NCS-FI/FS 6

CC-Link

Manual

Ver. 1.2

Nikki Denso Co., Ltd.

Preface

Thank you very much for adopting Nikki AC Servo Controller.

[About this manual]

This manual explains the NCS-FI/FS device that copes with the open field network CC-Link Ver. 1.10.

The NCS-FI/FS device that copes with the CC-Link is hereinafter called [this device].

Refer to [Other manuals] relating to other contents that are not for the CC-Link.
In the connection with the master station using the CC-Link, refer to the manual for that master station in parallel.

This manual is applicable to the software version 2.30 or a newer version.

[About description of input/output signals]

In this manual, remote input, remote output, and remote register input/output are the ones observed from the master station.   Therefore, please note that the relations of the input/output in this manual are reversed when comparing with other explanations on other manuals.

[Construction of this manual]

This manual is composed of Chapter 1, Chapter 2, and other appendices.

Chapter 1:   Outlines
 Explains the features of this device.
 Explains the system structures when connecting to the CC-Link.
 Explains the system constructions of this device.

Chapter 2:   CC-Link interface
 Explains the connectors, LED, and switches, relating to the CC-Link.
 Explains the input/output when controlling the CC-Link.

Appendix 1:   Specifications and setting information
Appendix 2:   A list of alarms/warnings for CC-Link
Appendix 3:   A list of parameters for CC-Link
Appendix 4:   Self-diagnosis for CC-Link
Appendix 5:   Exterior measurements
Appendix 6:   A list of control YES/NO for CC-Link input/output control signals
Appendix 7:   Application samples

[Other manuals]

Instruction manuals relating to this device are as follows, excluding this manual.
 ①   Fundamental functions (Explains specifications, installation, wiring, signals, operation mode, maintenance, self-diagnosis, compulsory inching, abnormalities)
 ②   Exclusive functions (Explains system constructions, LCD display/operation, parameters, indirect data, commands)
 ③   Commands (Explains command details)
 ④   Communication protocols (Explains communication procedures, communication data)

[About warranty period]

Warranty period of the products is one-year from the factory shipment.
However, please note that any failure or abnormality resulting from the following causes is not covered by the warranty.

① Modification by another party other than us.
② Non standard operation different from rules and regulations stipulated in this manual.
③ Natural disaster or act of gods.
④ Connection with another maker's unit that is not approved by us.

Range of our warranty only covers repair of our products.   Damages induced by the failure in the delivered products, opportunity loss at the side of the client, secondary damages, and accident compensation are excluded.
Regardless the warranty period, please inform our salesman whenever you find any failure or abnormality.

⚠ Caution
▪ Our products have been designed and manufactured for the aim of the general purpose applications in the general industry and the products are not intended to be used in any equipment and system that may involve human life. For this reason, we are free from any responsibility if the products are used in any other applications than we intended. (Examples: Applications in the equipment and system for the purpose of atomic, aerospace, medical, and passenger vehicles that may greatly involve the human-life and assets.
▪ When installing the product to the facility that may involve serious accidents and loss by excessive exterior noises or failure on the motor, install the back-up and fail-safe functions systematically.
▪ If used under the conditions where sulfur or sulfide gas is produced, splitting due to corrosion on the tip resistors or poor connection on the contacts can occur.

When you receive the ordered product, please check its exterior and all accessories.
When unpacking, if abnormalities are recognized on the device exterior or there are mixtures of unspecified accessories or differences in the quantity, do not use them and contact our salesman.
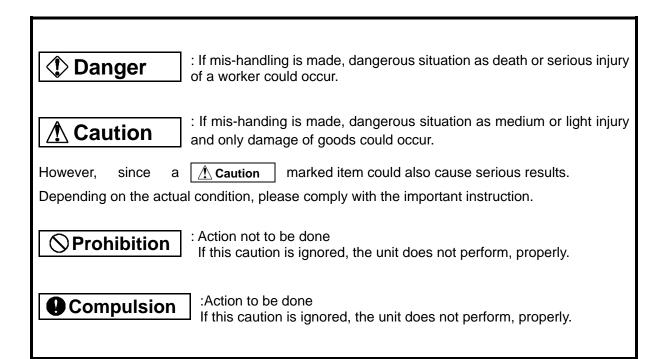
<u>Cautions for Safety</u>

Before executing the installation / operations / maintenance / inspection, always read this manual and attached document carefully. Use this device only after getting the proper knowledge of this device and understanding the safety information and precautions.

In this manual cautions for safety are ranked as "Danger" and "Caution".
And cautions for handling are divided into "Prohibition", "Compulsion" witch are defined (action not to be done) and (action to be done).

| ⬦ **Danger** | : If mis-handling is made, dangerous situation as death or serious injury of a worker could occur. |

| ⚠ **Caution** | : If mis-handing is made, dangerous situation as medium or light injury and only damage of goods could occur. |

However, since a ⚠ **Caution** marked item could also cause serious results.

Depending on the actual condition, please comply with the important instruction.

| ⊘ **Prohibition** | : Action not to be done
 If this caution is ignored, the unit does not perform, properly. |

| ❶ **Compulsion** | :Action to be done
 If this caution is ignored, the unit does not perform, properly. |

[Cautions when using unit]

◇ Danger

☆ Since electric shock and injury may occur, please be sure to comply with the following suggestions.

① Never touch inside of this unit (AC Servo driver) and terminal blocks.
   [Electric shock may occur.]

② Be sure to make grounding of an earth terminal or earth cable of this unit (AC Servo driver) and a motor.
   Use larger earth cables as much as possible for JIS Class 3 or better grounding.
   [Electric shock may occur.]

③ Before relocation, wiring, maintenance, or inspection, shut off the power and make sure using a tester that there is no residual voltage between the DC main circuits (DC bus inside the device), or conduct the job pausing for three minutes after the power-off.
   If being used as a control power separation type, never fail to shut off the control power after cutting off the main power.
   [Electric shock may occur.]

④ Do not damage, force cables excessively, put any heavy thing on cables and nip cables.
   [Electric shock may occur.]

⑤ Never touch the rotating section of running motor.
   [Injury may occur.]

⚠ Caution

① Use a specified motor and this unit.
   [Fire or failure may occur.]

② Never use in the atmosphere such as water splash, corrosive or low plashing point gas nor place close to flammable goods.
   [Fire or failure may occur.]

③ Since temperature of a motor, this unit and peripherals raises quite high, do not touch them.
   [Burn may occur.]

④ In supplying power or for a while after shutting power off, since a radiator,
   Regenerative resistor, a motor, etc. could be very hot, do not touch them.
   [Burn may occur.]

⃠ Prohibition

① Never apply the withstand voltage test and insulation-resistance test (Mega test) to this device.
   [Failure may occur.]

[Receiving and checking of packages]

⚠ **Caution**
① When you receive ordered units, please check the contents (model, output rating etc.) If wrong thing is found or quantity is wrong, please do not use them and inform the status to our sales man. 　**[Electric shock, injury, damage, fire or failure may occur.]** ② If packages of our products are broken, do not unpack them and inform the fact to our sales man. 　**[Electric shock, injury, damage, fire or failure may occur.]**

[Storage]

🚫 **Prohibition**
① Do not store units in a place of raining, water dripping, and harmful gas/ liquid. 　**[Failure may occur.]**

❗ **Compulsion**
① Store the product in a place of no direct sunlight or under the controlled temperature/humidity environment within the range specified in this manual. 　**[Failure may occur.]** ② When the storage period after purchase exceeds three years, absolutely contact our salesman. 　**[Failure may occur.]**

[Transportation]

⚠ **Caution**
① Do not hold a cable and a motor shaft during transporting units. 　**[Injury or failure may occur]**

❗ **Compulsion**
① Complying with the suggestion, do not transport excessive amount break whole packages. 　**[Injury or failure may occur]**

[Installation]

⚠ Caution
① Do not climb or put any heavy thing on this unit.   **[Injury or failure may occur]**
② Do not block the ventilation hole (exhaust/intake) and make sure no foreign substances get into the hole.   **[Fire may occur]**
③ Be sure to install this unit to the specified direction.   **[Fire or failure may occur]**
④ Internal side of the control panel or other equipments should be kept at a specific distance from this unit.   **[Fire or failure may occur]**
⑤ Never apply heavy shock to this unit.   **[This unit may be damaged]**
⑥ Conduct proper attachment suitable for output or weight of this unit.   **[This unit may be damaged]**
⑦ Attach this unit to a non-flammable thing as metal.   **[Fire may occur]**

[Wiring]

⚠ Caution
① Be sure to conduct correct wiring.   **[Running away a motor, burning of a motor, injury or fire may occur]**

② To avoid the impact of noise on this device, use cables having specified length and specified features (shielded, twisted, etc.).
  Use separate control I/O cables of this unit from other power supply cables, and power line.
  [Running away of a motor, injury or machine damage may occur]

③ To avoid electric shock and noise influence, be sure to make proper grounding (earth).   **[Running away of a motor, electric shock, injury or machine damage may occur]**

[Operation and Run]

⚠ **Caution**
① Protect the motor by installing an emergency stop circuit or similar alternative that is equipped with a thermostat. If the motor does not have a thermostat, then attach a protective function additionally. **[injury or fire may occur]**
② Make sure that the power specifications are correct. **[Injury , fire or machine damage may occur]**
③ Before conduct test run, separate a motor from its machine system and fix it to an adequate place and confirm the motion, then connect the motor to the machine. **[Injury or machine damage may occur]**
④ Since excess adjustment may cause this unit unstable, avoid this situation. **[Injury or machine damage may occur]**
⑤ When the alarm happened, reset first, remove the cause thoroughly, and then restart. **[Injury or machine damage may occur]**
⑥ When power recovers from black out status, since sudden re-start may occur, do not approach the machine. （Machine system design shall be considered to maintain safety of workers against re-start.） **[Injury may occur]**

🚫 **Prohibition**
① Do not supply power in motor turning or vibrating status. **[Running away of a motor, injury or machine damage may occur]**
② The braking function in the brake-incorporated-motor is to keep the position of the machine. Thus, do not apply this brake as a stopping device to brake or to ensure the machine safeness. **[Injury or machine damage may occur]**

❗ **Compulsion**
① Stop the operations immediately and set emergency stop circuit outside in order to stop the power supply. **[Injury or machine damage may occur]**

🚫 **Prohibition**
① Overhaul/ repair shall be conducted only by us or suggested shop by us. **[Failure may occur.]**

Contents

Chapter 1: Outlines

1-1 Features

This device is in conformity with the open field network CC-Link Ver. 1.10, and thus, network connection with other products produced by other makers is possible.
In this network connection, this device acts as the remote device station and the remote control is enabled from the master station (sequence control device, etc.) to this device.
In the remote control, the master station can control this device in the following operations.

① Most of the input/output signal control of this device is possible.
As for the control ABLE/UNABLE with the CC-Link, refer to [Appendix 6: Control ABLE/UNABLE list for CC-Link input/output control signals].

② Refreshed-data writing to this device is always possible. (Master station -> this dive)
Generally, it is allocated to the indirect data writing that does not retain data.

③ Refreshed-data readout from this device is always possible. (Master station <- this dive)
Generally, it is allocated to the speed/current position/deviation readout.

④ Data writing to this device is possible only when the writing is required. (Master station -> this device); or,
Data readout to this device is possible only when the readout is required. (Master station <- this device); generally,
It is used to write into the indirect data for data storage or into the parameter data; or,
It is used to readout multiple data.
In this writing/reading, handshake is conducted.

1-2 Type

Type of NCS-FI/FS for CC-Link is as follows.
Example) NCS-FI16MA-801A
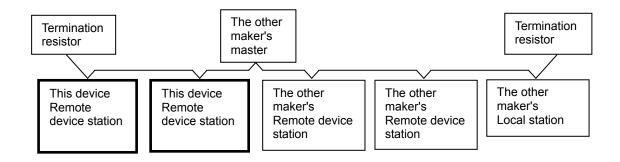
When this digit is [6], it is the NCS-FI/FS device that copes with CC-Link.

1-3 System configuration

1-3-1 CC-Link system configuration

System configuration by the CC-Link connection is as follows.
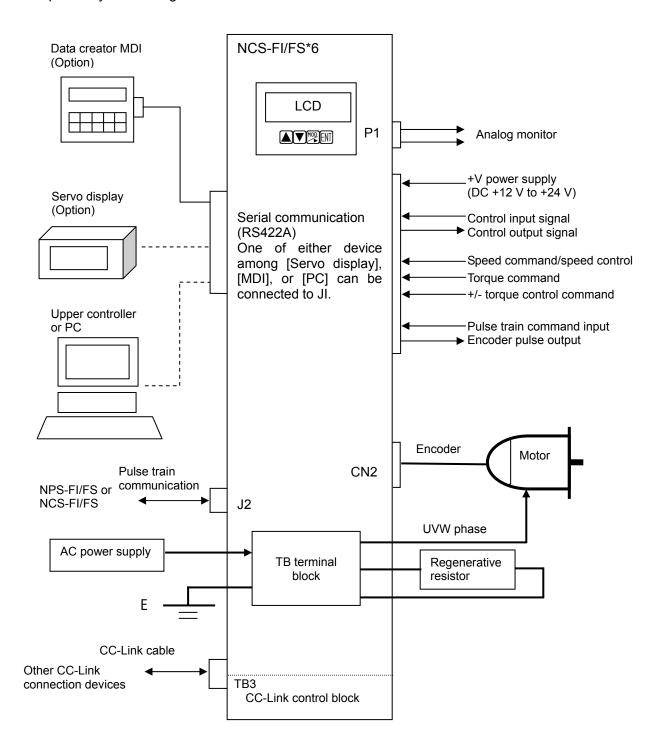
This device becomes a 4-station-occupied remote device station.
The master station is a device that implements data collection and data distribution on the CC-Link circuit.
The remote device station and local station are the target devices to which data collection and data distribution of the master station are implemented on the CC-Link circuit.
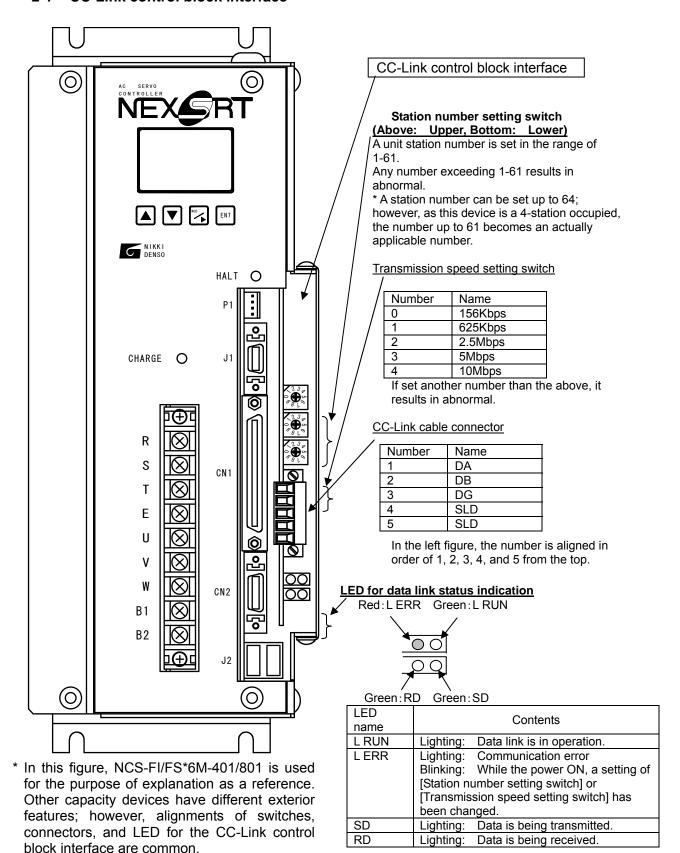
1-3-2 Device system configuration

Peripheral system configuration of this device is as follows.
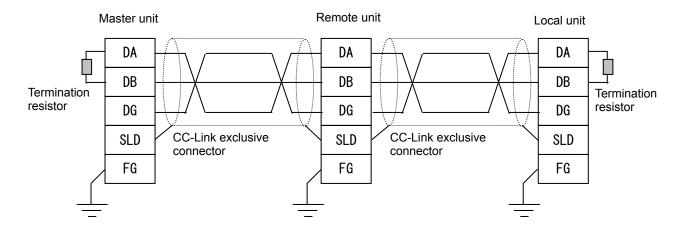
Chapter 2: CC-Link Interface

2-1   CC-Link control block interface

CC-Link control block interface

Station number setting switch
(Above: Upper, Bottom: Lower)
A unit station number is set in the range of
1-61.
Any number exceeding 1-61 results in
abnormal.
* A station number can be set up to 64;
however, as this device is a 4-station occupied,
the number up to 61 becomes an actually
applicable number.

Transmission speed setting switch

Number	Name
0	156Kbps
1	625Kbps
2	2.5Mbps
3	5Mbps
4	10Mbps

If set another number than the above, it
results in abnormal.

CC-Link cable connector

Number	Name
1	DA
2	DB
3	DG
4	SLD
5	SLD

In the left figure, the number is aligned in
order of 1, 2, 3, 4, and 5 from the top.

LED for data link status indication
Red：L ERR   Green：L RUN

Green：RD   Green：SD

LED name	Contents
L RUN	Lighting: Data link is in operation.
L ERR	Lighting: Communication error Blinking: While the power ON, a setting of [Station number setting switch] or [Transmission speed setting switch] has been changed.
SD	Lighting: Data is being transmitted.
RD	Lighting: Data is being received.

* In this figure, NCS-FI/FS*6M-401/801 is used
for the purpose of explanation as a reference.
Other capacity devices have different exterior
features; however, alignments of switches,
connectors, and LED for the CC-Link control
block interface are common.

2-2 Wiring

CC-Link connection is shown as below.

- For connection, absolutely use the CC-Link exclusive cable.
- Either termination resistor in the below two is used depending on a kind of applied cable.

Termination resistor	Applied cable
110Ω	Ver. 1.10 compatible CC-Link exclusive cable
	CC-Link exclusive cable
130Ω	CC-Link exclusive high-performance cable

- One each of the following resistors is attached to this device.
    110Ω 1/2 W (Brown brown brown)
    130Ω 1/2 W (Brown orange brown)
  If this device is allocated at the edge of the system, connect the termination resistor as an accessory between [DA-DB] in accordance with the cable applied.

2-3 Input/output Data

2-3-1 Memory mapped profile

(1) Machine type: NCS-FI/FS16
   Occupied station numbers: 4 stations
   RX,RY

Slave→Master		Master→Slave	
Device No.	Signal name	Device No.	Signal name
RXn0	Alarm (ALM)	RYn0	Reset (RST)
RXn1	Warning (WNG)	RYn1	Emergency stop (EMG)
RXn2	Servo ready (RDY)	RYn2	Servo ON (SON)
RXn3	Speed zero (SZ)	RYn3	Automatic start (PST)
RXn4	Positioning finish (PN)	RYn4	Hold (HLD)
RXn5	Rough matching (PRF)	RYn5	Deviation clear (CLR)
RXn6	Brake release (BRK)	RYn6	Forward direction over travel (FOT)
RXn7	Torque limited (LIM)	RYn7	Reverse direction over travel (ROT)
RXn8	Program end (PEND)	RYn8	Address assignment 1 (SS1)
RXn9	Auto-run ready (PRDY)	RYn9	Address assignment 2 (SS2)
RXnA	In manual mode (MMOD)	RYnA	Address assignment 3 (SS3)
RXnB	In home position return mode (HMOD)	RYnB	Address assignment 4 (PS4)
RXnC	In automatic mode (AMOD)	RYnC	Address assignment 5 (PS5)
RXnD	In pulse train mode (PMOD)	RYnD	Address assignment 6 (PS6)
RXnE	In remote control mode (RMOD)	RYnE	Address assignment 7 (PS7)
RXnF	Spare	RYnF	Address assignment 8 (PS8)
RX(n+1)0	General purpose output 1 (OUT1)	RY(n+1)0	
RX(n+1)1	General purpose output 2 (OUT2)	RY(n+1)1	
RX(n+1)2	General purpose output 3 (OUT3)	RY(n+1)2	
RX(n+1)3	General purpose output 4 (OUT4)	RY(n+1)3	Spare
RX(n+1)4	General purpose output 5 (OUT5)	RY(n+1)4	
RX(n+1)5	General purpose output 6 (OUT6)	RY(n+1)5	
RX(n+1)6	General purpose output 7 (OUT7)	RY(n+1)6	
RX(n+1)7	General purpose output 8 (OUT8)	RY(n+1)7	
RX(n+1)8		RY(n+1)8	Forward direction jog (FJ)
RX(n+1)9		RY(n+1)9	Reverse direction jog (RJ)
RX(n+1)A	Spare	RY(n+1)A	Spare
RX(n+1)B		RY(n+1)B	
RX(n+1)C		RY(n+1)C	Speed override 1 (OR1)
RX(n+1)D		RY(n+1)D	Speed override 2 (OR2)
RX(n+1)E	Soft limit switch A (SLSA)	RY(n+1)E	Speed override 3 (OR3)
RX(n+1)F	Soft limit switch B (SLSB)	RY(n+1)F	Speed override 4 (OR4)
RX(n+2)0	M output 01 (M01)	RY(n+2)0	Mode select 1 (MD1)
RX(n+2)1	M output 02 (M02)	RY(n+2)1	Mode select 2 (MD2)
RX(n+2)2	M output 04 (M04)	RY(n+2)2	Jog speed selection (JOSP)
RX(n+2)3	M output 08 (M08)	RY(n+2)3	Torque control (TL)
RX(n+2)4	M output 10 (M10)	RY(n+2)4	Specific pulse input prohibition (CIH)
RX(n+2)5	M output 20 (M20)	RY(n+2)5	Spare
RX(n+2)6	M output 40 (M40)	RY(n+2)6	External trigger (TRG) *1
RX(n+2)7	M output 80 (M80)	RY(n+2)7	
RX(n+2)8	Spare	RY(n+2)8	Spare
RX(n+2)9		RY(n+2)9	

RX(n+2)A	Spare	RY(n+2)A	Spare
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	M strobe (MSTB)	RY(n+2)E	
RX(n+2)F	Spare	RY(n+2)F	
RX(n+3)0		RY(n+3)0	
RX(n+3)1		RY(n+3)1	M finish (MFIN)
RX(n+3)2		RY(n+3)2	Spare
RX(n+3)3		RY(n+3)3	Block stop (BSTP)
RX(n+3)4		RY(n+3)4	Program cancel (PCAN)
RX(n+3)5		RY(n+3)5	External auto-start prohibition (EPIH)
RX(n+3)6		RY(n+3)6	Compulsory brake (BRON)
RX(n+3)7		RY(n+3)7	Speed gain selection (GSEL)
RX(n+3)8		RY(n+3)8	Spare
RX(n+3)9		RY(n+3)9	
RX(n+3)A		RY(n+3)A	
RX(n+3)B		RY(n+3)B	
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	Spare	RY(n+4)2	Spare
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	
RX(n+4)A		RY(n+4)A	
RX(n+4)B		RY(n+4)B	
RX(n+4)C		RY(n+4)C	
RX(n+4)D		RY(n+4)D	
RX(n+4)E		RY(n+4)E	
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	

RX(n+5)B	Spare	RY(n+5)B	Spare
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		RY(n+6)5	
RX(n+6)6		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	Reserved	RY(n+7)0	Reserved
RX(n+7)1		RY(n+7)1	
RX(n+7)2		RY(n+7)2	
RX(n+7)3		RY(n+7)3	
RX(n+7)4		RY(n+7)4	
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 *2	RY(n+7)8	Reserved *2
RX(n+7)9	Reserved *2	RY(n+7)9	Reserved *2
RX(n+7)A	Error status flag	RY(n+7)A	Error reset request flag *4
RX(n+7)B	Remote station READY *3	RY(n+7)B	Reserved
RX(n+7)C	Reserved	RY(n+7)C	
RX(n+7)D		RY(n+7)D	
RX(n+7)E	OS definition	RY(n+7)E	OS definition
RX(n+7)F		RY(n+7)F	

*1 External trigger (TRG) signal is valid only when the continuous control command is in operation.

*2 Primarily, it is in the territory for [RX(n+7)8: Initial data process request flag), [RY(n+7)8: Initial data process finish flag], [RX(n+7)9: Initial data setting finish flag], or for [RY(n+7)9: Initial data setting request flag], however, this device does not utilize in its specifications.

*3 It turns ON when the equipment is in the usable conditions or OFF in the occurrence of abnormal.

*4 The error reset request flag becomes the same function as the reset (RST) signal.

(2) Machine type: NCS-FI/FS36
    Occupied station numbers: 4 stations
    RX,RY

Slave→Master		Master→Slave	
Device No.	Signal name	Device No.	Signal name
RXn0	Alarm (ALM)	RYn0	Reset (RST)
RXn1	Warning (WNG)	RYn1	Emergency stop (EMG)
RXn2	Servo ready (RDY)	RYn2	Servo ON (SON)
RXn3	Speed zero (SZ)	RYn3	Automatic start (PST)
RXn4	Positioning finish (PN)	RYn4	Hold (HLD)
RXn5	Rough matching (PRF)	RYn5	Deviation clear (CLR)
RXn6	Brake release (BRK)	RYn6	Forward direction over travel (FOT)
RXn7	Torque limited (LIM)	RYn7	Reverse direction over travel (ROT)
RXn8	Program end (PEND)	RYn8	Address assignment 1 (SS1)
RXn9	Auto-run ready (PRDY)	RYn9	Address assignment 2 (SS2)
RXnA	In manual mode (MMOD)	RYnA	Address assignment 3 (SS3)
RXnB	In home position return mode (HMOD)	RYnB	Address assignment 4 (PS4)
RXnC	In automatic mode (AMOD)	RYnC	Address assignment 5 (PS5)
RXnD	In pulse train mode (PMOD)	RYnD	Address assignment 6 (PS6)
RXnE	In remote control mode (RMOD)	RYnE	Address assignment 7 (PS7)
RXnF	Spare	RYnF	Address assignment 8 (PS8)
RX(n+1)0	General purpose output 1 (OUT1)	RY(n+1)0	Spare
RX(n+1)1	General purpose output 2 (OUT2)	RY(n+1)1	
RX(n+1)2	General purpose output 3 (OUT3)	RY(n+1)2	
RX(n+1)3	General purpose output 4 (OUT4)	RY(n+1)3	
RX(n+1)4	General purpose output 5 (OUT5)	RY(n+1)4	
RX(n+1)5	General purpose output 6 (OUT6)	RY(n+1)5	
RX(n+1)6	General purpose output 7 (OUT7)	RY(n+1)6	
RX(n+1)7	General purpose output 8 (OUT8)	RY(n+1)7	
RX(n+1)8	Run general purpose output 1 (ROUT1)	RY(n+1)8	Forward direction jog (FJ)
RX(n+1)9	Run general purpose output 2 (ROUT2)	RY(n+1)9	Reverse direction jog (RJ)
RX(n+1)A	Run general purpose output 3 (ROUT3)	RY(n+1)A	Spare
RX(n+1)B	Run general purpose output 4 (ROUT4)	RY(n+1)B	
RX(n+1)C	Spare	RY(n+1)C	Speed override 1 (OR1)
RX(n+1)D	1-cycle finish output (ROUT6)	RY(n+1)D	Speed override 2 (OR2)
RX(n+1)E	In-synchronization output (ROUT7)	RY(n+1)E	Speed override 3 (OR3)
RX(n+1)F	Standby position output (ROUT8)	RY(n+1)F	Speed override 4 (OR4)
RX(n+2)0	M output 01 (M01)	RY(n+2)0	Mode select 1 (MD1)
RX(n+2)1	M output 02 (M02)	RY(n+2)1	Mode select 2 (MD2)
RX(n+2)2	M output 04 (M04)	RY(n+2)2	Jog speed selection (JOSP)
RX(n+2)3	M output 08 (M08)	RY(n+2)3	Torque control (TL)
RX(n+2)4	M output 10 (M10)	RY(n+2)4	Specific pulse input prohibition (CIH)
RX(n+2)5	M output 20 (M20)	RY(n+2)5	Spare
RX(n+2)6	M output 40 (M40)	RY(n+2)6	
RX(n+2)7	M output 80 (M80)	RY(n+2)7	
RX(n+2)8	Auto-run (PRUN)	RY(n+2)8	
RX(n+2)9	Auto-run ready 1(PRDY1)	RY(n+2)9	

RX(n+2)A	Auto-run ready 2 (PRDY 2)	RY(n+2)A	
RX(n+2)B	Home position return complete (HCMP)	RY(n+2)B	
RX(n+2)C	Master axis speed zero (MSZ)	RY(n+2)C	Spare
RX(n+2)D	Spare	RY(n+2)D	
RX(n+2)E	M strobe (MSTB)	RY(n+2)E	
RX(n+2)F		RY(n+2)F	
RX(n+3)0		RY(n+3)0	Internal master speed select (MSSP)
RX(n+3)1		RY(n+3)1	M finish (MFIN)
RX(n+3)2		RY(n+3)2	Spare
RX(n+3)3		RY(n+3)3	Block stop (BSTP)
RX(n+3)4		RY(n+3)4	Program cancel (PCAN)
RX(n+3)5		RY(n+3)5	External auto-start prohibition (EPIH)
RX(n+3)6		RY(n+3)6	Compulsory brake (BRON)
RX(n+3)7	Spare	RY(n+3)7	Speed gain selection (GSEL)
RX(n+3)8		RY(n+3)8	Detach control input (D11)
RX(n+3)9		RY(n+3)9	Compulsory synchronization end (D12)
RX(n+3)A		RY(n+3)A	Compulsory start (D14)
RX(n+3)B		RY(n+3)B	Master axis select (D18)
RX(n+3)C		RY(n+3)C	Cycle end (D21)
RX(n+3)D		RY(n+3)D	Mark prohibit (D22)
RX(n+3)E		RY(n+3)E	Cut length measurement (D24)
RX(n+3)F		RY(n+3)F	Spare
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		RY(n+4)2	
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	
RX(n+4)A		RY(n+4)A	
RX(n+4)B		RY(n+4)B	
RX(n+4)C		RY(n+4)C	
RX(n+4)D		RY(n+4)D	
RX(n+4)E	Spare	RY(n+4)E	Spare
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	

RX(n+5)B	Spare	RY(n+5)B	Spare
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		RY(n+6)5	
RX(n+6)6		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	Reserved	RY(n+7)0	Reserved
RX(n+7)1		RY(n+7)1	
RX(n+7)2		RY(n+7)2	
RX(n+7)3		RY(n+7)3	
RX(n+7)4		RY(n+7)4	
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	
RX(n+7)D		RY(n+7)D	
RX(n+7)E	OS definition	RY(n+7)E	OS definition
RX(n+7)F		RY(n+7)F	

*1 Primarily, it is in the territory for [RX(n+7)8: Initial data process request flag), [RY(n+7)8: Initial data process finish flag], [RX(n+7)9: Initial data setting finish flag], or for [RY(n+7)9: Initial data setting request flag], however, this device does not utilize in its specifications.

*2 It turns ON when the equipment is in the usable conditions or OFF in the occurrence of abnormal.

*3 The error reset request flag becomes the same function as the reset (RST) signal.

(3) Machine type: NCS-FI/FS46
     Occupied station numbers: 4 stations
     RX,RY

Slave→Master		Master→Slave	
Device No.	Signal name	Device No.	Signal name
RXn0	Alarm (ALM)	RYn0	Reset (RST)
RXn1	Warning (WNG)	RYn1	Emergency stop (EMG)
RXn2	Servo ready (RDY)	RYn2	Servo ON (SON)
RXn3	Speed zero (SZ)	RYn3	Automatic start (PST)
RXn4	Positioning finish (PN)	RYn4	Hold (HLD)
RXn5	Rough matching (PRF)	RYn5	Deviation clear (CLR)
RXn6	Brake release (BRK)	RYn6	Forward direction over travel (FOT)
RXn7	Torque limited (LIM)	RYn7	Reverse direction over travel (ROT)
RXn8	Program end (PEND)	RYn8	Address assignment 1 (SS1)
RXn9	Auto-run ready (PRDY)	RYn9	Address assignment 2 (SS2)
RXnA	In manual mode (MMOD)	RYnA	Address assignment 3 (SS3)
RXnB	In home position return mode (HMOD)	RYnB	Address assignment 4 (PS4)
RXnC	In automatic mode (AMOD)	RYnC	Address assignment 5 (PS5)
RXnD	In synchronization run mode (PMOD)	RYnD	Address assignment 6 (PS6)
RXnE	In remote control mode (RMOD)	RYnE	Address assignment 7 (PS7)
RXnF	Spare	RYnF	Address assignment 8 (PS8)
RX(n+1)0	General purpose output 1 (OUT1)	RY(n+1)0	Spare
RX(n+1)1	General purpose output 2 (OUT2)	RY(n+1)1	
RX(n+1)2	General purpose output 3 (OUT3)	RY(n+1)2	
RX(n+1)3	General purpose output 4 (OUT4)	RY(n+1)3	
RX(n+1)4	General purpose output 5 (OUT5)	RY(n+1)4	
RX(n+1)5	General purpose output 6 (OUT6)	RY(n+1)5	
RX(n+1)6	General purpose output 7 (OUT7)	RY(n+1)6	
RX(n+1)7	General purpose output 8 (OUT8)	RY(n+1)7	
RX(n+1)8	Spare	RY(n+1)8	Forward direction jog (FJ)
RX(n+1)9		RY(n+1)9	Reverse direction jog (RJ)
RX(n+1)A		RY(n+1)A	Spare
RX(n+1)B		RY(n+1)B	
RX(n+1)C		RY(n+1)C	Speed override 1 (OR1)
RX(n+1)D		RY(n+1)D	Speed override 2 (OR2)
RX(n+1)E	Forward direction in-operation (SLSA)	RY(n+1)E	Speed override 3 (OR3)
RX(n+1)F	Reverse direction in-operation (SLSB)	RY(n+1)F	Speed override 4 (OR4)
RX(n+2)0	M output 01 (M01)	RY(n+2)0	Mode select 1 (MD1)
RX(n+2)1	M output 02 (M02)	RY(n+2)1	Mode select 2 (MD2)
RX(n+2)2	M output 04 (M04)	RY(n+2)2	Jog speed selection (JOSP)
RX(n+2)3	M output 08 (M08)	RY(n+2)3	Torque control (TL)
RX(n+2)4	M output 10 (M10)	RY(n+2)4	Specific pulse input prohibition (CIH)
RX(n+2)5	M output 20 (M20)	RY(n+2)5	Spare
RX(n+2)6	M output 40 (M40)	RY(n+2)6	
RX(n+2)7	M output 80 (M80)	RY(n+2)7	
RX(n+2)8	Spare	RY(n+2)8	
RX(n+2)9		RY(n+2)9	

RX(n+2)A	Spare	RY(n+2)A	Spare
RX(n+2)B		RY(n+2)B	
RX(n+2)C	Master axis speed zero (MSZ)	RY(n+2)C	
RX(n+2)D	Spare	RY(n+2)D	
RX(n+2)E	M strobe (MSTB)	RY(n+2)E	
RX(n+2)F		RY(n+2)F	
RX(n+3)0	Spare	RY(n+3)0	Internal master speed select (MSSP)
RX(n+3)1		RY(n+3)1	M finish (MFIN)
RX(n+3)2		RY(n+3)2	Spare
RX(n+3)3		RY(n+3)3	Block stop (BSTP)
RX(n+3)4		RY(n+3)4	Program cancel (PCAN)
RX(n+3)5		RY(n+3)5	External auto-start prohibition (EPIH)
RX(n+3)6		RY(n+3)6	Compulsory brake (BRON)
RX(n+3)7		RY(n+3)7	Speed gain selection (GSEL)
RX(n+3)8		RY(n+3)8	Phase advanced (D11)
RX(n+3)9		RY(n+3)9	Phase delayed (D12)
RX(n+3)A		RY(n+3)A	Synchronization data renew permission (D14)
RX(n+3)B		RY(n+3)B	Master axis select (D18)
RX(n+3)C		RY(n+3)C	Synchronization ratio select 1 (D21)
RX(n+3)D		RY(n+3)D	Synchronization ratio select 2 (D22)
RX(n+3)E		RY(n+3)E	Synchronization ratio select 3 (D24)
RX(n+3)F		RY(n+3)F	Synchronization ratio select 4 (D28)
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	Spare	RY(n+4)2	Spare
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	
RX(n+4)A		RY(n+4)A	
RX(n+4)B		RY(n+4)B	
RX(n+4)C		RY(n+4)C	
RX(n+4)D		RY(n+4)D	
RX(n+4)E		RY(n+4)E	
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	

RX(n+5)B	Spare	RY(n+5)B	Spare
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		RY(n+6)5	
RX(n+6)6		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	Reserved	RY(n+7)0	Reserved
RX(n+7)1		RY(n+7)1	
RX(n+7)2		RY(n+7)2	
RX(n+7)3		RY(n+7)3	
RX(n+7)4		RY(n+7)4	
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	
RX(n+7)D		RY(n+7)D	
RX(n+7)E	OS definition	RY(n+7)E	OS definition
RX(n+7)F		RY(n+7)F	

*1 Primarily, it is in the territory for [RX(n+7)8: Initial data process request flag), [RY(n+7)8: Initial data process finish flag], [RX(n+7)9: Initial data setting finish flag], or for [RY(n+7)9: Initial data setting request flag], however, this device does not utilize in its specifications.

*2 It turns ON when the equipment is in the usable conditions or OFF in the occurrence of abnormal.

*3 The error reset request flag becomes the same function as the reset (RST) signal.

(4) Machine type: NCS-FI/FS66
     Occupied station numbers: 4 stations
     RX,RY

Slave→Master		Master→Slave	
Device No.	Signal name	Device No.	Signal name
RXn0	Alarm (ALM)	RYn0	Reset (RST)
RXn1	Warning (WNG)	RYn1	Emergency stop (EMG)
RXn2	Servo ready (RDY)	RYn2	Servo ON (SON)
RXn3	Speed zero (SZ)	RYn3	Automatic start (PST)
RXn4	Positioning finish (PN)	RYn4	Hold (HLD)
RXn5	Rough matching (PRF)	RYn5	Deviation clear (CLR)
RXn6	Brake release (BRK)	RYn6	Forward direction over travel (FOT)
RXn7	Torque limited (LIM)	RYn7	Reverse direction over travel (ROT)
RXn8	Program end (PEND)	RYn8	Address assignment 1 (SS1)
RXn9	Auto-run ready (PRDY)	RYn9	Address assignment 2 (SS2)
RXnA	In manual mode (MMOD)	RYnA	Address assignment 3 (SS3)
RXnB	In home position return mode (HMOD)	RYnB	Address assignment 4 (PS4)
RXnC	In automatic mode (AMOD)	RYnC	Address assignment 5 (PS5)
RXnD	In pulse train mode (PMOD)	RYnD	Address assignment 6 (PS6)
RXnE	In remote control mode (RMOD)	RYnE	Address assignment 7 (PS7)
RXnF	Spare	RYnF	Address assignment 8 (PS8)
RX(n+1)0	General purpose output 1 (OUT1)	RY(n+1)0	
RX(n+1)1	General purpose output 2 (OUT2)	RY(n+1)1	
RX(n+1)2	General purpose output 3 (OUT3)	RY(n+1)2	
RX(n+1)3	General purpose output 4 (OUT4)	RY(n+1)3	Spare
RX(n+1)4	General purpose output 5 (OUT5)	RY(n+1)4	
RX(n+1)5	General purpose output 6 (OUT6)	RY(n+1)5	
RX(n+1)6	General purpose output 7 (OUT7)	RY(n+1)6	
RX(n+1)7	General purpose output 8 (OUT8)	RY(n+1)7	
RX(n+1)8	Electronic clutch stop (FCRP)	RY(n+1)8	Forward direction jog (FJ)
RX(n+1)9	Free curved-line in-operation (FC)	RY(n+1)9	Reverse direction jog (RJ)
RX(n+1)A		RY(n+1)A	Spare
RX(n+1)B	Spare	RY(n+1)B	
RX(n+1)C		RY(n+1)C	Speed override 1 (OR1)
RX(n+1)D		RY(n+1)D	Speed override 2 (OR2)
RX(n+1)E	Soft limit switch A (SLSA)	RY(n+1)E	Speed override 3 (OR3)
RX(n+1)F	Soft limit switch B (SLSB)	RY(n+1)F	Speed override 4 (OR4)
RX(n+2)0	M output 01 (M01)	RY(n+2)0	Mode select 1 (MD1)
RX(n+2)1	M output 02 (M02)	RY(n+2)1	Mode select 2 (MD2)
RX(n+2)2	M output 04 (M04)	RY(n+2)2	Jog speed selection (JOSP)
RX(n+2)3	M output 08 (M08)	RY(n+2)3	Torque control (TL)
RX(n+2)4	M output 10 (M10)	RY(n+2)4	Specific pulse input prohibition (CIH)
RX(n+2)5	M output 20 (M20)	RY(n+2)5	
RX(n+2)6	M output 40 (M40)	RY(n+2)6	
RX(n+2)7	M output 80 (M80)	RY(n+2)7	Spare
RX(n+2)8	Spare	RY(n+2)8	
RX(n+2)9		RY(n+2)9	

RX(n+2)A	Spare	RY(n+2)A	Spare
RX(n+2)B		RY(n+2)B	
RX(n+2)C	Master axis speed zero (MSZ)	RY(n+2)C	
RX(n+2)D	Spare	RY(n+2)D	
RX(n+2)E	M strobe (MSTB)	RY(n+2)E	
RX(n+2)F		RY(n+2)F	
RX(n+3)0	Spare	RY(n+3)0	Internal master speed select (MSSP)
RX(n+3)1		RY(n+3)1	M finish (MFIN)
RX(n+3)2		RY(n+3)2	Spare
RX(n+3)3		RY(n+3)3	Block stop (BSTP)
RX(n+3)4		RY(n+3)4	Program cancel (PCAN)
RX(n+3)5		RY(n+3)5	External auto-start prohibition (EPIH)
RX(n+3)6		RY(n+3)6	Compulsory brake (BRON)
RX(n+3)7		RY(n+3)7	Speed gain selection (GSEL)
RX(n+3)8		RY(n+3)8	Phase advanced (D11)
RX(n+3)9		RY(n+3)9	Phase delayed (D12)
RX(n+3)A		RY(n+3)A	Electronic clutch(D14)
RX(n+3)B		RY(n+3)B	Master axis select (D18)
RX(n+3)C		RY(n+3)C	Cycle end (D21)
RX(n+3)D		RY(n+3)D	Pattern select 1 (D22)
RX(n+3)E		RY(n+3)E	Pattern select 2 (D24)
RX(n+3)F		RY(n+3)F	Pattern select 3 (D28)
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	Spare	RY(n+4)2	Spare
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	
RX(n+4)A		RY(n+4)A	
RX(n+4)B		RY(n+4)B	
RX(n+4)C		RY(n+4)C	
RX(n+4)D		RY(n+4)D	
RX(n+4)E		RY(n+4)E	
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	

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	Spare	RY(n+6)5	Spare
RX(n+6)6		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		RY(n+7)4	
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	
RX(n+7)D		RY(n+7)D	
RX(n+7)E	OS definition	RY(n+7)E	OS definition
RX(n+7)F		RY(n+7)F	

*1 Primarily, it is in the territory for [RX(n+7)8:　Initial data process request flag), [RY(n+7)8: Initial data process finish flag], [RX(n+7)9:　Initial data setting finish flag], or for [RY(n+7)9:　Initial data setting request flag], however, this device does not utilize in its specifications.

*2 It turns ON when the equipment is in the usable conditions or OFF in the occurrence of abnormal.

*3 The error reset request flag becomes the same function as the reset (RST) signal.

(5) All models are common

RWr,RWw

Slave→Master		Master→Slave	
Address	Contents	Address	Contents
RWrn	Alarm/Warning No.	RWwn	Write request/Read request data number
RWrn+1	Spare	RWwn+1	Spare
RWrn+2	Read request readout data Source of readout is specified by RWwn.　(Lower)	RWwn+2	Write request write data Object of writing is specified by RWwn.　(Lower)
RWrn+3	Read request readout data Source of readout is specified by RWwn.　(Upper)	RWwn+3	Write request write data Object of writing is specified by RWwn.　(Upper)
RWrn+4	Always refresh Readout data 1 (Lower)	RWwn+4	Always refresh Write data 1 (Lower)
RWrn+5	Always refresh Readout data 1 (Upper)	RWwn+5	Always refresh Write data 1 (Upper)
RWrn+6	Always refresh Readout data 2 (Lower)	RWwn+6	Always refresh Write data 2 (Lower)
RWrn+7	Always refresh Readout data 2 (Upper)	RWwn+7	Always refresh Write data 2 (Upper)
RWrn+8	Always refresh Readout data 3 (Lower)	RWwn+8	Always refresh Write data 3 (Lower)
RWrn+9	Always refresh Readout data 3 (Upper)	RWwn+9	Always refresh Write data 3 (Upper)
RWrn+A	Always refresh Readout data 4 (Lower)	RWwn+A	Always refresh Write data 4 (Lower)
RWrn+B	Always refresh Readout data 4 (Upper)	RWwn+B	Always refresh Write data 4 (Upper)
RWrn+C	Always refresh Readout data 5 (Lower)	RWwn+C	Spare
RWrn+D	Always refresh Readout data 5 (Upper)	RWwn+D	
RWrn+E	Always refresh Readout data 6 (Lower)	RWwn+E	
RWrn+F	Always refresh Readout data 6 (Upper)	RWwn+F	

*   As for the always refresh readout data, source of reading for write data, and for the object of writing, refer to [Appendix 3:　A list of parameters for CC-Link].

2-3-2 Input/Output signal

Used interface
RX: Remote input
RY: Remote output

① Signal specifications of RX and RY comply with the remote input/output signal of the standard NCS-FI/FS device.
This signal is the input/output observed from the master station.
In the other instruction manuals, the input/output signals are the ones that are observed from this device.   Therefore, relations of the input/output in this manual are reversed when comparing with other explanations on other manuals.

② Allocation of the remote input/output signals that are effective in the local mode and remote mode can be switched, in the remote input/output signals.
Remote signal effective in the local mode: Parameter P516 and P518 specify the allocation.
Remote signal effective in the remote mode: Parameter P517 and P519 specify the allocation.
In the input/output signals that cannot be allocated by the above parameters from P516 to P519, the remote input/output signals are always effective.

2-3-3 Always refresh data read/write

Used interface
RWr: Always refresh readout data
RWw: Always refresh write data

① Always data write and data read are conducted between this device and the master station.
Parameters from P720 to P729 specify the write object data to this device and the readout source data from this device.

② Data number specified by the parameters from P720 to P729 specify R device or D device following the [Chapter 6:   Data Area] in the Volume of communication protocols.
▪ When setting the data number of D device, set [0] for the 5th digit and the D device number for the 4th to the 1st digits.
▪ When setting the data number of R device, set [1] for the 5th digit and the R device number for the 4th to the 1st digits.
Example) In the D0064 (Absolute current position) assignment, set [00064] as the data number.
Example) In the R3716 (Indirect data 58) assignment, set [13716] as the data number.

③ When set [21000] or greater to the parameters from P720 to P723, writing of the always refresh write data is conducted to the dummy area (00678).   By setting [0], the always refresh write function with each parameter becomes invalid.   If the function becomes invalid, write process is not conducted.

④ When set [21000] or greater to the parameters from P724 to P729, reading of the always refresh read data is conducted from the dummy area (00678).

2-3-4 Write request data write/Read request data readout

Used interface

    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 readout data
    RWwn: Write request/Read request data number
    RWwn+2, 3: Write request write data
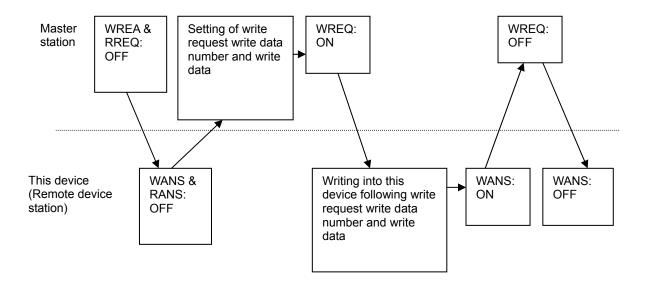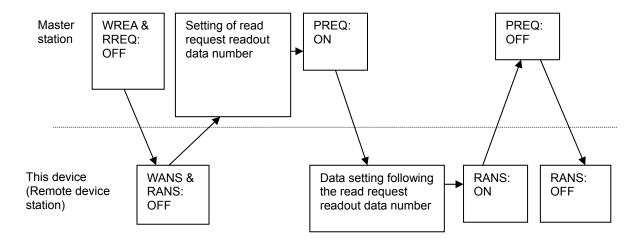
①   Between this device and the master station, data write or data readout is conducted only in the event of write request or only in the event of data readout request.

②   Data number specified by the write request data number in the write request or by the read request data number in the read request is set in the same method as the data number of always refresh data read/write.

③   In the write request data write, data write is conducted in the following handshake.

④   In the read request data readout, data readout is conducted in the following handshake.

Appendix 1: Specifications and setting information

- CC-Link specifications

Item	Contents					
Station type	Remote device station					
CC-Link version	1.10					
Communication speed	10M/5M/2.5M/625K/156K bps (Selectable by switching)					
Communication method	Polling method					
Synchronization method	Frame synchronization method					
Coding method	NRZI method					
Transmission type	Bus format (EIA RS485 compatible)					
Transmission format	HDLC compatible					
Error control method	CRC (X16+X12+X5+1)					
Number of occupied stations	4 stations					
Station number	Specify in the range of 1-61.　(Selectable by switching) * Station number is effective up to 64; however, practically it is up to 61 because this device is the 4-station occupied.					
Connecting cable	CC-Link exclusive cable					
Maximum cable total extension and cable length between stations	Communication speed	156kbps	625kbps	2.5Mbps	5Mbps	10Mbps
	Cable length between stations	More than 20 cm	More than 20 cm	More than 20 cm	More than 20 cm	More than 20 cm
	Maximum transmission distance	1200m	900m	400m	160m	100m

- Setting information

Item	Contents
Maker code	Nikki Denso:　0310H
Machine type code	Servo:　21H
Software version	Each up-version changes the number from version A (01H) to B (02H), C (03H), and to the succeeding number.

Appendix 2: A list of alarms/warnings for CC-Link

Name / Indication	Contents	Operation when happened output signal status	Releasing method Releasing method
CC-Link SW setting errors ALM. □ □ NET □ ERR Alarm code: 114	Errors in the CC-Link switch setting conditions Following errors were detected. ① Station number switch setting errors: 0 or more than 62 were set. ② Baud rate switch setting errors: Another digit excluding 0-4 was set.	Motor torque free Alarm ON Warning OFF Servo ready OFF Brake release OFF	After changing the switch set, turn on the power again.
CC-Link transmission abnormal ALM. □ NET □ □ OFF Alarm code: 111	Abnormal in the CC-Link transmission status: Following abnormal was detected. ① Time over error	Motor stopped suddenly, and then became torque free Alarm ON Warning OFF Servo ready OFF Brake release OFF	① Turn on the power again. ② Reset signal input
CC-Link communication standby warning WNG. □ NET □ NORDY Warning code: 112	CC-Link communication has not been started. Following errors were detected. ① CC-Link master device does not conduct CC-Link communication. ② CC-Link cable connection failures or wiring errors ③ Station number setting dose not match. ④ Baud rate setting dose not match.	Current operation continued Alarm OFF Warning ON Servo ready ON Brake release ON	Release detected warnings.
CC-Link SW change warning WNG. □ □ □ NET SW Warning code: 124	Setting conditions of the station number setting switch or transmission speed setting switch for the CC-Link have been changed from the original conditions at the power on.	Current operation continued Alarm OFF Warning ON Servo ready ON Brake release ON	Return the switches to the original conditions when power is on.

Appendix 3: A list of parameters for CC-Link

Parameter No.	Parameter name	Initial value	Function by CC-Link
P516	In Local, external input invalid select 1	033554238	In the local mode, it selects external output signal to be invalid. The invalid output signal can be controlled by the remote output signal of CC-Link. In the initial value, all but excluding FOT and ROT are to be controlled by the remote output signal.
P517	In Remote, external input valid select 1	000000192	In the remote mode, it selects the external output signal to be valid. Disregarding the valid/invalid condition of this parameter, it is possible to control by the remote output signal of CC-Link. The valid external output signal and remote output signal of CC-Link are controlled by logical-add. In the initial value, the external output signal is valid with FOT and ROT.

Setting of P516
According to the bit position/signal corresponding list as shown below, it sets a digit (Decimal number). In this digit, a bit that corresponds to the external output signal to be invalid becomes 1.
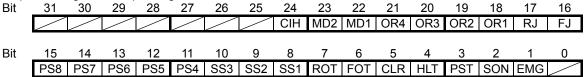
    Example) When making CLR and EMG signals invalid
    22H (Hexadecimal number) -> 34 (Decimal number) is set.

Similarly to P516, set a digit to P517. In this digit, a bit that corresponds to the external output signal to be valid becomes 1.

Bit position/signal corresponding list

Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
								CIH	MD2	MD1	OR4	OR3	OR2	OR1	RJ	FJ

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	PS8	PS7	PS6	PS5	PS4	SS3	SS2	SS1	ROT	FOT	CLR	HLT	PST	SON	EMG	
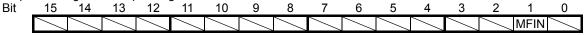
Parameter No.	Parameter name	Initial value	Function by CC-Link
P518	In Local, external input invalid select 2	000000002	In the local mode, it selects external output signal to be invalid. The invalid output signal can be controlled by the remote output signal of CC-Link. In the initial value, all but excluding FOT and ROT are to be controlled by the remote output signal.
P519	In Remote, external input valid select 1	000000000	In the remote mode, it selects the external output signal to be valid. Disregarding the valid/invalid condition of this parameter, it is possible to control by the remote output signal of CC-Link. The valid external output signal and remote output signal of CC-Link are controlled by logical-add. In the initial value, the external output signal is valid with FOT and ROT.

Setting of P518
According to the bit position/signal corresponding list as shown below, it sets a digit (Decimal number). In this digit, a bit that corresponds to the external output signal to be invalid becomes 1.

Similarly to P518, set a digit to P519. In this digit, a bit that corresponds to the external output signal to be valid becomes 1.

Bit position/signal corresponding list

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
															MFIN	

Parameter No.	Parameter name	Initial value / setting range	Function by CC-Link
P720	SQB write data 1	13700 / 00000 ～ 29999	It specifies the writing object data number of this device when writing the data that was set in the always refresh write data 1 of the remote register of CC-Link to this device. In the initial value, it writes into the indirect data 50 of this device.
P721	SQB write data 2	13702 / 00000 ～ 29999	It specifies the writing object data number of this device when writing the data that was set in the always refresh write data 1 of the remote register of CC-Link to this device. In the initial value, it writes into the indirect data 51 of this device.
P722	SQB write data 3	13704 / 00000 ～ 29999	It specifies the writing object data number of this device when writing the data that was set in the always refresh write data 1 of the remote register of CC-Link to this device. In the initial value, it writes into the indirect data 52 of this device.
P723 *1	SQB write data 4	13706 / 00000 ～ 29999	It specifies the writing object data number of this device when writing the data that was set in the always refresh write data 1 of the remote register of CC-Link to this device. In the initial value, it writes into the indirect data 53 of this device. In the NCS-FI/FS66, this parameter becomes invalid.

P720-P723 common contents
① When set [21000] or greater to each parameter, writing of the always refresh write data is made into the dummy area (00678).
② When set [0] to each parameter, writing function of always refresh write data corresponding to that parameter becomes invalid. When this function becomes invalid, writing process is not conducted.
③ Data number follows the below descriptions referring to the volume of communication protocols [Chapter 6:
▪ When specifies the data number of D device it becomes [0] for the 5th digit, and digits corresponding to D device becomes value for the 4th-1st digits.
▪ When specifies the data number of R device it becomes [1] for the 5th digit, and digits corresponding to R device for becmes the valu 4th-1st digits.

*1 The writing object of the always refresh write data 4 of NCS-FI/FS66 is fixed to the indirect data 68.

Parameter No.	Parameter name	Initial value / setting range	Function by CC-Link
P724	SQB readout data 1	13708	It specifies the readout object data number of this device, when readout the data that was set in the always refresh readout data 1 of the remote register of CC-Link from this device. In the initial value, it reads the indirect data 54 of this device.
		00000 ～ 29999	
P725	SQB readout data 2	13710	It specifies the readout object data number of this device, when readout the data that was set in the always refresh readout data 1 of the remote register of CC-Link from this device. In the initial value, it reads the indirect data 55 of this device.
		00000 ～ 29999	
P726	SQB readout data 3	13712	It specifies the readout object data number of this device, when readout the data that was set in the always refresh readout data 1 of the remote register of CC-Link from this device. In the initial value, it reads the indirect data 56 of this device.
		00000 ～ 29999	
P727	SQB readout data 4	13714	It specifies the readout object data number of this device, when readout the data that was set in the always refresh readout data 1 of the remote register of CC-Link from this device. In the initial value, it reads the indirect data 57 of this device.
		00000 ～ 29999	
P728	SQB readout data 5	00064	It specifies the readout object data number of this device, when readout the data that was set in the always refresh readout data 1 of the remote register of CC-Link from this device. With the initial value, it reads out the absolute current position of this device.
		00000 ～ 29999	
P729	SQB readout data 6	00042	It specifies the readout object data number of this device, when readout the data that was set in the always refresh readout data 1 of the remote register of CC-Link from this device. With the initial value, it reads out the absolute current position of this device.
		00000 ～ 29999	

P724-P729 common contents
① When set [21000] or greater to each parameter, readout of the always refresh readout data is made into the dummy area (00678).
② Data number follows the below descriptions referring to the volume of communication protocols [Chapter 6:
▪ When specifies the data number of D device, [0] for the 5th digit, and digits corresponding to D device number for the 4th-1st digits.
▪ When specifies the data number of R device, [1] for the 5th digit, and digits corresponding to R device for the 4th-1st digits.
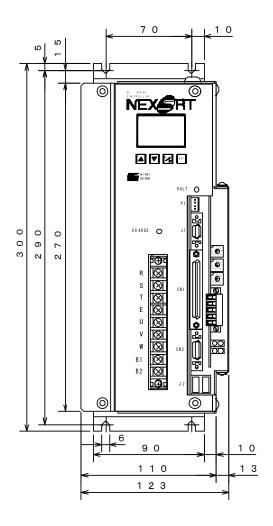
5
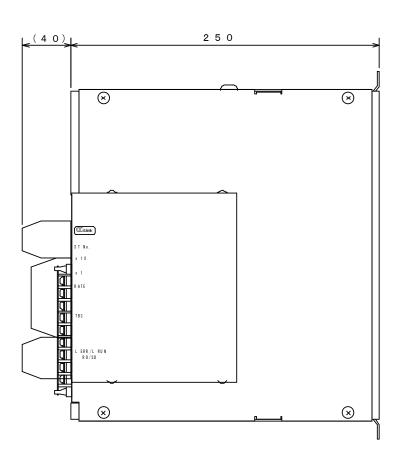
Appendix 4: Self-diagnosis for CC-Link

Diagnosis No.	LCD indication when running	Diagnosis contents
Switch input 1 check DG23 [___SW.IN1]	DG23 ▪▪	When adopting the CC-Link options, it indicates setting conditions of the station number setting switches that exist on the CC-Link control block interface. Indication is the BCD display for the switch in two digits.
Switch input 2 check DG24 [___SW.IN2]	DG24 ■ ■ ■ ■ ■ ■ Transmission speed setting conditions Occupied station number setting conditions	When adopting the CC-Link options, it indicates setting conditions in bits. The setting conditions are for the transmission speed setting switch that exists on the CC-Link control block interface and for the number of occupied stations. *table below*

Transmission speed setting conditions				Switch setting
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
:	:	:	:	:
:	:	:	:	:
1	0	0	1	9

Occupied station number setting conditions		Number of occupied stations
0	0	1 station
0	1	2 station
1	0	3 station
1	1	4 station

*   This device is fixed to the 4-station occupied; thus, the occupied station number setting conditions are always [4 stations].
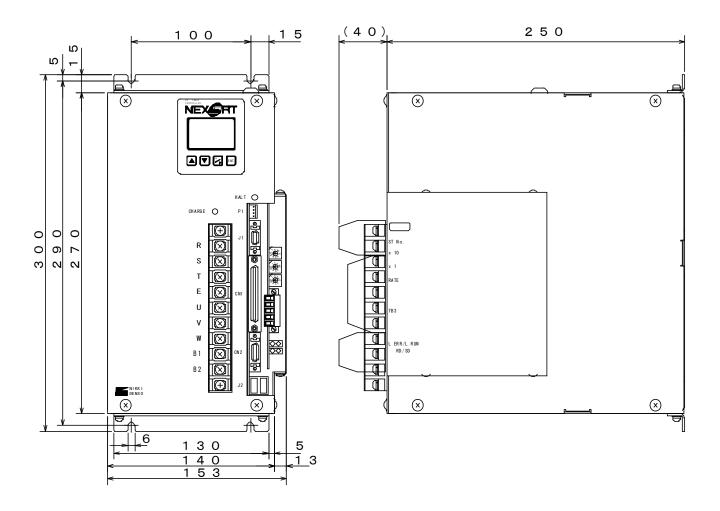
Appendix 5: Exterior measurements

NCS-FI/FS*6M-401/801 with CC-Link
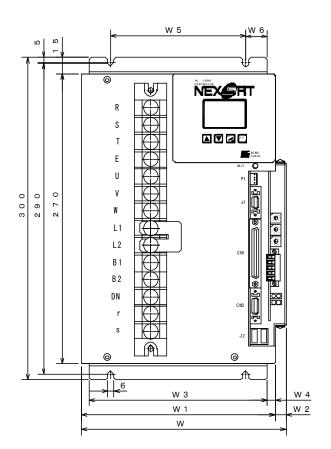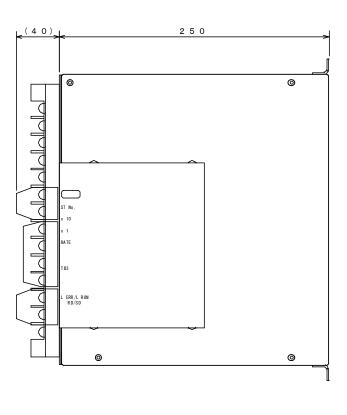
NCS-FI/FS*6M-122/242/402 with CC-Link
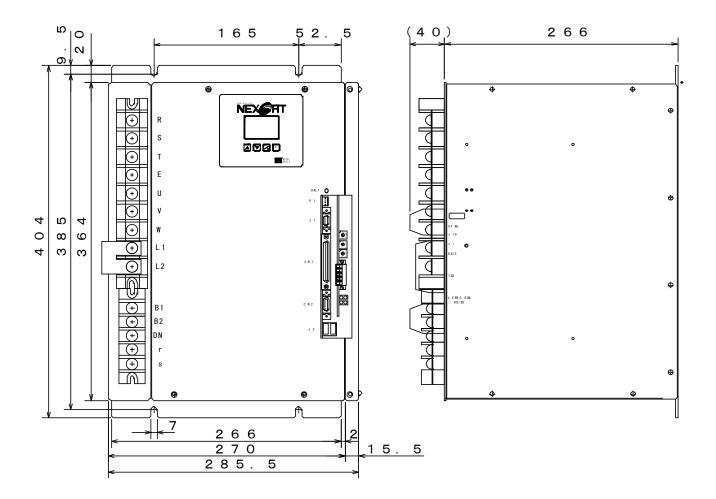
NCS-FI/FS*6M-752/113 with CC-Link
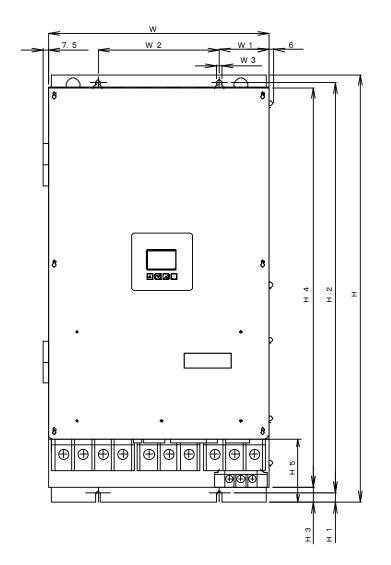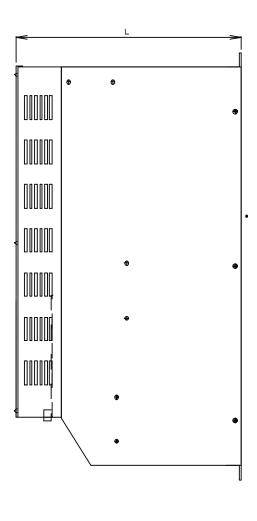
Power supply capacity type	W	W1	W2	W3	W4	W5	W6
752	193	180	13	165	7.5	125	20
113	233	220	13	165	30	125	20

9

NCS-FI/FS*6M-153
NCS-FI*6M-113/153 with CC-Link

R
S
T
E
U
V
W
L1
L2

B1
B2
DN
r
s

HALT
P1
J1

CN1

CN2

J2

ST No.
x10
x1
RATE

TB3

L ERR/L RUN
RD/SD

165   52.5
(40)   266

9.5
20

404
385
364

7
266   2
270   15.5
285.5

NCS-FI/FS*6M-223/303/373 with CC-Link

Power supply capacity type	H	H1	H2	H3	H4	H5	W	W1	W2	W3	W4	W5	L
223 303	580	11	558	20	540	85	300	67.5	165	7	15	270	305
373	700	11	678	20	660	120	450	95	260	9	41	270	330

Appendix 6: Control ABLE/UNABLE list for CC-Link input/output control signals

(1) NCS-FI/FS16

A list to know if the CC-Link remote input and remote output can control the input/output control signals: ABLE/UNABLE List

Output control signal			Input control signal		
Signal name	Signal	ABLE /UNABLE	Signal name	Signal	ABLE /UNABLE
Reset	RST	ABLE	Alarm	ALM	ABLE
Emergency stop	EMG		Warning	WNG	
Servo ON	SON		Servo ready	RDY	
Automatic start	PST		Speed zero	SZ	
Hold	HLD		Positioning finish	PN	
Deviation clear	CLR		Rough matching	PRF	
Forward direction over travel	FOT		Brake release	BRK	
Reverse direction over travel	ROT		Torque limited	LIM	
Address assignment 1	SS1		Program end	PEND	
Address assignment 2	SS2		Auto-run ready	PRDY	
Address assignment 3	SS3		In manual run mode	MMOD	
Address assignment 4	PS4		In home position return run mode	HMOD	
Address assignment 5	PS5		In automatic run mode	AMOD	
Address assignment 6	PS6		In pulse train run mode	PMOD	
Address assignment 7	PS7		In remote control mode	RMOD	
Address assignment 8	PS8		General purpose output 1	OUT1	
Forward direction jog	F J		General purpose output 2	OUT2	
Reverse direction jog	R J		General purpose output 3	OUT3	
Speed override 1	OR1		General purpose output 4	OUT4	
Speed override 2	OR2		General purpose output 5	OUT5	
Speed override 3	OR3		General purpose output 6	OUT6	
Speed override 4	OR4		General purpose output 7	OUT7	
Mode select 1	MD1		General purpose output 8	OUT8	
Mode select 2	MD2		Soft limit switch A	SLSA	
Jog speed selection	JOSP		Soft limit switch B	SLSB	
Torque control	T L		M output 01	M01	
Specific pulse input prohibition	CIH		M output 02	M02	
M finish	MFIN		M output 04	M04	
Block stop	BSTP		M output 08	M08	
Program cancel	PCAN		M output 10	M10	
External auto-start prohibition	EPIH		M output 20	M20	
Compulsory brake	BRON		M output 40	M40	
Speed gain selection	GSEL		M output 80	M80	
External trigger *1	TRG		M strobe	MSTB	
Remote/Local changeover	PC	UNABLE	Encoder pulse output	EA,EB,EM	UNABLE
Zero point deceleration	ZLS				
Pulse train command	RC,FC				
Torque control command	TL+/-				
Speed command	INH				
Torque command	TQH				

*1 External trigger (TRG) signal is valid only when the continuous control command is in operation.

(2) NCS-FI/FS36
A list to know if the CC-Link remote input and remote output can control the input/output control signals: ABLE/UNABLE List

Output control signal			Input control signal		
Signal name	Signal	ABLE /UNABLE	Signal name	Signal	ABLE /UNABLE
Reset	RST	ABLE	Alarm	ALM	ABLE
Emergency stop	EMG		Warning	WNG	
Servo ON	SON		Servo ready	RDY	
Automatic start	PST		Speed zero	SZ	
Hold	HLD		Positioning finish	PN	
Deviation clear	CLR		Rough matching	PRF	
Forward direction over travel	FOT		Brake release	BRK	
Reverse direction over travel	ROT		Torque limited	LIM	
Address assignment 1	SS1		Program end	PEND	
Address assignment 2	SS2		Auto-run ready	PRDY	
Address assignment 3	SS3		In manual run mode	MMOD	
Address assignment 4	PS4		In home position return run mode	HMOD	
Address assignment 5	PS5		In automatic run mode	AMOD	
Address assignment 6	PS6		In servo lock mode	PMOD	
Address assignment 7	PS7		In remote control mode	RMOD	
Address assignment 8	PS8		General purpose output 1	OUT1	
Forward direction jog	FJ		General purpose output 2	OUT2	
Reverse direction jog	RJ		General purpose output 3	OUT3	
Speed override 1	OR1		General purpose output 4	OUT4	
Speed override 2	OR2		General purpose output 5	OUT5	
Speed override 3	OR3		General purpose output 6	OUT6	
Speed override 4	OR4		General purpose output 7	OUT7	
Mode select 1	MD1		General purpose output 8	OUT8	
Mode select 2	MD2		M output 01	M01	
Jog speed selection	JOSP		M output 02	M02	
Torque control	TL		M output 04	M04	
Specific pulse input prohibition	CIH		M output 08	M08	
M finish	MFIN		M output 10	M10	
Block stop	BSTP		M output 20	M20	
Program cancel	PCAN		M output 40	M40	
External auto-start prohibition	EPIH		M output 80	M80	
Compulsory brake	BRON		M strobe	MSTB	
Speed gain selection	GSEL		Run general purpose output 1	ROUT1	
Detach control input	D11		Run general purpose output 2	ROUT2	
Compulsory synchronization end	D12		Run general purpose output 3	ROUT3	
Compulsory start	D14		Run general purpose output 4	ROUT4	
Master axis select	D18		1-cycle finish output	ROUT6	
Cycle end	D21		In-synchronization output	ROUT7	
Mark prohibit	D22		Standby position output	ROUT8	
Detach control input	D24		Auto-run	PRUN	
Internal master speed select	MSSP		Auto-run ready 1	PRDY1	
			Auto-run ready 2	PRDY2	
			Home position return complete	HCMP	
			Master axis speed zero (M	MSZ	
Remote/Local changeover	PC	UNABLE	Encoder pulse output	EA,EB,EM	UNABLE
Zero point deceleration	ZLS				
External trigger	TRG				
Master axis pulse line assignment	RC,FC				

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(3) NCS-FI/FS46
A list to know if the CC-Link remote input and remote output can control the input/output control signals: ABLE/UNABLE List

Output control signal			Input control signal		
Signal name	Signal	ABLE /UNABLE	Signal name	Signal	ABLE /UNABLE
Reset	RST	ABLE	Alarm	ALM	ABLE
Emergency stop	EMG		Warning	WNG	
Servo ON	SON		Servo ready	RDY	
Automatic start	PST		Speed zero	SZ	
Hold	HLD		Positioning finish	PN	
Deviation clear	CLR		Rough matching	PRF	
Forward direction over travel	FOT		Brake release	BRK	
Reverse direction over travel	ROT		Torque limited	LIM	
Address assignment 1	SS1		Program end	PEND	
Address assignment 2	SS2		Auto-run ready	PRDY	
Address assignment 3	SS3		In manual run mode	MMOD	
Address assignment 4	PS4		In home position return run mode	HMOD	
Address assignment 5	PS5		In automatic run mode	AMOD	
Address assignment 6	PS6		In synchronization run mode	PMOD	
Address assignment 7	PS7		In remote control mode	RMOD	
Address assignment 8	PS8		General purpose output 1	OUT1	
Forward direction jog	FJ		General purpose output 2	OUT2	
Reverse direction jog	RJ		General purpose output 3	OUT3	
Speed override 1	OR1		General purpose output 4	OUT4	
Speed override 2	OR2		General purpose output 5	OUT5	
Speed override 3	OR3		General purpose output 6	OUT6	
Speed override 4	OR4		General purpose output 7	OUT7	
Mode select 1	MD1		General purpose output 8	OUT8	
Mode select 2	MD2		M output 01	M01	
Jog speed selection	JOSP		M output 02	M02	
Torque control	TL		M output 04	M04	
Specific pulse input prohibition	CIH		M output 08	M08	
M finish	MFIN		M output 10	M10	
Block stop	BSTP		M output 20	M20	
Program cancel	PCAN		M output 40	M40	
External auto-start prohibition	EPIH		M output 80	M80	
Compulsory brake	BRON		M strobe	MSTB	
Speed gain selection	GSEL		In forward-run operation	SLSA	
Phase advanced	D11		In reverse-run operation	SLSB	
Phase delayed	D12		Master axis speed zero	MSZ	
Synchronization data renew permission	D14				
Master axis select	D18				
Synchronization ratio select 1	D21				
Synchronization ratio select 2	D22				
Synchronization ratio select 3	D24				
Synchronization ratio select 4	D28				
Return synchronization initialize	RINI				
Internal master speed select	MSSP				
Remote/Local changeover	PC	UNABLE	Encoder pulse output	EA,EB,EM	UNABLE
Zero point deceleration	ZLS				
External trigger	TRG				
Master axis pulse line assignment	RC,FC				

(4) NCS-FI/FS66
A list to know if the CC-Link remote input and remote output can control the input/output control signals:
ABLE/UNABLE List

Output control signal			Input control signal		
Signal name	Signal	ABLE /UNABLE	Signal name	Signal	ABLE /UNABLE
Reset	RST	ABLE	Alarm	ALM	ABLE
Emergency stop	EMG		Warning	WNG	
Servo ON	SON		Servo ready	RDY	
Automatic start	PST		Speed zero	SZ	
Hold	HLD		Positioning finish	PN	
Deviation clear	CLR		Rough matching	PRF	
Forward direction over travel	FOT		Brake release	BRK	
Reverse direction over travel	ROT		Torque limited	LIM	
Address assignment 1	SS1		Program end	PEND	
Address assignment 2	SS2		Auto-run ready	PRDY	
Address assignment 3	SS3		In manual run mode	MMOD	
Address assignment 4	PS4		In home position return run mode	HMOD	
Address assignment 5	PS5		In automatic run mode	AMOD	
Address assignment 6	PS6		In servo lock mode	PMOD	
Address assignment 7	PS7		In remote control mode	RMOD	
Address assignment 8	PS8		General purpose output 1	OUT1	
Forward direction jog	FJ		General purpose output 2	OUT2	
Reverse direction jog	RJ		General purpose output 3	OUT3	
Speed override 1	OR1		General purpose output 4	OUT4	
Speed override 2	OR2		General purpose output 5	OUT5	
Speed override 3	OR3		General purpose output 6	OUT6	
Speed override 4	OR4		General purpose output 7	OUT7	
Mode select 1	MD1		General purpose output 8	OUT8	
Mode select 2	MD2		Soft limit switch A	SLSA	
Jog speed selection	JOSP		Soft limit switch B	SLSB	
Torque control	TL		M output 01	M01	
Specific pulse input prohibition	CIH		M output 02	M02	
M finish	MFIN		M output 04	M04	
Block stop	BSTP		M output 08	M08	
Program cancel	PCAN		M output 10	M10	
External auto-start prohibition	EPIH		M output 20	M20	
Compulsory brake	BRON		M output 40	M40	
Speed gain selection	GSEL		M output 80	M80	
Phase advanced	D11		M strobe	MSTB	
Phase delayed	D12		Electronic clutch stopped	FCRP	
Electronic clutch	D14		Free curved-line in operation	FC	
Master axis select	D18		Master axis speed zero	MSZ	
Cycle end	D21				
Pattern select 1	D22				
Pattern select 2	D24				
Pattern select 3	D28				
Internal master speed select	MSSP				
Remote/Local changeover	PC	UNABLE	Encoder pulse output	EA,EB,EM	UNABLE
Zero point deceleration	ZLS				
External trigger	TRG				
Master axis pulse line assignment	RC,FC				
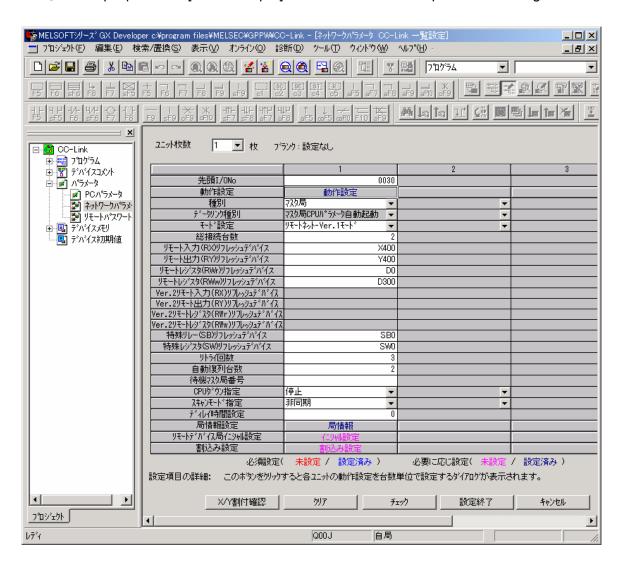
Appendix 7: Application examples

His section indicates practical setting conditions of this device, referring to an example where [MELSEC-Q Series Sequencer] produced by Mitsubishi Electric Corporation is used as the master station. For designing and maintenance tools of the sequencer, [GX Developer] (Ver. 8.03D) by Mitsubishi Electric Corporation is used in the explanation.

* Contents to be explained here are premised that the user understood the way of use of [MELSEC-Q Series Sequencer] and [GX Developer]. For details of these devices, refer to instruction manuals issued by Mitsubishi Electric Corporation.

An example below shows the cases where two sets of this device are used.

  (1) Setting of the master station network parameter (Sequencer)
       This section explains items to be set in the master station network parameter. As for details about parameters or contents that are not explained here, refer to the instruction manuals issued by Mitsubishi Electric Corporation.

  ①   Sample picture of [GX Developer] master station network parameter setting screen.

② Number of unit pieces
It sets the number of unit pieces to set the network parameter.
In the example, [1 piece] is set.

③ Head I/O No
It sets the head I/O No of the master station.
A value to set differs depending on the system configuration.
In the example, [0030] is set.

④ Type
It sets the type of station.
Set [Master station] as it is used at the master station.

⑤ Mode set
It sets the mode of CC-Link.
[Remote Net - Ver. 1 Mode] is set.

⑥ Total connecting units
It sets the number of total connecting units on the CC-Link system including the reserved stations.
Set [2], as two units of this device are connected.

⑦ Remote input (RX) refresh device
It sets the refresh device of the remote input (RX).
In the example, [X400] is set.
As this device is the 4-station occupied, X400-X47F are assigned to the remote input of the 1st device and X480-X4FF are assigned to the remote input (RX) of the 2nd device.
For details of the signals assigned, refer to [2-3-1 Memory mapped profile].

⑧ Remote output (RY) refresh device
It sets the refresh device of the remote output (RY).
In the example, [Y400] is set.
As this device is the 4-station occupied, X400-X47F are assigned to the remote output (RY) of the 1st device and X480-X4FF are assigned to the remote output (RY) of the 2nd device. For details of the signals assigned, refer to [2-3-1 Memory mapped profile].

⑨ Remote register (RWr) refresh device
It sets the refresh device of the remote register (RWr).
In the example, [D0] is set.
D0-D15 is assigned to the remote register (RWr) of the 1st device and D16-D31 is assigned to the remote register (RWr) of the 2nd device. For details of the signals assigned, refer to [2-3-1 Memory mapped profile].

⑩ Remote register (RWr) refresh device
It sets the refresh device of the remote register (RWr).
In the example, [D300] is set.
D300-D315 is assigned to the remote register (RWr) of the 1st device and D316-D331 is assigned to the remote register (RWr) of the 2nd device. For details of the signals assigned, refer to [2-3-1 Memory mapped profile].

⑪ Special relay (SB) refresh device
It sets the refresh device of the special relay (SB).
In the example, [SB0] is set.
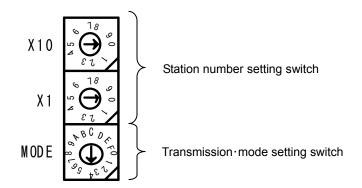
⑫ Special register (SW) refresh device
It sets the refresh device of the special register (SW).
In the example, [SW0] is set.

⑬ Station information
A below screen appears if the station information is selected.

In the station type, select [Remote device station].
In the number of occupied stations, select [4-station occupied].
In the reserve/invalid-station assignment, select [No setting].

As this device has 4 stations in the number of occupied stations, the 1st device becomes the station [1] and the 2nd device becomes the station [5].

⑭ Parameter is written into the sequencer, after completion of the setting for the network parameter and other necessary setting items (PC parameters, etc.).

(2) Switch setting of the master unit (Sequencer)
Figure below indicates examples of the switch setting of the master unit.

X10 Station number setting switch
X1

MODE Transmission·mode setting switch
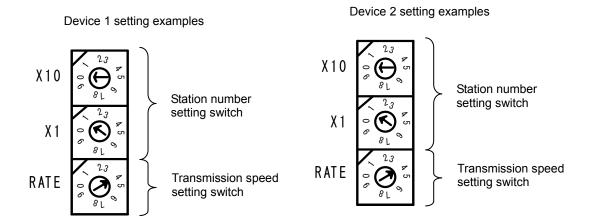
In the station number setting switch, set [0] (Master).
In the transmission·mode setting switch, set [4] (Transmission speed 10M bps, On-line mode).

There is an occasion to change the transmission speed depending on the cable length and communication environments.

(3) Switch setting of this device
Below indicates examples of switch setting of this device.

Device 1 setting examples

Device 2 setting examples

For two devices, two kinds of setting are conducted.

Device 1
  In the station number setting switch, set [01] (Station number 1).
  In the transmission speed setting switch, set [4] (10M bps).

Device 2
  In the station number setting switch, set [05] (Station number 5).
  In the transmission speed setting switch, set [4] (10M bps).

There is an occasion to change the transmission speed depending on the cable length and communication environments.

(4) Connection
After completion of the above (1)-(3) setting, connect the master unit with this device. By turning on the power, communication between the sequencer and this device is conducted.
If [CC-Link SW setting error] is happened, there is an error in switch setting of this device. Thus, recheck the setting.
After the power-on, [CC-Link communication standby warning] is happened for a while until the communication between the sequencer and this device is established.   This warning, however, disappears when the communication has been established normally. If not disappears, the above (1)-(3) procedures may have problems in setting or wiring; thus, recheck them.

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(5) Sample program
This section explains the sequence program that conducts [Write into always refresh write data], [Readout from always refresh read data], [Write request data write], and [Read request data read].
As for the data number to be used in write/read, refer to the volume of communication protocol, [Chapter 6: Data Area].

By setting remote register (RWr/RWw) refresh device with ⑨ and ⑩ in (1), relations between remote register and devices on sequencer become as listed below.

Slave→Master			
Address	Contents	Device 1 Sequencer device	Device 2 Sequencer device
RWrn	Alarm/Warning No.	D0	D16
RWrn+1	Spare	D1	D17
RWrn+2	Read request readout data Readout source is assigned with RWwn (Lower).	D2	D18
RWrn+3	Read request readout data Readout source is assigned with RWwn (Upper).	D3	D19
RWrn+4	Always refresh readout data 1 (Lower)	D4	D20
RWrn+5	Always refresh readout data 1 (Upper)	D5	D21
RWrn+6	Always refresh readout data 2 (Lower)	D6	D22
RWrn+7	Always refresh readout data 2 (Upper)	D7	D23
RWrn+8	Always refresh readout data 3 (Lower)	D8	D24
RWrn+9	Always refresh readout data 3 (Upper)	D9	D25
RWrn+A	Always refresh readout data 4 (Lower)	D10	D26
RWrn+B	Always refresh readout data 4 (Upper)	D11	D27
RWrn+C	Always refresh readout data 5 (Lower)	D12	D28
RWrn+D	Always refresh readout data 5 (Upper)	D13	D29
RWrn+E	Always refresh readout data 6 (Lower)	D14	D30
RWrn+F	Always refresh readout data 6 (Upper)	D15	D31
Slave→Master			
Address	Contents	Device 1 Sequencer device	Device 2 Sequencer device
RWwn	Write request/Read request data number	D300	D316
RWwn+1	Spare	D301	D317
RWwn+2	Write request write data Writing object is assigned with RWwn. (Lower)	D302	D318
RWwn+3	Write request write data Writing object is assigned with RWwn. (Upper)	D303	D319
RWwn+4	Always refresh write data 1 (Lower)	D304	D320
RWwn+5	Always refresh write data 1 (Upper)	D305	D321
RWwn+6	Always refresh write data 2 (Lower)	D306	D322
RWwn+7	Always refresh write data 2 (Upper)	D307	D323
RWwn+8	Always refresh write data 3 (Lower)	D308	D324
RWwn+9	Always refresh write data 3 (Upper)	D309	D325
RWwn+A	Always refresh write data 4 (Lower)	D310	D326
RWwn+B	Always refresh write data 4 (Upper)	D311	D327
RWwn+C	Spare	D312	D328
RWwn+D	Spare	D313	D329
RWwn+E	Spare	D314	D330
RWwn+F	Spare	D315	D331

① Writing into the always refresh write data

Data writing into this device is conducted, by setting the wish-to-write data to the sequencer device that copes with the always refresh write data 1-4.   Data number for writing is set with parameter P720-P723.   (For parameter details, refer to [Appendix 3:   A list of parameters for CC-Link].)

When writing [12345678] into the indirect data 50 using the always refresh write data of the device 1, set [13700] (Indirect data 50) to the P720, and then conduct the program as shown below.   (Data transmission is conducted while the MO is ON.)

```
        MO
 4  ┤├───────────────────────────────────────[DMOV    K12345678          D304    ]
     Data                                                            Device 1
     transmission                                                  writing data 1
     execute
```

② Readout from the always refresh write data

Readout data is entered to the sequencer device that copes with the always refresh readout data 1-6.   Data number for readout is set with the parameter P724-P729.   (For parameter details, refer to [Appendix 3:   A list of parameters for CC-Link].)
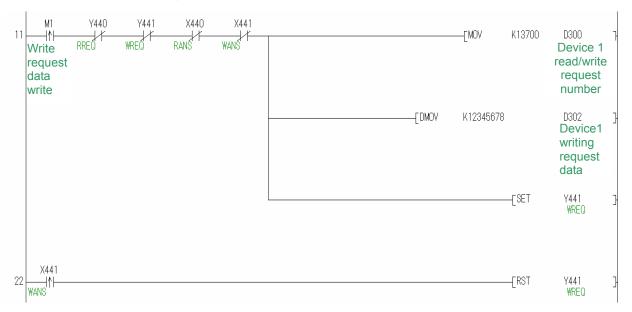
When readout indirect data 50 to the sequencer device D1000, using the always refresh readout data 1 of the device 2, set [13700] (Indirect data 50) to the P724, and then conduct the program as shown below.   (Data transmission is conducted while the MO is ON.)

```
        MO
 8  ┤├───────────────────────────────────────[DMOV     D20        D1000  ]
     Data                                              Device 2   Indirect
     transmission                                    readout data 1  data 50
     execute                                                       readout
                                                                    data
```

③ Write request data writing

Data writing into this device is conducted, by setting the wish-to-write data to the sequencer device that copes with the write request write data and by switching ON the write request (WREQ).   Data number for writing is set to the sequencer device that copes with the write request/readout request data number.

When writing [12345678] into the indirect data 50 of the device 1, conduct the program as shown below.   (Writing is conducted one time when M1 turns to ON.)

```
      M1    Y440   Y441   X440   X441
11  ─┤↑├──┤/├──┤/├──┤/├──┤/├──┬──────────────────[MOV    K13700      D300   ]
     Write  RREQ  WREQ  RANS  WANS  │                                Device 1
     request                        │                              read/write
     data                           │                               request
     write                          │                                number
                                    │
                                    ├──────────────[DMOV   K12345678   D302   ]
                                    │                                 Device1
                                    │                                 writing
                                    │                                 request
                                    │                                  data
                                    │
                                    └──────────────────────────[SET    Y441  ]
                                                                        WREQ

      X441
22  ─┤↑├───────────────────────────────────────────────────────[RST    Y441  ]
     WANS                                                               WREQ
```

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④ Read request data readout

Readout data of the set data number is entered to the sequencer device that copes with the read request readout data, by setting the readout data number to the sequencer device that copes with the write request/read request data number and by turning ON the read request (RREQ).

When readout the indirect data 50 of the device 2 into the sequencer device D1000, conduct the program as shown below.　(Readout is conducted one time when M2 turns to ON.)