pressure feedback control 2 (Pn458 = $n.\Box\Box\Box\Box$), the setting in Pn458 = $n.\Box\Box\Box\Box$ X is ignored and mode 2 operation is used.

Parameter		Meaning	When Enabled	Classification
	n. □□□ 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).

	Pressure Feedback	Enable Level			Torque
Pn44C	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 10,000	0.01%	1000	Immediately	Setup
	Pressure Feedback	Disable Level			Torque
Pn45A	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 10,000	0.01%	1000	Immediately	Setup



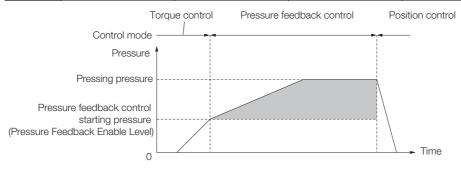
Note: 1. The area shaded in gray in the above diagram is the area in which pressure feedback control is enabled.

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).

	Pressure Feedback Enable Level									
Pn44C	Setting Range	Setting Unit	Default Setting	When Enabled	Classification					
	0 to 10,000	0.01%	1000	Immediately	Setup					

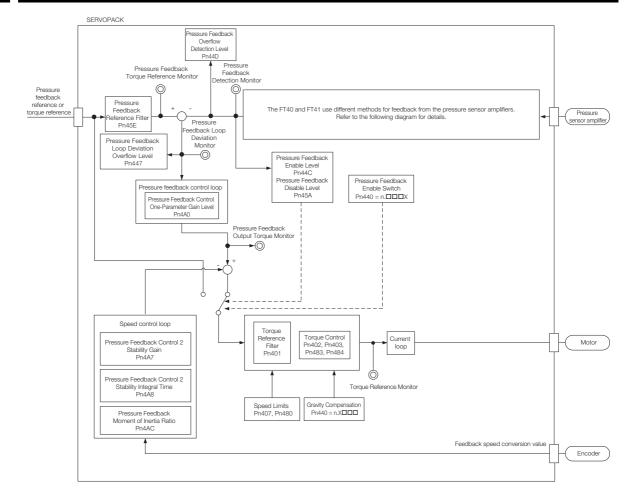


Note: The area shaded in gray in the above diagram is the area in which pressure feedback control is enabled.

3.5 Control Block Diagrams

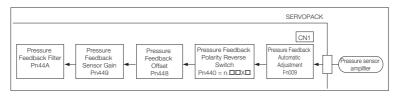
The control block diagrams for pressure feedback control are provided below.

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



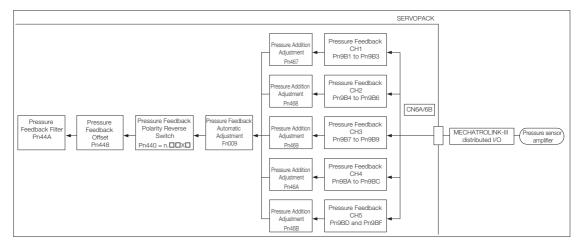
Methods for Feedback from Pressure Sensor Amplifiers

◆ FT40

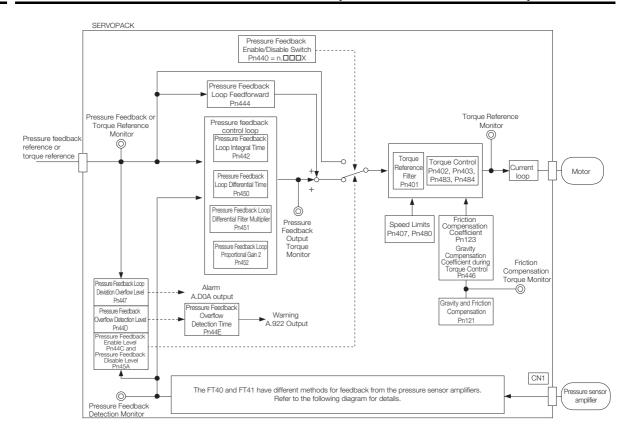


3.5.2 Pressure Feedback Control 1 (Pn458 = n.□□0□)

◆ FT41

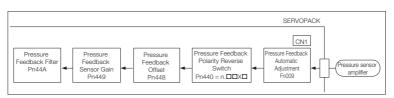


3.5.2 Pressure Feedback Control 1 (Pn458 = n.□□0□)



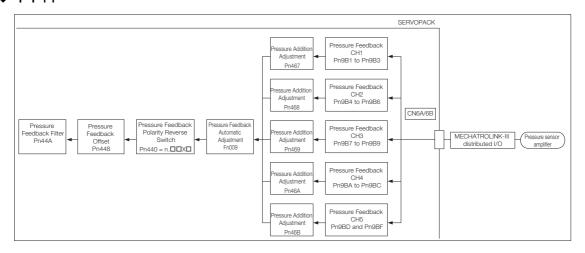
Methods for Feedback from Pressure Sensor Amplifiers

◆ FT40



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

◆ FT41

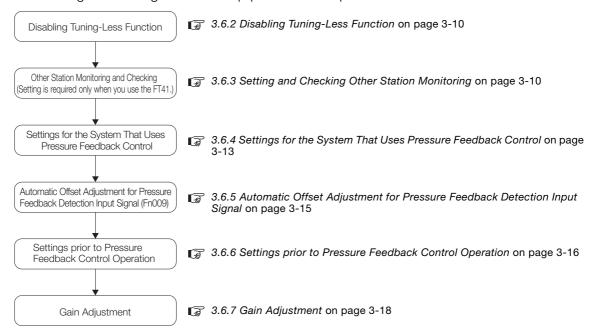


3.6

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: 0Eh) 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 30h.

3. Next, send a Data Read/Write_A command (DATA_RWA: 20h) 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.

Information

For details on the Connection Request command (CONNECT: 0Eh) and Data Read/Write_A command (DATA_RWA: 20h), 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				
	0002h to FEEFh	_	0002h	After restart	Setup				

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

	Other Station Monitor 1: Number of Transmission Bytes					
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.X□□□	Reserved parameter (Do not change.)		

Information

The setting of Pn9B3 = $n.\square\squareXX$ depends on the data format of the MECHATROLINK-III distributed 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	CMD CTRL	CMD STAT	_
3	OWD_OTTLE	OND_OTAT	
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	Tilput 0
8	0	Input 1 lower 8 bits	Input 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 = 0004h (R7G4HML3-6-LC2 station address) Pn9B2 = 0001h (number of transmission bytes: 16) Pn9B3 = 1206h (address offset: 6 (input 0), 2 bytes)

Note: If you use an R7G4HML3-6-LC2 I/O Module, always set Pn9B2 to n. □□□1 (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.

	Other Station Monitor 2: Station Address					
Pn9B4	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0002h to FEEFh	_	0002h	After restart	Setup	
	Other Station Moni	tor 2: Number of Trar	nsmission Bytes		Torque	
Pn9B5	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0 to 4	_	3	After restart	Setup	
	Other Station Moni	tor 2: Monitor Inform	ation Setting		Torque	
Pn9B6	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0000h to 14FFh	_	1000h	After restart	Setup	
	Other Station Moni	tor 3: Station Addres	S	1	Torque	
Pn9B7	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0002h to FEEFh	_	0002h	After restart	Setup	
	Other Station Moni	tor 3: Number of Trar	nsmission Bytes	1	Torque	
Pn9B8	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0 to 4	_	3	After restart	Setup	
	Other Station Moni	Torque				
Pn9B9	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0000h to 14FFh	_	1000h	After restart	Setup	
	Other Station Moni	Torque				
Pn9BA	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0002h to FEEFh	_	0002h	After restart	Setup	
	Other Station Moni	tor 4: Number of Trar	nsmission Bytes		Torque	
Pn9BB	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0 to 4	_	3	After restart	Setup	
	Other Station Moni	tor 4: Monitor Inform	ation Setting		Torque	
Pn9BC	Setting Range	Setting Unit	Default Setting	When Enabled	分類	
	0000h to 14FFh	_	1000h	After restart	Setup	
	Other Station Moni	tor 5: Station Addres	S		Torque	
Pn9BD	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0002h to FEEFh	_	0002h	After restart	Setup	
	Other Station Moni	tor 5: Number of Trar	nsmission Bytes		Torque	
Pn9BE	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0 to 4	_	3	After restart	Setup	
	Other Station Moni	tor 5: Monitor Inform	ation Setting		Torque	
Pn9BF	Setting Range	Setting Unit	Default Setting	When Enabled	Classification	
	0000h to 14FFh	_	1000h	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	0101h	You can check other station monitor data with Option Monitor 1.	Immediately	Cotus	
Pn825	0101h	You can check other station monitor data with Option Monitor 2.	immediately	Setup	
Para	ameter	Meaning	When Enabled	Classification	
Pn9C0	n.□□□X*1	Set the other station monitor number (1 to 5).	After restart	Sotup	
1 11900	n.□□X□*²	Set the other station monitor number (1 to 5).	Alter restait	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 m	onitor setti	ng in the	other	station	monitor	value 2	(upper	16 bits)	area d	эf
	Option Monitor 1 or 2 (32 bits).		-								

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

Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	
Other station monitor value 1 (lower 8 bits)							
Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	
	Other sta	ation monitor	value 1 (upp	er 8 bits)			
			I				
Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16	
	Other sta	ation monitor	value 2 (low	er 8 bits)			
Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24	
Other station monitor value 2 (upper 8 bits)							
	Bit 14	Other sta Bit 14 Bit 13 Other sta Bit 22 Bit 21 Other sta Bit 30 Bit 29	Other station monitor Bit 14 Bit 13 Bit 12 Other station monitor Bit 22 Bit 21 Bit 20 Other station monitor Bit 30 Bit 29 Bit 28	Other station monitor value 1 (low Bit 14 Bit 13 Bit 12 Bit 11 Other station monitor value 1 (upp Bit 22 Bit 21 Bit 20 Bit 19 Other station monitor value 2 (low Bit 30 Bit 29 Bit 28 Bit 27	Other station monitor value 1 (lower 8 bits) Bit 14 Bit 13 Bit 12 Bit 11 Bit 10 Other station monitor value 1 (upper 8 bits) Bit 22 Bit 21 Bit 20 Bit 19 Bit 18 Other station monitor value 2 (lower 8 bits) Bit 30 Bit 29 Bit 28 Bit 27 Bit 26	Other station monitor value 1 (lower 8 bits) Bit 14 Bit 13 Bit 12 Bit 11 Bit 10 Bit 9 Other station monitor value 1 (upper 8 bits) Bit 22 Bit 21 Bit 20 Bit 19 Bit 18 Bit 17 Other station monitor value 2 (lower 8 bits) Bit 30 Bit 29 Bit 28 Bit 27 Bit 26 Bit 25	

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.
- 2. 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: 0Eh) to the SERVOPACK and the R7G4HML3-6-LC2 I/O Module.
- **4.** Send the SMON command (30h) to the SERVOPACK and the DATA_RWA command (20h) to 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.

	Pressure Feedback	Torque			
	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
Pn449	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

3.6.4 Settings for the System That Uses Pressure Feedback Control

• Sensor amplifier output: 0 to 10 V for 0 to 980 N

The pressure for the rated torque is 11.5 N·m \times 2 \times π /0.02 m \approx 3,612.8 N.

Therefore, the servo amplifier output at the rated torque would be 10 V \times 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 pressure feedback sensor gain 1 (Pn467 (%)) + CH2 (pressure feedback value (0.01%) \times pressure feedback sensor gain 2 (Pn468 (%)) + CH3 (pressure feedback value (0.01%) \times pressure feedback sensor gain 3 (Pn469 (%)) + CH4 (pressure feedback value (0.01%) \times pressure feedback sensor gain 4 (Pn46A(%)) + CH5 (pressure feedback value (0.01%) \times 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	Sensor Gain 4			Torque
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 × π /0.02 m = 3.612.8 N.

Therefore, the servo amplifier output at the rated torque would be $3612.8 \text{ N}/980 \text{ N} \times 100.00\% = 368.65\%$.

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.

3.6.5 Automatic Offset Adjustment for Pressure Feedback Detection Input Signal

- **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:

- 1. 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 2×2) = 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 of the pressure feedback detection input signal.

Tool	Fn No./Function Name	Operating Procedure Reference
Digital Operator	Fn009	Σ-7-Series Digital Operator Operating Manual (Manual No.: SIEP S800001 33)
SigmaWin+	Others - Adjust the Speed and Torque Reference Offset	Operating 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 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

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				
Pn44A	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 65,535	0.01 ms	0	Immediately	Setup
	Pressure Feedback	Overflow Detection	Time		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 Feedback Overflow Detection Level 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 setting of the Pressure Feedback Enable Level, the system assumes that pressing does not need to be started and pressure 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 Pressure 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 Overflow 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).



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 ⁻¹	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.□□0□	Set pressure feedback control 1.		
Pn458	n.□□1□ (default setting)	Set pressure feedback control 2.	After restart	Setup

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

CAUTION

• If you enable gravity compensation (Pn440 = n.1□□□) and the pressure feedback detection value is 0 when the pressure sensor is faulty, pressure feedback control will not be performed normally and the Servomotor will be operated with excessive torque, possibly damaging the workpiece or machine.

Set Pn447 (Pressure Feedback Loop Deviation Overflow Level), Pn402/Pn403 (Torque Limits), and Pn483/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□□□ (default setting)	Disable gravity compensation.	After restart	Setup
	n.1□□□	Enable gravity compensation.		



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 ($Pn440 = n.\Box\Box\Box\Box$), always disable gravity compensation ($Pn440 = n.\Box\Box\Box\Box$).

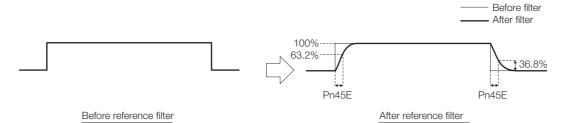
3.6.7 Gain Adjustment

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	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	Torque			
Pn4A8	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	15 to 51,200	0.01 ms	2,000	Immediately	Setup
	Pressure Feedback	Moment of Inertia Ra	atio		Torque
Pn4AC	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 20,000	1%	100	Immediately	Setup

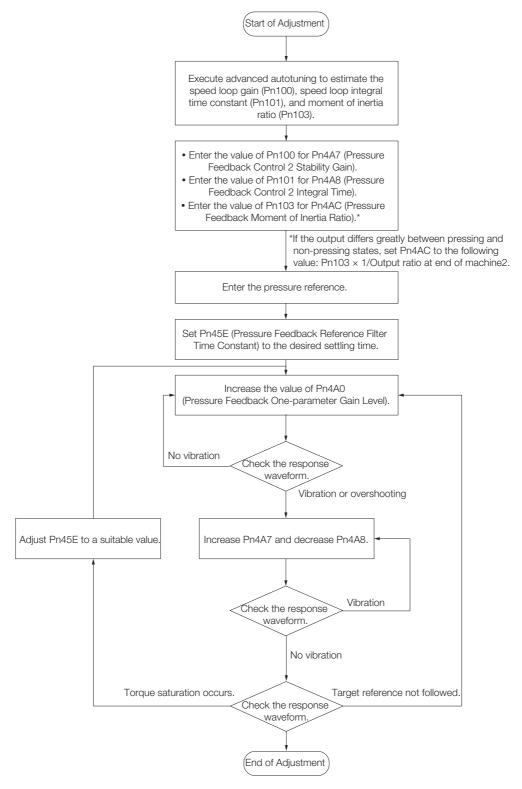
You can set Pn45E (Pressure Feedback Reference Filter Time Constant) according to the system to suppress shock when updating the pressure feedback reference for torque (pressure) control. If a large value is set, it will increase the delay and make response slower. Pn45E is valid only when pressure feedback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



	Pressure Feedback	Torque			
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

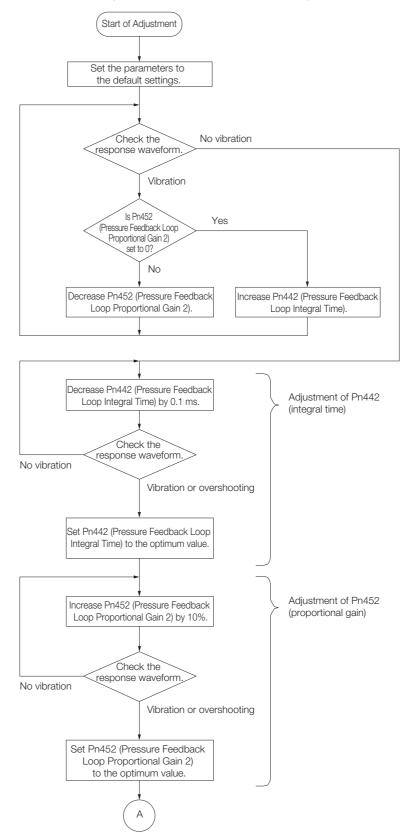
	Pressure Feedbac	ntegral Time	Torque		
Pn442	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 51,200	0.01 ms	2000	Immediately	Setup
	Pressure Feedbac	k Control 1 Pressur	re Feedback Loop I	Feedforward	Torque
Pn444	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 1,000	1%	100	Immediately	Setup
	Pressure Feedbac	k Control 1 Pressur	re Feedback Loop I	Differential Time	Torque
Pn450	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 51,200	0.1 ms	0	Immediately	Setup
	Pressure Feedback Control 1 Pressure 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 Pressur	re Feedback Loop I	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).

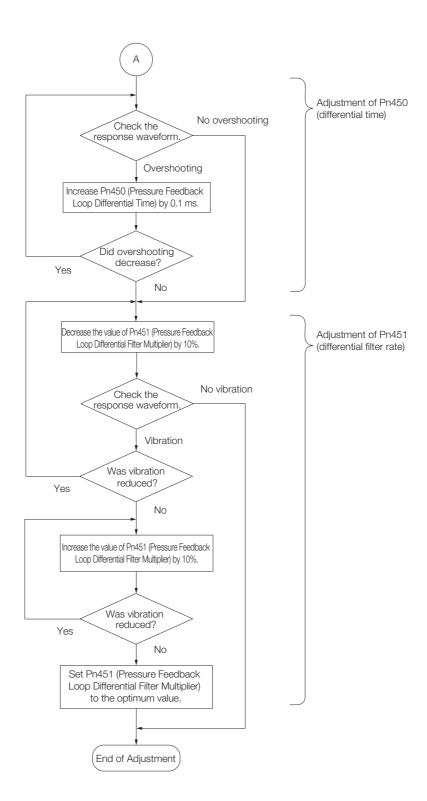
	Pressure Feedbac	Torque			
Pn447	Setting Range	Setting Unit	Default Setting	When Enabled	Classification
	0 to 800	1%	100	Immediately	Setup

■ Gain Adjustment Flowchart

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



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
30h	Pressure Feedback Torque Reference Monitor	1 V/100% rated torque
31h	Pressure Feedback Detection Monitor	1 V/100% rated torque
32h	Pressure Feedback Output Torque Monitor	1 V/100% rated torque
33h	Pressure Feedback Loop Deviation Monitor	1 V/100% rated torque

Option Monitors with MECHATROLINK-III Communications

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

4

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

4.1	Introd	uction
4.2	Operation	n Patterns for Speed/Torque (Pressure) Table Operation 4-3
4.3	Table Para	ameter 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 Operation4-7 Settings for Torque (Pressure) Table Operation4-11
4.4	Opera	ting Procedure 4-13
4.5	Monito	oring4-14

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.

Chapter 3 Pressure Feedback Control

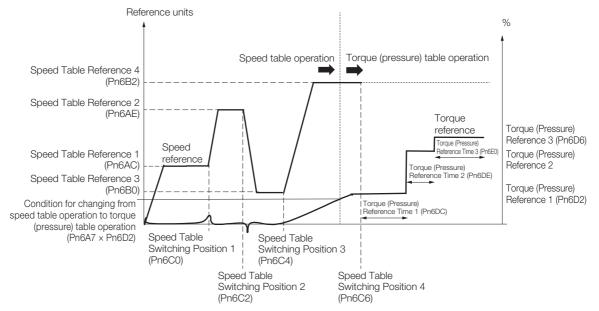
You can perform speed/torque (pressure) table operation in Speed Control Mode. It cannot be used in Position Control Mode or Torque Control Mode.

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 $Pn6A4 = n.\square X\square\square$ (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.

Pa	arameter	Meaning	When Enabled	Classification
	n.□□0□ (default setting)	Do not perform speed table operation.		
	n.□□1□	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.□□4□	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.□□7□	Use speed table reference 1 (Pn6AC) through speed table reference 7 (Pn6B8) for speed table operation.		
	n.□□8□	Use speed table reference 1 (Pn6AC) through speed table reference 8 (Pn6BA) for speed table operation.		
	n.□□9□	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.□0□□ (default setting)	Do not perform torque (pressure) table operation.		
	n.🗆1 🗆 🗆	Use torque (pressure) table reference 1 (Pn6D2) for torque (pressure) table operation.		
	n.□2□□	Use torque (pressure) table reference 1 (Pn6D2) and torque (pressure) table reference 2 (Pn6D4) for torque (pressure) table operation.		an next page

Continued from previous page.

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

Settings for Speed Table Operation 4.3.2

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	
1 110/10	0 to 2,147,483,647	1 reference unit/s	0	Immediately	Setup	
	Speed Table Reference 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	
111020	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 Refe	rence 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 Reference 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	
THOBA	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	
	Continued on next page.					

4.3.2 Settings for Speed Table Operation

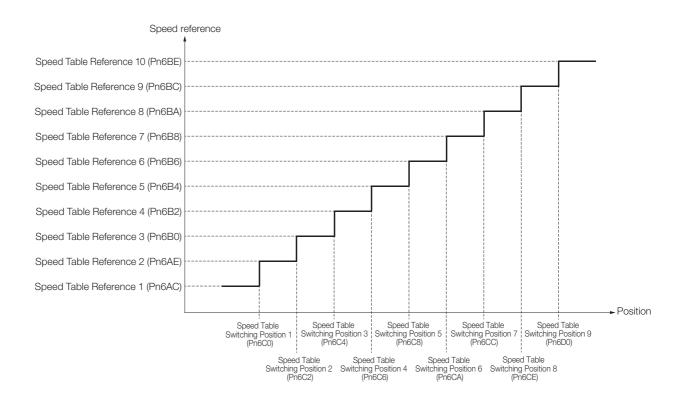
Continued from previous page.

	Speed Table Refer	rence 10		Speed	om providuo pago.		
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 Switch			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 Switch	ching Position 2		Speed	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 Switch	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 Switch	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 Switch	Speed Table Switching 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 Switch	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 Switch	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 Switch	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 Switch			Speed			
Pn6D0	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
PUODU	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.

Speed/Torque (Pressure) Table Operation

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



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

You can use Pn6A4 = n. \(\sigma\) \(\text{Table Operation Control Switching Condition Selection}\) and Pn6A4 = n.XIIII (Table Operation Control Method Switching Selection) to select from the following three conditions for switching from speed table operation to torque (pressure) table operation.

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

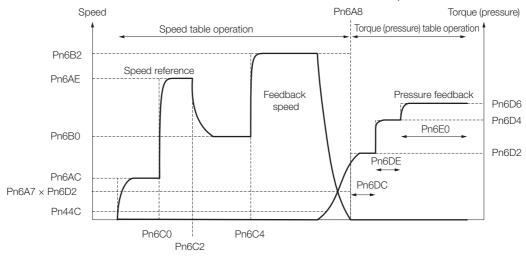
4.3.3 Setting Condition for Changing from Speed Table Operation to Torque (Pressure) Table Operation

P	arameter	Mea	aning	When Enabled	Classification		
	n.□□□0 (Default Setting)	Switch from speed tab (pressure) table operat feedback detection va Pn6D2 and the motor Pn6A8.	ion when the pressur lue exceeds Pn6A7 ×	re			
Pn6A4	n.□□□1	Switch from speed tab (pressure) table operat feedback detection val Pn6D2 or the motor po	ion when the pressur lue exceeds Pn6A7 ×	e Immediately	Setup		
	n.0□□□ (Default Setting)	Disable Pn6A5 and en	able Pn6A4 = n.□□□	ıx.			
	n.1□□□	Disable Pn6A4 = n.□□	I□X and enable Pn6A	4 5.			
	Torque (Pressure	e) Reference during Spe	eed Table Operation	Speed	Speed		
D 045	Setting Range	<u> </u>	Default Setting	When Enabled	Classification		
Pn6A5	0 to 1,073,741,824	10/	0	Immediately	Setup		
	Pressure Contro	Switching Pressure P	Speed				
Pn6A7	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
	0 to 10,000	0.01%	0	Immediately	Setup		
	Torque (Pressure	Torque (Pressure) Reference 1					
Pn6D2	Setting Range	Setting Unit	Default Setting	When Enabled	Classification		
111052	-1,073,741,824 1,073,741,824	1 %	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

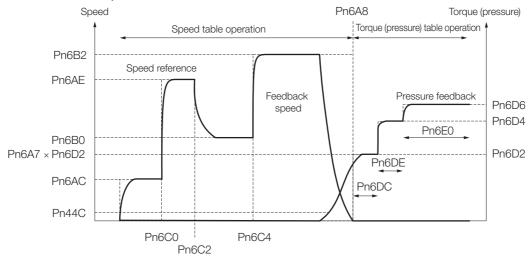
Speed table operation changes to torque (pressure) table operation when the pressure feedback detection value exceeds Pn6A7 × Pn6D2 and the motor position exceeds Pn6A8.



■ 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.



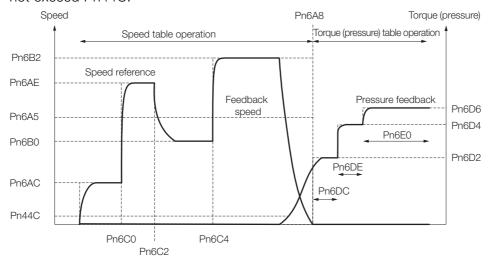
4.3.3 Setting Condition for Changing from Speed Table Operation to Torque (Pressure) Table Operation

■ 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.

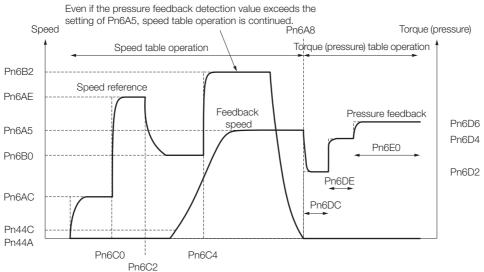


■ Torque (Pressure) Table Operation Example 2 for Pn6A4 = n.1□□□

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

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.

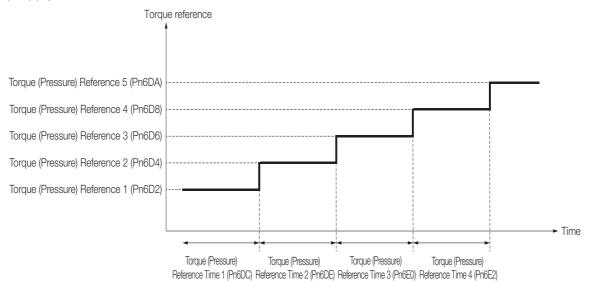
You can set the speed limit for torque (pressure) table operation in Pn6AA (Speed Limit for Torque (Pressure) Table Operation).

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	
1 11052	-1,073,741,824 to 1,073,741,824	1%	0	Immediately	Setup	
	Torque (Pressure) 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	
	-1,073,741,824 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	
	-1,073,741,824 to 1,073,741,824	1%	0	Immediately	Setup	
	Torque (Pressure) 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		•	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.□□□1 (Enable pressure feedback control).
- 2. Send the SV_ON (Servo ON) command.
- **3.** 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

- 4. 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		Reserv	red (0).	
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
	Reserv	/ed (0).			G-9	SEL	
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
Reserved.	SO3	SO2	SO1	BANK_SEL			
Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24
Reserved (0). Reserved (0). Reserved (0). Reference Speed/ Torque (Pressure) Table Operation Reference Topperation Reference Topperation Reference Reference Reference				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-	0	No command, or cancel operation.		
29	sure) Table Operation Reference		Start speed/torque (pressure) table operation.	Level	
	If bit 28 and bit 29 are ON, the speed/torque (pressure) table operation will start. If bit 29 is OFF, the speed/torque (pressure) table operation will be canceled.				



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
30h	Pressure Feedback Torque Reference Monitor	1 V/100% rated torque
31h	Pressure Feedback Detection Monitor	1 V/100% rated torque
32h	Pressure Feedback Output Torque Monitor	1 V/100% rated torque
33h	Pressure Feedback Loop Deviation Monitor	1 V/100% rated torque

Option Monitors with MECHATROLINK-III Communications

Pn824/Pn825	Signal Name	Unit
0050h	Pressure Feedback Detection Monitor	10,000/100% rated torque
0052h	Control Method Change Monitor	0: Position or speed control, 1: Torque control, 3: Pressure feedback
0100h	Speed/Torque (Pressure) Table Operation Monitor	- (channel 1/channel 2)
0101h*	Other Station Monitor 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	CANCEL Pressure Speed/Torque (F Feedback Status Status		Operating	
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
Proceura manitar (upper 8 hits)							

Pressure monitor (upper 8 bits)

• Monitor Details

Bit	Name	Value	Setting		
		0	Not ready for operation		
	Speed/Torque (Pressure) Table Operating	1	Ready for operation		
	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 to operation have been contact.	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 whe	re feedback control is enable.			
		0	Not canceled.		
3	CANCEL	1	Speed/torque (pressure) table operation monitor canceled.		
Ü	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 executed.		
8 to 11	If speed table reference 5 is being used for speed table operation, these bits will contain 5. If torque (pressure) reference 3 is being used for torque (pressure) table operation, these bits will contain 3. Use the Speed/Torque (Pressure) Table Operating Status to determine whether speed table operation or torque (pressure) table operation is being performed.				
16 to 31	Pressure Monitor	0 to 15	Pressure Feedback Detection Monitor [0.01%]		
	The pressure feedback	detection	value is stored here.		

^{*} Only for the FT41.

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

5.1	FT40	Specification5-2
	5.1.1 5.1.2 5.1.3 5.1.4 5.1.5 5.1.6 5.1.7	Alarm Displays
5.2	FT41	Specification5-57
	5.2.1 5.2.2 5.2.3 5.2.4 5.2.5 5.2.6 5.2.7	Alarm Displays
		and Conditions of the Servomotor 5-103

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. However, if no alarm number appears on the panel display, this indicates a SERVOPACK system error.

If there is an alarm, the display will change in the following order.

Example: Alarm A.E60

$$\begin{array}{c} \text{Status} \\ \text{Indications} \end{array} \longrightarrow \text{Not lit.} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \text{Not lit.} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \text{Not lit.} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \text{Not lit.} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \text{Not lit.} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \text{Not lit.} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \text{Not lit.} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \text{Not lit.} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \text{Not lit.} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \text{Not lit.} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \text{Not lit.} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \text{Not lit.} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \text{Not lit.} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \end{array} \longrightarrow \\ \begin{array}{c} \\ \\ \end{array} \longrightarrow \\ \end{array}$$

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.

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

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	1	Continued	Tom provid	ao pago.
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.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 Servomotor 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 transistor 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	 The AC power supply input setting or DC power supply input setting is not correct. The power supply wiring is not correct. 	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	 The pulse output speed for the setting of Pn212 (Number of Encoder Output Pulses) was exceeded. (This applies to Rotary Servomotors.) The motor speed upper limit for the setting of Pn281 (Encoder Output Resolution) was exceeded. (This applies to Linear Servomotors.) 	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 seconds 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 rotational 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
A.7A1	Internal Temperature Error 1 (Control Board Tempera- ture Error)	The surrounding temperature of the control PCB is abnormal.	Gr.2	Yes
		ı		

5.1.2 List of Alarms

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Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.7A2	Internal Temperature Error 2 (Power Board Tempera- ture Error)	The surrounding temperature of the power PCB is abnormal.	Gr.2	Yes
A.7A3	Internal Temperature Sensor Error	An error occurred in the temperature sensor circuit.	Gr.2	No
A.7Ab	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Gr.1	Yes
A.810	Encoder Backup Alarm	The power supplies to the encoder all failed and the position data was lost.	Gr.1	No
A.820	Encoder Checksum Alarm	There is an error in the checksum results for encoder memory.	Gr.1	No
A.830	Encoder Battery Alarm	The battery voltage was lower than the specified level after the control power supply was turned ON.	Gr.1	Yes
A.840	Encoder Data Alarm	There is an internal data error in the encoder.	Gr.1	No
A.850	Encoder Overspeed	The encoder was operating at high speed when the power was turned ON.	Gr.1	No
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	A failure occurred in the linear encoder.	Gr.1	No
A.891	Encoder Module Error	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
A.8A1	External Encoder Module Error	An error occurred in the Serial Converter Unit.	Gr.1	Yes
A.8A2	External Incremental Encoder Sensor Error	An error occurred in the external encoder.	Gr.1	Yes
A.8A3	External Absolute Encoder Position Error	An error occurred in the position data of the external encoder.	Gr.1	Yes
A.8A5	External Encoder Over- speed	An overspeed error occurred in the external encoder.	Gr.1	Yes
A.8A6	External Encoder Over- heated	An overheating error occurred in the external encoder.	Gr.1	Yes
A.b33	Current Detection Error 3	An error occurred in the current detection circuit.	Gr.1	No
A.b6A	MECHATROLINK Communications ASIC Error 1	ASIC error 1 occurred in MECHATROLINK communications.	Gr.1	No
A.b6b	MECHATROLINK Communications ASIC Error 2	ASIC error 2 occurred in MECHATROLINK communications.	Gr.2	No
A.bF0	System Alarm 0	Internal program error 0 occurred in the SERVO-PACK.	Gr.1	No
A.bF1	System Alarm 1	Internal program error 1 occurred in the SERVO-PACK.	Gr.1	No
A.bF2	System Alarm 2	Internal program error 2 occurred in the SERVO-PACK.	Gr.1	No
A.bF3	System Alarm 3	Internal program error 3 occurred in the SERVO-PACK.	Gr.1	No
A.bF4	System Alarm 4	Internal program error 4 occurred in the SERVO-PACK.	Gr.1	No
A.bF5	System Alarm 5	Internal program error 5 occurred in the SERVO-PACK.	Gr.1	No
A.bF6	System Alarm 6	Internal program error 6 occurred in the SERVO-PACK.	Gr.1	No
		Cont	inuad on n	ovt naga

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Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
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 Module failed.	Gr.1	No
A.CF2	Timer Stopped Error in Feedback Option Module Communications	An error occurred in the timer for communications 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.	Gr.1	Yes
A.d01	Position Deviation Over- flow 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.	Gr.1	Yes
A.d02	Position Deviation Over- flow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting 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 setting of Pn520 (Position Deviation Overflow Alarm Level) is exceeded before the limit is cleared.	Gr.2	Yes

5.1.2 List of Alarms

Continued from previous page.

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Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
Pressure Feedback Loop Deviation Overflow	The difference between the pressure feedback reference and the feedback detection value exceeded Pn447 (Pressure Feedback Loop Deviation Overflow Level).	Gr.1	Yes
Position Data Overflow	The position feedback data exceeded ±1,879,048,192.	Gr.1	No
MECHATROLINK Internal Synchronization Error 1	A synchronization error occurred during MECHATROLINK communications with the SER-VOPACK.	Gr.1	Yes
MECHATROLINK Trans- mission Cycle Setting Error	The setting of the MECHATROLINK communications transmission cycle is not correct.	Gr.2	Yes
MECHATROLINK Communications Data Size Setting Error	The setting of the MECHATROLINK communications data size is not correct.	Gr.2	Yes
MECHATROLINK Station Address Setting Error	The setting of the MECHATROLINK station address is not correct.	Gr.2	No
MECHATROLINK Syn- chronization Error	A synchronization error occurred during MECHATROLINK communications.	Gr.2	Yes
MECHATROLINK Syn- chronization Failed	Synchronization failed during MECHATROLINK communications.	Gr.2	Yes
Reception Error in MECHATROLINK Commu- nications	Communications errors occurred continuously during MECHATROLINK communications.	Gr.2	Yes
Synchronization Interval Error in MECHATROLINK Transmission Cycle	An error occurred in the transmission cycle during MECHATROLINK communications.		Yes
MECHATROLINK Syn- chronization Frame Not Received	Synchronization frames were continuously not received during MECHATROLINK communications.	Gr.2	Yes
Feedback Option Module Detection Failure	Detection of the Feedback Option Module failed.	Gr.1	No
Safety Function Signal Input Timing Error	An error occurred in the input timing of the safety function signal.	Gr.1	No
Gate Drive Error 1	An error occurred in the gate drive circuit.	Gr.1	No
Gate Drive Error 2	An error occurred in the gate drive circuit.	Gr.1	No
Command Execution Timeout	A timeout error occurred for a MECHATROLINK command.	Gr.2	Yes
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
Custom Alama	An internal program error occurred in the SER-		NJ-
oystem Alarm	VOPACK.	_	No
Digital Operator Commu- nications Error 1	Communications were not possible between the		NIC
Digital Operator Commu- nications Error 2	the SERVOPACK (e.g., a CPU error occurred).	_	No
	Pressure Feedback Loop Deviation Overflow Position Data Overflow MECHATROLINK Internal Synchronization Error 1 MECHATROLINK Trans- mission Cycle Setting Error MECHATROLINK Communications Data Size Set- ting Error MECHATROLINK Station Address Setting Error MECHATROLINK Syn- chronization Error MECHATROLINK Syn- chronization Failed Reception Error in MECHATROLINK Communications Synchronization Interval Error in MECHATROLINK Transmission Cycle MECHATROLINK Syn- chronization Frame Not Received Feedback Option Module Detection Failure Safety Function Signal Input Timing Error Gate Drive Error 1 Gate Drive Error 2 Command Execution Tim- eout Power Supply Line Open Phase System Alarm Digital Operator Communications Error 1 Digital Operator Communications Error 1 Digital Operator Communications Error 1 Digital Operator Communications Error 1	Pressure Feedback Loop Deviation Overflow The difference between the pressure feedback reference and the feedback detection value exceeded Pn447 (Pressure Feedback Loop Deviation Overflow Level). Position Data Overflow MECHATROLINK Internal Synchronization Error 1 MECHATROLINK Transmission Cycle Setting Error MECHATROLINK Communications Data Size Setting Error MECHATROLINK Station Address Setting Error MECHATROLINK Station Address Setting Error MECHATROLINK Synchronization Error 1 MECHATROLINK Synchronization Error of MECHATROLINK Synchronization Error MECHATROLINK Synchronization Fror MECHATROLINK Synchronization failed MECHATROLINK Synchronization failed MECHATROLINK Synchronization Failed Synchronization Fror in MECHATROLINK Communications MECHATROLINK Synchronization failed during MECHATROLINK communications An error occurred in the transmission cycle during MECHATROLINK communications An error occurred in the input timing of the safety function signal. An error occurred in the gate drive circuit. An error occurred in the gate drive circuit.	Alarm Name Alarm Meaning Alarm Meaning Alarm Meaning Pressure Feedback Loop Deviation Overflow The difference between the pressure feedback reference and the feedback detection value exceeded Pn447 (Pressure Feedback Loop Devi- ation Overflow Level). Position Data Overflow MECHATROLINK Internal Synchronization Error 1 A synchronization error occurred during MECHATROLINK Communications with the SER- VOPACK. The setting of the MECHATROLINK communica- tions of the MECHATROLINK communications bata Size Set- ting Error MECHATROLINK Station Address Setting Error MECHATROLINK Syn- chronization Error in MECHATROLINK Syn- chronization Failed Reception Error in MECHATROLINK Syn- chronization Failed Reception Error in MECHATROLINK Communications. A synchronization failed during MECHATROLINK communications Synchronization Failed Reception Error in MECHATROLINK Syn- chronization Failed Reception Error in MECHATROLINK Communications. A synchronization failed during MECHATROLINK Communications An error occurred continuously during MECHATROLINK communications. An error occurred continuously during MECHATROLINK communications. An error occurred in the transmission cycle during MECHATROLINK communications. An error occurred in the transmission cycle during MECHATROLINK communications. An error occurred in the transmission cycle during MECHATROLINK communications. An error occurred in the transmission occurred Detection Failure Detection of the Feedback Option Module failed. Gr.1 An error occurred in the gate drive circuit. Gr.1 Gate Drive Error 1 An error occurred in the gate drive circuit. Gr.1 An error occurred in the gate drive circuit. Gr.1 An error occurred in the main power supply was ON. An internal program error occurred in the SER- VOPACK. System Alarm An internal program error occurred in the SER- VOPACK. An a COMMUNICATION of the SER- VOPACK. An internal program error occurred in the SER- VOPACK. An internal program error occurred in the SER- VOPACK. An a COMMUNICATION of the

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

Troubleshooting Alarms

5.1.3

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 voltage within the specified range, and initialize the parameter settings.	*1
	The power supply was shut OFF while writing parameter settings.	Check the timing of shutting OFF the power supply.	Initialize the parameter settings and then set the parameters again.	*1
A.020: Parameter	The number of times that parameters were written exceeded the limit.	Check to see if the parameters were frequently changed from the host controller.	The SERVOPACK may be faulty. Replace the SER-VOPACK. Reconsider the method for writing the parameters.	-
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 electricity, 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 countermeasures 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 Format 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 software version of the parameters specified to write.	Read the product information to see if the software versions are the same. If they are different, 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
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	The power supply was shut OFF while setting a utility function.	Check the timing of shutting OFF the power supply.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
in the parameter data in 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.	-

5.1.3 Troubleshooting Alarms

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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 failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.030: Main Circuit Detector Error	The jumper between the DC Reactor terminals (⊝1 and ⊝2) was removed or there is faulty contact. The cable between the DC Reactor and SERVOPACK is not wired correctly or there is a faulty con-		Correct the wiring between the DC Reactor terminals.	_
	tact. The SERVOPACK and Servomotor capaci- ties do not match each other.	Check the combination of the SERVOPACK and Servomotor capacities.	Select a proper combination of SERVOPACK and Servomotor capacities.	*1
A.040: Parameter Set-	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 linear encoder.	Write the motor parameter file to the linear encoder.	*1
ting Error (A parameter setting is outside of	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
the setting range.)	A parameter setting is outside of the setting range.	Check the setting ranges of the parameters that have been changed.	Set the parameters to values within the setting ranges.	-
	The electronic gear ratio is outside of the setting range.	Check the electronic gear ratio. The ratio must be within the following 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 Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Check the setting of Pn212 or Pn281.	Set Pn212 or Pn281 to an appropriate value.	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The speed of program jogging went below the setting range when the electronic gear ratio (Pn20E/Pn210) or the Servomotor was changed.	Check to see if the detection conditions*2 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
4.040	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*2 are satisfied.	Increase the setting of Pn533 or Pn585.	*1
A.042: Parameter Combination Error	The movement speed of advanced autotuning went below the setting range when the electronic gear ratio (Pn20E/ Pn210) or the Servomotor was changed.	Check to see if the detection conditions*3 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
	Pressure Feedback Enable Switch is enabled (Pn440 =		When using the pressure feedback control, disable the tuning-less function (Pn170 = n.□□□0).	-
	n.□□□1) when the tuning-less function is enabled (Pn170 = n.□□□1).	tuning-less function.	When using the tuningless function, disable the pressure feedback control (Pn440 = n.□□□0).	-
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 SERVOPACK and Servomotor capacities do not match each other.	Confirm that the follow- ing condition is met: 1/4 ≤ (Servomotor capacity/SERVOPACK capacity) ≤ 4	Select a proper combination of the SERVOPACK and Servomotor capacities.	*1
(The capacities of the SERVOPACK and Servomotor	A failure occurred in the encoder.	Replace the encoder and check to see if the alarm still occurs.	Replace the Servomotor or encoder.	_
do not match.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.051: Unsupported	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 linear encoder.	Write the motor parameter file to the linear encoder.	*1
Device Alarm	An unsupported Serial Converter Unit or encoder (e.g., an external encoder) is connected to the SERVOPACK.	Check the product combination specifications.	Change to a correct combination of models.	-

5.1.3 Troubleshooting Alarms

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-	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
ent type of motor from the previ- ously connected motor.)	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
A.0b0: Invalid Servo ON Command Alarm	The SV_ON (Servo ON) command was sent from the host controller after a utility 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 from previous page.

Alarm Number:	Possible Cause	Confirmation	Correction	Reference
Alarm Name		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 Servomotor.	*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 terminals 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 consumed by the DB resistor 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 methods, or the mechanisms so that the dynamic brake does not need to be used so frequently.	-
	The regenerative processing capacity was exceeded.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Recheck the operating conditions and load.	*4
	The SERVOPACK regenerative resistance is too small.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Change the regenerative resistance to a value larger than the SERVO-PACK minimum allowable resistance.	*4

5.1.3 Troubleshooting Alarms

Continued from previous page.

Alarm Number:	Describle Course	Confineration	Continued from pro	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	A heavy load was applied while the Servomotor 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 transistor or the heat	A malfunction was caused by noise.	Improve the noise environment, 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 Servomotor.	*1
A.101: Motor Overcurrent 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 terminals 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 environment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermeasures 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.	-

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Alarm Number:	Possible Cause	Confirmation	Continued from pro	Reference
Alarm Name	When using the built- in regenerative resis- tor, the jumper between the regener- ative resistor terminals (B2 and B3) was removed from one of the following SERVO- PACKs: SGD7S-	Check to see if the jumper is connected between power supply terminals B2 and B3.*5	Correctly connect a jumper.	*1
	3R8A, -5R5A, -7R6A, -120A, -180A, -200A, or -330A. The External Regenerative Resistor or Regenerative Resistor Unit is not wired correctly, or was removed or disconnected.	Check the wiring of the External Regenerative Resistor or Regenerative Resistor Unit.*5	Correct the wiring of the External Regenerative Resistor or Regenerative Resistor Unit.	*1
A.300: Regeneration Error	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 to see if an External Regenerative Resistor 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 Regenerative 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 Regenerative Resistor Unit is connected 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 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 the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

5.1.3 Troubleshooting Alarms

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 voltage within the specified range.	-
	The external regenerative resistance value or regenerative resistor capacity is too small, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or other means.	Change the regenerative resistance value or capacity. Reconsider the operating conditions using the SigmaJunmaSize+ Capacity Selection Software or other means.	*4
	There was a continuous regeneration 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.320: Regenerative Overload	The setting of Pn600 (Regenerative Resistor Capacity) is smaller than the capacity of the External 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 Resistance) 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 regenerative 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.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The regenerative resistor was disconnected when the SERVOPACK power supply voltage was high.	Measure the resistance of the regenerative resistor using a measuring instrument.	If you are using the regenerative resistor built into the SERVOPACK, replace the SERVOPACK. If you are using an External Regenerative Resistor, replace the External Regenerative Resistor.	-
A 000:	DC power was supplied when an AC power supply input was specified in the settings.	Check the power supply 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 supplied when a DC power supply input was specified in the settings.	Check the power supply 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 to see if an External Regenerative Resistor 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.	-

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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 lightning surge.	Measure the power supply voltage.	Improve the power supply 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 SERVOPACK.	-
A.400: Overvoltage (Detected in the	The voltage for AC power supply was too high during acceleration or deceleration.	Check the power supply voltage and the speed and torque during operation.	Set the AC power supply voltage within the specified range.	-
main circuit power supply section of the SERVOPACK.)	The external regenerative 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 operating conditions and load.	*4
	The moment of inertia ratio or mass ratio exceeded the allowable 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 SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:	Descible Cause	Confirmation	Correction	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage went below the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	-
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*1
A.410:	The SERVOPACK fuse is blown out.	Check the power supply wiring.	Correct the power supply wiring and replace the SERVOPACK.	-
Undervoltage (Detected in the main circuit power supply section of the	The SERVOPACK fuse is blown out.	-	Replace the SERVO- PACK and connect a reactor to the DC reactor terminals (⊝1 and ⊝2) on the SERVOPACK.	-
SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The jumper between the DC Reactor terminals (⊝1 and ⊝2) was removed or there is faulty contact.		Correct the wiring between the DC Reactor	
	The cable between the DC Reactor and SERVOPACK is not wired correctly or there is a faulty contact.		terminals.	_
	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 reference.	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 reference 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 output 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 output pulse setting and the motor speed.	Reduce the motor speed.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Abnormal oscillation was detected in the motor speed.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	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 appropriate value.	*1
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration 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 custom tuning or Easy FFT.	Check the waveform of the motor speed.	Check the operating procedure 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 maximum motor speed.	*1

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Alarm Number: Alarm 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 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:	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.	-
Instantaneous Overload A.720: Continuous Overload	Operation was performed with a load applied to the shaft of the servomotor that exceeded the allowable value.	Check the condition of the machine to deter- mine if a load was applied to the shaft of the servomotor that exceeded the allowable value.	Correct the condition of the machine so that the load on the shaft during servomotor operation does not exceed the allowable value.	-
	There is an error in the setting of Pn282 (Linear Encoder Scale Pitch).	Check the setting of Pn282.	Correct the setting of Pn282.	*1
	There is an error in the setting of Pn080 = n.□□X□ (Motor Phase Sequence Selection).	Check the setting of $Pn080 = n.\square\square X\square$.	Set Pn080 = n.□□X□ to an appropriate value.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A 720 and	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 Servomotor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	 Reconsider the following: Reduce the Servomotor command speed. Decrease the moment of inertia ratio or mass ratio. Reduce the frequency of stopping with the dynamic brake. 	-
	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 frequency of the inrush current limiting resistor 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.	-
turned ON and OFF.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number			Continued from pro	evious page.
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermometer. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
A.7A1:	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
Internal Tempera- ture Error 1 (Control Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The surrounding temperature is too high.	Check the surrounding temperature using a thermometer. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
A 7A2.	An overload alarm was reset by turning OFF the power supply 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 Temperature Error 2 (Power Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.7A3: Internal Temperature Sensor Error (An error occurred in the temperature sensor circuit.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.7Ab: 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 connection 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 measures 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.	-
A.820: Encoder Check- sum Alarm (Detected at the encoder.)	A failure occurred in the encoder.	_	■ When Using an Absolute Encoder Set up the encoder again. If the alarm still occurs, the Servomotor may be faulty. Replace the Servomotor. ■ When Using a Singleturn Absolute Encoder or Incremental Encoder • The Servomotor may be faulty. Replace the Servomotor. • The linear encoder may be faulty. Replace the linear encoder.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.830: Encoder Battery Alarm (The absolute encoder battery voltage was lower	The battery connection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*1
	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*1
than the speci- fied level.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number:			Continued from pro	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The encoder malfunctioned.	_	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.	-
1.040	An error occurred in reading data from the linear encoder.	_	The linear encoder is not mounted within an appropriate 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 malfunctioned due to noise.	_	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding 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 sensor.	_
	Rotary Servomotor: The Servomotor speed was 200 min ⁻¹ 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 ⁻¹ , and turn ON the control power supply.	-
A.850: Encoder Over- speed (Detected at the encoder when the control power supply is turned ON.)	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.	-

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Alarm Number:	Possible Cause	Confirmation	Correction	Reference
Alarm Name		Commitmation		neierence
A.860: (Detected when a Rotary Servomo- tor, Absolute Lin-	The surrounding air temperature around the Servomotor is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40°C or less.	-
	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 specified range.	*1
ear Encoder, or Direct Drive Ser- vomotor is con- nected. However, this alarm is not detected for SGMCS Servo- motors.)	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.	-
(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 temperature around the Servomotor is too high.	Measure the surrounding 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 specified 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	A failure occurred in the external encoder.	_	Replace the external encoder.	_
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 Converter Unit.	-

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Alarm Number:	D 311 0	0 5 11	Continued from pr	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.8A2: External Incremental Encoder Sensor Error	A failure occurred in the external encoder.	_	Replace the external encoder.	-
A.8A3: External Absolute Encoder Position Error	A failure occurred in the external absolute encoder.	_	The external absolute encoder may be faulty. Refer to the encoder manufacturer's instruction manual for corrections.	-
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 maximum speed.	-
A.8A6: External Encoder Overheated	An overheating error was detected in the external encoder.	_	Replace the external encoder.	-
A.b33: Current Detection 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 section.	_	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 section due to noise.	_	Implement the following countermeasures against noise. • Check the MECHATROLINK Communications Cable and FG wiring. • Attach a ferrite core to the MECHATROLINK Communications Cable.	-
	There is a fault in the SERVOPACK MECHATROLINK communications section.	_	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.bF0: 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.	-
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.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
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.	_
A.bF4: 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.	_
	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.□□X□ (Motor Phase Sequence Selection).	Check the setting of Pn080 = n.□□X□.	Set Pn080 = n.□□X□ to an appropriate value.	*1
A.C10: Servomotor Out of Control (Detected when the servo is turned ON.)	A failure occurred in the encoder.	-	If the motor wiring is correct and an alarm still occurs after turning the power supply OFF and ON again, the Servomotor or linear encoder may be faulty. Replace the Servomotor 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.	_

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Alarm Number:	Possible Cause	Confirmation	Correction	Reference
Alarm Name	1 033ibic Odd3c	Commutation	Correction	Tiererenee
A.C20: Phase Detection Error	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.	-
	The count-up direction of the linear encoder does not match the forward direction of the Moving Coil in the motor.	Check the setting of Pn080 = n.□□X□ (Motor Phase Sequence Selection). Check the installation orientation for the linear encoder and Moving Coil.	Change the setting of Pn080 = n.□□X□. Correctly reinstall the linear encoder or Moving Coil.	*1
	The polarity sensor signal is being affected by noise.	_	Correct the FG wiring. Implement countermeasures against noise for the polarity sensor wiring.	-
	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
A.C21:	The polarity sensor is protruding from the Magnetic Way of the motor.	Check the polarity sensor.	Correctly reinstall the Moving Coil or Magnetic Way of the motor.	-
Polarity Sensor Error	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 sensor.	_
A.C22: Phase Information Disagreement	The SERVOPACK phase information is different from the linear encoder phase information.	_	Perform polarity detection.	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.C50: Polarity Detection Failure	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 installation. 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 processed 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.	_
	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 feedback goes to 0. If the external force cannot 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 resolution. (We recommend a pitch of $40~\mu m$ or less.) Or, increase the setting of Pn485 (Polarity Detection Reference Speed). However, increasing the setting of Pn485 will increase the Servomotor movement range that is required for polarity detection.	_

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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 signals. Execute polarity detection at a position where an overtravel signal would not be detected.	*1
A.C52: Polarity Detection Not Completed	The servo was turned ON when using an absolute linear encoder, Pn587 was set to n.□□□0 (Do not detect polarity), and the polarity had not been detected.	_	When using an absolute linear encoder, set Pn587 to n. DD 1 (Detect polarity).	-
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 detection.	_	Increase the setting of Pn48E (Polarity Detection Range). Or, increase the setting of Pn481 (Polarity Detection Speed Loop Gain).	-
A.C54: Polarity Detection Failure 2	An external force was applied to the Servomotor.	_	Increase the setting of Pn495 (Polarity Detection Confirmation Force Reference). 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.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	There is a faulty contact 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 disconnection or short-circuit in the encoder. Or, the cable impedance is outside the specified values.	Check the condition of the Encoder Cable.	Use the Encoder Cable within the specified specifications.	-
A.C90: Encoder Commu-	One of the following has occurred: corrosion caused by improper temperature, humidity, or gas, a short-circuit caused by entry of water drops or cutting oil, or faulty contact in connector caused by vibration.	Check the operating environment.	Improve the operating environment, and replace the cable. If the alarm still occurs, replace the SER-VOPACK.	*1
nications Error	A malfunction was caused by noise.	_	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding 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 failure occurred in the encoder.	_	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If the alarm occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	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
A.C91: Encoder Communications Position Data Acceleration Rate Error	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.	-
	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.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Noise entered on the signal line from the encoder.	_	Implement countermeasures against noise for the encoder wiring.	*1
	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor or linear encoder.	_
A.C92: Encoder Communications 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.	-

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 ² .	-
	The Encoder Cable is too long and noise entered on it.	_	Rotary Servomotors: The Encoder Cable wiring distance must be 50 m max. Linear Servomotors: The Encoder Cable wiring distance must be 20 m max.	-
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 vibration. Correctly install the Servomotor 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 different 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.	-

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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 Converter 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 specifications of the external encoder.	Use a specified cable.	-
Module Communications	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 Converter Unit and SERVO-PACK must be 20 m or less.	-
	The sheath on cable between the Serial Converter Unit and SERVOPACK is broken.	Check the cable that connects the Serial Converter Unit.	Replace the cable between the Serial Converter 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 Converter 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 Circuit Cables.	Make sure that there are no faulty contacts in the wiring for the Servomotor and encoder.	-
	The position command speed is too fast.	Reduce the position command speed and try operating the SER-VOPACK.	Reduce the position reference speed or the reference acceleration rate, or reconsider the electronic gear ratio.	*1
A.d00: Position Deviation Overflow (The setting of Pn520 (Position Deviation Overflow Alarm Level) was exceeded by the position deviation 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 acceleration by selecting the position reference filter (ACCFIL) using a MECHATROLINK 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.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.d01: Position Deviation 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 Deviation Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting 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 setting of Pn520 (Position 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 Overflow Level).	Check the pressure feedback detection monitor or pressure feedback loop devia- tion monitor.	Change the value of Pn447 (Pressure Feedback Loop Deviation Overflow Level). Adjust the values of Pn442 (Pressure Feedback Loop Integral Time) and other pressure feedback control parameters.	3-20
A.d30: Position Data Overflow	The position data exceeded ±1,879,048,192.	Check the input reference pulse counter.	Reconsider the operating specifications.	-
A.E02:	The MECHATROLINK transmission cycle fluctuated.	_	Remove the cause of transmission cycle fluctuation at the host controller.	-
MECHATROLINK Internal Synchro- nization Error 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.	-
A.E40: MECHATROLINK Transmission Cycle Setting Error	The setting of MECHATROLINK transmission cycle is outside of the specified 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 transmission bytes set on DIP switch S3 is not correct.	Check the MECHATROLINK communications data size of the host controller.	Reset DIP switch S3 to change the number of transmission bytes to an appropriate value.	*1

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Alarm Number:	Donaible Cause	Confirmation	Continued from pre	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.E42: 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 communications network have the same address.	Check to see if two or more stations on the communications network 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*4:	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	The WDT data at the host controller was not updated correctly at the start of synchronous communications, so synchronous communications 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.	-
Failed	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 wiring is not correct.	Check the MECHATROLINK wiring.	Correct the MECHATROLINK Communications Cable wiring.	-
A.E60*4: Reception Error in MECHATROLINK Communications	A MECHATROLINK data reception error occurred due to noise.	_	Implement countermeasures against noise. (Check the MECHATROLINK Communications Cable and FG wiring, and implement measures such as attaching a ferrite core to the MECHATROLINK Communications 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.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.E61: Synchronization	The MECHATROLINK transmission cycle fluctuated.	Check the setting of the MECHATROLINK transmission cycle.	Remove the cause of transmission cycle fluctuation at the host controller.	-
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 wiring is not correct.	Check the Servomotor wiring.	Correct the MECHATROLINK Communications Cable wiring.	-
A.E63: MECHATROLINK Synchronization Frame Not Received	A MECHATROLINK data reception error occurred due to noise.	-	Implement countermeasures against noise. (Check the MECHATROLINK Communications Cable and FG wiring, and implement measures such as attaching a ferrite core to the MECHATROLINK Communications 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 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.Eb1: Safety Function Signal Input Tim- ing Error	The delay between activation of the /HWBB1 and /HWBB2 input signals 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 circuits may be faulty. Alternatively, the input signal cables may be disconnected. Check to see if any of these items are faulty or have been disconnected.	-
	A failure occurred in the SERVOPACK.	-	Replace the SERVO- PACK.	_

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Alarm Number:	Possible Cause	Confirmation	Correction	Reference
Alarm Name	Fossible Gause	Commution	Correction	neierence
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.	-
A.Ed1:	A timeout error	Check the motor status when the command is executed.	Execute the SV_ON or SENS_ON command only when the motor is not operating.	-
Command Execution Timeout	occurred for a MECHATROLINK command.	For other types of control, check the status of the linear encoder when the command is exe- cuted.	Execute the SENS_ON command only when an external rotary encoder or linear encoder is connected.	-
	The three-phase power supply wiring is not correct.	Check the power supply wiring.	Make sure that the power supply is correctly wired.	*1
A.F10: Power Supply Line Open Phase	The three-phase power supply is unbalanced.	Measure the voltage for each phase of the three-phase power supply.	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 without specifying a signal-phase AC power supply input (Pn00B = n.□1□□).	Check the power supply and the parameter setting.	Match the parameter setting to the power supply.	*1
power supply 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.	_
FL-1*6: System Alarm FL-2*6: System Alarm FL-3*6: System Alarm FL-4*6: System Alarm FL-5*6: System Alarm FL-6*6: 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	There is a faulty connection between the Digital Operator and the SERVOPACK.	Check the connector contact.	Disconnect the connector and insert it again. Or, replace the cable.	_
Error 1	A malfunction was caused by noise.	_	Keep the Digital Operator or the cable away from sources of noise.	-

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
CPF01: Digital Operator Communications Error 2	A failure occurred in the Digital Operator.	_	Disconnect the Digital Operator and then connect it again. If an alarm still occurs, the Digital Operator may be faulty. Replace the Digital Operator.	-
	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.	-

- *1. 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)
- *2. Detection Conditions
 - Rotary Servomotors

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

• Pn533 [min⁻¹]
$$\times$$
 Encoder resolution $\leq \frac{Pn20E}{Pn210}$
• Maximum motor speed [min⁻¹] \times Encoder resolution Approx. 3.66 \times 10¹² $\geq \frac{Pn20E}{Pn210}$

· Linear Servomotors

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

$$\frac{\text{Pn585 [mm/s]}}{\text{Linear encoder pitch [μm]}} \times \frac{\text{Resolution of Serial Converter Unit}}{10} \leq \frac{\text{Pn20E}}{\text{Pn210}}$$

$$\frac{\text{Pn385 [100 mm/s]}}{\text{Linear encoder pitch [μm]}} \times \frac{\text{Resolution of Serial Converter Unit}}{\text{Approx. 6.10×10}^5} \geq \frac{\text{Pn20E}}{\text{Pn210}}$$

- *3. Detection Conditions
 - Rotary Servomotors

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

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

• Maximum motor speed [min⁻¹]
$$\times \frac{\text{Encoder resolution}}{\text{Approx. } 3.66 \times 10^{12}} \ge \frac{\text{Pn20E}}{\text{Pn210}}$$

· Linear Servomotors

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

$$\frac{\text{Rated motor speed [mm/s]} \times 1/3}{\text{Linear encoder pitch [μm]}} \times \frac{\text{Resolution of Serial Converter Unit}}{10} \leq \frac{\text{Pn20E}}{\text{Pn210}}$$

$$\frac{\text{Pn385 [100 mm/s]}}{\text{Linear encoder pitch [μm]}} \times \frac{\text{Resolution of Serial Converter Unit}}{\text{Approx. } 6.10 \times 10^{5}} \geq \frac{\text{Pn20E}}{\text{Pn210}}$$

*4. Refer to the following manual for details.

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

- *5. The SERVOPACK will fail if the External Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper is connected between the B2 and B3 terminals.
- *6. 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 percentage set with the following formula: (Pn520 × Pn51E/100)	Required.
A.901	Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 × Pn528/100)	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 operation. 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 (Regenerative 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 compensation 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 Command Conditions)	A command was sent when the conditions for sending a command were not satisfied.	Automatically reset.*
A.95b	Command Warning 2 (Unsupported Command)	An unsupported command was sent.	Automatically reset.*

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Warning Number	Warning Name	Meaning	Resetting
A.95d	Command Warning 4 (Command Interference)	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)		
A.960	MECHATROLINK Communications Warning	A communications error occurred during MECHATROLINK communications.	Required.
A.971	Undervoltage	This warning occurs before an A.410 alarm (Undervoltage) 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.
A.9b0	Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	Required.

^{*} The warning will automatically be cleared after the correct command is received.

Note: 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.□□□X (Vibration Detection Selection)
A.923	_ (Not affected by the setting of Pn008 = n.□X□□.)
A.930	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection)
A.942	Pn423 = n. \$\square\$ (Speed Ripple Compensation Information Disagreement Warning Detection Selection)
A.94A to A.960 and A.97A to A.97b	Pn800=n.□□X□ (Warning Check Masks)
A.971	Pn008 = n.□□X□ (Function Selection for Undervoltage) (Not affected by the setting of Pn008 = n.□X□□.)
A.9A0	Pn00D = n.X□□□ (Overtravel Warning Detection Selection) (Not affected by the setting of Pn008 = n.□X□□.)
A.9b0	Pn00F = n.□□□X (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 Circuit 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.	*
A.900: Position Deviation Overflow	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 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 × Pn51E/100) is too low for the operating conditions.	Check excessive position 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 deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 × Pn528/100)	_	Optimize the setting of Pn528 (Position Deviation Overflow Warning Level at Servo ON).	-

Warning Number:			Continued from pre	, ,
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 protection characteristics.	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 Servomotor was not driven because of mechanical problems.	Check the operation reference and motor speed.	Remove the mechanical problem.	_
	The overload warning level (Pn52B) is not suitable.	Check that the overload 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 vibration 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 Inertia Ratio) to an appropriate value.	*
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*

5.1.6 Troubleshooting Warnings

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction Correction	Reference
Training Hamo	The surrounding temperature is too high.	Check the surrounding temperature using a thermometer. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display 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 processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	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 thermometer. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display 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 processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	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.	-

Warning Number:				and 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 voltage within the specified range.	-
A.920: Regenerative Overload (warning before an A.320 alarm occurs)	There is insufficient external regenerative resistance, regenerative resistor capacity, or SER-VOPACK capacity, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or another means.	Change the regenerative resistance value, regenerative resistance capacity, or SERVOPACK capacity. Reconsider the operating conditions using the Sigma-JunmaSize+ Capacity Selection Software or other means.	-
	There was a continuous regeneration 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 external 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 consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following: Reduce the Servomotor command speed. Decrease the moment of inertia or mass. Reduce the frequency of stopping with the dynamic brake.	-
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	The pressure feedback detection 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 Feedback Overflow Detection Level) for the time set in Pn44E (Pressure Feedback Overflow 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 matter inside the SERVO-PACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SER- VOPACK may be faulty. Replace the SERVOPACK.	_

5.1.6 Troubleshooting Warnings

Continued from previous page.

Warning Number:	Possible Cause	Confirmation	Continued from pre	Reference
Warning Name			23300011	
A.930: Absolute Encoder Battery Error (The absolute encoder	The battery con- nection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*
battery voltage was lower than the specified level.) (Detected only when an abso-	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*
lute encoder is connected.)	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 Compensation Information 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 setting may increase the speed ripple.	*
tion Disagreement	tion information stored in the SER- VOPACK.	_	Set Pn423 to n.□□□0 (Disable speed ripple compensation). However, changing the setting may increase the speed ripple.	*
A.94A: Data Setting Warning 1 (Parameter Number Error)	An invalid parameter number was used.	Check the command that caused the warning.	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 warning.	Set the parameter within the setting range.	*
A.94C: Data Setting Warning 3 (Calculation Error)	The calculation result of the setting is not correct.	Check the command that caused the warning.	Set the parameter within the setting range.	*
A.94d: Data Setting Warning 4 (Parameter Size)	The parameter size set in the command is not correct.	Check the command that caused the warning.	Set the correct parameter size.	*
A.94E: Data Setting Warning 5 (Latch Mode Error)	A latch mode error was detected.	Check the command that caused the warning.	Change the setting of Pn850 or the LT_MOD data for the LTMOD_ON command sent by the host controller to an appropriate value.	*
A.95A: Command Warning 1 (Unsatisfied Command Conditions)	The command conditions are not satisfied.	Check the command that caused the warning.	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 warning.	Do not send unsupported commands.	*

Warning Number			Continued from pre	evious page
Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.95d: Command Warning 4 (Command Inter- ference)	The command sending conditions for latch-related commands was not satisfied.	Check the command that caused the warning.	Send the command after the command conditions are satisfied.	*
A.95E: Command Warning 5 (Subcommand Not Possible)	The command sending conditions for subcommands was not satisfied.	Check the command that caused the warning.	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 warning.	Do not send undefined commands.	*
	The MECHATROLINK Communications Cable is not wired correctly.	Check the wiring conditions.	Correct the MECHATROLINK communications cable wiring.	*
A.960: MECHATROLINK Communications Warning	A MECHATROLINK data reception error occurred due to noise.	Confirm the installation conditions.	Implement the following countermeasures against noise. • Check the MECHATROLINK Communications Cable and FG wiring and implement countermeasures to prevent noise from entering. • Attach a ferrite core to the MECHATROLINK Communications Cable.	-
	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 voltage 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 voltage 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 interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary 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.	-

5.1.6 Troubleshooting Warnings

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.97A: Command Warning 7 (Phase Error)	A command that cannot be executed in the current phase was sent.	_	Send the command after the command conditions are satisfied.	-
A.97b: Data Clamp Out of Range	The set command data was clamped to the minimum or maximum 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 monitor.	Even if an overtravel signal is not shown by the input signal monitor, momentary overtravel may have been detected. Take the following precautions. • Do not specify movements that would cause overtravel from the host controller. • Check the wiring of the overtravel signals. • Implement countermeasures against noise.	*
A.9b0: Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	_	Replace the part. Contact your Yaskawa representative 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)

Troubleshooting Based on the Operation and Conditions of the Servomotor

5.1.7

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

Problem	Possible Cause	Confirmation	Correction	Reference
	The control power supply is not turned ON.	Measure the voltage between control power supply terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the control power supply is turned ON.	-
	The main circuit power supply is not turned ON.	Measure the voltage across the main circuit power input terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the main circuit power supply is turned ON.	-
	The I/O signal connector (CN1) pins are not wired correctly or are disconnected.	Turn OFF the power supply to the servo system. Check the wiring condition of the I/O signal connector (CN1) pins.	Correct the wiring of the I/O signal connector (CN1) pins.	*
	The wiring for the Servomotor Main Circuit Cables or Encoder Cable is disconnected.	Check the wiring conditions.	Turn OFF the power supply to the servo system. Wire the cable correctly.	-
Servomotor Does Not Start	There is an overload on the Servomotor.	Operate the Servomotor with no load and check the load status.	Turn OFF the power supply to the servo system. Reduce the load or replace the Servomotor with a Servomotor with a larger capacity.	-
	The type of encoder that is being used does not agree with the setting of Pn002 = n. \(\Delta \times \Delta \Delta \Delta \) (Encoder Usage).	Check the type of the encoder that is being used and the setting of Pn002 = n.□X□□.	Set Pn002 = n. \(\Pi\)X\(\Pi\) according to the type of the encoder that is being used.	*
	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).	*
	The SV_ON command was not sent.	Check the commands sent from the host controller.	Send the SV_ON command from the host controller.	-
	The SENS_ON (Turn ON Sensor) command was not sent.	Check the commands sent from the host controller.	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 signals. If you are not using the safety function, connect the Safety Jumper Connector (provided as an accessory) to CN8.	*

5.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

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Problem	Possible Cause	Confirmation	Correction	Reference
	The FSTP (Forced Stop Input) signal is still OFF.	Check the FSTP signal.	Turn ON the FSTP signal. If you will not use the function to force the motor to stop, set Pn516 = n.□□□X (FSTP (Forced Stop Input) Signal Allocation) to disable the signal.	*
Servomotor Does Not Start	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
Start		Check the setting of Pn080 =n.□□□X (Polarity Sensor Selection).	Correct the parameter setting.	*
	The polarity detection was not executed.	Check the inputs to the SV_ON (Servo ON) command.	If you are using an incremental linear encoder, send the SV_ON (Servo ON) command from the host controller. If you are using an absolute linear encoder, execute polarity detection.	*
	There is a mistake in the Servomotor wiring.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Servomotor correctly.	-
	There is a mistake in the wiring of the encoder or Serial Converter Unit.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Serial Converter Unit correctly.	-
Servomotor	There is a mistake in the linear encoder wiring.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the connections correctly.	_
Moves Instanta- neously,	The setting of Pn282 (Linear Encoder Scale Pitch) is not correct.	Check the setting of Pn282.	Correct the setting of Pn282.	*
and Then Stops	The count-up direction of the linear encoder does not match the forward direction of the Moving Coil in the motor.	Check the directions.	Change the setting of Pn080 = n. \(\sim \subseteq \text{X} \subseteq \text{(Motor Phase Sequence Selection).}\) Match the linear encoder direction and motor direction.	*
	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.	_
Servomotor Speed Is Unstable	There is a faulty connection in the Servomotor wiring.	The connector connections for the power line (U, V, and W phases) and the encoder or Serial Converter Unit may be unstable. Turn OFF the power supply to the servo system. Check the wiring.	Tighten any loose terminals or connectors and correct the wiring.	-

5.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Problem	Possible Cause	Confirmation	Continued from pre	Reference
Servomotor Moves with- out a Refer- ence Input	A failure occurred in the SER-VOPACK.	-	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
	The count-up direction of the linear encoder does not match the forward direction of the Moving Coil in the motor.	Check the directions.	Change the setting of Pn080 = n.□□X□ (Motor Phase Sequence Selection). Match the linear encoder direction and Servomotor direction.	*
	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.	-
Dynamic Brake Does Not Operate	The setting of Pn001 = n.□□□X (Motor Stopping Method for Servo OFF and Group 1 Alarms) is not suitable.	Check the setting of Pn001 = n.□□□X.	Set Pn001 = n.□□□X correctly.	-
	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 resistance may be disconnected.	Turn OFF the power supply to the servo system. Replace the SERVO-PACK. To prevent disconnection, reduce the load.	-
	There was a failure in the dynamic brake drive circuit.	-	There is a defective component in the dynamic brake circuit. Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
Abnormal Noise from Servomotor	The Servomotor vibrated considerably while performing 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 allowable value, or increase the load level or reduce the rigidity level in the tuning-less level settings. If the situation is not improved, disable the tuning-less function (i.e., set Pn170 to n.□□□□0) and execute autotuning either with or without a host reference.	*

5.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference
Abnormal Noise from Servomotor		Turn OFF the power supply to the servo system. Check to see if there are any loose mounting screws.	Tighten the mounting screws.	-
	The machine mounting is not secure.	Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling.	Align the coupling.	-
		Turn OFF the power supply to the servo system. Check to see if the coupling is balanced.	Balance the coupling.	-
	The bearings are defective.	Turn OFF the power supply to the servo system. Check for noise and vibration around the bearings.	Replace the Servomotor.	-
	There is a vibration source at the driven machine.	Turn OFF the power supply to the servo system. Check for any foreign matter, damage, or deformation in the machine's moving parts.	Consult with the machine manufacturer.	-
	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use shielded twisted-pair wire cables or screened twisted-pair cables with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. 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.	Turn OFF the power supply to the servo system. Make sure that the rotary or Linear Encoder Cable satisfies the specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with a conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max. 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.	-

5.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Problem	Possible Cause	Confirmation	Correction Correction	Reference
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. 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 subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current 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.	Turn OFF the power supply to the servo system. 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.	Turn OFF the power supply to the servo system. Implement countermeasures against noise for the encoder wiring.	_
Abnormal Noise from Servomotor	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment). Check the linear encoder installation (mounting surface precision and securing method).	Reduce machine vibration. Improve the mounting state of the Servomotor or linear encoder.	-
	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
	A failure occurred in the Serial Converter Unit.	_	Turn OFF the power supply to the servo system. Replace the Serial Converter Unit.	_
	A failure occurred in the linear encoder.	_	Turn OFF the power supply to the servo system. Replace the linear encoder.	_

5.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
Servomotor	The servo gains are not balanced.	Check to see if the servo gains have been correctly 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 (Position 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 Constant) 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 balanced.	Check to see if the servo gains have been correctly 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 (Position 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 Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	-
P · S	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 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.	

Maintenance

5.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
Absolute Encoder Position	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max. 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.	_
Deviation Error (The position that was saved in the	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. 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.	-
host con- troller when the power was turned OFF is dif- ferent from	The Encoder Cable was subject to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
the posi- tion when the power was next turned ON.)	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. 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.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder or Serial Converter Unit wiring.	-
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment). Check the linear encoder installation (mounting surface precision and securing method).	Reduce machine vibration. Or, improve the mounting state of the Servomotor or linear encoder.	-

5.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

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Problem	Possible Cause	Confirmation	Correction	Reference
Absolute Encoder Position	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor or linear encoder.	-
Deviation Error (The position that was saved in the	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
host con- troller when the power		Check the error detection section of the host controller.	Correct the error detection section of the host controller.	-
was turned OFF is dif- ferent from the posi-	Host Controller Multiturn Data or Absolute Encoder	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.	-
tion when the power was next turned ON.)	Position Data Reading Error	Check for noise interference in the cable between the SERVO-PACK and the host controller.	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 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.	-
		Check the operating condition 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.	*
		Check the settings of the overtravel input signal allocations (Pn50A/Pn50B).	Set the parameters to correct values.	*
Overtravel Occurred		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 operation 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.	-
	There is a mistake in the allocation 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 allocated in Pn50A =n.X□□□, allocate the P-OT signal instead.	*
	Reverse Drive Prohibit) signal in Pn50A = n.X□□□ or Pn50B = n.□□□X.	Check to see if the N-OT signal is allocated in Pn50B = n.□□□X.	If another signal is allocated in Pn50B =n.□□□X, allocate the N-OT signal instead.	*

5.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Problem	Possible Cause	Confirmation	Continued from pre	Reference
Overtravel	The selection of the Servo- motor stopping method is	Check the servo OFF stopping method set in Pn001 = n.□□□X or Pn001 = n.□□X□.	Select a Servomotor stopping method other than coasting to a stop.	a)c
Occurred	not correct.	Check the torque control stopping method set in Pn001 = n.□□□X or Pn001 = n.□□X□.	Select a Servomotor stopping method other than coasting to a stop.	ж
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.	_
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
Position	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max. 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.	_
Deviation (without Alarm)	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. 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 subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current 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.	Turn OFF the power supply to the servo system. 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.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder wiring or Serial Converter Unit wiring.	-

5.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference
Problem	Possible Cause	Turn OFF the power sup-	Correction	Reference
	The encoder was subjected to excessive vibration or shock.	ply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment). Check the linear encoder installation (mounting surface precision and securing method).	Reduce machine vibration. Or, improve the mounting state of the Servomotor or linear encoder.	_
	The coupling between the machine and Servomotor is not suitable.	Turn OFF the power supply to the servo system. Check to see if position offset occurs at the coupling between machine and Servomotor.	Correctly secure the coupling between the machine and Servomotor.	_
Position Deviation (without Alarm)	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	_
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. 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.)	_	Turn OFF the power supply to the servo system. Replace the Servomotor or linear encoder.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
	The surrounding air temperature is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature to 40°C or less.	_
	The surface of the Servomotor is dirty.	Turn OFF the power supply to the servo system. 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.

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

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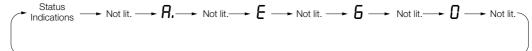
FT41 Specification

5.2.1 Alarm Displays

If an error occurs in the SERVOPACK, an alarm number will be displayed on the panel display. However, if no alarm number appears on the panel display, the display will indicate a SERVOPACK system error. Replace the SERVOPACK.

If there is an alarm, the display will change in the following order.

Example: Alarm A.E60



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.

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

5.2.2 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.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 Servomotor 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 transistor 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	 The AC power supply input setting or DC power supply input setting is not correct. The power supply wiring is not correct. 	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	 The pulse output speed for the setting of Pn212 (Number of Encoder Output Pulses) was exceeded. (This applies to Rotary Servomotors.) The motor speed upper limit for the setting of Pn281 (Encoder Output Resolution) was exceeded. (This applies to Linear Servomotors.) 	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 seconds 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 rotational or linear kinetic energy exceeded the	Gr.1	Yes
A.740	Inrush Current Limiting Resistor Overload	capacity of the dynamic brake resistor. The main circuit power supply was frequently turned ON and OFF.	Gr.1	Yes
A.7A1	Internal Temperature Error 1 (Control Board Tempera-	The surrounding temperature of the control PCB is abnormal.	Gr.2	Yes

	Continued from previous page.			
Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.7A2	Internal Temperature Error 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.	Gr.2	Yes
A.7A3	Internal Temperature Sensor Error	An error occurred in the temperature sensor circuit.	Gr.2	No
A.7Ab	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Gr.1	Yes
A.810	Encoder Backup Alarm	The power supplies to the encoder all failed and the position data was lost.	Gr.1	No
A.820	Encoder Checksum Alarm	There is an error in the checksum results for encoder memory.	Gr.1	No
A.830	Encoder Battery Alarm	The battery voltage was lower than the specified level after the control power supply was turned ON.	Gr.1	Yes
A.840	Encoder Data Alarm	There is an internal data error in the encoder.	Gr.1	No
A.850	Encoder Overspeed	The encoder was operating at high speed when the power was turned ON.	Gr.1	No
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	A failure occurred in the linear encoder.	Gr.1	No
A.891	Encoder Module Error	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
A.8A1	External Encoder Module Error	An error occurred in the Serial Converter Unit.	Gr.1	Yes
A.8A2	External Incremental Encoder Sensor Error	An error occurred in the external encoder.	Gr.1	Yes
A.8A3	External Absolute Encoder Position Error	An error occurred in the position data of the external encoder.	Gr.1	Yes
A.8A5	External Encoder Over- speed	An overspeed error occurred in the external encoder.	Gr.1	Yes
A.8A6	External Encoder Over- heated	An overheating error occurred in the external encoder.	Gr.1	Yes
A.b33	Current Detection Error 3	An error occurred in the current detection circuit.	Gr.1	No
A.b6A	MECHATROLINK Communications ASIC Error 1	ASIC error 1 occurred in MECHATROLINK communications.	Gr.1	No
A.b6b	MECHATROLINK Communications ASIC Error 2	ASIC error 2 occurred in MECHATROLINK communications.	Gr.2	No
A.bF0	System Alarm 0	Internal program error 0 occurred in the SERVO-PACK.	Gr.1	No
A.bF1	System Alarm 1	Internal program error 1 occurred in the SERVO-PACK.	Gr.1	No
A.bF2	System Alarm 2	Internal program error 2 occurred in the SERVO-PACK.	Gr.1	No
A.bF3	System Alarm 3	Internal program error 3 occurred in the SERVO-PACK.	Gr.1	No
A.bF4	System Alarm 4	Internal program error 4 occurred in the SERVO-PACK.	Gr.1	No
A.bF5	System Alarm 5	Internal program error 5 occurred in the SERVO-PACK.	Gr.1	No
A.bF6	System Alarm 6	Internal program error 6 occurred in the SERVO-PACK.	Gr.1	No

5.2.2 List of Alarms

Continued from previous page.

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Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
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 Module failed.	Gr.1	No
A.CF2	Timer Stopped Error in Feedback Option Module Communications	An error occurred in the timer for communications 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.	Gr.1	Yes
A.d01	Position Deviation Over- flow 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.	Gr.1	Yes
A.d02	Position Deviation Over- flow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting 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 setting of Pn520 (Position Deviation Overflow Alarm Level) is exceeded before the limit is cleared.	Gr.2	Yes

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Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.d0A	Pressure Feedback Loop Deviation Overflow	The difference between the pressure feedback reference and the feedback detection value exceeded Pn447 (Pressure Feedback Loop Deviation Overflow Level).	Gr.1	Yes
A.d30	Position Data Overflow	The position feedback data exceeded ±1,879,048,192.	Gr.1	No
A.E02	MECHATROLINK Internal Synchronization Error 1	A synchronization error occurred during MECHATROLINK communications with the SER-VOPACK.	Gr.1	Yes
A.E40	MECHATROLINK Trans- mission Cycle Setting Error	The setting of the MECHATROLINK communications transmission cycle is not correct.	Gr.2	Yes
A.E41	MECHATROLINK Communications Data Size Setting Error	The setting of the MECHATROLINK communications data size is not correct.	Gr.2	Yes
A.E42	MECHATROLINK Station Address Setting Error	The setting of the MECHATROLINK station address is not correct.	Gr.2	No
A.E50*	MECHATROLINK Syn- chronization Error	A synchronization error occurred during MECHATROLINK communications.	Gr.2	Yes
A.E51	MECHATROLINK Syn- chronization Failed	Synchronization failed during MECHATROLINK communications.	Gr.2	Yes
A.E60*	Reception Error in MECHATROLINK Commu- nications	Communications errors occurred continuously during MECHATROLINK communications.	Gr.2	Yes
A.E61	Synchronization Interval Error in MECHATROLINK Transmission Cycle	An error occurred in the transmission cycle during MECHATROLINK communications.	Gr.2	Yes
A.E63	MECHATROLINK Syn- chronization Frame Not Received	Synchronization frames were continuously not received during MECHATROLINK communications.	Gr.2	Yes
A.E72	Feedback Option Module Detection Failure	Detection of the Feedback Option Module failed.	Gr.1	No
A.Eb1	Safety Function Signal Input Timing Error	An error occurred in the input timing of the safety function signal.	Gr.1	No
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
A.Ed1	Command Execution Timeout	A timeout error occurred for a MECHATROLINK command.	Gr.2	Yes
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
FL-1*				
FL-2*				
FL-3*	System Alarm	An internal program error occurred in the SER-	_	No
FL-4*		VOPACK.		
FL-5*				
FL-6*	Dinital On anatan Oanan			
CPF00	Digital Operator Communications Error 1	Communications were not possible between the Digital Operator (model: JUSP-OP05A-1-E) and	_	No
CPF01	Digital Operator Commu- nications Error 2	the SERVOPACK (e.g., a CPU error occurred).		

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

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 voltage within the specified range, and initialize the parameter settings.	*1
	The power supply was shut OFF while writing parameter settings.	Check the timing of shutting OFF the power supply.	Initialize the parameter settings and then set the parameters again.	*1
A.020: Parameter	The number of times that parameters were written exceeded the limit.	Check to see if the parameters were frequently changed from the host controller.	The SERVOPACK may be faulty. Replace the SER-VOPACK. Reconsider the method for writing the parameters.	-
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 electricity, 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 countermeasures 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 Format 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 software version of the parameters specified to write.	Read the product information to see if the software versions are the same. If they are different, 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
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 function.	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.	_

Alarm Number:	Possible Cause	Confirmation	Continued from pro	Reference
Alarm Name				
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 failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.030: Main Circuit	The jumper between the DC Reactor terminals (⊝1 and ⊝2) was removed or there is faulty contact.		Correct the wiring	
Detector Error	The cable between the DC Reactor and SERVOPACK is not wired correctly or there is a faulty contact.	_	between the DC Reactor terminals.	_
	The SERVOPACK and Servomotor capacities do not match each other.	Check the combination of the SERVOPACK and Servomotor capacities.	Select a proper combination of SERVOPACK and Servomotor capacities.	*1
A.040: Parameter Set-	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 linear encoder.	Write the motor parameter file to the linear encoder.	*1
ting Error (A parameter set- ting is outside of	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
the setting range.)	A parameter setting is outside of the setting range.	Check the setting ranges of the parameters that have been changed.	Set the parameters to values within the setting ranges.	-
	The electronic gear ratio is outside of the setting range.	Check the electronic gear ratio. The ratio must be within the following 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 Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Check the setting of Pn212 or Pn281.	Set Pn212 or Pn281 to an appropriate value.	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The speed of program jogging went below the setting range when the electronic gear ratio (Pn20E/Pn210) or the Servomotor was changed.	Check to see if the detection conditions*2 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
A 0.40	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*2 are satisfied.	Increase the setting of Pn533 or Pn585.	*1
A.042: Parameter Combination Error	The movement speed of advanced autotuning went below the setting range when the electronic gear ratio (Pn20E/ Pn210) or the Servomotor was changed.	Check to see if the detection conditions*3 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
	Pressure Feedback Enable Switch is enabled (Pn440 = n.□□□1) when the	Check the setting of the tuning-less function.	When using the pressure feedback control, disable the tuning-less function (Pn170 = n.□□□0).	-
	tuning-less function is enabled (Pn170 = n.□□□1).		When using the tuningless function, disable the pressure feedback control (Pn440 = n.□□□0).	-
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 SERVOPACK and Servomotor capacities do not match each other.	Confirm that the follow- ing condition is met: 1/4 ≤ (Servomotor capacity/SERVOPACK capacity) ≤ 4	Select a proper combination of the SERVOPACK and Servomotor capacities.	*1
(The capacities of the SERVOPACK and Servomotor	A failure occurred in the encoder.	Replace the encoder and check to see if the alarm still occurs.	Replace the Servomotor or encoder.	-
do not match.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.051: 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 linear encoder.	Write the motor parameter 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 specifications.	Change to a correct combination of models.	-

5.2.3 Troubleshooting Alarms

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
A.0b0: Invalid Servo ON Command Alarm	The SV_ON (Servo ON) command was sent from the host controller after a utility 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

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Alarm Number:	De ceileil O	0	Continued from pro	
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 Servomotor.	*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 terminals 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 consumed by the DB resistor 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 methods, or the mechanisms so that the dynamic brake does not need to be used so frequently.	-
	The regenerative processing capacity was exceeded.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Recheck the operating conditions and load.	*4
	The SERVOPACK regenerative resistance is too small.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Change the regenerative resistance to a value larger than the SERVO-PACK minimum allowable resistance.	*4

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
, warm reame	A heavy load was applied while the Servomotor 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 transistor 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 countermeasures 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 Servomotor.	*1
A.101: Motor Overcurrent 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 terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	*1
allowable current.)	A heavy load was applied while the Servomotor 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 environment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermeasures 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.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	When using the built-in regenerative resistor, the jumper between the regenerative resistor terminals (B2 and B3) was removed from one of the following 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.*5	Correctly connect a jumper.	*1
	The External Regenerative Resistor or Regenerative Resistor Unit is not wired correctly, or was removed or disconnected.	Check the wiring of the External Regenerative Resistor or Regenerative Resistor Unit.*5	Correct the wiring of the External Regenerative Resistor or Regenerative Resistor Unit.	*1
A.300: Regeneration Error	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 to see if an External Regenerative Resistor 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 Regenerative 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 Regenerative Resistor Unit is connected 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 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 the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_

Alarm Number:	Possible Cause	Confirmation	Correction	Reference
Alarm Name	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	The external regenerative resistance value or regenerative resistor capacity is too small, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or other means.	Change the regenerative resistance value or capacity. Reconsider the operating conditions using the SigmaJunmaSize+ Capacity Selection Software or other means.	*4
	There was a continuous regeneration 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.320: Regenerative Overload	The setting of Pn600 (Regenerative Resistor Capacity) is smaller than the capacity of the External 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 Resistance) 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 regenerative 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.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The regenerative resistor was disconnected when the SERVOPACK power supply voltage was high.	Measure the resistance of the regenerative resistor using a measuring instrument.	If you are using the regenerative resistor built into the SERVOPACK, replace the SERVOPACK. If you are using an External Regenerative Resistor, replace the External Regenerative Resistor.	-
A 200.	DC power was supplied when an AC power supply input was specified in the settings.	Check the power supply 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 supplied when a DC power supply input was specified in the settings.	Check the power supply 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 to see if an External Regenerative Resistor 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.	-

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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 lightning surge.	Measure the power supply voltage.	Improve the power supply 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 SERVOPACK.	-
A.400: Overvoltage (Detected in the	The voltage for AC power supply was too high during acceleration or deceleration.	Check the power supply voltage and the speed and torque during operation.	Set the AC power supply voltage within the specified range.	-
main circuit power supply section of the SERVOPACK.)	The external regenerative 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 operating conditions and load.	*4
	The moment of inertia ratio or mass ratio exceeded the allowable 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 SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:	Possible Cause	Confirmation	Correction	Reference
Alarm Name	The power supply voltage went below the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	-
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*1
A.410:	The SERVOPACK fuse is blown out.	Check the power supply wiring.	Correct the power supply wiring and replace the SERVOPACK.	-
Undervoltage (Detected in the main circuit power supply section of the	The SERVOPACK fuse is blown out.	_	Replace the SERVO- PACK and connect a reactor to the DC reactor terminals (⊝1 and ⊝2) on the SERVOPACK.	-
SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The jumper between the DC Reactor terminals (⊝1 and ⊝2) was removed or there is faulty contact.		Correct the wiring	
	The cable between the DC Reactor and SERVOPACK is not wired correctly or there is a faulty con- tact.	_	between the DC Reactor terminals.	-
	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 reference.	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 reference 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 output 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 output pulse setting and the motor speed.	Reduce the motor speed.	-

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Abnormal oscillation was detected in the motor speed.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	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 appropriate value.	*1
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration 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 custom tuning or Easy FFT.	Check the waveform of the motor speed.	Check the operating procedure 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 maximum motor speed.	*1

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Alarm Number: Alarm 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 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 740	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.	-
A.710: Instantaneous Overload A.720: Continuous Overload	Operation was performed with a load applied to the shaft of the servomotor that exceeded the allowable value.	Check the condition of the machine to deter- mine if a load was applied to the shaft of the servomotor that exceeded the allowable value.	Correct the condition of the machine so that the load on the shaft during servomotor operation does not exceed the allowable value.	-
	There is an error in the setting of Pn282 (Linear Encoder Scale Pitch).	Check the setting of Pn282.	Correct the setting of Pn282.	*1
	There is an error in the setting of Pn080 = n. \$\square\$ (Motor Phase Sequence Selection).	Check the setting of Pn080 = n.□□X□.	Set Pn080 = n.□□X□ to an appropriate value.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A 700 and	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 Servomotor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following: Reduce the Servomotor command speed. Decrease the moment of inertia ratio or mass ratio. Reduce the frequency of stopping with the dynamic brake.	-
	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 frequency of the inrush current limiting resistor 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.	-

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Alarm Number:			Continued from pr	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermometer. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
A.7A1:	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
Internal Tempera- ture Error 1 (Control Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The surrounding temperature is too high.	Check the surrounding temperature using a thermometer. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
A 7A0	An overload alarm was reset by turning OFF the power supply 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 excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.		The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.7A3: Internal Temperature Sensor Error (An error occurred in the temperature sensor circuit.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

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Alarm Number:	Descible Cours	Confinentia	Continued from pre	, ,
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.7Ab: 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 SERVOPACK.	-
	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 connection 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 measures 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.	-
A.820: Encoder Check- sum Alarm (Detected at the encoder.)	A failure occurred in the encoder.	_	■ When Using an Absolute Encoder Set up the encoder again. If the alarm still occurs, the Servomotor may be faulty. Replace the Servomotor. ■ When Using a Singleturn Absolute Encoder or Incremental Encoder or Incremental Encoder alulty. Replace the Servomotor. • The linear encoder may be faulty. Replace the linear encoder.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.830: Encoder Battery	The battery connection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*1
Alarm (The absolute encoder battery voltage was lower	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*1
voltage was lower than the speci- fied level.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The encoder malfunctioned.	_	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.	-
1.040	An error occurred in reading data from the linear encoder.	_	The linear encoder is not mounted within an appropriate 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 malfunctioned 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 sensor.	_
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 ⁻¹ 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 ⁻¹ , and turn ON the control power supply.	-
	Linear Servomotor: The Servomotor exceeded the specified 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.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding air temperature around the Servomotor is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40°C or less.	-
A.860: (Detected when a Rotary Servomo- tor, Absolute Lin-	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 specified range.	*1
ear Encoder, or Direct Drive Ser- vomotor is con- nected. However, this alarm is not detected for SGMCS Servo- motors.	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.	-
(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 temperature around the Servomotor is too high.	Measure the surrounding 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 specified 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	A failure occurred in the external encoder.	_	Replace the external encoder.	_
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 Converter Unit.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.8A2: External Incremental Encoder Sensor Error	A failure occurred in the external encoder.	-	Replace the external encoder.	-
A.8A3: External Absolute Encoder Position Error	A failure occurred in the external absolute encoder.	_	The external absolute encoder may be faulty. Refer to the encoder manufacturer's instruction manual for corrections.	-
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 maximum speed.	-
A.8A6: External Encoder Overheated	An overheating error was detected in the external encoder.	-	Replace the external encoder.	-
A.b33: Current Detection 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 section.	_	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	A malfunction occurred in the MECHATROLINK communications section due to noise.	_	Implement the following countermeasures against noise. • Check the MECHATROLINK Communications Cable and FG wiring. • Attach a ferrite core to the MECHATROLINK Communications Cable.	-
ASIC Error 2	There is a fault in the SERVOPACK MECHATROLINK communications section.	-	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.bF0: 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.	-
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.	-

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Alarm Number:			Continued from pre	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
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.	-
A.bF4: 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.	-
	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.□□X□ (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 correct and an alarm still occurs after turning the power supply OFF and ON again, the Servomotor or linear encoder may be faulty. Replace the Servomotor 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.	-

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.C20: Phase Detection Error	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.	-
	The count-up direction of the linear encoder does not match the forward direction of the Moving Coil in the motor.	Check the setting of Pn080 = n.□□X□ (Motor Phase Sequence Selection). Check the installation orientation for the linear encoder and Moving Coil.	Change the setting of Pn080 = n.□□X□. Correctly 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 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
A.C21:	The polarity sensor is protruding from the Magnetic Way of the motor.	Check the polarity sensor.	Correctly reinstall the Moving Coil or Magnetic Way of the motor.	-
Polarity Sensor Error	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 sensor.	-
A.C22: Phase Information Disagreement	The SERVOPACK phase information is different from the linear encoder phase information.	_	Perform polarity detection.	*1

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Alarm Number:	Possible Cause	Confirmation	Continued from pro-	
Alarm Name	Possible Cause	Confirmation	2311231131	Reference
A.C50: Polarity Detection Failure	The parameter settings 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 installation. 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 processed 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.	_
	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 feedback goes to 0. If the external force cannot 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 μm or higher, the SERVOPACK cannot detect the correct speed feedback. Use a linear encoder scale pitch with higher resolution. (We recommend a pitch of 40 μm or less.) Or, increase the setting of Pn485 (Polarity Detection Reference Speed). However, increasing the setting of Pn485 will increase the Servomotor movement range that is required for polarity detection.	_

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 signals. Execute polarity detection at a position where an overtravel signal would not be detected.	*1
A.C52: Polarity Detection Not Completed	The servo was turned ON when using an absolute linear encoder, Pn587 was set to n.□□□0 (Do not detect polarity), and the polarity had not been detected.	_	When using an absolute linear encoder, set Pn587 to n. \(\text{Detect polarity} \)).	-
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 detection.	_	Increase the setting of Pn48E (Polarity Detection Range). Or, increase the setting of Pn481 (Polarity Detection Speed Loop Gain).	-
A.C54: Polarity Detection Failure 2	An external force was applied to the Servomotor.	-	Increase the setting of Pn495 (Polarity Detection Confirmation Force Reference). 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.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	There is a faulty contact 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 disconnection or short-circuit in the encoder. Or, the cable impedance is outside the specified values.	Check the condition of the Encoder Cable.	Use the Encoder Cable within the specifications.	-
A.C90: Encoder Communications Error	One of the following has occurred: corrosion caused by improper temperature, humidity, or gas, a short-circuit caused by entry of water drops or cutting oil, or faulty contact in connector caused by vibration.	Check the operating environment.	Improve the operating environment, and replace the cable. If the alarm still occurs, replace the SER-VOPACK.	*1
	A malfunction was caused by noise.	-	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding 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 failure occurred in the encoder.	_	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If the alarm occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	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
A.C91: Encoder Communications Position Data Acceleration Rate	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 influence 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.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Noise entered on the signal line from the encoder.	_	Implement countermeasures against noise for the encoder wiring.	*1
	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor or linear encoder.	-
A.C92: Encoder Communications 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-	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.	-
Encoder Parameter 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.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference	
A.Cb0: Encoder Echo- back Error	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 ² .	-	
	The Encoder Cable is too long and noise entered on it.	_	Rotary Servomotors: The Encoder Cable wiring distance must be 50 m max. Linear Servomotors: The Encoder Cable wiring distance must be 20 m max.	-	
	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 vibration. Correctly install the Servomotor 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.	-	

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Alarm Number: Continued from previous page				
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.CF1: Reception Failed Error in Feed-	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 Converter Unit and SERVO-PACK.	*1
	A specified cable is not being used between Serial Con- verter Unit and SER- VOPACK.	Check the wiring specifications of the external encoder.	Use a specified cable.	-
back Option 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 Converter Unit and SERVO-PACK must be 20 m or less.	-
	The sheath on cable between the Serial Converter Unit and SERVOPACK is broken.	Check the cable that connects the Serial Converter Unit.	Replace the cable between the Serial Converter Unit and SERVO-PACK.	-
A.CF2: Timer Stopped	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.	-
Error in Feed- back Option Module Commu- nications	A failure occurred in the Serial Converter Unit.	_	Replace the Serial Converter 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 Circuit Cables.	Make sure that there are no faulty contacts in the wiring for the Servomotor and encoder.	-
	The position command speed is too fast.	Reduce the position command speed and try operating the SER-VOPACK.	Reduce the position reference speed or the reference acceleration rate, or reconsider the electronic gear ratio.	*1
A.d00: Position Deviation Overflow (The setting of Pn520 (Position Deviation Overflow Alarm Level) was exceeded by the position deviation.)	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 acceleration by selecting the position reference filter (ACCFIL) using a MECHATROLINK 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.	-

5.2.3 Troubleshooting Alarms

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.d01: Position Deviation 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 Deviation Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting 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 setting of Pn520 (Position 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 Overflow Level).	Check the pressure feedback detection monitor or pressure feedback loop deviation monitor.	Change the value of Pn447 (Pressure Feedback Loop Deviation Overflow Level). Adjust the values of Pn442 (Pressure Feedback Loop Integral Time) and other pressure feedback control parameters.	3-18
A.d30: Position Data Overflow	The position data exceeded ±1,879,048,192.	Check the input reference 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 fluctuation 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.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Continued from pro-	Reference
Alailli Naille	The MECHATROLINK Communications Cable is not wired correctly.	Check the wiring conditions.	Correct the MECHATROLINK Communications Cable wiring.	-
A.E30: MECHATROLINK Other Station Monitor Reception Error	A MECHATROLINK data reception error occurred due to noise.	Check the installation conditions.	Implement the following countermeasures against noise. • Check the MECHATROLINK Communications Cable and FG wiring and implement countermeasures to prevent noise from entering. • Attach a ferrite core to the MECHATROLINK Communications Cable.	_
	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 specified 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 transmission bytes set on DIP switch S3 is not correct.	Check the MECHATROLINK communications data size of the host controller.	Reset DIP switch S3 to change the number of transmission bytes to an appropriate value.	*1
A.E42: 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 communications network have the same address.	Check to see if two or more stations on the communications network 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*4: MECHATROLINK Synchronization Error	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.	_
	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.	_

5.2.3 Troubleshooting Alarms

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.E51: MECHATROLINK Synchronization	The WDT data at the host controller was not updated correctly at the start of synchronous communications, so synchronous communications 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.	_
Failed	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 wiring is not correct.	Check the MECHATROLINK wiring.	Correct the MECHATROLINK Communications Cable wiring.	_
A.E60*4: Reception Error in MECHATROLINK Communications	A MECHATROLINK data reception error occurred due to noise.	_	Implement countermeasures against noise. (Check the MECHATROLINK Communications Cable and FG wiring, and implement measures such as attaching a ferrite core to the MECHATROLINK Communications 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 transmission cycle.	Remove the cause of transmission cycle fluctuation at the host controller.	-
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 wiring is not correct.	Check the Servomotor wiring.	Correct the MECHATROLINK Communications Cable wiring.	_
A.E63: MECHATROLINK Synchronization Frame Not Received	A MECHATROLINK data reception error occurred due to noise.	_	Implement countermeasures against noise. (Check the MECHATROLINK Communications Cable and FG wiring, and implement measures such as attaching a ferrite core to the MECHATROLINK Communications 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 from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	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.Eb1: Safety Function Signal Input Tim- ing Error	The delay between activation of the /HWBB1 and /HWBB2 input signals 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 circuits may be faulty. Alternatively, the input signal cables may be disconnected. Check to see if any of these items are faulty or have been disconnected.	_
	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.	_
A.Ed1: Command Exe- cution Timeout	A timeout error	Check the motor status when the command is executed.	Execute the SV_ON or SENS_ON command only when the motor is not operating.	-
	occurred for a MECHATROLINK command.	For other types of control, check the status of the linear encoder when the command is exe- cuted.	Execute the SENS_ON command only when an external rotary encoder or linear encoder is connected.	-

5.2.3 Troubleshooting Alarms

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The three-phase power supply wiring is not correct.	Check the power supply 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 supply.	Balance the power supply 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	A single-phase power supply was input without specifying a signal-phase AC power supply input (Pn00B = n.□1□□).	Check the power supply and the parameter setting.	Match the parameter setting 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.	-
FL-1*6:				
FL-3*6: System Alarm FL-3*6:			Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	
System Alarm FL-4*6:	A failure occurred in the SERVOPACK.			_
System Alarm FL-5*6: System Alarm				
FL-6*6: System Alarm				
CPF00: Digital Operator	There is a faulty connection between the Digital Operator and the SERVOPACK.	Check the connector contact.	Disconnect the connector 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 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.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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- *2. Detection Conditions
 - Rotary Servomotors

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

• Pn533 [min⁻¹]
$$\times$$
 Encoder resolution 6×10^5 \leq Pn20E Pn210

• Maximum motor speed [min⁻¹]
$$\times$$
 Encoder resolution Approx. 3.66×10^{12} \ge Pn200 Pn210

• Linear Servomotors

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

- *3. Detection Conditions
 - Rotary Servomotors

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

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

• Maximum motor speed [min⁻¹]
$$\times \frac{\text{Encoder resolution}}{\text{Approx. } 3.66 \times 10^{12}} \ge \frac{\text{Pn20E}}{\text{Pn210}}$$

• Linear Servomotors

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

- *4. Refer to the following manual for details.
 - Σ-7-Series Peripheral Device Selection Manual (Manual No.: SIEP S800001 32)
- *5. The SERVOPACK will fail if the External Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper is connected between the B2 and B3 terminals.
- *6. 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 percentage set with the following formula: (Pn520 × Pn51E/100)	Required.
A.901	Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 \times Pn528/100)	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 operation. 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 (Regenerative 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 Battery Error	This warning occurs when the voltage of absolute encoder's battery is low.	Required.
A.942	Speed Ripple Compensation Information Disagreement	The speed ripple compensation information stored in the encoder does not agree with the speed ripple compensation 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 Command Conditions)	A command was sent when the conditions for sending a command were not satisfied.	Automatically reset.*
A.95b	Command Warning 2 (Unsupported Command)	An unsupported command was sent.	Automatically reset.*

Continued from previous page.

Warning Number	Warning Name	Meaning	Resetting
A.95d	Command Warning 4 (Command Interference)	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 MECHATROLINK communications.	Required.
A.964	Other Station Monitor Data Communications Warning	A communications error occurred during MECHATROLINK communications.	Required.
A.971	Undervoltage	This warning occurs before an A.410 alarm (Undervoltage) 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.
A.9b0	Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	Required.

^{*} The warning will automatically be cleared after the correct command is received..

Note: 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.□□□X (Vibration Detection Selection)
A.923	_ (Not affected by the setting of Pn008 = n.□X□□.)
A.930	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection)
A.942	Pn423 = n.□□X□ (Speed Ripple Compensation Information Disagreement Warning Detection Selection)
A.94A to A.960 and A.97A to A.97b	Pn800=n.□□X□ (Warning Check Masks)
A.971	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection) (Not affected by the setting of Pn008 = n.□X□□.)
A.9A0	Pn00D = n.X□□□ (Overtravel Warning Detection Selection) (Not affected by the setting of Pn008 = n.□X□□.)
A.9b0	Pn00F = n.□□□X (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 Circuit 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.	*
A.900: Position Deviation Overflow	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 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 × Pn51E/100) is too low for the operating conditions.	Check excessive position 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 deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 × Pn528/100)	_	Optimize the setting of Pn528 (Position Deviation Overflow Warning Level at Servo ON).	-

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.910: Overload (warning before an A.710 or A.720 alarm occurs)	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 protection characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
	An excessive load was applied during operation because the Servomotor was not driven because of mechanical problems.	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 vibration 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 Inertia Ratio) to an appropriate value.	*
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*

5.2.6 Troubleshooting Warnings

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermometer. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display 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 processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	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 thermometer. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display 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 processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	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.	_

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.920: Regenerative Over- load (warning before an A.320 alarm occurs)	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	There is insufficient external regenerative resistance, regenerative resistor capacity, or SER-VOPACK capacity, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or another means.	Change the regenerative resistance value, regenerative resistance capacity, or SERVOPACK capacity. Reconsider the operating conditions using the Sigma-JunmaSize+ Capacity Selection Software or other means.	_
	There was a continuous regeneration 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 external 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 consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following: Reduce the Servomotor command speed. Decrease the moment of inertia or mass. Reduce the frequency of stopping with the dynamic brake.	-
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	The pressure feedback detection value exceeded the	Check the output from the pressure sensor amplifier.	Adjust the pressure sensor amplifier.	-
A.922: Pressure Feedback Overflow	level set in Pn44D (Pressure Feedback Overflow Detection Level) for the time set in Pn44E (Pressure Feedback Overflow 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 matter inside the SERVO-PACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SER- VOPACK may be faulty. Replace the SERVOPACK.	_

5.2.6 Troubleshooting Warnings

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Continued from pre	Reference
A.930: Absolute Encoder Battery Error (The	The battery connection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*
absolute encoder battery voltage was lower than the spec- ified level.) (Detected only when an abso-	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*
lute encoder is connected.)	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 Compensation Information Disagreement	compensation information stored in the encoder does not agree with the speed ripple compensa-	_	Set Pn423 to n. □□1□ (Do not detect A.942 alarms). However, changing the setting may increase the speed ripple.	**:
_	tion information stored in the SER- VOPACK.	_	Set Pn423 to n.□□□0 (Disable speed ripple compensation). However, changing the setting may increase the speed ripple.	*
A.94A: Data Setting Warning 1 (Parameter Number Error)	An invalid parameter number was used.	Check the command that caused the warning.	Use the correct parameter number.	*
A.94b: Data Setting Warn- ing 2 (Out of Range)	The set command data was clamped to the minimum or maximum value of the setting range.	Check the command that caused the warning.	Set the parameter within the setting range.	*
A.94C: Data Setting Warning 3 (Calculation Error)	The calculation result of the setting is not correct.	Check the command that caused the warning.	Set the parameter within the setting range.	*
A.94d: Data Setting Warning 4 (Parameter Size)	The parameter size set in the command is not correct.	Check the command that caused the warning.	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 warning.	Change the setting of Pn850 or the LT_MOD data for the LTMOD_ON command sent by the host controller to an appropriate value.	*
A.95A: Command Warning 1 (Unsatisfied Com- mand Conditions)	The command conditions are not satisfied.	Check the command that caused the warning.	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 warning.	Do not send unsupported commands.	*

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Warning Number:	B 311 0	0 " "	Continued from pre	
Warning Name	Possible Cause	Confirmation	Correction	Reference
A.95d: Command Warning 4 (Command Inter- ference)	The command sending conditions for latchrelated commands was not satisfied.	Check the command that caused the warning.	Send the command after the command conditions are satisfied.	*
A.95E: Command Warning 5 (Subcommand Not Possible)	The command sending conditions for subcommands was not satisfied.	Check the command that caused the warning.	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 warning.	Do not send undefined commands.	*
	The MECHATROLINK Communications Cable is not wired correctly.	Check the wiring conditions.	Correct the MECHATROLINK communications cable wiring.	*
A.960: MECHATROLINK Communications Warning	A MECHATROLINK data reception error occurred due to noise.	Confirm the installation conditions.	Implement the following countermeasures against noise. • Check the MECHATROLINK Communications Cable and FG wiring and implement countermeasures to prevent noise from entering. • Attach a ferrite core to the MECHATROLINK Communications Cable.	-
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	The MECHATROLINK Communications Cable is not wired correctly.	Check the wiring conditions.	Correct the MECHATROLINK communications cable wiring.	*
A.964: Other Station Monitor Data Communications Warning	A MECHATROLINK data reception error occurred due to noise.	Confirm the installation conditions.	Implement the following countermeasures against noise. • Check the MECHATROLINK Communications Cable and FG wiring and implement countermeasures to prevent noise from entering. • Attach a ferrite core to the MECHATROLINK Communications Cable.	_
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-

5.2.6 Troubleshooting Warnings

Continued from previous page.

Warning Number:			Continued from pre	
Warning Name	Possible Cause	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 voltage 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 voltage 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 interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary 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.	-
A.97A: Command Warning 7 (Phase Error)	A command that cannot be executed in the current phase was sent.	_	Send the command after the command conditions are satisfied.	-
A.97b: Data Clamp Out of Range	The set command data was clamped to the minimum or maximum value of the setting range.	_	Set the command data within the setting ranges.	-
A.9A0: Overtravel (Overtravel status was detected.)	Overtravel was detected while the servo was ON.	Check the status of the overtravel signals on the input signal monitor.	Even if an overtravel signal is not shown by the input signal monitor, momentary overtravel may have been detected. Take the following precautions. • Do not specify movements that would cause overtravel from the host controller. • Check the wiring of the overtravel signals. • Implement countermeasures against noise.	*
A.9b0: Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	_	Replace the part. Contact your Yaskawa representative 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)

Troubleshooting Based on the Operation and Conditions of the Servomotor 5.2.7

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

Problem	Possible Cause	Confirmation	Correction	Reference
	The control power supply is not turned ON.	Measure the voltage between control power supply terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the control power supply is turned ON.	_
	The main circuit power supply is not turned ON.	Measure the voltage across the main circuit power input terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the main circuit power supply is turned ON.	-
	The I/O signal connector (CN1) pins are not wired correctly or are disconnected.	Turn OFF the power supply to the servo system. Check the wiring condition of the I/O signal connector (CN1) pins.	Correct the wiring of the I/O signal connec- tor (CN1) pins.	*
	The wiring for the Servomotor Main Circuit Cables or Encoder Cable is disconnected.	Check the wiring conditions.	Turn OFF the power supply to the servo system. Wire the cable correctly.	-
Servomotor Does Not Start	There is an overload on the Servomotor.	Operate the Servomotor with no load and check the load status.	Turn OFF the power supply to the servo system. Reduce the load or replace the Servomotor with a Servomotor with a larger capacity.	-
	The type of encoder that is being used does not agree with the setting of Pn002 = n. \(\Delta \times \Delta	Check the type of the encoder that is being used and the setting of $Pn002 = n.\square X \square \square$.	Set Pn002 = n. \(\Pi\)X\(\Pi\) according to the type of the encoder that is being used.	*
	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).	*
	The SV_ON command was not sent.	Check the commands sent from the host controller.	Send the SV_ON command from the host controller.	-
	The SENS_ON (Turn ON Sensor) command was not sent.	Check the commands sent from the host controller.	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.	*

5.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

	Continued from previous page.			
Problem	Possible Cause	Confirmation	Correction	Reference
	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 signals. If you are not using the safety function, connect the Safety Jumper Connector (provided as an accessory) to CN8.	*
Servomotor	The FSTP (Forced Stop Input) signal is still OFF.	Check the FSTP signal.	Turn ON the FSTP signal. If you will not use the function to force the motor to stop, set Pn516 = n.□□□X (FSTP (Forced Stop Input) Signal Allocation) to disable the signal.	*
Does Not Start	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
		Check the setting of Pn080 =n.□□□X (Polarity Sensor Selection).	Correct the parameter setting.	*
	The polarity detection was not executed.	Check the inputs to the SV_ON (Servo ON) command.	If you are using an incremental linear encoder, send the SV_ON (Servo ON) command from the host controller. If you are using an absolute linear encoder, execute polarity detection.	*
	There is a mistake in the Servomotor wiring.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Servomotor correctly.	-
	There is a mistake in the wiring of the encoder or Serial Converter Unit.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Serial Converter Unit correctly.	-
Servomotor	There is a mistake in the linear encoder wiring.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the connections correctly.	_
Moves Instanta- neously,	The setting of Pn282 (Linear Encoder Scale Pitch) is not correct.	Check the setting of Pn282.	Correct the setting of Pn282.	*
and Then Stops	The count-up direction of the linear encoder does not match the forward direction of the Moving Coil in the motor.	Check the directions.	Change the setting of Pn080 = n.□□X□ (Motor Phase Sequence Selection). Match the linear encoder direction and motor direction.	*
	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.	-

5.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
Servomotor Speed Is Unstable	There is a faulty connection in the Servomotor wiring.	The connector connections for the power line (U, V, and W phases) and the encoder or Serial Converter Unit may be unstable. Turn OFF the power supply to the servo system. Check the wiring.	Tighten any loose terminals or connectors and correct the wiring.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
Servomotor Moves with- out a Refer- ence Input	The count-up direction of the linear encoder does not match the forward direction of the Moving Coil in the motor.	Check the directions.	Change the setting of Pn080 = n.□□X□ (Motor Phase Sequence Selection). Match the linear encoder direction and Servomotor direction.	*
	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.	-
Dynamic Brake Does Not Operate	The setting of Pn001 = n.□□□X (Motor Stopping Method for Servo OFF and Group 1 Alarms) is not suitable.	Check the setting of Pn001 = n.□□□X.	Set Pn001 = n.□□□X correctly.	-
	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 resistance may be disconnected.	Turn OFF the power supply to the servo system. Replace the SERVO-PACK. To prevent disconnection, reduce the load.	-
	There was a failure in the dynamic brake drive circuit.	_	There is a defective component in the dynamic brake circuit. Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-

5.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
1 10010111	1 occibio oddoo	Communication	Reduce the load so	11010101100
	The Servomotor vibrated considerably while performing the tuning-less function with the default settings.	Check the waveform of the motor speed.	that the moment of inertia ratio or mass ratio is within the allowable value, or increase the load level or reduce the rigidity level in the tuning-less level settings. If the situation is not improved, disable the tuning-less function (i.e., set Pn170 to n.□□□0) and execute autotuning either with or without a host reference.	*
		Turn OFF the power supply to the servo system. Check to see if there are any loose mounting screws.	Tighten the mounting screws.	-
	The machine mounting is not secure.	Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling.	Align the coupling.	-
Abnormal Noise from Servomotor		Turn OFF the power supply to the servo system. Check to see if the coupling is balanced.	Balance the coupling.	-
	The bearings are defective.	Turn OFF the power supply to the servo system. Check for noise and vibration around the bearings.	Replace the Servomotor.	-
	There is a vibration source at the driven machine.	Turn OFF the power supply to the servo system. Check for any foreign matter, damage, or deformation in the machine's moving parts.	Consult with the machine manufacturer.	-
	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use shielded twisted-pair wire cables or screened twisted-pair cables with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	_

5.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

	Continued from previous page			
Problem	Possible Cause	Confirmation	Correction	Reference
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Make sure that the rotary or Linear Encoder Cable satisfies the specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with a conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max. 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.	-
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. 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.	-
Abnormal Noise from Servomotor	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current 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.	Turn OFF the power supply to the servo system. 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.	Turn OFF the power supply to the servo system. Implement countermeasures against noise for the encoder wiring.	-
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment). Check the linear encoder installation (mounting surface precision and securing method).	Reduce machine vibration. Improve the mounting state of the Servomotor or linear encoder.	-
	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-

5.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference
Abnormal Noise from	A failure occurred in the Serial Converter Unit.	-	Turn OFF the power supply to the servo system. Replace the Serial Converter Unit.	-
Servomotor	A failure occurred in the linear encoder.	_	Turn OFF the power supply to the servo system. Replace the linear encoder.	-
	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	*
Servomotor	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 (Position 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 Constant) 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 balanced.	Check to see if the servo gains have been correctly 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 (Position 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 Constant) 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 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.	

5.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
Absolute Encoder Position Deviation Error (The position that was saved in the host con- troller when the power was turned OFF is dif- ferent from	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twistedpair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max. 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.	_
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. 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.	-
	Replace the Encoder Cable and correct the cable installation environment.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
the posi- tion when the power was next turned ON.)	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. 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.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder or Serial Converter Unit wiring.	-
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment). Check the linear encoder installation (mounting surface precision and securing method).	Reduce machine vibration. Or, improve the mounting state of the Servomotor or linear encoder.	_

5.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference
Absolute Encoder Position Deviation Error (The position that was saved in the	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor or linear encoder.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
host con- troller when the power		Check the error detection section of the host controller.	Correct the error detection section of the host controller.	_
was turned OFF is dif- ferent from the posi-	Host Controller Multiturn Data or Absolute Encoder	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.	_
tion when the power was next turned ON.)	Position Data Reading Error	Check for noise interference in the cable between the SERVO-PACK and the host controller.	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 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.	_
		Check the operating condition 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.	_
	The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal mal-	Check to see if the operation of the overtravel limit switches is unstable.	Stabilize the operating condition of the over-travel limit switches.	_
	brive Prohibit) signal mal- 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.	-

5.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

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Problem	Possible Cause	Confirmation	Continued from pre	Reference
1 TODIETTI	1 Ossible Gause		If another signal is allo-	reletetice
	There is a mistake in the allocation 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□□□.	cated in Pn50A =n.XDDD, allocate the P-OT signal instead.	*
Overtravel Occurred	Reverse Drive Prohibit) signal in Pn50A = n.X□□□ or Pn50B = n.□□□X.	Check to see if the N-OT signal is allocated in Pn50B = n.□□□X.	If another signal is allocated in Pn50B =n.□□□X, allocate the N-OT signal instead.	*
	The selection of the Servo- motor stopping method is	Check the servo OFF stopping method set in Pn001 = $n.\square\square\square X$ or Pn001 = $n.\square\square X\square$.	Select a Servomotor stopping method other than coasting to a stop.	*
	not correct.	Check the torque control stopping method set in $Pn001 = n.\square\square\square X$ or $Pn001 = n.\square\square X\square$.	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 (without Alarm)	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max. 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.	_
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. 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 subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current 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.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-

5.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Duolalaise	Descible Cours	Confirmation	Continued from pre	1	
Problem	Possible Cause	Confirmation	Correction	Reference	
	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder wiring or Serial Converter Unit wiring.	-	
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment). Check the linear encoder installation (mounting surface precision and securing method).	Reduce machine vibration. Or, improve the mounting state of the Servomotor or linear encoder.	-	
Position Deviation (without	The coupling between the machine and Servomotor is not suitable.	Turn OFF the power supply to the servo system. Check to see if position offset occurs at the coupling between machine and Servomotor.	Correctly secure the coupling between the machine and Servomotor.	-	
Alarm)	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-	
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. 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.)	_	Turn OFF the power supply to the servo system. Replace the Servomotor or linear encoder.	-	
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-	

5.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
	ture is too high. air temperature around the Servomotor. Turn OFF the power supply to the servo sys-		Reduce the surrounding air temperature to 40°C or less.	-
			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.	_

 $[\]boldsymbol{\ast}$ Refer to the following manual for details.

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

5.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Parameter Lists

This chapter provides information on the parameters.

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	6.3.3	Parameters

6.1.1 Interpreting the Parameter Lists

6.1 List o

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.

◆ Differences in Terms for Rotary Servomotors and Linear Servomotors on page xii

"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 Default Whin Classi-Setting Setting Applica-Refer-Size Name Enabled No Setting ble Motors Range Unit fication ence 0000h to 2 Basic Function Selections 0 0000h After restart Setup 10B1h There are the following two classifications. If there are differences in the parameters for Rotary Setup Servomotor and Linear Servomotor, information is Tuning provided for both. Refer to the following section for details. • Top row: For Rotary Servomotors • Bottom row: For Linear Servomotors $\Sigma\text{-7-Series}\ \Sigma\text{-7S}$ SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28) **Rotation Direction Selection** Movement Direction Selection Use CCW as the forward direction. 0 Use the direction in which the linear encoder counts up as the forn.□□□X ward direction. Pn000 Use CW as the forward direction. (Reverse Rotation Mode) Use the direction in which the linear encoder counts down as the

		forward direction. (Reverse Movement Mode)						
n.□□X□	Reserved	d parameter (Do not change.)						
n.□X□□	Reserved	eserved parameter (Do not change.)						
	Rotary/Li	near Servomotor Startup Selection When Encoder Is Not Connected	Reference					
		When a second of the second of						
n.X□□□	0	When an encoder is not connected, start as SERVOPACK for Rotary Servomotor.						

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.

◆ Differences in Terms for Rotary Servomotors and Linear Servomotors on page xii

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 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	Tuning

You can set the parameter in increments of the setting unit.
However, if a unit is given in square brackets,

the setting is automatically converted to the resolution given in the square brackets.

FT40 Specification

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	Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Basic Fund tions 0	tion Selec-	0000h to 10B1h	-	0000h	All	After restart	Setup	*1	
			Rotation D	rection Selectio	n						
			Movement	Direction Select	tion						
			L	se CCW as the t	forward dir	ection.					
		n.□□□X		Use the direction in which the linear encoder counts up as the forward direction.							
			L	Use CW as the forward direction. (Reverse Rotation Mode)							
Pn000				Use the direction in which the linear encoder counts down as the forward direction. (Reverse Movement Mode)							
	n.□□X□ Reserved parameter (Do not change.)										
		n.□X□□	Reserved p	arameter (Do no	ot change.	.)					
			Rotary/Line	ar Servomotor	Startup Se	election W	hen Encoder	Is Not Conr	nected		
		n.X□□□		/hen an encoder notor.	is not cor	nected, st	art as SERVC	PACK for Ro	otary Serv	0-	
				/hen an encoder notor.	is not cor	nected, st	art as SERVC	PACK for Li	near Servo	D-	
	ITIOLOI.										

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		0000h to 1142h	-	0000h	All	After restart	Setup	*1			
							1						
			Motor Stopp	ing Method for	Servo OF	FF and Gro	oup 1 Alarms						
			0 Sto	p the motor by	applying	the dynam	ic brake.						
		n.□□□X	bra	p the motor by ke.					the dynar	nic 			
			2 Co	ast the motor to	o a stop w	ithout the	dynamic brake	∋.					
			Overtravel S	topping Metho	d								
			<u> </u>	oly the dynamic									
				celerate the mo que and then s			ne torque set ir	n Pn406 as t	he maxim	um			
Pn001		n.□□X□		celerate the mo que and then le			ne torque set ir	n Pn406 as t	he maxim	um			
				celerate the mo n servo-lock th		op using t	he deceleratio	n time set in	Pn30A a	nd 			
				celerate the mo n let the motor		op using t	he deceleratio	n time set in	Pn30A a	nd 			
			Main Circuit	Power Supply	AC/DC In	put Select	ion						
		n. 🗆 X 🗆 🗆		ut AC power as nals (do not use			wer supply usi	ng the L1, L2	2, and L3	ter-			
		11.0700	1 teri	Input DC power as the main circuit power supply using the B1/ \oplus and \ominus 2 terminals or the B1 and \ominus 2 terminals (use an external converter or the shared converter).									
		n.X□□□ Reserved parameter (Do not change.)											
	2	Application Selections		0000h to 4213h	_	0011h	_	After restart	Setup	_			
		·											
			MECHATROI Option	INK Comman	d Position	and Spee	ed Control	Applicable Motors	Refere	nce			
			H	served setting (Do not us	e.)							
		n.□□□X	1 Use	e TLIM as the to	orque limit			A.II	*2				
			2 Res	served setting (Do not use	e.)		All	*2				
			3 Res	served setting (Do not use	e.)							
Pn002			Torque Conti	rol Option				Applicable Motors	Refere	nce			
F11002		n.□□X□	0 Res	served setting (Do not use	e.)							
				e the speed limed timed time.	it for torqu	ie control (VLIM) as the	All	*2				
			Encoder Usa	ge				Applicable Motors	Refere	nce			
		n.□X□□	0 Use	e the encoder a	ccording	to encoder	specifica-	All					
			1 Use	e the encoder a	s an incre	mental end	coder.	1	*1				
			2 Use	e the encoder a	ıs a single	-turn abso	lute encoder.	Rotary					
		n.XDDD	Reserved pa	rameter (Do no	t change.)							
			, , , , , , , , , , , , , , , , , , ,										

6.2.1 List of Servo Parameters

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	Function 6	0000h to 105Fh	-	0002h	All	Immedi- ately	Setup	*1					
			Analog Mo	nitor 1 Signal Se	election										
			00	Motor speed (1 V/1,000 min ⁻¹)											
			00	Motor speed (1	V/1,000 m	nm/s)									
			01	Speed reference	e (1 V/1,00	00 min ⁻¹)									
			01	Speed reference	e (1 V/1,00	00 mm/s)									
			02	Torque reference	e (1 V/100	% rated to	rque)								
			02	Force reference	•										
			03	Position deviation	•										
			04	Position amplifie		•		0.05 V/enco	der pulse	unit)					
			04	Position amplifie (0.05 V/linear er			ctronic gear)								
								05	Position referen	ce speed ((1 V/1,000	min ⁻¹)			
			03	Position referen	ce speed ((1 V/1,000	mm/s)								
			06	Reserved setting	g (Do not ı	use.)									
			07	Reserved setting (Do not use.)											
			08	Positioning com (positioning con		V, position									
Pn006		00	Speed feedforw	ard (1 V/1	,000 min ⁻¹)									
		n.□□XX	09	Speed feedforw	ard (1 V/1	,000 mm/s	s)								
			0A	Torque feedforw	ard (1 V/1	00% rated	I torque)								
			UA	Force feedforwa	ard (1 V/10	00% rated	force)								
			0B	Active gain (1st gain: 1 V, 2nd gain: 2 V)											
			0C	Completion of p (completed: 5 V											
			0D	External encode	er speed (1	V/1,000 r	min ⁻¹ : value at	the motor s	haft)						
			0E	Reserved setting	g (Do not ı	use.)									
			0F	Reserved setting	g (Do not ı	use.)									
			10	Main Circuit DC	Voltage										
			11 to 29	Reserved setting	gs (Do not	use.)									
			30	Pressure feedba	ack torque	reference	monitor								
			00	Pressure feedba											
			31	Pressure feedba	ack detecti	ion monito	r								
			32	Pressure feedba	ack output	torque mo	onitor								
				Pressure feedba											
			33	Pressure feedba			onitor								
			34 to 5F	Reserved setting	gs (Do not	use.)									
		n.□X□□	Reserved p	parameter (Do no	ot change.	.)									
		n.X□□□	Reserved p	parameter (Do no	ot change.	.)									

Parameter Lists

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		0000h to 105Fh	-	0000h	All	Immedi- ately	Setup	*1	
			Analog Mo	onitor 2 Signal Se	election						
			00	Motor speed (1	V/1,000 m	nin ⁻¹)					
			00	Motor speed (1 V/1,000 mm/s)							
			0.4	Speed reference	e (1 V/1,00	00 min ⁻¹)					
			01	Speed reference	e (1 V/1,00	00 mm/s)					
			00	Torque reference	e (1 V/100	% rated to	orque)				
			02	Force reference	(1 V/100%	6 rated for	ce)				
			03	Position deviation (0.05 V/reference unit)							
				Position amplifie	er deviation	n (after ele	ctronic gear) (0.05 V/enco	der pulse	unit)	
			04	Position amplifie (0.05 V/linear er			ctronic gear)				
			05	Position reference	ce speed (1 V/1,000	min ⁻¹)				
			00	Position reference	ce speed (1 V/1,000	mm/s)				
			06	Reserved setting (Do not use.)							
			07	Reserved setting (Do not use.)							
	n.□□X)		08	Positioning completed: 5 V, positioning not completed: 0 V)							
		» UUVV	09	Speed feedforward (1 V/1,000 min ⁻¹)							
Pn007		П.ШЦХХ	09	Speed feedforw	ard (1 V/1	,000 mm/s	s)				
			0A	Torque feedforw	ard (1 V/1	00% rated	I torque)			<u> </u>	
			UA	Force feedforward (1 V/100% rated force)							
			0B	Active gain (1st	gain: 1 V,	2nd gain: :	2 V)				
			0C	Completion of p (completed: 5 V							
			0D	External encode	er speed (1	V/1,000 r	min ⁻¹ : value at	the motor s	haft)	<u> </u>	
			0E	Reserved setting	g (Do not i	use.)					
			0F	Reserved setting	g (Do not i	use.)					
			10	Main Circuit DC	Voltage						
			11 to 29	Reserved setting	gs (Do not	use.)					
			30	Pressure feedba	ack torque	reference	monitor				
			30	Pressure feedba	ack force r	eference n	nonitor				
			31	Pressure feedba	ick detecti	ion monito	r				
			32	Pressure feedba							
				Pressure feedba							
			33	Pressure feedba	•		onitor				
			34 to 5F	Reserved setting	gs (Do not	use.)					
	n.□X□□ Reserved parameter (Do not change.)										
	VERE December (December)										
		n.X□□□	Reserved	parameter (Do no	ot change	.)					

6.2.1 List of Servo Parameters

Continued from previous 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 8	0000h to 7121h	_	4000h	Rotary	After restart	Setup	*1
			+	Voltage Alarm						
		n.□□□X		tput alarm (A.8			-			
			1 Ou	tput warning (A	930) for I	ow battery	voltage.			
			Function Sel	ection for Und	ervoltage					
Pn008				not detect und						
FIIUUO		n.□□X□		ect undervolta			•			
				ect undervolta SERVOPACK).	ge warning	g and limit	torque with Pr	1424 and Pn	425 (i.e., c	only ——
			Warning Det	ection Selection	n					
		n.□X□□	0 De	ect warnings.						
			1 Do	not detect war	nings exc	ept for A.9	71.			
		n.X□□□	Reserved pa	rameter (Do no	ot change.	.)				
			'	,		,				
	2	Application Selections	n Function 9	0000h to 0121h	-	0010h	All	After restart	Tuning	*1
		n.□□□X	Reserved pa	rameter (Do no	t change.)				
			Current Cont	rol Mode Sele	ction					
			0 Use	current contro	l mode 1.					
		n.□□X□		ERVOPACK Mo			-R90A, -1R6A	A, -2R8A, -5	R5A, and	
Pn009		п.шихш	1 1	R6A: Use curre ERVOPACK Mo			-180A200A	330A47	OA550A	١.
				90A, and -780				,,	. ,	,
			2 Use	current contro	ol mode 2.					
			Speed Detec	tion Method S	election					
		n.□X□□	0 Use	speed detecti	on 1.					
			1 Use	speed detecti	on 2.					
		n.XDDD	Reserved pa	rameter (Do no	t change.)				
					301	,				

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	Function A	0000h to 0044h	_	0001h	All	After restart	Setup	*1		
				1	1	I		I	1			
			Motor Stopp	oing Method fo	r Group 2	Alarms						
				ply the dynami ethod set in Pn			motor to a st	op (use the s	stopping			
				celerate the more								
		n.□□□X		celerate the mo			ne torque set	in Pn406 as	the maxim	num		
			3 De	celerate the me e setting of Pn0	otor to a s 001 = n. □I	top using t ⊐□X for th	he deceleratione status after	on time set in stopping.	n Pn30A. I	Jse		
				celerate the meen let the motor		top using t	he decelerati	on time set i	n Pn30A a	ınd		
Pn00A			Stopping Me	ethod for Force	ed Stops							
				ply the dynami ethod set in Pn			motor to a st	op (use the	stopping			
			1 De	celerate the mo	otor to a st etting of P	top using t n001 = n. l	he torque set □□□X for the	in Pn406 as e status after	the maxin	num		
		n.□□X□		celerate the mo			he torque set	in Pn406 as	the maxin	num		
				celerate the me e setting of Pn0					n Pn30A.	Use		
				celerate the me		top using t	he decelerati	on time set i	n Pn30A a	ınd		
		n.□X□□ Reserved parameter (Do not change.)										
		n.X□□□ Reserved parameter (Do not change.)										
	2	Application Selections	Function B	0000h to 1121h	-	0000h	All	After restart	Setup	*1		
		+	•	ameter Display								
		n.□□□X		olay only setup	•	rs.						
			1 Disp	olay all parame	ters.							
				ng Method for	•							
Pn00B		, DDVD		p the motor by								
		n.□□X□		oly the dynamic thod set in Pn0			motor to a sto	p (use the s	topping			
				the stopping n			= n.□□□X.					
			Power Input S	Selection for T	hree-phas	e SERVOF	PACK					
		n.□X□□	0 Use	a three-phase	power su	pply input.						
			1 Use a three-phase power supply input as a single-phase power supply input.									
	ı	n.X□□□	Reserved par	ameter (Do no	t change.)							

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Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Application Selections	n Function C	0000h to 0131h	-	0000h	_	After restart	Setup	*1		
			Function Sel	ection for Test	without a	Motor			Applica Motor	ble s		
		n.□□□X		able tests with					All			
			1 Ena	able tests witho	out a moto	ſ.						
D 000			Encoder Res	olution for Tes	ts without	a Motor			Applicable Motors			
Pn00C		~ DDVD	0 Use	e 13 bits.								
		n.□□X□		e 20 bits.					Rotary			
				e 22 bits.								
			3 Use	e 24 bits.								
	-		Encoder Typ	e Selection for	Tests with	nout a Mot	or		Applica Motor	ble s		
		n.□X□□	0 Use	e an incrementa	al encoder.				All			
		1 Use an absolute encoder.							All			
	2	Application Selections	n Function D	0000h to 1001h	_	0000h	All	Immedi- ately	Setup	*1		
							•					
		n.□□□X Reserved parameter (Do not change.)										
Pn00D		n.□□X□ Reserved parameter (Do not change.)										
THOOD		n.□X□□	Reserved pa	rameter (Do no	ot change.	.)						
		Overtravel Warning Detection Selection										
		n.X□□□	0 Do									
			1 De	tect overtravel	warnings.							
	2	Application Selections	n Function F	0000h to 2011h	_	0000h	All	After restart	Setup	*1		
			Preventative	Maintenance \	Marning S	election						
		n.□□□X		not detect preve			warnings					
Pn00F		11.000	+	ect preventative								
PHOOF				·			190.					
		n.□□X□	Reserved pa	rameter (Do no	ot change)						
		n.□X□□	Reserved pa	rameter (Do no	ot change.)						
		n.X□□□	Reserved pa	rameter (Do no	ot change.)						
Pn021	2	Reserved p	parameter (Do	_	_	0000h	All	-	-	-		
Pn022	2	Ū	oarameter (Do	_	_	0000h	All	_	_	-		
	1	1	,	1	1	I	1		·	<u> </u>		

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Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence				
	2	Σ-V Compa	atible Func-	0000h to 2111h	-	0000h	_	After restart	Setup	_				
	n.l		Reserved para	meter (Do not	change.)									
		F	Encoder Resol	ution Compati	hility Sala	ction			Applica					
Pn040	n.l			he encoder res			motor.		Moto	rs				
				a resolution of 2 7A, SGM7P, S					Rota	У				
	n.l	DXDD F	Reserved para	meter (Do not	change.)									
	n.	XDDD F	Reserved para	meter (Do not	change.)									
	2	Application Selections		0000h to 1111h	-	0000h	Linear	After restart	Setup	_				
	1	n.□□□X Polarity Sensor Selection 0 Use polarity sensor. 1 Do not use polarity sensor.												
Pn080	1	n.□□X□												
	1	n.X000	Calculation Method for Maximum Speed or Encoder Output Pulses O Calculate the encoder output pulse setting for a fixed maximum speed. Calculate the maximum speed for a fixed encoder output pulse setting.											
	2	Application Selections		0000h to 1111h	_	0000h	All	After restart	Setup	*1				
Pn081		n.□□□X	0 Out	Output Phase-C pulses only in the forward direction. Output phase-C pulses in both the forward and reverse directions.										
	1	n.□□X□	Reserved par	rameter (Do no	ot change.)								
	ı	n.□X□□	Reserved par	rameter (Do no	ot change.)								
	I	n.X000	Reserved par	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	pp Integral stant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1				
Pn102	2	Position Lo		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	peed Loop	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1				
Pn105	2	Second Sp	peed Loop ne Constant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1				
Pn106	2		osition Loop	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1				
	•								•					

Continued from previous page.

Parameter	Size	N	ame	Setting	Setting	Default	Applicable	When	Classi-	Refer-	
No.				Range	Unit	Setting	Motors	Enabled Immedi-	fication	ence	
Pn109	2	Feedforwa		0 to 100	1%	0	All	ately	Tuning	*1	
Pn10A	2	Feedforwa Constant	rd Filter Time	0 to 6,400	0.01 ms	0	All	Immedi- ately	Tuning	*1	
	2	Gain Applications	cation Selec	- 0000h to 5334h	-	0000h	All	_	Setup	*1	
					1		1		1		
			Mode Swit	ching Selection					When Enabled		
				Jse the internal to 0n10C).	orque refer	ence as th	e condition (le	evel setting:			
				Ise the speed ref	erence as	the condit	ion (level sett	ing: Pn10D).			
		n.□□□X	L	Ise the speed ref			•	,	Immedi-		
				n10E).	•						
				Ise the accelerat Pn182).	se the acceleration reference as the condition (level setting: 182).						
Pn10B				· · · · · · · · · · · · · · · · · · ·	e the position deviation as the condition (level setting: Pn10F						
			4 [o not use mode	switching.						
			Speed Loo	p Control Metho	od				Whe Enabl		
		n.□□X□		PI control	Afte	r					
				P control Reserved settings	(Do not u	se.)			resta		
		n.□X□□ Reserved parameter (Do not change.)									
	-	n.X□□□ Reserved parameter (Do not change.)									
	"	11.7000	neserveu p	Darameter (DO III	or change.)					
Pn10C	2	Mode Swit for Torque	ching Level Reference	0 to 800	1%	200	All	Immedi- ately	Tuning	*1	
Pn10D	2	Mode Swit for Speed	ching Level Reference	0 to 10,000	1 min ⁻¹	0	Rotary	Immedi- ately	Tuning	*1	
Pn10E	2	Mode Swit for Acceler	ching Level ation	0 to 30,000	1 min ⁻¹ /s	0	Rotary	Immedi- ately	Tuning	*1	
Pn10F	2	Mode Swit for Position	ching Level Deviation	0 to 10,000	1 refer- ence unit	0	All	Immedi- ately	Tuning	*1	
Pn11F	2	Position Int	tegral Time	0 to 50,000	0.1 ms	0	All	Immedi- ately	Tuning	*1	
Pn121	2	Friction Co Gain	mpensation	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1	
Pn122	2		ction Com- Gain	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1	
Pn123	2	Friction Co	pensation Gain Friction Compensation		1%	0	All	Immedi- ately	Tuning	*1	
		Coefficient	<u> </u>	0 to 100			<u> </u>				
Pn124	2	Coefficient Friction Co	mpensation Correction	-10,000 to 10,000	0.1 Hz	0	All	Immedi- ately	Tuning	*1	
		Coefficient Friction Co Frequency	mpensation Correction mpensation	-10,000 to	0.1 Hz 1%	0	All	Immedi-	Tuning Tuning	*1	
Pn124	2	Coefficient Friction Co Frequency Friction Co Gain Corre	mpensation Correction mpensation	-10,000 to 10,000				Immedi- ately			
Pn124 Pn125	2	Coefficient Friction Co Frequency Friction Co Gain Corre Gain Switc	empensation Correction empensation ection	-10,000 to 10,000 1 to 1,000	1%	100	All	Immediately Immediately Immediately	Tuning	*1	
Pn124 Pn125 Pn131	2 2 2	Coefficient Friction Co Frequency Friction Co Gain Corre Gain Switc Gain Switc Time 1	empensation Correction empensation ction hing Time 1	-10,000 to 10,000 1 to 1,000 0 to 65,535 0 to 65,535	1% 1 ms	100	All	Immediately Immediately Immediately Immediately Immediately	Tuning	*1	

Applicable When Classi-Refer-

No.	S				Range	Unit	Setting	Motors	Enabled	fication	ence	
	2	Automatic ing Selection		ch-	0000h to 0052h	-	0000h	All	Immedi- ately	Tuning	*1	
			Gain Sw	itchir	ng Selection							
			Use manual gain switching. The gain is switched manually with G-SEL in the servo command o nals (SVCMD_IO).									
	1	n.□□□X	1	Res	erved setting (Do not us	e.)					
	Use automatic gain switching pattern 1. The gain settings 1 switch automatically to 2 when switching satisfied. The gain settings 2 switch automatically to 1 when stion A is not satisfied.											
Pn139	-		Gain Switching Condition A									
			0		IN (Positioning		ion Output	\ cianal turno	ONI			
					,	, ,						
			1	/CC	IN (Positioning	g Complet	ion Output) signal turns	ns OFF.			
	1	n.□□X□	2	/NE	AR (Near Outp	Output) signal turns ON.						

/NEAR (Near Output) signal turns OFF.

Setting

Setting

Parameter

Pn142

Pn143

2

2

Model Following Control Gain Correction

Model Following Control Bias in the Forward

Direction

ize

Name

3

Default

	5	Position reference input is ON.									
n.□X□□	Reserve	d parameter (Do not change.)									
n.X□□□	Reserve	eserved parameter (Do not change.)									

Position reference filter output is 0 and position reference input is OFF.

Pn13D	2	Current Gain Level	100 to 2,000	1%	2000	All	Immedi- ately	Tuning	*1
	2	Model Following Control-Related Selections	0000h to 1121h	-	0100h	All	Immedi- ately	Tuning	*1

			Model F	ollow	ing Control Se	election							
	r	n.□□□X	0	Do no	ot use model fo	ollowing co	ontrol.						
			1	Use r	model following	control.							
			Vibratio	n Sup	pression Sele	ction							
		n.□□X□	0	Do no	ot perform vibra	ation supp	oression.						
	•	1.0000	1	Perfo	rm vibration su	ıppressior	n for a spec	cific frequency	/ .				
D=140			2	Perfo	rm vibration su	ppressior	n for two sp	pecific frequer	ncies.				
Pn140			•										
			Vibratio	n Sup	pression Adju	stment Se	election						
	r	n.□X□□	0	tuni	Do not adjust vibration suppression automatically during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.								
			1		ust vibration su nout a host refe						n-		
				•									
			Speed F	eedf	orward (VFF)/T	orque Fe	edforward	(TFF) Selecti	on				
	r	n.X000	0	Do	not use model	following	control and	d speed/torqu	ue feedforwa	rd togethe	er.		
			1	1 Use model following control and speed/torque feedforward together.									
Pn141	2	Model Follo trol Gain	owing Con- 10 to 20,000 0.1/s 500 All Immediately Tuning *1										

0.1%

0.1%

1000

1000

ΑII

All

500 to 2,000

0 to 10,000

Continued on next page.

Tuning

Tuning

Immedi-

ately

Immedi-ately

*1

*1

Continued from previous page.

Doromata	~			Catting at	Cotting or	Default		M/ban				
Parameter No.	Size		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	uppression 1 A	10 to 2,500	0.1 Hz	500	All	Immedi- ately	Tuning	*1		
Pn146	2	Vibration S Frequency	uppression 1 B	10 to 2,500	0.1 Hz	700	All	Immedi- ately	Tuning	*1		
Pn147	2	Model Follo trol Speed Compensa	Feedforward	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1		
Pn148	2	Second Mo	odel Follow- I Gain	10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*1		
Pn149	2		odel Follow- Gain Correc-	500 to 2,000	0.1%	1000	All	Immedi- ately	Tuning	*1		
Pn14A	2	Vibration S Frequency	/ibration Suppression 2 requency		0.1 Hz	800	All	Immedi- ately	Tuning	*1		
Pn14B	2	Vibration S Correction	/ibration Suppression 2 Correction		1%	100	All	Immedi- ately	Tuning	*1		
	2	Control-Re tions	lated Selec-	0000h to 0021h	_	0021h	All	After restart	Tuning	*1		
			Model Follow	wing Control Ty	pe Select	ion						
		n.□□□X		e model followir	0	71						
			1 Us	e model followi	ng control	type 2.						
D 445	Ī		Tuning-less	Type Selection								
Pn14F				e tuning-less ty	pe 1.							
		n.□□X□	1 Us	e tuning-less ty	pe 2.							
			2 Us	2 Use tuning-less type 3.								
		n.□X□□	Reserved pa	rameter (Do no	t change)						
		n.X□□□	Reserved pa	rameter (Do no	t change.)						
	2	Anti-Reson trol-Related	ance Con- d Selections	0000h to 0011h	_	0010h	All	Immedi- ately	Tuning	*1		
			Anti-Resona	nce Control Se	lection							
		n.□□□X		not use anti-re		control.						
			1 Us	e anti-resonanc	e control.							
			Anti-Resona	nce Control Ad	liustment	Selection				_		
Dn160				not adjust anti-	•		utomatically of	during execu	tion of aut	0-		
Pn160		n.□□X□	0 tur	ning without a ho ning.	ost referer	ice, autotu	ning with a ho	ost reference	, and cust	om		
				just anti-resona hout a host refe								
			ing		J. 100, au	.o.uimig W			Jactorn tu			
		n.□X□□	Reserved pa	rameter (Do no	t change	.)						
	-			`		,						
		n.X□□□	Reserved pa	rameter (Do no	t change.)						
Pn161	2	Anti-Reson	ance Fre-	10 to 20,000	0.1 Hz	1000	All	Immedi- ately	Tuning	*1		
Pn162	2	Anti-Reson Correction		1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1		
Pn163	2	Anti-Reson	ance Damp-	0 to 300	1%	0	All	Immedi- ately	Tuning	*1		
	Ь	-		1	1	1	1					

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn164	2	Anti-Resonance Filter Time Constant 1 Cor- rection	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1
Pn165	2	Anti-Resonance Filter Time Constant 2 Cor- rection	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1
Pn166	2	Anti-Resonance Damping Gain 2	0 to 1,000	1%	0	All	Immedi- ately	Tuning	*1
	2	Tuning-less Function- Related Selections	0000h to 2711h	_	1400h	All	-	Setup	*1

			Tuning-le	ess S	Selection					Who Enab	
		n.□□□X	0	Disa	able tuning-les	s function.				Afte	er
			1	Ena	able tuning-less	function.				rest	art
			Speed C	ontro	ol Method					Who	
Pn170		n.□□X□	0	Use	e for speed cor	ntrol.				Afte	er
FIII/U			1	Use	e for speed cor	ntrol and u	se host co	ntroller for po	sition contro	I. rest	art
		n.□X□□	Rigidity I	Rigidity Level							
			0 to 7	Set	the rigidity leve	el.				Imme ate	
		n.X000	Tuning-le	ess L	oad Level					Who Enab	
		11	0 to 2	Set	the load level	for the tun	ing-less fu	nction.		Imme ate	
Pn181	2	Mode Swit for Speed			0 to 10,000	1 mm/s	0	Linear	Immedi- ately	Tuning	*1
Pn182	2	Mode Swit for Acceler		el	0 to 30,000	1 mm/ s ²	0	Linear	Immedi- ately	Tuning	*1
Pn205	2	Multiturn L	mit 0 to 65,535 1 rev 65535 Rotary After restart						Setup	*1	

0000h to 2210h

n.□□□X	Reserved parameter (Do not change.)
n.□□X□	Reserved parameter (Do not change.)
n.□X□□	Reserved parameter (Do not change.)
	/COIN (Positioning Completion Output) Signal Output Timing
	Output when the absolute value of the position deviation is the same or less

0010h

ΑII

Pn207

Position Control Function Selections

2

	,	
	0	Output when the absolute value of the position deviation is the same or less than the setting of Pn522 (Positioning Completed Width).
n.X□□□	1	Output when the absolute value of the position error is the same or less than the setting of Pn522 (Positioning Completed Width) and the reference after the position reference filter is 0.
	2	Output when the absolute value of the position error is the same or less than the setting of Pn522 (Positioning Completed Width) and the reference input is 0.

Pn20A	4	Reserved parameter (Do not change.)	-	-	32768	Rotary	_	-	*1
Pn20E	4	Electronic Gear Ratio (Numerator)	1 to 1,073,741,824	1	16	All	After restart	Setup	*1
Pn210	4	Electronic Gear Ratio (Denominator)	1 to 1,073,741,824	1	1	All	After restart	Setup	*1

Continued on next page.

After restart

Setup

*1

	Continued from previous pag								s page.			
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
Pn212	4	Number of Output Pul		16 to 1,073,741,824	1 P/Rev	2048	Rotary	After restart	Setup	*1		
Pn22A	2	Reserved (Do not ch		-	_	0000h	Rotary	_	_	*1		
	2		ontrol Expan- ion Selections	0000h to 0001h	_	0000h	All	After restart	Setup	*1		
Pn230		n.00X0 n.00X0 n.0X00	0 Cor 1 Cor Reserved par	mpensation Di mpensate forw mpensate reve rameter (Do no rameter (Do no	ard referer rse referen ot change. ot change.	ces.						
				500 000 L	0.1 ref-			Lanca and P				
Pn231	4	Backlash (Compensation	-500,000 to 500,000	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 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	peed	0 to 10,000	Rotary: 1 min ⁻¹ Direct Drive: 0.1 min ⁻¹	500	Rotary	Immedi- ately	Setup	*1		
Pn305	2	Soft Start /	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	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		
	2	Vibration D Selections		0000h to 0002h	-	0000h	All	Immedi- ately	Setup	*1		
Pn310		n.000X	0 Do 1 Out	Vibration Detection Selection 0 Do not detect vibration. 1 Output a warning (A.911) if vibration is detected.								
		n.□□X□	Reserved par	rameter (Do no	ot change.)						
		n.□X□□ Reserved parameter (Do not change.)										
		n.X□□□	Reserved par	erved parameter (Do not change.)								
Pn311	2	Vibration D	etection Sen-	50 to 500	1%	100	All	Immedi- ately	Tuning	*1		
Pn312	2	Vibration D Level	etection	0 to 5,000	1 min ⁻¹	50	Rotary	Immedi- ately	Tuning	*1		
		+						Continue	d on nex	+ 5555		

When Enabled

*1

*1

*1

Continued from previous page.

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn316	2	Maximum Motor Speed	0 to 65,535	1 min ⁻¹	10000	Rotary	After restart	Setup	*1
Pn324	2	Moment of Inertia Cal- culation Starting Level	0 to 20,000	1%	300	All	Immedi- ately	Setup	*1
Pn383	2	Jogging Speed	0 to 10,000	1 mm/s	50	Linear	Immedi- ately	Setup	*1
Pn384	2	Vibration Detection Level	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	First Stage First Torque Reference Filter Time Constant	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1
Pn402	2	Forward Torque Limit	0 to 800	1%*3	800	Rotary	Immedi- ately	Setup	*1
Pn403	2	Reverse Torque Limit	0 to 800	1%*3	800	Rotary	Immedi- ately	Setup	*1
Pn404	2	Forward External Torque Limit	0 to 800	1%*3	100	All	Immedi- ately	Setup	*1
Pn405	2	Reverse External Torque Limit	0 to 800	1%*3	100	All	Immedi- ately	Setup	*1
Pn406	2	Emergency Stop Torque	0 to 800	1%*3	800	All	Immedi- ately	Setup	*1
Pn407	2	Speed Limit during Torque Control	0 to 10,000	1 min ⁻¹	100	Rotary	Immedi- ately	Setup	*1
	2	Torque-Related Function Selections	0000h to 1111h	-	0000h	All	-	Setup	*1

		n.□□□X	0	Disa	able first stage	notch filte	er.			Imme	di-	
			1	Ena	ble first stage	notch filte	r.			atel	У	
	_											
			Speed Li	imit S	Selection					Whe Enabl		
			0		the smaller of 107 as the spec		num moto	r speed and t	he setting of			
		n.□□X□	0		the smaller of 180 as the spee		num moto	r speed and t	he setting of	Afte	r	
Pn408			1		the smaller of ing of Pn407 a			n detection sp	peed and the	restart		
				Use the smaller of the overspeed alarm detection speed and the setting of Pn480 as the speed limit.								
	li	n.□X□□	Notch Fi	Iter S	Selection 2					Whe		
			0	Disable second stage notch filter.								
			1	Ena	ble second sta	ige notch	filter.			ately	/	
			Friction (Com	pensation Fun	ction Sele	ection			Whe Enabl		
		n.X□□□	0	Disa	able friction co	mpensatio	n.			Imme	Immedi-	
	1 Enable friction compensation.									ately	У	
Pn409	2	First Stage Frequency	Notch Filt	tch Filter 50 to 5,000 1 Hz 5000 All Immediately								

50 to 1,000

0 to 1,000

50 to 5,000

0.01

0.001

1 Hz

70

0

5000

ΑII

All

ΑII

Notch Filter Selection 1

First Stage Notch Filter Q Value

First Stage Notch Filter

Second Stage Notch Filter Frequency

Pn40A

Pn40B

Pn40C

2

2

2

Depth

Tuning Continued on next page.

Tuning

Tuning

Immedi-

ately

Immedi-

ately

Immedi-

ately

Parameter 0

Continued from previous page.

Setting Default Applicable When Classi- Refer-

Pn40E 2 Second Stage Notch Fil- 0 to 1,000 0.001 0 All Immediately Second Stage Second Immediately	fication	ence									
Second Stage Second Sec	Tuning	*1									
	Tuning	*1									
Pn40F 2 Torque Reference Filter 100 to 5,000 1 Hz 5000 All attely	Tuning	*1									
Pn410 2 Second Stage Second Torque Reference Filter Q Value 50 to 100 0.01 50 All Immediately	Tuning	*1									
Pn412 2 First Stage Second Torque Reference Filter Time Constant 0 to 65,535 0.01 ms 100 All Immediately	Tuning	*1									
2 Torque-Related Function Selections 2 0000h to 1111h - 0000h All Immediately	Setup	*1									
Notch Filter Selection 3											
n.□□□X 0 Disable third stage notch filter.											
	Enable third stage notch filter.										
Notch Filter Selection 4											
Pn416 n.□□X□ 0 Disable fourth stage notch filter.											
1 Enable fourth stage notch filter.											
Notch Filter Selection 5											
n.□X□□ 0 Disable fifth stage notch filter.	Disable fifth stage notch filter.										
1 Enable fifth stage notch filter.	1 Enable fifth stage notch filter.										
n.X□□□ Reserved parameter (Do not change.)											
Pn417 2 Third Stage Notch Filter 50 to 5,000 1 Hz 5000 All Immediately	Tuning	*1									
Trequency	Tuning										
Third Store Notes Eilter		*1									
Pn418 2 Third Stage Notch Filter 50 to 1,000 0.01 70 All Immediately Third Stage Notch Filter 50 to 1,000 0.01 70 Immediately	Tuning	*1									
Pn418 2 Third Stage Notch Filter 50 to 1,000 0.01 70 All Immediately Pn419 2 Third Stage Notch Filter 0 to 1,000 0.001 0 All Immediately Fourth Stage Notch File Immediately	Tuning Tuning										
Pn418 2 Third Stage Notch Filter 50 to 1,000 0.01 70 All Immediately Pn419 2 Third Stage Notch Filter 0 to 1,000 0.001 0 All Immediately Pn419 2 Fourth Stage Notch Filter 50 to 5,000 1 Hz 5000 All Immediately Pn41A 2 Fourth Stage Notch Filter 50 to 5,000 1 Hz 5000 All Immediately	- O	*1									
Pn418 2 Third Stage Notch Filter Q Value 50 to 1,000 0.01 70 All Immediately Pn419 2 Third Stage Notch Filter Depth 0 to 1,000 0.001 0 All Immediately Pn41A 2 Fourth Stage Notch Filter Frequency 50 to 5,000 1 Hz 5000 All Immediately Pn41B 2 Fourth Stage Notch Filter Q Value 50 to 1,000 0.01 70 All Immediately	Tuning	*1									
Pn418 2 Third Stage Notch Filter Q Value 50 to 1,000 0.01 70 All Immediately Pn419 2 Third Stage Notch Filter Depth 0 to 1,000 0.001 0 All Immediately Pn41A 2 Fourth Stage Notch Filter Frequency 50 to 5,000 1 Hz 5000 All Immediately Pn41B 2 Fourth Stage Notch Filter Q Value 50 to 1,000 0.01 70 All Immediately Pn41C 2 Fourth Stage Notch Filter Depth 0 to 1,000 0.001 0 All Immediately	Tuning Tuning	*1 *1 *1									
Pn4182Third Stage Notch Filter Q Value50 to 1,0000.0170AllImmediatelyPn4192Third Stage Notch Filter Depth0 to 1,0000.0010AllImmediatelyPn41A2Fourth Stage Notch Filter Frequency50 to 5,0001 Hz5000AllImmediatelyPn41B2Fourth Stage Notch Filter Q Value50 to 1,0000.0170AllImmediatelyPn41C2Fourth Stage Notch Filter Depth0 to 1,0000.0010AllImmediatelyPn41D2Fifth Stage Notch Filter Frequency50 to 5,0001 Hz5000AllImmediately	Tuning Tuning Tuning	*1 *1 *1 *1									

Setting

Parameter	a)			Setting	Setting	Default	Applicable	When	Classi-	Refer-			
No.	Size	N	ame	Range	Unit	Setting	Motors	Enabled	fication	ence			
	2	Speed Rip sation Sele	ple Compen- ections	0000h to 1111h	_	0000h	Rotary	_	Setup	*1			
			Speed Ripple	e Compensatio	on Functio	n Selectio	on		Whe Enab				
		n.□□□X		able speed ripp					Imme				
			1 Ena	able speed ripp	ole comper	nsation.			ale	iy 			
Pn423		n.□□X□	tion Selectio			tion Disaç	greement Wa	rning Detec-	Enab	led			
				tect A.942 alar						After restart			
			Speed Ripple	e Compensatio	on Enable	Condition	Selection		Whe				
		n.□X□□	0 Sp	eed reference					Afte				
			1 Mo	1 Motor speed									
		n.XDDD	Reserved pa	rameter (Do no	ot change.)							
Pn424	2	Torque Lim	nit at Main Cir- e Drop	0 to 100	1%*2	50	All	Immedi- ately	Setup	*1			
Pn425	2	Release Til Limit at Ma Voltage Dr	me for Torque ain Circuit op	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	sation Ena	•	0 to 10,000	1 min ⁻¹	0	Rotary	Immedi- ately	Tuning	*1			
	2	Pressure F Selection S		0000h to 1111h	_	0000h	All	After restart	Setup	3-14			
		n.□□□X		Pressure Feedback Enable Switch 0 Disable pressure feedback control and perform normal torque control.									
			1 Enable pressure feedback control.										
		n.□□X□		dback Polarity									
Pn440				not reverse the	-								
				verse the polar									
		n.□X□□	Reserved par	ameter (Do not	change.)								
		n.X□□□	 	Control Gravity	•		tch						
				able gravity co	•								
			, , ,	able gravity cor	riporioatio								
Pn441	2	Reserved p	parameter (Do	_	-	100	All	_	-	-			
Pn442	2	Pressure F Control 1 F Feedback Time		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	parameter (Do e.)	-	-	0	All	_	-	-			
Pn446	2		mpensation during	0 to 150	1%	95	All	Immedi- ately	Setup	_			

	Continued from previous page.											
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
Pn447	2	Pressure Feedback Loop Deviation Overflow Level	0 to 800	1%	100	All	Immedi- ately	Setup	3-20			
Pn448	2	Pressure Feedback Off- set	-10,000 to 10,000	0.01%	0	All	Immedi- ately	Setup	3-16			
Pn449	2	Pressure Feedback Sensor Gain	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 Feedback Filter	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	3-16			
Pn44C	2	Pressure Feedback Enable Level	0 to 10,000	0.01%	1000	All	Immedi- ately	Setup	3-6			
Pn44D	2	Pressure Feedback Overflow Detection Level	0 to 800	1%	300	All	Immedi- ately	Setup	3-16			
Pn44E	2	Pressure Feedback Overflow Detection Time	0 to 5,000	0.1 ms	0	All	Immedi- ately	Setup	3-16			
Pn450	2	Pressure Feedback Control 1 Pressure Feedback Loop Differ- ential Time	0 to 51,200	0.1 ms	0	All	Immedi- ately	Setup	3-20			
Pn451	2	Pressure Feedback Control 1 Pressure Feedback Loop Differ- ential Filter Rate	0 to 10,000	1%	100	All	Immedi- ately	Setup	3-20			
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 Reference Amplitude	1 to 800	1%	15	All	Immedi- ately	Tuning	*1			
	2	Pressure Feedback Selection Switch 2	0000h to 0011h	_	0011h	All	After restart	Setup	3-17			
Pn458		0 S 1 S 1.□□X□ Pressure Fee	dback Control I et mode 1. et mode 2. dback Type Sel et pressure fee	ection Swi	tch	ch						
			et pressure fee		ntrol 2.							
	_	•	ameter (Do not	<u> </u>								
	<u> </u>	neserveu par	ameter (Do not	Change.j								
Pn459	2	Gravity Compensation Reference Level for Torque Control	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	Pressure Feedback Reference Filter Time Constant	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	_			

6

Continued from previous page.

							Cor	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					
	2	Notch Filte Selections	r Adjustment 1	0000h to 0101h	-	0101h	All	Immedi- ately	Tuning	*1					
			Notch Filter	Adjustment Se	lection 1										
		n.□□□X	0 tun	not adjust the ing without a hing.											
				ust the first sta hout a host refe											
Pn460		n.□□X□	Reserved pa	rameter (Do no	ot change.)									
			Notch Filter	Adjustment Se	lection 2										
		n.□X□□	0 fun	not adjust the ction is enabled otuning with a	d or during	execution	of autotuning	g wiṫhout a h							
			1 tion	ust the second is enabled or otuning with a	during exe	ecution of	autotuning wi	thout a host							
		n.X□□□	Reserved pa	rameter (Do no	ot change.	.)									
						,									
	2	Gravity Cor Related Se	mpensation- lections	0000h to 0001h	-	0000h	All	After restart	Setup	*1					
		- DDDV	Oit O	ti O-l	A										
		n.□□□X	, .	ensation Selection able gravity col		ın.									
Pn475				able gravity cor	•										
F11473	n.□□X□ Reserved parameter (Do not change.)														
	n.□X□ Reserved parameter (Do not change.) n.□X□□ Reserved parameter (Do not change.)														
		n.X□□□	Reserved par	Reserved parameter (Do not change.)											
Pn476	2	Gravity Cor Torque	mpensation	-1,000 to 1,000	0.1%	0	All	Immedi- ately	Tuning	*1					
Pn480	2	Speed Lim Force Cont	it during trol	0 to 10,000	1 mm/s	100	Linear	Immedi- ately	Setup	*1					
Pn481	2	Polarity De Speed Loo		10 to 20,000	0.1 Hz	400	Linear	Immedi- ately	Tuning	_					
Pn482	2	Polarity De Speed Loo Time Cons	p Integral	15 to 51,200	0.01 ms	3000	Linear	Immedi- ately	Tuning	-					
Pn483	2	Forward Fo	orce Limit	0 to 800	1%*3	30	Linear	Immedi- ately	Setup	*1					
Pn484	2	Reverse Fo		0 to 800	1%*3	30	Linear	Immedi- ately	Setup	*1					
Pn485	2	ence Spee		0 to 100	1 mm/s	20	Linear	Immedi- ately	Tuning	-					
Pn486	2	Polarity De ence Accel Deceleration		0 to 100	1 ms	25	Linear	Immedi- ately	Tuning	-					
Pn487	2	stant Špee		0 to 300	1 ms	0	Linear	Immedi- ately	Tuning	_					
Pn488	2	ence Waitir		50 to 500	1 ms	100	Linear	Immedi- ately	Tuning	-					
Pn48E	2	Polarity De Range		1 to 65,535	1 mm	10	Linear	Immedi- ately	Tuning						
Pn490	2	Level			1%	100	Linear	Immedi- ately	Tuning	-					
Pn495	2	Polarity De firmation Formation	tection Con- orce Refer-	0 to 200	1%	100	Linear	Immedi- ately	Tuning	_					

Continued from previous page.

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn498	2	Polarity Detection Allow- able Error Range	0 to 30	1 deg	10	Linear	Immedi- ately	Tuning	-
Pn49F	2	Speed Ripple Compensation 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	ı	_	-
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 Integral 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.)	_	_	0000h	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 ⁻¹	20	Rotary	Immedi- ately	Setup	*1
Pn503	2	Speed Coincidence Detection Signal Output Width	0 to 100	1 min ⁻¹	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 Output Speed Level	0 to 10,000	1 min ⁻¹	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

Parameter Lists

Continued from previous page.

Parameter No.	Size	N	Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Input Signa 1	al Sele	ctions	0000h to FFF2h	_	1881h	All	After restart	Setup	*1			
		n.□□□X	Rese	rved par	ameter (Do no	ot change.	.)							
		n.□□X□	Rese	rved par	ameter (Do no	ot change.	.)							
		n.□X□□	Rese	rved par	ameter (Do no	ot change.)							
	Ī		P-OT	-OT (Forward Drive Prohibit) Signal Allocation										
			0	111111111111111111111111111111111111111										
			1											
			2	, , , , , , , , , , , , , , , , , , ,										
			3	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1										
Pn50A			4	1										
			5	5 Enable forward drive when CN1-11 input signal is ON (closed).										
			6		forward drive		<u>'</u>	• •	closed).					
		n.X□□□	7		signal to alwa									
			8		signal to alwa									
			9		forward drive		<u>'</u>		\ I /					
			Α		forward drive			<u> </u>	1 /					
			В		forward drive			· ·	<u>'</u>					
			С		forward drive		- '	<u> </u>	1 /					
			D	D Enable forward drive when CN1-10 input signal is OFF (open).										
			E Enable forward drive when CN1-11 input signal is OFF (open).											
			F	Enable	forward drive	when CN1	-12 input	signal is OFF	(open).					

Continued from previous page.

Parameter No.	Size	N	Name		ing :	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Input Signa 2	al Selection	s 0000 FFF		_	8882h	All	After restart	Setup	*1			
			N-OT (Re	verse Drive	Prohibit	t) Signal	Allocation	1						
			0	Enable reve	erse drive	e when C	N1-13 inp	out signal is O	N (closed).					
			1	Enable reve	erse drive	e when C	N1-7 inpu	it signal is ON	(closed).					
			2	Enable reve	erse drive	e when C	N1-8 inpu	it signal is ON	(closed).					
			3	Enable reve	erse drive	e when C	N1-9 inpu	it signal is ON	(closed).					
			4	Enable reve	erse drive	e when C	N1-10 inp	out signal is O	N (closed).					
			5	Enable reve	erse drive	e when C	N1-11 inp	out signal is O	N (closed).					
			6	Enable reve	erse drive	e when C	N1-12 inp	out signal is O	N (closed).					
		n.□□□X	7	Set the sigr	nal to alv	vays prol	nibit revers	se drive.						
			8	Set the sigr	nal to alv	vays ena	ble reverse	e drive.						
			9	Enable reve	erse drive	e when C	N1-13 inp	out signal is O	FF (open).					
			А	Enable reve	erse drive	e when C	N1-7 inpu	ıt signal is OF	F (open).					
			В											
			С											
			D	Enable reve	erse drive	e when C	N1-10 inp	out signal is O	FF (open).					
				Enable reve	erse drive	e when C	N1-11 inp	out signal is O	FF (open).					
			F	Enable reve	erse drive	e when C	N1-12 inp	out signal is O	FF (open).					
Pn50B	n.□□X□ Reserved parameter (Do not change.)													
THOOD			/P-CL (Fo	rward Exte	rnal Torc	que Limit	t Input) Sig	gnal Allocatio	n					
			0	Active wher	n CN1-1	3 input s	ignal is ON	V (closed).						
			1	Active wher	n CN1-7	input sig	gnal is ON	(closed).						
			2	Active wher	n CN1-8	input sig	gnal is ON	(closed).						
			3	Active wher	n CN1-9	input sig	gnal is ON	(closed).						
			4	Active wher	n CN1-1	0 input s	ignal is ON	V (closed).						
			5	Active wher	n CN1-1	1 input s	ignal is ON	V (closed).						
			6	Active wher	n CN1-1	2 input s	ignal is ON	V (closed).						
		$n.\Box X\Box\Box$	7	The signal i	s always	active.								
			8	The signal i	s always	s inactive								
			9	Active wher	n CN1-1	3 input s	ignal is OF	F (open).						
			А	Active wher	n CN1-7	input sig	gnal is OFF	(open).						
			В	Active wher	n CN1-8	input sig	gnal is OFF	(open).						
			С	Active wher	n CN1-9	input sig	gnal is OFF	(open).						
			D	Active wher	n CN1-1	0 input s	ignal is OF	F (open).						
			E	Active wher	n CN1-1	1 input s	ignal is OF	F (open).						
			F	Active wher	n CN1-1	2 input s	ignal is OF	F (open).						
		n VOCO						gnal Allocatio						
		n.X□□□		The allocati Input) signa			e as the /P	-CL (Forward	External Tor	que Limit				
					-						_			

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Output Sig tions 1	ınal Selec-	0000h to 6666h	-	0000h	All	After restart	Setup	*1			
			/COIN (Posit	ioning Comple	tion Outp	ut) Signal	Allocation						
				abled (the abov									
		n.□□□X		tput the signal			•						
				tput the signal									
				tput the signal			CN1-26 outpu	ut terminal.					
			4 to 6 Res	served setting (Do not us	e.)							
Pn50E			/V-CMP (Spe	ed Coincidenc	e Detecti	on Output) Signal Alloc	ation					
		n.□□X□		e 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□□	/TGON (Rotation Detection Output) Signal Allocation 0 to 6 The allocations are the same as the /COIN (Positioning Completion) signal allocations.										
			/S-RDY (Sen	o Ready) Sign	al Allocat	ion							
		n.X□□□	O to 6 The	e allocations are cations.			OIN (Position	ing Complet	ion) signal				
		Output Sig	ınal Salac-	0000h to				After					
	2	tions 2	1101 00100	6666h	_	0100h	All	restart	Setup	*1			
			/CLT (Torque Limit Detection Output) Signal Allocation										
			0 Dis	abled (the abov	ve signal c	output is no	ot used).						
		n.□□□X		tput the signal	from the C	N1-1 or C	N1-2 output t	erminal.					
				tput the signal			· · · · · · · · · · · · · · · · · · ·						
				tput the signal			CN1-26 outpu	ut terminal.					
			4 to 6 Res	served setting (Do not us	e.)							
Pn50F			/VLT (Speed	Limit Detection	n) Signal /	Allocation							
		n.□□X□		allocations are allocations.	e the same	e as the /C	CLT (Torque Lir	mit Detectio	n Output) s	sig-			
			/BK (Brake C	output) Signal A	Allocation								
		n.□X□□	The	. , .		e as the /C	CLT (Torque Lir	mit Detection	n Output) s	sia-			
			0 to 6 The allocations are the same as the /CLT (Torque Limit Detection Output) signal allocations.										
			/WARN (War	ning Output) S	ignal Allo	cation							
		n.X□□□		The allocations are the same as the /CLT (Torque Limit Detection Output) signal allocations.									

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Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Output Sig tions 3	gnal Selec-	0000h to 0666h	_	0000h	All	After restart	Setup	*1			
			/NEAR (Nea	ır Output) Signa	al Allocation	on							
			0 Di	sabled (the abo	ve signal d	output is no	ot used).						
		n.□□□X	1 0	utput the signal	from the C	CN1-1 or C	N1-2 output	terminal.					
		II.UUUX	2 0	utput the signal	from the C	N1-23 or	CN1-24 outp	ut terminal.					
Pn510				utput the signal			CN1-26 outp	ut terminal.					
			4 to 6 Re	eserved setting ((Do not us	e.)							
		n.□□X□	Reserved p	arameter (Do no	ot change	.)							
		n.□X□□	Reserved p	arameter (Do no	ot change	.)							
		n.X□□□	Reserved p	arameter (Do no	ot change	.)							
		Innut Sign	al Selections	0000h to				After					
	2	5	ai delections	FFFFh	_	6543h	All	restart	Setup	*1			
			/DEC (Origi	n Return Decele	eration Sw	itch Input) Signal Alloc	ation					
			0 Ad	ctive when CN1-	-13 input s	signal is ON	V (closed).						
			1 Ac	ctive when CN1-	-7 input si	gnal is ON	(closed).						
			2 A	ctive when CN1-	-8 input si	gnal is ON	(closed).						
			+	ctive when CN1-									
			+	ctive when CN1-			, ,						
			1	ctive when CN1-			• •						
				ctive when CN1-	-	signal is Of	V (closed).						
		n.□□□X	1	7 The signal is always active. 8 The signal is always inactive.									
				9 Active when CN1-13 input signal is OFF (open).									
			A Active when CN1-7 input signal is OFF (open).										
				ctive when CN1-									
			D A	ctive when CN1-	-10 input s	signal is Of	F (open).						
Pn511				ctive when CN1-									
			F A	ctive when CN1-	-12 input s	signal is Of	F (open).						
			/EXT1 (Exte	rnal Latch Inpu	t 1) Signa	l Allocatio	n						
			0 to 3 Th	ne signal is alwa	ys inactive).							
				ctive when CN1-		_							
				ctive when CN1-		_							
		n.□□X□		ctive when CN1-									
			+	ctive when CN1-			() /						
				ctive when CN1- ctive when CN1-			,						
				ne signal is alwa			i (operi).						
					•								
		- UVUU		rnal Latch Inpu									
		n.□X□□		ne allocations are attions.	e the sam	e as the /E	XT1 (External	Latch Input	1) signal a	allo-			
			/EXT3 (Exte	rnal Latch Inpu	t 3) Signa	Allocation	n						
		n.X□□□		ne allocations are	e the sam	e as the /E	XT1 (External	Latch Input	1) signal a	 allo-			

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Output Sig Settings	ınal Inverse	0000h to 1111h	-	0000h	All	After restart	Setup	*1			
			Output Signa	al Inversion for	CN1-1 ar	nd CN1-2	Terminals						
		n.□□□X	0 The	e signal is not i	nverted.								
			1 The	e signal is inver	ted.								
			Output Cian	al lavoraion for	CNI1 OO a	2 CN1 C	14 Tarminala						
Pn512		~ DDVD		al Inversion for		and Civi-2	4 Terminais						
111312		n.□□X□		The signal is not inverted. The signal is inverted.									
			1 1116	e signai is inver	tea.								
			Output Signa	al Inversion for	CN1-25 a	and CN1-2	26 Terminals						
	n.□X□□ 0 The signal is not inverted.												
			1 The	e signal is inver	ted.								
		n.XDDD	Decembed no	rameter (Do no	at abanga	١							
		11.7000	neserveu pa	.)									
	2	Output Sig tions 4	ınal Selec-	0000h to 0666h	_	0000h	All	After restart	Setup	*1			
		n.□□□X	Reserved pa	rameter (Do no	ot change.	.)							
		n.□□X□	Reserved pa	rameter (Do no	ot change.	.)							
			/PM (Preven	tative Maintena	ance Outp	ut) Signal	Allocation						
Pn514			0 Dis	abled (the abo	ve signal c	output is no	ot used).						
			1 Ou	tput the signal	from the C	N1-1 or C	N1-2 output t	terminal.					
		n.□X□□	2 Ou	tput the signal	from the C	N1-23 or	CN1-24 outpu	ut terminal.					
			3 Ou	tput the signal	from the C	N1-25 or	CN1-26 outpi	ut terminal.					
				served setting									
	V=== D												
	n.X□□□ Reserved parameter (Do not change.)												

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Parameter No. Set Ing Setting	*1
Pn516 FSTP (Forced Stop Input) Signal Allocation O	*1
Pn516	
Pn516	
Pn516	_
Pn516 1	
Pn516 Pn516 Columbia	
Pn516 A Enable drive when CN1-9 input signal is ON (closed).	
Pn516 A	
Pn516 Separate Final Content Final Cont	
Pn516 7 Set the signal to always prohibit drive (always force the motor to stop). 8 Set the signal to always enable drive (always disable forcing the motor to stop). 9 Enable drive when CN1-13 input signal is OFF (open). A Enable drive when CN1-7 input signal is OFF (open). B Enable drive when CN1-8 input signal is OFF (open). C Enable drive when CN1-9 input signal is OFF (open). D Enable drive when CN1-10 input signal is OFF (open). E Enable drive when CN1-11 input signal is OFF (open). F Enable drive when CN1-12 input signal is OFF (open). N.□□X□ Reserved parameter (Do not change.) N.□□X□ Reserved parameter (Do not change.) N.□□□ Reserved parameter (Do not change.) Pn518 - Reserved parameter (Do not change.) Pn518 4 Reserved parameter (Do not change.) Pn519 2 Position Deviation Overflow Warring Level 1 to 100 1% 100 All Immediately Setup flow Alarm Level 1,073,741,823 1 to 100 and 1 to 100 at 1,073,741,823 All Immediately Setup at 1,073,741,823 1 to 100 at 1,073,741,823 All Immediately Setup at 1,073,741,823 at 1,073,741,823 at 1,074,741,823 at 1,074,	
Reserved parameter (Do not change.) Pn518	
Reserved parameter (Do not change.) Reserved parameter (Do not change.) Reserved parameter (Do not change.) Pn518 4 Reserved parameter (Do not change.) Pn518 2 Position Deviation Overflow Warning Level Pn520 4 Position Deviation Overflow Warning Level Pn520 4 Position Deviation Overflow Warning Level Pn520 4 Position Deviation Overflow wharm CN1-13 input signal is OFF (open). Pable drive when CN1-9 input signal is OFF (open). Enable drive when CN1-10 input signal is OFF (open). Enable drive when CN1-11 input signal is OFF (open). Enable drive when CN1-12 input signal is OFF (open). Reserved parameter (Do not change.) Reserved parameter (Do not change.) Pn518 A Reserved parameter (Do not change.) Pn520 A Position Deviation Overflow Warning Level Pn520 A Position Deviation Overflow Warning	
9 Enable drive when CN1-13 input signal is OFF (open). A Enable drive when CN1-7 input signal is OFF (open). B Enable drive when CN1-8 input signal is OFF (open). C Enable drive when CN1-9 input signal is OFF (open). D Enable drive when CN1-10 input signal is OFF (open). E Enable drive when CN1-11 input signal is OFF (open). F Enable drive when CN1-12 input signal is OFF (open). F Enable drive when CN1-12 input signal is OFF (open). N.□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□	
B Enable drive when CN1-8 input signal is OFF (open). C Enable drive when CN1-9 input signal is OFF (open). D Enable drive when CN1-10 input signal is OFF (open). E Enable drive when CN1-11 input signal is OFF (open). F Enable drive when CN1-12 input signal is OFF (open). F Enable drive when CN1-12 input signal is OFF (open). N. Reserved parameter (Do not change.) N. Reserved parameter (Do not change.)	
C Enable drive when CN1-9 input signal is OFF (open). D Enable drive when CN1-10 input signal is OFF (open). E Enable drive when CN1-11 input signal is OFF (open). F Enable drive when CN1-12 input signal is OFF (open). Reserved parameter (Do not change.) n.□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□	
D Enable drive when CN1-10 input signal is OFF (open). E Enable drive when CN1-11 input signal is OFF (open). F Enable drive when CN1-12 input signal is OFF (open). Reserved parameter (Do not change.) n.□X□□ Reserved parameter (Do not change.) n.X□□□ Reserved parameter (Do not change.) Reserved parameter (Do not change.) Pn518 - Reserved parameter (Do not change.) Pn51B 4 Reserved parameter (Do not change.) Pn51B 2 Position Deviation Over-flow Warning Level Pn520 4 Position Deviation Over-flow Alarm Level Pn520 4 Position Deviation Over-flow Alarm Level Pn520 4 Position Deviation Over-flow Alarm Level Pn520 5 Enable drive when CN1-10 input signal is OFF (open). All	
E Enable drive when CN1-11 input signal is OFF (open). F Enable drive when CN1-12 input signal is OFF (open). n.□\ \text{\sqrt{n.}}\ \text{\text{\$P\$}}\ \text{Reserved parameter (Do not change.)}\ \text{\text{\$n.}}\ \text{\text{\$\text{\$P\$}}}\ \text{\text{\$N.}}\ \text{\text{\$\text{\$\text{\$\text{\$P\$}}}}\ \text{\$\text{	
F Enable drive when CN1-12 input signal is OFF (open). n.□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□	
n.□□X□ Reserved parameter (Do not change.) n.□X□□ Reserved parameter (Do not change.) n.X□□□ Reserved parameter (Do not change.) Pn518 - Reserved parameter (Do not change.) Pn51B 4 Reserved parameter (Do not change.) Pn51B 2 Position Deviation Over-flow Warning Level Pn520 4 Position Deviation Over-flow Alarm Level 1 to flow Alarm Level	
n.□X□□ Reserved parameter (Do not change.) n.X□□□ Reserved parameter (Do not change.) n.X□□□ Reserved par	
Pn518 - Reserved parameter (Do not change.) Pn518 - Reserved parameter (Do not change.) Pn51B 4 Reserved parameter (Do not change.) Pn51B 2 Position Deviation Overflow Warning Level Pn520 4 Position Deviation Overflow Alarm Level Pn520 1 Position Deviation Overflow Alarm Level Pn520 2 Position Deviation Overflow Alarm Level Pn520 3 Position Deviation Overflow Alarm Level Pn520 4 Position Deviation Overflow Alarm Level Pn520 4 Position Deviation Overflow Alarm Level Pn520 5 Position Deviation Overflow Alarm Level Pn520 5 Position Deviation Overflow Alarm Level Pn520 6 Position Deviation Overflow Alarm Level Pn520 7 Position Deviation Overflow Alarm Level Pn520 6 Position Deviation Overflow Alarm Level Pn520 7 Position Deviation Overflow Alarm Level Pn520 7 Position Deviation Overflow Alarm Level Pn520 8 Position Deviation Overflow Alarm Level Pn520 8 Position Deviation Overflow Alarm Level Pn520 9 Position Deviation Overflow Alarm Level Pn520 9 Position Deviation Overflow Alarm Level Pn520 9 Position Deviation Overflow Alarm Level	
Pn518 - Reserved parameter (Do not change.) All Pn51B 4 Reserved parameter (Do not change.) 1000 Rotary Pn51E 2 Position Deviation Overflow Warning Level 10 to 100 1% 100 All Immediately Setup Pn520 4 Position Deviation Overflow Alarm Level 1,073,741,823 1 reference unit 1	
Pn518 - Reserved parameter (Do not change.) All Pn51B 4 Reserved parameter (Do not change.) 1000 Rotary Pn51E 2 Position Deviation Overflow Warning Level 10 to 100 1% 100 All Immediately Setup Pn520 4 Position Deviation Overflow Alarm Level 1,073,741,823 1 reference unit 1	
Pn51B 4 Reserved parameter (Do not change.) Pn51B 2 Position Deviation Overflow Warning Level Pn520 4 Position Deviation Overflow Alarm Level Pn520 524288 O All Immediately Pn520 524288 O All Immediately	
Pn51B 4 Reserved parameter (Do not change.) Pn51B 2 Position Deviation Overflow Warning Level Pn520 4 Position Deviation Overflow Alarm Level Pn520 524288 O All Immediately Pn520 524288 O All Immediately	
Pn51B 4 Reserved parameter (Do not change.) Pn51B 2 Position Deviation Overflow Warning Level Pn520 4 Position Deviation Overflow Alarm Level Pn520 524288 O All Immediately Pn520 524288 O All Immediately	
Pn51B 4 Reserved parameter (Do not change.) Pn51B 2 Position Deviation Overflow Warning Level Pn520 4 Position Deviation Overflow Alarm Level 10 to 100 19 100 All Immediately Setup 1 reference unit 1 referen	_
Pn51E 2 Position Deviation Over- flow Warning Level 10 to 100 1% 100 All Immediately Pn520 4 Position Deviation Over- flow Alarm Level 1,073,741,823 1 reference unit 1 referen	
Pn51E 2 Position Deviation Over- flow Warning Level 10 to 100 1% 100 All Immediately Pn520 4 Position Deviation Over- flow Alarm Level 1 to 1,073,741,823 1 reference unit 1 re	*1
Pn520 4 Position Deviation Over- flow Alarm Level 1 to 1,073,741,823 1 reference unit 2 to 1,073,741,8	*1
Pn520 4 Fostion Deviation Over- flow Alarm Level 1,073,741,823 ence unit 0 All ately Setup	
1 refer	*1
Pn522 4 Positioning Completed Uto ence 7 All milling Setup	*1
1 unit	
Pn524 4 Near Signal Width 1 to 1,073,741,824 ence ence 1824 All Immediately Setup	*1
unit 2	
Pn526 4 Position Deviation Over- flow Alarm Level at 1 to 1,073,741,823 unit 524288 All Immediately Setup	
Selvo div	*1
Pn528 2 Position Deviation Over- I I I I I I I I I I I I I I I I I I I	*1
Servo ON ately	*1
Pn529 2 Speed Limit Level at Servo ON 0 to 10,000 1 min ⁻¹ 10000 Rotary Immediately Setup	
Pn52A 2 Reserved parameter (Do 20 Rotary	
Pn52B 2 Overload Warning Level 1 to 100 1% 20 All Immediately Setup	*1
Pn52C 2 at Motor Overload 10 to 100 1% 100 All After Setup	*1
	*1 *1 *1

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Program Jo Related Se	ogging- lections		0000h to 0005h	-	0000h	All	Immedi- ately	Setup	*1
Pn530	2	n.□□X□	Program 0 1 2 3 4 5 Reserved	(Wa mov (Wa in P Pn5)))))	ging Operation iting time in Provements in	n Pattern 1535 → Fc 1536 1535 → Fc 1536 1535 → Fc 1536 1535 → Re 1536 1535 → Fc 1536 1537 → Fc 1537 → Fc 1538 → Fc	one of the control of	All travel distance	Immediately e in Pn531) > e in Pn531 — Number of n	Setup Number	*1 of of of of of of ime s in
		n.X□□□	Reserved	l par	rameter (Do no	ot change.	.)				
	1 votov										

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: 1 min ⁻¹ Direct Drive: 0.1 min ⁻¹	500	Rotary	Immedi- ately	Setup	*1
Pn534	2	Program Jogging Acceleration/Deceleration Time	2 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn535	2	Program Jogging Wait- ing Time	0 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn536	2	Program Jogging Number 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
Pn551	2	Analog Monitor 2 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	× 0.01	100	All	Immedi- ately	Setup	*1
Pn553	2	Analog Monitor 2 Mag- nification	-10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn55A	2	Power Consumption Monitor Unit Time	1 to 1,440	1 min	1	All	Immedi- ately	Setup	_
Pn560	2	Residual Vibration Detection Width	1 to 3,000	0.1%	400	All	Immedi- ately	Setup	*1
Pn561	2	Overshoot Detection Level	0 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn581	2	Zero Speed Level	1 to 10,000	1 mm/s	20	Linear	Immedi- ately	Setup	*1
Pn582	2	Speed Coincidence Detection Signal Output Width	0 to 100	1 mm/s	10	Linear	Immedi- ately	Setup	*1

Continued from previous page.

Parameter No.	Size	Na	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn583	2	Brake Refe put Speed		0 to 10,000	1 mm/s	10	Linear	Immedi- ately	Setup	*1
Pn584	2	Speed Limi Servo ON	t Level at	0 to 10,000	1 mm/s	10000	Linear	Immedi- ately	Setup	*1
Pn585	2	Program Joment Spee	Program Jogging Movenent Speed		1 mm/s	50	Linear	Immedi- ately	Setup	*1
Pn586	2	Motor Runi Ratio			1%/ Max. speed	0	Linear	Immedi- ately	Setup	-
	2	cution Sele	Polarity Detection Execution Selection for Absolute Linear Encoder		-	0000h	Linear	Immedi- ately	Setup	*1
Pn587	r	1.000X	Polarity Detection O Do n 1 Dete			lute Linea	r Encoder			
111001	r	n.00X0			ot change.)				
	r	1.0X00	Reserved pa	rameter (Do no	ot change.)				
	r	n.X000	Reserved pa	rameter (Do no	ot change.)				
Pn600	2	Regeneration Capacity*4	ve Resistor	Depends on model.*5	10 W	0	All	Immedi- ately	Setup	*1
Pn601	2	Dynamic B tor Allowab Consumpti	le Energy	0 to 65,535	10 J	0	All	After restart	Setup	*7
Pn603	2	Regeneration tance	ve Resis-	0 to 65,535	10 mΩ	0	All	Immedi- ately	Setup	*1
Pn604	2	Dynamic Brance	rake Resis-	0 to 65,535	10 mΩ	0	All	After restart	Setup	*7
Pn61A	2	Reserved p (Do not cha		_	_	0000h	Linear		_	
Pn61B	2	Reserved p (Do not cha		_	_	250	All	_	_	_
Pn61C	2	Reserved p (Do not cha		_	_	100	All	-	-	_
Pn61D	2	Reserved p (Do not cha		_	_	0	All	-	_	-
Pn621 to Pn628	_	Reserved p not change	arameter (Do	-	_	-	All	-	_	-

		Continued from previous 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		m-	0000h to 15A1h	-	0000h	All	Immedi- ately	Setup	4-4	
			Table Ope	eratio	on Control Swit	tching Cor	dition Sele	ection				
		n.□□□X	0	the	tch from speed pressure feedb or position exc	oack dete	ction value				en	
			1	the	tch from speed pressure feedb ition exceeds f	back detec						
			Speed Ta	ble	Reference Sel	ection						
			0	Do	not perform sp	eed table	operation.					
			1	Use	speed table re	eference 1	(Pn6AC) f	or speed table	e operation.			
			2	le reference	2 (Pn6AE)	for						
			3		speed table re speed table op		(Pn6AC) tl	nrough speed	table referer	nce 3 (Pn6	B0)	
			4		speed table re speed table op		(Pn6AC) tl	nrough speed	table referer	nce 4 (Pn6	B2)	
		n.□□X□	5	Use speed table reference 1 (Pn6AC) through speed table reference 5 (Pn6B4 for speed table operation.								
			6	Use speed table reference 1 (Pn6AC) through speed table reference 6 (Pn68 for speed table operation.								
Pn6A4			7		speed table re speed table op		(Pn6AC) tl	rough speed	table referer	nce 7 (Pn6	B8)	
			8		speed table re speed table op		(Pn6AC) th	rough speed	table referer	nce 8 (Pn6	BA)	
			9	Use (Pn	speed table re BBC) for speed	eference 1 I table ope	(Pn6AC) teration.	hrough speed	table refere	ence 9		
			А		speed table re BBE) for speed			hrough speed	table refere	ence 10		
			Torque (F	ress	sure) Referenc	e Selectio	n					
	0 Do not perform torque (pressure) table operation.											
	1 Use torque (pressure) table reference 1 (Pn6D2) for torque (pressure) table operation.)	
		n. 🗆 X 🗆 🗆	Use torque (pressure) table reference 1 (Pn6D2) and torque (pressure) table reference 2 (Pn6D4) for torque (pressure) table operation.									
			3		torque (pressi e reference 3 ((pressure)		

	5	use torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table reference 5 (Pn6DA) for torque (pressure) table operation.
	Speed T	able Operation Control Method Switching Selection
n.X□□□	0	Disable Pn6A5 and enable Pn6A4 = n.□□□X.
	1	Disable Pn6A4 = n.□□□X and enable Pn6A5.

Use torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table reference 4 (Pn6D8) for torque (pressure) table operation.

Pn6A5	4	Torque (Pressure) Reference during Speed Table Operation	0 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-8
Pn6A7	2	Pressure Control Switching Pressure Per- centage	0 to 10,000	0.01%	0	All	Immedi- ately	Setup	4-8
Pn6A8	4	Table Operation Switching Position	0 to 2,147,483,647	1 refer- ence unit	0	All	Immedi- ately	Setup	4-8
Pn6AA	4	Speed Limit for Torque (Pressure) Table Opera- tion	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-11

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	Continued from previous 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	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	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) Reference 1	-1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-8, 4-11		
Pn6D4	4	Torque (Pressure) Reference 2	-1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-11		
Pn6D6	4	Torque (Pressure) Reference 3	-1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-11		
Pn6D8	4	Torque (Pressure) Reference 4	-1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-11		

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn6DA	4	Torque (Pressure) Reference 5	-1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-11
Pn6DC	4	Torque (Pressure) Reference Time 1	0 to 180,000	0.01 s	0	All	Immedi- ately	Setup	4-11
Pn6DE	4	Torque (Pressure) Reference Time 2	0 to 180,000	0.01 s	0	All	Immedi- ately	Setup	4-11
Pn6E0	4	Torque (Pressure) Reference Time 3	0 to 180,000	0.01 s	0	All	Immedi- ately	Setup	4-11
Pn6E2	4	Torque (Pressure) Reference Time 4	0 to 180,000	0.01 s	0	All	Immedi- ately	Setup	4-11
	2	Communications Controls	0000h to 1FF3h	_	1040h	All	Immedi- ately	Setup	_

		MECH	HATROLINK Communications Check Mask for Debugging
		0	Do not mask.
	n.DDDX	1	Ignore MECHATROLINK communications errors (A.E60).
		2	Ignore WDT errors (A.E50).
		3	Ignore both MECHATROLINK communications errors (A.E60) and WDT errors (A.E50).
		Warnii	ng Check Masks
		0	Do not mask.
		1	Ignore data setting warnings (A.94□).
		2	Ignore command warnings (A.95□).
		3	Ignore both A.94□ and A.95□ warnings.
		4	Ignore communications warnings (A.96□).
-000		5	Ignore both A.94□ and A.96□ warnings.
1800		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□, A.97A, and A.97b warnings.
		Α	Ignore A.95□, A.97A, and A.97b warnings.
		В	Ignore A.94□, A.95□, A.97A, and A.97b warnings.
		С	Ignore A.96□, A.97A, and A.97b warnings.
		D	Ignore A.94□, A.96□, 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□□	Reser	ved parameter (Do not change.)
		Autom	natic Warning Clear Selection for Debugging
	n.X□□□	0	Retain warnings for debugging.
		1	Automatically clear warnings (MECHATROLINK-III specification).

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Parameter No.	Size	N	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Selections Limits)			0000h to 0103h	_	0003h	All	Immedi- ately	Setup	*1
											-
					it Selection						
		n.□□□X	0		le both forward			re iiriits.			_
		II.UUUX	2		ole reverse soft						_
Pn801			3		ole both forward			are limits.			_
1 1100 1	-		D		/D	1 -1	\				_
		n.□□X□			rameter (Do no		,				_
					it Check for R						
		n.□X□□	0		ot perform soft orm software lin						_
			'	renc	iiii soitware iiii	III CHECKS	ioi reierei	ices.			_
		n.X□□□	Reserve	ed pa	rameter (Do no	t change.	.)				
						T .	T			T	1
Pn803	2	Origin Ran	ge		0 to 250	1 refer- ence unit	10	All	Immedi- ately	Setup	*2
Pn804	4	Forward S	oftware L	imit	-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 L	imit	-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	Absolute Encoder Origin Offset			1 refer- ence unit	0	All	Immedi- ately *7	Setup	*1
Pn80A	2	First Stage eration Co		ccel-	1 to 65,535	10,000 refer- ence units/s ²	100	All	Immedi- ately *8	Setup	*2
Pn80B	2	Second St Acceleration			1 to 65,535	10,000 refer- ence units/s ²	100	All	Immedi- ately *8	Setup	*2
Pn80C	2	Acceleration Switching		ant	0 to 65,535	100 reference units/s	0	All	Immedi- ately *8	Setup	*2
Pn80D	2	First Stage Deceleration		ant	1 to 65,535	10,000 refer- ence units/s ²	100	All	Immedi- ately *8	Setup	*2
Pn80E	2	Second St Deceleration			1 to 65,535	10,000 refer- ence units/s ²	100	All	Immedi- ately *8	Setup	*2
Pn80F	2	Deceleration Switching		ant	0 to 65,535	100 reference units/s	0	All	Immedi- ately *8	Setup	*2
Pn810	2	Exponentia tion/Decele			0 to 65,535	100 reference units/s	0	All	Immedi- ately *9	Setup	*2
Pn811	2	Exponential Accelera- tion/Deceleration Time Constant		0 to 5,100	0.1 ms	0	All	Immedi- ately *9	Setup	*2	
Pn812	2	Mayamant Ayaraga		0 to 5,100	0.1 ms	0	All	Immedi- ately *9	Setup	*2	
Pn814	4	External Positioning Final Travel Distance			-1,073,741,823 to 1,073,741,823	1 refer- ence unit	100	All	Immedi- ately	Setup	*2
Pn816	2	Reserved p (Do not ch		ers	-	_	0000h	All	_	-	_

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn817 *10	2	Origin Approach Speed	0 to 65,535	100 reference units/s	50	All	Immedi- ately *8	Setup	*2
Pn818 *11	2	Origin Approach Speed 2	0 to 65,535	100 reference units/s	5	All	Immedi- ately *8	Setup	*2
Pn819	4	Final Travel Distance for Origin Return	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	100	All	Immedi- ately	Setup	*2
Pn81E	2	Reserved parameters (Do not change.)	_	-	0000h	All	-	-	_
Pn81F	2	Reserved parameters (Do not change.)	-	-	0010h	All	-	_	-
Pn820	4	Forward Latching Area	-2,147,483,648 to 2,147,483,647	1 refer- ence unit	0	All	Immedi- ately	Setup	*2
Pn822	4	Reverse Latching Area	-2,147,483,648 to 2,147,483,647	1 refer- ence unit	0	All	Immedi- ately	Setup	*2

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Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Option Monitor 1 Selection	0000h to FFFFh	-	0000h	All	Immedi- ately	Setup	*2	

Se	etting	Monitor	Applica Motor
High	n-Speed	d Monitor Region	
000	0h	Motor speed [overspeed detection speed/1000000h]	All
000	1h	Speed reference [overspeed detection speed/1000000h]	All
000	2h	Torque [maximum torque/1000000h]	All
000	3h	Position deviation (lower 32 bits) [reference units]	All
000	4h	Position deviation (upper 32 bits) [reference units]	All
000	Ah	Encoder count (lower 32 bits) [reference units]	All
000	Bh	Encoder count (upper 32 bits) [reference units]	All
000	Ch	FPG count (lower 32 bits) [reference units]	All
000	Dh	FPG count (upper 32 bits) [reference units]	All
Low	-Speed	Monitor Region	
001	0h	Un000: Motor speed [min ⁻¹]	All
001	1h	Un001: Speed Reference [min ⁻¹]	All
001	2h	Un002: Torque Reference [%]	All
		Un003: Rotational Angle 1 [encoder pulses] Number of encoder pulses from encoder phase C displayed in decimal	
001	3h	Un003: Electrical Angle 1 [linear encoder pulses] Linear encoder pulses from the polarity origin displayed in decimal	All
001	4b	Un004: Rotational Angle 2 [deg] Electrical angle from polarity origin	All
001	411	Un004: Electrical Angle 2 [deg] Electrical angle from polarity origin	All
001	5h	Un005: Input Signal Monitor	All
001	6h	Un006: Output Signal Monitor	All
001	7h	Un007: Input Reference Speed [min ⁻¹]	All
001	8h	Un008: Position Deviation [reference units]	All
001	9h	Un009: Accumulated Load Ratio [%]	All
001	Ah	Un00A: Regenerative Load Ratio [%]	All
001	Bh	Un00B: Dynamic Brake Resistor Power Consumption [%]	All
001	Ch	Un00C: Input Reference Pulse Counter [reference units]	All
001	Dh	Un00D: Feedback Pulse Counter [encoder pulses]	All
002	3h	Initial multiturn data [Rev]	Rotai
002	4h	Initial incremental data [pulses]	Rota
002	5h	Initial absolute position data (lower 32 bits) [pulses]	Linea
002	6h	Initial absolute position data (upper 32 bits) [pulses]	Linea
004	0h	Un025: SERVOPACK Installation Environment Monitor	All
004	1h	Un026: Servomotor Installation Environment Monitor	All
004	2h	Un027: Built-in Fan Remaining Life Ratio	All
004	3h	Un028: Capacitor Remaining Life Ratio	All
004	4h	Un029: Surge Prevention Circuit Remaining Life Ratio	All
004	5h	Un02A: Dynamic Brake Circuit Remaining Life Ratio	All
004	6h	Un032: Instantaneous Power	All
004	7h	Un033: Power Consumption	All
004	8h	Un034: Cumulative Power Consumption	All
005	0h	Pressure feedback detection monitor	All
005	2h	Control method change monitor	All
010	0h	Speed/torque (pressure) table operation monitor	All

Parameter No.	Size	l	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
		Setting			Moni				Applio	
	_		Monitor Region	•		• • • • • • • • • • • • • • • • • • • •	24) [
D=004	_	080h 1081h	Previous value Previous value		· ·	` `	, .		Al Al	
Pn824	_	084h	Continuous Lat			tion (Li Oc	DZ) [reference	uriitoj	Al	
	А	II Areas		,						
		Other alues	Reserved settir	ngs (Do not use	e.)				Al	
	2	Option M tion	onitor 2 Selec-	0000h to FFFFh	_	0000h	All	Immedi- ately	Setup	*2
Pn825	l .	0000h to 0084h	The settings	are the same	as those f	or the Opti	ion Monitor 1	Selection.		_
Pn827	2		eceleration 1 for Stopping	1 to 65,535	10,000 refer- ence units/s ²	100	All	Immedi- ately *8	Setup	*2
Pn829	2	SVOFF W SVOFF at to Stop)	aiting Time (for Deceleration	0 to 65,535	10 ms	0	All	Immedi- ately *8	Setup	*2
Pn82A	2	Reserved (Do not c	parameters hange.)	_	-	1813h	All	-	_	_
Pn82B	2	,	parameters	-	_	1D1Ch	All	-	_	_
Pn82C	2	Reserved (Do not c	parameters hange.)	_	-	1F1Eh	All	-	_	_
Pn82D	2		parameters	_	_	0000h	All	_	_	
Pn82E	2	Reserved (Do not c	parameters hange.)	-	-	0000h	All	-	_	-
	2	Motion Se	ettings	0000h to 0001h	-	0000h	All	After restart	Setup	*2
										-
				eration/Decele				204 to Do04	0.000	
	1	n.□□□X	0 lose i	Pn80A to Pn80 ed.)	r and File	527. (THE S	ettings of Frid	004 10 11104	o are	
Pn833			1 Use Fignor	Pn834 to Pn84 ed.)	0. (The se	ttings of P	n80A to Pn80	F and Pn82	7 are	=
		n.□□X□	Reserved par	rameter (Do no	ot change.)				
		n.□X□□	Reserved par	rameter (Do no	ot change.)				
	Ī	n.X000	Reserved par	rameter (Do no	ot change.	.)				I
	-		·			,				-
Pn834	4	First Stag eration C	e Linear Accel- onstant 2	1 to 20,971,520	10,000 refer- ence units/s ²	100	All	Immedi- ately *8	Setup	*2
Pn836	4		Stage Linear ion Constant 2	1 to 20,971,520	10,000 refer- ence units/s ²	100	All	Immedi- ately *8	Setup	*2
Pn838	4		ion Constant Speed 2	0 to 2,097,152,000	1 refer- ence unit/s	0	All	Immedi- ately *8	Setup	*2

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				_	_			tinued fron			
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
Pn83A	4	First Stage Deceleration	Linear on Constant 2	1 to 20,971,520	10,000 refer- ence units/s ²	100	All	Immedi- ately *8	Setup	*2	
Pn83C	4	Second Sta Deceleration	age Linear on Constant 2	1 to 20,971,520	10,000 refer- ence units/s ²	100	All	Immedi- ately *8	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 *8	Setup	*2	
Pn840	4	Linear Dec Constant 2	eleration ? for Stopping	1 to 20,971,520	10,000 refer- ence units/s ²	100	All	Immedi- ately *8	Setup	*2	
Pn842 *10	4	Second Or Approach		0 to 20,971,520	100 reference units/s	0	All	Immedi- ately *8	Setup	*2	
Pn844 *11	4 Second Original Approach S			0 to 20,971,520	100 reference units/s	0	All	Immedi- ately *8	Setup	*2	
Pn846	2	POSING C Scurve Acc Deceleration	celeration/	0 to 50	1%	0	All	Immedi- ately *8	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 Sequent Settings	uence 1 to 4	0000h to 3333h	_	0000h	All	Immedi- ately	Setup	*2	
			Latch Seque	nce 1 Signal S	election						
			0 Phas	se C						=	
		n.□□□X	1 EXT	signal						=	
				2 signal						_	
			3 EXT3	3 signal						_	
D=050			Latch Seque	nce 2 Signal S	election					Ī	
Pn852		n.□□X□	0 to 3 The tion.	settings are the	same as	those for t	he Latch Seq	uence 1 Sigr	nal Selec-	_	
			Latch Seque	nce 3 Signal S	election					Ī	
		n.□X□□		settings are the		those for t	he Latch Seq	uence 1 Sigr	nal Selec-	_	
			Latch Sequence 4 Signal Selection								
		n.X□□□		settings are the		those for t	he Latch Seq	uence 1 Sigr	nal Selec-	_	

Parameter Lists

Continued from previous page.

Parameter	Size	N	ame	Setting	Setting	Default	Applicable	When	Classi-	Refer-		
No.	ij			Range	Unit	Setting	Motors	Enabled	fication	ence		
	2	Latch Sequent Settings	uence 5 to 8	0000h to 3333h	-	0000h	All	Immedi- ately	Setup	*2		
			Latch Sequ	ence 5 Signal S	Selection							
			0 Pha	se C						_		
		n.□□□X		1 signal						=		
				2 signal						_		
			3 EXT	3 signal						_		
			Latch Sequ	ence 6 Signal S	Selection							
Pn853		n.□□X□	0 to 3 The	settings are the	e same as	those for t	he Latch Seq	uence 5 Sigr	nal Selec-	_		
				ence 7 Signal S								
	:	n.□X□□	0 to 3 The	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.X□□□	0 to 3 The settings are the same as those for the Latch Sequence 5 Signal Selection.									
										=		
	2	SVCMD_IC) Input Signal	0000h to 1717h	_	0000h	All	Immedi- ately	Setup	*2		
		WOTHER ALI		17 1711				atory				
	Input Signal Monitor Allocation for CN1-13 (SVCMD_IO)											
			O Allocate bit 24 (IO_STS1) to CN1-13 input signal monitor.									
				cate bit 25 (IO_						_		
			2 Allo	cate bit 26 (IO_	STS3) to C	N1-13 inp	ut signal mor	itor.		=		
		n.□□□X	3 Allo	cate bit 27 (IO_	STS4) to C	N1-13 inp	ut signal mor	itor.		_		
			4 Allo	cate bit 28 (IO_	STS5) to C	N1-13 inp	ut signal mor	itor.		-		
			5 Allo	cate bit 29 (IO_	STS6) to C	N1-13 inp	ut signal mor	itor.		_		
				cate bit 30 (IO_						_		
Pn860			7 Allo	cate bit 31 (IO_	STS8) to C	N1-13 inp	ut signal mor	itor.		_		
			CN1-13 Inp	ut Signal Monit	or Enable	/Disable S	election					
		n.□□X□	0 Disa	able allocation fo	or CN1-13	input sign	al monitor.			_		
			1 Ena	ble allocation fo	or CN1-13	input signa	al monitor.			_		
			Input Signa	Monitor Alloca	ation for C	N1-7 (SVC	CMD_IO)			I		
		n.□X□□		settings are the			-			-		
			CN1-7 Inpu	t Signal Monito	r Enable/[Disable Se	lection					
		n.X□□□	0 Disable allocation for CN1-7 input signal monitor.									
			1 Ena	ble allocation fo	or CN1-7 in	nput signal	monitor.		•	_		

Continued from previous page.

2 SVCMD_IO Input Signal 0000h to 1717h - 0000h All Immediately setup *2	Parameter No.	Name Setting Setting Default Applicable When Classi-Ref Range Unit Setting Motors Enabled fication end												
Pn861 Pn861 CN1-8 Input Signal Monitor Enable/Disable Selection 0 Disable allocation for CN1-8 input signal monitor. 1 Enable allocation for CN1-9 (SVCMD_IO) 0 to 7 The settings are the same as the CN1-13 allocations. CN1-9 Input Signal Monitor Enable/Disable Selection 0 Disable allocation for CN1-9 input signal monitor. 1 Enable allocation for CN1-9 input signal monitor. 2 SVCMD_IO Input Signal 0000h to 17/1h - 0000h All Immediately Setup *2		2	SVCMD_IC Monitor All	O Input Signal locations 2	0000h to	_		All						
Pn861 Pn861 Pn861 Pn861 Pn862 Pn863 Pn863 Pn863 Pn863 Pn863 Pn863 Pn863 Pn866 CN1-8 Input Signal Monitor Enable/Disable Selection Q Disable allocation for CN1-8 input signal monitor. CN1-8 Input Signal Monitor Allocation for CN1-8 input signal monitor. Disable allocation for CN1-8 input signal monitor. Disable allocation for CN1-9 (SVCMD_IO) O to 7 The settings are the same as the CN1-13 allocations. CN1-9 Input Signal Monitor Enable/Disable Selection Q Disable allocation for CN1-9 input signal monitor. Disable allocation for CN1-9 input signal monitor. Disable allocation for CN1-9 input signal monitor. Disable allocation for CN1-10 (SVCMD_IO) O to 7 The settings are the same as the CN1-13 allocations. CN1-10 Input Signal Monitor Enable/Disable Selection Q Disable allocation for CN1-10 input signal monitor. Disable allocation for CN1-10 input signal monitor. Disable allocation for CN1-10 input signal monitor. Disable allocation for CN1-11 input signal monitor. Disable allocation for CN1-12 input signal monitor. Disable allocation for CN1-13 allocations. CN1-11 Input Signal Monitor Allocation for CN1-12 (SVCMD_IO) Disable allocation for CN1-12 input signal monitor. Disable allocation for CN1-13 allocations. Disable allocation for CN1-12 input signal monitor. Disable allocation for CN1-12 input signal monitor.														
Pn861 Pn861 CN1-8 Input Signal Monitor Enable/Disable Selection 0 Disable allocation for CN1-8 input signal monitor. 1 Enable allocation for CN1-8 input signal monitor. 1 Enable allocation for CN1-8 input signal monitor. 1 Enable allocation for CN1-9 (sVCMD_IO) 0 to 7 The settings are the same as the CN1-13 allocations. CN1-9 Input Signal Monitor Enable/Disable Selection 1 Enable allocation for CN1-9 input signal monitor. 1 Enable allocation for CN1-9 input signal monitor. 2 SVCMD_IO Input Signal O000h to 1 Final Monitor Allocations 3 1717h			п ПППХ	Input Signal	Monitor Alloca	tion for C	N1-8 (SVC	MD_IO)						
Pn861 Disable allocation for CN1-8 input signal monitor.				0 to 7 The s	settings are the	same as	the CN1-1	3 allocations.			=			
Pn861 1 Enable allocation for CN1-8 input signal monitor. Input Signal Monitor Allocation for CN1-9 (SVCMD_IO)				CN1-8 Input	Signal Monito	r Enable/E	Disable Sel	ection			Ī			
Input Signal Monitor Allocation for CN1-9 (SVCMD_IO) 0 to 7 The settings are the same as the CN1-13 allocations.			n.□□X□	0 Disak	ole allocation fo	or CN1-8 in	nput signal	monitor.			-			
Pn863 CNI-9 Input Signal Monitor Enable/Disable Selection O Disable allocation for CN1-9 input signal monitor. O Disable allocation for CN1-10 (SVCMD_IO) O Disable allocation for CN1-10 (SVCMD_IO) O Disable allocation for CN1-10 input signal monitor. O Disable allocation for CN1-11 (SVCMD_IO) O Disable allocation for CN1-11 input signal monitor. O Disable allocation for CN1-12 input signal monitor. O Disable allocation for CN1-12 (SVCMD_IO) O D D D D D D D D D D D D D D D D D D	Pn861			1 Enab	le allocation fo	r CN1-8 in	ıput signal	monitor.			_			
Pn862 Pn862 CN1-9 Input Signal Monitor Enable/Disable Selection O Disable allocation for CN1-9 input signal monitor. 1 Enable allocation for CN1-9 input signal monitor. 1 Enable allocation for CN1-9 input signal monitor. 2 SVCMD_IO Input Signal O000h to 1717h O000h All Immediately Setup *2				Input Signal	Monitor Alloca	tion for C	N1-9 (SVC	MD IO)			ī			
Pn862 Pn862 N.			n.□X□□	<u> </u>			•				_			
Pn862 Pn862 N.				CN1 0 Input	Signal Monitor	r Enable/Γ	Disable Sel	oction			- 			
Pn862 1 Enable allocation for CN1-9 input signal monitor.			n ХППП	+ • • • • • • • • • • • • • • • • • • •							_			
Pn862 Monitor Allocations 3 1717h Double All ately Setup 2			,								=			
Pn862 Monitor Allocations 3 1717h Double All ately Setup 2		1 Enable allocation for CN1-9 input signal monitor.									=			
Pn862 Pn862 CN1-10 Input Signal Monitor Enable/Disable Selection O Disable allocation for CN1-10 input signal monitor. Input Signal Monitor Allocation for CN1-11 (SVCMD_IO) O to 7 The settings are the same as the CN1-13 allocations. CN1-11 Input Signal Monitor Enable/Disable Selection n.X□□□ O Disable allocation for CN1-11 input signal monitor. CN1-11 Input Signal Monitor Enable/Disable Selection n.X□□□ O Disable allocation for CN1-11 input signal monitor. 1 Enable allocation for CN1-11 input signal monitor. 2 SVCMD_IO Input Signal		2	SVCMD_IC	O Input Signal locations 3		_	0000h	All		Setup	*2			
Pn862 Pn862 CN1-10 Input Signal Monitor Enable/Disable Selection O Disable allocation for CN1-10 input signal monitor. Input Signal Monitor Allocation for CN1-11 (SVCMD_IO) O to 7 The settings are the same as the CN1-13 allocations. CN1-11 Input Signal Monitor Enable/Disable Selection n.X□□□ O Disable allocation for CN1-11 input signal monitor. CN1-11 Input Signal Monitor Enable/Disable Selection n.X□□□ O Disable allocation for CN1-11 input signal monitor. 1 Enable allocation for CN1-11 input signal monitor. 2 SVCMD_IO Input Signal						II.	<u>I</u>			I.				
Pn862 Pn862 CN1-10 Input Signal Monitor Enable/Disable Selection 0 Disable allocation for CN1-10 input signal monitor. 1 Enable allocation for CN1-10 input signal monitor. 1 Enable allocation for CN1-11 (SVCMD_IO) 0 to 7 The settings are the same as the CN1-13 allocations. CN1-11 Input Signal Monitor Enable/Disable Selection 1 Enable allocation for CN1-11 input signal monitor. CN1-11 Input Signal Monitor Enable/Disable Selection 1 Enable allocation for CN1-11 input signal monitor. 2 SVCMD_IO Input Signal O000h to 1717h - 0000h All Immediately Setup *2 N.□□□X Input Signal Monitor Allocation for CN1-12 (SVCMD_IO) 0 to 7 The settings are the same as the CN1-13 allocations. CN1-12 Input Signal Monitor Enable/Disable Selection 0 Disable allocation for CN1-12 input signal monitor.				Input Signal Monitor Allocation for CN1-10 (SVCMD_IO)										
Pn862 Disable allocation for CN1-10 input signal monitor.			п.⊔⊔⊔х	0 to 7 The s	settings are the	same as	the CN1-1	3 allocations.			_			
Pn862 N. Disable allocation for CN1-10 input signal monitor.				CN1-10 Inpu	t Signal Monit	or Enable/	Disable S	election			ī			
n.□X□□ Input Signal Monitor Allocation for CN1-11 (SVCMD_IO) O to 7 The settings are the same as the CN1-13 allocations. CN1-11 Input Signal Monitor Enable/Disable Selection O Disable allocation for CN1-11 input signal monitor. 1 Enable allocation for CN1-11 input signal monitor. 2 SVCMD_IO Input Signal Monitor Allocations 4 Monitor Allocations 4 Monitor Allocations 4 Monitor Allocation for CN1-12 (SVCMD_IO) O to 7 The settings are the same as the CN1-13 allocations. Pn863 CN1-12 Input Signal Monitor Enable/Disable Selection O Disable allocation for CN1-12 input signal monitor.			n.□□X□								-			
n.□X□□	Pn862			1 Enab	le allocation fo	r CN1-10	input signa	l monitor.			_			
n.□□□□														
n.X□□□ 0 Disable allocation for CN1-11 input signal monitor. 1 Enable allocation for CN1-11 input signal monitor. 2 SVCMD_IO Input Signal 0000h to 1717h - 0000h All Immediately Setup *2 n.□□□X Input Signal Monitor Allocation for CN1-12 (SVCMD_IO) 0 to 7 The settings are the same as the CN1-13 allocations. Pn863 CN1-12 Input Signal Monitor Enable/Disable Selection 0 Disable allocation for CN1-12 input signal monitor.			n.□X□□				•				_			
n.X□□□ 0 Disable allocation for CN1-11 input signal monitor. 1 Enable allocation for CN1-11 input signal monitor. 2 SVCMD_IO Input Signal 0000h to 1717h - 0000h All Immediately Setup *2 n.□□□X Input Signal Monitor Allocation for CN1-12 (SVCMD_IO) 0 to 7 The settings are the same as the CN1-13 allocations. Pn863 CN1-12 Input Signal Monitor Enable/Disable Selection 0 Disable allocation for CN1-12 input signal monitor.				CN11 11 Innu	t Cianal Manit	or Enable	/Dischla C	alaatian			- I			
1 Enable allocation for CN1-11 input signal monitor. 2 SVCMD_IO Input Signal 0000h to 17177h - 0000h All Immediately Setup *2 n.□□□X Input Signal Monitor Allocation for CN1-12 (SVCMD_IO) 0 to 7 The settings are the same as the CN1-13 allocations. Pn863 CN1-12 Input Signal Monitor Enable/Disable Selection 0 Disable allocation for CN1-12 input signal monitor.			n ХППП											
2 SVCMD_IO Input Signal 0000h to 1717h - 0000h All Immediately Setup *2 n. Input Signal Monitor Allocation for CN1-12 (SVCMD_IO) 0 to 7 The settings are the same as the CN1-13 allocations. CN1-12 Input Signal Monitor Enable/Disable Selection 0 Disable allocation for CN1-12 input signal monitor.			11				' '				_			
Pn863 Monitor Allocations 4 1717h - 0000h All ately Setup *2							1				_			
Pn863 O to 7 The settings are the same as the CN1-13 allocations. CN1-12 Input Signal Monitor Enable/Disable Selection O Disable allocation for CN1-12 input signal monitor.		2				_	0000h	All		Setup	*2			
Pn863 O to 7 The settings are the same as the CN1-13 allocations. CN1-12 Input Signal Monitor Enable/Disable Selection O Disable allocation for CN1-12 input signal monitor.														
Pn863 O to 7 The settings are the same as the CN1-13 allocations. CN1-12 Input Signal Monitor Enable/Disable Selection O Disable allocation for CN1-12 input signal monitor.			5 000V	Input Signal	Monitor Alloca	tion for C	N1-12 (SV	CMD_IO)						
n.□□X□ 0 Disable allocation for CN1-12 input signal monitor.			п.шших	0 to 7 The s	settings are the	same as	the CN1-1	3 allocations.			_			
n.□□X□ 0 Disable allocation for CN1-12 input signal monitor.				CN1-12 Inpu	t Signal Monit	or Enable/	/Disable S	election			ī			
1 Enable allocation for CN1-12 input signal monitor.	Pn863		n.□□X□								-			
											_			
n.□X□□ Reserved parameter (Do not change.)			n.□X□□	Reserved par	rameter (Do no	ot change.)				Ī			
n.X□□□ Reserved parameter (Do not change.)			n.X□□□	Reserved pa	rameter (Do no	ot change.	.)				Ī			
											_			

Continued from previous page.

Parameter No.	Size	Name Setting Setting Default Applicable When Classi- Reference Range Unit Setting Motors Enabled fication enc									
	2		Output Sig r Allocations		-	0000h	All	Immedi- ately	Setup	*2	
	ı		Output Sig	anal Monitor Allo	cation for	CN1-1 and	d CN1-2 (SV	CMD_IO)		1	
				ocate bit 24 (IO_			•	= /		-	
				ocate bit 25 (IO_						_	
				ocate bit 26 (IO_						_	
		n.□□□X		ocate bit 20 (IO_						_	
		11.000		ocate bit 27 (IO_						_	
				` =						=	
				ocate bit 29 (IO_						_	
Pn868				ocate bit 30 (IO_S			. 0			=	
1 11000			7 Allocate bit 31 (IO_STS8) to CN1-1/CN1-2 output signal monitor.								
	Ī		CN1-1/CN	11-2 Output Sign	al Monitor	Enable/Di	isable Selecti	ion		Ī	
		n.□□X□		sable allocation for						-	
				able allocation fo		· · · · · ·				_	
			'	abic anocation to	1 0111 1/0	7111 Z Outp	at signal mor	iitoi.		=	
		» U\UU	Output Sig	nal Monitor Allo	cation for	CN1-23 aı	nd CN1-24 (S	SVCMD_IO)			
		0 to 7 The settings are the same as the CN1-1/CN1-2 allocations.							_		
	-		0.14 00/0	NI 04 0 1 1 0'			/D: 11 0 1			-	
				N1-24 Output Si						l	
		n.X□□□		sable allocation for			. 0			_	
			1 Er	able allocation fo	r CN1-23/	CN1-24 ou	utput signal m	nonitor.		=	
	2	nal Monito	Output Sign Allocations		-	0000h	All	Immedi- ately	Setup	*2	
		2 171711 atery									
	ī		Output Sid	gnal Monitor Allocation for CN1-25 and CN1-26 (SVCMD IO)							
		n.□□□X	Output Signal Monitor Allocation for CN1-25 and CN1-26 (SVCMD_IO) 0 to 7 The settings are the same as the CN1-1/CN1-2 allocations.								
			0 to 7 Th	e settings are the	e same as	the CNT-1	/CIVI-2 alloca	ations.		_	
Pn869			CN1-25/C	N1-26 Output Si	gnal Moni	tor Enable	/Disable Sele	ection			
		n.□□X□	0 Di	sable allocation fo	or CN1-25	/CN1-26 o	utput signal n	nonitor.		_	
			1 Er	able allocation fo	r CN1-25/	CN1-26 ou	utput signal m	nonitor.		=	
	-									_	
		n.□X□□	Reserved	parameter (Do no	ot change.	.)					
	ı	n.XDDD	Reserved	parameter (Do no	ot change.	.)					
	-			,		.,				_	
	_		dress Moni-	03h to							
Pn880	2	tor (for mai	intenance,	EFh	_	_	All	_	Setup	-	
		,,	nission Byte								
Pn881	2		nitor [bytes]	17, 32, 48			All		Setup		
F11001	۷.	(for mainte only)	nance, reac	17, 32, 40	_	_	All	_	Setup	_	
		,,	an Cuala Ca								
D=000	0		on Cycle Se or [× 0.25 με	21			All		Catura		
Pn882	2	(for mainte	nance, reac		_	_	All	_	Setup	_	
		only)		_							
			ations Cycle				Δ		0		
D 000		2 Setting Monitor [trans- mission cycles] (for 0 to 32 - All - Setup -									
Pn883	2	mission cy					,		Cotap		

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									itii lucu iloli	1 provida	o pago.	
Parameter No.	Size		Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Commun trols 2	ications Co	on-	0000h to 0001h	-	0000h	All	Immedi- ately	Setup	*2	
	_		MECHAT	DOL I	NK Communic	otiono Er	or Holding	r Proko Signa	ol Cotting			
							•	, ,				
	n.	пппх			ain the status se IATROLINK cor				ommand wh	en a		
Pn884			1 A	pply	the holding bra	ike when a	a MECHAT	ROLINK com	munications	error occi	urs.	
	n.		Reserved	l para	parameter (Do not change.)							
	n.	пхпп	Reserved	l para	ameter (Do not	change.)						
	n.	XDDD	Reserved	l para	ameter (Do not	change.)						
		MECHATROLINK Receive Error Counter										
Pn88A	2	Monitor	tenance, re		0 to 65,535	-	0	All	_	Setup	-	
Pn890 to Pn8A6	4	tor during	d Data Mo g Alarm/Wa tenance, re	arn-	Oh to FFFFFFFh	_	0h	All	-	Setup	*2	
Pn8A8 to Pn8BE	4	during Al	e Data Moi arm/Warnii tenance, re	ng	Oh to FFFFFFFh	-	Oh	All	-	Setup	*2	
Pn900	2	Number of Banks	of Paramet	er	0 to 16	-	0	All	After restart	Setup	*2	
Pn901	2	Number of Bank Me	of Paramet mbers	er	0 to 15	-	0	All	After restart	Setup	*2	
Pn902 to Pn910	2		arameter Bank Mem- er Definition		0000h to 08FFh	-	0000h	All	After restart	Setup	*2	
Pn920 to Pn95F	2		er Bank Da ed in nonvo		0000h to FFFFh	_	0000h	All	Immedi- ately	Setup	*2	

- *1. 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)
- *2. Refer to the following manual for details.
 - 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. Normally set this parameter to 0. If you use an External Regenerative Resistor, set the capacity (W) of the External Regenerative Resistor.
- *5. The upper limit is the maximum output capacity (W) of the SERVOPACK.
- *6. These parameters are for SERVOPACKs with the dynamic brake option. Refer to the following manual for details
 - Σ-7-Series Σ-7S/Σ-7W SERVOPACK with Hardware Option Specifications Dynamic Brake Product Manual (Manual No.: SIEP S800001 73)
- *7. The parameter setting is enabled after SENS_ON command execution is completed.
- *8. 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.
- *9. The settings are updated only if the reference is stopped (i.e., only if DEN is set to 1).
- *10.The setting of Pn842 is valid while Pn817 is set to 0.
- *11. The setting of Pn844 is valid while Pn818 is set to 0.

Parameter Lists

List of MECHATROLINK-III Common Parameters

6.2.2

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 tion (read o		0h or 1h	_	ı	All	_	
01									
PnA02		0000h	Absolute	encoder					
		0001h	Incremen	tal encoder					
	4	Motor Type (read only)	Selection	0h or 1h	-	-	All	_	
02									
PnA04		0000h	Rotary Se	ervomotor					
		0001h	Linear Se	ervomotor					
	4	Semi-close closed Type tion (read c	e Selec-	Oh or 1h	-	-	All	_	
03									_
PnA06		0000h	Semi-clos	sed					atior
	0001h Reserved								
									inf
04 PnA08	4	Rated Speconly)	ed (read	Oh to FFFFFFFh	x10^PnA0C min ⁻¹	_	All	_	Device information
05 PnA0A	4	Maximum (Speed (rea		Oh to FFFFFFFh	x10^PnA0C min ⁻¹	_	All	-	
06 PnA0C	4	Speed Muli (read only)	tiplier	-1,073,741,823 to 1,073,741,823	-	-	All	_	
07 PnA0E	4	Rated Torq (read only)	ue	Oh to FFFFFFFh	x10^PnA12 N·m	-	All	_	
08 PnA10	4	Maximum (Torque (rea		Oh to FFFFFFFh	x10^PnA12 N·m	-	All	_	
09 PnA12	4	Torque Mul (read only)	tiplier	-1,073,741,823 to 1,073,741,823	-	ı	All	_	
0A PnA14	4	Resolution (read only)		Oh to FFFFFFFh	1 pulse/rev	_	Rotary	_	
0B PnA16	4	Linear Scal	le Pitch	0 to 65,536,000	1 nm [0.01 μm]	0	Linear	After restart	
0C PnA18	4	Pulses per Pitch (read		Oh to FFFFFFFh	1 pulse/ pitch	-	Linear	-	

6.2.2 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	Classi- fication		
21 PnA42	4	Electronic Gear Ratio (Numerator)		1 to 1,073,741,824	-	16	All	After restart	ncation		
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*1			
24 PnA48	4	Multiturn Limit		0 to 65,535	1 Rev	65535	Rotary	After restart	-		
	4	Limit Setting		0h to 33h	-	0000h	All	After restart			
25 PnA4A		Bit 0 Bit 1 Bit 2 Bit 3 Bit 4 Bit 5 Bits 6 to 31	N-OT Rese Rese P-SC	rved. DT (0: Disabled, 1: DT (0: Disabled, 1:	sabled) Enabled)				Machine specifications		
26 PnA4C	4	Forward Software Limit		-1,073,741,823 to 1,073,741,823	1 reference unit	10737418 23	All	Immedi- ately	_		
27 PnA4E	4	Reserved parameter (Do not change.)		-	-	0	All	Immedi- ately			
28 PnA50	4	Reverse Software Limit		-1,073,741,823 to 1,073,741,823	1 reference unit	-1073741 823	All	Immedi- ately			
29 PnA52	4	Reserved parameter (Do not change.)		-	_	0	All	Immedi- ately			
41 PnA82	4	Speed Unit Setion*2	elec-	0h to 4h	-	0h	All	After restart			
		0001h F 0002h F 0003h n	Reference Percentag min ⁻¹ *3	ce units/s ce units/min age (%) of rated speed*2,*3 m motor speed/40000000h*4					tings		
42 PnA84	4	Speed Base Unit Selection*2,*3,*4 (Set the value of n from the following formula: Speed unit selection (41 PnA82) × 10 ⁿ)		-3 to 3	-	0	All	After restart	Unit settings		
43	4	Position Unit Stion	Selec-	0h	-	0h	All	After restart			
PnA86	0000h Reference units										

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Parameter No.	Size	Name	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication
44 PnA88	4	Position Base Unit Selection (Set the value of n from the following formula: Position u selection (43 PnA86) × 10 ⁿ)	0	-	0	All	After restart	
	4	Acceleration Unit Selection	Oh	-	0h	All	After restart	
45 PnA8A		0000h Referen	nce units/s²					
46 PnA8C	4	Acceleration Base Unit Selection (Set the value of n from the following formula: Accelerati unit selection (45 PnA8A) × 10 ⁿ)	4 to 6	-	4	All	After restart	
	4	Torque Unit Selection	1h or 2h	-	1h	All	After restart	
47 PnA8E			ntage (%) of rated toro					
48 PnA90	4	Torque Base Unit Selection*5,*6 (Set the value of n from the following formula: Torque ur selection (47 PnA8E) × 10 ¹)	-5 to 0	-	0	All	After restart	Unit settings
	4	Supported Unit (reannly)	ad _	-	0601011F h	All	-	
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 Units Bit 16 Bit 17 Bits 18 to 23 Torque Units Bit 24 Bit 25 Bit 26 Bits 27 to 31	Reference units/s (1: Reference units/min in Percentage (%) of rat min ⁻¹ (rpm) (1: Enable Maximum motor speriments) Reference units (1: Enable Reference units (1: Enable Reference units) Reference units/s² (1 ms (acceleration time Reserved (0: Disable N·m (0: Disable N·m (0: Disable Reference (%) of rat Maximum torque/400 Reserved (0: Disable Reserved (0: Disabl	(1: Enabled) ted speed (1: E ed) ed/4000000h (d). nabled) d). : Enabled) e required to re d). ted torque (1: E	1: Enabled) ach rated sp	peed) (0: Disa	bled)	

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Parameter No.	Size	Nar	me	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication
61 PnAC2	4	Speed Loo	p Gain	1,000 to 2,000,000	0.001 Hz [0.1 Hz]	40000	All	Immedi- ately	
62 PnAC4	4	Speed Loo Time Cons		150 to 512,000	1 μs [0.01 ms]	20000	All	Immedi- ately	
63 PnAC6	4	Position Lo	op Gain	1,000 to 2,000,000	0.001/s [0.1/s]	40000	All	Immedi- ately	
64 PnAC8	4	Feed Forward pensation	ard Com-	0 to 100	1%	0	All	Immedi- ately	
65 PnACA	4	Position Logral Time (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-positi	on Range	1 to 1,073,741,824	1 reference unit	10737418 24	All	Immedi- ately	
81 PnB02	4	Exponentia tion Accele Deceleration Constant	ration/	0 to 510,000	1 μs [0.1 ms]	0	All	Immedi- ately*7	
82 PnB04	4	Movement Time	Average	0 to 510,000	1 μs [0.1 ms]	0	All	Immedi- ately*7	
83 PnB06	4	Final Travel		-1,073,741,823 to 1,073,741,823	1 reference unit	100	All	Immedi- ately	
84 PnB08	4	Zero Point Return Approach Speed		Oh to 3FFFFFFh	10 ⁻³ min ⁻¹	× 5,000h reference units/s con- verted to 10^{-3} min ⁻¹	All	Immedi- ately	
85 PnB0A	4	Zero Point Creep Spe		Oh to 3FFFFFFh	10 ⁻³ min ⁻¹	× 500h reference units/s con- verted to 10 ⁻³ min ⁻¹	All	Immedi- ately	Tuning
86 PnB0C	4	Final Travel Point Retu		-1,073,741,823 to 1,073,741,823	1 reference unit	100	All	Immedi- ately	
	4	Monitor Se	lect 1	Oh to Fh	-	1h	All	Immedi- ately	
87 PnB0E		0000h 0001h 0002h 0003h 0004h 0005h 0006h 0007h 0008h 0009h 000Ah 000Bh 000Ch 000Dh 000Eh 000Fh	Reserved CMN1 (co CMN2 (co OMN1 (o	(undefined value). (undefined value). common monitor 1) common monitor 2) ptional monitor 2)					

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Parameter No.	Size	Nan	пе	Setting Range		Default Setting	Applicable Motors	When Enabled
	4	Monitor Sel	ect 2	0h to Fh	-	0h	All	Immedi- ately
88 PnB10		0000h to 000Fh	The settin	gs are the same	as those for Fixed	l Monitor S	election 1.	
	4	Monitor Sel SEL_MON1		0h to 9h	-	0h	All	Immedi- ately
		0000h 0001h 0002h 0003h 0004h 0005h	TPOS (ta IPOS (ref POS_OF TSPD (ta SPD_LIM TRQ_LIM SV_STAT Monitor [Byte 1: C 00h: Ph 01h: Ph 02h: Ph 03h: Ph Byte 2: C 00h: Po 01h: Sp 02h: Toi Byte 3: R	erence position FSET (offset set rget speed) (speed limit) (torque limit) (servo actual opposcription current communicase 0 ase 1 ase 2 ase 3 current control most sition control more eed control more eed control more eque control more end control end con	cations phase ode ode de de	Value for 0	System) com	g ction
B12		0006h	Bits 2 and 3 Bits 4 and 5	LT_RDY1 LT_SEL1R LT_SEL2R	Processing status latch detection for LT_REQ2 in SVCN D_CTRL region Latch signal Latch signal	r	Latch dete not yet processed. Processing detection in progress. Phase C External in signal 1 External in signal 3 Phase C External in signal 1 External in signal 1 External in signal 2 External in signal 3	put put put put
) nB12		0006h	Bits 2 and 3	LT_SEL1R LT_SEL2R Reserved (0)	latch detection for LT_REQ2 in SVCN D_CTRL region Latch signal Latch signal	1 0 1 2 3 0 1 2 3 3	not yet processed. Processing detection in progress. Phase C External in signal 1 External in signal 2 External in signal 3 Phase C External in signal 1 External in signal 1 External in signal 2 External in signal 2 External in signal 3	put put put put put
			Bits 2 and 3 Bits 4 and 5 Bit 6 Reserved	LT_SEL1R LT_SEL2R Reserved (0)	latch detection for LT_REQ2 in SVCN D_CTRL region Latch signal Latch signal	1 0 1 2 3 0 1 2 3 of initial endit position r	not yet processed. Processing detection in progress. Phase C External in signal 1 External in signal 2 External in signal 3 Phase C External in signal 1 External in signal 1 External in signal 2 External in signal 2 External in signal 3	put put put put put put put put on con-a

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Parameter No.	Size	Na	me	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication
	4	Monitor Se SEL_MON		Oh to 9h	_	0h	All	Immedi- ately	
8A PnB14		0000hto 0009h	The setting	s are the same as	those for SEL	_MON Monit	or Selection	1.	
8B PnB16	4	Zero Point Range	Detection	0 to 250	1 reference unit	10	All	Immedi- ately	
8C PnB18	4	Forward To	orque Limit	0 to 800	1%	100	All	Immedi- ately	
8D PnB1A	4	Reverse To	orque Limit	0 to 800	1%	100	All	Immedi- ately	
8E PnB1C	4	Zero Speed Detection Range		1,000 to 10,000,000	10 ⁻³ min ⁻¹	20000	All	Immedi- ately	g
8F PnB1E	4	Speed Match Signal Detection Range		0 to 100,000	10 ⁻³ min ⁻¹	10000	All	Immedi- ately	meters
	4	SVCMD_C Enabled/D (read only)	isabled	-	_	0FFF3F3F h	All	_	ted para
90 PnB20			CN CN 3 ST 5 AC 7 Re LT LT LT d 11 LT d 13 LT d 15 Re 19 SE 23 SE 27 SE	MD_PAUSE (1: Ena MD_CANCEL (1: Ena MD_CANCEL (1: Ena MD_CANCEL (1: Ena MD_CANCEL (1: Ena MD_CANCEL (1: Enabled MSECU (1:	nabled) abled) d). d). d)) d). led)	h			Command-related parameters

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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)	-	0h	0FFF3F33 h	All	_	
		,	1	i.	1			
		Bit 0	CMD_PAUSE_CMP	(1: Enabled)				
		Bit 1	CMD_CANCEL_CM	P (1: Enabled)				
		Bit 2 and 3	Reserved (0: Disable	ed).				
		Bits 4 and 5	ACCFIL (1: Enabled)					
		Bits 6 and 7	Reserved (0: Disabled).					
		Bit 8	L_CMP1 (1: Enabled	d)				
91 PnB22		Bit 9	L_CMP2 (1: Enabled	d)				
		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).				တ
		Bits 16 to 19	SEL_MON1 (1: Enak	oled)				eter
		Bits 20 to 23	SEL_MON2 (1: Enak	oled)				аШ
		Bits 24 to 27	SEL_MON3 (1: Enak	oled)				par
		Bits 28 to 31	Reserved (0: Disable	ed).			_	ted
								Command-related parameters
	4	I/O Bit Enabled/Dis abled (Output) (read only)		-	007F01F0 h	All	-	Comme
		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	oled)				
		Bits 20 to 22	SO1 to SO3 (1: Ena	bled)				
		Bit 23	Reserved (0: Disable	ed).				
		Bits 24 to 31	Reserved (0: Disable	ed).				

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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 h	All	ı	
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 11 Bit 12 Bit 13 Bit 14 Bit 15 Bit 16 Bit 17 Bit 18 Bit 19 Bit 20 to 23 Bits 24 to 31	Reserved (0: Disable DEC (1: Enabled) P-OT (1: Enabled) N-OT (1: Enabled) EXT1 (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) N-SOT (1: Enabled) DEN (1: Enabled) NEAR (1: Enabled) PSET (1: Enabled) ZPOINT (1: Enabled) V_LIM (1: Enabled) V_LIM (1: Enabled) V_CMP (1: Enabled) ZSPD (1: Enabled) Reserved (0: Disable IO_STS1 to IO_STS	ed). d)				Command-related parameters

- *1. The parameter setting is enabled after SENS_ON command execution is completed.
- *2. If you set the Speed Unit Selection (parameter 41: PnA82) to 0002h adjust the Speed Base Unit Selection (parameter 42: PnA84) to satisfy the following formula. Rotary Servomotor: 1.28 × Rated speed [min⁻¹] × 10^{PnA84} < Maximum speed [min⁻¹] Linear Servomotor: 1.28 × Rated speed [mm/s] × 10^{PnA84} < Maximum speed [mm/s]</p>
- *3. If you set the Speed Unit Selection (parameter 41: PnA82) to either 0002h or 0003h, set the Speed Base Unit Selection (parameter 42: PnA84) to a number between -3 and 0.
- *4. If you set the Speed Unit Selection (parameter 41: PnA82) to 0004h, set the Speed Base Unit Selection (parameter 42: PnA84) to 0.
- *5. If you set the Torque Unit Selection (parameter 47: PnA8E) to 0001h, adjust the Torque Base Unit Selection (parameter 48: PnA90) to satisfy the following formula. 128 × 10^{PnA90} < Maximum torque [%]</p>
- *6. If you set the Torque Unit Selection (parameter 47: PnA8E) to 0002h, set the Torque Base Unit Selection (parameter 48: PnA90) to 0.
- *7. 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.

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

Parameter No.	Default Setting		Name	When Enabled
Pn000	0000h		Basic Function Selections 0	After restart
Pn001	0000h		Application Function Selections 1	After restart
Pn002	0011h		Application Function Selections 2	After restart
Pn006	0002h		Application Function Selections 6	Immediately
Pn007	0000h		Application Function Selections 7	Immediately
Pn008	4000h		Application Function Selections 8	After restart
Pn009	0010h		Application Function Selections 9	After restart
Pn00A	0001h		Application Function Selections A	After restart
Pn00B	0000h		Application Function Selections B	After restart
Pn00C	0000h		Application Function Selections C	After restart
Pn00D	0000h		Application Function Selections D	Immediately
Pn00F	0000h		Application Function Selections F	After restart
Pn021	0000h		Reserved parameter	_
Pn022	0000h		Reserved parameter	_
Pn040	0000h		Σ -V Compatible Function Switch	After restart
Pn080	0000h		Application Function Selections 80	After restart
Pn081	0000h		Application Function Selections 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 Integral Time Constant	Immediately
Pn106	400		Second Position Loop Gain	Immediately
Pn109	0		Feedforward	Immediately
Pn10A	0		Feedforward Filter Time Constant	Immediately
Pn10B	0000h		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

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Parameter No.	Default Setting	Name	When Enabled				
Pn11F	0	Position Integral Time Constant	Immediately				
Pn121	100	Friction Compensation Gain	Immediately				
Pn122	100	Second Friction Compensation Gain	Immediately				
Pn123	0	Friction Compensation Coefficient	Immediately				
Pn124	0	Friction Compensation Frequency 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	0000h	Automatic Gain Switching Selections 1	Immediately				
Pn13D	2000	Current Gain Level	Immediately				
Pn140	0100h	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	0021h	Control-Related Selections	After restart				
Pn160	0010h	Anti-Resonance Control- Related Selections	Immediately				
Pn161	1000	Anti-Resonance Frequency	Immediately				
Pn162	100	Anti-Resonance Gain Correction	Immediately				
Pn163	0	Anti-Resonance Damping Gain	Immediately				

Parameter No.	Default Setting	Name	When Enabled
Pn164	0	Anti-Resonance Filter Time Constant 1 Correction	Immediately
Pn165	0	Anti-Resonance Filter Time Constant 2 Correction	Immediately
Pn166	0	Anti-Resonance Damping Gain 2	Immediately
Pn170	1400h	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	0010h	Position Control Function Selections	After restart
Pn20A	32768	Reserved parameter	_
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	0000h	Reserved parameter	-
Pn230	0000h	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 Average Movement Time	Immediately
Pn310	0000h	Vibration Detection Selections	Immediately
Pn311	100	Vibration Detection Sensitivity	Immediately
Pn312	50	Vibration Detection Level	Immediately
Pn316	10000	Maximum Motor Speed	After restart
Pn324	300	Moment of Inertia Calculation Starting Level	Immediately
Pn383	50	Jogging Speed	Immediately
Pn384	10	Vibration Detection Level	Immediately
Pn385	50	Maximum Motor Speed First Stage First Torque	After restart
Pn401	100	Reference Filter Time Constant	Immediately

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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	0000h	Torque-Related Function Selections	*1		
Pn409	5000	First Stage Notch Filter Frequency	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 Frequency	Immediately		
Pn410	50	Second Stage Second Torque Reference Filter Q Value	Immediately		
Pn412	100	First Stage Second Torque Reference Filter Time Con- stant	Immediately		
Pn416	0000h	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 Frequency	Immediately		
Pn41E	70	Fifth Stage Notch Filter Q Value	Immediately		
Pn41F	0	Fifth Stage Notch Filter Depth	Immediately		
Pn423	0000h	Speed Ripple Compensation Selections	*1		
Pn424	50	Torque Limit at Main Circuit Voltage Drop	Immediately		

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Parameter No.	Default Setting	Name	When Enabled
Pn425	100	Release Time for Torque Limit at Main Circuit Voltage Drop	Immediately
Pn426	0	Torque Feedforward Average Movement Time	Immediately
Pn427	0	Speed Ripple Compensation Enable Speed	Immediately
Pn440	0000h	Pressure Feedback Selection Switches	After restart
Pn441	100	Reserved parameter	_
Pn442	2000	Pressure Feedback Control 1 Pressure Feedback Loop Integral Time	Immediately
Pn444	100	Pressure Feedback Control 1 Pressure Feedback Loop Feedforward	Immediately
Pn445	0	Reserved parameter	-
Pn446	95	Gravity Compensation Coefficient during Torque Control	Immediately
Pn447	100	Pressure Feedback Loop Deviation Overflow Level	Immediately
Pn448	0	Pressure Feedback Offset	Immediately
Pn449	0	Pressure Feedback Sensor Gain	Immediately
Pn44A	0	Pressure Feedback Filter	Immediately
Pn44C	1000	Pressure Feedback Enable Level	Immediately
Pn44D	300	Pressure Feedback Over- flow Detection Level	Immediately
Pn44E	0	Pressure Feedback Over- flow Detection Time	Immediately
Pn450	0	Pressure Feedback Control 1 Pressure Feedback Loop Differential Time	Immediately
Pn451	100	Pressure Feedback Control 1 Pressure Feedback Loop Differential Filter Rate	Immediately
Pn452	100	Pressure Feedback Control 1 Pressure Feedback Loop Proportional Gain 2	Immediately
Pn456	15	Sweep Torque Reference Amplitude	Immediately
Pn458	0011h	Pressure Feedback Selection Switch 2	After restart
Pn459	500	Gravity Compensation Reference Level for Torque Control	Immediately
Pn45A	1000	Pressure Feedback Disable Level	Immediately
Pn45B	50	Reserved parameter	_
Pn45C	150	Reserved parameter	_
Pn45D	100	Reserved parameter	_
Pn45E	0	Pressure Feedback Reference Filter Time Constant	Immediately

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Parameter No.	Default Setting	Name	When Enabled
Pn460	0101h	Notch Filter Adjustment Selections 1	Immediately
Pn475	0000h	Gravity Compensation- Related Selections	After restart
Pn476	0	Gravity Compensation Torque	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 Constant	Immediately
Pn483	30	Forward Force Limit	Immediately
Pn484	30	Reverse Force Limit	Immediately
Pn485	20	Polarity Detection Reference Speed	Immediately
Pn486	25	Polarity Detection Reference Acceleration/Deceleration Time	Immediately
Pn487	0	Polarity Detection Constant 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 Confirmation 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	0000h	Reserved parameter	_
Pn4D0	0	Reserved parameter	_
Pn4D1	0	Reserved parameter	
Pn502	20	Rotation Detection Level	Immediately
Pn503	10	Speed Coincidence Detection Signal Output Width	Immediately
Pn506	0	Brake Reference-Servo OFF Delay Time	Immediately
Pn507	100	Brake Reference Output Speed Level	Immediately

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Parameter No.	Default Setting	Name	When Enabled
Pn508	50	Servo OFF-Brake Com- mand Waiting Time	Immediately
Pn509	20	Momentary Power Interruption Hold Time	Immediately
Pn50A	1881h	Input Signal Selections 1	After restart
Pn50B	8882h	Input Signal Selections 2	After restart
Pn50E	0000h	Output Signal Selections 1	After restart
Pn50F	0100h	Output Signal Selections 2	After restart
Pn510	0000h	Output Signal Selections 3	After restart
Pn511	6543h	Input Signal Selections 5	After restart
Pn512	0000h	Output Signal Inverse Settings	After restart
Pn514	0000h	Output Signal Selections 4	After restart
Pn516	8888h	Input Signal Selections 7	After restart
Pn518	_	Reserved parameter	_
Pn51B	1000	Reserved parameter	_
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-	
Pn528	100	Position Deviation Over- flow Warning Level at Servo ON	Immediately
Pn529	10000	Speed Limit Level at Servo ON	Immediately
Pn52A	20	Reserved parameter	_
Pn52B	20	Overload Warning Level	Immediately
Pn52C	100	Base Current Derating at Motor Overload Detection	After restart
Pn530	0000h	Program Jogging-Related Selections	Immediately
Pn531	32768	Program Jogging Travel Distance	Immediately
Pn533	500	Program Jogging Movement Speed	Immediately
Pn534	100	Program Jogging Acceleration/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 Magnification	Immediately
Pn553	100	Analog Monitor 2 Magnification	Immediately

Continued from previous page.

		Continued from p	
Parameter No.	Default Setting	Name	When Enabled
Pn55A	1	Power Consumption Monitor Unit Time	Immediately
Pn560	400	Residual Vibration Detection Width	Immediately
Pn561	100	Overshoot Detection Level	Immediately
Pn581	20	Zero Speed Level	Immediately
Pn582	10	Speed Coincidence Detection 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 Movement Speed	Immediately
Pn586	0	Motor Running Cooling Ratio	Immediately
Pn587	0000h	Polarity Detection Execu- tion Selection for Absolute Linear Encoder	Immediately
Pn600	0	Regenerative Resistor Capacity	Immediately
Pn601	0	Dynamic Brake Resistor Allowable Energy Consumption	After restart
Pn603	0	Regenerative Resistance	Immediately
Pn604	0	Dynamic Brake Resistance	After restart
Pn61A	0000h	Reserved parameter	_
Pn61B	250	Reserved parameter	_
Pn61C	100	Reserved parameter	_
Pn61D	0	Reserved parameter	_
Pn6A4	0000h	Table Operation Parameter Settings	Immediately
Pn6A5	0	Torque (Pressure) Reference 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 Continued	Immediately

Continued from previous page.

Pn6C2 0 Speed Table Switching Position 2 Imm Pn6C4 0 Speed Table Switching Position 3 Imm Pn6C6 0 Speed Table Switching Position 3 Imm Pn6C6 0 Speed Table Switching Position 4 Imm Pn6C6 0 Speed Table Switching Position 4 Speed Table Switching Position 5 Imm Pn6C8 0 Speed Table Switching Position 6 Imm Pn6CC 0 Speed Table Switching Position 7 Speed Table Switching Position 8 Speed Table Switching Position 8 Speed Table Switching Pn6CC 0 Speed Table Switching Pn6CC 1 Imm Pn6CC 1 Speed Table Switching Pn6CC 1 Imm Pn6CC 1 Speed Table Switching Pn6CC 1 Imm Pn6CC 1 Speed Table Switching Pn6CC 1 Speed Table Switching Pn6CC 1 Imm Pn6CC 1 Speed Table Switching Pn6CC 1 Imm Pn6CC 1 Speed Table Switching Pn6CC 1 Imm Pn6CC 1 Speed Table Switching Pn6CC 1 Spee		Continued from p		
Pn6C4	When Enabled		Default Setting	
Position 3 Image: Speed Table Switching Image: Speed Tab	mediately		0	Pn6C2
Pn6C8 0 Position 4 Image: Exemption 5 Pn6CA 0 Speed Table Switching Position 5 Image: Exemption 5 Pn6CC 0 Speed Table Switching Position 7 Image: Exemption 5 Pn6CC 0 Speed Table Switching Position 8 Image: Exemption 9 Pn6CE 0 Speed Table Switching Position 9 Image: Exemption 9 Pn6DO 0 Torque (Pressure) Reference 1 Image: Exemption 9 Pn6D2 0 Torque (Pressure) Reference 2 Image: Exemption 9 Pn6D4 0 Torque (Pressure) Reference 2 Image: Exemption 9 Pn6D4 0 Torque (Pressure) Reference 2 Image: Exemption 9 Pn6D6 0 Torque (Pressure) Reference 2 Image: Exemption 9 Pn6D6 0 Torque (Pressure) Reference 2 Image: Exemption 9 Pn6D6 0 Torque (Pressure) Reference 5 Image: Exemption 9 Pn6D7 0 Torque (Pressure) Reference 5 Image: Exemption 9 Pn6D8 0 Torque (Pressure) Reference 6 Image: Exemption 9 Pn6D7	mediately	Speed Table Switching Position 3	0	Pn6C4
Pn6CA 0 Position 5 Immode Pn6CC 0 Speed Table Switching Position 6 Immode Pn6CC 0 Speed Table Switching Position 8 Immode Pn6CE 0 Speed Table Switching Position 8 Immode Pn6D0 0 Speed Table Switching Position 9 Immode Pn6D1 0 Torque (Pressure) Reference 1 Immode Pn6D2 0 Torque (Pressure) Reference 1 Immode Pn6D4 0 Torque (Pressure) Reference 2 Immode Pn6D6 0 Torque (Pressure) Reference 3 Immode Pn6D8 0 Torque (Pressure) Reference 6 Immode Pn6DA 0 Torque (Pressure) Reference 7 Immode Pn6DA 0 Torque (Pressure) Reference 7 Immode Pn6DC 0 Torque (Pressure) Reference 7 Immode Pn6DB 0 Torque (Pressure) Reference 7 Immode Pn6DB 0 Torque (Pressure) Reference 7 Immode Pn6ED 0 Torque (mediately	Speed Table Switching Position 4	0	Pn6C6
Pn6CC 0 Speed Table Switching Position 7 Imm Pn6CE 0 Speed Table Switching Position 7 Imm Pn6CE 0 Speed Table Switching Position 8 Imm Pn6D0 0 Speed Table Switching Position 9 Imm Pn6D2 0 Torque (Pressure) Reference 1 Imm Pn6D4 0 Torque (Pressure) Reference 2 Imm Pn6D6 0 Torque (Pressure) Reference 3 Torque (Pressure) Reference 4 Imm Pn6D8 0 Torque (Pressure) Reference 4 Imm Pn6DA 0 Torque (Pressure) Reference 5 Imm Pn6DC 0 Torque (Pressure) Reference 6 Imm Pn6DC 0 Torque (Pressure) Reference 7 Imm Pn6DE 0 Torque (Pressure) Reference 7 Imm Pn6DE 0 Torque (Pressure) Reference 7 Imm 2 Torque (Pressure) Reference 7 Imm 2 Torque (Pressure) Reference 7 Imm 2 Torque (Pressure) Reference 7 Imm 3 Torque (Pressure) Reference 7 Imm 3 Torque (Pressure) Reference 7 Imm 4 Torque (Pressure) Reference 7 Imm 6 Torque (Pressure) Reference 7 Imm 7 Imm 8 Torque (Pressure) Reference	mediately		0	Pn6C8
Pn6CE 0 Position 7 Speed Table Switching Position 7 Immediate Pn6D0 0 Speed Table Switching Position 9 Immediate Pn6D0 0 Torque (Pressure) Reference 1 Immediate Pn6D4 0 Torque (Pressure) Reference 2 Immediate Pn6D6 0 Torque (Pressure) Reference 3 Torque (Pressure) Reference 3 Torque (Pressure) Reference 4 Immediate Pn6D8 0 Torque (Pressure) Reference 4 Immediate Pn6D6 0 Torque (Pressure) Reference 5 Immediate Pn6D6 0 Torque (Pressure) Reference 5 Immediate Pn6D6 0 Torque (Pressure) Reference 6 Immediate Pn6D6 0 Torque (Pressure) Reference 7 Immediate Pn6D6 0 Torque (Pressure) Reference 8 Immediate Pn6D6 0 Torque (Pressure) Reference 9 Immediate Pn6D6 0 Torque Pn6D6 0 Torque (Pressure) Reference 9 Immediate Pn6D6 0 Torque Pn6D6 0 To	mediately		0	Pn6CA
Pn6D0 0 Position 8 Speed Table Switching Position 9 Pn6D2 0 Torque (Pressure) Reference 1 Immediate Pn6D4 0 Torque (Pressure) Reference 2 Immediate Pn6D6 0 Torque (Pressure) Reference 3 Immediate Pn6D6 0 Torque (Pressure) Reference 3 Immediate Pn6D6 0 Torque (Pressure) Reference 4 Immediate Pn6D6 0 Torque (Pressure) Reference 5 Immediate Pn6D6 0 Torque (Pressure) Reference 5 Immediate Pn6D6 0 Torque (Pressure) Reference 7 Torque (Pressure) Reference 7 Torque (Pressure) Reference 7 Torque (Pressure) Reference 8 Torque (Pressure) Reference 8 Torque (Pressure) Reference 8 Torque (Pressure) Reference 9 Torque (Pressure) Reference 9 Torque (Pressure) Reference 1 Torque (Pressure) Reference	mediately		0	Pn6CC
Pn6D2 0 Torque (Pressure) Reference 1 Immed 1 Immed 1 Immed 1 Immed 2 Immed 2 Immed 3 Immed 3 Immed 3 Immed 3 Immed 4 Immed 3	mediately	Position 8	0	Pn6CE
Pn6D4 0 ence 1 Image: content of the possibility of the pn804 Image: content of the pn804 Ima	mediately	Speed Table Switching Position 9	0	Pn6D0
Pn6D6 0	mediately		0	Pn6D2
Pn6D8 0 Innex 3 Innex Pn6D8 0 Innex 4 Innex Pn6DA 0 Innex 5 In	mediately		0	Pn6D4
Pn6DA 0 ence 4 limit Pn6DC 0 Torque (Pressure) Reference 5 limit Pn6DE 0 Torque (Pressure) Reference Time 1 limit Pn6DE 0 Torque (Pressure) Reference Time 2 limit 2 Pn6E0 0 Torque (Pressure) Reference Time 3 limit 2 Pn6E2 0 Torque (Pressure) Reference Time 3 limit 3 Pn800 1040h Communications Controls limit 4 Pn801 0003h Application Function Selections 6 (Software Limits) limit 5 Pn803 10 Origin Range limit 7 Pn804 1073741823 Forward Software Limit limit 7 Pn806 -1073741823 Reverse Software Limit limit 7 Pn808 0 Second Stage Linear Acceleration Constant limit 8 Pn808 100 Second Stage Linear Acceleration Constant	mediately		0	Pn6D6
Pn6DC 0 ence 5 Imm Pn6DC 0 Torque (Pressure) Reference Time 1 Imm Pn6DE 0 Torque (Pressure) Reference Time 2 Imm Pn6E0 0 Torque (Pressure) Reference Time 2 Imm Pn6E2 0 Torque (Pressure) Reference Time 3 Imm Pn800 1040h Communications Controls Imm Pn801 0003h Application Function Selections 6 (Software Limits) Pn803 10 Origin Range Imm Pn804 1073741823 Porward Software Limit Imm Pn806 -1073741823 Reverse Software Limit Imm Pn808 0 Absolute Encoder Origin Offset Pn80A 100 Second Stage Linear Acceleration Constant	mediately		0	Pn6D8
Pn6DE 0 ence Time 1 Torque (Pressure) Reference Time 2 Pn6E0 0 Torque (Pressure) Reference Time 3 Pn6E2 0 Torque (Pressure) Reference Time 3 Pn800 1040h Communications Controls Immediate Pn801 0003h Application Function Selections 6 (Software Limits) Pn803 10 Origin Range Immediate Pn804 1073741823 Forward Software Limit Immediate Pn806 -1073741823 Reverse Software Limit Immediate Pn808 0 First Stage Linear Acceleration Constant Pn80A 100 Second Stage Linear Acceleration Constant	mediately		0	Pn6DA
Pn6E0 0	mediately		0	Pn6DC
Pn6E2 0 ence Time 3 Pn800 1040h Communications Controls Impersor of Ence Time 4 Pn801 0003h Application Function Selections 6 (Software Limits) Pn803 10 Origin Range Impersor of Ence Time 4 Pn804 1073741823 Forward Software Limit Impersor of Ence Time 4 Pn806 -1073741823 Forward Software Limit Impersor of Ence Time 3 Pn808 0 Forward Sontrols Impersor of Ence Time 3 Pn808 0 Forward Software Limit Impersor of Ence Time 3 Pn808 0 Forward Software Limit Impersor of Ence Time 3 Pn808 0 Forward Software Limit Impersor of Ence Time 3 Pn808 0 Second Stage Linear Acceleration Constant Impersor of Ence Time 3 Pn808 100 Second Stage Linear Acceleration Constant	mediately		0	Pn6DE
Pn800 1040h Communications Controls Imm Pn801 0003h Application Function Selections 6 (Software Limits) Pn803 10 Origin Range Imm Pn804 1073741823 Forward Software Limit Imm Pn806 -1073741823 Reverse Software Limit Imm Pn808 0 Absolute Encoder Origin Offset Pn80A 100 First Stage Linear Acceleration Constant Pn80B 100 Second Stage Linear Acceleration Constant	mediately		0	Pn6E0
Pn8010003hApplication Function Selections 6 (Software Limits)Pn80310Origin RangeImitPn8041073741823Forward Software LimitImitPn806-1073741823Reverse Software LimitImitPn8080Absolute Encoder Origin OffsetPn80A100First Stage Linear Acceleration ConstantImitPn80B100Second Stage Linear Acceleration Constant	mediately		0	Pn6E2
Pn803 10 Origin Range Imi Pn804 1073741823 Forward Software Limit Imi Pn806 -1073741823 Reverse Software Limit Imi Pn808 0 Absolute Encoder Origin Offset Pn80A 100 First Stage Linear Acceleration Constant Pn80B 100 Second Stage Linear Acceleration Constant	mediately	Communications Controls	1040h	Pn800
Pn804 1073741823 Forward Software Limit Imit Pn806 -1073741823 Reverse Software Limit Imit Pn808 0 Absolute Encoder Origin Offset Pn80A 100 First Stage Linear Acceleration Constant Pn80B 100 Second Stage Linear Acceleration Constant	mediately	Application Function Selections 6 (Software Limits)	0003h	Pn801
Pn806 -1073741823 Reverse Software Limit Imit Pn808 0 Absolute Encoder Origin Offset Pn80A 100 First Stage Linear Acceleration Constant Pn80B 100 Second Stage Linear Acceleration Constant	mediately	Origin Range	10	Pn803
Pn808 0 Absolute Encoder Origin Offset Pn80A 100 First Stage Linear Acceleration Constant Pn80B 100 Second Stage Linear Acceleration Constant	mediately	Forward Software Limit	1073741823	Pn804
Pn808 Offset Pn80A 100 First Stage Linear Acceleration Constant Pn80B 100 Second Stage Linear Acceleration Constant	mediately	Reverse Software Limit	-1073741823	Pn806
Pn80B 100 tion Constant Second Stage Linear Acceleration Constant	lmmedi- ately ^{*2}		0	Pn808
Pn80B 100 Acceleration Constant	Immedi- ately*3		100	Pn80A
Acceleration Constant	Immedi- ately*3		100	Pn80B
nonc nation of the last	mmedi- ately*3	Acceleration Constant Switching Speed	0	Pn80C
100	Immedi- ately*3		100	Pn80D
Second Stage Linear	Immedi- ately*3		100	Pn80E
Deceleration Constant	Immedi- ately*3		0	Pn80F

Continued from previous page.

		Continued from p	
Parameter No.	Default Setting	Name	When Enabled
Pn810	0	Exponential Acceleration/ Deceleration Bias	Immedi- ately*3
Pn811	0	Exponential Acceleration/ Deceleration Time Constant	Immedi- ately*3
Pn812	0	Movement Average Time	Immedi- ately*3
Pn814	100	External Positioning Final Travel Distance	Immedi- ately*3
Pn816	0000h	Reserved parameter	_
Pn817	50	Origin Approach Speed 1	Immedi- ately*3
Pn818	5	Origin Approach Speed 2	Immedi- ately*3
Pn819	100	Final Travel Distance for Origin Return	Immedi- ately*3
Pn81E	0000h	Reserved parameter	_
Pn81F	0010h	Reserved parameter	_
Pn820	0	Forward Latching Area	Immediately
Pn822	0	Reverse Latching Area	Immediately
Pn824	0000h	Option Monitor 1 Selection	Immediately
Pn825	0000h	Option Monitor 2 Selection	Immediately
Pn827	100	Linear Deceleration Constant 1 for Stopping	Immedi- ately*3
Pn829	0	SVOFF Waiting Time (for SVOFF at Deceleration to Stop)	Immediately
Pn82A	1813h	Reserved parameter	_
Pn82B	1D1Ch	Reserved parameter	_
Pn82C	1F1Eh	Reserved parameter	_
Pn82D	0000h	Reserved parameter	_
Pn82E	0000h	Reserved parameter	_
Pn833	0000h	Motion Settings	After restart
Pn834	100	First Stage Linear Acceleration Constant 2	Immedi- ately*3
Pn836	100	Second Stage Linear Acceleration Constant 2	Immedi- ately*3
Pn838	0	Acceleration Constant Switching Speed 2	Immedi- ately*3
Pn83A	100	First Stage Linear Deceleration Constant 2	Immedi- ately*3
Pn83C	100	Second Stage Linear Deceleration Constant 2	Immedi- ately*3
Pn83E	0	Deceleration Constant Switching Speed 2	Immedi- ately*3
Pn840	100	Linear Deceleration Constant 2 for Stopping	Immedi- ately*3
Pn842	0	Second Origin Approach Speed 1	Immedi- ately*3
Pn844	0	Second Origin Approach Speed 2	Immedi- ately*3

		Continued from p	revious page.	
Parameter No.	Default Setting	Name	When Enabled	
Pn846	0	POSING Command Scurve Acceleration/Deceleration Rate	Immedi- ately*3	
Pn850	0	Number of Latch Sequences		
Pn851	0	Continuous Latch Sequence Count	Immediately	
Pn852	0000h	Latch Sequence 1 to 4 Settings	Immediately	
Pn853	0000h	Latch Sequence 5 to 8 Settings	Immediately	
Pn860	0000h	SVCMD_IO Input Signal Monitor Allocations 1	Immediately	
Pn861	0000h	SVCMD_IO Input Signal Monitor Allocations 2	Immediately	
Pn862	0000h	SVCMD_IO Input Signal Monitor Allocations 3	Immediately	
Pn863	0000h	SVCMD_IO Input Signal Monitor Allocations 4	Immediately	
Pn868	0000h	SVCMD_IO Output Signal Monitor Allocations 1	Immediately	
Pn869	0000h	SVCMD_IO Output Signal Monitor Allocations 2	Immediately	
Pn880	_	Station Address Monitor (for maintenance, read only)	_	
Pn881	_	Set Transmission Byte Count Monitor [bytes] (for maintenance, read only)	_	
Pn882	_	Transmission Cycle Setting Monitor [× 0.25 μs] (for maintenance, read only)	_	
Pn883	_	Communications Cycle Setting Monitor [transmis- sion cycles] (for mainte- nance, read only)	_	
Pn884	0000h	Communications Controls 2	Immediately	
Pn88A	0	MECHATROLINK Receive Error Counter Monitor (for maintenance, read only)	_	
Pn890 to Pn8A6	Oh	Command Data Monitor during Alarm/Warning (for maintenance, read only)	-	
Pn8A8 to Pn8BE	Oh	Response Data Monitor during Alarm/Warning (for maintenance, read only)	-	
Pn900	0	Number of Parameter Banks	After restart	
Pn901	0	Number of Parameter Bank Members	After restart	
Pn902 to Pn910	0000h	Parameter Bank Member Definition	After restart	
Pn920 to Pn95F	0000h	Parameter Bank Data (Not saved in nonvolatile memory.)	Immediately	
01 PnA02	-	Encoder Type Selection (read only)	_	

Continued from previous page.

		Continued from p	
Parameter No.	Default Setting	Name	When Enabled
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	ı	Maximum Output Speed (read only)	_
06 PnA0C	-	Speed Multiplier (read only)	_
07 PnA0E	-	Rated Torque (read only)	_
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*2
24 PnA48	65535	Multiturn Limit Setting	After restart
25 PnA4A	0000h	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	Oh	Speed Unit Selection	After restart
42 PnA84	0	Speed Base Unit Selection	After restart
43 PnA86	0h	Position Unit Selection	After restart
44 PnA88	0	Position Base Unit Selection	After restart
45 PnA8A	Oh	Acceleration Unit Selection	After restart
46 PnA8C	4	Acceleration Base Unit Selection	After restart
47 PnA8E	1h	Torque Unit Selection	After restart
	-	Continued	on novt nago

Continued from previous page.

		Continued from p	revious page.
Parameter No.	Default Setting	Name	When Enabled
48 PnA90	0	Torque Base Unit Selection	After restart
49 PnA92	0601011Fh	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
81 PnB02	0	Exponential Acceleration/ Deceleration Time Constant	Immedi- ately ^{*3}
82 PnB04	0	Movement Average Time	Immedi- ately*3
83 PnB06	100	External Positioning Final Travel Distance	Immediately
84 PnB08	× 5,000h reference units/s converted to 10 ⁻³ min ⁻¹	Origin Approach Speed	Immediately
85 PnB0A	× 500h reference units/s converted to 10 ⁻³ min ⁻¹	Origin Return Creep Speed	Immediately
86 PnB0C	100	Final Travel Distance for Origin Return	Immediately
87 PnB0E	1h	Fixed Monitor Selection 1	Immediately
88 PnB10	Oh	Fixed Monitor Selection 2	Immediately
89 PnB12	Oh	SEL_MON (CMN1) Monitor Selection 1	Immediately
8A PnB14	Oh	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	0FFF3F3Fh	Servo Command Control Field Enable/Disable Selec- tions (read only)	_

Continued from previous page.

Parameter No.	Default Setting			Name	When Enabled
91 PnB22	0FFF3F33h			Servo Status Field Enable/ Disable Selections (read only)	-
92 PnB24	007F01F0h			Output Bit Enable/Disable Selections (read only)	_
93 PnB26	FF0FFEFEh			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 6-43

^{*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

6.3.1 **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 Func tions 0	tion Selec	-	0000h to 10B1h	_	0000h	All	After restart	Setup	*1	
		l		Rotation	Dire	ction Selection	n						
	Pn000		n.□□□X	Movemer	Movement Direction Selection								
					Use	CCW as the f	orward dir	ection.					
				0	Use the direction in which the linear encoder counts up as the forward direction.								
					Use CW as the forward direction. (Reverse Rotation Mode)								
				1	Use the direction in which the linear encoder counts down as the forward direction. (Reverse Movement Mode)								
			n.□□X□	Reserved	d par	ameter (Do no	t change.)					
			n.□X□□	Reserved	d par	ameter (Do no	t change.)					
		l		Rotary/Linear Servomotor Startup Selection When Encoder Is Not Connected							nected		
			n.X000		When an encoder is not connected, start as SERVOPACK for Rotary Servomotor.							0-	
				1	Whe	en an encoder or.	is not cor	nected, st	art as SERVC	PACK for Li	near Servo)-	
		_		<u></u>								_	

Continued from previous page.

Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2		n Function	0000h to 1142h	-	0000h	All	After restart	Setup	*1
Pn001	Motor Stopping Method for Servo OFF and Group 1 Alarms 0 Stop the motor by applying the dynamic brake. 1 Stop the motor by the applying dynamic brake and then release brake. 2 Coast the motor to a stop without the dynamic brake. Overtravel Stopping Method 0 Apply the dynamic brake or coast the motor to a stop. 1 Decelerate the motor to a stop using the torque set in Pn406 torque and then servo-lock the motor. 2 Decelerate the motor to a stop using the torque set in Pn406 torque and then let the motor coast. 3 Decelerate the motor to a stop using the deceleration time set then servo-lock the motor. 4 Decelerate the motor to a stop using the deceleration time set then let the motor coast. Main Circuit Power Supply AC/DC Input Selection Input AC power as the main circuit power supply using the Lagrangian.								he dynan ne maxim ne maxim Pn30A ai	nic
		n.□X□□	0 Inpr min Inpr 1 terr		s the main shared cost the main 1 and \ominus 2	circuit povonverter).	wer supply usi	ing the B1/⊕	and ⊖	
	n.X□□□ Reserved parameter (Do not change.)									
	2	Application Selections		0000h to 4213h	-	0011h	-	After restart	Setup	_
		n.□□□X	Option 0 Res 1 Use 2 Res	erved setting (a TLIM as the to served setting (a reved setting (a reved setting (Do not us orque limit Do not us	e.)	ed Control	Applicable Motors All	Refere	
			Torque Contr	ol Option				Applicable Motors	Refere	ence
Pn002		n.□□X□	1 Use	erved setting (the speed limed limit.			VLIM) as the	All	*2	
			Encoder Usa					Applicable Motors	Refere	ence
		n.□X□□	tion	the encoder a s. the encoder a				All	*1	
		n.XDDD		the encoder a			lute encoder.	Rotary		

Continued from previous page. Setting Default Applicable When Classi- Refer-

Parameter No.	Size	Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Application Selections	Function 6	0000h to 105Fh	_	0002h	All	Immedi- ately	Setup	*1	
			Analog Mor	nitor 1 Signal Se	lection						
			00	Motor speed (1 V/1,000 min ⁻¹)							
			00	Motor speed (1	V/1,000 m	ım/s)					
			0.1	Speed reference	e (1 V/1,00	0 min ⁻¹)					
			01	Speed reference	e (1 V/1,00	0 mm/s)					
			00	Torque reference	e (1 V/100	% rated to	rque)				
			02	Force reference	(1 V/100%	rated for	ce)				
			03 Position deviation (0.05 V/reference unit)								
				Position amplifie	r deviatior	n (after ele	ctronic gear) (0.05 V/enco	der pulse	unit)	
			04	Position amplifie (0.05 V/linear en	r deviatior coder pul	n (after elec se unit)	ctronic gear)				
			05	Position reference speed (1 V/1,000 min ⁻¹)							
			03	Position reference	ce speed (1 V/1,000	mm/s)				
			06	Reserved setting (Do not use.)							
			07	Reserved setting (Do not use.)							
			08	Positioning completion (positioning completed: 5 V, positioning not completed: 0 V)							
		n.□□XX	09	Speed feedforward (1 V/1,000 min ⁻¹)							
Pn006		П.ШЦХХ	09	Speed feedforw	ard (1 V/1	,000 mm/s	s)				
			0A	Torque feedforw	ard (1 V/1	00% rated	I torque)				
			UA	Force feedforward (1 V/100% rated force)							
			0B	Active gain (1st	gain: 1 V,	2nd gain: 2	2 V)				
				Completion of p (completed: 5 V,							
			0D	External encode	r speed (1	V/1,000 r	min ⁻¹ : value at	the motor s	haft)		
			0E	Reserved setting	g (Do not ı	ıse.)					
			0F	Reserved setting	g (Do not ı	ıse.)					
			10	Main Circuit DC	Voltage						
			11 to 29	Reserved setting	gs (Do not	use.)					
			30	Pressure feedba	ck torque	reference	monitor				
			00	Pressure feedba	ick force r	eference m	nonitor				
			31	Pressure feedba	ck detecti	on monito	r				
			32	Pressure feedba	<u>'</u>						
				Pressure feedba							
				Pressure feedba			onitor				
			34 to 5F	Reserved setting	gs (Do not	use.)					
		n.□X□□	Reserved p	arameter (Do no	ot change.)					
		n.X□□□	Reserved p	arameter (Do no	ot change.)					

Continued from previous page.

Setting Setting Default Applicable When Classi- Refer-

Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
NO.	2	Application Selections	n Function	0000h to	-	0000h	All	Immedi- ately	Setup	*1			
		COICOTIONS	'	100111				atory					
			Analog Ma	onitor 2 Signal Se	loction								
			Allalog Mic			-:1\							
			00	Motor speed (1 V/1,000 min ⁻¹) Motor speed (1 V/1,000 mm/s)									
				Motor speed (1 V/1,000 mm/s)									
			01	Speed reference									
				Torque reference	,		urauo)						
			02		•		. ,						
			03	Force reference (1 V/100% rated force) Position deviation (0.05 V/reference unit)									
			- 00	Position deviation (0.05 V/reference unit) Position amplifier deviation (after electronic gear) (0.05 V/encoder pulse unit)									
			04	Position amplifie (0.05 V/linear er	er deviation	n (after ele			<u>ac. paice</u>	<u> </u>			
				Position referen	•		min ⁻¹)						
			05	Position referen		. , ,							
			06	Reserved setting	•	•	,						
			07	Reserved setting (Do not use.)									
			08	Positioning completion (positioning completed: 5 V, positioning not completed: 0 V)									
			00	Speed feedforw	ard (1 V/1	,000 min ⁻¹)						
Pn007		n.□□XX	09	Speed feedforw	ard (1 V/1	,000 mm/s	s)						
1 11001			0A	Torque feedforw	ard (1 V/1	00% rated	I torque)						
			UA	Force feedforwa	ırd (1 V/10	00% rated	force)						
			0B	Active gain (1st	gain: 1 V,	2nd gain: 2	2 V)						
			0C	Completion of p (completed: 5 V									
			0D	External encode	r speed (1	V/1,000 r	min ⁻¹ : value at	the motor s	haft)				
			0E	Reserved setting	g (Do not i	use.)							
			0F	Reserved setting (Do not use.)									
			10	Main Circuit DC	Voltage								
			11 to 29	Reserved setting	•								
			30	Pressure feedba									
				Pressure feedba									
			31	Pressure feedba									
			32	Pressure feedba									
			20	Pressure feedba									
			33 34 to 5F	Pressure feedba			Jillor						
			34 10 DF	neserved setting	98 (DO 1101	use.)							
		n.□X□□	Reserved	parameter (Do no	ot change	.)							
		n.X000	Reserved	parameter (Do no	ot change.	.)							

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		0000h to 7121h	_	4000h	Rotary	After restart	Setup	*1	
			Low Battery	Voltage Alarm	/Warning S	Selection					
		n.□□□X	0 Ou	tput alarm (A.8	30) for low	battery vo	oltage.				
			1 Ou	tput warning (A	930) for l	ow battery	voltage.				
			Function Selection for Undervoltage								
			0 Do not detect undervoltage.								
Pn008		n.□□X□	1 De	tect undervolta	ge warning	g and limit	torque at hos	t controller.			
				tect undervolta SERVOPACK).	ge warning	and limit	torque with Pr	n424 and Pn	425 (i.e., c	only	
			Warning Det	ection Selection	n						
		n.□X□□	0 De	tect warnings.							
		1 Do not detect warnings except for A.971.									
	n.X□□□ Reserved parameter (Do not change.)										
	2	Application Selections		0000h to 0121h	-	0010h	All	After restart	Tuning	*1	
		n.□□□X	Reserved parameter (Do not change.)								
	Ī		Current Cont	rol Mode Sele	ction						
			0 Use	e current contro	l mode 1.						
Pn009		n.□□X□	1 -7	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	e current contro	l mode 2.						
	i		Speed Detec	tion Method S	election						
		n.□X□□		e speed detecti							
			1 Use speed detection 2.								
	-	n.XDDD	5 .		1 - 1 1						
		11.7000	Reserved pa	rameter (Do no	t cnange.)					

Continued from previous page.

Parameter No.	Size	Na	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Application Selections		0000h to 0044h	-	0001h	All	After restart	Setup	*1			
			Motor Stopp	oing Method fo	r Group 2	Alarms							
				pply the dynami ethod set in Pno			motor to a st	op (use the s	stopping				
			1 De	ecelerate the more rque. Use the s	otor to a st etting of P	op using tl n001 = n. l	ne torque set □□□X for the	in Pn406 as t e status after	the maxim stopping.	um 			
		n.□□□X	² to	Decelerate the motor to a stop using the torque set in Pn406 as the maximum torque and then let the motor coast.									
			th.	Decelerate the motor to a stop using the deceleration time set in Pn30A. Use the setting of Pn001 = n.□□□X for the status after stopping.									
				ecelerate the me en let the motor		top using t	the deceleration	on time set ir	n Pn30A a	nd 			
Pn00A			Stopping M	ethod for Force	ed Stops								
		n.□□X□		pply the dynami ethod set in Pn			motor to a st	op (use the s	stopping				
				Decelerate the motor to a stop using the torque set in Pn/06 as the maximum									
				Decelerate the motor to a stop using the torque set in Pn406 as the maximum torque and then let the motor coast. Decelerate the motor to a stop using the deceleration time set in Pn30A. Use									
			3 De	ecelerate the mees	otor to a s 001 = n. □I	top using t □□X for th	the deceleration	on time set in stopping.	n Pn30A. l	Jse			
		Decelerate the motor to a stop using the deceleration time set in Pn30A and then let the motor coast.											
		n.□X□□	Reserved pa	arameter (Do n	ot change)							
		- VDDD	D	, , , ,	-4 -1	`							
		n.X□□□	Reserved pa	arameter (Do n	ot change	-)							
	2	Application Selections		0000h to 1121h	_	0000h	All	After restart	Setup	*1			
	_												
			•	ameter Display									
		n.□□□X		play only setup	•	rs.							
			1 Dis	play all paramet	ters.								
			Motor Stopp	ing Method for	Group 2	Alarms							
			0 Sto	p the motor by	setting th	e speed re	ference to 0.						
Pn00B		n.□□X□		oly the dynamic thod set in Pn0			motor to a sto	p (use the st	opping				
			2 Set	the stopping n	nethod wit	h Pn00A =	= n.□□□X.						
			Power Input	Selection for T	hree-phas	e SERVOR	PACK						
		n.□X□□	i	e a three-phase									
				a three-phase	· · · · · · · · · · · · · · · · · · ·			nase power s	upply inpu	ut.			
		n.X□□□	Reserved parameter (Do not change.)										

Parameter Lists

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Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Application Selections	n Function C	0000h to 0131h	-	0000h	-	After restart	Setup	*1		
	-	n.□□□X	0 Dis	ection for Test able tests without tests with tests without tests without tests without tests without tests withou	out a moto	r.			Applical Motor	ble s		
			Encoder Resolution for Tests without a Motor							ble		
Pn00C			0 Use	9 13 bits.					Motor	5		
		n.□□X□										
									Rotar	y		
				2 Use 22 bits.								
			0 036	3 Use 24 bits.								
			Encoder Type	e Selection for	Tests with	nout a Mot	tor		Applical Motor	ble s		
		0 Use an incremental encoder.										
		1 Use an absolute encoder.										
	2	Application Selections	n Function D	0000h to 1001h	_	0000h	All	Immedi- ately	Setup	*1		
		n.□□□X	X Reserved parameter (Do not change.)									
		n.□□X□	Posonyod pa	rameter (Do no	ot change	1						
Pn00D		11.0000	neserved pa	irameter (Do no	n change.	·)						
111000		n.□X□□ Reserved parameter (Do not change.)										
		п.ХППП	0 Do	/arning Detection not detect overtravel	rtravel wa							
	2	Application Selections	n Function F	0000h to 2011h	_	0000h	All	After restart	Setup	*1		
			Preventative	Maintenance \	Narning S	election						
		n.□□□X		not detect preve			warnings					
				ect preventative								
Pn00F			1 Doce	ot proventative	maintona	1100 Waltin	190.					
		n.□□X□		rameter (Do no								
		n.□X□□	Reserved pa	rameter (Do no	ot change.	.)						
		n.X□□□	Reserved pa	rameter (Do no	ot change.)						
Pn021	2	2 Reserved parameter (Do 0000h All										
Pn022	2		parameter (Do	_	_	0000h	All	_	_	-		

Continued from previous page.

							Cor	ntinued fron	n previou	s page.	
Parameter No.	Size	1	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Σ-V Comp	oatible Func- h	0000h to 2111h	-	0000h	-	After restart	Setup	-	
	n.	пппх	Reserved para	meter (Do not	neter (Do not change.)						
Pn040			Encoder Resol	<u> </u>					Applica Moto		
P11040	n.	.ппхп	1 Use a	a resolution of 2	e encoder resolution of the Servomotor. esolution of 20 bits when connected to an SGM7J, A, SGM7P, SGM7G, SGM7E, or SGM7F Servomotor.						
	n.□X□□ Reserved parameter (Do not change.)										
	n.X□□□ Reserved parameter (Do not change.)										
	2	Application Selections	on Function s 80	0000h to 1111h	_	0000h	Linear	After restart	Setup	_	
		n.□□□X	Polarity Sens 0 Use 1 Do								
Pn080		n.□□X□ Motor Phase Sequence Selection 0 Set a phase-A lead as a phase sequence of U, V, and W. 1 Set a phase-B lead as a phase sequence of U, V, and W.									
	n.□X□□ Reserved parameter (Do not change.)										
	n.X□□□ Calculation Method for Maximum Speed or Encoder Output Pulses 0 Calculate the encoder output pulse setting for a fixed maximum s 1 Calculate the maximum speed for a fixed encoder output pulse s							•			
	2	Applications Selections	n Function s 81	0000h to 1111h	-	0000h	All	After restart	Setup	*1	
Pn081		n.□□□X Phase-C Pulse Output Selection Output phase-C pulses only in the forward direction. Output phase-C pulses in both the forward and reverse direct									
		n.□□X□	Reserved par	rameter (Do no	ot change.)					
		n.□X□□	Reserved par	rameter (Do no	ot change.	.)					
		n.X□□□	Reserved par	rameter (Do no	ot change.	.)					
Pn100	2	Speed Lo	op Gain	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1	
Pn101	2	Speed Lo Time Con	op Integral stant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1	
Pn102	2	Position L	oop Gain	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1	
Pn103	2	Moment of	of Inertia Ratio	0 to 20,000	1%	100	All	Immedi- ately	Tuning	*1	
Pn104	2	Second S Gain	peed Loop	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1	
Pn105	2	Second S Integral T	peed Loop ime Constant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1	
Pn106	2	Second P Gain	osition Loop	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1	
							-				

Continued from previous page.

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn109	2	Feedforward	0 to 100	1%	0	All	Immedi- ately	Tuning	*1
Pn10A	2	Feedforward Filter Time Constant	0 to 6,400	0.01 ms	0	All	Immedi- ately	Tuning	*1
	2	Gain Application Selections	0000h to 5334h	_	0000h	All	-	Setup	*1

Pn10B	

	Mode Switching Selection							
	0	Use the internal torque reference as the condition (level setting: Pn10C).						
	-1	Use the speed reference as the condition (level setting: Pn10D).						
п.ПППХ	I	Use the speed reference as the condition (level setting: Pn181).						
11.000	2	Use the acceleration reference as the condition (level setting: Pn10E).	Immedi- ately					
		Use the acceleration reference as the condition (level setting: Pn182).						
	3	Use the position deviation as the condition (level setting: Pn10F).						
	4	Do not use mode switching.						

	Speed L	oop Control Method	When Enabled
n.□□X□	0	PI control	
	1	I-P control	After restart
	2 and 3	Reserved settings (Do not use.)	. Solari

n.□X□□	Reserved parameter (Do not change.)
n.XDDD	Reserved parameter (Do not change.)

Pn10C	2	Mode Switching Level for Torque Reference	0 to 800	1%	200	All	Immedi- ately	Tuning	*1
Pn10D	2	Mode Switching Level for Speed Reference	0 to 10,000	1 min ⁻¹	0	Rotary	Immedi- ately	Tuning	*1
Pn10E	2	Mode Switching Level for Acceleration	0 to 30,000	1 min ⁻¹ /s	0	Rotary	Immedi- ately	Tuning	*1
Pn10F	2	Mode Switching Level for Position Deviation	0 to 10,000	1 refer- ence unit	0	All	Immedi- ately	Tuning	*1
Pn11F	2	Position Integral Time Constant	0 to 50,000	0.1 ms	0	All	Immedi- ately	Tuning	*1
Pn121	2	Friction Compensation Gain	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn122	2	Second Friction Compensation Gain	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn123	2	Friction Compensation Coefficient	0 to 100	1%	0	All	Immedi- ately	Tuning	*1
Pn124	2	Friction Compensation Frequency Correction	-10,000 to 10,000	0.1 Hz	0	All	Immedi- ately	Tuning	*1
Pn125	2	Friction Compensation Gain Correction	1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn131	2	Gain Switching Time 1	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn132	2	Gain Switching Time 2	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn135	2	Gain Switching Waiting Time 1	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn136	2	Gain Switching Waiting Time 2	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1

Continued from previous page.

Parameter	Size	Na	ame	Setting	Setting	Default	Applicable	When	Classi-	Refer-			
No.		Automatic (Gain Switch-	Range 0000h to	Unit	Setting	Motors	Enabled Immedi-	fication	ence			
	2	ing Selection		0052h	_	0000h	All	ately	Tuning	*1			
	_												
				ing Selection									
			0 Th	e manual gain s e gain is switch Is (SVCMD_IO).		lly with G-	SEL in the se	rvo comman	d output s	ig-			
		n.□□□X	1 Re	served setting (Do not us	e.)							
			2 Th	Use automatic gain switching pattern 1. The gain settings 1 switch automatically to 2 when switching condition A is satisfied. The gain settings 2 switch automatically to 1 when switching condition A is not satisfied.									
Pn139	I		Gain Switch	ing Condition A	4								
			0 /C	OIN (Positioning	g Complet	ion Output) signal turns	ON.					
			1 /C	OIN (Positioning	g Complet	ion Output) signal turns	OFF.					
		n.□□X□		EAR (Near Outp	, ,								
				EAR (Near Outp	, 0								
				sition reference	<u> </u>		I position refe	rence input i	s OFF.				
			5 Position reference input is ON.										
	[n.□X□□	□□ Reserved parameter (Do not change.)										
	Ī	n.X□□□	Reserved parameter (Do not change.)										
				, (
Pn13D	2	Current Ga	in Level	100 to 2,000	1%	2000	All	Immedi- ately	Tuning	*1			
	2 Model Following Con- trol-Related Selections 0000h to 1121h - 0100h All Immediately Tuning							*1					
		troi riolatoc	atory atory										
	Ī		Model Following Control Selection										
		n.□□□X		not use model for		ontrol.							
			Use model following control.										
			Vibration Suppression Selection 0 Do not perform vibration suppression.										
		n.□□X□		orm vibration su			cific frequenc	V.					
			2 Perf	orm vibration su	uppressior	n for two s	oecific freque	ncies.					
Pn140			Vibration Su	ppression Adju	stment S	election							
			Do	not adjust vibr	ation supp	ression au							
		n.□X□□	tur	ning without a he						om ——			
				ljust vibration su hout a host refe J.						n-			
			Speed Feed	forward (VFF)/1	Torque Fe	edforward	(TFF) Selecti	ion					
		n.X□□□	0 Dc	not use model	following	control an	d speed/torqu	ue feedforwa	rd togethe	er.			
			1 Us	e model followi	ng control	and speed	d/torque feed	forward toge	ther.				
Pn141	2	Model Follo trol Gain		10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*1			
Pn142	2	Model Follo	orrection	500 to 2,000	0.1%	1000	All	Immedi- ately	Tuning	*1			
Pn143	2	Model Follo trol Bias in Direction	wing Con- the Forward	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1			

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Setting Setting Default Applicable When Classi- Refer-

						0	5 ();		itinued fron	·			
Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
Pn144	2	Model Follo trol Bias in Direction			0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1		
Pn145	2	Vibration S Frequency	uppressio A	n 1	10 to 2,500	0.1 Hz	500	All	Immedi- ately	Tuning	*1		
Pn146	2	Vibration S Frequency		n 1	10 to 2,500	0.1 Hz	700	All	Immedi- ately	Tuning	*1		
Pn147	2	Model Follo trol Speed Compensa	Feedforw	n- ard	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1		
Pn148	2		Second Model Follow- ing Control Gain		10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*1		
Pn149	2				500 to 2,000	0.1%	1000	All	Immedi- ately	Tuning	*1		
Pn14A	2	Vibration S Frequency	uppressio	n 2	10 to 2,000	0.1 Hz	800	All	Immedi- ately	Tuning	*1		
Pn14B	2	Vibration S Correction	uppressio	n 2	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1		
	2	Control-Retions	lated Sele	eC-	0000h to 0021h	-	0021h	All	After restart	Tuning	*1		
							l.	I	1	1			
		n.□□□X	Model Fo	ollow	ing Control Ty	pe Select	ion						
			0	Use	e model followi	ng control	type 1.						
			1	1 Use model following control type 2.									
Pn14F			Tuning-le	299 T	ype Selection								
			0		tuning-less ty	ne 1							
		n.□□X□	1		tuning-less ty	•							
			2		e tuning-less ty								
		n. 🗆 X 🗆 🗆	Reserve		rameter (Do no)						
	-				,		,						
	n.XDDD Reserved parameter (Do not change.)												
	2	Anti-Resor trol-Relate			0000h to 0011h	-	0010h	All	Immedi- ately	Tuning	*1		
			Anti-Resonance Control Selection										
		n.□□□X	Anti-Resonance Control Selection 0 Do not use anti-resonance control.										
			1	-	anti-resonanc								
	-		Anti-Res	onar	nce Control Ac	liustment	Selection						
D 400			74111 1100		not adjust anti	•		utomatically o	durina execu	ition of aut	·O-		
Pn160		n.□□X□	0		ing without a h								
			1		ust anti-resona nout a host refe								
		n. 🗆 X 🗆 🗆	Reserve	d pai	rameter (Do no	ot change	.)				_		
		n VCCC	Dagge	d	romotor /D-	t obor	\						
		n.X□□□	neserve	u pai	rameter (Do no	or change.)						
Pn161	2	Anti-Resor	nance Fre-		10 to 20,000	0.1 Hz	1000	All	Immedi- ately	Tuning	*1		
Pn162	2	Anti-Resor Correction		า	1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1		
Pn163	2	Anti-Resor		np-	0 to 300	1%	0	All	Immedi-	Tuning	*1		
	2 ing Gain 0 to 300 1/6 0 All ately fulling							L					

Continued from previous page.

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
Pn164	2	Anti-Resor Time Cons rection	ance Filter tant 1 Cor-	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1	
Pn165	2	Anti-Resor Time Cons rection	ance Filter tant 2 Cor-	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1	
Pn166	2	Anti-Resoring Gain 2	ance Damp-	0 to 1,000	1%	0	All	Immedi- ately	Tuning	*1	
	2	Tuning-less Related Se		0000h to 2711h	-	1400h	All	ı	Setup	*1	
		•		Micro							
		n.□□□X	Tuning-less S	Selection					Whe Enab		
			-	Disable tuning-less function. Enable tuning-less function.						er art	
					Janotion.				Whe	en	
	1	n.□□X□	Speed Contr		atrol				Enab		
Pn170				e for speed cor e for speed cor		se host co	ntroller for po	sition contro	Afte ol. resta		
	Ī	~ DVDD	Rigidity Leve	ıl					Whe Enab		
		n.□X□□	0 to 7 Set the rigidity level.							edi- y	
	Ī		Tuning-less I	Tuning-less Load Level							
	1	n.X□□□	0 to 2 Set	the load level	for the tun	ing-less fu	nction.		Immedi- ately		
	ately										
Pn181	2	Mode Swit	ching Level Reference						Tuning	*1	
Pn182	2	Mode Swit for Acceler	ching Level ation	0 to 30,000	1 mm/	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 Cotion Select	ontrol Func- ions	0000h to 2210h	-	0010h	All	After restart	Setup	*1	
		n.□□□X	•	parameter (Do not change.)							
		n.□□X□		Reserved parameter (Do not change.) Reserved parameter (Do not change.)							
	-	n.□X□□		· · · · · · · · · · · · · · · · · · ·		,					
Pn207			Ou	ioning Comple tput when the	absolute v	alue of the	position devi	ation is the s	ame or le	SS	
			tha	n the setting of the setting t	•		· ·		or less th	nan	
	1	n.X□□□	1 the	setting of Pn5 position refere	22 (Positio	ning Com					
				tput when the a setting of Pn5							
		Decision		T			I				
Pn20A	4	Reserved (Do not ch	ange.)	_	-	32768	Rotary	-	-	*1	
Pn20E	4	Electronic (Numerator	r)	1 to 1,073,741,824	1	16	All	After restart	Setup	*1	
Pn210	4	Electronic (Denomina		1 to 1,073,741,824	1	1	All	After restart	Setup	*1	

		Continued from previous page.											
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
Pn212	4	Number of Output Pu		16 to 1,073,741,824	1 P/Rev	2048	Rotary	After restart	Setup	*1			
Pn22A	2	Reserved (Do not ch	parameter nange.)	_	-	0000h	Rotary	_	_	*1			
	2		ontrol Expar ion Selectior		_	0000h	All	After restart	Setup	*1			
				Backlash Compensation Direction O Compensate forward references.									
D 000		n.□□□X		Compensate forw Compensate reve									
Pn230	i	n.□□X□	Reserved	narameter (Do no	grameter (Do not change.)								
			<u> </u>	·		,							
		n.□X□□											
		n.X□□□	Reserved	parameter (Do no	ot change.	.)							
		1		1	1	1	I	 	1				
Pn231	4	Backlash (Compensatio	-500,000 to 500,000	0.1 ref- erence units	0	All	Immedi- ately	Setup	*1			
Pn233	2	Backlash (Compensa- Constant	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	*1			
Pn281	2	Encoder C tion	utput Resol	u- 1 to 4,096	1 edge/ pitch	20	All	After restart	Setup	*1			
Pn282	4	Linear End Pitch	oder Scale	0 to 6,553,600	0.01 μm	0	Linear	After restart	Setup	*1			
Pn304	2	Jogging Speed		0 to 10,000	Rotary: 1 min ⁻¹ Direct Drive: 0.1 min ⁻¹	500	Rotary	Immedi- ately	Setup	*1			
Pn305	2	Soft Start Acceleration Time		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	Speed Fee Time Cons	edback Filter stant	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	*1			
Pn30A	2		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			
	2	Vibration E Selections		0000h to 0002h	-	0000h	All	Immedi- ately	Setup	*1			
				Detection Selection									
		n.□□□X		Do not detect vibr									
Dn210				Output a warning	, ,								
Pn310			2 (Output an alarm (A	A.52U) If VI	pration is (detected.						
		n.□□X□	Reserved	parameter (Do no	ot change.	.)							
		n.□X□□	Reserved	parameter (Do no	ot change)							
		n.X□□□	Reserved	parameter (Do no	ot change.)							
Pn311	2	Vibration E sitivity	Detection Se	n- 50 to 500	1%	100	All	Immedi- ately	Tuning	*1			
Pn312	2	Vibration D	Detection	0 to 5,000	1 min ⁻¹	50	Rotary	Immedi- ately	Tuning	*1			
	ь	+			-	l	-	·	1	1			

Continued from previous page.

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi-	Refer- ence
INO.	0)		nange	Offic	Setting	MOTORS		lication	ence
Pn316	2	Maximum Motor Speed	0 to 65,535	1 min ⁻¹	10000	Rotary	After restart	Setup	*1
Pn324	2	Moment of Inertia Cal- culation Starting Level	0 to 20,000	1%	300	All	Immedi- ately	Setup	*1
Pn383	2	Jogging Speed	0 to 10,000	1 mm/s	50	Linear	Immedi- ately	Setup	*1
Pn384	2	Vibration Detection Level	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	First Stage First Torque Reference Filter Time Constant	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1
Pn402	2	Forward Torque Limit	0 to 800	1%*3	800	Rotary	Immedi- ately	Setup	*1
Pn403	2	Reverse Torque Limit	0 to 800	1%*3	800	Rotary	Immedi- ately	Setup	*1
Pn404	2	Forward External Torque Limit	0 to 800	1%*3	100	All	Immedi- ately	Setup	*1
Pn405	2	Reverse External Torque Limit	0 to 800	1%*3	100	All	Immedi- ately	Setup	*1
Pn406	2	Emergency Stop Torque	0 to 800	1%*3	800	All	Immedi- ately	Setup	*1
Pn407	2	Speed Limit during Torque Control	0 to 10,000	1 min ⁻¹	100	Rotary	Immedi- ately	Setup	*1
	2	Torque-Related Function Selections	0000h to 1111h	-	0000h	All	-	Setup	*1
					•	•			•

	1	n.000X	Notch Fil	Disa	Selection 1 able first stage					Whe Enab Imme atel	led edi-
			Speed Li							Whe Enabl	
		n.□□X□	0	Use the smaller of the maximum motor speed and the setting of Pn407 as the speed limit.							
	ı		0		the smaller of 180 as the spee		num motor	speed and the	ne setting of	Afte	er
Pn408			-1	Use the smaller of the overspeed alarm detection speed ar setting of Pn407 as the speed limit.						resta	ırt
			'		the smaller of ing of Pn480 a			n detection sp	eed and the		
			Notch Fil	Notch Filter Selection 2						Whe Enabl	
	1	n.□X□□	0	Disable second stage notch filter.							di-
			1	Enable second stage notch filter.							y
			Friction (Com	pensation Fun	ction Sele	ction			Whe Enabl	
	1	n.X□□□	0	Disa	able friction co	mpensatio	n.			Imme	di-
			1	Ena	ble friction con	npensatio	٦.			atel	У
Pn409	2	First Stage Frequency	Notch Filt	er	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*]

50 to 1,000

0 to 1,000

50 to 5,000

0.01

0.001

1 Hz

70

0

5000

AII

AII

ΑII

ately Immedi-ately

Immedi-ately

Immedi-

ately

Continued on next page.

Tuning

Tuning

Tuning

*1

*1

*1

*1

Pn40A

Pn40B

Pn40C

2

2

2

First Stage Notch Filter Q Value

First Stage Notch Filter Depth

Second Stage Notch Filter Frequency

Continued from previous page.

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn40D	2	Second Stage Notch Filter Q Value	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn40E	2	Second Stage Notch Filter Depth	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn40F	2	Second Stage Second Torque Reference Filter Frequency	100 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn410	2	Second Stage Second Torque Reference Filter Q Value	50 to 100	0.01	50	All	Immedi- ately	Tuning	*1
Pn412	2	First Stage Second Torque Reference Filter Time Constant	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1
	2	Torque-Related Function Selections 2	0000h to 1111h	_	0000h	All	Immedi- ately	Setup	*1

Pn416

	Notch Fi	Notch Filter Selection 3								
n.□□□X	O Disable third stage notch filter.									
	1 Enable third stage notch filter.									
	Notch Fi	Notch Filter Selection 4								
$n.\Box\Box X\Box$	0	Disable fourth stage notch filter.								
	1	Enable fourth stage notch filter.								
	Notch Filter Selection 5									
n.□X□□	0	Disable fifth stage notch filter.								
	1	Enable fifth stage notch filter.								
n.X□□□	Reserve	d parameter (Do not change.)								

Pn417	2	Third Stage Notch Filter Frequency	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn418	2	Third Stage Notch Filter Q Value	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn419	2	Third Stage Notch Filter Depth	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn41A	2	Fourth Stage Notch Filter Frequency	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn41B	2	Fourth Stage Notch Filter Q Value	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn41C	2	Fourth Stage Notch Filter Depth	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn41D	2	Fifth Stage Notch Filter Frequency	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn41E	2	Fifth Stage Notch Filter Q Value	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn41F	2	Fifth Stage Notch Filter Depth	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1

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Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Speed Rip sation Sele	ple Compen- ections	0000h to 1111h	_	0000h	Rotary	-	Setup	*1	
		n.□□□X		e Compensatio			n		Whe Enab		
			0 Disable speed ripple compensation.1 Enable speed ripple compensation.							edi- ly	
Pn423		- DDVD		Speed Ripple Compensation Information Disagreement Warning Detection Selection						en bled	
F11423		n.□□X□	Detect A.942 alarms.Do not detect A.942 alarms.							er art	
			Speed Ripple	e Compensatio	on Enable	Condition	Selection		Whe Enab		
	n.□X□□		0 Speed reference							er art	
				tor speed					resta		
		n.X□□□	Reserved par	rameter (Do no	ot change.	.)					
Pn424	2	Torque Lim	nit at Main Cir- e Drop	0 to 100	1%*2	50	All	Immedi- ately	Setup	*1	
Pn425	2	Release Tir Limit at Ma Voltage Dre		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	sation Ena		0 to 10,000	1 min ⁻¹	0	Rotary	Immedi- ately	Tuning	*1	
	2	Pressure Feedback Selection Switches		0000h to 1111h	_	0000h	All	After restart	Setup	3-14	
		n.□□□X	Pressure Feed	eedback Enable Switch							
			0 Dis	able pressure f	ontrol.						
			1 Ena	Enable pressure feedback control.							
		n.□□X□	Pressure Feedback Polarity Switch								
Pn440				Do not reverse the polarity.							
				verse the polari							
	-	n.□X□□	-	ameter (Do not	O ,						
		n.X□□□		Control Gravity able gravity co	·		ch				
				able gravity cor	•						
	-										
Pn441	2	Reserved p	parameter (Do e.)	-	_	100	All	_	_	-	
Pn442	2	Pressure F Control 1 F Feedback Time		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	parameter (Do e.)		_	0	All		_	_	
Pn446	2	Ŭ.	parameter (Do	-	_	95	All	_	-	-	
								Continue	رم مر مرم ام		

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn447	2	Pressure Feedback Loop Deviation Overflow Level	0 to 800	1%	100	All	Immedi- ately	Setup	3-20
Pn448	2	Pressure Feedback Off- set	-10,000 to 10,000	0.01%	0	All	Immedi- ately	Setup	3-16
Pn449	2	Reserved parameter (Do not change.)	_	-	0	All	-	-	-
Pn44A	2	Pressure Feedback Filter	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	3-16
Pn44C	2	Pressure Feedback Enable Level	0 to 10,000	0.01%	1000	All	Immedi- ately	Setup	3-6
Pn44D	2	Pressure Feedback Overflow Detection Level	0 to 800	1%	300	All	Immedi- ately	Setup	3-16
Pn44E	2	Pressure Feedback Overflow Detection Time	0 to 5,000	0.1 ms	0	All	Immedi- ately	Setup	3-16
Pn450	2	Pressure Feedback Control 1 Pressure Feedback Loop Differ- ential Time	0 to 51,200	0.1 ms	0	All	Immedi- ately	Setup	3-20
Pn451	2	Pressure Feedback Control 1 Pressure Feedback Loop Differ- ential Filter Rate	0 to 10,000	1%	100	All	Immedi- ately	Setup	3-20
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 Feedback Selection Switch 2	0000h to 0011h	_	0011h	All	After restart	Setup	3-17

	n.□□□X	Pressure F	Feedback Control Mode Selection Switch
		0	Set mode 1.
		1	Set mode 2.
Pn458	n.□□X□	Pressure F	Feedback Type Selection Switch
		0	Set pressure feedback control 1.
		1	Set pressure feedback control 2.
	n.□X□□	Reserved	parameter (Do not change.)

11.0700	neserved parameter (Do not change.)
n.X□□□	Reserved parameter (Do not change.)

Pn459	2	Gravity Compensation Reference Level for Torque Control	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	Pressure Feedback Reference Filter Time Constant	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	_

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Parameter No.	Size		ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Notch Filte Selections	r Adjustment 1	0000h to 0101h	_	0101h	All	Immedi- ately	Tuning	*1		
				Adjustment Se								
		n.□□□X		not adjust the ing without a hing.								
				Adjust the first stage notch filter automatically during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.								
Pn460		n.□□X□	Reserved parameter (Do not change.)									
				Adjustment Se								
		n.□X□□	Do not adjust the second stage notch filter automatically when the tuning-less function is enabled or during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.									
			Adj 1 tior	Adjust the second stage notch filter automatically when the tuning-less func-								
			aut	oluning with a	nost refere	ence, and	custom tuning	J.				
		n.X□□□	Reserved parameter (Do not change.)									
										1		
Pn467	2	Pressure For Sensor Gai		0 to 10,000	1%	0	Rotary	Immedi- ately	Setup	3-13		
Pn468	2	Pressure F	essure Feedback ensor Gain 2		1%	0	Rotary	Immedi- ately	Setup	3-13		
Pn469	2		Pressure Feedback Sensor Gain 3		1%	0	Rotary	Immedi- ately	Setup	3-13		
Pn46A	2	Sensor Gai	Pressure Feedback Sensor Gain 4		1%	0	Rotary	Immedi- ately	Setup	3-13		
Pn46B	2	Pressure For Sensor Gai	in 5	0 to 10,000	1%	0	Rotary	Immedi- ately	Setup	3-13		
	2	Gravity Co Related Se	mpensation- lections	0000h to 0001h	_	0000h	All	After restart	Setup	*1		
		ם חחחע	n.□□□X Gravity Compensation Selection									
		п.ШШХ	0 Disable gravity compensation.									
Dn 475				able gravity cor	· ·							
Pn475		n.□□X□		ameter (Do not	<u>'</u>							
		n. 🗆 X 🗆 🗆	•	ameter (Do not	<u> </u>							
					0 /							
		n.X□□□	Reserved par	ameter (Do not	change.)							
Pn476	2	Gravity Cor Torque	mpensation	-1,000 to 1,000	0.1%	0	All	Immedi- ately	Tuning	*1		
Pn480	2	Speed Lim Force Cont	it during trol	0 to 10,000	1 mm/s	100	Linear	Immedi- ately	Setup	*1		
Pn481	2	Polarity De Speed Loo		10 to 20,000	0.1 Hz	400	Linear	Immedi- ately	Tuning	-		
Pn482	2	Polarity De Speed Loo Time Cons	p Integral	15 to 51,200	0.01 ms	3000	Linear	Immedi- ately	Tuning	_		
Pn483	2	Forward Fo	orce Limit	0 to 800	1%*3	30	Linear	Immedi- ately	Setup	*1		
Pn484	2	Reverse Fo		0 to 800	1%*3	30	Linear	Immedi- ately	Setup	*1		
Pn485	2	ence Spee		0 to 100	1 mm/s	20	Linear	Immedi- ately	Tuning	-		
Pn486	2	Polarity De ence Accel Deceleration		0 to 100	1 ms	25	Linear	Immedi- ately	Tuning	-		

Parameter Lists

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Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn487	2	Polarity Detection Constant Speed Time	0 to 300	1 ms	0	Linear	Immedi- ately	Tuning	_
Pn488	2	Polarity Detection Reference 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 Confirmation Force Reference	0 to 200	1%	100	Linear	Immedi- ately	Tuning	_
Pn498	2	Polarity Detection Allowable Error Range	0 to 30	1 deg	10	Linear	Immedi- ately	Tuning	_
Pn49F	2	Speed Ripple Compensation 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	-	I	-
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 Integral Time	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Setup	3-18
Pn4A9	2	Reserved parameter (Do not change.)	-	-	400	All	-	ı	_
Pn4AA	2	Reserved parameter (Do not change.)	_	_	2000	All	-	ı	-
Pn4AB	2	Reserved parameter (Do not change.)	_	_	0	All	-	ı	-
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.)	_	_	0000h	All	-	-	_
Pn4D0	2	Reserved parameter (Do not change.)	_	_	0	All	-	ı	-
Pn4D1	2	Reserved parameter (Do not change.)	_	_	0	All	-	ı	-
Pn502	2	Rotation Detection Level	1 to 10,000	1 min ⁻¹	20	Rotary	Immedi- ately	Setup	*1
Pn503	2	Speed Coincidence Detection Signal Output Width	0 to 100	1 min ⁻¹	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 Output Speed Level	0 to 10,000	1 min ⁻¹	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

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Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Input Signa 1	al Sele	ctions	0000h to FFF2h	-	1881h	All	After restart	Setup	*1	
		n.□□□X	Rese	rved par	rameter (Do no	ot change.	.)					
		n.□□X□	Rese	rved par	rameter (Do no	ot change.	.)					
		n.□X□□	Rese	rved par	ameter (Do no	ot change.	.)					
	Ī		P-OT (Forward Drive Prohibit) Signal Allocation									
			0		forward drive		<u>'</u>					
			1	Enable	forward drive	when CN1	-7 input si	gnal is ON (cl	osed).			
			2		forward drive			· ·				
			3	Enable forward drive when CN1-9 input signal is ON (closed).								
Pn50A			4	Enable forward drive when CN1-10 input signal is ON (closed).								
			5									
			6						closed).			
		n.X□□□	7		signal to alwa	, ,						
			8		signal to alwa	,			, ,			
			9		forward drive							
			A		forward drive			,	1 /			
			В		forward drive		<u> </u>	•	<u> </u>			
			С		forward drive							
			D		forward drive		•		· · ·			
			E		forward drive		<u>'</u>		· · · ·			
	F Enable forward drive when CN1-12 input signal is OFF (open).								(open).			

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Input Signa 2	al Selection	s 0000h to FFFFh	-	8882h	All	After restart	Setup	*1		
					1							
			N-OT (Re	verse Drive Prohi	bit) Signal	Allocation	1					
			`	Enable reverse dr	, 0			N (closed).				
			1	Enable reverse dr	ive when C	N1-7 inpu	ıt signal is ON	I (closed).				
			2	Enable reverse dr	ive when C	 DN1-8 inpu	ıt signal is ON	I (closed).				
			3	Enable reverse dr	ive when C	N1-9 inpu	ıt signal is ON	I (closed).				
			4	Enable reverse drive when CN1-10 input signal is ON (closed).								
			5	Enable reverse drive when CN1-11 input signal is ON (closed).								
			6	Enable reverse drive when CN1-12 input signal is ON (closed).								
		n.□□□X	7	Set the signal to	always pro	hibit revers	se drive.					
			8	Set the signal to a	always ena	ble reverse	e drive.			<u></u>		
			9	Enable reverse dr	ive when C	N1-13 inp	out signal is O	FF (open).				
			А	Enable reverse drive when CN1-7 input signal is OFF (open).								
			В	Enable reverse dr	ive when C	CN1-8 inpu	ıt signal is OF	F (open).				
			С	Enable reverse dr	ive when C	CN1-9 inpu	ıt signal is OF	F (open).				
			D	D Enable reverse drive when CN1-10 input signal is OFF (open).								
			Е	E Enable reverse drive when CN1-11 input signal is OFF (open).								
			F	Enable reverse dr	ive when C	N1-12 inp	out signal is O	FF (open).				
Pn50B		n.□□X□	Reserved	parameter (Do n	ot change.	.)						
FIIOD			/P-CL (Fo	rward External To	orque Limi	t Input) Si	gnal Allocatio	n				
			0	Active when CN1	-13 input s	signal is ON	V (closed).					
			1	Active when CN1	-7 input siç	gnal is ON	(closed).			 -		
			2	Active when CN1	-8 input si	gnal is ON	(closed).					
			3	Active when CN1	-9 input siç	gnal is ON	(closed).					
			4	Active when CN1	-10 input s	signal is ON	V (closed).					
			5	Active when CN1	-11 input s	signal is ON	V (closed).					
			6	Active 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	Active when CN1	-13 input s	signal is OF	F (open).					
			А	Active when CN1	-7 input siç	gnal is OFF	(open).					
			В	Active when CN1	-8 input siç	gnal is OFF	(open).					
			С	Active when CN1	-9 input siç	gnal is OFF	(open).					
			D	Active when CN1	-10 input s	signal is OF	F (open).					
			E	Active when CN1	-11 input s	ignal is OF	F (open).					
			F	Active when CN1-12 input signal is OFF (open).								
			/N-CL (Re	everse External To	orque Limi	t Input) Si	gnal Allocatio	on				
		n.X□□□	0 to F	The allocations a Input) signal alloc		e as the /P	-CL (Forward	External Tor	que Limit			

Continued from previous page.

Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Output Sig	ınal Selec-	0000h to 6666h	-	0000h	All	After restart	Setup	*1			
		1		1		1	1		1				
			/COIN (Posi	tioning Comple	tion Outp	ut) Signal	Allocation						
			0 Dis	sabled (the abo	ve signal c	utput is no	ot used).						
		n.□□□X	1 Ou	itput the signal	from the C	N1-1 or C	N1-2 output	terminal.					
			2 Ou	itput the signal	from the C	N1-23 or	CN1-24 outp	ut terminal.					
				itput the signal			CN1-26 outpu	ut terminal.					
			4 to 6 Re	served setting	Do not us	e.)							
Pn50E			/V-CMP (Sp	/V-CMP (Speed Coincidence Detection Output) Signal Allocation The allocations are the same as the /COIN (Positioning Completion) signal									
		n.□□X□		e allocations ar ocations.	e the same	e as the /C	OIN (Position	ing Complet	ion) signal				
		/TGON (Rotation Detection Output) Signal Allocation											
		n.□X□□	ing Complet	ion) signal									
			/S-RDY (Ser	vo Ready) Sigr	nal Allocat	ion							
		n.X□□□		e allocations ar ocations.	e the same	e as the /C	OIN (Position	ing Complet	ion) signal				
	2	Output Sig tions 2	ınal Selec-	0000h to 6666h	_	0100h	All	After restart	Setup	*1			
			/CLT (Torque Limit Detection Output) Signal Allocation										
				sabled (the abo		<u> </u>	· · · · · · · · · · · · · · · · · · ·						
		n.□□□X		tput the signal			•						
				tput the signal			· · · · · · · · · · · · · · · · · · ·						
				served setting			CN 1-26 Outpi	ut terminai.					
					`	,							
Pn50F		n.□□X□	— ` · · —	Limit Detection	, ,		N.T./Torque Liv	mit Dataation	o Outout) a	oi o			
				e allocations ar I allocations.	e the same	e as the /C	LI (Torque LII	Thit Detection	1 Output) s				
			/BK (Brake 0	Output) Signal A	Allocation								
		n.□X□□	0 to 6 Th	e allocations ar l allocations.	e the same	e as the /C	CLT (Torque Li	mit Detection	n Output) s	sig-			
			/WARN (Wai	rning Output) S	ignal Allo	cation							
		n.X□□□	O to 6 Th	The allocations are the come of the (OLT (Targets Limit Datastics Output) sign									

							Con	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	Output Sig tions 3	nal Selec-	0000h to 0666h	_	0000h	All	After restart	Setup	*1			
					'								
			/NFAR (Nea	r Output) Signa	ıl Allocatic	n							
				sabled (the abo			ot used).						
				utput the signal				terminal.					
		n.□□□X	2 0	utput the signal	from the C	N1-23 or	CN1-24 outp	ut terminal.					
Pn510			3 O	utput the signal	from the C	N1-25 or	CN1-26 outp	ut terminal.					
			4 to 6 Re	eserved setting ((Do not us	e.)							
		$n.\square\squareX\square$	Reserved parameter (Do not change.)										
		n.□X□□	Reserved p	arameter (Do no	ot change.	.)							
		n.X□□□	Reserved p	arameter (Do no	ot change.	.)							
						·							
	2	Input Signa	al Selections	0000h to FFFFh	-	6543h	All	After restart	Setup	*1			
		/DEC (Origin Return Deceleration Switch Input) Signal Allocation											
			0 A	ctive when CN1-	·13 input s	signal is ON	V (closed).						
			1 Ac	ctive when CN1-	·7 input siç	gnal is ON	(closed).						
			2 A	ctive when CN1-	·8 input siç	gnal is ON	(closed).						
			3 A	ctive when CN1-	·9 input si	gnal is ON	(closed).						
			4 A	ctive when CN1-	-10 input s	signal is ON	V (closed).						
				ctive when CN1-			, ,						
				ctive when CN1-		signal is ON	V (closed).						
		n.□□□X											
					•		/						
			9 Active when CN1-13 input signal is OFF (open).										
			A Active when CN1-7 input signal is OFF (open). B Active when CN1-8 input signal is OFF (open).										
				ctive when CN1-	' '	,	(1 /						
				ctive when CN1-		,	· 1 /						
				ctive when CN1-									
Pn511				ctive when CN1-									
			/EXT1 (Exte	rnal Latch Inpu	t 1) Signal	Allocation	า						
			0 to 3 Th	ne signal is alwa	ys inactive								
			4 Ac	ctive when CN1-	-10 input s	signal is ON	V (closed).						
			5 A	ctive when CN1-	-11 input s	signal is ON	V (closed).						
		n.□□X□	6 A	ctive when CN1-	-12 input s	signal is ON	V (closed).						
			D A	ctive when CN1-	·10 input s	signal is OF	F (open).						
			E Ad	ctive when CN1-	·11 input s	signal is OF	F (open).						
			F A	ctive when CN1-	·12 input s	signal is OF	F (open).						
			7 to C Th	ne signal is alwa	ys inactive								
			/EXT2 (Exte	rnal Latch Inpu	t 2) Signal	Allocation	า						
		n.□X□□							allo-				
			/EXT3 (External Latch Input 3) Signal Allocation										
		n.X□□□	0 to F The allocations are the same as the /EXT1 (External Latch Input 1) signal allocations.										

Continued from previous page.

Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence				
	2	Output Sig Settings	nal Inverse	0000h to 1111h	-	0000h	All	After restart	Setup	*1				
			Output Sig	nal Inversion for	CN1-1 ar	nd CN1-2	Terminals							
		n.□□□X	0 7	he signal is not in	nverted.									
			1 7	he signal is inver	ted.									
			Output Sig	Output Signal Inversion for CN1-23 and CN1-24 Terminals										
Pn512		n.□□X□	0 7	The signal is not inverted.										
			1 7	he signal is inver	ted.									
			Output Signal Inversion for CN1-25 and CN1-26 Terminals											
		n.□X□□	0 7	0 The signal is not inverted.										
			1 7	he signal is inver	ted.									
		n.XDDD	Reserved	parameter (Do no	ot change.	.)								
				· · · · · · · · · · · · · · · · · · ·		,								
	2	Output Sig	gnal Selec-	0000h to 0666h	_	0000h	All	After restart	Setup	*1				
		n.□□□X	Reserved	eserved parameter (Do not change.)										
		n.□□X□	Reserved	parameter (Do no	ot change.	.)								
			/PM (Preve	entative Maintena	ance Outp	ut) Signal	Allocation							
Pn514				Disabled (the abo										
		- UVUU	1 (Output the signal	from the C	N1-1 or C	N1-2 output	terminal.						
		n.□X□□	2 (Output the signal	from the C	N1-23 or	CN1-24 outp	ut terminal.						
			3 (Output the signal	from the C	N1-25 or	CN1-26 outp	ut terminal.						
			4 to 6 Reserved setting (Do not use.)											
		n.X□□□	Reserved	parameter (Do no	ot change	.)								
														

Applicable When Classi-Refer-

Continued from previous page.

Parameter No.	Size	1	Name	Setting Range	Unit	Setting	Applicable	When Enabled	fication	ence			
	2	Input Sigr	nal Selections	0000h to FFFFh	-	8888h	All	After restart	Setup	*1			
		l			ı			Į.	1				
			FSTP (Forced	Stop Input) Si	gnal Alloc	ation							
			0 En	able drive wher	n CN1-13	input signa	al is ON (close	ed).					
			1 En	able drive wher	n CN1-7 ir	put signal	is ON (closed	d).					
				able drive wher			•	*					
				able drive wher			•	,					
				able drive wher			•						
				able drive wher able drive wher									
				t the signal to a					o etan)				
	n.	.000X	So	t the signal to a									
Pn516			8 sto	. •			arrayo aroabr						
				able drive wher		·		•					
				able drive wher			` .	,					
				Enable drive when CN1-8 input signal is OFF (open).									
				Enable drive when CN1-9 input signal is OFF (open). Enable drive when CN1-10 input signal is OFF (open).									
				Enable drive when CN1-10 input signal is OFF (open). Enable drive when CN1-11 input signal is OFF (open).									
				able drive wher									
						1 0	, ,	,					
	n.	.00X0	Reserved para	ameter (Do not	change.)								
	n.□X□□ Reserved parameter (Do not change.)												
	n.XDDD Reserved par			ameter (Do not	change.)								
				•	,								
Pn518	_		parameter (Do	_	_	_	All	_	_	_			
		not chang	je.)										
Pn51B	4		parameter (Do	_	_	1000	Rotary	_	_	*1			
5		not chang	Deviation Over-	10.1.100	1.0/			Immedi-	0 .				
Pn51E	2	flow Warr		10 to 100	1%	100	All	ately	Setup	*1			
Pn520	4	CI A.I	Deviation Over-	1 to	1 refer- ence	524288	All	Immedi-	Setup	*1			
		flow Alarn	n Level	1,073,741,823	unit	0	. 411	ately	Cotap	•			
Pn522	4		g Completed	0 to	1 refer- ence	7	All	Immedi-	Setup	*1			
. HOLL	7	Width		1,073,741,824	unit	,	/ WI	ately	Cotap	1			
Pn524	4	Near Sign	nal Width	1 to	1 refer- ence	107374	All	Immedi-	Setup	*1			
111024	_	iveal Sigi	iai vviatil	1,073,741,824	unit	1824	ΛII	ately	Jetup	1			
Pn526	4	Position I	Deviation Over-	1 to	1 refer-	524288	All	Immedi-	Setup	*1			
111320	4	Servo ON		1,073,741,823	ence unit	0	ΑII	ately	Setup	. 1			
Pn528	2		Deviation Over- ning Level at	10 to 100	1%	100	All	Immedi- ately	Setup	*1			
Pn529	2	Speed Limit Level at Servo ON		0 to 10,000	1 min ⁻¹	10000	Rotary	Immedi- ately	Setup	*1			
Pn52A	2	Reserved not chang	parameter (Do ge.)	-	-	20	Rotary	_	_	*1			
Pn52B	2		Warning Level	1 to 100	1%	20	All	Immedi- ately	Setup	*1			
		D C											

Setting

Setting

Parameter

Pn52C

2

Base Current Derating at Motor Overload Detection

10 to 100

1%

100

All

Default

Continued on next page.

After

restart

Setup

*1

6

Continued from previous page.

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Program Jo Related Se		0000h to 0005h	_	0000h	All	Immedi- ately	Setup	*1		
	_	1					I	-				
				gging Operation				'- D-504)	NI sala s	- (
				aiting time in Provements in Pna		orward by	travei distance	e in Ph531) >	< Number	OI		
				aiting time in Provements in Pna		everse by t	ravel distance	e in Pn531) >	< Number	of		
			2 mg (W	aiting time in Provements in Provements in Provents in Provements in Pro	536 n535 → Re	•		,				
Pn530		n.□□□X	3 mg	aiting time in Provements in P	536 n535 → Fo	•		•				
			4 in	(Waiting time in Pn535 \rightarrow Forward by travel distance in Pn531 \rightarrow Waiting time in Pn535 \rightarrow Reverse by travel distance in Pn531) \times Number of movements in Pn536								
			5 in	Naiting time in Pn535 \rightarrow Reverse by travel distance in Pn531 \rightarrow Waiting time in Pn535 \rightarrow Forward by travel distance in Pn531) \times Number of movements in In536								
		n.□□X□ Reserved parameter (Do not change.)										
		n.□X□□ Reserved parameter (Do not change.)										
		n.X000	Reserved pa	arameter (Do no	ot change.)						
Pn531	4	Program Jo Distance	ogging Travel	1 to 1,073,741,824	1 refer- ence unit	32768	All	Immedi- ately	Setup	*1		
Pn533	2	Program Joment Spee	ogging Move- d	1 to 10,000	Rotary: 1 min ⁻¹ Direct Drive: 0.1 min ⁻¹	500	Rotary	Immedi- ately	Setup	*1		
Pn534	2	Program Joeration/Dec	ogging Accel- celeration	2 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1		
Pn535	2	Program Joing Time	ogging Wait-	0 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1		
Pn536	2	Program Jober of Mov	ogging Num- ements	0 to 1,000	Times	1	All	Immedi- ately	Setup	*1		
Pn550	2	Analog Mo Voltage	nitor 1 Offset	-10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1		
Pn551	2	Analog Mo Voltage	nitor 2 Offset	-10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1		
Pn552	2	Analog Mo nification	nitor 1 Mag-	-10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1		
Pn553	2	Analog Mo nification	nitor 2 Mag-	-10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1		
Pn55A	2	Power Con Monitor Un	nit Time	1 to 1,440	1 min	1	All	Immedi- ately	Setup	-		
Pn560	2	Residual Vi Detection \		1 to 3,000	0.1%	400	All	Immedi- ately	Setup	*1		
Pn561	2	Overshoot Level	Detection	0 to 100	1%	100	All	Immedi- ately	Setup	*1		
Pn581	2	Zero Speed		1 to 10,000	1 mm/s	20	Linear	Immedi- ately	Setup	*1		
Pn582	2	Speed Coil Detection S Width	ncidence Signal Output	0 to 100	1 mm/s	10	Linear	Immedi- ately	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	
Pn583	2	Brake Refe put Speed		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 Joment Spee	ogging Move- d	1 to 10,000	1 mm/s	50	Linear	Immedi- ately	Setup	*1	
Pn586	2	Motor Runi Ratio	ning Cooling	0 to 100	1%/ Max. speed	0	Linear	Immedi- ately	Setup	_	
	2	cution Sele	tection Exe- ection for inear Encoder	0000h to 0001h	_	0000h	Linear	Immedi- ately	Setup	*1	
Pn587	n.□□□X		0 Do 1 Det	ction Selection not detect polarity.	arity.		r Encoder				
		n.□□X□	Reserved pa	rameter (Do no	ot change.	.)					
		n.□X□□	Reserved pa	rameter (Do no	ot change.	.)					
		n.X□□□	Reserved pa	rameter (Do no	ot change.						
		Pogenere+	ve Resistor	Depends on				Image!:			
Pn600	2	Capacity*4		model.*5	10 W	0	All	Immedi- ately	Setup	*1	
Pn601	2	Dynamic B tor Allowab Consumpti		0 to 65,535	10 J	0	All	After restart	Setup	*7	
Pn603	2	Regenerati tance	ve Resis-	0 to 65,535	10 mΩ	0	All	Immedi- ately	Setup	*1	
Pn604	2	Dynamic B tance	rake Resis-	0 to 65,535	10 mΩ	0	All	After restart	Setup	*7	
Pn61A	2	Reserved p	parameter (Do e.)	-	-	0000h	Linear	_	_	-	
Pn61B	2	Reserved p	parameter (Do e.)	-	-	250	All	-	-	_	
Pn61C	2	Reserved p	parameter (Do e.)	-	-	100	All	-	-	_	
Pn61D	2	Reserved p	parameter (Do e.)	_	-	0	All	_	_	-	
Pn621 to Pn628	_	Reserved p	parameter (Do e.)	_	-	-	All	_	-	_	
Pn68E	4	Reserved p	parameter (Do e.)	-	-	0	Rotary	_	-	-	
Pn690	2	Reserved p	parameter (Do e.)	-	-	0	Rotary	-	-	-	
Pn692	2	Reserved p	parameter (Do e.)	_	-	0	Rotary	-	_	_	
Pn694	2	Reserved p	parameter (Do e.)	_	-	0	Rotary	-	-	_	
Pn696	2	Reserved p	parameter (Do e.)	-	-	0	Rotary	-	_	_	
Pn698	2	Reserved p	parameter (Do e.)	_	-	0	Rotary	-	_		
Pn69A	2	Reserved p	parameter (Do e.)	-	-	0	Rotary	-	_	_	
Pn69C	2	Reserved p	parameter (Do e.)	_	-	0	Rotary	-	_	_	
Pn69E	2	Reserved p	parameter (Do e.)	-	-	0	Rotary	-	-	_	
Pn6A0	2	Reserved p	parameter (Do e.)		-	0	Rotary	_	_	-	

Continued from previous page.

Parameter 8	_								itinued fron				
Table Operation Paramicology Table Departion Table Depar		Size	N	lame		_					Refer- ence		
Table Operation Control Switching Condition Selection	Pn6A2	2			-	-	0	Rotary	_	-	_		
Pn6A4 Switch from speed table operation to torque (pressure) table operation when motor position exceeds Pn6A8. Switch from speed table operation to torque (pressure) table operation when motor position exceeds Pn6A8. Switch from speed table operation to torque (pressure) table operation when the pressure redaback detection value exceeds Pn6A7 × Pn6D2 or the motor position exceeds Pn6A8. Speed Table Reference Selection Do not perform speed table operation. Use speed table reference 1 (Pn6AC) (or speed table operation. Use speed table reference 1 (Pn6AC) and speed table reference 3 (Pn6AB) for speed table operation. Use speed table operation. Use speed table operation. Use speed table reference 1 (Pn6AC) through speed table reference 3 (Pn6BD) for speed table operation. Use speed table operation. Use speed table reference 1 (Pn6AC) through speed table reference 5 (Pn6B4) for speed table operation. Use speed table reference 1 (Pn6AC) through speed table reference 6 (Pn6BB) for speed table operation. Use speed table reference 1 (Pn6AC) through speed table reference 6 (Pn6BB) for speed table operation. Use torque (pressure) table operation. Use torque (pressure) table reference 1 (Pn6DC) torque (pressure) table operation. Use torque (pressure) table reference 1 (Pn6DC) through broque (pressure) table reference 2 (Pn6DB) for torque (pressure) table operation. Use torque (pressure) table reference 1 (Pn6DC) through torque (pressure) table reference 4 (Pn6DB) for torque (pressure) table operation. Use tor		2				_	0000h	All		Setup	4-4		
Pn6A4 Switch from speed table operation to torque (pressure) table operation when motor position exceeds Pn6A8. Switch from speed table operation to torque (pressure) table operation when motor position exceeds Pn6A8. Switch from speed table operation to torque (pressure) table operation when the pressure redaback detection value exceeds Pn6A7 × Pn6D2 or the motor position exceeds Pn6A8. Speed Table Reference Selection Do not perform speed table operation. Use speed table reference 1 (Pn6AC) (or speed table operation. Use speed table reference 1 (Pn6AC) and speed table reference 3 (Pn6AB) for speed table operation. Use speed table operation. Use speed table operation. Use speed table reference 1 (Pn6AC) through speed table reference 3 (Pn6BD) for speed table operation. Use speed table operation. Use speed table reference 1 (Pn6AC) through speed table reference 5 (Pn6B4) for speed table operation. Use speed table reference 1 (Pn6AC) through speed table reference 6 (Pn6BB) for speed table operation. Use speed table reference 1 (Pn6AC) through speed table reference 6 (Pn6BB) for speed table operation. Use torque (pressure) table operation. Use torque (pressure) table reference 1 (Pn6DC) torque (pressure) table operation. Use torque (pressure) table reference 1 (Pn6DC) through broque (pressure) table reference 2 (Pn6DB) for torque (pressure) table operation. Use torque (pressure) table reference 1 (Pn6DC) through torque (pressure) table reference 4 (Pn6DB) for torque (pressure) table operation. Use tor													
Pn6A4 Torque (Pressure) Reference 1 (Pn6AC) through speed table reference 9 (Pn6BA) to respect table operation.				Table Operat	ion Control Swi	tching Cor	ndition Sele	ection					
1			n.□□□X	0 the	the pressure feedback detection value exceeds Pn6A7 × Pn6D2 and the								
Pn6A4 O Do not perform speed table operation.				1 the	the pressure feedback detection value exceeds Pn6A7 × Pn6D2 or the motor								
Pn6A4 O Do not perform speed table operation.				Speed Table	Reference Sel	lection							
Pn6A4 Use speed table reference 1 (Pn6AC) for speed table operation.				+			operation.						
Pn6A4 Pn6A5 Pn6A6 Pn													
Pn6A4 Pn6A5 In.DIXD In.DIXD				2 sp	eed table opera	ation.	,						
Pn6A4 Pn6A5 Include Include				3 for	speed table op	eration.		<u> </u>					
Pn6A4 Pn6A4 Pn6A5 Incruse Pressure Sepect Table Sepect Table Sepect Table Sepect Table Pn6A6 Buse speed table Sepect Table				4 for	speed table op	peration.							
Pn6A4 Pn6A4 Pn6A5 Pn6A6 Pn6A7 Pn6A6 Pn			n.□□X□	o for	speed table op	peration.							
Ph6A4				6 for	speed table op	eration.	. ,			`			
September Sept	Pn6A4			/ for	speed table op	eration.	. ,			`			
Pn6BC for speed table operation.				8 for	speed table op	eration.					BA)		
Torque (Pressure) Reference Selection				9 (Pi	n6BC) for speed	d table ope	eration.						
Do not perform torque (pressure) table operation.								hrough speed	d table refere	ence 10			
1 Use torque (pressure) table reference 1 (Pn6D2) for torque (pressure) table operation. 2 Use torque (pressure) table reference 1 (Pn6D2) and torque (pressure) table reference 2 (Pn6D4) for torque (pressure) table operation. 3 Use torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table reference 3 (Pn6D6) for torque (pressure) table operation. 4 Use torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table reference 4 (Pn6D8) for torque (pressure) table operation. 5 Use torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table reference 5 (Pn6DA) for torque (pressure) table operation. Speed Table Operation Control Method Switching Selection 0 Disable Pn6A5 and enable Pn6A4 = n.□□□X. 1 Disable Pn6A4 = n.□□□X and enable Pn6A5. Pn6A5 4 Torque (Pressure) Reference during Speed Table Operation 1 Torque (Pressure) Reference during Speed Table Operation 2 Pressure Control Switching Pressure Percentage 2 Pressure Control Switching Pressure Percentage 3 Use torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table operation. 4 Use torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table operation. 5 Use torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table operation. 5 Use torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table operation. 5 Use torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table operation. 6 Use torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table operation. 7 Use torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table operation. 8 Use torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table operation. 8 Use torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table operation. 9 Use torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table operation. 9 Use torque (pressure) table operation. 9 Use torque (pressure) table referen			Torque (Pressure) Reference Selection										
Disable Pn6A5 4 Torque (Pressure) Reference during Speed Table Operation 1,073,741,824 1,000 2 Pressure Control Switching Pressure Centage 2 Pressure Control Switching Pressure Centage 2 Pressure Control Switching Pressure Percentage 4 Table Operation Switch of the prosition 2 1,147,483,647 1,483,647 1,483,647 1,483,647 1,483,647 1,483,647 1,483,647 1,483,647 1,483,647 1,483,647 1,483,647 1,483,647 1,483,647 1,482,4 1,484				0 Do	not perform to	rque (pres	sure) table	operation.					
Pn6A5 4 Torque (Pressure) Reference during Speed Table Operation Torque (ure) table	reference ⁻	I (Pn6D2) for	torque (pres	sure) table	<u> </u>		
Speed Table Operation Control Method Switching Selection 1 Disable Pn6A5 1 Disable Pn6A4 = n. □ □ □ X and enable Pn6A5. Torque (Pressure) Reference during Speed Table Operation 1,073,741,824 1% 0 All Immediately 1 Setup 4-8 1 Table Operation Switching Pressure Percentage 2,147,483,647 1 Table Operation Switching Pressure Percentage 2 Table Operation Switching Pressure On the Pn6A8 1 Table Operation Switching Pressure Percentage 1 Treference 1 (Pn6D2) through torque (pressure) table operation. 2			n.□X□□							ssure) tabl	е		
table reference 4 (Pn6D8) for torque (pressure) table operation. Sust torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table reference 5 (Pn6DA) for torque (pressure) table operation. Sust torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table operation. Sust torque (pressure) table reference 1 (Pn6D2) through torque (pressure) table operation. Sust torque (pressure) table reference 1 (Pn6D2) through torque (pressure) torque (pressure) table operation. Sust torque (pressure) table operation. Sust torque (pressure) table operation. Sust torque (pressure) table operation. Outlier torque (pressur										(pressure)			
Speed Table Operation Control Method Switching Selection 0 Disable Pn6A5 and enable Pn6A4 = n.				4 tal	ole reference 4 ((Pn6D8) fo	r torque (p	rèssure) table	e operation.	,			
n.X□□□ 0 Disable Pn6A5 and enable Pn6A4 = n.□□□X. 1 Disable Pn6A4 = n.□□□X and enable Pn6A5. Pn6A5 4 Torque (Pressure) Reference during Speed Table Operation 1,073,741,824 1% 0 All Immediately Setup 4-8 Pn6A7 2 Pressure Control Switching Pressure Percentage 0 to 10,000 0.01% 0 All Immediately Setup 4-8 Pn6A8 4 Table Operation Switching Pressure Percentage 0 All Immediately Setup 4-8										(pressure)			
n.X□□□ 0 Disable Pn6A5 and enable Pn6A4 = n.□□□X. 1 Disable Pn6A4 = n.□□□X and enable Pn6A5. Pn6A5 4 Torque (Pressure) Reference during Speed Table Operation 1,073,741,824 1% 0 All Immediately Setup 4-8 Pn6A7 2 Pressure Control Switching Pressure Percentage 0 to 10,000 0.01% 0 All Immediately Setup 4-8 Pn6A8 4 Table Operation Switching Pressure Percentage 0 All Immediately Setup 4-8				Speed Table	Operation Co	ntrol Meth	od Switch	ing Selection	1				
Pn6A5 4 Torque (Pressure) Reference during Speed 1,073,741,824 1% 0 All Immediately Setup 4-8 Pn6A7 2 Pressure Control Switching Pressure Percentage 0 to 10,000 0.01% 0 All Immediately Setup 4-8 Pn6A8 4 Table Operation Switching Pressure Percentage 0 to 10,000 1 reference unit 0 to 2,147,483,647 2 and 1 reference unit 0 All Immediately Setup 4-8			n.X□□□	0 Dis	sable Pn6A5 an	d enable F	Pn6A4 = n.	□□□X.					
Pn6A54ence during Speed Table Operation1,073,741,8241%0AllInfinediatelySetup4-8Pn6A72Pressure Control Switching Pressure Percentage0 to 10,0000.01%0AllImmediatelySetup4-8Pn6A84Table Operation Switching Pressure Percentage0 to 2,147,483,6471 reference ence unit0AllImmediatelySetup4-8				1 Di:	sable Pn6A4 = ı	n.□□□X 8	and enable	Pn6A5.					
Pn6A72Pressure Control Switching Pressure Per- centage0 to 10,0000.01%0AllImmediatelySetup4-8Pn6A84Table Operation Switching Position0 to 2,147,483,6471 refer- ence unit0AllImmediatelySetup4-8	Pn6A5	4	ence durir	ng Speed	0 10	1%	0	All		Setup	4-8		
Pn6A8 4 Table Operation Switching Position	Pn6A7	2	Pressure (Switching	Control	0 to 10,000	0.01%	0	All		Setup	4-8		
	Pn6A8	4				ence	0	All		Setup	4-8		
						uriit			Continue	ed on nex	t page.		

						Continued from previous page										
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence							
Pn6AA	4	Speed Limit for Torque (Pressure) Table Opera- tion	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-11							
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	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	0 to 2,147,483,647	1 refer- ence unit/s	0	All	Immedi- ately	Setup	4-5							
Pn6BC	4	Speed Table Reference	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) Reference 1	-1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-8, 4-11							
Pn6D4	4	Torque (Pressure) Reference 2	-1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-11							
Pn6D6	4	Torque (Pressure) Reference 3	-1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-11							

Continued from previous page.

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn6D8	4	Torque (Pressure) Reference 4	-1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-11
Pn6DA	4	Torque (Pressure) Reference 5	-1,073,741,824 to 1,073,741,824	1%	0	All	Immedi- ately	Setup	4-11
Pn6DC	4	Torque (Pressure) Reference Time 1	0 to 180,000	0.01 s	0	All	Immedi- ately	Setup	4-11
Pn6DE	4	Torque (Pressure) Reference Time 2	0 to 180,000	0.01 s	0	All	Immedi- ately	Setup	4-11
Pn6E0	4	Torque (Pressure) Reference Time 3	0 to 180,000	0.01 s	0	All	Immedi- ately	Setup	4-11
Pn6E2	4	Torque (Pressure) Reference Time 4	0 to 180,000	0.01 s	0	All	Immedi- ately	Setup	4-11
	2	Communications Controls	0000h to 1FF3h	_	1040h	All	Immedi- ately	Setup	-
				•				•	

		MECH	IATROLINK Communications Check Mask for Debugging
		0	Do not mask.
		1	Ignore MECHATROLINK communications errors (A.E60).
	n.□□□X	2	Ignore WDT errors (A.E50).
		3	Ignore both MECHATROLINK communications errors (A.E60) and WDT errors (A.E50).
		Warnii	ng Check Masks
		0	Do not mask.
		1	Ignore data setting warnings (A.94□).
		2	Ignore command warnings (A.95□).
		3	Ignore both A.94□ and A.95□ warnings.
		4	Ignore communications warnings (A.96□).
00		5	Ignore both A.94□ and A.96□ warnings.
00		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□, A.97A, and A.97b warnings.
		Α	Ignore A.95□, A.97A, and A.97b warnings.
		В	Ignore A.94□, A.95□, A.97A, and A.97b warnings.
		С	Ignore A.96□, A.97A, and A.97b warnings.
		D	Ignore A.94□, A.96□, A.97A, and A.97b warnings.
		Е	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.)
		Autom	natic Warning Clear Selection for Debugging
	n.X□□□	0	Retain warnings for debugging.
		1	Automatically clear warnings (MECHATROLINK-III specification).

Parameter No.	Size	Na	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Application Selections Limits)	Function 6 (Software	0000h to 0103h	-	0003h	All	Immedi- ately	Setup	*1	
Pn801		n.□□□X	1 Disak 2 Disak	le both forward ble forward soft ble reverse soft	t Selection e both forward and reverse software limits. e forward software limit. e reverse software limit. e both forward and reverse software limits.						
		n.□□X□	Reserved par	rameter (Do no	ot change.	.)					
		n.□X□□	O Do not perform software limit checks for references. Perform software limit checks for references.								
	n.X□□□		Reserved par	rameter (Do no	ot change.	.)				I	
Pn803	2	Origin Ran	ge	0 to 250	1 refer- ence unit	10	All	Immedi- ately	Setup	*2	
Pn804	4	Forward So	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 Sc	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 El Offset	ncoder Origin	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	0	All	Immedi- ately *7	Setup	*1	
Pn80A	2	First Stage eration Cor	Linear Accel- nstant	1 to 65,535	10,000 refer- ence units/s ²	100	All	Immedi- ately *8	Setup	*2	
Pn80B	2	Second Sta Acceleration	age Linear on Constant	1 to 65,535	10,000 refer- ence units/s ²	100	All	Immedi- ately *8	Setup	*2	
Pn80C	2	Acceleration Switching S	on Constant Speed	0 to 65,535	100 reference units/s	0	All	Immedi- ately *8	Setup	*2	
Pn80D	2	First Stage Deceleration	Linear on Constant	1 to 65,535	10,000 refer- ence units/s ²	100	All	Immedi- ately *8	Setup	*2	
Pn80E	2	Second Sta Deceleration	age Linear on Constant	1 to 65,535	10,000 refer- ence units/s ²	100	All	Immedi- ately *8	Setup	*2	
Pn80F	2	Deceleration Switching S	on Constant Speed	0 to 65,535	100 reference units/s	0	All	Immedi- ately *8	Setup	*2	
Pn810	2		al Accelera- eration Bias	0 to 65,535	100 reference units/s	0	All	Immedi- ately *9	Setup	*2	
Pn811	2	Exponentia tion/Decele Constant	al Accelera- eration Time	0 to 5,100	0.1 ms	0	All	Immedi- ately *9	Setup	*2	
Pn812	2	Movement Time	Average	0 to 5,100	0.1 ms	0	All	Immedi- ately *9	Setup	*2	
Pn814	4	External Po Final Travel		-1,073,741,823 to 1,073,741,823	1 refer- ence unit	100	All	Immedi- ately	Setup	*2	
Pn816	2	Reserved p (Do not cha	parameters ange.)	_	-	0000h	All	_	_	_	

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								. p. c	
Parameter	Size	Name	Setting	Setting	Default	Applicable	When	Classi-	Refer-
No.	S	1441110	Range	Unit	Setting	Motors	Enabled	fication	ence
Pn817	2	Origin Approach Speed	0 to 65,535	100 reference units/s	50	All	Immedi- ately *8	Setup	*2
Pn818 *11	2	Origin Approach Speed 2	0 to 65,535	100 reference units/s	5	All	Immedi- ately *8	Setup	*2
Pn819	4	Final Travel Distance for Origin Return	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	100	All	Immedi- ately	Setup	*2
Pn81E	2	Reserved parameters (Do not change.)	-	_	0000h	All	-	-	_
Pn81F	2	Reserved parameters (Do not change.)	_	_	0010h	All	ı	-	-
Pn820	4	Forward Latching Area	-2,147,483,648 to 2,147,483,647	1 refer- ence unit	0	All	Immedi- ately	Setup	*2
Pn822	4	Reverse Latching Area	-2,147,483,648 to 2,147,483,647	1 refer- ence unit	0	All	Immedi- ately	Setup	*2

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Option Monitor 1 Selection	0000h to FFFFh	-	0000h	All	Immedi- ately	Setup	*2

	Setting	Monitor	Applicable Mo
	High-Speed	Monitor Region	
	0000h	Motor speed [overspeed detection speed*12/1000000h]	All
	0001h	Speed reference [overspeed detection speed*12/1000000h]	All
	0002h	Torque [maximum torque/1000000h]	All
	0003h	Position deviation (lower 32 bits) [reference units]	All
	0004h	Position deviation (upper 32 bits) [reference units]	All
	000Ah	Encoder count (lower 32 bits) [reference units]	All
	000Bh	Encoder count (upper 32 bits) [reference units]	All
	000Ch	FPG count (lower 32 bits) [reference units]	All
	000Dh	FPG count (upper 32 bits) [reference units]	All
	Low-Speed	Monitor Region	
	0010h	Un000: Motor speed [min ⁻¹]	All
	0011h	Un001: Speed Reference [min ⁻¹]	All
	0012h	Un002: Torque Reference [%]	All
		Un003: Rotational Angle 1 [encoder pulses]	7 (11
	0013h	Number of encoder pulses from encoder phase C displayed in decimal	All
		Un003: Electrical Angle 1 [linear encoder pulses] Linear encoder pulses from the polarity origin displayed in decimal	
		Un004: Rotational Angle 2 [deg]	
	0014h	Electrical angle from polarity origin	All
		Un004: Electrical Angle 2 [deg] Electrical angle from polarity origin	
	0015h	Un005: Input Signal Monitor	All
	0016h	Un006: Output Signal Monitor	All
-	0017h	Un007: Input Reference Speed [min ⁻¹]	All
	0017H	Un008: Position Deviation [reference units]	All
	0010h	Un009: Accumulated Load Ratio [%]	All
	0013h	Un00A: Regenerative Load Ratio [%]	All
	001An	Un00B: Dynamic Brake Resistor Power Consumption [%]	All
	001Dh	Un00C: Input Reference Pulse Counter [reference units]	All
	001Dh	Un00D: Feedback Pulse Counter [encoder pulses]	All
	001Bh	Initial multiturn data [Rev]	Rotary
	0024h	Initial incremental data [pulses]	Rotary
	0025h	Initial absolute position data (lower 32 bits) [pulses]	Linear
	0026h	Initial absolute position data (lower 62 bits) [pulses]	Linear
	0020H	Un025: SERVOPACK Installation Environment Monitor	All
	0040H	Un026: Servomotor Installation Environment Monitor	All
	004111 0042h	Un027: Built-in Fan Remaining Life Ratio	All
	0042H	Un028: Capacitor Remaining Life Ratio	All
	0043H	Un029: Surge Prevention Circuit Remaining Life Ratio	All
	0044H	Un02A: Dynamic Brake Circuit Remaining Life Ratio	All
	0043H	Un032: Instantaneous Power	All
	0047h	Un033: Power Consumption	All
	0047H 0048h	Un034: Cumulative Power Consumption	All
	0048H 0050h	Pressure feedback detection monitor	All
	0050H 0052h		All
	0100h	Control method change monitor Speed/torque (pressure) table operation monitor	All
	0100h	Other station monitor data	All

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		1				ı		ntinued fror	n previou	s page.
Parameter No.	Size	1	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
		Setting			Mon	itor			Applic	
	С	ommunica	tions Modu	-						
	_	0080h		lue of latched fe					Al	
Pn824	_	0081h 0084h		llue of latched fe Latch Status (E	•	ition (LPOS	S2) [reference	units	Al	
	_	II Areas	Continuous	Later Status (L	A 3 [A [U 3]				Al	ı
	_	Other	Danamanda	attings (Danst.)				Δ.	
		ralues	Reserved s	ettings (Do not ι	ise.)				Al	I
									1	T
	2	Option Mo	onitor 2 Sele	ec- 0000h to	_	0000h	All	Immedi- ately	Setup	*2
		1000						atory		
Pn825	_									
		0000h to 0084h	The sett	ings are the sam	e as those f	or the Opt	ion Monitor 1	Selection.		
	000411									
					10,000	T			1	
Pn827	2		celeration	1 to 65,535	10,000 refer-	100	All	Immedi-	Setup	*2
F11021	_	Constant	1 for Stopp	ing 1 10 05,550	ence units/s ²	100	All	ately *8	Setup	- 2
		SVOFF W	aiting Time (for	di iito/ o			Immedi-		
Pn829	2	SVOFF at to Stop)	Deceleration	n 0 to 65,538	5 10 ms	0	All	ately *8	Setup	*2
D=00A	2	1 /	parameters		_	1010b	AII		_	
Pn82A	2	(Do not cl		_	_	1813h	All	_	_	_
Pn82B	2	Reserved (Do not cl	parameters hange.)	_	_	1D1Ch	All	_	_	_
Pn82C	2	Reserved (Do not cl	parameters hange.)	_	_	1F1Eh	All	-	_	_
Pn82D	2	Reserved (Do not cl	parameters hange.)	_	_	0000h	All	-	_	_
Pn82E	2	Reserved (Do not cl	parameters hange.)	_	_	0000h	All	-	_	_
	2	Motion Se	ettings	0000h to 0001h	_	0000h	All	After restart	Setup	*2
			Linear Ac	celeration/Dece	leration Co	nstant Sel	ection			1
				lse Pn80A to Pn	80F and Pna	327. (The s	settings of Pn	834 to Pn84	0 are	_
		n.□□□X	IÇ	gnored.) Ise Pn834 to Pn8	240 /Tho ac	attings of D	In OOA to Doo	DE and Dnoo	7 oro	_
Pn833				gnored.)	540. (THE SE	ittii igs Oi i		or and rinoz	7 ale	_
	Ī	n.□□X□	Reserved	parameter (Do	not change	.)				Ī
		n. 🗆 X 🗆 🗆	Reserved	parameter (Do	not change	.)				Ī
	-	- VODO	Danaman	, , , , , , , , , , , , , , , , , , ,		`				-
		n.X□□□	Reserved	parameter (Do	not change	.)				
					10,000				<u> </u>	
Pn834	4	First Stag eration Co	e Linear Acc onstant 2	cel- 20,971,520	refer-	100	All	Immedi- ately *8	Setup	*2
Pn836	4	Second S Accelerat	Stage Linear ion Constan	1 to t 2 20,971,520	10,000 refer- ence units/s ²	100	All	Immedi- ately *8	Setup	*2
Pn838	4		ion Constan Speed 2	t 0 to 2,097,152,00	1 reference unit/s	0	All	Immedi- ately *8	Setup	*2
				• •				0 11	d on nev	.4

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn83A	4	First Stage Linear Deceleration Constant 2	1 to 20,971,520	10,000 refer- ence units/s ²	100	All	Immedi- ately *8	Setup	*2
Pn83C	4	Second Stage Linear Deceleration Constant 2	1 to 20,971,520	10,000 refer- ence units/s ²	100	All	Immedi- ately *8	Setup	*2
Pn83E	4	Deceleration Constant Switching Speed 2	0 to 2,097,152,000	1 refer- ence unit/s	0	All	Immedi- ately *8	Setup	*2
Pn840	4	Linear Deceleration Constant 2 for Stopping	1 to 20,971,520	10,000 refer- ence units/s ²	100	All	Immedi- ately *8	Setup	*2
Pn842 *10	4	Second Origin Approach Speed 1	0 to 20,971,520	100 reference units/s	0	All	Immedi- ately *8	Setup	*2
Pn844 *11	4	Second Origin Approach Speed 2	0 to 20,971,520	100 reference units/s	0	All	Immedi- ately *8	Setup	*2
Pn846	2	POSING Command Scurve Acceleration/ Deceleration Rate	0 to 50	1%	0	All	Immedi- ately *8	Setup	-
Pn850	2	Number of Latch Sequences	0 to 8	-	0	All	Immedi- ately	Setup	*2
Pn851	2	Continuous Latch Sequence Count	0 to 255	_	0	All	Immedi- ately	Setup	*2
	2	Latch Sequence 1 to 4 Settings	0000h to 3333h	_	0000h	All	Immedi- ately	Setup	*2

		Latch S	Sequence 1 Signal Selection
		0	Phase C
	n.□□□X	1	EXT1 signal
		2	EXT2 signal
		3	EXT3 signal
Pn852		Latch S	Sequence 2 Signal Selection
1 11032	n.□□X□	0 to 3	The settings are the same as those for the Latch Sequence 1 Signal Selection.
		Latch S	Sequence 3 Signal Selection
	n.□X□□	0 to 3	The settings are the same as those for the Latch Sequence 1 Signal Selection.
		Latch S	Sequence 4 Signal Selection
	n.X□□□	0 to 3	The settings are the same as those for the Latch Sequence 1 Signal Selection.

Continued from previous page.

Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Latch Seq Settings	uence 5 to 8	0000h to 3333h	-	0000h	All	Immedi- ately	Setup	*2	
									•		
			Latch Seque	ence 5 Signal S	Selection						
			0 Pha	se C						_	
		n.□□□X	1 EXT	1 signal						_	
				2 signal							
			3 EXT	3 signal						_	
			Latch Seque	ence 6 Signal S	Selection						
Pn853		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 Seque	ence 7 Signal S	Selection						
		n.□X□□	0 to 3 The tion.	settings are the	e same as	those for the	he Latch Sequ	uence 5 Sigr	nal Selec-	_	
			Latch Sequence 8 Signal Selection								
		n.X□□□	0 to 3 The tion.	The settings are the same as those for the Latch Sequence 5 Signal Selection.							
	2	SVCMD_IO Monitor Al	O Input Signal locations 1	0000h to 1717h	_	0000h	All	Immedi- ately	Setup	*2	
										_	
		Input Signal Monitor Allocation for CN1-13 (SVCMD_IO)									
				cate bit 24 (IO_						_	
				ate bit 25 (IO_						_	
		- DDDV		cate bit 26 (IO_S						_	
		n.□□□X		cate bit 27 (IO_S						=	
				cate bit 28 (IO_S cate bit 29 (IO_S		· ·				_	
				cate bit 29 (IO_C						_	
Pn860				cate bit 31 (IO_S						_	
							-			- -	
		~ UUVU		ut Signal Monit							
		n.□□X□		ble allocation for						_	
	1 Enable allocation for CN1-13 input signal monitor.									_ _	
		n.□X□□	<u> </u>	Monitor Alloca		•	•				
			0 to 7 The	settings are the	same as	the CN1-1	3 allocations.			_	
			CN1-7 Input	Signal Monito	r Enable/D	Disable Se	lection				
		n.X□□□		ble allocation fo						_	
			1 Enal	ole allocation fo	r CN1-7 in	put signal	monitor.			_	

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	SVCMD_IC Monitor All) Input Signal ocations 2	0000h to 1717h	_	0000h	All	Immedi- ately	Setup	*2
		n.□□□X		Monitor Alloca						1
Pn861		п.□□Х□	0 Disab	Signal Monitoral	or CN1-8 in	nput signal	monitor.			Ī
		n.□X□□		Monitor Alloca settings are the						
		n.X000	0 Disab	Signal Monitor ole allocation for le allocation for	or CN1-9 in	nput signal	monitor.			I - -
	2	SVCMD_IC Monitor All) Input Signal ocations 3	0000h to 1717h	-	0000h	All	Immedi- ately	Setup	*2
		n.□□□X		Monitor Alloca ettings are the]
Pn862		n.□□X□	0 Disab	t Signal Monitories allocation for the allocation for the allocation for the signal of	or CN1-10	input signa	al monitor.] -
		n.□X□□		Monitor Alloca settings are the						_
		n.X000	0 Disab	t Signal Monitorile allocation for	or CN1-11	input signa	al monitor.] - -
	2	SVCMD_IC Monitor All) Input Signal ocations 4	0000h to 1717h	-	0000h	All	Immedi- ately	Setup	*2
		п.□□□Х		Monitor Alloca settings are the		•	= /			
Pn863		n.□□X□	0 Disab	t Signal Monitor ble allocation for le allocation for	or CN1-12	input signa	al monitor.] -
		n.□X□□	Reserved par	ameter (Do no	ot change.)				
		n.X□□□	Reserved par	ameter (Do no	ot change.)				

Continued from previous page.

					1					s page.
Parameter No.	Size		lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	SVCMD_IC nal Monito	Output S r Allocation	ig- ns 0000h to 1717h	_	0000h	All	Immedi- ately	Setup	*2
		'								
										-
				ignal Monitor Allo			•	,		
				Allocate bit 24 (IO_S			<u> </u>			
				Allocate bit 25 (IO_S						=
				Allocate bit 26 (IO_S						_
		n.□□□X		Allocate bit 27 (IO_S						=
				Allocate bit 28 (IO_S						=
				Allocate bit 29 (IO_S Allocate bit 30 (IO_S						_
Pn868				Allocate bit 31 (IO_S						-
			, ,	Nicate bit 51 (IC_t	3130) 10 C	7141-170141	-2 output sig	nai monitoi.		_ _
			CN1-1/C	N1-2 Output Signa	al Monitor	Enable/D	sable Selecti	ion		
		n.□□X□	0 [Disable allocation for	or CN1-1/0	CN1-2 outp	out signal mo	nitor.		_
			1 E	Enable allocation fo	r CN1-1/C	N1-2 outp	ut signal mor	nitor.		=
	Ī		Output S	ignal Monitor Allo	cation for	CN1-23 aı	nd CN1-24 (S	SVCMD IO)		Ī
		n.□X□□		he settings are the			•			-
			014 00/	011 01 0 1 10			/D: 11 0 1			- T
		VOOD		CN1-24 Output Signature						
		n.X□□□		Disable allocation fo						-
			1 Enable allocation for CN1-23/CN1-24 output signal monitor.						_	
		0) (0) 40 10	20 1 10						I	
	2	SVCMD_IC nal Monito	r Allocation	ons 0000h to 1717h	_	0000h	All	Immedi-	Setup	*2
		2		17 1711				ately		
		n.□□□X	Output S	ignal Monitor Allo	cation for	CN1-25 aı	nd CN1-26 (S	SVCMD_IO)		
			0 to 7 T	he settings are the	same as	the CN1-1	/CN1-2 alloca	ations.		_
										_
			CN1-25/9	CN1-26 Output Si	anal Moni	tor Enable	/Disable Sele	ection		
Pn869		n.□□X□		CN1-26 Output Signification for						
Pn869		n.□□X□	0 [CN1-26 Output Signification for Enable allocation for	or CN1-25	/CN1-26 o	utput signal r	nonitor.		_
Pn869			0 E	Disable allocation for	or CN1-25. r CN1-25/	/CN1-26 o	utput signal r	nonitor.		_ - -
Pn869		n.00X0	0 E	Disable allocation fo	or CN1-25. r CN1-25/	/CN1-26 o	utput signal r	nonitor.		 - -
Pn869			0 [1 E	Disable allocation for	or CN1-25, r CN1-25/ ot change	/CN1-26 o	utput signal r	nonitor.] - - [
Pn869		n.□X□□	0 [1 E	Disable allocation for Enable allocation for Indianate I	or CN1-25, r CN1-25/ ot change	/CN1-26 o	utput signal r	nonitor.		
Pn869		n.□X□□ n.X□□□	0 E Reserved	Disable allocation for a parameter (Do not param	or CN1-25, r CN1-25/ ot change	/CN1-26 o	utput signal r	nonitor.		I - I I
Pn869	2	n.□X□□ n.X□□□ Station Ad tor (for ma	0 C 1 E Reserved	Disable allocation for Enable allocation for Inable allocation for	or CN1-25, r CN1-25/ ot change	/CN1-26 o	utput signal r	nonitor.	Setup	 - -
		n.□X□□ n.X□□□ Station Ad tor (for ma read only)	0 C 1 E Reserved Reserved dress Monintenance,	Disable allocation for Enable allocation for Inable allocation for	or CN1-25, r CN1-25/ ot change	/CN1-26 o	utput signal r	nonitor.	Setup	 -
Pn880	2	n.□X□□ n.X□□□ Station Ad tor (for ma read only) Set Transn	0 C 1 E Reserved Reserved dress Monintenance,	Disable allocation for Enable allocation for Inable allocation for	or CN1-25, r CN1-25/ ot change	/CN1-26 o	utput signal nutput signal m	nonitor.	'	- - - - -
		n.□X□□ n.X□□□ Station Ad tor (for ma read only) Set Transn Count Mor (for mainte	0 C 1 E Reserved Reserved dress Monintenance, nission Bytel	Disable allocation for Enable allocation for Inable allocation for	or CN1-25, r CN1-25/ ot change	/CN1-26 o	utput signal r	nonitor.	Setup	
Pn880	2	n.□X□□ n.X□□□ Station Ad tor (for ma read only) Set Transn Count Mor (for mainte only)	Reserved Reserved dress Monintenance, nission Bythitor [bytesenance, real	Disable allocation for Enable allocation for Enable allocation for the parameter (Do not be parameter (Do not be parameter) (Do not	or CN1-25, r CN1-25/ ot change	/CN1-26 o	utput signal nutput signal m	nonitor.	'	 -
Pn880 Pn881	2	n.□X□□ n.X□□□ Station Ad tor (for ma read only) Set Transm Count Mor (for mainte only) Transmissiting Monitor	Reserved Reserved dress Monintenance, nission Bythitor [bytes enance, real on Cycle Sor [x 0.25]	Disable allocation for Enable allocation for Enable allocation for Inable allocation for	or CN1-25, r CN1-25/ ot change	/CN1-26 o	utput signal rutput signal r	nonitor.	Setup	- - - - -
Pn880	2	n.□X□□ n.X□□□ Station Ad tor (for ma read only) Set Transn Count Mor (for mainte only) Transmissi ting Monitt (for mainte (for mainte only)	Reserved Reserved dress Monintenance, nission Bythitor [bytes enance, real on Cycle Sor [x 0.25]	Disable allocation for Enable allocation for Enable allocation for Inable allocation for	or CN1-25, r CN1-25/ ot change	/CN1-26 o	utput signal nutput signal m	nonitor.	'	 -
Pn880 Pn881	2	n.□X□□ n.X□□□ Station Ad tor (for ma read only) Set Transn Count Mor (for mainte only) Transmissi ting Monite (for mainte only) Communic	Reserved Reserved dress Monintenance, nission Bythitor [bytestanance, real on Cycle Spr. [x 0.25] enance, real cations Cyc	Disable allocation for Enable allocation for Enable allocation for It parameter (Do not It pa	or CN1-25, r CN1-25/ ot change	/CN1-26 o	utput signal rutput signal r	nonitor.	Setup	
Pn880 Pn881	2	n.□X□□ n.X□□□ Station Ad tor (for ma read only) Set Transn Count Mor (for mainte only) Transmissi ting Monito (for mainte only) Communic Setting Mo	Reserved Reserved dress Monintenance, nission Bythitor [bytesenance, real on Cycle Sor [x 0.25] enance, real cations Cyconitor [trans	Disable allocation for Enable allocation for Enable allocation for It parameter (Do not It pa	or CN1-25, r CN1-25/ ot change	/CN1-26 o	utput signal rutput signal r	nonitor.	Setup	- - - -
Pn880 Pn881 Pn882	2 2	n.□X□□ n.X□□□ Station Ad tor (for ma read only) Set Transn Count Mor (for mainte only) Transmissi ting Monite (for mainte only) Communic	Reserved Reserved dress Monintenance, nission Bythitor [bytesenance, real on Cycle Sor [x 0.25] enance, real cations Cyc onitor [transceles] (for	Disable allocation for Enable allocation for Enable allocation for Inable allocation for	or CN1-25, r CN1-25/ ot change	/CN1-26 o	utput signal mutput signal mut	nonitor.	Setup	- - - -

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Parameter	Ф				Setting	Setting	Default	Applicable	When	Classi-	Refer-		
No.	Size		Name		Range	Unit	Setting	Motors	Enabled	fication	ence		
	2	Commun trols 2	ications	Con-	0000h to 0001h	_	0000h	All	Immedi- ately	Setup	*2		
	_			TD 01.1				5 . 0					
					NK Communic					en a			
	n	X	0	MECH	ATROLINK cor	nmunicati	ons error c	occurs.					
Pn884			1	Apply	the holding bra	ake when a	a MECHAI	ROLINK com	munications	error occi	urs.		
	n	.DDXD	Reserve	ed para	ımeter (Do not	change.)							
	n	.0X00	Reserve	ed para	ımeter (Do not	change.)							
	n	.X000	Reserve	ed para	rameter (Do not change.)								
Pn88A	2	MECHATI Receive E Monitor (for maint only)	Error Cou		0 to 65,535	-	0	All	-	Setup	-		
Pn890 to Pn8A6	4	Commandor during ing (for maint only)	g Alarm/V	Varn-	Oh to FFFFFFFh	_	Oh	All	_	Setup	*2		
Pn8A8 to Pn8BE	4	Response during Ala (for maint only)	arm/Warı	ning	Oh to FFFFFFFh	_	0h	All	_	Setup	*2		
Pn900	2	Number of Banks	of Param	eter	0 to 16	_	0	All	After restart	Setup	*2		
Pn901	2	Number of Bank Mer		eter	0 to 15	-	0	All	After restart	Setup	*2		
Pn902 to Pn910	2	Paramete ber Defini		1em-	0000h to 08FFh	_	0000h	All	After restart	Setup	*2		
Pn920 to Pn95F	2	Paramete (Not save memory.)			0000h to FFFFh	_	0000h	All	Immedi- ately	Setup	*2		
Pn9B1	2	Other Sta Station A		itor 1:	0002h to FEEFh	_	0002h	All	After restart	Setup	3-11		
	2	Other Sta Number of sion Byte	of Transn		0000h to 0004h	-	0003h	All	After restart	Setup	3-11		
		n.□□□X	_	ss Offs									
			0	Rese	rved paramete	r (Do not s	set.)						
			2	32 by							_		
Pn9B2			3	48 by							_		
			4	Rese	rved paramete	r (Do not s	et.)				- -		
		n.□□X□	Reser	ved pai	rameter (Do no	t change.)							
	l	n.□X□□ Reserved parameter (Do not change.)											
		n.X□□□	Reser	ved pai	rameter (Do no	t change.)							
											=		
									Continue	ed on nex	t nago		

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Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Other Stati Monitor Inf ting			0000h to 14FFh	-	1000h	All	After restart	Setup	3-11
	_										_
		n.□□XX	Addres								
			00		mand: 20, Res	•					_
			01	Comi	mand: 0, Resp	onse: u					=
			02	Comr	mand: CMD_C	TRL, Resp	onse: CM	D_STAT			
			04	Comr	mand: 0, Resp	onse: Tota	l input low	er 8 bits			_
			05		mand: 0, Resp						=
			06		mand: 0, Resp						_
			07	Comr	mand: 0, Resp	onse: Inpu	ıt 0 upper	8 bits			
			08	Comr	mand: 0, Resp	onse: Inpu	ıt 1 lower 8	3 bits			_
			09	Comr	mand: 0, Resp	onse: Inpu	ıt 1 upper	8 bits			<u> </u>
Pn9B3			10		mand: 0, Resp						_
			11		mand: 0, Resp						_
			12		mand: 0, Resp						_
			13		mand: 0, Resp						_
			14 15		nand: 0, Resp						_
			10	COITII	nana. o, nesp	01136. 0					_
	1	n.□X□□		ize (Ur	nit: Bytes)						
			0	0 byte							_
			1	1 byte							_
			2 3*16	2 byte							=
			4	3 byte							_
			4	4 Dyte	J3						_ _
		n.X□□□	Reserv	ed par	ameter (Do no	ot change.)				
								,			
Pn9B4	2	Other Stati	dress		0002h to FEEFh	-	0002h	All	After restart	Setup	3-12
Pn9B5	2	Other Stati Number of sion Bytes			0 to 4	_	3	All	After restart	Setup	3-12
Pn9B6	2	Other Stati Monitor Inf ting			0000h to 14FFh	-	1000h	All	After restart	Setup	3-12
Pn9B7	2	Other Stati Station Add		tor 3:	0002h to FEEFh	-	0002h	All	After restart	Setup	3-12
Pn9B8	2	Other Stati Number of sion Bytes			0 to 4	_	3	All	After restart	Setup	3-12
Pn9B9	2	Other Stati Monitor Inf ting			0000h to 14FFh	-	1000h	All	After restart	Setup	3-12
Pn9BA	2	Other Stati Station Add		tor 4:	0002h to FEEFh	-	0002h	All	After restart	Setup	3-12
Pn9BB	2	Other Stati Number of sion Bytes			0 to 4	-	3	All	After restart	Setup	3-12
Pn9BC	2	Other Stati Monitor Inf ting			0000h to 14FFh	-	1000h	All	After restart	Setup	3-12
Pn9BD	2	Other Stati Station Add	dress		0002h to FEEFh	-	0002h	All	After restart	Setup	3-12
Pn9BE	2	Other Stati Number of sion Bytes			0 to 4	-	3	All	After restart	Setup	3-12

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn9BF	2	Other Station Monitor 5: Monitor Information Set- ting	0000h to 14FFh	-	1000h	All	After restart	Setup	3-12
	2	Other Station Monitor Target Station Selection	0000h to 0F55h	-	0000h	All	After restart	Setup	3-12

	n.□□□X	Other	Station Monitor Target Station Selection 1
		0	No selection
		1	CH1
		2	CH2
		3	CH3
		4	CH4
		5	CH5
D. 000	n.□□X□	Other	Chatian Manitan Tannat Chatian Calcation C
Pn9C0			Station Monitor Target Station Selection 2
		0	No selection
		1	CH1
		2	CH2
		3	CH3
		4	CH4
		5	CH5
		1_	
	n.□X□□	Reserv	ved parameter (Do not change.)
	n.X□□□	Reserv	ved parameter (Do not change.)
			•

- *1. 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)
- *2. Refer to the following manual for details.
 - 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. Normally set this parameter to 0. If you use an External Regenerative Resistor, set the capacity (W) of the External Regenerative Resistor.
- *5. The upper limit is the maximum output capacity (W) of the SERVOPACK.
- *6. These parameters are for SERVOPACKs with the dynamic brake option. Refer to the following manual for details.
 - Σ-7-Series Σ-7S/Σ-7W SERVOPACK with Hardware Option Specifications Dynamic Brake Product Manual (Manual No.: SIEP S800001 73)
- *7. The parameter setting is enabled after SENS_ON command execution is completed.
- *8. 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.
- *9. The settings are updated only if the reference is stopped (i.e., only if DEN is set to 1).
- *10. The setting of Pn842 is valid while Pn817 is set to 0.
- *11. The setting of Pn844 is valid while Pn818 is set to 0.
- *12. You can check overspeed detection speed with MECHATROLINK-III Common Parameter 05 PnA0A (Maximum Output Speed).
- *13.If you set Pn9B3 to n.□3□□, the data size will be the same as if you set Pn9B3 to n.□2□□ .

6.3.2 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 tion (read o	rpe Selec- only)	Oh or 1h	-	-	All	-	
01 PnA02		0000h	Absolute	encoder					
		0001h	Incremen	tal encoder					
	4	Motor Type (read only)	Selection	0h or 1h	_	_	All	-	=
02 PnA04		0000h	Rotary Se	ervomotor					
		0001h	Linear Se	ervomotor					
	4	Semi-close closed Type tion (read c	e Selec-	0h or 1h	_	-	All	_	
03 PnA06		0000h	Semi-clo	and					ion
		0000h 0001h	Reserved						Device information
									9.
04 PnA08	4	Rated Speconly)	ed (read	0h to FFFFFFFh	x10^PnA0C min ⁻¹	-	All	_	Devic
05 PnA0A	4	Maximum (Speed (rea		Oh to FFFFFFFh	x10^PnA0C min ⁻¹	_	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	Oh to FFFFFFFh	x10^PnA12 N·m	-	All	_	
08 PnA10	4	Maximum (Torque (rea	Output ad only)	Oh to FFFFFFFh	x10^PnA12 N·m	_	All	_	
09 PnA12	4	Torque Mul (read only)	Itiplier	-1,073,741,823 to 1,073,741,823	-	-	All	_	
0A PnA14	4	Resolution (read only)		Oh to FFFFFFFh	1 pulse/rev	-	Rotary	-	
0B PnA16	4	Linear Scal	le Pitch	0 to 65,536,000	1 nm [0.01 μm]	0	Linear	After restart	
0C PnA18	4	Pulses per Pitch (read		Oh to FFFFFFFh	1 pulse/ pitch	_	Linear	-	

						,	Jonunuea ir	OITI PIEVIOI	
Parameter No.	Size	Name		Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication
21 PnA42	4	Electronic Ge (Numerator)	ar Ratio	1 to 1,073,741,824	-	16	All	After restart	
22 PnA44	4	Electronic Ge (Denominator		1 to 1,073,741,824	-	1	All	After restart	
23 PnA46	4	Absolute Enc Origin Offset	oder	-1,073,741,823 to 1,073,741,823	1 reference unit	0	All	Immedi- ately*1	
24 PnA48	4	Multiturn Limi	it	0 to 65,535	1 Rev	65535	Rotary	After restart	-
	4	Limit Setting		0h to 33h	_	0000h	All	After restart	-
		Bit 0		(0: Enabled, 1: Di	· · · · · · · · · · · · · · · · · · ·				Machine specifications
25		Bit 2	Rese	rved.					ojįji
PnA4A		Bit 3	Rese						beć
		Bit 4		T (0: Disabled, 1:	Enabled)				Je s
		Bit 5		OT (0: Disabled, 1:	· · · · · · · · · · · · · · · · · · ·				chir
					Li labieu)				Ma
		Bits 6 to 31	Reserved.						
26 PnA4C	4	Forward Soft	ware	-1,073,741,823 to 1,073,741,823	1 reference unit	10737418 23	All	Immedi- ately	
27 PnA4E	4	Reserved par (Do not chang	ameter ge.)	_	_	0	All	Immedi- ately	
28 PnA50	4	Reverse Softv Limit	ware	-1,073,741,823 to 1,073,741,823	1 reference unit	-1073741 823	All	Immedi- ately	
29 PnA52	4	Reserved par (Do not chang		-	-	0	All	Immedi- ately	-
	4	Speed Unit S	election	0h to 4h	_	0h	All	After restart	-
		0000h F	Referenc	e units/s					
41				e units/min					
PnA82		0002h	Percenta	ge (%) of rated spe	eed*2,*3				
		0003h r	min ⁻¹ *3						
		0004h	Maximun	n motor speed/400	000000h*4				
				*					sbı
42 PnA84	4	Speed Base I Selection *2, * (Set the value from the follor formula: Spee	3, *4 e of n wing	-3 to 3	-	0	All	After restart	Unit settings
		selection							
	4	Position Unit tion	Selec-	Oh	_	0h	All	After restart	-
43									
PnA86		0000h F	Referenc	e units					
						·			
	l								1

6.3.2 List of MECHATROLINK-III Common Parameters

Continued from previous page.

Size Name Setting Range							`	Continued tr	OIII PIEVIO	is page
Selection Sele		Size	Name)	Setting Range	_				Classi- fication
Selection		4	Selection (Set the value from the follo formula: Posi selection	e of n wing tion unit	0	-	0	All		
Acceleration Base Unit Selection (3e) the value of n (4e) to 6 - 4 All After restart Acceleration (4e) to 70 All After restart A		4		Unit	0h	-	0h	All		
Unit Selection (Set the value of n from the following formula: Acceleration unit selection (45 PhASA) x 10") 4 to 6				eference	units/s ²				restart	
1000 Percentage (%) of rated torque*5		4	Unit Selection (Set the value from the follo formula: Acce unit selection	n e of n wing eleration	4 to 6	-	4	All		
PnA8E		4		Selec-	1h or 2h	-	1h	All		
1			0001h F	Percentac	ae (%) of rated tord	 aue*5				
48 PnA90 4 Selection*5.*6 (Set the value of n from the following formula: Torque unit selection (47 PnA8E) x 10°) 4 Supported Unit (read only) 5 Percentage (%) of rated speed (1: Enabled) Bit 1 Reference units/min (1: Enabled) Bit 2 Percentage (%) of rated speed (1: Enabled) Bit 4 Maximum motor speed/4000000h (1: Enabled) Bit 8 Reference units (1: Enabled) Bit 9 to 15 Reserved (0: Disabled). Acceleration Units Bit 16 Reference units (1: Enabled) Bit 17 ms (acceleration time required to reach rated speed) (0: Disabled) Torque Units Bit 24 N·m (0: Disabled) Bit 25 Percentage (%) of rated torque (1: Enabled) Bit 25 Percentage (%) of rated torque (1: Enabled)	FIIAOL									
48 PnA90 4 Selection*5.*6 (Set the value of n from the following formula: Torque unit selection (47 PnA8E) x 10°) 4 Supported Unit (read only) 5 Percentage (%) of rated speed (1: Enabled) Bit 1 Reference units/min (1: Enabled) Bit 2 Percentage (%) of rated speed (1: Enabled) Bit 4 Maximum motor speed/4000000h (1: Enabled) Bit 8 Reference units (1: Enabled) Bit 9 to 15 Reserved (0: Disabled). Acceleration Units Bit 16 Reference units (1: Enabled) Bit 17 ms (acceleration time required to reach rated speed) (0: Disabled) Torque Units Bit 24 N·m (0: Disabled) Bit 25 Percentage (%) of rated torque (1: Enabled) Bit 25 Percentage (%) of rated torque (1: Enabled)										
Speed Units Bit 0 Reference units/s (1: Enabled) Bit 1 Reference units/min (1: Enabled) Bit 2 Percentage (%) of rated speed (1: Enabled) Bit 4 Maximum motor speed/4000000h (1: Enabled) Bits 5 to 7 Reserved (0: Disabled). Position Units Bit 8 Reference units (1: Enabled) Bits 9 to 15 Reserved (0: Disabled). Acceleration Units Bit 16 Reference units/s² (1: Enabled) Bit 17 ms (acceleration time required to reach rated speed) (0: Disabled) 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/40000000h (1: Enabled)		4	Selection*5,*6 (Set the value from the follo formula: Torq selection	e of n wing ue unit	-5 to 0	-	0	All		Unit settings
Bit 0 Reference units/s (1: Enabled) Bit 1 Reference units/min (1: Enabled) Bit 2 Percentage (%) of rated speed (1: Enabled) Bit 3 min ⁻¹ (rpm) (1: Enabled) Bit 4 Maximum motor speed/4000000h (1: Enabled) Bits 5 to 7 Reserved (0: Disabled). Position Units Bit 8 Reference units (1: Enabled) Bits 9 to 15 Reserved (0: Disabled). Acceleration Units Bit 16 Reference units/s² (1: Enabled) Bit 17 ms (acceleration time required to reach rated speed) (0: Disabled) 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/40000000h (1: Enabled)		4		nit (read	_	_		All	_	
Bit 0 Reference units/s (1: Enabled) Bit 1 Reference units/min (1: Enabled) Bit 2 Percentage (%) of rated speed (1: Enabled) Bit 3 min ⁻¹ (rpm) (1: Enabled) Bit 4 Maximum motor speed/4000000h (1: Enabled) Bits 5 to 7 Reserved (0: Disabled). Position Units Bit 8 Reference units (1: Enabled) Bits 9 to 15 Reserved (0: Disabled). Acceleration Units Bit 16 Reference units/s² (1: Enabled) Bit 17 ms (acceleration time required to reach rated speed) (0: Disabled) 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/40000000h (1: Enabled)							L		L	
Bit 1 Reference units/min (1: Enabled) Bit 2 Percentage (%) of rated speed (1: Enabled) Bit 3 min ⁻¹ (rpm) (1: Enabled) Bit 4 Maximum motor speed/4000000h (1: Enabled) Bits 5 to 7 Reserved (0: Disabled). Position Units Bit 8 Reference units (1: Enabled) Bits 9 to 15 Reserved (0: Disabled). Acceleration Units Bit 16 Reference units/s² (1: Enabled) Bit 17 ms (acceleration time required to reach rated speed) (0: Disabled) 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/40000000h (1: Enabled)			Speed Units							
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Bit 16 Reference units/s² (1: Enabled) Bit 17 ms (acceleration time required to reach rated speed) (0: Disabled) 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/40000000h (1: Enabled)					oorvoa (o. Bioabio	ω ₁ .				
Bit 17 ms (acceleration time required to reach rated speed) (0: Disabled) 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/40000000h (1: Enabled)					ference units/s ² (1	: Enabled)				
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/40000000h (1: Enabled)						· · · · · · · · · · · · · · · · · · ·	ach rated sp	peed) (0: Disa	bled)	
Bit 24 N·m (0: Disabled) Bit 25 Percentage (%) of rated torque (1: Enabled) Bit 26 Maximum torque/40000000h (1: Enabled)								,,		
Bit 25 Percentage (%) of rated torque (1: Enabled) Bit 26 Maximum torque/40000000h (1: Enabled)			Torque Units							
Bit 26 Maximum torque/4000000h (1: Enabled)			Bit 24	N∙r	n (0: Disabled)					
			Bit 25	Pe	rcentage (%) of rat	ed torque (1: E	Enabled)			
Bits 27 to 31 Reserved (0: Disabled).			Bit 26	Ма	ximum torque/400	000000h (1: En	abled)			
			Bits 27 to 31	Re	served (0: Disable	d).	-			

							Continued fr	om previou	
Parameter No.	Size	Nar	me	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication
61 PnAC2	4	Speed Loo	p Gain	1,000 to 2,000,000	0.001 Hz [0.1 Hz]	40000	All	Immedi- ately	
62 PnAC4	4	Speed Loc Time Cons		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 Forw pensation	ard Com-	0 to 100	1%	0	All	Immedi- ately	
65 PnACA	4	Position Logral Time (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-positi	on Range	1 to 1,073,741,824	1 reference unit	10737418 24	All	Immedi- ately	
81 PnB02	4	Exponential Function Acceleration/ Deceleration Time Constant		0 to 510,000	1 μs [0.1 ms]	0	All	Immedi- ately ^{*7}	
82 PnB04	4	Movement Time	Average	0 to 510,000	1 μs [0.1 ms]	0	All	Immedi- ately*7	
83 PnB06	4	Final Trave		-1,073,741,823 to 1,073,741,823	1 reference unit	100	All	Immedi- ately	
84 PnB08	4	Zero Point Return Approach Speed		Oh to 3FFFFFFFh	10 ⁻³ min ⁻¹	× 5,000h reference units/s con- verted to 10 ⁻³ min ⁻¹	All	Immedi- ately	
85 PnB0A	4	Zero Point Creep Spe		Oh to 3FFFFFFFh	10 ⁻³ min ⁻¹	× 500h reference units/s con- verted to 10 ⁻³ min ⁻¹	All	Immedi- ately	Tuning
86 PnB0C	4	Final Trave Point Retu		-1,073,741,823 to 1,073,741,823	1 reference unit	100	All	Immedi- ately	
	4	Monitor Se	lect 1	0h to Fh	-	1h	All	Immedi- ately	
87 PnB0E		000Bh Reserved 000Ch CMN1 (c 000Dh CMN2 (c 000Eh OMN1 (o		(undefined value). (undefined value). ommon monitor 1) ommon monitor 2) otional monitor 1) otional monitor 2)					

6.3.2 List of MECHATROLINK-III Common Parameters

Continued from previous page.

			_					
Parameter No.	Size	Nan	ne	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled
	4	Monitor Sel	ect 2	0h to Fh	-	Oh	All	Immedi- ately
8 nB10		0000h to 000Fh The settings are the same as those for Fixed Monitor Selection 1. Monitor Select for 0h to 0h						
	4	Monitor Sel SEL_MON1		0h to 9h	-	0h	All	Immedi- ately
		0000h 0001h 0002h 0003h 0004h 0005h	IPOS (refe POS_OFF TSPD (tar SPD_LIM TRQ_LIM SV_STAT Monitor D Byte 1: C 00h: Ph. 02h: Ph. 03h: Ph. 03h: Ph. 03h: Po 01h: Sp 02h: Tor Byte 3: R Byte 4: E	errence position SET (offset set get speed) (speed limit) (torque limit) (servo actual o bescription urrent commun ase 0 ase 1 ase 2 ase 3 urrent control n sition control m eed control mo que control mo eserved spansion signal	node ode de de monitor	linate syste	em)	nmand)
39 PnB12		0006h	Bit 0 Bit 1 Bits 2 and 3 Bits 4 and 5	Name LT_RDY1 LT_RDY1 LT_SEL1R LT_SEL2R Reserved (0	Processing status latch detection for LT_REQ1 in SVC D_CTRL region Processing status latch detection for LT_REQ2 in SVC D_CTRL region Latch signal Latch signal	or M- 1 s for 0	e Settin Latch dete not yet processed. Processing detection i progress. Latch dete not yet processed. Processing detection i progress. Processing detection i progress. Phase C External in signal 1 External in signal 3 Phase C External in signal 1 External in signal 1 External in signal 2 External in signal 1 External in signal 2 External in signal 2 External in signal 2	glatch n put
		0007h	Bit 0 Bit 1 Bits 2 and 3 Bits 4 and 5 Bit 6 Reserved	LT_RDY1 LT_RDY1 LT_SEL1R LT_SEL2R Reserved (0	Processing status latch detection for LT_REQ1 in SVC D_CTRL region Processing status latch detection for LT_REQ2 in SVC D_CTRL region Latch signal Latch signal	S for O or M- 1 2 3 0 1 2 3	Latch dete not yet processed. Processing detection i progress. Latch dete not yet processed. Processing detection i progress. Processing detection i progress. Phase C External in signal 1 External in signal 3 Phase C External in signal 1 External in signal 1 External in signal 1	glatch n glatch n glatch n glatch n glatch n put put put put
			Bit 0 Bit 1 Bits 2 and 3 Bits 4 and 5 Bit 6 Reserved INIT_PGF	LT_RDY1 LT_RDY1 LT_SEL1R LT_SEL2R Reserved (0	Processing status latch detection for LT_REQ1 in SVC D_CTRL region Processing status latch detection for LT_REQ2 in SVC D_CTRL region Latch signal	s for or M- 1 s for 0 1 s for 0 1 2 3 of initial epit position	Latch dete not yet processed. Processing detection i progress. Latch dete not yet processed. Processing detection in progress. Processing detection in progress. Phase C External in signal 1 External in signal 2 External in signal 3 Phase C External in signal 1 External in signal 1 External in signal 1 External in signal 2 External in signal 1	glatch n glatch n glatch n glatch n glatch n glatch n put put put put put put

Parameter Lists

Continued from previous page.

Parameter No.	Size	Na	ıme	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Cla
	4	Monitor S SEL_MON		0h to 9h	_	0h	All	Immedi- ately	
8A PnB14		0000h to 0009h The setting		ings are the same as those for SEL_MON Monitor Selection 1.					
8B PnB16	4	Zero Point Range	t Detection	0 to 250	1 reference unit	10	All	Immedi- ately	
8C PnB18	4	Forward T	orque Limit	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 Detection Range		1,000 to 10,000,000	10 ⁻³ min ⁻¹	20000	All	Immedi- ately	
8F PnB1E	4	Speed Match Signal Detection Range		0 to 100,000	10 ⁻³ min ⁻¹	10000	All	Immedi- ately	
	4	SVCMD_0 Enabled/D (read only	Disabled	-	_	0FFF3F3F h	All	_	
		Bit 0		MD PAUSE (1: Ena	ablad)				
		Bit 1		ID_FAUSE (1: EN					
		Bits 2 and		OP_MODE (1: En					
		Bits 4 and		CCFIL (1: Enabled)	abiouj				(
		Bits 6 and		Reserved (0: Disabled).					
00				LT REQ1 (1: Enabled)					
90 PnB20		Bit 9		_REQ2 (1: Enabled	,				
		Bits 10 an		_SEL1 (1: Enabled					
		Bits 12 an		_SEL2 (1: Enabled	*				
				Reserved (0: Disabled).					
		Bits 16 to	19 SE	SEL_MON1 (1: Enabled)					
		Bits 20 to		EL_MON2 (1: Enab	· · · · · · · · · · · · · · · · · · ·				
		Bits 24 to	27 SE	EL_MON3 (1: Enab	led)				
	ı	Bits 28 to							1

6.3.2 List of MECHATROLINK-III Common Parameters

Continued from previous page.

Parameter	Size	Name		Setting Range	Setting Unit	Default	Applicable	When	Classi-	
No.	Oizo			Cotting Hange	[Resolution]	Setting	Motors	Enabled	fication	
	4	SVCMD_STAT bit Enabled/Disabled (read only)		-	_	0FFF3F33 h	All	_		
		Bit 0	CI	MD_PAUSE_CMP	(1: Enabled)					
		Bit 1 CMD_CANCEL_CMP (1: Enabled)								
		Bit 2 and 3	Re	eserved (0: Disable	ed).					
		Bits 4 and 5	A	CCFIL (1: Enabled)						
		Bits 6 and 7	Re	eserved (0: Disable	ed).					
		Bit 8	L_	CMP1 (1: Enabled	l)					
91		Bit 9	L_	CMP2 (1: Enabled	l)					
PnB22		Bit 10 POS_RDY (1: Enabled)								
		Bit 11	P	ON (1: Enabled)						
		Bit 12	M.	_RDY (1: Enabled)						
		Bit 13 SV_ON (1: Enabled)								
		Bits 14 and 15 Reserved (0: Disabled).								
		Bits 16 to 19 SEL_MON1 (1: Enabled)								
		Bits 20 to 23 SEL_MON2 (1: Enabled)								
		Bits 24 to 27	SE	EL_MON3 (1: Enab	oled)				g b	
		Bits 28 to 31	Re	eserved (0: Disable	ed).				ate	
	4	I/O Bit Enabled/Disabled (Output) (reaconly)		_	-	007F01F0 h	All	_	Command-related parameters	
		Bits 0 to 3 Reserved (0: Disabled).								
		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	Re	eserved (0: Disable	ed).					
		Bits 16 to 19	В	ANK_SEL (1: Enab	led)					
		Bits 20 to 22	S	O1 to SO3 (1: Enal	bled)					
		Bit 23	Re	eserved (0: Disable	ed).					
		Bits 24 to 31	Re	eserved (0: Disable	ed).					
								_		

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 h	All	_	
93 PnB26		Bit 1 Bit 2 Bit 3 Bit 4 Bit 5 Bit 6 Bit 7 Bit 8 Bit 9 Bit 10 Bit 11 Bit 12 Bit 13 Bit 14 Bit 15 Bit 16 Bit 17 Bit 18 Bit 19 Bit 10 Bit 11 Bit 12 Bit 13 Bit 14 Bit 15 Bit 16 Bit 17 Bit 18 Bit 19 Bits 20 to 23	Reserved (0: Disable DEC (1: Enabled) P-OT (1: Enabled) N-OT (1: Enabled) EXT1 (1: Enabled) EXT2 (1: Enabled) EXT3 (1: Enabled) EXT9 (1: Enabled) ESTP (1: Enabled) Reserved (0: Disable BRK_ON (1: Enabled) N-SOT (1: Enabled) DEN (1: Enabled) DEN (1: Enabled) DEN (1: Enabled) T_LIM (1: Enabled) V_LIM (1: Enabled) V_LIM (1: Enabled) V_CMP (1: Enabled) Reserved (0: Disable DESPD (1: Enabled) Reserved (0: Disable DESPD (1: Enabled)	ed).				Command-related parameters

- *1. The parameter setting is enabled after SENS_ON command execution is completed.
- *2. If you set the Speed Unit Selection (parameter 41: PnA82) to 0002h adjust the Speed Base Unit Selection (parameter 42: PnA84) to satisfy the following formula. Rotary Servomotor: 1.28 × Rated speed [min⁻¹] × 10^{PnA84} < Maximum speed [min⁻¹] Linear Servomotor: 1.28 × Rated speed [mm/s] × 10^{PnA84} < Maximum speed [mm/s]</p>
- *3. If you set the Speed Unit Selection (parameter 41: PnA82) to either 0002h or 0003h, set the Speed Base Unit Selection (parameter 42: PnA84) to a number between -3 and 0.
- *4. If you set the Speed Unit Selection (parameter 41: PnA82) to 0004h, set the Speed Base Unit Selection (parameter 42: PnA84) to 0.
- *5. If you set the Torque Unit Selection (parameter 47: PnA8E) to 0001h, adjust the Torque Base Unit Selection (parameter 48: PnA90) to satisfy the following formula. 128 × 10^{PnA90} < Maximum torque [%]
- *6. If you set the Torque Unit Selection (parameter 47: PnA8E) to 0002h, set the Torque Base Unit Selection (parameter 48: PnA90) to 0.
- *7. 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

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

Parameter No.	Default Setting	Name	When Enabled
Pn000	0000h	Basic Function Selections 0	After restart
Pn001	0000h	Application Function Selections 1	After restart
Pn002	0011h	Application Function Selections 2	After restart
Pn006	0002h	Application Function Selections 6	Immediately
Pn007	0000h	Application Function Selections 7	Immediately
Pn008	4000h	Application Function Selections 8	After restart
Pn009	0010h	Application Function Selections 9	After restart
Pn00A	0001h	Application Function Selections A	After restart
Pn00B	0000h	Application Function Selections B	After restart
Pn00C	0000h	Application Function Selections C	After restart
Pn00D	0000h	Application Function Selections D	Immediately
Pn00F	0000h	Application Function Selections F	After restart
Pn021	0000h	Reserved parameter	_
Pn022	0000h	Reserved parameter	_
Pn040	0000h	Σ-V Compatible Function Switch	After restart
Pn080	0000h	Application Function Selections 80	After restart
Pn081	0000h	Application Function Selections 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 Integral Time Constant	Immediately
Pn106	400	Second Position Loop Gain	Immediately
Pn109	0	Feedforward	Immediately
Pn10A	0	Feedforward Filter Time Constant	Immediately
Pn10B	0000h	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

Continued from previous page.						
Parameter No.	Default Setting	Name	When Enabled			
Pn11F	0	Position Integral Time Constant	Immediately			
Pn121	100	Friction Compensation Gain	Immediately			
Pn122	100	Second Friction Compensation Gain	Immediately			
Pn123	0	Friction Compensation Coefficient	Immediately			
Pn124	0	Friction Compensation Frequency 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	0000h	Automatic Gain Switching Selections 1	Immediately			
Pn13D	2000	Current Gain Level	Immediately			
Pn140	0100h	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 Direction	Immediately			
Pn144	1000	Model Following Control Bias in the Reverse Direction	Immediately			
Pn145	500	Vibration Suppression 1 Frequency A	Immediately			
Pn146	700	Vibration Suppression 1 Frequency B	Immediately			
Pn147	1000	Model Following Control Speed Feedforward Compensation	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	0021h	Control-Related Selections	After restart			
Pn160	0010h	Anti-Resonance Control- Related Selections	Immediately			
Pn161	1000	Anti-Resonance Frequency	Immediately			
Pn162	100	Anti-Resonance Gain Correction	Immediately			
Pn163	0	Anti-Resonance Damping Gain	Immediately			

6.3.3 Parameter Recording Table

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		Continued from p	
Parameter No.	Default Setting	Name	When Enabled
Pn164	0	Anti-Resonance Filter Time Constant 1 Correction	Immediately
Pn165	0	Anti-Resonance Filter Time Constant 2 Correction	Immediately
Pn166	0	Anti-Resonance Damping Gain 2	Immediately
Pn170	1400h	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	0010h	Position Control Function Selections	After restart
Pn20A	32768	Reserved parameter	_
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	0000h	Reserved parameter	_
Pn230	0000h	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 Average Movement Time	Immediately
Pn310	0000h	Vibration Detection Selections	Immediately
Pn311	100	Vibration Detection Sensitivity	Immediately
Pn312	50	Vibration Detection Level	Immediately
Pn316	10000	Maximum Motor Speed	After restart
Pn324	300	Moment of Inertia Calculation 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 Constant	Immediately on next 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	0000h	Torque-Related Function Selections	*1
Pn409	5000	First Stage Notch Filter Frequency	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 Torque Reference Filter Q Value	Immediately
Pn412	100	First Stage Second Torque Reference Filter Time Con- stant	Immediately
Pn416	0000h	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 Frequency	Immediately
Pn41E	70	Fifth Stage Notch Filter Q Value	Immediately
Pn41F	0	Fifth Stage Notch Filter Depth	Immediately
Pn423	0000h	Speed Ripple Compensation Selections	*1
Pn424	50	Torque Limit at Main Circuit Voltage Drop	Immediately

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

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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
Pn475	0000h	Gravity Compensation- Related Selections	After restart
Pn476	0	Gravity Compensation Torque	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 Constant	Immediately
Pn483	30	Forward Force Limit	Immediately
Pn484	30	Reverse Force Limit	Immediately
Pn485	20	Polarity Detection Reference Speed	Immediately
Pn486	25	Polarity Detection Reference Acceleration/Deceleration Time	Immediately
Pn487	0	Polarity Detection Constant 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 Confirmation Force Reference	Immediately
Pn498	10	Polarity Detection Allowable Error Range	Immediately
Pn49F	0	Speed Ripple Compensation Enable Speed	Immediately
Pn4A0	1000	Pressure Feedback One- Parameter Gain Level	Immediately
Pn4A3	100	Reserved parameter	_
Pn4A7	400	Pressure Feedback Contro 2 Stability Gain	immediately
Pn4A8	2000	Pressure Feedback Contro 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	0000h	Reserved parameter	_
Pn4D0	0	Reserved parameter	_

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Parameter No.	Default Setting	Name	When Enabled
Pn4D1	0	Reserved parameter	_
Pn502	20	Rotation Detection Level	Immediately
Pn503	10	Speed Coincidence Detection 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 Interruption Hold Time	Immediately
Pn50A	1881h	Input Signal Selections 1	After restart
Pn50B	8882h	Input Signal Selections 2	After restart
Pn50E	0000h	Output Signal Selections 1	After restart
Pn50F	0100h	Output Signal Selections 2	After restart
Pn510	0000h	Output Signal Selections 3	After restart
Pn511	6543h	Input Signal Selections 5	After restart
Pn512	0000h	Output Signal Inverse Settings	After restart
Pn514	0000h	Output Signal Selections 4	After restart
Pn516	8888h	Input Signal Selections 7	After restart
Pn518	_	Reserved parameter	_
Pn51B	1000	Reserved parameter	_
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	Reserved parameter	_
Pn52B	20	Overload Warning Level	Immediately
Pn52C	100	Base Current Derating at Motor Overload Detection	After restart
Pn530	0000h	Program Jogging-Related Selections	Immediately
Pn531	32768	Program Jogging Travel Distance	Immediately
Pn533	500	Program Jogging Movement Speed	Immediately
Pn534	100	Program Jogging Acceleration/Deceleration Time	Immediately
Pn535	100	Program Jogging Waiting Time	Immediately

		Continued from p	
Parameter No.	Default Setting	Name	When Enabled
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 Magnification	Immediately
Pn553	100	Analog Monitor 2 Magnification	Immediately
Pn55A	1	Power Consumption Monitor Unit Time	Immediately
Pn560	400	Residual Vibration Detection Width	Immediately
Pn561	100	Overshoot Detection Level	Immediately
Pn581	20	Zero Speed Level	Immediately
Pn582	10	Speed Coincidence Detection 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 Movement Speed	Immediately
Pn586	0	Motor Running Cooling Ratio	Immediately
Pn587	0000h	Polarity Detection Execution Selection for Absolute Linear Encoder	Immediately
Pn600	0	Regenerative Resistor Capacity	Immediately
Pn601	0	Dynamic Brake Resistor Allowable Energy Consumption	After restart
Pn603	0	Regenerative Resistance	Immediately
Pn604	0	Dynamic Brake Resistance	After restart
Pn61A	0000h	Reserved parameter	_
Pn61B	250	Reserved parameter	_
Pn61C	100	Reserved parameter	_
Pn61D	0	Reserved parameter	_
Pn6A4	0000h	Table Operation Parameter Settings	Immediately
Pn6A5	0	Torque (Pressure) Reference 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

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Parameter No.	Default Setting	Name	When Enabled
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
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) Reference 2	Immediately
Pn6D6	0	Torque (Pressure) Reference 3	Immediately
Pn6D8	0	Torque (Pressure) Reference 4	Immediately
Pn6DA	0	Torque (Pressure) Reference 5	Immediately
Pn6DC	0	Torque (Pressure) Reference Time 1	Immediately
Pn6DE	0	Torque (Pressure) Reference Time 2	Immediately
Pn6E0	0	Torque (Pressure) Reference Time 3	Immediately
Pn6E2	0	Torque (Pressure) Reference Time 4	Immediately
Pn800	1040h	Communications Controls	Immediately
Pn801	0003h	Application Function Selections 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*2
Pn80A	100	First Stage Linear Acceleration Constant	Immedi- ately*3
Pn80B	100	Second Stage Linear Acceleration Constant	Immedi- ately*3

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		Continued from p	revious page.
Parameter No.	Default Setting	Name	When Enabled
Pn80C	0	Acceleration Constant Switching Speed	Immedi- ately*3
Pn80D	100	First Stage Linear Deceleration Constant	Immedi- ately*3
Pn80E	100	Second Stage Linear Deceleration Constant	Immedi- ately*3
Pn80F	0	Deceleration Constant Switching Speed	Immedi- ately*3
Pn810	0	Exponential Acceleration/ Deceleration Bias	Immedi- ately*3
Pn811	0	Exponential Acceleration/ Deceleration Time Constant	Immedi- ately*3
Pn812	0	Movement Average Time	Immedi- ately*3
Pn814	100	External Positioning Final Travel Distance	Immedi- ately*3
Pn816	0000h	Reserved parameter	_
Pn817	50	Origin Approach Speed 1	Immedi- ately*3
Pn818	5	Origin Approach Speed 2	Immedi- ately*3
Pn819	100	Final Travel Distance for Origin Return	Immedi- ately*3
Pn81E	0000h	Reserved parameter	_
Pn81F	0010h	Reserved parameter	_
Pn820	0	Forward Latching Area	Immediately
Pn822	0	Reverse Latching Area	Immediately
Pn824	0000h	Option Monitor 1 Selection	Immediately
Pn825	0000h	Option Monitor 2 Selection	Immediately
Pn827	100	Linear Deceleration Constant 1 for Stopping	Immedi- ately*3
Pn829	0	SVOFF Waiting Time (for SVOFF at Deceleration to Stop)	Immediately
Pn82A	1813h	Reserved parameter	_
Pn82B	1D1Ch	Reserved parameter	-
Pn82C	1F1Eh	Reserved parameter	-
Pn82D	0000h	Reserved parameter	_
Pn82E	0000h	Reserved parameter	_
Pn833	0000h	Motion Settings	After restart
Pn834	100	First Stage Linear Acceleration Constant 2	Immedi- ately*3
Pn836	100	Second Stage Linear Acceleration Constant 2	Immedi- ately*3
Pn838	0	Acceleration Constant Switching Speed 2	Immedi- ately*3
Pn83A	100	First Stage Linear Deceleration Constant 2	Immedi- ately*3
Pn83C	100	Second Stage Linear Deceleration Constant 2	Immedi- ately*3
Pn83E	0	Deceleration Constant Switching Speed 2	Immedi- ately*3

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		Continued from p	nevious page.
Parameter No.	Default Setting	Name	When Enabled
Pn840	100	Linear Deceleration Constant 2 for Stopping	Immedi- ately*3
Pn842	0	Second Origin Approach Speed 1	Immedi- ately*3
Pn844	0	Second Origin Approach Speed 2	Immedi- ately*3
Pn846	0	POSING Command Scurve Acceleration/Deceleration Rate	Immedi- ately*3
Pn850	0	Number of Latch Sequences	Immediately
Pn851	0	Continuous Latch Sequence Count	Immediately
Pn852	0000h	Latch Sequence 1 to 4 Settings	Immediately
Pn853	0000h	Latch Sequence 5 to 8 Settings	Immediately
Pn860	0000h	SVCMD_IO Input Signal Monitor Allocations 1	Immediately
Pn861	0000h	SVCMD_IO Input Signal Monitor Allocations 2	Immediately
Pn862	0000h	SVCMD_IO Input Signal Monitor Allocations 3	Immediately
Pn863	0000h	SVCMD_IO Input Signal Monitor Allocations 4	Immediately
Pn868	0000h	SVCMD_IO Output Signal Monitor Allocations 1	Immediately
Pn869	0000h	SVCMD_IO Output Signal Monitor Allocations 2	Immediately
Pn880	-	Station Address Monitor (for maintenance, read only)	-
Pn881	-	Set Transmission Byte Count Monitor [bytes] (for maintenance, read only)	-
Pn882	-	Transmission Cycle Setting Monitor [× 0.25 μs] (for maintenance, read only)	_
Pn883	-	Communications Cycle Setting Monitor [transmission cycles] (for maintenance, read only)	_
Pn884	0000h	Communications Controls 2	Immediately
Pn88A	0	MECHATROLINK Receive Error Counter Monitor (for maintenance, read only)	-
Pn890 to Pn8A6	0h	Command Data Monitor during Alarm/Warning (for maintenance, read only)	-
Pn8A8 to Pn8BE	0h	Response Data Monitor during Alarm/Warning (for maintenance, read only)	-
Pn900	0	Number of Parameter Banks	After restart
Pn901	0	Number of Parameter Bank Members	After restart
Pn902 to Pn910	0000h	Parameter Bank Member Definition	After restart

Parameter No.	Default Setting	Name	When Enabled
		Parameter Bank Data (No	
Pn920 to Pn95F	0000h	saved in nonvolatile mem	
Pn9B1	0002h	Other Station Monitor 1: Station Address	After restart
Pn9B2	0003h	Other Station Monitor 1: Number of Transmission Bytes	After restart
Pn9B3	1000h	Other Station Monitor 1: Monitor Information Setting	After restart
Pn9B4	0002h	Other Station Monitor 2: Station Address	After restart
Pn9B5	3	Other Station Monitor 2: Number of Transmission Bytes	After restart
Pn9B6	1000h	Other Station Monitor 2: Monitor Information Setting	After restart
Pn9B7	0002h	Other Station Monitor 3: Station Address	After restart
Pn9B8	3	Other Station Monitor 3: Number of Transmission Bytes	After restart
Pn9B9	1000h	Other Station Monitor 3: Monitor Information Setting	After restart
Pn9BA	0002h	Other Station Monitor 4: Station Address	After restart
Pn9BB	3	Other Station Monitor 4: Number of Transmission Bytes	After restart
Pn9BC	1000h	Other Station Monitor 4: Monitor Information Setting	After restart
Pn9BD	0002h	Other Station Monitor 5: Station Address	After restart
Pn9BE	3	Other Station Monitor 5: Number of Transmission Bytes	After restart
Pn9BF	1000h	Other Station Monitor 5: Monitor Information Setting	After restart
Pn9C0	0000h	Other Station Monitor Tar get Station Selection	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 on	y) –
07 PnA0E	-	Rated Torque (read only)	_
08 PnA10	-	Maximum Output Torque (read only)	_

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		Continued from p	
Parameter No.	Default Setting	Name	When Enabled
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*2
24 PnA48	65535	Multiturn Limit Setting	After restart
25 PnA4A	0000h	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	0h	Speed Unit Selection	After restart
42 PnA84	0	Speed Base Unit Selection	After restart
43 PnA86	0h	Position Unit Selection	After restart
44 PnA88	0	Position Base Unit Selection	After restart
45 PnA8A	0h	Acceleration Unit Selection	After restart
46 PnA8C	4	Acceleration Base Unit Selection	After restart
47 PnA8E	1h	Torque Unit Selection	After restart
48 PnA90	0	Torque Base Unit Selection	After restart
49 PnA92	0601011Fh	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
		Continued	on novt nago

Parameter		Continued from p	When
No.	Default Setting	Name	Enabled
66 PnACC	7	Positioning Completed Width	Immediately
67 PnACE	1073741824	Near Signal Width	Immediately
81 PnB02	0	Exponential Acceleration/ Deceleration Time Constant	Immedi- ately*3
82 PnB04	0	Movement Average Time	Immedi- ately*3
83 PnB06	100	External Positioning Final Travel Distance	Immediately
84 PnB08	× 5,000h reference units/s converted to 10 ⁻³ min ⁻¹	Origin Approach Speed	Immediately
85 PnB0A	× 500h reference units/s converted to 10 ⁻³ min ⁻¹	Origin Return Creep Speed	Immediately
86 PnB0C	100	Final Travel Distance for Origin Return	Immediately
87 PnB0E	1h	Fixed Monitor Selection 1	Immediately
88 PnB10	Oh	Fixed Monitor Selection 2	Immediately
89 PnB12	0h	SEL_MON (CMN1) Monitor Selection 1	Immediately
8A PnB14	0h	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	0FFF3F3Fh	Servo Command Control Field Enable/Disable Selec- tions (read only)	_
91 PnB22	0FFF3F33h	Servo Status Field Enable/ Disable Selections (read only)	-
92 PnB24	007F01F0h	Output Bit Enable/Disable Selections (read only)	_
93 PnB26	FF0FFEFEh	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 6-43

^{*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.

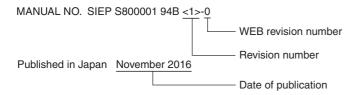


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The revision dates and numbers of the revised manuals are given on the bottom of the back cover.



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Σ -7-Series AC Servo Drive

Σ -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, Japar Phone: +81-4-2962-5151 Fax: +81-4-2962-6138 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 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 www.yaskawa.com.br

YASKAWA EUROPE GmbH

Philipp-Reis-Str. 6, 65795 Hattersheim am Main, Germany Phone: +49-6196-569-300 Fax: +49-6196-569-398 www.yaskawa.eu.com E-mail: info@yaskawa.eu.com

YASKAWA ELECTRIC KOREA CORPORATION

6F, 112, LS-ro, Dongan-gu, Anyang-si, Gyeonggi-do, Korea Phone: +82-31-8015-4224 Fax: +82-31-8015-5034 www.yaskawa.co.kr

YASKAWA ASIA PACIFIC PTE. LTD.

30A, Kallang Place, #06-01, 339213, Singapore Phone: +65-6282-3003 Fax: +65-6289-3003 www.yaskawa.com.sg

YASKAWA ELECTRIC (THAILAND) CO., LTD.
59, 1F-5F, Flourish Building, Soi Ratchadapisek 18, Ratchadapisek Road, Huaykwang, Bangkok, 10310, Thailand Phone: +66-2-017-0099 Fax: +66-2-017-0799

YASKAWA ELECTRIC (CHINA) CO., LTD.

22F, Link Square 1, No.222, Hubin Road, Shanghai, 200021, China Phone: +86-21-5385-2200 Fax: +86-21-5385-3299 www.vaskawa.com.cn

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

YASKAWA ELECTRIC TAIWAN CORPORATION

12F, No. 207, Section 3, Beishin Road, Shindian District, New Taipei City 23143, Taiwan Phone: +886-2-8913-1333 Fax: +886-2-8913-1513 or +886-2-8913-1519 www.yaskawa.com.tw

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