NIKKI
DENSO

Instruction Manual

VCⅡ Series Communications protocol

Preface

We thank you very much for adopting the VCⅡ Series Communications protocol.

In the text of this instruction manual, "VCⅡ Series Communications protocol Instruction Manual" is indicated as "this manual" and in the same way, "AC Servo controller VCⅡ Series" is indicated as "servo driver" or "this servo driver".

Precautions in safety

Before installation, wiring, operation, maintenance and inspection, and abnormality diagnosis and countermeasures, carefully read this manual and all other related operating instruction manuals for proper usage.
Before use, be sure to fully acquaint with the equipment, safety information, and other related precautions.

In the table below, cautions for safety are ranked as "Danger" and "Caution".
And contents to follow are ranked as "Prohibition" and "Compulsion".

◇! Danger	If mishandling is made, dangerous situation as death or serious injury on a worker could occur.
⚠ Caution	If mishandling is made, dangerous situation as medium or light injury could occur and damages on goods could be suspected. However, since Caution-marked item could also cause serious results depending on the actual conditions, please comply with the important instructions.
◯ Prohibition	Prohibitions (actions not to be done) are indicated.
❶ Compulsion	Compulsions (actions to be done) are indicated.

Precautions in handling

⚠ Caution
If you make any wrong command, 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.

About this manual

This manual explains the VCⅡ Series Communication protocol.

For information on the installation, wiring, usage, maintenance and inspection, abnormality diagnosis, and countermeasures about the servo driver to use, as well as setting and display, refer to the "AC Servo driver VCⅡ Series Instruction Manual" and the "AC Servo controller VCⅡ Series Instruction Manual".
In the event of any conflicts, the "AC Servo driver VCⅡ Series Instruction Manual" and the "AC Servo controller VCⅡ Series Instruction Manual" prevail over this manual.

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

> - This manual covers the servo driver of the following versions:
>   - Software version 1.00 or later
>   - Hardware version 1.00 or later
>
> - In the main text, a P + 3-digit representation such as P000 means a parameter number.
>
> - A hexadecimal number is distinguished from a decimal number by adding an "H" at the end of the number.

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Contents

Chapter 1 Outline

1-1 Outline

The servo driver 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[1].

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.[2]

The communication protocol for data transfer conforms to [Control procedure 4] of "AJ71C24-S8 Computer link unit" made by Mitsubishi Electric Corporation.

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[1] Computer or a programmable terminal (PT)
[2] If your servo driver is of a sequence function built-in type, communication is controlled with the logical sum (OR) of the input signal due to sequence control and the input signal due to communication.

1-2 Address assignment in command operation examples

1-2-1 Data transfer

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

*PT recommended by Nikki Denso: NCR-XAC5D3A (touch panel 5.7-inch monochrome LCD)
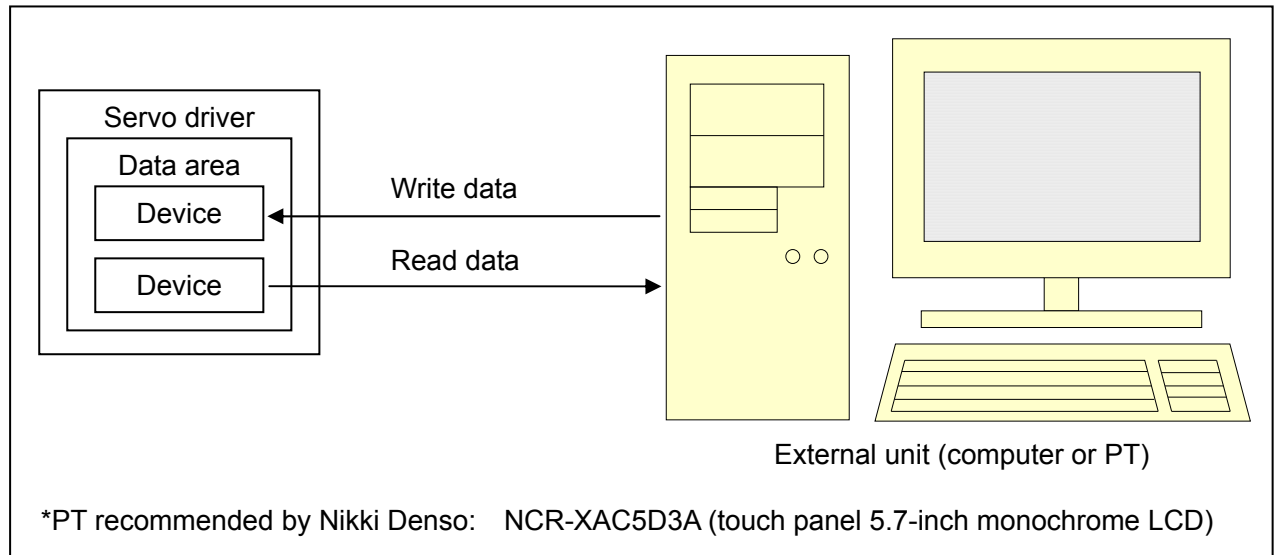
Figure 1-1 Data transfer method

Table 1 Data transfer and data areas

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

1-2-2 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.

1-2-3 Broadcasting (simultaneous transmission to all servo drivers)

When writing data from an external unit, you can write the data to all connected servo drivers at once by setting the station number (ID No.) to "FF" and sending the data.

1-2-4 Group management

By setting a group ID, you can control multiple servo drivers that have the same group ID at once. You can select any group ID number in the range of 1 to 255, and can set up to five ID numbers to a single servo driver (so that the servo driver can belong to up to five groups).

As with broadcasting, you can write data to all servo drivers that belong to the same group at once by setting a specific group station number (ID No.) and sending the data.

Chapter 2 Configuration

Figure 2-1 System configuration diagram (daisy chain)

Servo driver

VC II

J1

Power encoder

Motor

Servo driver

VC II

J1

Power encoder

Motor

External unit
(computer/PT)

RS-422A

If the external unit conforms to the
RS-232C communication standard,
an RS-232C-to-RS-422A
conversion cable is available.

Servo driver

VC II

J1

Power encoder

Motor

Servo driver

VC II

J1

Power encoder

Motor

Connection
of up to 16
shafts

⚠ **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.)

Chapter 3 Specification

3-1 Basic specification of serial communication

Table 2 Basic specification of serial communication

Item	Specification		
Connection specification	EIA standard, RS-422A equivalent		
Communication method	Half-duplex		
Synchronization method	Asynchronous		
Data transmission speed	4800/9600/19200/56000[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 computer and a touch panel)		
Slave station	This servo driver		
Communication procedure	Dedicated communication procedure Refer to Chapter 5 Serial communication procedures.		
Communication code	Control code 	Signal name	S T X	E T X	E O T	E N Q	A C K	L　F	C　L	C　R	N A K
---	---	---	---	---	---	---	---	---	---
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 that can be processed in a single communication session	D device and R device	64 (in word units)	
	X device	256 (in bit units)	

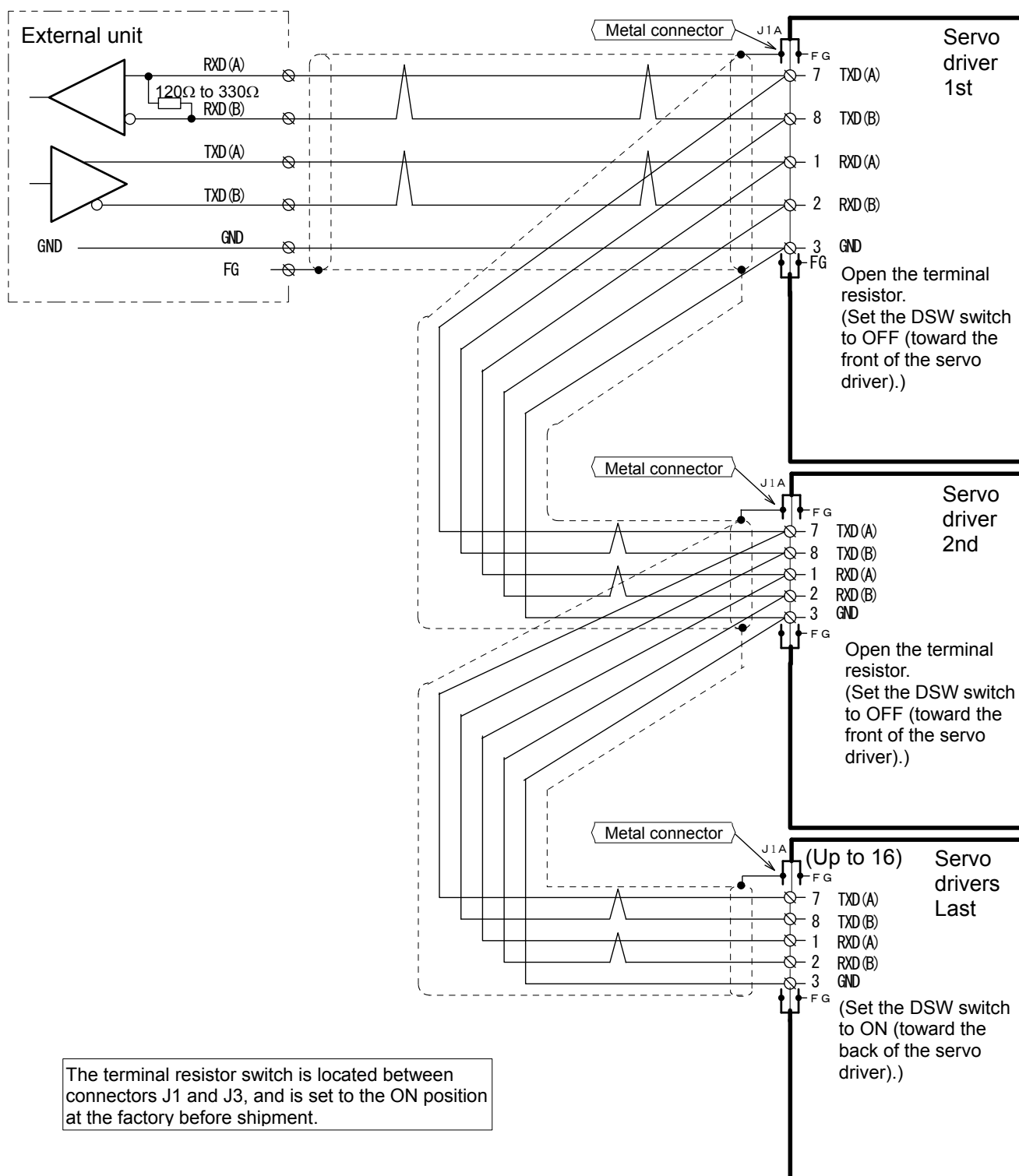## 3-2 Serial communication cable wiring

Figure 3-1 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.)

Chapter 4 Setting the servo driver

4-1 Setting the parameters of the servo driver

Parameters related to serial communication are [P505] to [P520], listed below.

For details, refer to the separate volumes, "AC Servo driver Instruction Manual" and "AC Servo controller Instruction Manual".

Table 3 Parameters related to serial communication

Parameter No.	Parameter name	Overview	Setting
P505	Communication unit number selection	Select the external unit (protocol) to be connected during serial communication.	Select setting No. [2: computer].
P506	Communication ID number	Set the ID No. (station number) of each servo driver connected in a daisy chain for serial communication. [Caution] Set a different ID No. for each of the servo drivers to be connected in a daisy chain.	Select one from the range of [00 to 16].
P507	Data length selection (serial communication)	Select transceiving data length for serial communication.	Select between [7 BITS/8 BITS].
P508	parity selection (serial communication)	Select the parity for serial communication.	Select among [NONE/ODD/EVEN].
P509	Baud rate selection (serial communication)	Select the baud rate for serial communication.	Select among [4.8/9.6/19.2/56/(115.2)[kbps]]. Note) Currently, 115.2 [kbps] is not supported.
P511	Communication group-ID set 1	Set an effective ID for group communication.	Select from the range of [000 to 255].
P512	Communication group response Yes/No 1	Use this parameter with communication group-ID set 1 as a pair. Select from response Yes/No.	Select from [RESP.OFF/RESP. ON].
P513	Communication group-ID set 2	Set an effective ID for group communication.	Select from the range of [000 to 255].
P514	Communication group response Yes/No 2	Use this parameter with communication group-ID set 2 as a pair. Select from response Yes/No.	Select from [RESP.OFF/RESP. ON].
P515	Communication group-ID set 3	Set an effective ID for group communication.	Select from the range of [000 to 255].
P516	Communication group response Yes/No 3	Use this parameter with communication group-ID set 3 as a pair. Select from response Yes/No.	Select from [RESP.OFF/RESP. ON].
P517	Communication group-ID set 4	Set an effective ID for group communication.	Select from the range of [000 to 255].
P518	Communication group response Yes/No 4	Use this parameter with communication group-ID set 4 as a pair. Select from response Yes/No.	Select from [RESP.OFF/RESP. ON].
P519	Communication group ID set 5	Set an effective ID for group communication.	Select from the range of [000 to 255].
P520	Communication group response Yes/No 5	Use this parameter with communication group-ID set 5 as a pair. Select from response Yes/No.	Select from [RESP.OFF/RESP. ON].

4-2 Relations between modes and control input signals

Relations between run modes and control input signals (whether effective or ineffective) in the VCⅡ Series are listed below.

4-2-1 VCⅡ-D type

Table 4   Relations between modes of the VCⅡ-D type and control input signals

Type			VCⅡ-D			
Control input signal name		Run mode	Speed	Torque	Pulse train	Simple positioning
Reset	RST	X0000	★	★	★	★
Emergency Stop	EMG	X0001	★	★	★	★
Servo On	SON	X0002	★	★	★	★
Drive	DR	X0003	★	★	★	★
Gain Select, Gain Select 2	GSEL, GSEL2	X0004, X0012	★	★	★	★
Deviation Clear	CLR	X0005			★	★
Forward Over Travel	FOT	X0006	1)	1)	1)	1)
Reverse Over Travel	ROT	X0007	1)	1)	1)	1)
Speed/Torque Selects 1 and 2	SS1 and SS2	X0008 to X0009	★	★		
Command Direction Select	SSD	X000A	3)	3)		
Mode Selects 1 and 2	MD1 and MD2	X000B to X000C	★	★	★	★
Torque Limit	TL	X000D	★	★	★	★
Command Pulse Input Prohibition	CIH	X000E			2)	
Compulsory Brake ON	BRON	X000F	★	★	★	★
Proportional Control	PC	X0010	★		★	★
Address Assignments 1 to 3	PS1 to PS3	X0018 to X001A				★
Simple Positioning Start	PST	X0020				★*1
Forward Direction Jog	FJOG	X0021				★*2
Reverse Direction Jog	RJOG	X0022				★*2
Speed Overrides 1 to 4	OR1 to OR4	X0028 to X002B	3)			
Zero Return Mode	ORG	X0031				★*3

★ : Effective   : Ineffective

1) and 2):   Whether the signal is effective or ineffective can be set with a parameter.   (Relations are as follows.)

1)   :   [P705:   Hardware OT effective/ineffective selection]

2)   :   [P600:   CIH signal function selection]

3)   :   When an internal command is selected by command select 1/2 (SS1/SS2).

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*1 Ineffective in manual run and zero return run modes.
*2 Ineffective in simple positioning run mode.
*3 Ineffective in manual run and simple positioning run modes.

4-3

Table 5   Relations between modes of the VCⅡ-C1 type and control input signals

Type		Run mode	VCⅡ-C1			
Control input signal name			Automatic	Manual	Zero return	Pulse train
Reset	RST	X0000	★	★	★	★
Emergency Stop	EMG	X0001	★	★	★	★
Servo On	SON	X0002	★	★	★	★
Gain Select, Gain Select 2	GSEL, GSEL2	X0004, X0012	★	★	★	★
Deviation Clear	CLR	X0005	★	★	★	★
Forward Over Travel	FOT	X0006	1)	1)	1)	1)
Reverse Over Travel	ROT	X0007	1)	1)	1)	1)
Command Direction Select	SSD	X000A	3)			
Mode Selects 1 and 2	MD1 and MD2	X000B to X000C	★	★	★	★
Torque Limit	TL	X000D	★	★	★	★
Command Pulse Input Prohibition	CIH	X000E				2)
Compulsory Brake ON	BRON	X000F	★	★	★	★
Proportional Control	PC	X0010	★	★	★	★
Address Assignment	PS1 to PS8	X0018 to X001F	★			
Automatic start	PST	X0020	★			
Forward Direction Jog	FJOG	X0021		★	★	
Reverse Direction Jog	RJOG	X0022		★	★	
Jog speed select	JOSP	X0023		★		
M complete	MFIN	X0024	★			
Block stop	BSTP	X0025	★			
Program cancel	PCAN	X0026	★			
External automatic start prohibit	EPIH	X0027	★			
Speed Overrides 1 to 4	OR1 to OR4	X0028 to X002B	★	★	★	
Hold	HLD	X002C	★	★	★	★
External trigger	TRG	X002D	4)			

★ : Effective   ▮ : Ineffective

1) and 2):   Whether the signal is effective or ineffective can be set with a parameter.   (Relations are as follows.)

1)   : [P705:   Hardware OT effective/ineffective selection]

2)   : [P600:   CIH signal function selection]

3)   : Effective when an internal command is selected by an automatic run driver command.

4)   : Effective when an automatic run successive control command is executed.

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4-2-3 VCⅡ-C6 type

Table 6　Relations between modes of VCⅡ-C6 type and control input signals

Type		Run mode	VCⅡ-C6			
Control input signal name			Automatic	Manual	Zero return	Servo lock
Reset	RST	X0000	★	★	★	★
Emergency Stop	EMG	X0001	★	★	★	★
Servo On	SON	X0002	★	★	★	★
Gain Select, Gain Select 2	GSEL, GSEL2	X0004, X0012	★	★	★	★
Deviation Clear	CLR	X0005	★	★	★	★
Forward Over Travel	FOT	X0006	1)	1)	1)	1)
Reverse Over Travel	ROT	X0007	1)	1)	1)	1)
Mode Selects 1 and 2	MD1 and MD2	X000B to X000C	★	★	★	★
Torque Limit	TL	X000D	★	★	★	★
Command Pulse Input Prohibition	CIH	X000E	2)			
Compulsory Brake ON	BRON	X000F	★	★	★	★
Proportional Control	PC	X0010	★	★	★	★
Address Assignment	PS1 to PS8	X0018 to X001F	★			
Automatic start	PST	X0020	★			
Forward Direction Jog	FJOG	X0021		★	★	
Reverse Direction Jog	RJOG	X0022		★	★	
Jog speed select	JOSP	X0023		★		
M complete	MFIN	X0024	★			
Block stop	BSTP	X0025	★			
Program cancel	PCAN	X0026	★			
External automatic start prohibit	EPIH	X0027	★			
Speed Overrides 1 to 4	OR1 to OR4	X0028 to X002B	★	★	★	
Hold	HLD	X002C	★	★	★	
Internal Master Speed Select	MSSP	X0030	★	★	★	★
Phase Advance	D11	X0038	★			
Phase Delay	D12	X0039	★			
Electronic Clutch	D14	X003A	★			
Master Axis Select	D18	X003B	★			
Cycle End	D21	X003C	★			
Pattern Select 1	D22	X003D	★			
Pattern Select 2	D24	X003E	★			
Pattern Select 3	D28	X003F	★			

★ : Effective　　　■ : Ineffective

1) and 2):　Whether the signal is effective or ineffective can be set with a parameter.　(Relations are as follows.)

1)　:　[P705:　Hardware OT effective/ineffective selection]

2)　:　[P600:　CIH signal function selection]

4-5

Chapter 5 Serial communication procedures

5-1 Data transfer

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.

⚠ **Caution**

Writing data to an area in the range of R0000 to R3699 requires time of about 5 ms per device because the data must be written to nonvolatile memory.   For this reason, if, after data is sent to an area in this range, additional data is to be sent to an area in this range, leave time of at least 5 ms per device.

Example) <u>If data is to be sent to five devices R0000 to R0004</u>

T: Wait time until the next transmission

T >= 5 [Number of devices] * 5 [ms]

Leave at least 25 [ms] before the start of the next transmission.

 * For broadcasting and group communication, add additional wait time of at least 20 [ms].

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

5-2-1 Normal writing (from a single external unit to a single servo driver)

Sum check range
(from station number to text data)

Sum check code

	E N Q	Station number	Fixed *1	Command	Fixed *1	Text data		C R	L F
External unit side		0 1	F F	W W	0	R 0 0 3 7 0 1 1 2 3 4	1 2	C R	L F
	0 5 H	3 3 0 1 H H	4 4 6 6 H H	5 5 7 7 H H	3 0 H	5 3 3 3 3 3 3 3 3 3 2 0 0 3 7 0 1 1 2 3 4 H H H H H H H H H H H	3 3 1 2 H H	0 D H	0 A H

Low-order digits
High-order digits

High-order digits
Low-order digits

Servo driver side

Sum check formula

30H + 31H + 46H + 46H + 57H + 57H + 30H

+   52H + 30H + 30H + 33H + 37H + 30H + 31H

+   31H + 32H + 33H + 34H = 4 1 2 H

Sum check data

Data transfer success

A C K	Station number	Fixed *1	C R	L F
	0 1	F F	C R	L F
0 6 H	3 3 0 1 H H	4 4 6 6 H H	0 D H	0 A H

Error code

Or,

Data transfer failure

N A K	Station number	Fixed *1		C R	L F
	0 1	F F	0 1	C R	L F
1 5 H	3 3 0 1 H H	4 4 6 6 H H	3 3 0 1 H H	0 D H	0 A H

High-order digits
Low-order digits

Figure 5-1 Normal data writing procedures

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*1 Transferred as fixed data.

5-2-2 Broadcasting (simultaneous transmission from a single external unit to all servo drivers)

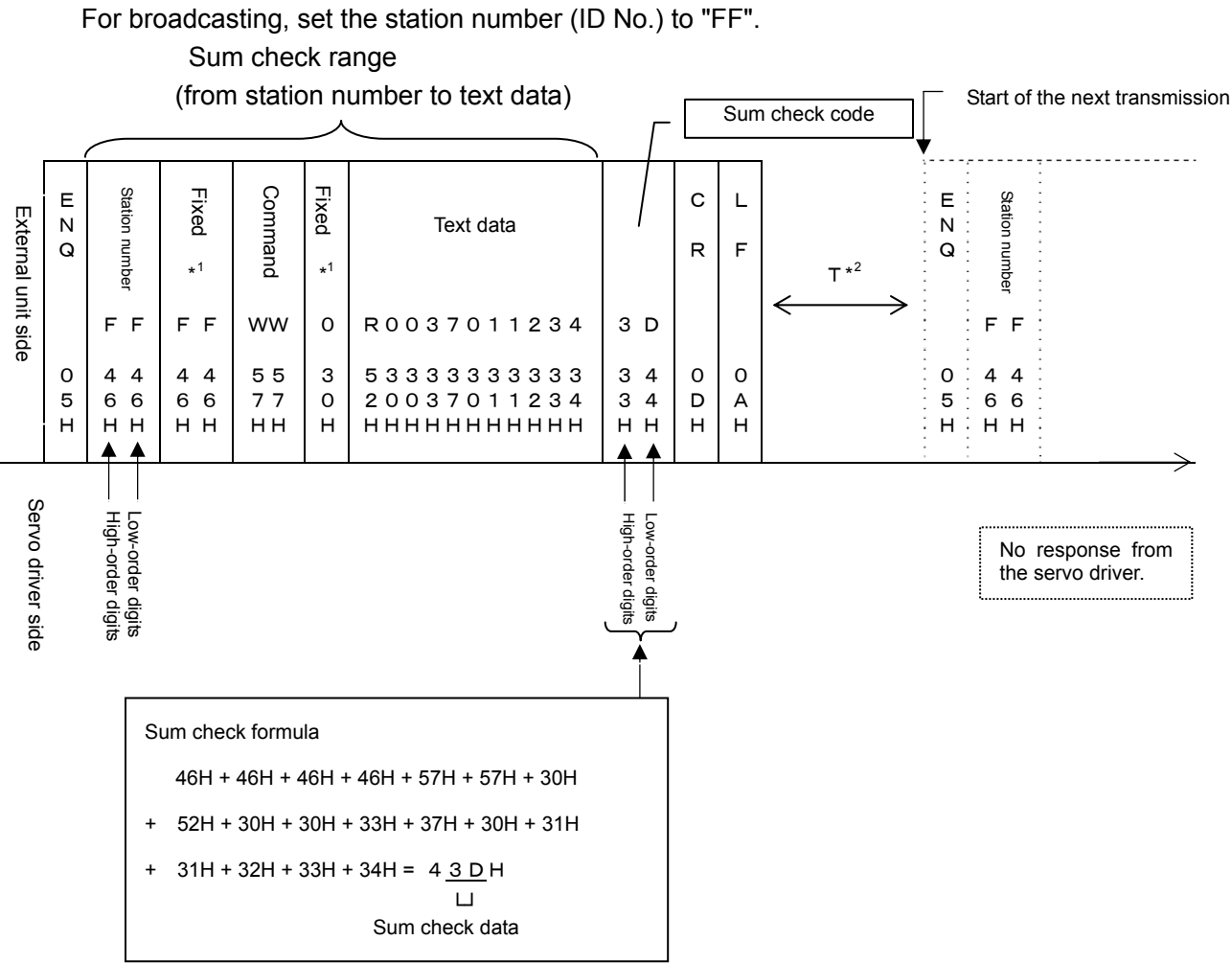For broadcasting, set the station number (ID No.) to "FF".

Figure 5-2 Broadcast data writing procedure

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*[1] Transferred as fixed data.

*[2] Time (T) before the start of the next transmission from the external unit must be at least 20 ms.

5-4

5-2-3 Group communication (simultaneous transmission from a single external unit to the servo drivers in a single group)

For group communication, station numbers (ID Nos.) "01 to FF" can be used.

It is recommended to set a number different from normal, individual communication IDs "01 to 16" and the number "FF" for broadcasting.

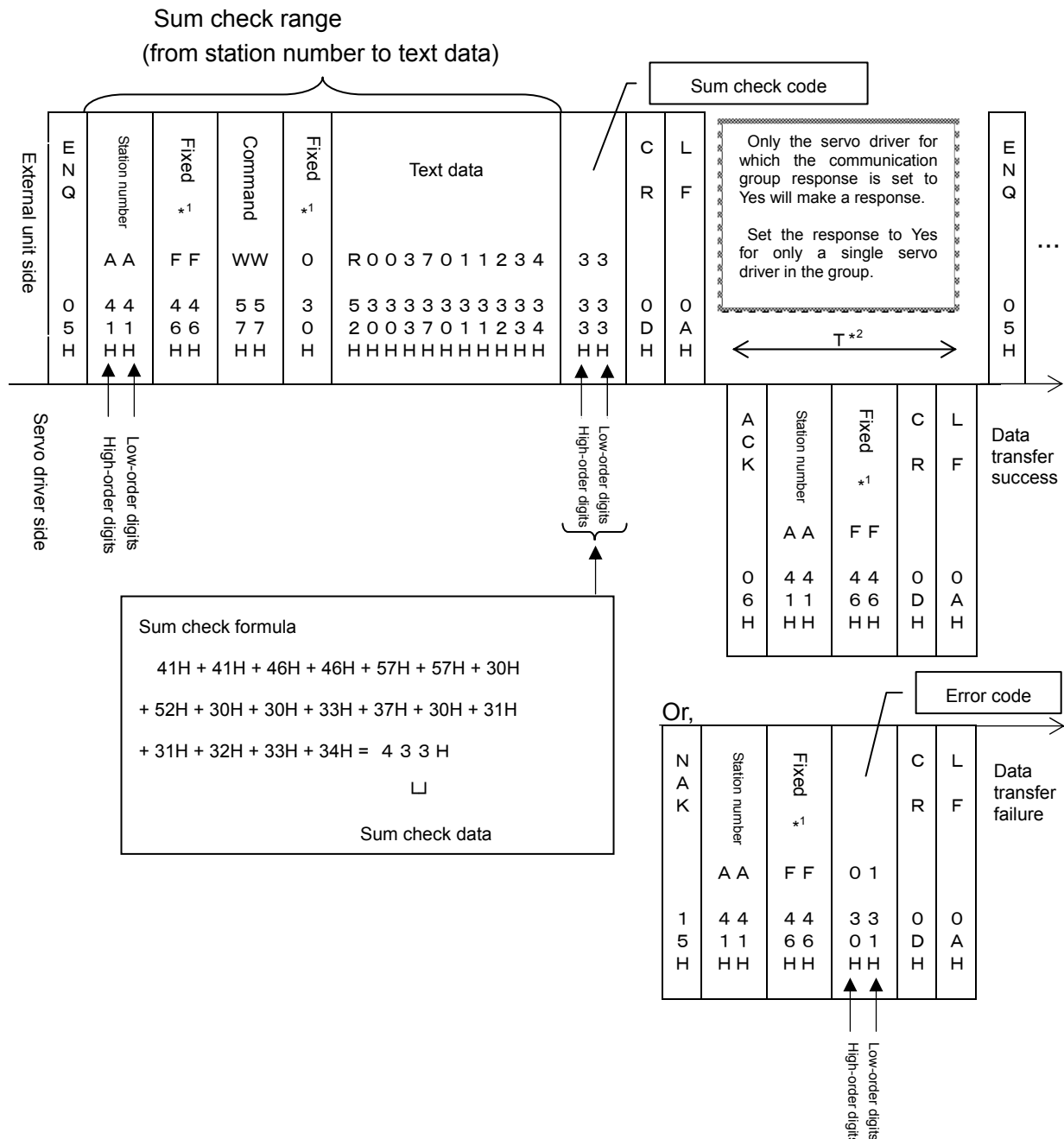Only a single servo driver in the group can make a response.

Figure 5-3 Group communication data writing procedure

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*[1] Transferred as fixed data.

*[2] Time (T) before the start of the next transmission from the external unit must be at least 20 ms.

5-3 Data reading procedure (transfer of data from the servo driver to an external unit)

Sum check range
(from station number to text data)

Sum check code

	Station number	Fixed *1	Command	Fixed *1	Text data		C R	L F
External unit side								
E N Q	0 1	F F	W R	0	R 0 0 3 7 0 1	4 3		
0 5 H	3 3 0 1 H H	4 4 6 6 H H	5 5 7 2 H H	3 0 H	5 3 3 3 3 3 3 2 0 0 3 7 0 1 H H H H H H H	3 3 4 3 H H	0 D H	0 A H

High-order digits / Low-order digits (Station number)

High-order digits / Low-order digits

Servo driver side

Sum check formula
30H + 31H + 46H + 46H + 31H
+ 32H + 33H + 34H + 03H
= 1 B A H
Sum check data

Sum check formula
30H + 31H + 46H + 46H + 57H + 52H + 30H
+ 52H + 30H + 30H + 33H + 37H + 30H + 31H
= 3 4 3 H
Sum check data

Sum check range
(station number to ETX)

Sum check code

S T X	Station number	Fixed *1	Text data	E T X		C R	L F	
0 1	F F	1 2 3 4		B A				Data transfer success
0 2 H	3 3 0 1 H H	4 4 6 6 H H	3 3 3 3 1 2 3 4 H H H H	0 D H	4 4 2 1 H H	0 D H	0 A H	

Or,

Error code

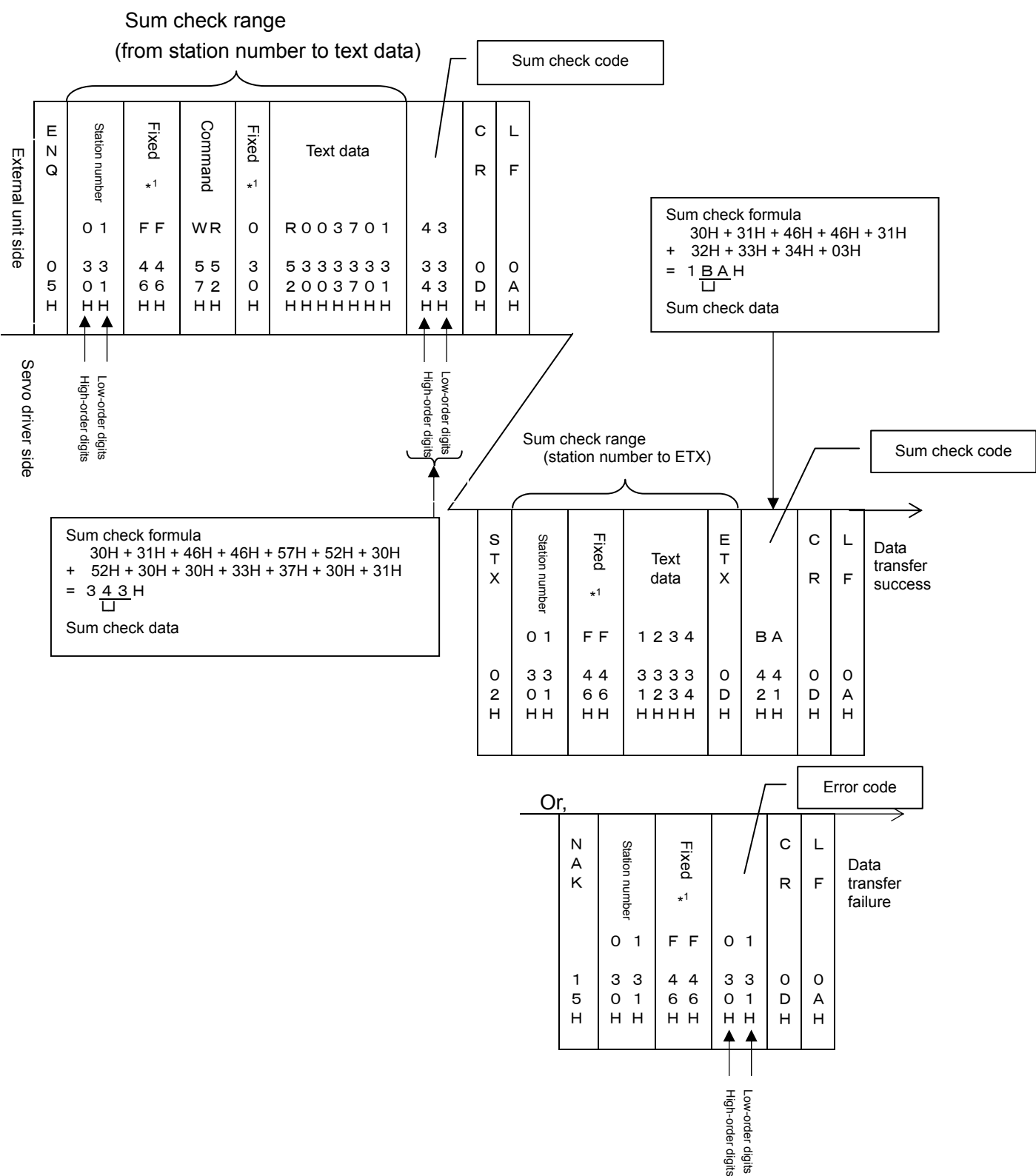| N A K	Station number	Fixed *1		C R	L F	
0 1	F F	0 1				Data transfer failure
1 5 H	3 3 0 1 H H	4 4 6 6 H H	3 0 H 3 1 H	0 D H	0 A H	

High-order digits / Low-order digits

Figure 5-4 Data reading procedure

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*1 Transferred as fixed data.

5-4 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.
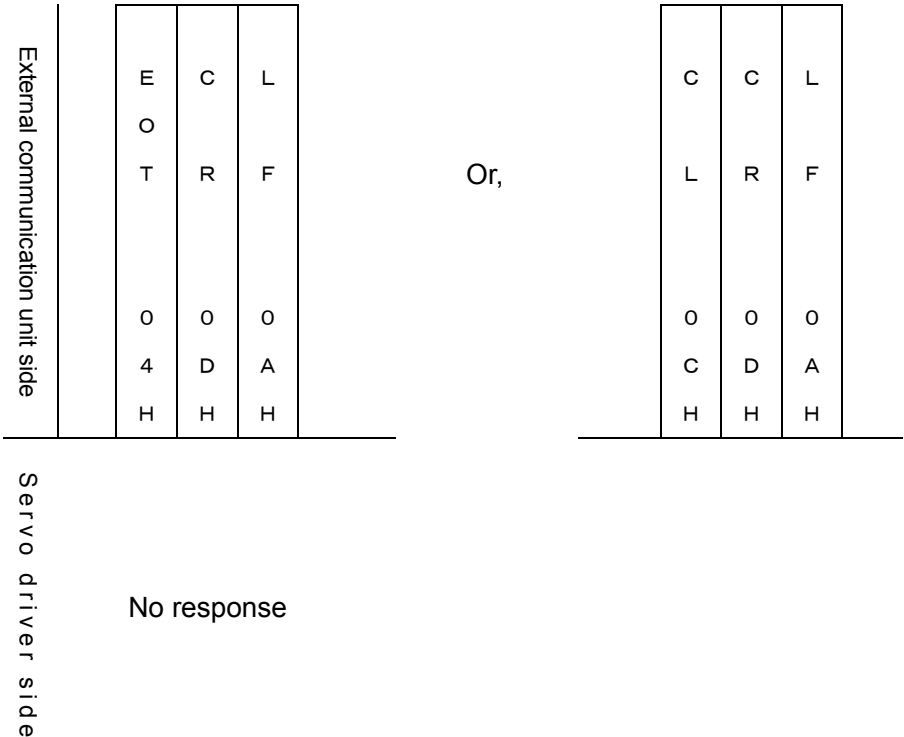

Figure 5-5 Data communication procedure sequence initialization procedure

5-5 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".

Table 7 Communication error codes

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 ・The sum check in the receive data did not match the sum check data created by the servo driver from the receive data.
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.
07	30H, 37H	Character error ・A character code other than the control codes "0" to "9"/"A" to "Z" was received.

5-6 Communication commands

Communication commands of the servo driver are as follows.

Table 8 Communication commands

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.
QR	51H, 52H	Reads data from the P device area. 　Note) Supported by the VCⅡ-C6 (free curve control) type only.
QW	51H, 57H	Writes data to the P device area. 　Note) Supported by the VCⅡ-C6 (free curve control) type only.

⚠ 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 an 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.

Serial communication procedures

5-6-1 Reading data from the D and R device areas (WR command)

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.

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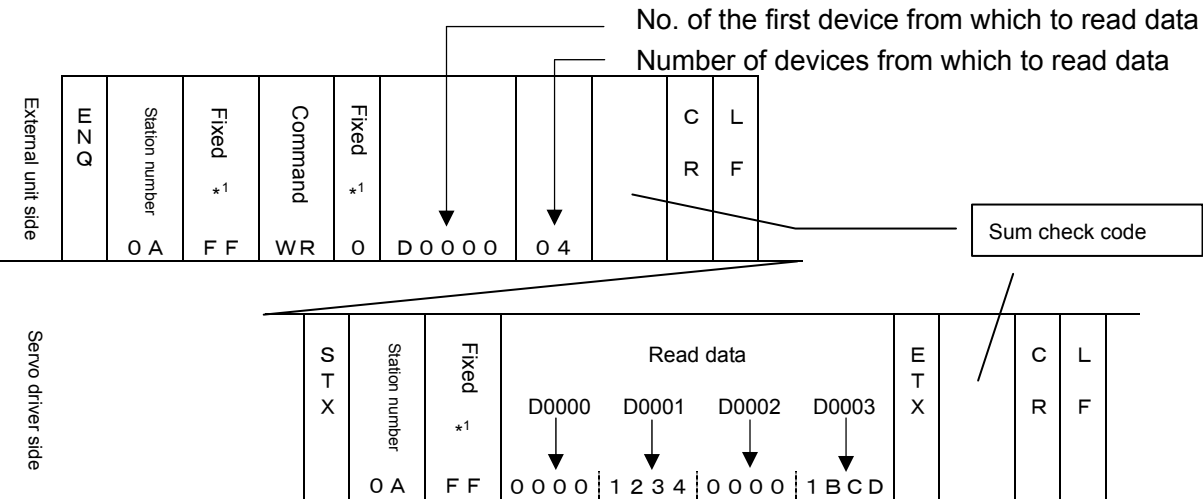

Figure 5-6 Method of reading data from the D device area and the R device area

5-6-2 Writing data to the D and R device areas (WW command)

Transfer write data, number of devices to which to write data, station number, and sum check code in a format in which hexadecimal numbers are converted into character codes.
<u>* For broadcasting, there will be no response from the servo driver.</u>

Example of writing data to R devices R0080 to R0085 (6 devices) with the station number 04
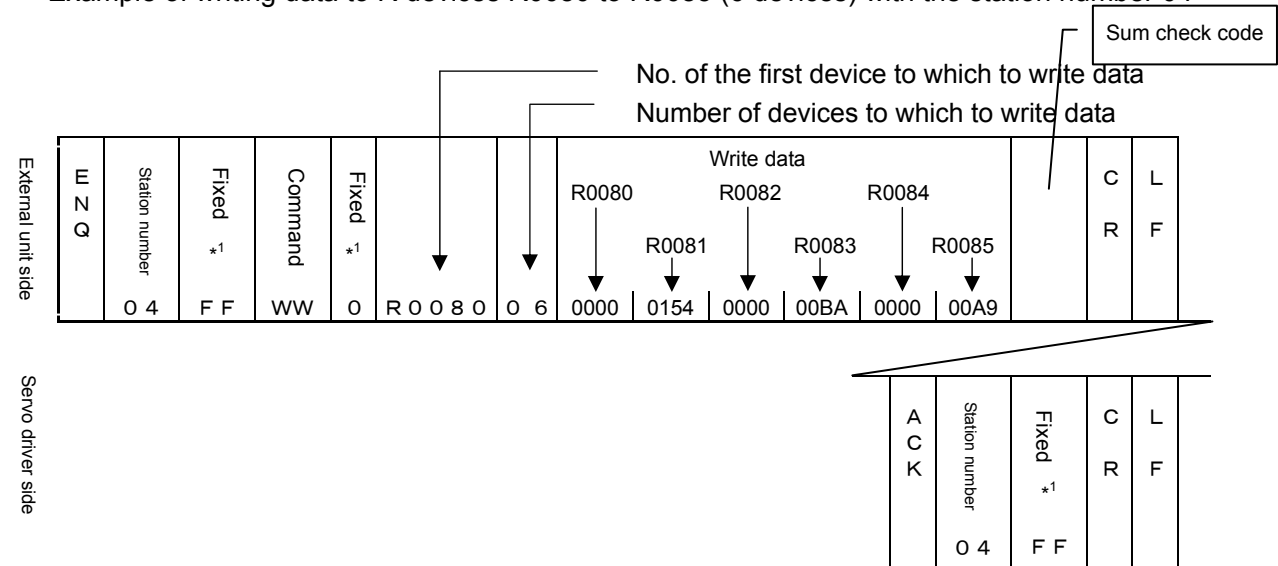
Figure 5-7 Procedure for writing data to the D device area and the R device area

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*[1] Transferred as fixed data.

5-10

5-6-3 Registering the D and R device areas with the monitoring (WM command)

Example of registering, with the monitoring, D devices D0000, R3733, D0002, and R3732 (4 devices) with the station number 16 (10H)
* For broadcasting, there will be no response from the servo driver.
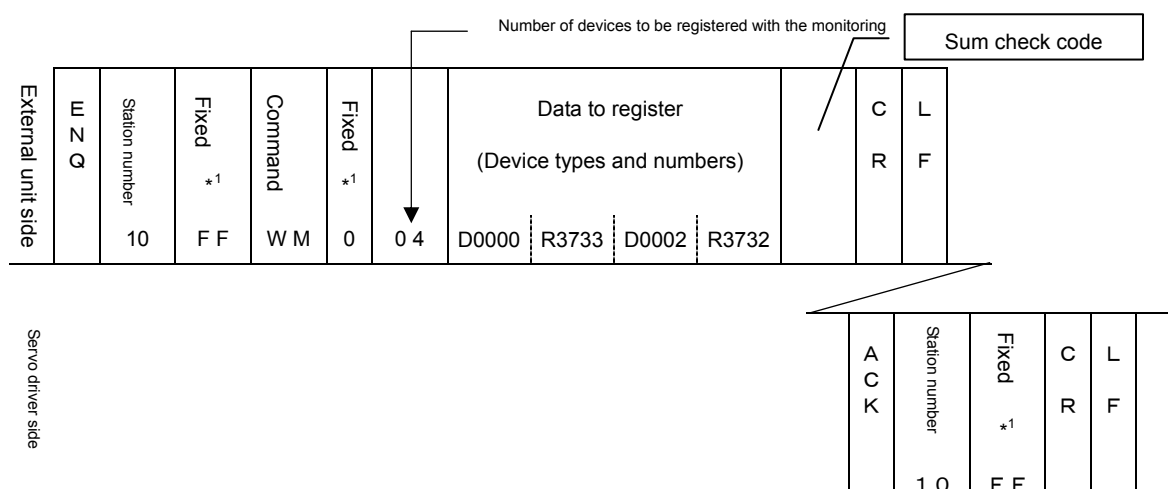

Figure 5-8 Method of registering the D device area and the R device area with the monitoring

5-6-4 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)

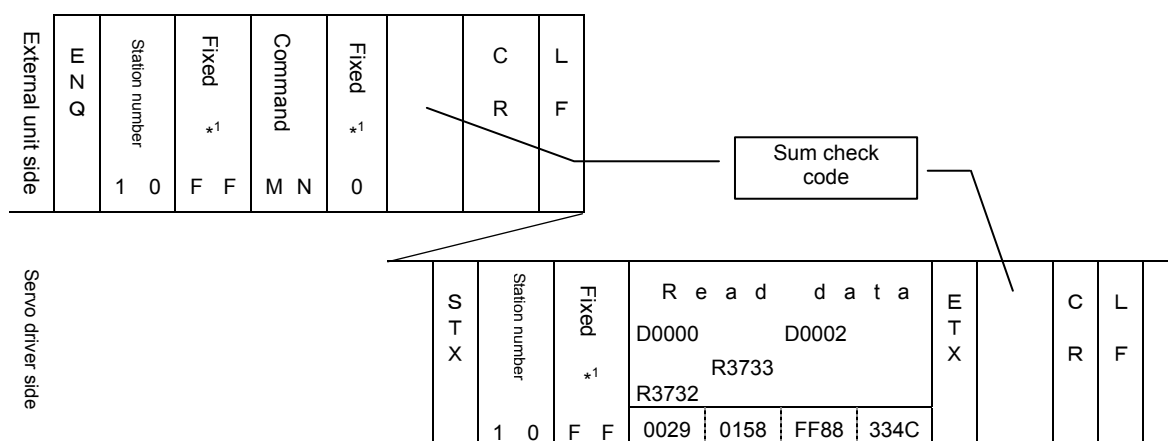(Servo drivers registered with the monitoring: D0000, R3733, D0002, and R3732)

Figure 5-9 Method of reading data from the D and R device areas registered with the monitoring

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*¹ Transferred as fixed data.

5-11

5-6-5 Reading data from the X device area (BR command)

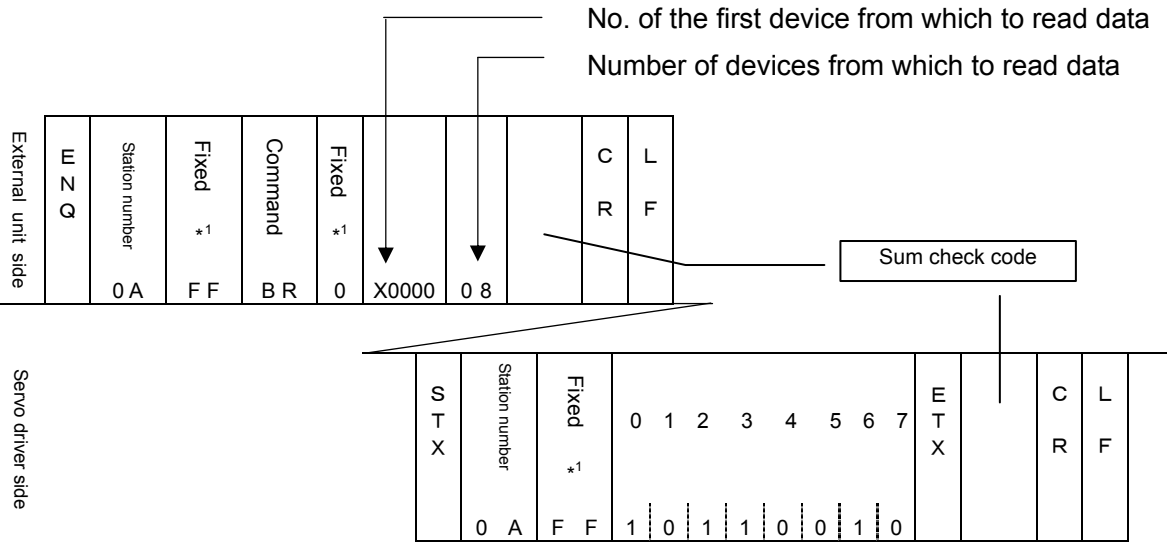Example of reading data from X devices X0000 to X0007 (8 devices) with the station number 10 (0AH)

Figure 5-10 Method of reading data from the X device area

5-6-6 Writing data to the X device area (BW command)

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

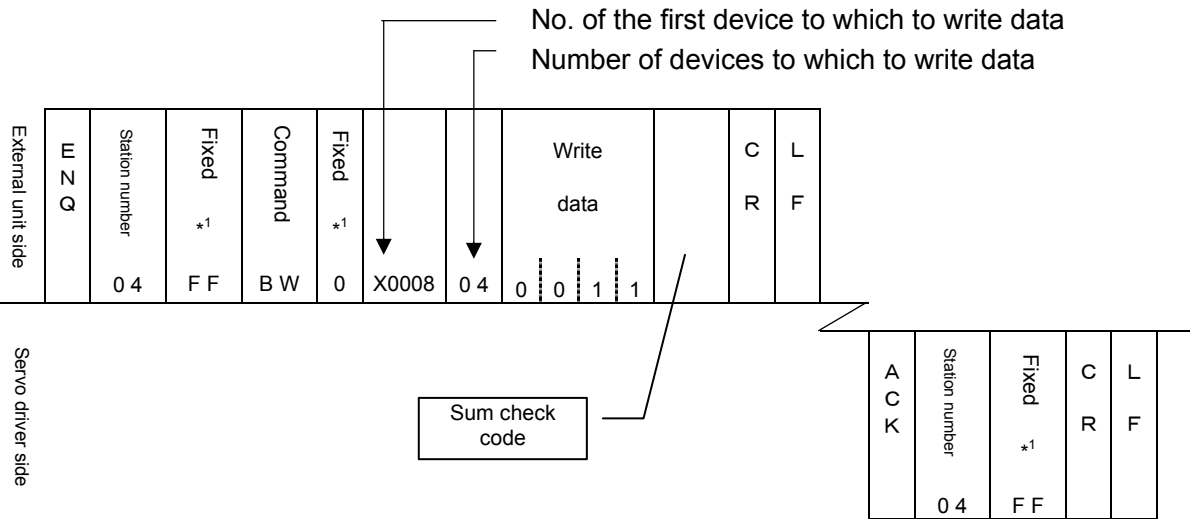* For broadcasting, there will be no response from the servo driver.

Figure 5-11 Method of writing data to the X device area

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[1] Transferred as fixed data.

5-6-7 Reading data from the P device area (QR command)

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.

Example of reading D devices P000000 to P000003 (4 devices) with the station number 10 (0AH)
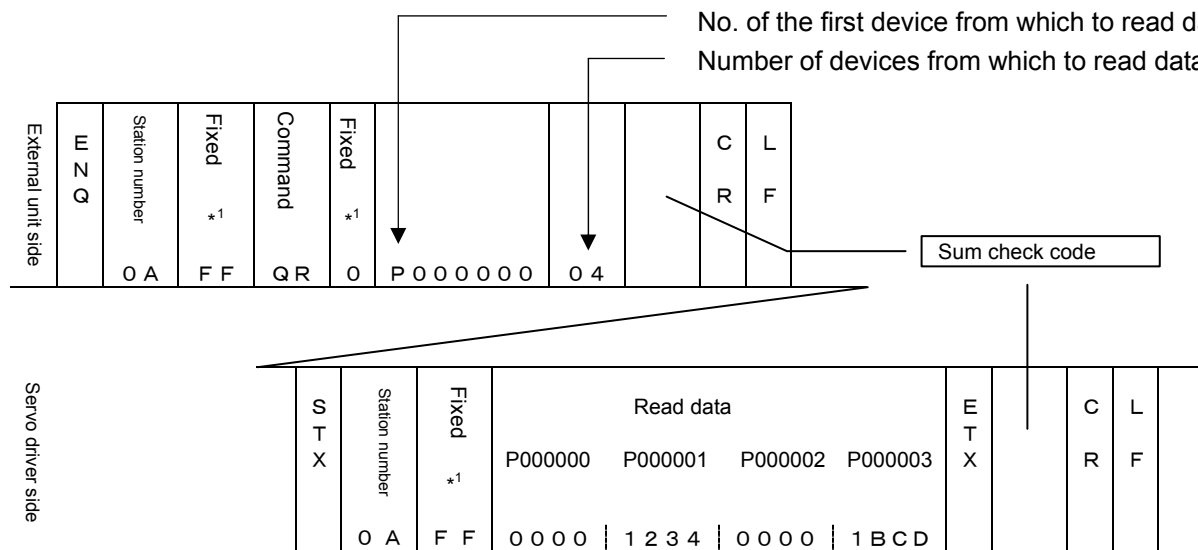

Figure 5-12 Method of reading data from the P device area

5-6-8 Writing data to the P device area (QW command)

Transfer write data, number of devices to which to write data, station number, and sum check code in a format in which hexadecimal numbers are converted into character codes.
* For broadcasting, there will be no response from the servo driver.

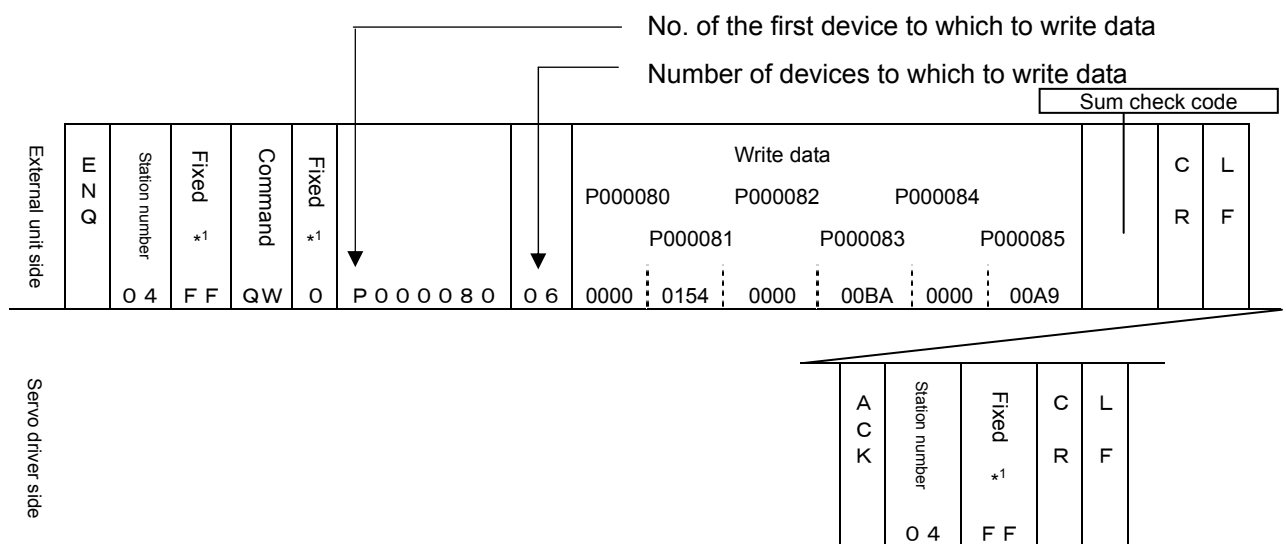Example of writing data to P devices P000080 to P000085 (6 devices) with the station number 04

Figure 5-13 Method of writing data to the P device area

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[1] Transferred as fixed data.