VPS Series

AC Servo Driver

NCR-DCC0/DCD0

<Communication Functions>

Instruction Manual

Ver. 1.8



Preface

We thank you very much for adopting the AC Servo driver "VPS Series" (hereinafter indicated as "servo driver" or "this servo driver).

[About this instruction manual]

This instruction manual explains the communication functions of this servo driver. These functions are divided into the following two types:

- Serial communication functions (IO specification VPS Series)
- CC-Link communication functions (CC-Link specification VPS Series)

The serial communication functions are available for "IO specification VPS Series (model: NCR-DCC0)". The CC-Link communication functions are available for "CC-Link specification VPS Series (model: NCR-DCD0)". Check the model of the servo driver you use before reading this instruction manual.

For information on the installation, wiring, usage, maintenance and inspection, abnormality diagnosis and countermeasures, setting, and display about the servo driver to use, refer to the instruction manual of the relevant VPS series servo driver.

For proper communication (data transfer), fully understand the contents of this document.

In this instruction manual, a hexadecimal number is distinguished from a decimal number by adding an "H" at the end of the number.

This instruction manual applies to the models that display the listed data when the data display LED is in the status display mode.

Model No.	Relevant device	Motor type	Software version
200.	IO specification VPS Series: NA80/800 Series motor Serial encoder	А	43.
300.	IO specification VPS Series: NA80/800 Series motor 90 deg phase difference pulse encoder	В	4 3 .
400.	IO specification VPS Series: Tau linear motor High-resolution encoder	С	43.
500.	IO specification VPS Series: Tau linear motor 90 deg phase difference pulse encoder	D	7. 7
600.	IO specification VPS Series: Tau DISC motor High-resolution encoder	Е	¥3.
700.	IO specification VPS Series: Tau DISC motor 90 deg phase difference pulse encoder	F	43.
800.	CC-Link specification VPS Series: NA80/800 Series motor Serial encoder	А	Ч3.
900.	CC-Link specification VPS Series: NA80/800 Series motor 90 deg phase difference pulse encoder	В	Ч3.
1000.	CC-Link specification VPS Series: Tau linear motor High-resolution encoder	С	4 3 .
1100.	CC-Link specification VPS Series: Tau linear motor 90 deg phase difference pulse encoder	D	Ч∃.
1200.	CC-Link specification VPS Series: Tau DISC motor High-resolution encoder	E	Ч∃.
1300.	CC-Link specification VPS Series: Tau DISC motor 90deg phase difference pulse encoder	F	4 3 .
1500.	IO specification VPS Series: Tau linear motor ABS linear scale	G	43.
1600.	CC-Link specification VPS Series: Tau linear motor ABS linear scale	G	43.

^{*} The high-resolution encoders are "IPU Series" manufactured by Nikki Denso.

- The IO specification VPS Series does not support the CC-Link communication functions.
- The CC-Link specification VPS Series does not support the serial communication functions.
- ■When using the Tau linear motor, read "torque" as "thrust".
- * Nikki Denso Co., Ltd. reserves the right to revise this document under any circumstances. This document is subject to change without prior notice. Information from Nikki Denso Co., Ltd. is accurate and reliable, but we assume no responsibility for any consequences of the use of the information unless we specifically guarantee it.

^{*} The listed version or higher of software is applicable.

Precautions in safety

Before installation, operation, maintenance, and inspection, carefully read this instruction manual and all other attached manuals for proper usage.

Before use, be sure to fully acquaint with the equipment, safety information, and other related precautions.

In this instruction manual, cautions for safety are ranked as "Danger" and "Caution".

And actions not to be done and actions to be done when handling the servo driver are respectively indicated as "Prohibition" and "Compulsion".



: If mishandling is made, dangerous situation as death or serious injury on a worker could occur.



: If mishandling is made, dangerous situation as medium or light injury could occur and only damages on goods could be suspected.



: Actions not to be done.

If this prohibition is ignored, the servo motor does not operate normally.



: Actions to be done.

If this compulsion is ignored, the servo motor does not operate normally.

[Precautions in handling]

⚠ Caution

If you make any wrong parameter and other data settings, not only abnormal operation will occur, but also the runaway and burn of the servo driver and injury may occur. Take adequate care when making settings.

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Chapter 1 Outline

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1-1 Outline

1-1-1 Features

The IO specification VPS Series is equipped as standard with a serial communication interface (RS-422A equivalent) as an interface to an external unit to enable you to transfer data with an external unit (such as a sequencer).

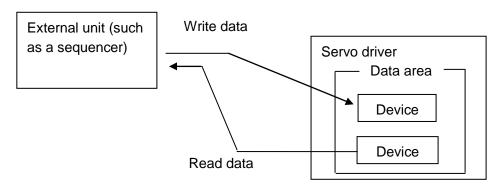
By connecting serial communication lines (wires) in a daisy chain, you can manage multiple servo drivers with communication.

Communication is possible at all times regardless of the mode of the servo driver. (In the self-diagnosis mode, however, remote operation with communication is disabled.)

1-1-2 Communication functions

[1] Data transfer

By writing data to and reading data from a specified device (data area) inside the servo driver, the following functions are achieved.



[Figure 1-1] Data transfer method

Function	Transfer direction	Target device	Data area name
Parameter edit	Read/Write	R device	Parameter area
Reading of information about the various statuses of the servo driver	Read only	D device	Status data area
Command data edit	Read/Write	D device	Command data area
Remote control (Writing of control signals and operation)	Read/Write	X device	Remote control data area

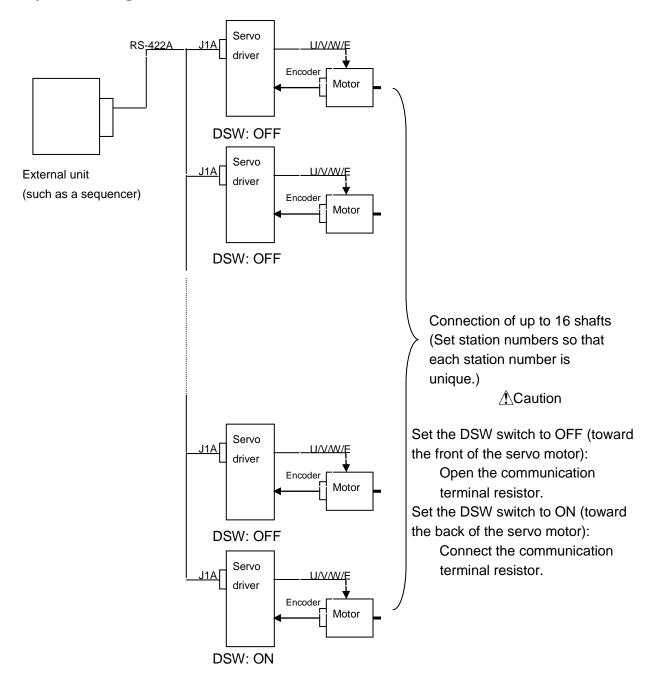
[Table 1-1] Data transfer and data areas

[2] Management of multiple servo drivers

By connecting the serial communication lines (wires) of multiple servo drivers in a daisy chain and by setting different station numbers (ID Nos.), you can manage the multiple servo drivers.

1-2 Configuration

1-2-1 System configuration



[Figure 1-2] System configuration diagram (daisy chain connection example)

⚠Caution

● If each station number (communication ID No.) is not unique, not only abnormal communication will occur, but also servo driver failure may occur. Take adequate care when setting station numbers (communication ID Nos.)

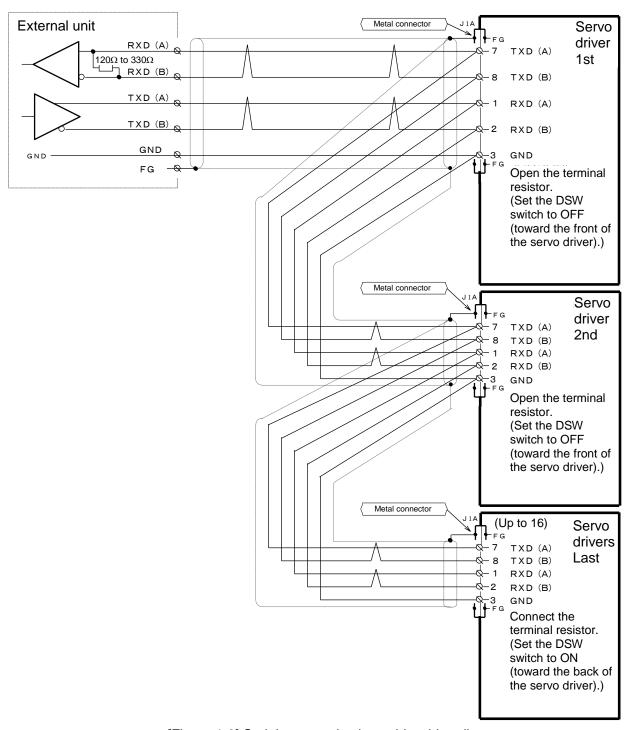
1-3 Specification

1-3-1 Basic specification of serial communication

Item	Specification				
Connection specification	EIA standard, RS-422A equivalent				
Communication method	Half-duplex				
Synchronization method	Asynchronous				
Data transmission speed	9.6K/19.2K/38.4K/57.6K/115.2K[bps] (Selectable with a parameter)				
Character length	7/8 bits (Selectable with a parameter)				
Parity	Odd/even/none (Selectable with a parameter)				
Stop bits	2				
Main station	External unit (such as a sequencer)				
Slave station	VPS Series (servo driver)				
Communication procedure	Dedicated communication procedure Refer to [1-5] Serial communication procedures.				
	Control code				
Communication code	Signal STX ETX EOT ENQ ACK L FC L C R N A K				
code	Code 0 2 H 0 3 H 0 4 H 0 5 H 0 6 H 0 A H 0 C H 0 D H 1 5 H				
	Data code "0(30H)" to "9(39H)", "A(41H)" to "Z(5AH)"				
Number of items	D device and R device 64 (in word units)				
that can be processed in a single communication session	X device 256 (in bit units)				

[Table 1-2] Basic specification of serial communication

1-3-2 Serial communication cable wiring



[Figure 1-3] Serial communication cable wiring diagram

∕.\Caution

● If each station number (communication ID No.) is not unique, not only abnormal communication will occur, but also servo driver failure may occur. Take adequate care when setting station numbers (communication ID Nos.)

1-4 Setting the servo driver

1-4-1 Setting the parameters of the servo driver

Parameters related to serial communication are [P500] to [P501], listed below.

For details of setting, refer to the "Servo Driver Instruction Manual".

Parameter No.	Parameter name	Overview	Setting
P500	Communication specification selection	Set the function selection, data length, parity, and baud rate for communication.	1st digit: Function selection 0: Low-order data and high-order data are stored in this order. (Little endian) 1: High-order data and low-order data are stored in this order. (Big endian) Normally, it is advisable to set 0 to use the servo driver. 2nd digit: Data length 0: 7 bits, 1: 8 bits 3rd digit: Parity 0: None, 1: Odd, 2: Even 4th digit: Baud rate 0: 9.6K, 1: 19.2K, 2: 38.4K, 3: 57.6K, 4: 115.2K
		Set the ID No. (station number) of each servo driver connected in a daisy chain for serial communication.	Select one from the range of [00 to 16].
P501	Communication ID No.	[Caution] * When only one servo driver is connected, set "1". * Do not set "0". If "0" is set, an attempt is made to communicate with all connected servo drivers, and communication conflicts occur, which may disable normal communication.	

[Settings take effect at]: Power-on or input of the reset signal

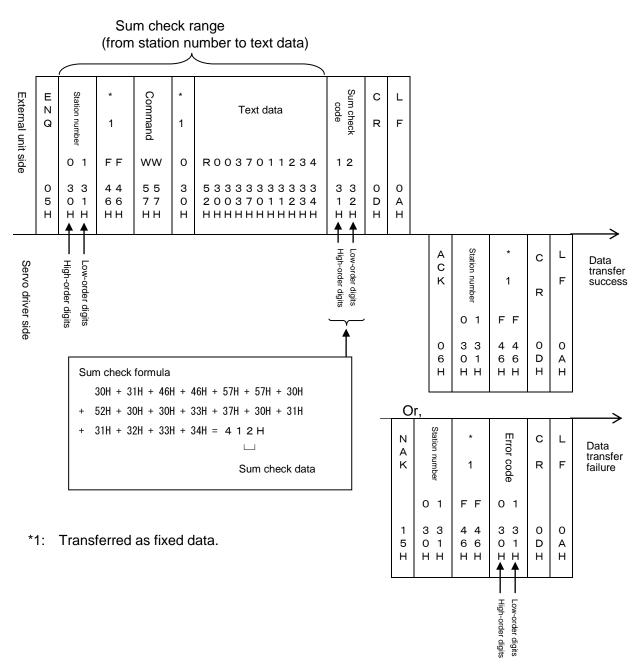
[Table 1-3] Parameters related to serial communication

1-5 Serial communication procedures

In communication between an external unit and the servo driver, data transfer can be performed by the external unit by specifying a device No. (internal address of the servo driver), and then writing data to and reading data from the servo driver.

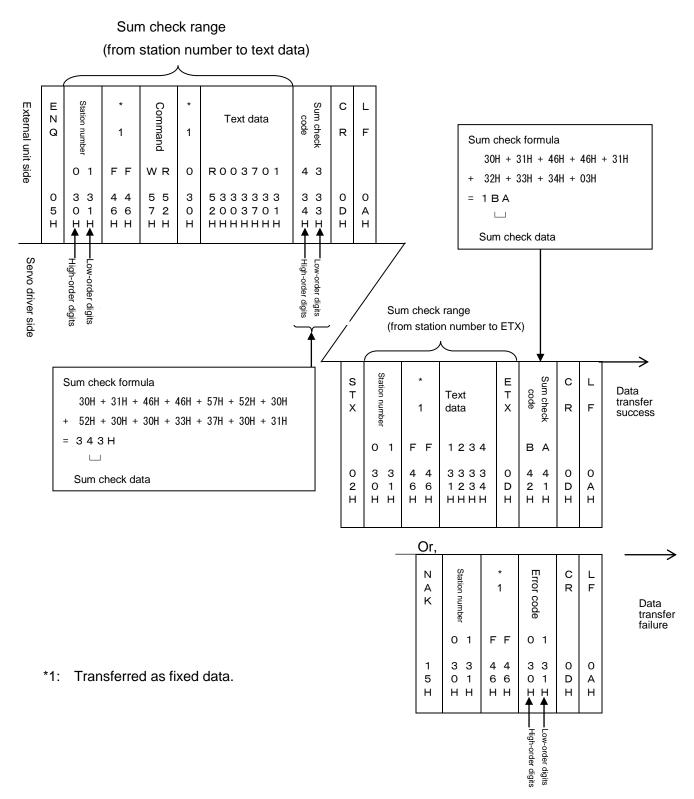
Write and read data, number of devices, station number, and sum check code must be transferred in a format in which hexadecimal numbers are converted into character codes.

1-5-1 Data writing procedure (transfer of data from an external unit to the servo driver)



[Figure 1-4] Data writing procedure (normal writing)

1-5-2 Data reading procedure (transfer of data from the servo driver to an external unit)

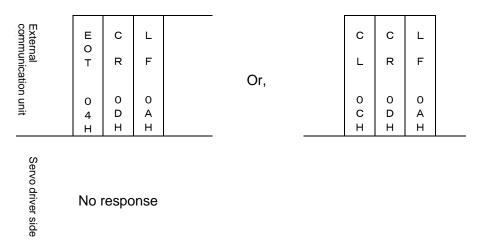


[Figure 1-5] Data reading procedure

1-5-3 Data communication sequence initialization procedure

Data communication sequence initialization is used to forcibly interrupt the communication from an external unit.

The servo driver cancels the existing data and initializes itself.



[Figure 1-6] Data communication procedure sequence initialization procedure

1-5-4 Communication error codes

If the communication data received by the servo driver contains any error, the servo driver will send back an error code together with "NAK".

Error code	Value to transfer	Description
01	30H, 31H	Parity error • The basic specification of serial communication is not followed. (1-character data could not be received with the specified parity.)
02	30H, 32H	Sum check error
03	30H, 33H	Protocol error Data communication was performed with a procedure other than the control procedure.
04	30H, 34H	 Framing error The basic specification of serial communication is not followed. (The stop bits could not be recognized.)
05	30H, 35H	Overrun error • The servo driver missed receive data.
06	30H, 36H	Communication contents error A non-existent command was received. The number of items requested for processing exceeded the permissible range.

[Table 1-4] Communication error codes

1-5-5 Communication commands

Communication commands of the servo driver are as follows.

Command code	Value to transfer	Description	
WR	57H, 52H	Reads data from the D device area and the R device area.	
WW	57H, 57H	Writes data to the D device area and the R device area.	
WM	57H, 4DH	Registers the D device area and the R device area with the monitoring. (Maximum number of words that can be registered: 20) Monitoring: For a D or R device from which you want to read data continuously, you can use this command to register the No. of the device with the monitoring function, which reads all data at once.	
MN	4DH, 4EH	Reads data from the D device area and R device area registered with the monitoring.	
BR	42H, 52H	Reads data from the X device area.	
BW	42H, 57H	Writes data to the X device area.	

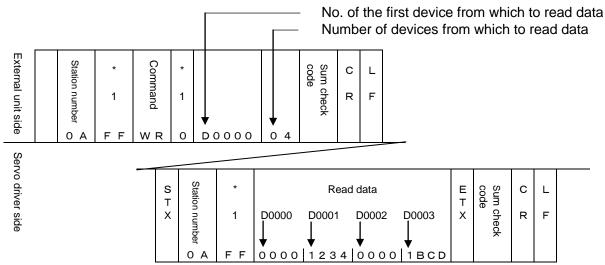
[Table 1-5] Communication commands

⚠Caution

In communication, no checks are performed on device Nos. or data ranges or for consistency with other data. If a command is sent that requests the writing of data to the data area for Nikki Denso only or to a non-existing area or that requests the writing of data out of range or data contradictory to other data, not only the data will be reflected directly in operation, causing operation failure, but also the burn of the motor and damage to the servo driver may occur. Use great caution.

[1] Reading data from the D and R device areas (WR command)

Example of reading data from D devices D0000 to D0003 (4 devices) with the station number 10 (0AH)

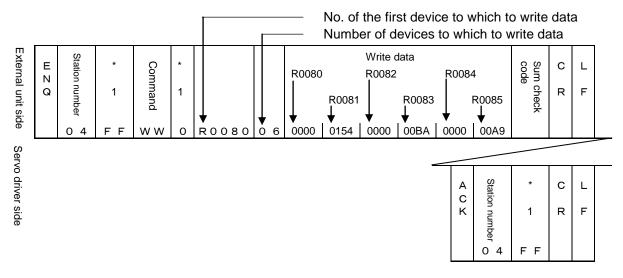


- *1 Transferred as fixed data.
- * Transfer read data, number of devices from which to read data, station number, and sum check code in a format in which hexadecimal numbers are converted into character codes.

[Figure 1-7] Method of reading data from the D device area and the R device area

[2] Writing data to the D and R device areas (WW command)

Example of writing data to R devices R0080 to R0085 (6 devices) with the station number 04



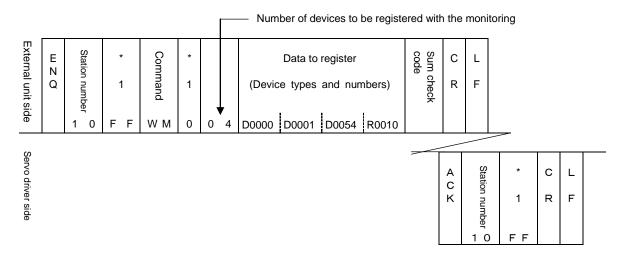
*1 Transferred as fixed data.

[Figure 1-8] Procedure for writing data to the D device area and the R device area

Outline

[3] Registering the D and R device areas with the monitoring (WM command)

Example of registering, with the monitoring, D devices D0000, D0001, D0054, and R0010 (4 devices) with the station number 16 (10H) $^{\circ}$

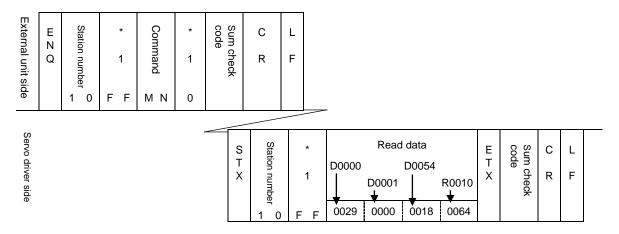


*1 Transferred as fixed data.

[Figure 1-9] Method of registering the D device area and the R device area with the monitoring

[4] Reading data from the D and R device areas registered with the monitoring (MN command)

Example of reading from registered devices with the station number 16 (10H) (Servo drivers registered with the monitoring: D0000, D0001, D0054, and R0010)

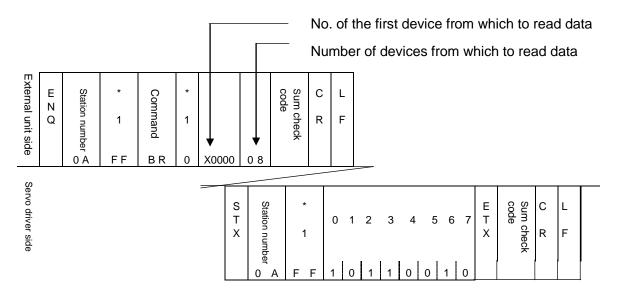


*1 Transferred as fixed data.

[Figure 1-10] Method of reading data from the D and R device areas registered with the monitoring

[5] Reading data from the X device area (BR command)

Example of reading data from X devices X0000 to X0007 (8 devices) with the station number 10 (0AH)

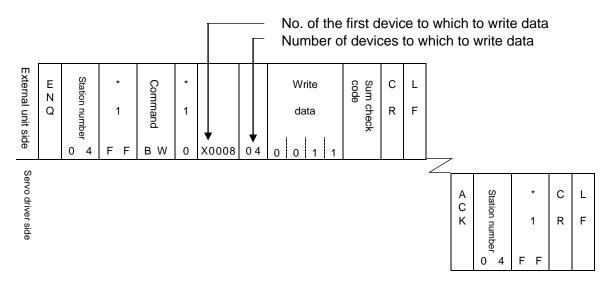


*1 Transferred as fixed data.

[Figure 1-11] Method of reading data from the X device area

[6] Writing data to the X device area (BW command)

Example of writing X devices X0008 to X000B (4 devices) with the station number 04



*1 Transferred as fixed data.

[Figure 1-12] Method of writing data to the X device area

Chapter 2 CC-Link communication

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2-1 CC-Link system configuration

The CC-Link specification VPS Series (model NCR-DCD0*) conforms to open field network CC-Link Ver 1.10 to enable you to connect CC-Link compatible devices manufactured by other companies on a network. When connected on this type of network, this servo driver functions as a remote device station and can be remote-controlled from the master station (such as a sequencer).

In the remote control mode, for the servo driver, the master station can:

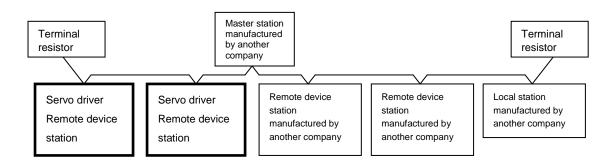
- Control almost all input/output signals of the servo driver.
 For whether each signal can be controlled with CC-Link communication, refer to "2-6 Whether input/output control signals can be controlled with CC-Link".
- 2) Always write refreshed data to the servo driver (master station → servo driver). Normally, allocate this operation to write data (such as D device command value data) in an area in which data is not held.
- Always read refreshed data from the servo driver (master station ← servo driver).
 Normally, allocate this operation to read speed, current position, deviation, and other D device status data.
- 4) Write data to the servo driver only when a write request is made to it (master station → servo driver). Read data from the servo driver only when a read request is made to it (master station ← servo driver).

Normally, use this operation to write data (such as R device parameter data) in an area in which data is held.

Also use this operation to write and read multiple data items.

Use a handshake sequence for this write/read operation.

The system configuration with CC-Link connection is shown below.

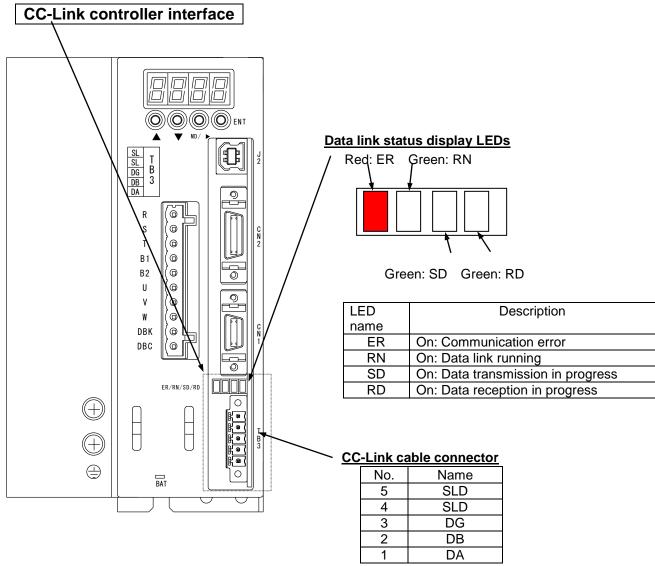


This servo driver functions as a remote device station which occupies four stations.

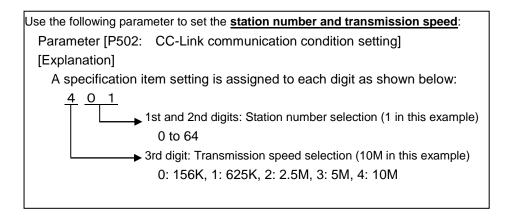
The master station collects and distributes data on the CC-Link network.

The remote device stations and local station are the target devices of the data collection and distribution of the master station on the CC-Link network.

2-2 CC-Link controller interface

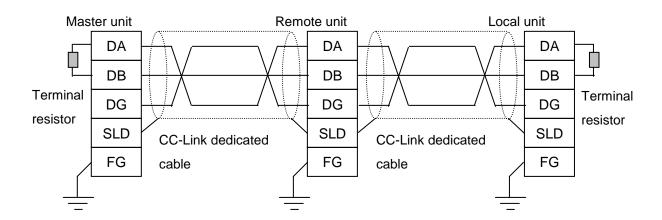


Numbers 1, 2, 3, 4, and 5 are assigned from the bottom to the top in the figure.



2-3 Wiring

How to connect a CC-Link network is shown below.



- To connect a CC-Link network, be sure to use CC-Link dedicated cables.
- Use either of the following two types of terminal resistors according to the type of cable used.

Terminal resistor	Cable used
110 Ω	Ver 1.10 compatible CC-Link dedicated cable CC-Link dedicated cable
130 Ω	High performance CC-Link dedicated cable

• One each of the following types of resistors are supplied with this servo driver:

110 Ω 1/2W (brown, brown, brown)

130 Ω 1/2W (brown, orange, brown)

To place this servo driver at the end of the system, connect an appropriate supplied terminal resistor according to the cable used between "DA and DB".

2-4 Input/output data

2-4-1 Memory mapped profileNumber of occupied stations: 4

RX/RY

100111				
	Slave → Master	Master → Slave		
Device No.	Signal name	Device No.	Signal name	
RXn0	Ready (RDY)	RYn0	Drive (DR)	
RXn1	Alarm (ALM)	RYn1	Servo On (SON)	
RXn2	Deviation range A (PNA)	RYn2	Torque Limit (TL)	
RXn3	Deviation range B (PNB)	RYn3	Gain Select (GSEL)	
RXn4	Break Release (BRK)	RYn4	Reset (RST)	
RXn5	Speed Zero (SZ)	RYn5	Mode select (MD)	
RXn6	Not used	RYn6	Command Pulse Input Prohibition (CIH)	
RXn7	Emergency stop (EMGO)	RYn7	Reverse command direction (RVS)	
RXn8	Zero point return completion (HCP)	RYn8	Command Select 1 (SS1)	
RXn9		RYn9	Command Select 2 (SS2)	
RXnA		RYnA	Command Select 3 (SS3)	
RXnB		RYnB	Emergency Stop (EMG)	
RXnC		RYnC	Forward Over Travel (FOT)	
RXnD		RYnD	Reverse Over Travel (ROT)	
RXnE		RYnE	Command data reflection prohibition (NRF)	
RXnF		RYnF	Feedback selection (PFB)	
RX(n+1)0		RY(n+1)0	Internal pulse triggering (ZST)	
RX(n+1)1		RY(n+1)1	Zero Point LS (ZLS)	
RX(n+1)2		RY(n+1)2	Zero marker (ZMK)	
RX(n+1)3		RY(n+1)3	,	
RX(n+1)4		RY(n+1)4		
RX(n+1)5		RY(n+1)5	Not used	
RX(n+1)6		RY(n+1)6		
RX(n+1)7		RY(n+1)7		
RX(n+1)8		RY(n+1)8	Forward Direction Jog (FJ)	
RX(n+1)9	Not used	RY(n+1)9	Reverse Direction Jog (RJ)	
RX(n+1)A		RY(n+1)A	Command Select 4 (SS4)	
RX(n+1)B		RY(n+1)B	Command Select 5 (SS5)	
RX(n+1)C		RY(n+1)C		
RX(n+1)D		RY(n+1)D	1	
RX(n+1)E		RY(n+1)E		
RX(n+1)F	1	RY(n+1)F	1	
RX(n+2)0		RY(n+2)0	1	
RX(n+2)1		RY(n+2)1	1	
RX(n+2)2	1	RY(n+2)2	1	
RX(n+2)3	1	RY(n+2)3	Not used	
RX(n+2)4	1	RY(n+2)4	1	
RX(n+2)5		RY(n+2)5	1	
RX(n+2)6		RY(n+2)6	1	
RX(n+2)7		RY(n+2)7	1	
RX(n+2)8		RY(n+2)8	1	
RX(n+2)9		RY(n+2)9	1	
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CC-Link communication

	T		
RX(n+2)A		RY(n+2)A	
RX(n+2)B		RY(n+2)B	
RX(n+2)C		RY(n+2)C	
RX(n+2)D		RY(n+2)D	
RX(n+2)E		RY(n+2)E	
RX(n+2)F		RY(n+2)F	
RX(n+3)0		RY(n+3)0	
RX(n+3)1		RY(n+3)1	
RX(n+3)2		RY(n+3)2	
RX(n+3)3		RY(n+3)3	
RX(n+3)4	1	RY(n+3)4	
RX(n+3)5	Not used	RY(n+3)5	Not used
RX(n+3)6		RY(n+3)6	
RX(n+3)7		RY(n+3)7	
RX(n+3)8		RY(n+3)8	
RX(n+3)9		RY(n+3)9	
RX(n+3)A		RY(n+3)A	
RX(n+3)A	1	RY(n+3)B	1
RX(n+3)C		RY(n+3)C	
RX(n+3)D		RY(n+3)D	
RX(n+3)E		RY(n+3)E	
RX(n+3)F		RY(n+3)F	
RX(n+4)0	Read request answer (RANS)	RY(n+4)0	Read request (RREQ)
RX(n+4)1	Write request answer (WANS)	RY(n+4)1	Write request (WREQ)
RX(n+4)2	write request answer (WANS)	RY(n+4)2	White request (WKLQ)
RX(n+4)3		RY(n+4)3	
RX(n+4)4		RY(n+4)4	
RX(n+4)5		RY(n+4)5	
RX(n+4)6		RY(n+4)6	
RX(n+4)7		RY(n+4)7	
RX(n+4)8		RY(n+4)8	
		_ ' /	
RX(n+4)9		RY(n+4)9 RY(n+4)A	
RX(n+4)A	-		
RX(n+4)B		RY(n+4)B	
RX(n+4)C		RY(n+4)C	
RX(n+4)D	Not used	RY(n+4)D	Not used
RX(n+4)E	Not used	RY(n+4)E	Not used
RX(n+4)F		RY(n+4)F	
RX(n+5)0		RY(n+5)0	
RX(n+5)1		RY(n+5)1	
RX(n+5)2		RY(n+5)2	
RX(n+5)3		RY(n+5)3	
RX(n+5)4	-	RY(n+5)4	
RX(n+5)5	-	RY(n+5)5	
RX(n+5)6	-	RY(n+5)6	
RX(n+5)7	-	RY(n+5)7	
RX(n+5)8		RY(n+5)8	
RX(n+5)9		RY(n+5)9	
RX(n+5)A		RY(n+5)A	

			OO LIIIK COITIITIATIICAU
RX(n+5)B		RY(n+5)B	
RX(n+5)C		RY(n+5)C	
RX(n+5)D	- - -	RY(n+5)D	
RX(n+5)E		RY(n+5)E	
RX(n+5)F		RY(n+5)F	
RX(n+6)0		RY(n+6)0	
RX(n+6)1		RY(n+6)1	
RX(n+6)2		RY(n+6)2	
RX(n+6)3		RY(n+6)3	
RX(n+6)4		RY(n+6)4	
RX(n+6)5	Not used	RY(n+6)5	Not used
RX(n+6)6	1.101 0.000	RY(n+6)6	
RX(n+6)7		RY(n+6)7	
RX(n+6)8		RY(n+6)8	
RX(n+6)9		RY(n+6)9	
RX(n+6)A		RY(n+6)A	
RX(n+6)B		RY(n+6)B	
RX(n+6)C		RY(n+6)C	
RX(n+6)D		RY(n+6)D	
RX(n+6)E		RY(n+6)E	
RX(n+6)F		RY(n+6)F	
RX(n+7)0		RY(n+7)0	
RX(n+7)1		RY(n+7)1	
RX(n+7)2		RY(n+7)2	
RX(n+7)3	Reserved	RY(n+7)3	Reserved
RX(n+7)4	Reserved	RY(n+7)4	Neserved
RX(n+7)5		RY(n+7)5	
RX(n+7)6		RY(n+7)6	
RX(n+7)7		RY(n+7)7	
RX(n+7)8	Reserved *1	RY(n+7)8	Reserved *1
RX(n+7)9	Reserved *1	RY(n+7)9	Reserved *1
RX(n+7)A	Error status flag	RY(n+7)A	Error reset request flag *3
RX(n+7)B	Remote station READY *2	RY(n+7)B	Reserved
RX(n+7)C	Reserved	RY(n+7)C	Reserved
RX(n+7)D	INGOGIVEU	RY(n+7)D	1.6361 VGU
RX(n+7)E	OS definition	RY(n+7)E	OS definition
RX(n+7)F	OG GETTITION	RY(n+7)F	OG GENTILION

^{*1:} Originally, these areas are for "RX(n+7)8: Initial data processing request flag", "RY(n+7)8: Initial data processing completion flag", "RX(n+7)9: Initial data setting completion flag", and "RY(n+7)9: Initial data setting request flag". They are not used in the specification of this servo driver.

^{*2:} On when the device is available or off when an error occurs.

^{*3:} Functions in the same way as the reset (RST) signal.

CC-Link communication

RWr/RWw

Slave → Master			Master → Slave	
Address	Description	Address	Description	
RWrn	Alarm/warning No.	RWwn	Write/read request data number	
RWrn+1	Not used	RWwn+1	Not used	
RWrn+2	Read request read data The read source is specified in RWwn. (Low-order)	RWwn+2	Write request write data The write destination is specified in RWwn. (Low-order)	
RWrn+3	Read request read data The read source is specified in RWwn. (High-order)	RWwn+3	Write request write data The write destination is specified in RWwn. (High-order)	
RWrn+4	Always refreshed read data 1 (low-order)	RWwn+4	Always refreshed write data 1 (low-order)	
RWrn+5	Always refreshed read data 1 (high-order)	RWwn+5	Always refreshed write data 1 (high-order)	
RWrn+6	Always refreshed read data 2 (low-order)	RWwn+6	Always refreshed write data 2 (low-order)	
RWrn+7	Always refreshed read data 2 (high-order)	RWwn+7	Always refreshed write data 2 (high-order)	
RWrn+8	Always refreshed read data 3 (low-order)	RWwn+8	Always refreshed write data 3 (low-order)	
RWrn+9	Always refreshed read data 3 (high-order)	RWwn+9	Always refreshed write data 3 (high-order)	
RWrn+A	Always refreshed read data 4 (low-order)	RWwn+A	Always refreshed write data 4 (low-order)	
RWrn+B	Always refreshed read data 4 (high-order)	RWwn+B	Always refreshed write data 4 (high-order)	
RWrn+C	Always refreshed read data 5 (low-order)	RWwn+C	Always refreshed write data 5 (low-order)	
RWrn+D	Always refreshed read data 5 (high-order)	RWwn+D	Always refreshed write data 5 (high-order)	
RWrn+E	Always refreshed read data 6 (low-order)	RWwn+E	Always refreshed write data 6 (low-order)	
RWrn+F	Always refreshed read data 6 (high-order)	RWwn+F	Always refreshed write data 6 (high-order)	

^{*} For the read sources and write destinations of always refreshed read data and write data, refer to "Chapter 6 Parameters P721 to P732" in the "Servo Driver Instruction Manual".

2-4-2 Input/output signals

Used interfaces

RX: Remote input RY: Remote output

1) The RX and RY signal specifications conform to the remote input/output signals of the standard VPS Series servo driver.

The remote input signals are input to the master station and the remote output signals are output from the master station.

These input/output signal directions are opposite to those explained in other than this chapter since in these chapters, the input signals are input to this servo driver and the output signals are output from the servo driver.

2) The remote input/output signals are always enabled.

The remote input/output signals and external input signals are controlled using OR (logical addition) in this servo driver.

To disable the external input signals, use parameter P700.

2-4-3 Always refreshed data read/write

Used interfaces

RWr: Always refreshed read data RWw: Always refreshed write data

- 1) Data is always written and read between this servo driver and master station.
 - To specify the area to which to write data in this servo driver and the area from which to read data in it, use parameters P721 to P732.
- 2) As the data number, in parameter P721 to P732, specify the R or D device as described in Chapter 3, "Data area".
 - To set a D device data number, specify "0" in the 5th digit and the D device number in the 4th to 1st digits.
 - To set an R device data number, specify "1" in the 5th digit and the R device number in the 4th to 1st digits.
 - Example) For D0032 (C016: Current position), specify "00032" as the data number.
 - Example) For D1020 (positioning type command 1), specify "01020" as the data number.
- 3) Set a value of "21000 or greater" or "0" in parameter P721 to P726 to disable the always refreshed write function corresponding to the parameter. When the function is disabled, write processing is not performed.
- 4) Set a value of "21000 or greater" in parameter P727 to P732 to disable the always refreshed read function corresponding to the parameter. When the function is disabled, read data is always "0".

2-4-4 Write request data write/read request data read

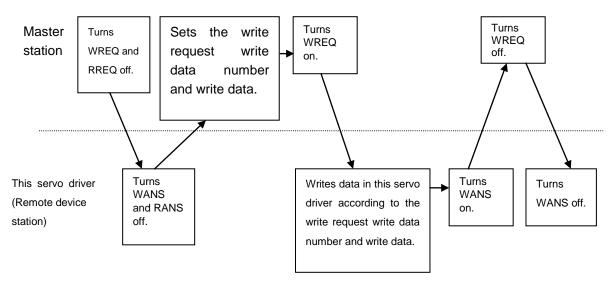
Used interfaces

RX(n+4)0: Read request answer, RX(n+4)1: Write request answer

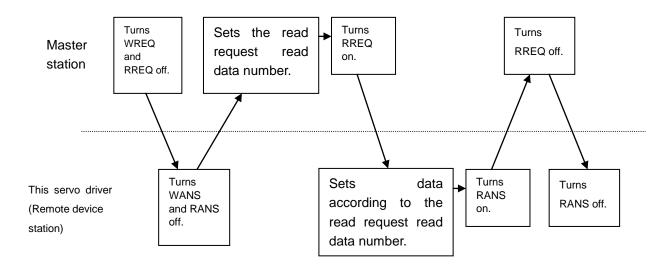
RY(n+4)0: Read request, RY(n+4)1: Write request

RWrn+2,3: Read request read data RWwn: Write/read request data number RWwn+2,3: Write request write data

- 1) Data is written or read between this servo driver and master station only when a request to write or read data is made.
- 2) Specify the write data number for a write request or the read data number for a read request in the same way as for the data number for always refreshed data read/write.
- 3) Data is written for write request data write according to the following handshake sequence.



4) Data is read for read request data read according to the following handshake sequence.



2-5 Specification and setting information

CC-Link specification

Item	Specification					
Station type	Remote device station					
CC-Link version	1.10					
Communication speed	10M/5M/2.5M/625K/156	Kbps (specif	iable with a pa	rameter)		
Communication system	Polling system					
Synchronization system	Frame synchronization s	system				
Encoding system	NRZI encoding					
Transmission path format	Bus format (EIA RS485 conformance)					
Transmission format	HDLC conformance					
Error control system	CRC (X16+X12+X5+1)					
Number of occupied stations	4					
Station number	Specify a number within a range of 1 to 61 (with a parameter). * Although available station numbers are 1 to 64, actual available numbers are 1 to 61 since this servo driver occupies four stations.					
Connection cable	CC-Link dedicated cable					
	Communication speed	156kbps	625kbps	2.5Mbps	5Mbps	10Mbps
Maximum overall and inter-station cable	Inter-station /	At least 20 cm	At least 20 cm	At least 20 cm	At least 20 cm	At least 20 cm
lengths	Maximum transmission distance	1200 m	900 m	400 m	160 m	100 m

Setting information

Item	Setting
Manufacturer code	Nikki Denso: 0310H
Model code	Servo: 21H
Software version	Version of software for the CC-Link interface section. The starting version is version A (01H) and the version is upgraded to B (02H), C (03H), and so on. This version is irrelevant to the software version of the servo driver (value displayed on the data display LEDs in device information display mode "L [] [] \(\frac{1}{4} \) ").

2-6 Whether input/output control signals can be controlled with CC-Link

Whether input/output control signals can be controlled with CC-Link remote input and remote output

Output control signa	ıl		Input control signal		
		Can be	<u> </u>		Can be
Signal name	Symbol	controlled ?	Signal name	Symbol	controlled ?
Drive	DR	Yes	Ready	RDY	Yes
Servo On	SON		Alarm	ALM	
Torque Limit	TL		Deviation range A	PNA	
Gain Select	GSEL		Deviation range B	PNB	
Reset	RST		Break Release	BRK	
Mode select	MD		Speed Zero	SZ	
Command Pulse Input Prohibition	CIH		Emergency stop	EMGO	
Reverse command	RVS		Zero point return	HCP	
direction			completion		
Command Select 1	SS1				
Command Select 2	SS2				
Command Select 3					
Emergency Stop	EMG				
Forward Over Travel	FOT				
Reverse Over Travel	ROT				
Command data reflection prohibition	NRF				
Feedback selection	PFB				
Internal pulse triggering	ZST				
Zero Point LS	ZLS				
Zero marker	ZMK				
Forward Direction Jog	FJ				
Reverse Direction Jog	RJ				
Command Select 4	SS4				
Command Select 5	SS5				
Pulse train command	RC, FC	No	Marker output signal	OCEM	No
* The authorities					

^{*} The output control signals are output from the master station and the input control signals are input to the master station.

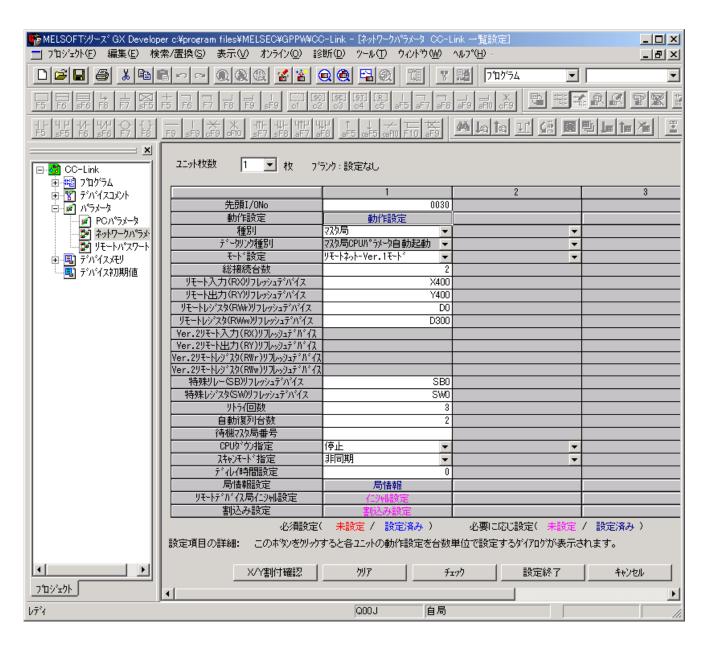
2-7 Example of operation

This section explains settings and others required for operating this servo driver using an example. In this example, a "MELSEC-Q series sequencer" manufactured by Mitsubishi Electric as the master station, and "GX Developer" (Ver 8.03D) manufactured by Mitsubishi Electric is used as the sequencer design and maintenance tool.

* The explanation in this section is intended for users who understand how to use "MELSEC-Q series sequencer" and "GX Developer". For details of them, refer to the instruction manual provided by Mitsubishi Electric.

An example is explained below. In this example, two servo drivers are used.

- (1) Setting the network parameters to the master station (sequencer)
 - The following explains the items to be set as the network parameters of the master station. For details of the parameters and items that are not explained here, refer to the instruction manual provided by Mitsubishi Electric.
 - 1) Example of the "GX Developer" screen for setting the network parameters to the master station



CC-Link communication

2) Number of Modules

Set the number of units for which to set the network parameters.

In this example, "1 board" is set.

3) Start I/O No.

Set the start I/O number of the master station.

The value to be set differs depending on the system configuration.

In this example, "0030" is set.

4) Type

Set the type of station.

"Master station" is set since the sequencer is to be used as the master station.

5) Mode

Set the CC-Link mode.

"Remote Net(Ver.1 Mode)" is set.

6) Total Module Connected

Set the total number of stations connected in the CC-Link system including reserved stations.

"2" is set since only two servo drivers are to be connected.

7) Remote Input(RX)

Set the remote input (RX) refresh device.

In this example, "X400" is set.

Since this servo driver occupies four stations, X400 to X47F are allocated to the remote input (RX) of the first servo driver and X480 to X4FF are allocated to the remote input (RX) of the second servo driver. For details of the allocated signals, refer to "2-4-1 Memory mapped profile".

8) Remote Output(RY)

Set the remote output (RY) refresh device.

In this example, "Y400" is set.

Since this servo driver occupies four stations, Y400 to Y47F are allocated to the remote output (RY) of the first servo driver and Y480 to Y4FF are allocated to the remote output (RY) of the second servo driver. For details of the allocated signals, refer to "2-4-1 Memory mapped profile".

9) Remote Register(RWr)

Set the remote register (RWr) refresh device.

In this example, "D0" is set.

D0 to D15 are allocated to the remote register (RWr) of the first servo driver and D16 to D31 are allocated to the remote register (RWr) of the second servo driver. For details of the allocated signals, refer to "2-4-1 Memory mapped profile".

10) Remote Register(RWw)

Set the remote register (RWw) refresh device.

In this example, "D300" is set.

D300 to D315 are allocated to the remote register (RWw) of the first servo driver and D316 to D331 are allocated to the remote register (RWw) of the second servo driver. For details of the allocated signals, refer to "2-4-1 Memory mapped profile".

11) Special Relay(SB)

Set the special relay (SB) refresh device.

In the example, "SB0" is set.

12) Special Register(SW)

Set the special register (SW) refresh device.

In the example, "SW0" is set.

13) Station Information

When "Station information" is clicked, the following screen appears.



Select "Remote Device Station" for Station Type.

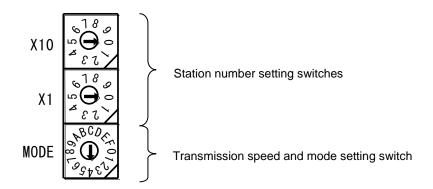
Select "Occupied Stations 4" for Occupied Count.

Select "No Setting" for Reserve/Invalid Station Select.

Since this servo driver occupies four stations, "1" is indicated for Station No. of the first servo driver and "5" is indicated for Station No. of the second servo driver.

- 14) After setting the network parameters and other required items (including PC parameters), write the parameters to the sequencer.
- (2) Setting the switches on the master unit (sequencer)

The following figure shows an example of setting the switches on the master unit.



Use the station number setting switches to set "0" (master).

Use the transmission speed and mode setting switch, set "4" (Transmission speed: 10Mbps, mode: online).

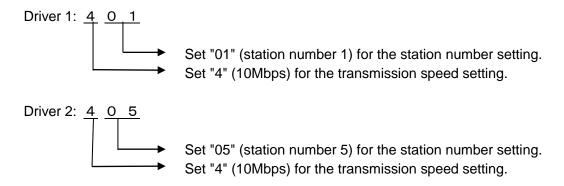
The transmission speed may have to be changed depending on the cable length and/or communication environment.

CC-Link communication

(3) Setting the parameter to this servo driver

An example of setting the parameter for this servo driver is shown below.

Setting parameter [P502: CC-Link communication condition setting]



The transmission speed may have to be changed depending on the cable length and/or communication environment.

(4) Connection

After the completion of settings (1) to (3), connect the master unit and servo drivers as described in "2-3 Wiring" and turn the power on. The sequencer and servo drivers start communication with one another.

If alarm "CC-Link station number setting error" occurs, an invalid station number may be set for the servo driver. Check the parameter.

(5) Sample programs

A sequence program is explained below, which "writes data to always refreshed write data devices", "reads data from always refreshed read data devices", "writes write request data", and "reads read request data".

For the data numbers used for writing and reading data, refer to Chapter 3, "Data area".

According to the settings of the remote register (RWr/RWw) refresh devices made in steps 9) and 10) in (1), each remote register corresponds to a device in the sequence as follows.

	Slave → Master					
Address	Description	Sequencer device for servo driver 1	Sequencer device for servo driver 2			
RWrn	Alarm/warning No.	D0	D16			
RWrn+1	Not used	D1	D17			
RWrn+2	Read request read data The read source is specified in RWwn. (Low-order)	D2	D18			
RWrn+3	Read request read data The read source is specified in RWwn. (High-order)	D3	D19			
RWrn+4	Always refreshed read data 1 (low-order)	D4	D20			
RWrn+5	Always refreshed read data 1 (high-order)	D5	D21			
RWrn+6	Always refreshed read data 2 (low-order)	D6	D22			
RWrn+7	Always refreshed read data 2 (high-order)	D7	D23			
RWrn+8	Always refreshed read data 3 (low-order)	D8	D24			
RWrn+9	Always refreshed read data 3 (high-order)	D9	D25			
RWrn+A	Always refreshed read data 4 (low-order)	D10	D26			
RWrn+B	Always refreshed read data 4 (high-order)	D11	D27			
RWrn+C	Always refreshed read data 5 (low-order)	D12	D28			
RWrn+D	Always refreshed read data 5 (high-order)	D13	D29			
RWrn+E	Always refreshed read data 6 (low-order)	D14	D30			
RWrn+F	Always refreshed read data 6 (high-order)	D15	D31			
	Master → Slav		-			
Address	Description	Sequencer device for servo driver 1	Sequencer device for servo driver 2			
RWwn	Write/read request data number	D300	D316			
RWwn+1	Not used	D301	D317			
RWwn+2	Write request write data The write destination is specified in RWwn. (Low-order)	D302	D318			
RWwn+3	Write request write data The write destination is specified in RWwn. (High-order)	D303	D319			
RWwn+4	Always refreshed write data 1 (low-order)	D304	D320			
RWwn+5	Always refreshed write data 1 (high-order)	D305	D321			
RWwn+6	Always refreshed write data 2 (low-order)	D306	D322			
RWwn+7	Always refreshed write data 2 (high-order)	D307	D323			
RWwn+8	Always refreshed write data 3 (low-order)	D308	D324			
RWwn+9	Always refreshed write data 3 (high-order)	D309	D325			
RWwn+A	Always refreshed write data 4 (low-order)	D310	D326			
RWwn+B	Always refreshed write data 4 (high-order)	D311	D327			
RWwn+C	Always refreshed write data 5 (low-order)	D312	D328			
RWwn+D	Always refreshed write data 5 (high-order)	D313	D329			
RWwn+E	Always refreshed write data 6 (low-order)	D314	D330			

CC-Link communication

1) Writing data to always refreshed write data devices

Set data to be written in the sequencer device corresponding to always refreshed write data 1 to 6 to write the data to this servo driver. To specify the number of data to be written, use parameter P721 to P726 (for details of the parameters, refer to "Chapter 6 Parameters" in the "Servo Driver Instruction Manual".

To write "1234" to device D1008 (command value data: speed command value 5) using always refreshed write data 1 for servo driver 1, set "01008" (D1008) in P721 and execute the following program. (Data is transferred when M0 is on.)

2) Reading data from always refreshed read data devices

Read data is stored in the sequencer device corresponding to always refreshed read data 1 to 6. To specify the number of data to be read, use parameter P727 to P732 (for details of the parameters, refer to "Chapter 6 Parameters" in the "Servo Driver Instruction Manual".

To read the value of device D0026 (status data: position deviation pulse) using always refreshed read data 1 for servo driver 2 to sequencer device D2000, set "00026" (D0026) in P727 and execute the following program. (Data is transferred when M0 is on.)

```
M0

Data transfer

execution

Read

Position

data 1 for deviation

servo read data

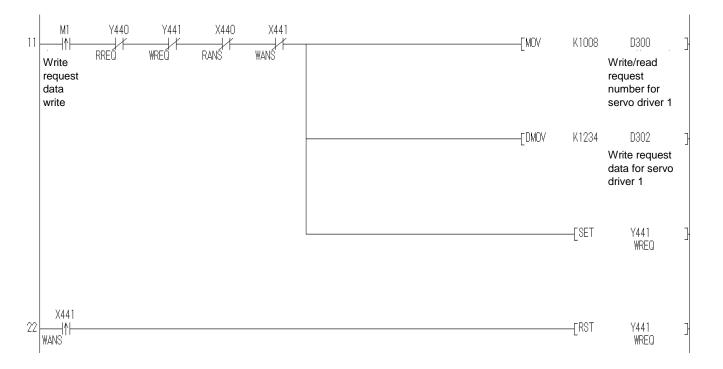
driver 2
```

3) Writing write request data

Set data to be written in the sequencer device corresponding to write request write data and turn Write request (WREQ) on to write the data to this servo driver. Set the number of data to be written in the sequencer device corresponding to the write/read request data number.

To write "1234" to device D1008 (command value data: speed command value 5) for servo driver 1, execute the following program.

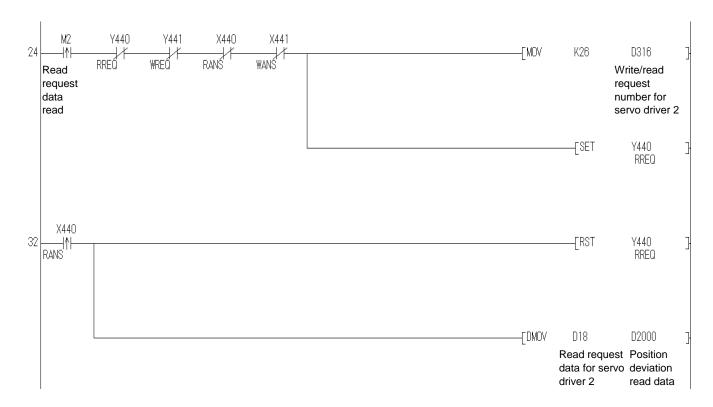
(Data is written once when M1 is turned on.)



4) Reading read request data

Set the number of data to be read in the sequencer device corresponding to the write/read request data number and turn Read request (RREQ) on to store read data having the specified data number in the sequencer device corresponding to read request read data.

To read the value of device D0026 (status data: position deviation pulse) for servo driver 2 to sequencer device D2000, execute the following program. (Data is read once when M2 is turned on.)



Chapter 3 Data area

3-1 Overall data area configuration	3-2
3-2 Parameter data (R device)	
3-3 Status data (D device)	
3-4 Command value data (D device)	
3-5 Serial communication remote control data (X device)	

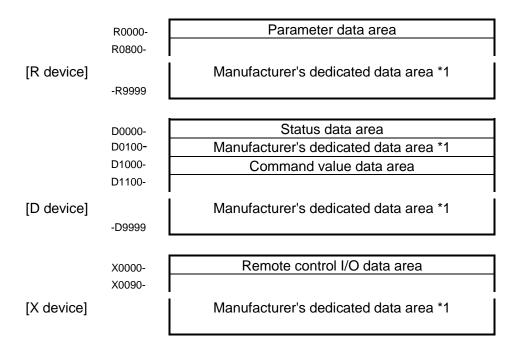
3-1 Overall data area configuration

There are three types of data area: **R and D device areas** that store data such as parameter data and status data (16 bits/data) and **X device area** for remote control (1 bit/1 signal).

The R and D device areas are available for serial communication and CC-Link communication. The X device area is available only for serial communication. For remote input/output in CC-Link communication, use signals dedicated to remote input/output (RX and RY). (For details, refer to Chapter 2, "CC-Link communication".)

By reading data from or writing data to these data areas according to the relevant communication protocol, you can perform the following:

- 1) Parameter data area
 - Transmit and receive parameter data (parameter edit).
 - This area is allocated in EEPROM, so it can be rewritten up to 10000 times.
- 2) Status data area
 - Read status data of the servo driver
- 3) Command value data area
 - Operate speed and positioning command values with communication.
 - This area can be rewritten with no limitation. The rewritten data is not backed up, however.
- 4) Remote control I/O data area (only for serial communication)
 - Operate the servo driver through communication instead of external input signals (remote control)



^{*1} Manufacturer's dedicated data area is intended for internal use in the servo driver. Do not read data from or write data to this area.

[Figure 3-1] Overall configuration of device data areas

- During communication, no check is made regarding the device number, data range, consistency with other data, etc. If an attempt is made to write data to Nikki Denso's dedicated data area or a nonexistent area or if a command is sent that requests the writing of out-of-range data or data inconsistent with other data, the written data is reflected on the operation as is, potentially not only causing a malfunction but also burning the motor or damaging the servo driver. Therefore, due care is required.
- 2) The R and D device areas are available for both serial communication and CC-Link communication. The X device area is available only for serial communication.
- 3) For serial communication, you can select little or big endian for handling communication data by setting the function selection (1st digit) of parameter P500. For CC-Link communication, parameter P500 is disabled and the function selection for communication data is fixed to little endian.

3-2 Parameter data (R device)

[1] Setting data in the parameter area

You can edit a parameter for the servo driver by "writing data to and reading it from" the parameter area (R device) corresponding to the parameter No. (However, the parameters related to the basic specifications for communication need to be set on the servo driver side.)

Two devices are assigned to each parameter in the parameter area, and a single parameter consists of 32 bits.

Whether to use each of the two devices for storing high-order or low-order data is determined according to the setting of the function selection (1st digit) of Communication specification selection (P500) as follows. (This specification is enabled only for serial communication. For CC-Link communication, the specification is fixed to little endian.)

Device No.	Function selection (1st digit) of Communication specification selection (P500) 0: Little endian 1: Big endian		Parameter No.
R0000	Low-order	High-order	P000
R0001	High-order	Low-order	F000

[Table 3-1] Data configuration (parameter)

For communication, the value (decimal) displayed on the operation panel is converted to an 8-digit hexadecimal number (signed 32-bit data).

<Example of positive data>

Device No.	Parameter	Parameter	Set value		
Device No.	No.	name	(example)		
R0266	Daga	Deviation	123456		
R0267	P203	range B	123430		

Conversion of the set value

123456		1E240H	0001E240H
(Decimal)	_	(Hexadecimal)	0001E240H

Convert to hexadecimal 32-bit-lo

32-bit-long data (8 digits in hexadecimal)

Communication data

Device No.	Function selection (1st digit) of Communication specification selection (P500)		
	0: Little endian	1: Big endian	
R0266	E240	0001	
R0267	0001	E240	

<Example of negative data>

Device No.	Parameter No.	Parameter name	Set value (example)
R0408	P404	Zero return	-654321
R0409	P404	speed	-004321

Conversion of the set value

-654321	 FFF6040FH	_	FFF6040FH
(Decimal)	(Hexadecimal)		FFF0040FH

Convert to hexadecimal

32-bit-long data (8 digits in hexadecimal)

Communication data

	Function selection (1st digit) of Communication				
Device No.	specification selection (P500)				
	0: Little endian	1: Big endian			
R0266	040F	FFF6			
R0267	FFF6	040F			

[Figure 3-2] Examples of conversion for communication data (parameter)

[2] Parameter area list

The following table lists the parameters for the servo driver.

For whether to enable or disable each parameter for the model you use, refer to the "Servo Driver Instruction Manual".

For a disabled or reserved parameter, set "blank" or "0".

Device No.	Parameter No.	Parameter name	Unit	Set value
R0000 R0001	P000	Motor type		0000 to 9999
R0002 R0003	P001	Encoder type selection		0: S-INC 1: S-ABS (INC mode) 2: S-ABS (ABS mode) 3: Reserved 4: Reserved 5: INC3 6: IPU 7: L-SEN 8: C-SEN 9: C-ABS 10: L-ABS 11: L-LESS
R0004 R0005	P002	Encoder Pulse selection		0:17bit (131072ppr) 1:2000ppr
R0006 R0007	P003	Rotating direction selection		0: Forward operation 1: Reverse operation
R0008 R0009	P004	Tau DISC/Rotary type motor applicable max. speed	rpm	0 to 9999
R0010 R0011	P005	Torque limit value 1+	%	0 to 799
R0012 R0013	P006	Torque limit value 1-	%	0 to 799
R0014 R0015	P007	Torque limit value 2+	%	0 to 799
R0016 R0017	P008	Torque limit value 2-	%	0 to 799
R0018 R0019	P009	Electronic-thermal detecting method selection	%	50 to 200
R0020 R0021	P010	Encoder Pulse output division numerator		-9999999 to 9999999
R0022 R0023	P011	Encoder Pulse output division denominator		0 to 99999999
R0024 R0025	P012	Encoder Marker output specification		0: Once per revolution, 1: One position
R0026 R0027	P013	Encoder Marker output position	Encoder position	-999999999 to 999999999

[Table 3-2] Parameter list 1/19

Device No.	Parameter No.	Parameter name	Unit	Set value
R0028 R0029	P014	Servo control Abnormality detection adjustment value		-1000 to 1000
R0030 R0031	P015	Absolute position correction Correction run designation		Normally, set 0. For details, refer to "Absolute Position Correction Function".
R0032 R0033	P016	ABS data incremental direction		-1 to 0
R0034 R0035	P017	ABS zero position electric angle	0.01°	0 to 35999
R0036 R0037	P018	Select the functional specification		1st digit: Electronic-thermal function 0 to 99999999 2nd digit: Serial encoder communication timing 0: Standard 1: Special
R0038 R0039	P019	Reserved		

[Table 3-2] Parameter list 2/19

F		T		
Device No.	Parameter No.	Parameter name	Unit	Set value
R0040 R0041	P020	Motor type, Number of poles		0 to 65535
R0042 R0043	P021	Rated torque current	0.01 A	0 to 99999999
R0044 R0045	P022	Tau DISC/Rotating motor rated number of revolutions	rpm	1 to 9999
R0046 R0047	P023	Max momentary torque ratio	%	1 to 799
R0048 R0049	P024	Exciting current command (Induction)		-32768 to 32767
R0050 R0051	P025	Slip coefficient (Induction)		-32768 to 32767
R0052 R0053	P026	Primary resistance	mΩ	0 to 65535
R0054 R0055	P027	Primary self-inductance	μH	0 to 65535
R0056 R0057	P028	Voltage feed-forward rate	%	0 to 100
R0058 R0059	P029	Induced voltage compensatory rate	%	0 to 100
R0060 R0061	P030	Incoherence compensatory rate	%	0 to 100
R0062 R0063	P031	dq Proportional gain		0 to 65535
R0064 R0065	P032	dq Integral gain		-32768 to 32767
R0066 R0067	P033	Dead time compensation time	0.1 µs	-32768 to 32767
R0068 R0069	P034	Torque to torque current conversion coefficient		-32768 to 32767
R0070 R0071	P035	PWM output limiter value		-32768 to 32767
R0072 R0073	P036	Electric thermal correction standard		-32768 to 32767
R0074 R0075	P037	Conversion limiter of Torque command value		-32768 to 32767
R0076 to R0097	P038 to P048	Reserved		
R0098 R0099	P049	Torque Constant	0.001 Nm/A *1	0 to 99999999

^{*1 0.001} N/A for a Tau linear motor

[Table 3-2] Parameter list 3/19

Device No.	Parameter No.	Parameter name	Unit	Set value
R0100 R0101	P050	Tau DISC motor 1-rotation number of pulses	pulse	0 to 99999999
R0102 R0103	P051	Tau linear motor sensor resolution	1nm	-9999999 to 99999999
R0104 R0105	P052	Distance between linear motor pole opposite	0.01 mm	1 to 100000
R0106 R0107	P053	Tau linear motor applicable maximum speed	0.01 mm/s	0 to 10000000
R0108 R0109	P054	Tau Linear motor rated speed	0.01 mm/s	1 to 10000000
R0110 R0111	P055	Magnetic pole sensor type		0: No sensor 1: Sensor provided (offset enabled) 2: Sensor provided (offset disabled) 3: Sensor provided (for a high-resolution encoder)
R0112 to R0115	P056 to P057	Reserved		
R0116 R0117	P058	Magnetic pole sensor offset	0.01 mm	0 to 10000
R0118 R0119	P059	Special encoder, number of pulses	pulse	0 to 99999999

[Table 3-2] Parameter list 4/19

Device	Parameter	Parameter name	Unit	Set value
No.	No.	Farailleter Haille	Offic	Set value
R0120	P100	Low-speed range for gain	0.01%	0 to 10000
R0121	1 100	change	0.0176	0 10 10000
R0122	P101	Speed loop Proportional gain		0 to 9999
R0123	1 101	Opeca loop i Toportional gain		0 10 3333
R0124	P102	Speed loop Integral time	0.1 ms	0 to 29999
R0125	1 102	constant	0.1 1110	0 10 20000
R0126	P103	Speed loop Derivative time	μs	-999 to 999
R0127	1 100	constant	μο	000 10 000
R0128	P104	Speed loop proportional gain	0.1%	-1000 to 1000
R0129	1 104	division ratio	0.170	1000 10 1000
R0130		Reserved		
R0131		110001100		
R0132	P106	Speed loop Proportional		0 to 9999
R0133	1 100	Gain/Low speed gain range		0 10 3333
R0134		Speed loop Integral time		
R0135	P107	constant/Low speed gain	0.1 ms	0 to 29999
		range		
R0136	D400	Speed loop Derivative time		000 to 000
R0137	P108	constant/Low speed gain range	μs	-999 to 999
R0138		Speed loop Proportional Gain		
	P109	division ratio/Low speed gain	0.1%	-1000 to 1000
R0139		range	01170	1000 10 1000
R0140				
R0141		Reserved		
R0142	D444	Speed loop Proportional		0.10000
R0143	P111	Gain/GSEL signal ON		0 to 9999
R0144	D112	Speed loop Integral time	0.1 mg	0 to 20000
R0145	P112	constant/GSEL signal ON	0.1 ms	0 to 29999
R0146	P113	Speed loop Derivative time	ш	-999 to 999
R0147	FIIO	constant/GSEL signal ON	μs	-999 10 999
R0148	P114	Speed loop Proportional gain	0.1%	-1000 to 1000
R0149	F114	division ratio/GSEL signal ON	U. 170	-1000 to 1000
R0150		Reserved		
R0151		INGSGIVEU		
R0152	P116	Stopped differential coefficient		0 to 999
R0153	FIIO	Stopped differential coefficient		U 10 333
R0154	P117	Stopped filter time constant	0.1 ms	0 to 999
R0155	FII/	Stopped filter time constant	0.11118	U 10 333
R0156	P118	Speed loop integral torque limit	%	0 to 799
R0157	FIIO	Speed loop integral torque limit	7/0	0 10 7 33
R0158	P119	Stopped feedback filter time	0.1 ms	0 to 10
R0159	1.119	constant	0.11115	0.00 10

[Table 3-2] Parameter list 5/19

Device No.	Parameter No.	Parameter name	Unit	Set value
R0160 R0161	P120	Torque command filter frequency	Hz	0 to 4999
R0162 R0163	P121	Notch filter center frequency 1	Hz	0 to 4999
R0164 R0165	P122	Notch filter bandwidth 1	Hz	0 to 4999
R0166 R0167	P123	Notch filter center frequency 2	Hz	0 to 4999
R0168 R0169	P124	Notch filter bandwidth 2	Hz	0 to 4999
R0170 R0171	P125	Notch filter center frequency 3	Hz	0 to 4999
R0172 R0173	P126	Notch filter bandwidth 3	Hz	0 to 4999
R0174 R0175	P127	Notch filter center frequency 4	Hz	0 to 4999
R0176 R0177	P128	Notch filter bandwidth 4	Hz	0 to 4999
R0178 R0179	P129	Notch filter center frequency 5	Hz	0 to 4999
R0180 R0181	P130	Notch filter bandwidth 5	Hz	0 to 4999
R0182 R0183	P131	Low speed gain reconversion delay time	ms	0 to 999
R0184 R0185	P132	Manufacturer exclusive use		0
R0186 to R0219	P133 to P149	Reserved		

[Table 3-2] Parameter list 6/19

Device No.	Parameter No.	Parameter name	Unit	Set value
R0220 R0221	P150	Auto-tuning Operation specific selection		1st to 3rd digits: Operation speed ratio 0 to 100% 4th digit: Operation direction 0: Both, 1: + direction only 2: - direction only
R0222 R0223	P151	Inertia *1	10 ⁻⁶ Kg⋅m²	0 to 999999999
R0224 R0225	P152	Viscous friction *2	10 ⁻⁶ Nm/(rad /sec)	0 to 99999999
R0226 R0227	P153	Inertia/GSEL on *1	10 ⁻⁶ Kg⋅m²	0 to 999999999
R0228 R0229	P154	Viscosity friction/GSEL on *2	10 ⁻⁶ Nm/(rad /sec)	0 to 99999999
R0230 R0231	P155	Self-diagnosis trial run specification		1st to 3rd digits: Stop time 0 to 9.99 sec 4th digit: Operation direction 0: Both, 1: + direction only 2: - direction only
R0232 R0233	P156	Self-diagnosis trial run positioning	pulse	0 to 99999999
R0234 R0235	P157	Self-diagnosis trial run speed	pulse/ sec	1 to 99999999
R0236 R0237	P158	Forced inching speed	pulse/ sec	1 to 99999999
R0238 R0239	P159	Magnetic pole sensor automatic adjustment operation	%	-100 to 100
R0240 R0241	P160	Torque limiting value at magnetic pole detection	%	0 to 799
R0242 R0243	P161	Magnetic pole detection gain 1		0 to 9999
R0244 R0245	P162	Magnetic pole detection integral calculus time constant	0.1 ms	0 to 9999
R0246 R0247	P163	Magnetic pole detection gain 2	s ⁻¹	0 to 9999
R0248 to R0259	P164 to P169	Reserved		

^{*1 &}quot;Parameter name: Mass" and "Unit: $10^{-4}~{\rm Kg\cdot m^2}$ " for a linear motor *2 "Unit: $10^{-4}~{\rm N/m/s}$ " for a linear motor

[Table 3-2] Parameter list 7/19

Caution

Device No.	Parameter No.	Parameter name	Unit	Set value
R0260 R0261	P200	Position loop gain	s ⁻¹	0 to 9999
R0262 R0263	P201	Servo lock gain	s ⁻¹	0 to 9999
R0264 R0265	P202	Deviation range A	encoder pulse	0 to 99999999
R0266 R0267	P203	Deviation range B	encoder pulse	0 to 99999999
R0268 R0269	P204	Overflow detecting pulse	encoder pulse	0 to 99999999
R0270 R0271	P205	Position loop differential time constant	μs	-999 to 999
R0272 R0273	P206	Full-closed feedback correction ratio numerator		-9999999 to 9999999
R0274 R0275	P207	Full-closed feedback correction ratio denominator		1 to 99999999
R0276 R0277	P208	Full-closed overflow detecting pulse	encoder pulse	0 to 99999999
R0278 to R0359	P209 to P249	Reserved		

[Table 3-2] Parameter list 8/19

Device No.	Parameter No.	Parameter name	Unit	Set value
R0360 R0361	P300	Speed command gain	mV	1000 to 99999
R0362 R0363	P301	Speed command offset	mV	-9999 to 9999
R0364 R0365	P302	Speed command value 1	0.01%	-10000 to 10000
R0366 R0367	P303	Speed command value 2	0.01%	-10000 to 10000
R0368 R0369	P304	Speed command value 3	0.01%	-10000 to 10000
R0370 R0371	P305	Speed command value 4	0.01%	-10000 to 10000
R0372 R0373	P306	Speed command value 5	0.01%	-10000 to 10000
R0374 R0375	P307	Speed command value 6	0.01%	-10000 to 10000
R0376 R0377	P308	Speed command value 7	0.01%	-10000 to 10000
R0378 R0379	P309	Acceleration time (For controlling speed)	ms	0 to 9999
R0380 R0381	P310	Deceleration time (For controlling speed)	ms	0 to 9999
R0382 to R0399	P311 to P319	Reserved		

[Table 3-2] Parameter list 9/19

⚠ Caution

Device No.	Parameter No.	Parameter name	Unit	Set value
R0400 R0401	P400	Zero return/jog acceleration time	ms	0 to 9999
R0402 R0403	P401	Zero return/jog deceleration time	ms	0 to 9999
R0404 R0405	P402	Zero return method selection		0:STD.HOME, 1:LS LESS, 2:ABS.HOME, 3:MK.VLD, 4:SHORT.HOME, 5:STD.HOME2, 6:LS LESS2, 7:STOP HOME, 8:ABS.HOME2, 9:OT HOME
R0406				-999999999 to 999999999
R0407	P403	Zero point marker selecting	Encoder	1) P402: STD.HOME or LS LESS <p001: (abs="" (inc="" c-abs="" mode),="" or="" s-abs="" s-inc,=""> -1: External marker 0 to encoder one-rotation resolution -1: Encoder position Other than the above: Controlled assuming that the encoder position is 0 <p001: l-abs=""> -1: External marker Other than -1: Encoder position 2) P402: ABS.HOME or SHORT.HOME Encoder positioning position 3) P402: MK.VLD or STOP HOME This parameter is disabled. 4) P402: STD.HOME2 or LS LESS2 0: Encoder marker</p001:></p001:>
R0408 R0409	P404	Zero return speed	pulse/ sec	-9999999 to 99999999

[Table 3-2] Parameter list 10/19

Device No.	Parameter No.	Parameter name	Unit	Set value
R0410 R0411	P405	Zero return creep speed	pulse/ sec	1 to 99999999
R0412 R0413	P406	Zero return position constant	pulse	0 to 99999999
R0414 R0415	P407	Zero return set distance	pulse	-9999999 to 99999999
R0416 R0417	P408	Position data reference point	pulse	-9999999 to 99999999
R0418 R0419	P409	Positioning acceleration time 1	msec	0 to 9999
R0420 R0421	P410	Positioning deceleration time 1	msec	0 to 9999
R0422 R0423	P411	Positioning acceleration time 2	msec	0 to 9999
R0424 R0425	P412	Positioning deceleration time 2	msec	0 to 9999
R0426 R0427	P413	Positioning speed 1/Jog speed	pulse/ sec	1 to 99999999
R0428 R0429	P414	Positioning speed 2	pulse/ sec	1 to 99999999
R0430 R0431	P415	Positioning speed 3	pulse/ sec	1 to 99999999
R0433	P416	Positioning type command 1		1st digit: INC, ABS, SHORT, ABS+, or /ABS- specification 0: Relative position specification (INC) 1: Absolute position specification (ABS) 2: One-rotation shortcut positioning (SHORT) 3: Absolute position specification in the forward direction (ABS+) 4: Absolute position specification in the reverse direction (ABS-) 2nd digit: Speed specification 0: Positioning speed 1 (P413) 1: Positioning speed 2 (P414) 2: Positioning speed 3 (P415) 3rd digit: Acceleration/deceleration time specification 0: Positioning acceleration/deceleration time 1 (P409 to P410) 1: Positioning acceleration/deceleration time 2 (P411 to P412)
R0434 R0435	P417	Positioning position command	pulse	-99999999 to 99999999

[Table 3-2] Parameter list 11/19

Device No.	Parameter No.	Parameter name	Unit	Set value
R0436 R0437	P418	Positioning type command 2		Same as P416
R0438 R0439	P419	Positioning position command 2	pulse	-9999999 to 99999999
R0440 R0441	P420	Positioning type command 3		Same as P416
R0442 R0443	P421	Positioning position command 3	pulse	-9999999 to 9999999
R0444 R0445	P422	Positioning type command 4		Same as P416
R0446 R0447	P423	Positioning position command 4	pulse	-9999999 to 9999999
R0448 R0449	P424	Positioning type command 5		Same as P416
R0450 R0451	P425	Positioning position command 5	pulse	-9999999 to 9999999
R0452 R0453	P426	Positioning type command 6		Same as P416
R0454 R0455	P427	Positioning position command 6	pulse	-9999999 to 9999999
R0456 R0457	P428	Positioning type command 7		Same as P416
R0458 R0459	P429	Positioning position command 7	pulse	-9999999 to 99999999

[Table 3-2] Parameter list 12/19

Device No.	Parameter No.	Parameter name	Unit	Set value
R0460	P500	Communication specification selection		1st digit: Function selection 0: Low-order data and high-order data are stored in this order. (Little endian) 1: High-order data and low-order data are stored in this order. (Big endian) 2nd digit: Data length 0: 7 bits, 1: 8 bits 3rd digit: Parity 0: None, 1: Odd, 2: Even 4th digit: Baud rate 0: 9.6K, 1: 19.2K, 2: 38.4K, 3: 57.6K, 4: 115.2K
R0462 R0463	P501	Communication ID No.		0 to 16
R0464 R0465	P502	CC-Link communication condition setting		1st and 2nd digits: Station number 0 to 64 3rd digit: Communication baud rate 0: 156K, 1: 625K, 2: 2.5M, 3: 5M, 4: 10M
R0466 to R0499	P503 to P519	Reserved		

[Table 3-2] Parameter list 13/19

⚠ Caution

Device No.	Parameter No.	Parameter name	Unit	Set value
R0500				1st digit: Phase sequence selection
R0501	P600	Pulse train command selection		0: Forward direction, 1: Reverse direction 2nd digit: Type selection 0: x1, 1: x2, 2: x4, 3: F/R pls, 4: pls + F/R
R0502	P601	Pulse train command ratio		1 to 99999999
R0503	POUT	numerator		1 10 9999999
R0504 R0505	P602	Pulse train command ratio denominator		1 to 99999999
R0506	Dooo	D. Lea Code Code I Code and Locking	0.40/	0.1.1000
R0507	P603	Pulse train feed forward ratio	0.1%	0 to 1200
R0508	DC0.4		0.40/	0 to 1000
R0509	P604	Pulse train feed forward shift ratio	0.1%	0 to 1000
R0510	DCOF	Pulse train feed forward /		000 to 000
R0511	P605	derivative time constant	µsec	-999 to 999
R0512	P606	Pulse train late compensating	0.1	0 to 9999
R0513	P000	time	ms	0 10 9999
R0514	P607	Pulse train leveling filter time	ms	0 to 300
R0515	1 007	I dise train leveling litter time	1113	0 10 300
R0516	P608	Pulse train inertia feed forward	0.1%	-1000 to 2000
R0517	1 000	ratio	0.170	-1000 10 2000
R0518	P609	Pulse train viscous friction feed	0.1%	-1000 to 2000
R0519	1 003	forward ratio	0.170	-1000 10 2000
R0520 to	P610 to	Reserved		
R0539	P619	1.0001100		

[Table 3-2] Parameter list 14/19

	_			
Device No.	Parameter No.	Parameter name	Unit	Set value
R0540 R0541	P700	Control input signal allocation		1st & 2nd digits: DI1, 3rd & 4th digits: DI2, 5th & 6th digits: DI3, 7th & 8th digits: DI4 00 to 49: Positive logic, 50 to 99: Negative logic
R0542				1st & 2nd digits: DI5, 3rd & 4th digits:
R0543	P701	Control input signal allocation 2		DI6, 5th & 6th digits: DI7, 7th & 8th digits: DI8 00 to 49: Positive logic, 50 to 99: Negative logic
R0544				1st & 2nd digits: DO1, 3rd & 4th digits:
R0545	P702	Control output signal allocation		DO2, 5th & 6th digits: DO3, 7th & 8th digits: DO4 00 to 49: Positive logic, 50 to 99: Negative logic
R0546 to R0549	P703 to P704	Reserved		
R0550		Control input signal status		1st digit: DR, 2nd digit: SON,
R0551	P705	setting 1 (0: ON/OFF valid, 1: Fixed to OFF, 2: Fixed to ON)		3rd digit: TL, 4th digit: GSEL, 5th digit: RST, 6th digit: MD, 7th digit: CIH, 8th digit: RVS
R0552		Control input signal status		1st digit: SS1, 2nd digit: SS2,
R0553	P706	setting 2		3rd digit: SS3, 4th digit: EMG, 5th digit: FOT, 6th digit: ROT, 7th digit: NRF, 8th digit: PFB
R0554		Control input signal status		1st digit: ZST, 2nd digit: ZLS,
R0555	P707	setting 3 (0: ON/OFF valid, 1: Fixed to OFF, 2: Fixed to ON)		3rd digit: ZMK, 4th digit: Reserved, 5th digit: APRQ, 6th digit: ALRQ, 7th digit: ABRQ, 8th digit: CRQ
R0556		Control input signal status		1st digit: FJ, 2nd digit: RJ,
R0557	P708	setting 4 (0: ON/OFF valid, 1: Fixed to OFF, 2: Fixed to ON)		3rd digit: SS4, 4th digit: SS5, 5th digit: Reserved, 6th digit: Reserved, 7th digit: Reserved, 8th digit: Reserved
R0558 R0559		Reserved		
R0560 R0561	P710	Control input signal specification selection 1		1st digit: Deviation clear selection when SON signal OFF 0: Valid, 1: Invalid 2nd digit: Stop selection when EMG signal OFF 0: Motor power off, 1: Brake stop 3rd digit: ZST run complete select 0: Normal completion 1: ZST signal off completion
R0562 to R0569	P711 to P714	Reserved		
R0570 R0571	P715	Deceleration time at Emergency stop (Brake stop)	ms	0 to 9999
R0572 R0573	P716	Servo OFF delay time at Emergency stop (Brake stop)	ms	0 to 9999
	P716	1	ms	0 to 9999

[Table 3-2] Parameter list 15/19

Device No.	Parameter No.	Parameter name	Unit	Set value
R0574 R0575	P717	Speed zero range (For SZ signal)	0.01%	0 to 10000
R0576 R0577	P718	Brake output signal delay time	ms	0 to 999
R0578 R0579	P719	Dynamic brake specification selection		0:INVALID, 1:DMB ON 2:DMB OFF
R0580 R0581	P720	Servo ON ready delay time at Dynamic brake	ms	0 to 10
R0582 R0583	P721	CC-Link writing data 1		0 to 29999
R0584 R0585	P722	CC-Link writing data 2		0 to 29999
R0586 R0587	P723	CC-Link writing data 3		0 to 29999
R0588 R0589	P724	CC-Link writing data 4		0 to 29999
R0590 R0591	P725	CC-Link writing data 5		0 to 29999
R0592 R0593	P726	CC-Link writing data 6		0 to 29999
R0594 R0595	P727	CC-Link readout data 1		0 to 29999
R0596 R0597	P728	CC-Link readout data 2		0 to 29999
R0598 R0599	P729	CC-Link readout data 3		0 to 29999
R0600 R0601	P730	CC-Link readout data 4		0 to 29999
R0602 R0603	P731	CC-Link readout data 5		0 to 29999
R0604 R0605	P732	CC-Link readout data 6		0 to 29999
R0606 R0607	P733	1-rotation range + side	pulse	0 to 99999999
R0608 R0609	P734	1-rotation range - side	pulse	-9999999 to 0
R0610 R0611	P735	Index data range	pulse	0 to 99999999
R0612 to R0639	P736 to P749	Reserved		

[Table 3-2] Parameter list 16/19

- ·	D				
Device No.	Parameter No.	Parameter name	Unit	Set value	
R0640	P800	Desitioning type command 9		Same as P416	
R0641	P600	Positioning type command 8		Same as P410	
R0642	P801	Positioning position command	pulco	-9999999 to 9999999	
R0643	FOUT	8	pulse	-9999999 10 9999999	
R0644	P802	Positioning type command 9		Same as P416	
R0645	1 002	1 Ositioning type command 9		Same as 1 410	
R0646	P803	Positioning position command	pulse	-9999999 to 9999999	
R0647	1 000	9	puisc	3333333 10 33333333	
R0648	P804	Positioning type command 10		Same as P416	
R0649	1 004	1 ositioning type command 10		Jame as 1 410	
R0650	P805	Positioning position command	pulse	-9999999 to 9999999	
R0651	1 000	10	puisc	3333333 10 33333333	
R0652	P806	Positioning type command 11		Same as P416	
R0653	1 000	1 ostaoriing type command 11		Came as 1 410	
R0654	P807	Pan7 Positioning position command		-99999999 to 99999999	
R0655	1 007	11	pulse	-3333333 10 33333333	
R0656	P808	Positioning type command 12		Same as P416	
R0657	1 000	1 ostaoring type command 12		Came as 1 410	
R0658	P809	Positioning position command	pulse	-9999999 to 9999999	
R0659	1 000	12	Puloo		
R0660	P810	Positioning type command 13		Same as P416	
R0661	1 0 1 0			Came as i iii	
R0662	P811	Positioning position command	pulse	-9999999 to 9999999	
R0663		13	Puloo	3333333 (3 3333333	
R0664	P812	Positioning type command 14		Same as P416	
R0665	. 5.2			233 43	
R0666	P813	Positioning position command	pulse	-9999999 to 9999999	
R0667	. 5.0	14		1130000	
R0668	P814	Positioning type command 15		Same as P416	
R0669	. 5	.		233 43	
R0670	P815	Positioning position command	pulse	-9999999 to 9999999	
R0671	. 3.0	15	F =:-00		
R0672	P816	Positioning type command 16		Same as P416	
R0673	. 3.0	.			
R0674	P817	Positioning position command	pulse	-9999999 to 9999999	
R0675		16	Puloc	2222222 12 2222222	
R0676	P818	Positioning type command 17		Same as P416	
R0677		5 7.			
R0678	P819	Positioning position command	pulse	-9999999 to 9999999	
R0679	. 3.0	17	J- 500		

[Table 3-2] Parameter list 17/19

⚠ Caution

Device No.	Parameter No.	Parameter name	Unit	Set value	
R0680	INO.				
R0681	P820	Positioning type command 18		Same as P416	
R0682	_	Positioning position command			
R0683	P821	18	pulse	-9999999 to 9999999	
R0684	Dooo	Desire de la companya della companya de la companya		O	
R0685	- P822	Positioning type command 19		Same as P416	
R0686	P823	Positioning position command	pulse	-9999999 to 9999999	
R0687	FOZJ	19	puise	-9999999 10 9999999	
R0688	P824	Positioning type command 20		Same as P416	
R0689	1 02-	1 ositioning type command 20		Came as 1 410	
R0690	P825	Positioning position command	pulse	-9999999 to 9999999	
R0691	. 020	20	Paloo	0000000 10 0000000	
R0692	P826	Positioning type command 21		Same as P416	
R0693					
R0694	P827	Positioning position command	pulse	-9999999 to 9999999	
R0695		21			
R0696 R0697	P828	Positioning type command 22		Same as P416	
R0698		Positioning position command			
R0699	P829	Positioning position command 22	pulse	-9999999 to 99999999	
R0700					
R0701	P830	Positioning type command 23		Same as P416	
R0702		Positioning position command	<u> </u>	00000001 0000000	
R0703	P831	23	pulse	-9999999 to 9999999	
R0704	Dooo			0 P440	
R0705	P832	Positioning type command 24		Same as P416	
R0706	P833	Positioning position command	pulse	00000000 to 0000000	
R0707	F033	24	puise	-9999999 to 9999999	
R0708	P834	Positioning type command 25		Same as P416	
R0709	1 00+	1 ositioning type command 25		Came as 1 410	
R0710	P835	Positioning position command	pulse	-9999999 to 9999999	
R0711	. 555	25	Paloo	0000000 10 0000000	
R0712	P836	Positioning type command 26		Same as P416	
R0713					
R0714	P837	Positioning position command	pulse	-9999999 to 9999999	
R0715		26			
R0716 R0717	P838	Positioning type command 27		Same as P416	
R0717		Positioning position command			
R0719	P839	27	pulse	-9999999 to 9999999	

[Table 3-2] Parameter list 18/19

Device No.	Parameter No.	Parameter name	Unit	Set value
R0720 R0721	P840	Positioning type command 28		Same as P416
R0722 R0723	P841	Positioning position command 28	pulse	-9999999 to 99999999
R0724 R0725	P842	Positioning type command 29		Same as P416
R0726 R0727	P843	Positioning position command 29	pulse	-9999999 to 9999999
R0728 R0729	P844	Positioning type command 30		Same as P416
R0730 R0731	P845	Positioning position command 30	pulse	-9999999 to 99999999
R0732 R0733	P846	Positioning type command 31		Same as P416
R0734 R0735	P847	Positioning position command 31	pulse	-9999999 to 99999999
R0736 R0737	P848	OT back Zero return at OT deceleration time	msec	0 to 9999
R0738 to R0799	P849 to P879	Reserved		

[Table 3-2] Parameter list 19/19

⚠ Caution

3-3 Status data (D device)

[1] Data format of the status data area

You can identify the operation status of the servo driver by "reading" the status data area from the "D devices".

There are two types of status data: "1-device status data" and "2-device status data".

1) 1-device status data

One device number is assigned to 1-device status data, which is signed 16-bit-long hexadecimal data consisting of four digits.

<Example of data (little endian mode)>

Device No.	Status item	Item name/status	Status value
D0080		Current generating alarm/ Absolute encoder overflow	E2H

Communication data

Device No.	Data	
D0080	00E2	

In the above example, in the big endian mode, the device No. is "D0081". (For CC-Link communication, the mode is fixed to little endian.)

[Table 3-3] Data configuration (1-device status data)

2) 2-device status data

Two device numbers are assigned to 2-device status data, which is signed 32-bit-long hexadecimal data consisting of eight digits.

The high-order/low-order data relationship between the two device numbers of 2-device status data is as shown below.

(For CC-Link communication, the specification is fixed to little endian.)

Device No.	Function selec	Status item	
	Communicati		
	selection		
	0: Little endian		
D0020	Low-order	High-order	C010
D0021	High-order	Low-order	C010

[Table 3-4] Data configuration (2-device status data)

<Example of data>

Device No.	Status	Status data	Status value
	item		(example)
D0020		Encoder pulse	
D0021	C010	cumulative	543210
		quantity	

Convert to hexadecimal

32-bit-long data (8 digits in hexadecimal)

Communication data

Function selection (1st digit) of					
Communication specification					
selection (P500)					
0: Little endian 1: Big endian					
49EA	8000				
0008 49EA					
	Communicate selection: Little endian 49EA				

[Figure 3-3] Example of status data

[2] 2-device status data area list

For whether to enable or disable each status item for the model you use, refer to the "Servo Driver Instruction Manual".

nstruction M			ı	
Device No.	Status item	Item name (Blank: "Reserved")	Unit	Remarks
D0000 D0001	C000	Actual number of motor rotation	0.01%	
D0002 D0003	C001	External speed command	0.01%	
D0004			4096 (1000H)	
D0005	C002	Actual torque command	indicating 100%	
D0006 D0007	C003	Peak torque command	4096 (1000H) indicating 100%	Cleared to 0 when 0 is written.
D0008 D0009	C004	Load ratio of motor	4096 (1000H) indicating 100%	
D0010 D0011	C005	Thermal trip rate	%	
D0012 D0013	C006	Servo control error occurrence ratio	%	When 100% or greater is indicated, a servo control error occurs.
D0014 D0015	C007	Thermal trip rate	%	
D0016 to D0019				
D0020 D0021	C010	Encoder pulse cumulative quantity	encoder pulse	Cleared to 0 when 0 is written.
D0022 D0023	C011	Encoder position	encoder pulse	
D0024 D0025	C012	One-rotation position of encoder	encoder pulse	
D0026 D0027	C013	Position deviation pulse	encoder pulse	
D0028 D0029	C014	Pulse train command cumulative quantity	pulse train command pulse	Cleared to 0 when 0 is written.
D0030 D0031	C015	Input frequency of pulse train command	pulse train command pulses/sec	
D0032 D0033	C016	Current position	pulse	
D0034 D0035	C017	Full-closed feed back pulse accumulation quantity	full-closed feedback pulse	Cleared to 0 when 0 is written.
D0036 D0037	C018	Full-closed feed back conversion deviation pulse	full-closed feedback pulse	
D0038 D0039	C019	Full-closed loop control deviation pulse	encoder pulse	
D0040 to D0049				
		•	•	

[Table 3-5] 2-device status data list 1/2

Device No.	Status item	Item name (Blank: "Reserved")	Unit	Remarks
D0050 D0051	C100	External input-output signal condition		Each bit is assigned to one signal. Refer to "Bit status area list".
D0052 D0053	C101	Inside input signal condition		Each bit is assigned to one signal. Refer to "Bit status area list".
D0054 D0055	C102	Inside output signal condition		Each bit is assigned to one signal. Refer to "Bit status area list".
D0056 D0057	C103	Communication indicator		Description of each digit of the decimal number 4th digit: Fixed to 1. 3rd digit: 8: Transmission in progress, 1: No transmission 2nd digit: Fixed to 1. 1st digit: 8: Reception in progress, 1: No reception
D0058 D0059	C104	CC-Link Post number		
D0060 D0061	C105	CC-Link transmission control speed		0:156K 1:625K 2:2.5M 3:5M 4:10M
D0062 D0063	C106	Absolute position correction		Normally, 0 is indicated. For details, refer to "Absolute Position Correction Function".
D0064 to D0079				

[Table 3-5] 2-device status data list 2/2

[3] Bit status area list

For whether to enable or disable each status item for the model you use, refer to the "Servo Driver Instruction Manual".

Device No.	Status item	High-order/ low-order word	Bit position	Description (Blank: "Reserved")	Remarks
D0050 to D0051	C100 External input- output signal condi- tion	Low-order word	0(LSB) 1 2 3 4 5 6 7 8 9 A B C	DI1 signal DI2 signal DI3 signal DI4 signal DI5 signal DI6 signal DI7 signal DI8 signal DO1 signal DO2 signal DO3 signal DO4 signal	*1 *1 *1 *1 *1 *1 *1 *1 *1 *2 *2 *2 *2 *2 *3 *3
		High-order word	F(MSB) 0(LSB) 1 2 3 4 5 6 7 8 9 A B C D E F(MSB)	RC signal	

^{*1:} On when the corresponding bit is 1 (Short-circuit between COM terminals)

[Table 3-6] Bit status data list 1/3

^{*2:} On when the corresponding bit is 1 (Current flows between COM terminals.)

^{*3:} On when the corresponding bit is 1 (The positive logic signal is high.)

Device No.	Status item	High-order/ low-order word	Bit position	Description (Blank: "Reserved")	Remarks
D0052 to D0053	C101 Inside input signal condi- tion	Low-order word	0(LSB) 1 2 3 4 5 6 7 8 9 A B C	DR signal SON signal TL signal GSEL signal RST signal MD signal CIH signal RVS signal SS1 signal SS2 signal SS3 signal EMG signal FOT signal ROT signal	*1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *
		High-order word	F(MSB) 0(LSB) 1 2 3 4 5 6 7 8 9 A B C D E F(MSB)	PFB signal ZST signal ZLS signal ZMK signal ZSTP signal APRQ signal ALRQ signal ABRQ signal CRQ signal FJ signal RJ signal SS4 signal SS5 signal	*1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *

^{*1:} On when the corresponding bit is 1

[Table 3-6] Bit status data list 2/3

Device No.	Status item	High-order/ low-order word	Bit position	Description (Blank: "Reserved")	Remarks
Door	C102	Low-order word	0(LSB) 1 2 3 4 5 6 7 8 9 A B C D	RDY signal ALM signal PNA signal PNB signal BRK signal SZ signal EMG0 signal HCP signal	*1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *
D0054 to D0055	output signal condi- tion	High-order word	F(MSB) 0(LSB) 1 2 3 4 5 6 7 8 9 A B C D E F(MSB)	DRSP signal CRSP signal	*1

^{*1:} On when the corresponding bit is 1

[Table 3-6] Bit status data list 3/3

[4] 1-device status data area list

1) Little endian mode (when the function selection (1st digit) of Communication specification selection (P500) is 0)

(For the CC-Link specification, the mode is fixed to little endian.)

Device No.	Status item	Item name (Blank: "Reserved")	Unit	Remarks
D0080	AL.xx	Current generating alarm		For the description of the alarm code, refer to "Alarm code list".
D0081	A0.xx	Latest alarm		For the description of the alarm code, refer to "Alarm code list".
D0082	A1.xx	One previous alarm		For the description of the alarm code, refer to "Alarm code list".
D0083	A2.xx	Two previous alarm		For the description of the alarm code, refer to "Alarm code list".
D0084	A3.xx	Three previous alarm		For the description of the alarm code, refer to "Alarm code list".
D0085	A4.xx	Four times previous alarm		For the description of the alarm code, refer to "Alarm code list".
D0086	A5.xx	Five previous alarm		For the description of the alarm code, refer to "Alarm code list".
D0087 to D0089				
D0090	L000	Model Number		
D0091	L001	Device output capacity	W	Description of each digit of the decimal number 3rd and 2nd digits: Significant digits 1st digit: Exponent of 10 Example) 401 → 40 × 10 ¹ → 400W
D0092	L002	Device input power supply Voltage	V	
D0093	L003	Hardware version		
D0094	L004	Software version		
D0095 to D0097				
D0098	L005	Device system software number		
D0099				

[Table 3-7] 1-device status data list (little endian) 1/2

2) Big endian mode (when the function selection (1st digit) of Communication specification selection (P500) is 1)

Device No.	Status item	Item name (Blank: "Reserved")	Unit	Remarks
D0080	A0.xx	Latest alarm		For the description of the alarm code, refer to "Alarm code list".
D0081	AL.xx	Current generating alarm		For the description of the alarm code, refer to "Alarm code list".
D0082	A2.xx	Two previous alarm		For the description of the alarm code, refer to "Alarm code list".
D0083	A1.xx	One previous alarm		For the description of the alarm code, refer to "Alarm code list".
D0084	A4.xx	Four times previous alarm		For the description of the alarm code, refer to "Alarm code list".
D0085	A3.xx	Three previous alarm		For the description of the alarm code, refer to "Alarm code list".
D0086				
D0087	A5.xx	Five previous alarm		For the description of the alarm code, refer to "Alarm code list".
D0088 to D0089				
D0090	L001	Device output capacity	W	Description of each digit of the decimal number 3rd and 2nd digits: Significant digits 1st digit: Exponent of 10 Example) 401 → 40 × 10 ¹ → 400W
D0091	L000	Model Number		
D0092	L003	Hardware version		
D0093	L002	Device input power supply Voltage	V	
D0094				
D0095	L004	Software version		
D0096 to D0098				
D0099	L005	Device system software number		

[Table 3-7] 1-device status data list (big endian) 2/2

[5] Alarm code list

Alarm c	ode No.	Description (Blank:	Alarm o	ode No.	Description (Blank:
Hex.	Decimal	"Reserved")	Hex.	Decimal	
00H	0	No alarm occurs.	30H	48	Encoder error
01H	1		31H	49	At-power-ON motor shaft error
02H	2		32H	50	Serial encoder count error
03H	3		33H		Serial encoder communication error
04H	4		34H		Linear sensor resolution error
05H	5		35H		Serial encoder marker confirmation error
06H	6		36H	54	
07H	7		37H		High-resolution encoder error
08H	8		38H	55	Magnetic pole detection error Tau DISC motor 1-rotation
09H	10		39H		position detection speed error Tau DISC absolute encoder
0AH			3AH		light-receiving element error Tau DISC absolute encoder
0BH	11		3BH		light-emitting element error
0CH	12		3CH	60	numbers
0DH	13		3DH		No absolute position correction data in IPU
0EH	14		3EH	62	VPS-IPU communication error
0FH	15		3FH	63	
10H		IPM error	40H		Deviation over flow
11H	17		41H	65	
12H	18	Insufficient voltage error	42H		Pulse train command over speed error
13H		Excessive voltage error	43H		ZST startup disabled
14H		Over speed error	44H		Zero return selection error
15H		Overload error	45H		Full-closed feed back calculation overflow
16H		IPM overload error	46H		Full-closed deviation overflow
17H	23	A C	47H		No index data range setting
18H	24	AC power supply error	48H	72	One-rotation shortcut positioning position specification error
19H	25	Excessive regenerative current error	49H	73	epositional en en
1AH		Servo control error	4AH	74	
1BH	27		4BH	75	
1CH	28		4CH	76	
1DH 1EH	29 30		4DH 4EH	77 78	
1FH	31		4FH	79	
20H	32		50H		Forward over travel
21H		Motor selection error	51H	81	
22H	34		52H	82	
23H	35		53H	83	
24H	36		54H	84	
25H	37		55H	85	
26H 27H	38 39		56H 57H	86 87	
28H	40		58H	88	
29H	41		59H	89	
2AH	42		5AH	90	
2BH	43		5BH	91	
2CH	44		5CH	92	
2DH	45 46		5DH	93 94	
2EH			5EH		
2FH	47	Table 2 91 Mg	5FH	95	

[Table 3-8] Alarm code list 1/3

Alarm co	ode No	Description (Blank:	Alarm c	ode No.	Description (Blank:
Hex.	Decimal	"Reserved")	Hex.	Decimal	"Reserved")
60H	96	,	90H	144	,
61H	97		91H	145	
	98				CC-Link station number setting
62H			92H		error
63H	99		93H	147	CC-Link transmission error
64H	100		94H	148	
65H	101		95H	149	
66H 67H	102 103		96H 97H	150 151	
68H	103		98H	152	
69H	105		99H	153	
6AH	106		9AH	154	
6BH	107		9BH	155	
6CH	108		9CH	156	
6DH	109		9DH	157	
6EH	110		9EH	158	
6FH	111		9FH	159	
70H		Adjustment data hold error	A0H	160	
71H	_	Parameter hold error	A1H	161	
72H		Absolute position correction related data hold error	A2H		Rated speed command invalid 1
73H	115		АЗН		Rated speed command invalid 2
74H	116		A4H	164	
75H	117		A5H	165	
76H 77H	118 119		A6H A7H	166 167	
77H	120		A/H A8H	168	
79H	121		A9H	169	
7AH	122		AAH	170	
7BH	123		ABH	171	
7CH	124		ACH	172	
7DH	125		ADH	173	
7EH 7FH	126 127		AEH AFH	174 175	
80H	128		B0H		ABS linear scale over speed
	129		-	170	ABS linear scale initialization
81H			B1H	177	error ABS linear scale initialization error
82H	130		B2H	178	error
83H	131		ВЗН	179	ABS linear scale ABS detection error
84H	132		B4H	180	ABS linear scale transducer error
85H	133		B5H	181	ABS linear scale signal strength error
86H	134		В6Н	182	ABS linear scale inconsistency photoelectric and capacitive data
87H	135		В7Н	183	ABS linear scale photoelectric error
88H	136		В8Н	184	ABS linear scale electrostatic capacitance error
89H	137		В9Н	185	ABS linear scale communication error
8AH	138		BAH	186	ABS linear scale signal strength alarm
8BH	139		BBH	187	ABS linear scale thermal alarm
8CH	140		BCH	188	
8DH	141 142		BDH	189 190	
8EH			BEH		
8FH	143		BFH	191	

[Table 3-8] Alarm code list 2/3

Hex.	ode No. Decimal	Description (Blank: "Reserved")	Hex.	Decimal	Description (Blank: "Reserved")
	192	iteserved)		240	rteserved)
C0H			F0H		
C1H	193		F1H	241	
C2H	194		F2H	242	
СЗН	195		F3H	243	
C4H	196		F4H	244	
C5H	197		F5H	245	
C6H	198		F6H	246	
C7H	199		F7H	247	
C8H	200		F8H	248	
C9H	201		F9H	249	
CAH	202		FAH	250	
CBH	203		FBH	251	
CCH	204		FCH	252	
CDH	205		FDH	253	
CEH	206		FEH	254	
CFH	207		FFH	255	
D0H	208				
D1H	209				
D2H	210				
D3H	211				
D4H	212				
D5H	213				
D6H	214				
D7H	215				
D8H	216				
D9H	217				
DAH	218				
DBH	219				
DCH	220				
DDH	221				
DEH	222				
DFH	223				
E0H		Absolute encoder battery error			
E1H		Absolute encoder hold error			
E2H		Absolute encoder overflow error			
E3H	227	Absolute encoder count error			
E4H	228	1-rotation position range setting error			
E5H	229	Current position setting disabled			
E6H	230				
E7H	231				
E8H	232				
E9H	233				
EAH	234				
EBH	235				
ECH	236				
EDH	237				
EEH	238			1	
EFH	239				

[Table 3-8] Alarm code list 3/3

3-4 Command value data (D device)

Command value data is used to set the speed command value in the speed control operation mode or positioning command value in the pulse train operation mode with communication. You can set this data with communication to flexibly change the speed and positioning position.

The contents of this data area are explained below.

- 1) This data area corresponds to parameters P302 to P308 [Speed command values 1 to 7], P416 to P429 [Positioning commands 1 to 7], and P800 to P847 [Positioning commands 8 to 31]. The data format of this data area differs from that of the parameter area, however.
- 2) Normally, in this data area, the data values of parameters P302 to P308 [Speed command values 1 to 7], P416 to P429 [Positioning commands 1 to 7], and P800 to P847 [Positioning commands 8 to 31] are reflected.

To use this data area for communication, turn the NRF signal [Command data reflection prohibition signal] on.

When the NRF signal is turned on, the data values of parameters P302 to P308 [Speed command values 1 to 7], P416 to P429 [Positioning commands 1 to 7], and P800 to P847 [Positioning commands 8 to 31] are not reflected in this data area.

At power-on, however, the data values of parameters P302 to P308 [Speed command values 1 to 7], P416 to P429 [Positioning commands 1 to 7], and P800 to P847 [Positioning commands 8 to 31] are reflected in this data area.

- 3) Data set with communication is reflected as follows:
 - Speed command value in the speed control operation mode Reflected in real time during operation.
 - Positioning command value in the pulse train operation mode
 Data at the start of positioning operation is used for operation.

Any positioning command value set during positioning operation is not reflected for the positioning in progress.

[1] Data format of the command value data area

You can rewrite the speed command and positioning data to the servo driver by "writing" data to the command value data area (D device) corresponding to the command data.

Two devices are assigned to each command value in the command value data area, and a single command value consists of 32 bits.

Whether to use each of the two devices for storing high-order or low-order data is determined according to the setting of the function selection (1st digit) of Communication specification selection (P500) as follows. (This specification is enabled only for serial communication. For CC-Link communication, the specification is fixed to little endian.)

Device No.	Function sele	Item name	
	Communicat		
	select		
	0: Little endian 1: Big endian		
D1000	Low-order	High-order	Speed command
D1001	High-order	Low-order	value 1

[Table 3-9] Data configuration

[Data format of other than a positioning type command]

For communication, as data other than a positioning type command, the value (decimal) displayed on the operation panel is converted to an 8-digit hexadecimal number (signed 32-bit data).

<Example of positive data>

Device No.	Item name	Set value (example)	
D1002	Speed command value 2	1224	
D1003	Speed command value 2	1234	

Conversion of the set value

1234	 4D2H	 000004D2H
(Decimal)	(Hexadecimal)	000004D2H

Convert to hexadecimal

32-bit-long data (8 digits in hexadecimal)

Communication data

Device No.	Function selection (1st digit) of				
	Communication specification selection (P500)				
	0: Little endian 1: Big endian				
D1002	04D2	0000			
D1003	0000	04D2			

<Example of negative data>

Device No.	Item name	Set value (example)	
D1038	Positioning position	-7854321	
D1039	command 3	-7004321	

Conversion of the set value

-7854321	FF88270FH		EE00270ELL
(Decimal)	(Hexadecimal)	_	FF88270FH

Convert to hexadecimal

32-bit-long data (8 digits in hexadecimal)

Communication data

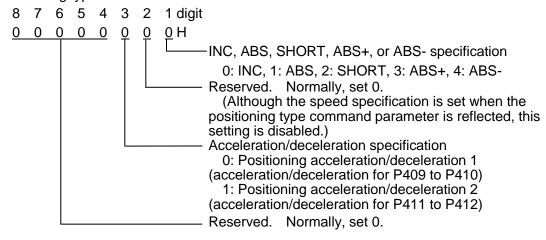
Device No.	Function selection (1st digit) of		
	Communication specification selection (P500)		
	0: Little endian 1: Big endian		
D1038	270F	FF88	
D1039	FF88 270F		

[Figure 3-4] Examples of conversion for communication data other than a positioning type command 1/2

[Data format of a positioning type command]

For positioning type command data for communication, an item is assigned to each digit of a hexadecimal number as follows.

Positioning type command data



<Example of data>

Device No.	Item name	Set value (example)
D1028	Positioning type	00000101H
D1029	command 2	ABS Positioning acceleration/deceleration 2
		Positioning acceleration/deceleration 2

Communication data

Device No.	Function selection (1st digit) of Communication		
	specification selection (P500)		
	0: Little endian 1: Big endian		
D1028	0101	0000	
D1029	0000 0101		

[Figure 3-4] Example of conversion for positioning type command communication data 2/2

[2] Command value data area list

Device No.	Corresponding parameter	Item name (Blank: "Reserved")	Unit	Remarks
	parameter	l Reserved)	1	
D1000 D1001	P302	Speed command value 1	0.01%	
D1002				
D1003	P303	Speed command value 2	0.01%	
D1004	D004	0	0.040/	
D1005	P304	Speed command value 3	0.01%	
D1006	Dage	Consideration and value 4	0.040/	
D1007	P305	Speed command value 4	0.01%	
D1008	P306	Speed command value 5	0.01%	
D1009	F300	Speed Command value 5	0.0176	
D1010	P307	Speed command value 6	0.01%	
D1011	1 307	opeed command value o	0.0176	
D1012	P308	Speed command value 7	0.01%	
D1013	1 000	opeda commana valae i	0.0170	
D1014 to				
D1017				
D1018	P413	Jog speed	pulse/sec	Positioning speed 1 is not
D1019			F 5	affected.
D1020	P416	Positioning type		Refer to the data format of a
D1021		command 1		positioning type command.
D1022 D1023	P417	Positioning position command 1	pulse	
D1024		Positioning speed	nulco/oco	The speed command specified for
D1025		command 1	pulse/sec	P416 is reflected.
D1026				
D1027				
D1028	P418	Positioning type		Refer to the data format of a
D1029	1 110	command 2		positioning type command.
D1030	P419	Positioning position	pulse	
D1031	-	command 2		The second second second
D1032		Positioning speed	pulse/sec	The speed command specified for
D1033		command 2		P418 is reflected.
D1034				
D1035 D1036		Positioning type		Refer to the data format of a
D1036	P420	Positioning type command 3		positioning type command.
D1037		Positioning position		positioning type command.
D1038	P421	command 3	pulse	
D1039		Positioning speed		The speed command specified for
D1040		command 3	pulse/sec	P420 is reflected.
D1041				
D1043				
2.0.0			l .	

[Table 3-10] Command value data list 1/7

Device	Corresponding	,	Unit	Remarks
No.	parameter	"Reserved")		
D1044	P422	Positioning type command		Refer to the data format of a
D1045		4		positioning type command.
D1046 D1047	P423	Positioning position command 4	pulse	
D1048		Positioning speed	. ,	The speed command specified
D1049		command 4	pulse/sec	for P422 is reflected.
D1050				
D1051				
D1052	D 40.4	Positioning type command		Refer to the data format of a
D1053	P424	5		positioning type command.
D1054	P425	Positioning position	nulas	
D1055	P425	command 5	pulse	
D1056		Positioning speed	nulas/sss	The speed command specified
D1057		command 5	pulse/sec	for P424 is reflected.
D1058				
D1059				
D1060	P426	Positioning type command		Refer to the data format of a
D1061	F420	6		positioning type command.
D1062	P427	Positioning position	pulse	
D1063	F421	command 6	puise	
D1064		Positioning speed	pulse/sec	The speed command specified
D1065		command 6	puise/sec	for P426 is reflected.
D1066				
D1067				
D1068	P428	Positioning type command		Refer to the data format of a
D1069	F420	7		positioning type command.
D1070	P429	Positioning position	pulse	
D1071	F423	command 7	puise	
D1072		Positioning speed	pulse/sec	The speed command specified
D1073		command 7	puise/sec	for P428 is reflected.
D1074				
D1075				
D1076 to				
D1099				

[Table 3-10] Command value data list 2/7

Device	Corresponding	Item name (Blank:	Unit	Remarks
No.	parameter	"Reserved")		
D1200	P800	Positioning type command		Refer to the data format of a
D1201		8		positioning type command.
D1202	P801	Positioning position command 8	pulse	
D1203 D1204				The aread command an edited for
D1204		Positioning speed command 8	pulse/sec	The speed command specified for P800 is reflected.
D1205		Command 6		Pour is reflected.
D1200				
D1207		Desitioning type command		Refer to the data format of a
D1208	P802	Positioning type command 9		positioning type command.
D1209		Positioning position		positioning type command.
D1210	P803	command 9	pulse	
D1212		Positioning speed	mla a /	The speed command specified for
D1213		command 9	pulse/sec	P802 is reflected.
D1214				
D1215				
D1216	P804	Positioning type command		Refer to the data format of a
D1217	P0U4	10		positioning type command.
D1218	P805	Positioning position	pulse	
D1219	P003	command 10	puise	
D1220		Positioning speed	pulse/sec	The speed command specified for
D1221		command 10	puise/sec	P804 is reflected.
D1222				
D1223				
D1224	P806	Positioning type command		Refer to the data format of a
D1225	1 000	11		positioning type command.
D1226	P807	Positioning position	pulse	
D1227		command 11		The aread command areaitied to
D1228 D1229		Positioning speed command 11	pulse/sec	The speed command specified for P806 is reflected.
D1229		Command 11		1 000 is reflected.
D1230				
D1231		Positioning type command		Refer to the data format of a
D1232	P808	12		positioning type command.
D1233		Positioning position		positioning type command.
D1234	P809	command 12	pulse	
D1236		Positioning speed		The speed command specified for
D1237		command 12	pulse/sec	P808 is reflected.
D1238				. 555 10 101105104.
D1239				

[Table 3-10] Command value data list 3/7

Device No.	Corresponding	Item name (Blank: "Reserved")	Unit	Remarks
D1240	parameter			Defer to the data former of a
D1240	P810	Positioning type command 13		Refer to the data format of a
D1241				positioning type command.
D1242	P811	Positioning position command 13	pulse	
D1243		Positioning speed		The speed command specified
D1244 D1245		command 13	pulse/sec	for P810 is reflected.
D1246		Command 13		Torrors reflected.
D1247	-			
D1248		Positioning type command		Refer to the data format of a
D1249	P812	14		positioning type command.
D1250		Positioning position		positioning type community.
D1251	P813	command 14	pulse	
D1252		Positioning speed		The speed command specified
D1253		command 14	pulse/sec	for P812 is reflected.
D1254				
D1255				
D1256	D044	Positioning type command		Refer to the data format of a
D1257	P814	15		positioning type command.
D1258	D045	Positioning position	nula a	
D1259	P815	command 15	pulse	
D1260		Positioning speed	pulse/sec	The speed command specified
D1261		command 15	puise/sec	for P814 is reflected.
D1262				
D1263				
D1264	P816	Positioning type command		Refer to the data format of a
D1265	1 010	16		positioning type command.
D1266	P817	Positioning position	pulse	
D1267	1 017	command 16	Paise	
D1268		Positioning speed	pulse/sec	The speed command specified
D1269		command 16	2 4100,000	for P816 is reflected.
D1270				
D1271				
D1272	P818	Positioning type command		Refer to the data format of a
D1273		17		positioning type command.
D1274	P819	Positioning position	pulse	
D1275		command 17		The second second second
D1276		Positioning speed	pulse/sec	The speed command specified
D1277		command 17	ļ ·	for P818 is reflected.
D1278	-			
D1279				

[Table 3-10] Command value data list 4/7

Device	Corresponding	Item name (Blank:	Unit	Remarks
No.	parameter	"Reserved")		
D1280	P820	Positioning type command		Refer to the data format of a
D1281		18		positioning type command.
D1282	P821	Positioning position	pulse	
D1283		command 18		The second secon
D1284		Positioning speed	pulse/sec	The speed command specified for P820 is reflected.
D1285		command 18	-	101 P820 is reflected.
D1286 D1287				
-		Desitioning type command		Defer to the data format of a
D1288 D1289	P822	Positioning type command 19		Refer to the data format of a
		_		positioning type command.
D1290 D1291	P823	Positioning position command 19	pulse	
D1292		Positioning speed	nulco/ooo	The speed command specified
D1293		command 19	pulse/sec	for P822 is reflected.
D1294				
D1295				
D1296	P824	Positioning type command		Refer to the data format of a
D1297	1 024	20		positioning type command.
D1298	P825	Positioning position	pulse	
D1299	1 020	command 20	paioc	
D1300		Positioning speed	pulse/sec	The speed command specified
D1301		command 20	P 455, 555	for P824 is reflected.
D1302				
D1303				
D1304	P826	Positioning type command		Refer to the data format of a
D1305		21		positioning type command.
D1306 D1307	P827	Positioning position command 21	pulse	
D1308		Positioning speed	. ,	The speed command specified
D1309		command 21	pulse/sec	for P826 is reflected.
D1310				
D1311				
D1312	Door	Positioning type command		Refer to the data format of a
D1313	P828	22		positioning type command.
D1314	Dean	Positioning position	nuloo	
D1315	P829	command 22	pulse	
D1316		Positioning speed	puloo/sss	The speed command specified
D1317		command 22	pulse/sec	for P828 is reflected.
D1318				
D1319				

[Table 3-10] Command value data list 5/7

Device	Corresponding	,	Unit	Remarks
No.	parameter	"Reserved")		
D1320	P830	Positioning type command		Refer to the data format of a
D1321		23		positioning type command.
D1322	P831	Positioning position	pulse	
D1323		command 23		
D1324		Positioning speed	pulse/sec	The speed command specified
D1325		command 23	F	for P830 is reflected.
D1326				
D1327				
D1328	P832	Positioning type command		Refer to the data format of a
D1329	. 002	24		positioning type command.
D1330	P833	Positioning position	pulse	
D1331	1 000	command 24	Paioo	
D1332		Positioning speed	pulse/sec	The speed command specified
D1333		command 24	paise/500	for P832 is reflected.
D1334				
D1335				
D1336	P834	Positioning type command		Refer to the data format of a
D1337	1 004	25		positioning type command.
D1338	P835	Positioning position	pulse	
D1339	1 000	command 25	puise	
D1340		Positioning speed	pulse/sec	The speed command specified
D1341		command 25	puise/sec	for P834 is reflected.
D1342				
D1343				
D1344	P836	Positioning type command		Refer to the data format of a
D1345	F030	26		positioning type command.
D1346	P837	Positioning position	pulse	
D1347	F031	command 26	puise	
D1348		Positioning speed	pulse/sec	The speed command specified
D1349		command 26	puise/sec	for P836 is reflected.
D1350				
D1351				
D1352	P838	Positioning type command		Refer to the data format of a
D1353	1-030	27		positioning type command.
D1354	P839	Positioning position	pulse	
D1355	1-009	command 27	haise	
D1356		Positioning speed	pulse/sec	The speed command specified
D1357		command 27	puise/sec	for P838 is reflected.
D1358				
D1359				

[Table 3-10] Command value data list 6/7

Device No.	Corresponding parameter	Item name (Blank: "Reserved")	Unit	Remarks
D1360	parameter	Positioning type command		Refer to the data format of a
D1361	P840	28		positioning type command.
D1361		Positioning position		positioning type command.
D1363	P841	command 28	pulse	
D1364		Positioning speed		The speed command specified
D1365		command 28	pulse/sec	for P840 is reflected.
D1366				
D1367				
D1368	P842	Positioning type command		Refer to the data format of a
D1369	P042	29		positioning type command.
D1370	P843	Positioning position	pulse	
D1371	F043	command 29	puise	
D1372		Positioning speed	pulse/sec	The speed command specified
D1373		command 29	puise/sec	for P842 is reflected.
D1374				
D1375				
D1376	P844	Positioning type command		Refer to the data format of a
D1377	1 044	30		positioning type command.
D1378	P845	Positioning position	pulse	
D1379	1 043	command 30	puise	
D1380		Positioning speed	pulse/sec	The speed command specified
D1381		command 30	puise/sec	for P844 is reflected.
D1382				
D1383				
D1384	P846	Positioning type command		Refer to the data format of a
D1385	. 5-15	31		positioning type command.
D1386	P847	Positioning position	pulse	
D1387	. 0-77	command 31	Paloo	
D1388		Positioning speed	pulse/sec	The speed command specified
D1389		command 31	P 3100/000	for P846 is reflected.
D1390				
D1391				
D1392 to				
D1399				

[Table 3-10] Command value data list 7/7

3-5 Serial communication remote control data (X device)

* Serial communication only

[1] Setting the serial communication remote control data area

You can turn control input signals of the servo driver on or off by "writing" serial communication remote control data. Serial communication remote control data is stored in the X device area.

The contents of the X device area are explained below.

- 1) Each data item is 1 bit long and takes the value of "0" or "1" as data.
- 2) The signal is on when the data value is "1" and off when the data value is "0", regardless of whether the logic is positive or negative.
- 3) External control input signals and X device input signals are controlled using the logical addition (OR).
- 4) Unlike the device numbers of other devices, those of the X device are in hexadecimal.

[2] Serial communication remote control data area list

1) Little endian mode (when the function selection (1st digit) of Communication specification selection (P500) is 0)

Device No.	Symbol	Signal name (Blank: "Reserved")	Remarks
X0000	DR	Drive	
X0001	SON	Servo On	
X0002	TL	Torque Limit	
X0003	GSEL	Gain Select	
X0004	RST	Reset	
X0005	MD	Mode select	
X0006	CIH	Command Pulse Input Prohibition	
X0007	RVS	Reverse command direction	
X0008	SS1	Command Select 1	
X0009	SS2	Command Select 2	
X000A	SS3	Command Select 3	
X000B	EMG	Emergency Stop	
X000C	FOT	Forward Over Travel	
X000D	ROT	Reverse Over Travel	
X000E	NRF	Command data reflection prohibition	
X000F	PFB	Feedback selection	
X0010	ZST	Internal pulse triggering	
X0011	ZLS	Zero Point LS	
X0012	ZMK	Zero marker	
X0013	ZSTP	Internal pulse stop	
X0014	APRQ	Current position data request	
X0015	ALRQ	Alarm code request	
X0016	ABRQ	ABS data request	
X0017	CRQ	Demand clock	
X0018	FJ	Forward Direction Jog	
X0019	RJ	Reverse Direction Jog	
X001A	SS4	Command Select 4	
X001B	SS5	Command Select 5	
X001C			
X001D			
X001E			
X001F			

[Table 3-11] Serial communication remote control data area list (little endian) 1/2

2) Big endian mode (when the function selection (1st digit) of Communication specification selection (P500) is 1)

Device No.	Symbol	Signal name (Blank: "Reserved")	Remarks
X0000	ZST	Internal pulse triggering	
X0001	ZLS	Zero Point LS	
X0002	ZMK	Zero marker	
X0003	ZSTP	Internal pulse stop	
X0004	APRQ	Current position data request	
X0005	ALRQ	Alarm code request	
X0006	ABRQ	ABS data request	
X0007	CRQ	Demand clock	
X0008	FJ	Forward Direction Jog	
X0009	RJ	Reverse Direction Jog	
X000A	SS4	Command Select 4	
X000B	SS5	Command Select 5	
X000C			
X000D			
X000E			
X000F			
X0010	DR	Drive	
X0011	SON	Servo On	
X0012	TL	Torque Limit	
X0013	GSEL	Gain Select	
X0014	RST	Reset	
X0015	MD	Mode select	
X0016	CIH	Command Pulse Input Prohibition	
X0017	RVS	Reverse command direction	
X0018	SS1	Command Select 1	
X0019	SS2	Command Select 2	
X001A	SS3	Command Select 3	
X001B	EMG	Emergency Stop	
X001C	FOT	Forward Over Travel	
X001D	ROT	Reverse Over Travel	
X001E	NRF	Command data reflection prohibition	
X001F	PFB	Feedback selection	

[Table 3-11] Serial communication remote control data area list (big endian) 2/2