MITSUBISHI ELECTRIC

700 series

INVERTER
Plug-in option
FR-A7NC E kit
INSTRUCTION MANUAL

CC-Link *communication function*

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Thank you for choosing this Mitsubishi Inverter plug-in option. This Instruction Manual gives handling information and precautions for use of this equipment. Incorrect handling might cause an unexpected fault. Before using the equipment, please read this manual carefully to use the equipment to its optimum. Please forward this manual to the end user.

This section is specifically about safety matters

Do not attempt to install, operate, maintain or inspect this product until you have read through this Instruction Manual and appended documents carefully and can use the equipment correctly. Do not use this product until you have a full knowledge of the equipment, safety information and instructions.

In this Instruction Manual, the safety instruction levels are classified into "WARNING" and "CAUTION".
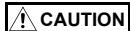
⚠ **WARNING**	Incorrect handling may cause hazardous conditions, resulting in death or severe injury.

⚠ **CAUTION**	Incorrect handling may cause hazardous conditions, resulting in medium or slight injury, or may cause only material damage.

The ⚠ CAUTION level may even lead to a serious consequence according to conditions. Both instruction levels must be followed because these are important to personal safety.

SAFETY INSTRUCTIONS

1. Electric Shock Prevention

⚠ **WARNING**

- While the inverter power is ON, do not remove the front cover or the wiring cover. Do not run the inverter with the front cover or the wiring cover removed. Otherwise you may access the exposed high voltage terminals or the charging part of the circuitry and get an electric shock.
- Even if power is OFF, do not remove the front cover except for wiring or periodic inspection. You may accidentally touch the charged inverter circuits and get an electric shock.
- Before wiring or inspection, power must be switched OFF. To confirm that, LED indication of the operation panel must be checked. (It must be OFF.) Any person who is involved in wiring or inspection shall wait for at least 10 minutes after the power supply has been switched OFF and check that there are no residual voltage using a tester or the like. The capacitor is charged with high voltage for some time after power OFF, and it is dangerous.
- Any person who is involved in wiring or inspection of this equipment shall be fully competent to do the work.
- The plug-in option must be installed before wiring. Otherwise, you may get an electric shock or be injured.
- Do not touch the plug-in option or handle the cables with wet hands. Otherwise you may get an electric shock.
- Do not subject the cables to scratches, excessive stress, heavy loads or pinching. Otherwise you may get an electric shock.

2. Injury Prevention

⚠ CAUTION

- **The voltage applied to each terminal must be the ones specified in the Instruction Manual. Otherwise burst, damage, etc. may occur.**
- **The cables must be connected to the correct terminals. Otherwise burst, damage, etc. may occur.**
- **Polarity must be correct. Otherwise burst, damage, etc. may occur.**
- **While power is ON or for some time after power-OFF, do not touch the inverter as they will be extremely hot. Doing so can cause burns.**

3. Additional Instructions

Also the following points must be noted to prevent an accidental failure, injury, electric shock, etc.

1) Transportation and mounting

⚠ CAUTION

- **Do not install or operate the plug-in option if it is damaged or has parts missing.**
- **Do not stand or rest heavy objects on the product.**
- **The mounting orientation must be correct.**
- **Foreign conductive objects must be prevented from entering the inverter. That includes screws and metal fragments or other flammable substances such as oil.**

2) Trial run

⚠ CAUTION

- **Before starting operation, each parameter must be confirmed and adjusted. A failure to do so may cause some machines to make unexpected motions.**

3) Usage

⚠ WARNING

- **Do not modify the equipment.**
- **Do not perform parts removal which is not instructed in this manual. Doing so may lead to fault or damage of the inverter.**

⚠ CAUTION

- **When parameter clear or all parameter clear is performed, the required parameters must be set again before starting operations because all parameters return to the initial value.**
- **For prevention of damage due to static electricity, nearby metal must be touched before touching this product to eliminate static electricity from your body.**

4) Maintenance, inspection and parts replacement

⚠ CAUTION

- **Do not test the equipment with a megger (measure insulation resistance).**

5) Disposal

⚠ CAUTION

- **This inverter plug-in option must be treated as industrial waste.**

6) General instruction

Many of the diagrams and drawings in this Instruction Manual show the inverter without a cover or partially open for explanation. Never operate the inverter in this manner. The cover must be reinstalled and the instructions in the inverter manual must be followed when operating the inverter.

― CONTENTS ―

II

1 PRE-OPERATION INSTRUCTIONS

1.1 Unpacking and product confirmation
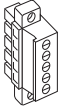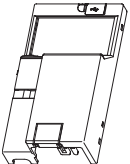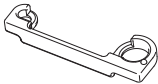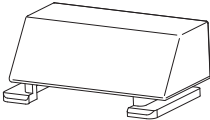
Take the plug-in option out of the package, check the product name, and confirm that the product is as you ordered and intact.

This product is a plug-in option for the FR-E700 series inverters (with standard control circuit terminal specifications) and the FR-E700EX series drive units.

For using the FR-E700EX series, use this Instruction Manual assuming that the term "inverter" means "drive unit", and the term "frequency (0.01Hz increments)" means "rotation speed (1r/min increments)".

1.1.1 Product confirmation

Check the enclosed items.

Plug-in option 1	Mounting screw (M3 × 6mm)............. 2 *(Refer to page 8, 10.)*	Terminal block................................. 1 *(Refer to page 8, 10.)*
Front cover for plug-in option ....1 *(Refer to page 8, 10.)*	Option protective cover * .... 1 *(Refer to page 8.)*	Option small cover (Not used) 1

* Only for the FR-E720-3.7K (FR-E720-175) or lower and FR-E740-7.5K (FR-E740-170) or lower.

═══ CAUTION ═══

• **Install a provided front cover for plug-in option, in place of the inverter front cover.**

1.2   Parts

Connector for communication
Mount the accessory terminal block to connect to the network. *(Refer to page 16.)*

Terminating resistor selection switch
Select the resistor value of the terminating resistor. *(Refer to page 13.)*

Front view
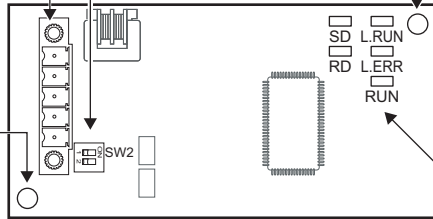
Mounting hole

Rear view

SD   L.RUN
RD   L.ERR
       RUN

SW2

Mounting hole
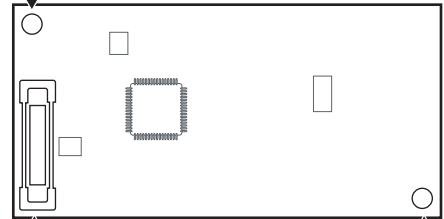
Mounting hole

Mounting hole

Connector
Connect to the inverter option connector.

Terminal layout

DA
DB
DG
SLD
FG

SW2

Operation status indication LED
Lit/flicker of the LED indicate operation status. *(Refer to page 3.)*
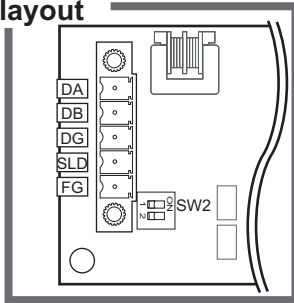
•Operation status indication LED

LED	Description
L.RUN	Lit when refresh data is properly received. Turns OFF when a data transmission is stopped for a certain period of time.
L.ERR	• Lit when a communication error occurs in the own station and flickers when settings of switch, etc. are changed while power is ON. • Flickers when the *Pr. 542* or *Pr. 543* setting is changed. Turn the power ON again or turn the RES signal ON. *(Refer to page 31, 32.)*
RUN	Lit during normal operation (5V is supplied in the board) (Lit even in the noncommunication status.) Flickers when the master station is CC-Link ver.1 and the FR-A7NC is CC-Link ver.2 compatible. *(Refer to page 5.)*
SD	Turns OFF when no data is transmitted.
RD	Lit when the received data carrier is detected.

1

REMARKS

· Set the station number using *Pr. 542 Communication station number (CC-Link). (Refer to page 31.)*
· Set transmission baud rate using *Pr. 543 Baud rate selection (CC-Link)*. *(Refer to page 32.)*

1.3 Inverter option specifications

Option Type	Inverter plug-in, terminal block connectable
Power Supply	5VDC supplied from the inverter
Number of Connectable Units	42 units at max. (Refer to *page 37* for the number of stations occupied.) Can be used in combination with other options.
Cable Size	0.3mm^2 to 0.75mm^2
Station Type	Remote device station
Number of Stations Occupied	CC-Link ver.1: one station occupied. CC-Link ver.2: one station occupied (selectable from among double, quadruple and octuple)
Communication Cable	CC-Link dedicated cable, CC-Link dedicated cable compatible with version 1.10

1.4 CC-Link version

1.4.1 CC-Link ver. 1.10

The conventional CC-Link, defined as ver. 1.00, has the restriction on the inter-station cable length. The improved CC-Link, defined as ver. 1.10, can support 20cm or longer inter-station cable.

Refer to the instruction manual of CC-Link master module for the maximum overall cable lengths and inter-station cable lengths for CC-Link ver. 1.00 and ver. 1.10.

CC-Link ver. 1.10 compatibility conditions

1) All modules that comprise a CC-Link system should be compatible with CC-Link ver. 1.10.
2) All data link cables should be CC-Link ver. 1.10 compatible, CC-Link dedicated cables.
   (CC-Link ver. 1.10 compatible cables have a CC_{-Link} logo or ver. 1.10 indication.)

===== **CAUTION** =====

- **In a system that is composed of the mixed modules and cables compatible with CC-Link version 1.00 and the ones compatible with version 1.10, the maximum overall cable length and inter-station cable length are compatible with CC-Link version 1.00 specifications.**

1.4.2 CC-Link ver. 2

The FR-A7NC is compatible with CC-Link ver.2.

When using the CC-Link ver.2 setting with the FR-A7NC, the master station also needs to be compatible with the CC-Link ver.2.

For CC-Link ver.2, double, quadruple and octuple settings can be used to increase the remote register (RWr/w) points.

Master station (CC-Link ver.1)

CC-Link ver.1 setting | CC-Link ver.2 setting

Communication enabled | **Communication disabled** ("RUN" LED flickers)

Master station (CC-Link ver.2)

CC-Link ver.1 setting | CC-Link ver.2 setting

Communication enabled | **Communication enabled**

5
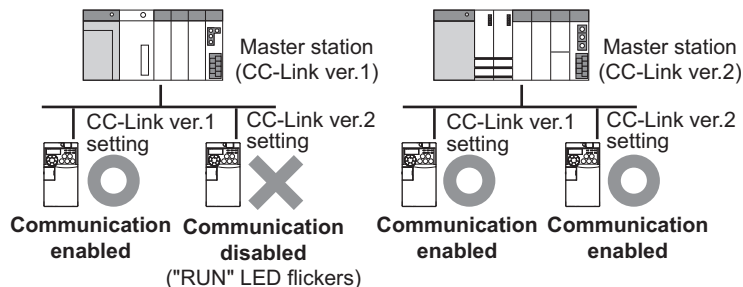
2 / INSTALLATION

2.1 Pre-installation instructions

Make sure that the input power of the inverter is OFF.

⚠**CAUTION**

⚠ **Do not mount or remove the plug-in option while the input power is ON. Otherwise, the inverter and plug-in option may be damaged.**

⚠ **Static electricity in your body must be discharged before you touch the product. Otherwise the product may be damaged.**

2.2 Installation procedure

CAUTION

- **Always perform wiring to the main circuit terminals and control circuit terminals before installing the option. Wiring cannot be performed after installing the option.**
  For wiring to terminals RUN, FU, and SE of control circuit terminal, run cables as shown in the right figure to prevent them from being caught between the option board and control circuit terminal block. In case cables are caught, the inverter may be damaged.

- **When the inverter cannot recognize that the option unit is mounted due to improper installation, etc., "$E.\ \ \ 1$" (option fault) is displayed.**

Plug-in option

- **When mounting/removing an option, hold the sides of the option. Do not press on the parts on the option circuit board. Stress applied to the parts by pressing, etc. may cause a failure.**
- **Take caution not to drop mounting screws during the mounting and removal of the option.**
- **Pull the option straight out when removing. Pressure applied to the connector and to the option circuit board may break the option.**
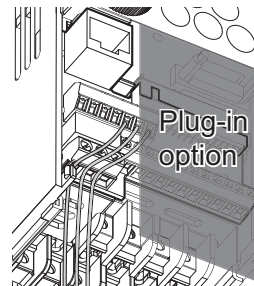
● Inverter with one front cover

(1) Remove the front cover of the inverter. (For details on how to remove the front cover, refer to the Instruction Manual (Applied) of the inverter.)

(2) The PU cover on the front cover needs to be removed. Open the PU cover with a screwdriver, etc. and force it to swing open widely in the direction shown by the arrow in the figure below until it is off its hinges.

(1) Front cover

(2) PU cover

* Force the PU cover to swing open widely in the direction shown by the arrow until it is off.
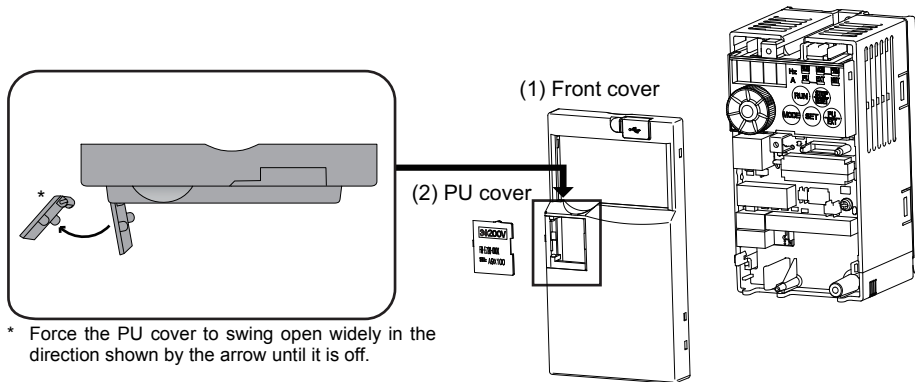
REMARKS

• Because the voltage class, model name, and SERIAL number (voltage class only for FR-E740-5.5K (FR-E740-120) or higher) are written on the PU cover, the PU cover needs to be installed on the supplied front cover (the front cover for plug-in option) as a substitute for the initial PU cover on it.

(3) Install the option protective cover.
(4) Securely fit the connector of the plug-in option to the inverter connector along the guides.
(5) Securely fix the both top and bottom of the plug-in option to the inverter with the accessory mounting screws (tightening torque 0.33N•m to 0.40N•m). If the screw holes do not line up, the connector may not have been plugged securely. Check for loose plugging.
(6) Remove a PU cover on the supplied front cover for plug-in option to replace a PU cover with the PU cover removed from the original front cover in step (2).
(7) Mount the already wired terminal block to the plug-in option. (Refer to *Chapter 3* for wiring.)
(8) Install the front cover for plug-in option to the inverter.

Front cover for plug-in option
(8)
(6) Replace
(7)
(5) Mounting screws
(4)
Option connector of inverter
(3) Option protective cover
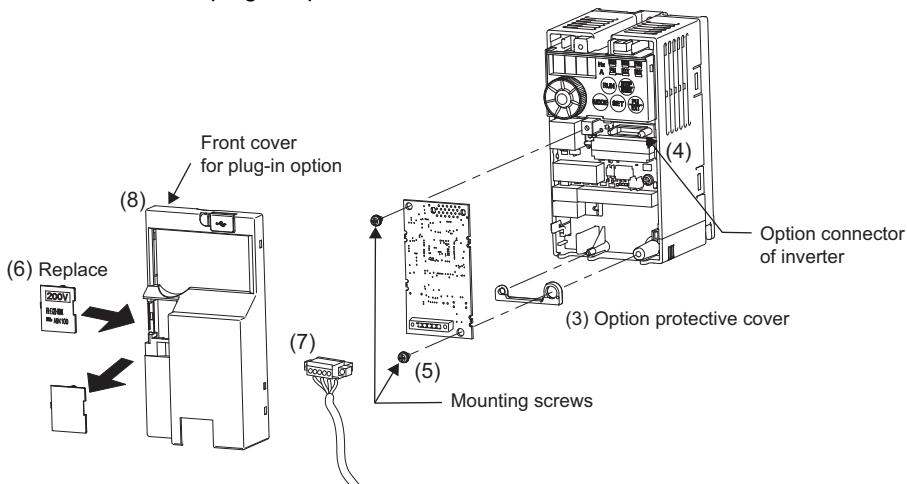
REMARKS

- The protective structure (JEM1030) applied to the inverter without optional protective cover shall be the open type (IP00).

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● Inverter with two front covers
(1) Remove the front covers 1 and 2 of the inverter. (For details on how to remove the front covers, refer to the Instruction Manual (Applied) of the inverter.)
(2) Remove the PU cover from the front cover 2. For removing the PU cover, refer to *page 7*.

2

Front cover 1
(1)
Front cover 2
(1)
(2)
PU cover
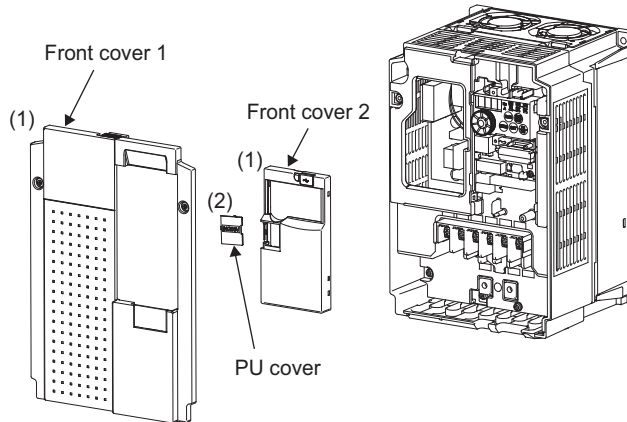
REMARKS
• Because the voltage class is written on the PU cover, the PU cover needs to be installed on the supplied front cover (the front cover for plug-in option) as a substitute for the initial PU cover on it.

(3) Install the front cover 1 to the inverter.
(4) Securely fit the connector of the plug-in option to the inverter connector along the guides.
(5) Securely fix the both top and bottom of the plug-in option to the inverter with the accessory mounting screws (tightening torque 0.33N•m to 0.40N•m). If the screw holes do not line up, the connector may not have been plugged securely. Check for loose plugging.
(6) Remove a PU cover on the supplied front cover for plug-in option to replace a PU cover with the PU cover removed from the original front cover 2 in step (2).
(7) Mount the already wired terminal block to the plug-in option. (Refer to *Chapter 3* for wiring.)
(8) Install the front cover for plug-in option to the inverter.

Front cover 1

(3)

(4) Option connector of inverter

Front cover for plug-in option

(6)
Replace

(8)

(7)

(5) Mounting screws

Installation completed

2
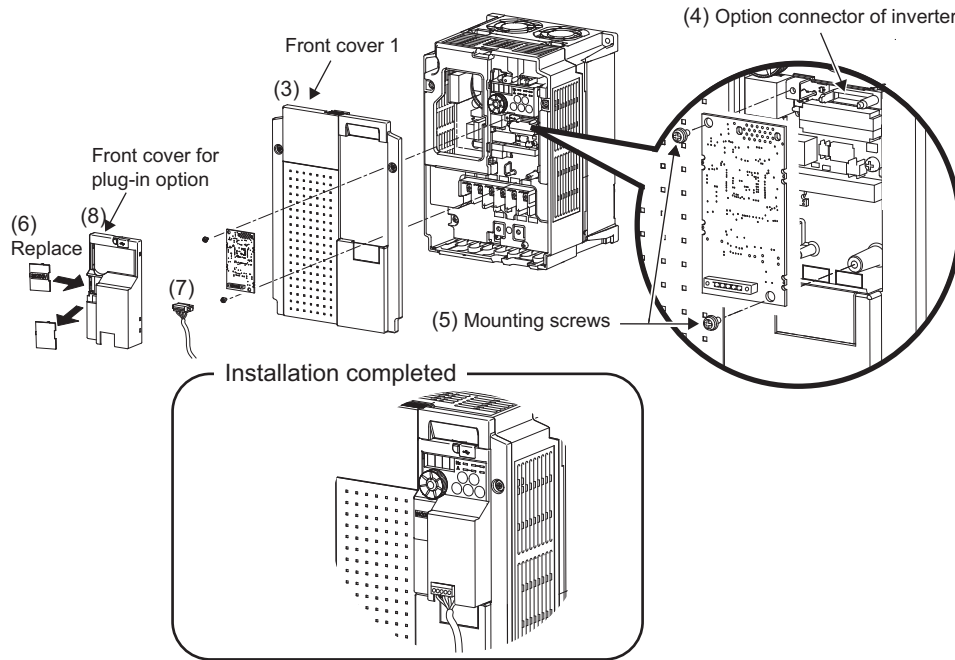
3 WIRING

3.1 System configuration example

(1) Programmable controller side
Mount the "RJ61BT11", "QJ61BT11N", "L26CPU-BT", "L26CPU-PBT", "LJ61BT11", "A1SJ61QBT11" or "A1SJ61BT11", "CC-Link system master/local module" on the main or extension base unit having the programmable controller CPU used as the master station.

(2) Inverter side
Mount the option (FR-A7NC) on the inverter.

(3) Connect the programmable controller CC-Link module master station and the terminal block supplied with the FR-A7NC with the CC-Link dedicated cable. After connecting the terminal block to the FR-A7NC, fit the front cover.
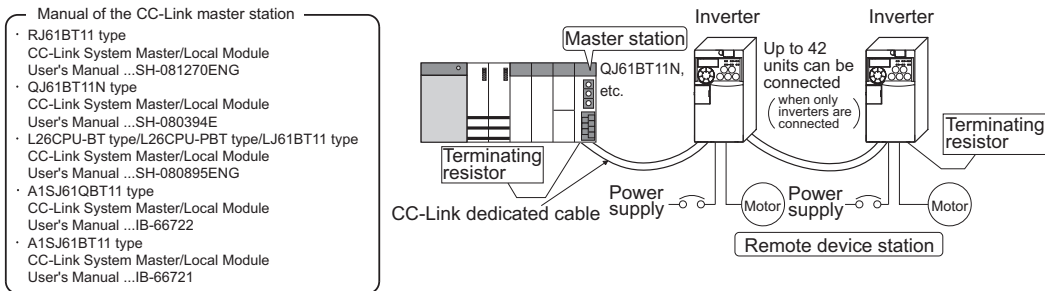
REMARKS

- When the CPU has automatic refresh function (example: QnA series CPU)
  When the END instruction is executed by the programmable controller CPU, the buffer memory is automatically refreshed to enable communication with a remote device.
- When the CPU does not have automatic refresh function (example: AnA series CPU)
  Sequence ladder logic is configured to perform direct communication with the buffer memory of the master station and to enable communication with a remote device.

3.2 Connection of several inverters

An inverter can join the link system as a CC-Link remote device station, and such device stations can be controlled and monitored with a user program of a programmable controller. These devices can be useful components of an automated factory.

For the shield cable of the CC-Link dedicated cable, connect it to "SLD" of each unit and always earth (ground) it via "FG".

Terminals SLD and FG are connected inside the unit.
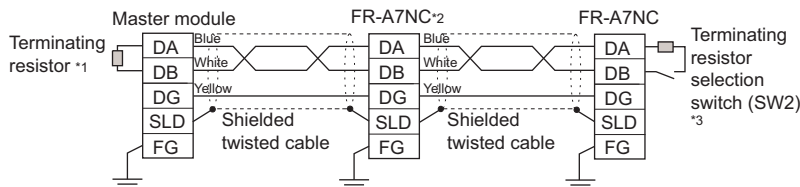
*1   Use the terminating resistors supplied with the programmable controller.
*2   For the unit in the middle, set 1 and 2 of SW2 to OFF (without terminating resistor).
*3   Perform setting of the terminating resistor selection switch (SW2).
(Refer to page 2 for the position of the switch.)
When connecting a terminating resistor separately, do not use a built-in terminating resistor. (SW2 1-OFF, 2-OFF)

	1	2	Description
	OFF	OFF	Without terminating resistor
	ON	OFF	Do not use.
	OFF	ON	130Ω
	ON	ON	110Ω

130Ω is a resistance value for the CC-Link ver.1.00 dedicated high performance cable.

REMARKS

When performing online exchange

The built-in terminating resistor cannot be exchanged online since the terminating resistor is on the FR-A7NC board and disconnected when the terminal block is removed from the FR-A7NC connector for communication. When changing the FR-A7NC online, connect a terminating resistor supplied with a programmable controller master module to the FR-A7NC after modifying it and do not use the internal terminating resistor (SW2 1-OFF, 2-OFF).

● Connection with the terminating resistor
Connect the terminating resistor between terminals DA-DB of the FR-A7NC at the end.
Modify the terminating resistors supplied with the programmable controller to use.
When a resistor is not supplied with the master module, use a resistor with 110Ω 1/2W available on the market.

Tube

Cut   Cut the tube
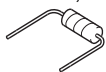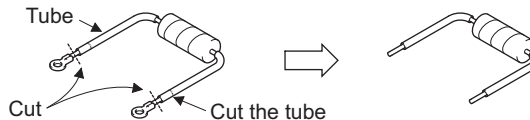
(1) Maximum number of connectable units to one master station (CC-Link ver.1.10):
    42 units (when only inverters are connected)

If any other units are included, the number of stations occupied depends on the unit specifications and therefore the following conditions must be satisfied:

$\{(1 \times a) + (2 \times b) + (3 \times c) + (4 \times d)\} \leq 64$

a: Number of units occupying 1 station   c: Number of units occupying 3 stations
b: Number of units occupying 2 stations   d: Number of units occupying 4 stations

$\{(16 \times A) + (54 \times B) + (88 \times C)\} \leq 2304$

A: Number of remote I/O stations ≤ 64
B: Number of remote device stations ≤ 42
C: Number of local, standby master and intelligent device stations ≤ 26

(2) Maximum number of connectable units to one master station (CC-Link ver.2.00):
42 units (when only inverters are connected)

If any other units are included, the number of stations occupied depends on the unit and therefore the following conditions must be satisfied:

- $\{(a + a2 + a4 + a8) + (b + b2 + b4 + b8) \times 2 + (c + c2 + c4 + c8) \times 3 + (d + d2 + d4 + d8) \times 4\} \leq 64$
- $\{(a \times 32 + a2 \times 32 + a4 \times 64 + a8 \times 128) + (b \times 64 + b2 \times 96 + b4 \times 192 + b8 \times 384) + (c \times 96 + c2 \times 160 + c4 \times 320 + c8 \times 640) + (d \times 128 + d2 \times 224 + d4 \times 448 + d8 \times 896)\} \leq 8192$
- $\{(a \times 4 + a2 \times 8 + a4 \times 16 + a8 \times 32) + (b \times 8 + b2 \times 16 + b4 \times 32 + b8 \times 64) + (c \times 12 + c2 \times 24 + c4 \times 48 + c8 \times 96) + (d \times 16 + d2 \times 32 + d4 \times 64 + d8 \times 128)\} \leq 2048$

    a: Number of single setting devices occupying one station
    b: Number of single setting devices occupying two stations
    c: Number of single setting devices occupying three stations
    d: Number of single setting devices occupying four stations
    a2: Number of double setting devices occupying one station
    b2: Number of double setting devices occupying two stations
    c2: Number of double setting devices occupying three stations
    d2: Number of double setting devices occupying four stations
    a4: Number of quadruple setting devices occupying one station
    b4: Number of quadruple setting devices occupying two stations
    c4: Number of quadruple setting devices occupying three stations
    d4: Number of quadruple setting devices occupying four stations
    a8: Number of octuple setting devices occupying one station
    b8: Number of octuple setting devices occupying two stations
    c8: Number of octuple setting devices occupying three stations
    d8: Number of octuple setting devices occupying four stations

- $16 \times A + 54 \times B + 88 \times C \leq 2304$
    A: Numbers of remote I/O stations ≤ 64
    B: Number of remote device stations ≤ 42
    C: Number of local and intelligent device stations ≤ 26

3

3.3   Connection cable

In the CC-Link system, use CC-Link dedicated cables.

If the cable used is other than the CC-Link dedicated cable, the performance of the CC-Link system is not guaranteed.

For the specifications of the CC-Link dedicated cable, refer to the website of the CC-Link Partner Association.

· Website of the CC-Link Partner Association http://www.cc-link.org/

3.4   Wiring

(1) Strip off the sheath of the CC-Link dedicated cable and twist wires to use. If the length of the sheath pealed is too long, a short circuit may occur among neighboring wires. If the length is too short, wires might come off.
    Use recommended cables. *(Refer to page 16.)* Recommended tightening torque : 0.22N·m to 0.25N·m
    Wire the stripped cable after twisting it to prevent it from becoming loose. (Do not solder it.)

Cable stripping length

6.5mm
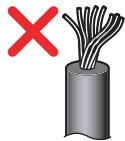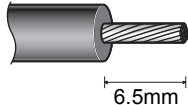
Use a blade terminal as necessary.

Recommended blade terminal model
For wiring of the CC-link communication signal, two CC-Link dedicated cables need to be twisted to wire to one terminal block.
It is recommended to use the following blade terminal and tool.
Recommended products (as of February 2015):
Phoenix Contact Co., Ltd.
· Ferrule terminal model: AI-TWIN2 × 0,5-8WH
· Ferrule terminal crimping tool name: CRIMPFOX 6

Note the crimping method.
Hold the long side in a longitudinal direction and insert it into the terminal block.
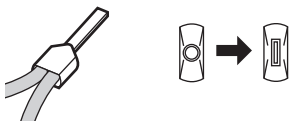
Connection of the shielding wires of the CC-Link dedicated cable
Twist the shielding wires and wire to the terminal SLD.
Use a compression tube and junction terminal block.

Shielding wires
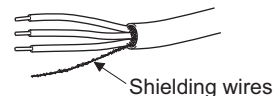
Use of a compression tube
CC-Link dedicated cable
Prevent looseness with a compression tube
Shielding wires
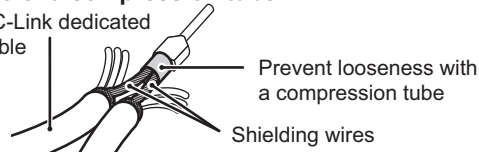
Use of a junction terminal block

| FR-A7NC SLD | FR-A7NC SLD |

Junction terminal block   Junction terminal block

3

17
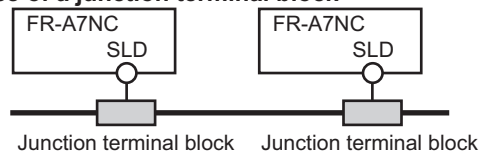
(2) Loosen the terminal screw and insert the cable into the terminal.

Screw Size	Tightening Torque	Cable Size	Screwdriver
M2	0.22N·m to 0.25N·m	0.3mm^2 to 0.75mm^2	Small ⊖ flat-blade screwdriver (Tip thickness: 0.4mm /tip width: 2.5mm)

——— **CAUTION** ———
- **Undertightening can cause cable disconnection or malfunction. Overtightening can cause a short circuit or malfunction due to damage to the screw or unit.**

(3) Connect the terminal block to the connector for communication of the communication option.
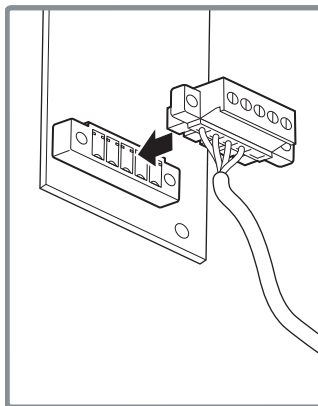
(4) When wiring an inverter, which has front covers 1 and 2, pass the cable over the front cover 1 as shown below. If a CC-Link cable is passed through underneath the inverter front cover 1, the bending radius of the cable shortens, stressing the cable.

Front cover 1

Front cover 2

3
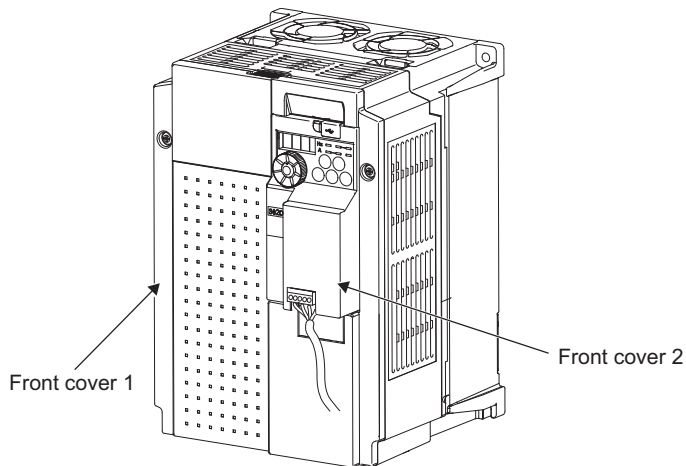
REMARKS

• If the terminal block of the FR-A7NC is removed, the built-in terminating resistor cannot be used. *(Refer to page 13.)*

⚠️CAUTION

⚠️ **When wiring, take care not to subject the cable to stress.**

⚠️ **After wiring, wire offcuts must not be left in the inverter. They may cause a fault, failure or malfunction.**

4 INVERTER SETTING

4.1 Parameter list

The following parameters are used for the plug-in option (FR-A7NC).
Set the values according to need.

Parameter Number	Name	Setting Range	Minimum Setting Increments	Initial Value	Refer to Page
79	Operation mode selection	0 to 4, 6, 7	1	0	*22*
313 *1	DO0 output selection	The setting range depends on the inverter.	1	9999	*48*
314 *1	DO1 output selection				
315 *1	DO2 output selection				
338	Communication operation command source	0, 1	1	0	*4
339	Communication speed command source	0, 1, 2	1	0	*4
340	Communication startup mode selection	0, 1, 10	1	0	*22*
342	Communication EEPROM write selection	0, 1	1	0	*4
349 *1	Communication reset selection	0, 1	1	0	*29*
500 *1	Communication error execution waiting time	0 to 999.8s	0.1s	0s	*24*
501 *1	Communication error occurrence count display	0	1	0	*25*
502	Stop mode selection at communication error	0 to 3	1	0	*26*
541 *1	Frequency command sign selection (CC-Link)	0, 1	1	0	*33*
542 *1, *2, *3	Communication station number (CC-Link)	1 to 64	1	1	*31*
543 *1, *2, *3	Baud rate selection (CC-Link)	0 to 4	1	0	*32*
544 *1, *2	CC-Link extended setting	0, 1, 12, 14, 18	1	0	*37*
550 *2	NET mode operation command source selection	0, 2, 9999	1	9999	*4

*1   Parameters which can be displayed when the plug-in option (FR-A7NC) is mounted.
*2   The setting is applied after inverter reset or at the next power-ON.
*3   "L.ERR" LED flickers if the setting is changed. If the inverter is reset, the setting is applied and the LED turns OFF.
*4   For the parameter details, refer to the Instruction Manual (Applied) of the inverter.

4.2   Operation mode setting

The inverter mounted with a communication option has three operation modes.

(1) PU operation [PU]............. Controls the inverter from the keys of the operation panel on the inverter or parameter unit (FR-PU07/FR-PA07).

(2) External operation [EXT] ... Controls the inverter by switching ON/OFF external signals connected to the control circuit terminals of the inverter.
(The inverter is factory-set to this mode.)

(3) Network operation [NET] ... Controls the inverter with instructions through network via the communication option.
(The operation signal and running frequency can be entered via the control circuit terminals depending on the *Pr. 338 Communication operation command source* and *Pr. 339 Communication speed command source* settings. For details, refer to the Instruction Manual (Applied) of the inverter.

4

4.2.1   Operation mode indicator

Operation panel
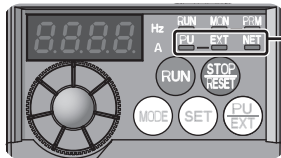
Operation mode indicators
(The operating mode (of the inverter) can be checked with the ON/OFF state of the LED indicator.)
PU: PU operation mode
EXT: External operation mode
NET: Network operation mode

4.2.2 Operation mode switching and communication startup mode (Pr. 79, Pr. 340)

(1) Operation mode switching conditions

Before switching the operation mode, check the following:

1) The inverter is at a stop.

2) Both the STF and STR signals are OFF.

3) The *Pr. 79 Operation mode selection* setting is correct.

 (Use the operation panel of the inverter or parameter unit (FR-PU07/FR-PA07) for setting.)

(2) Operation mode selection at power ON and at restoration from instantaneous power failure

The operation mode at power ON and at restoration from instantaneous power failure can be selected.

Set a value other than "0" in *Pr. 340* to select the Network operation mode.

After started in Network operation mode, parameter write through network is enabled. (Refer to *page 70* for a program example for parameter write.)

REMARKS

• Change of the *Pr. 340* setting is applied after power ON or an inverter reset.

• *Pr. 340* can be changed on the operation panel in any operation mode.

• When setting a value other than 0 in *Pr. 340*, make sure that the initial settings of the inverter are correct.

• Refer to the Instruction Manual (Applied) of the inverter for details of *Pr. 79, Pr. 340*.

Pr. 340 Setting	*Pr. 79* Setting	Operation Mode at Power ON or Power Restoration	Operation Mode Switchover
0 (initial value)	0 (initial value)	External operation mode	Switching among the External, PU, and NET operation mode is enabled. *1
	1	PU operation mode	PU operation mode fixed
	2	External operation mode	Switching between the External and NET operation mode is enabled. Switching to the PU operation mode is disallowed.
	3, 4	External/PU combined operation mode	Operation mode switching is disallowed
	6	External operation mode	Switching among the External, PU, and NET operation mode is enabled while running.
	7	X12 (MRS) signal ON ..... External operation mode	Switching among the External, PU, and NET operation mode is enabled. *1
		X12 (MRS) signal OFF ... External operation mode	External operation mode fixed (Forcibly switched to External operation mode.)
1	0	NET operation mode	Same as when *Pr. 340* = "0"
	1	PU operation mode	
	2	NET operation mode	
	3, 4	External/PU combined operation mode	
	6	NET operation mode	
	7	X12 (MRS) signal ON .... NET operation mode	
		X12 (MRS) signal OFF ... External operation mode	
10	0	NET operation mode	Switching between the PU and NET operation mode is enabled. *2
	1	PU operation mode	Same as when *Pr. 340* = "0"
	2	NET operation mode	NET operation mode fixed
	3, 4	External/PU combined operation mode	Same as when *Pr. 340* = "0"
	6	NET operation mode	Switching between the PU and NET operation mode is enabled while running. *2
	7	External operation mode	Same as when *Pr. 340* = "0"

*1 Operation mode cannot be directly switched between the PU operation mode and Network operation mode.

*2 Operation mode can be switched between the PU operation mode and Network operation mode by pressing $\left(\dfrac{PU}{EXT}\right)$ on the operation panel or inputting the X65 signal.

4

4.3 Operation at communication error occurrence

4.3.1 Operation selection at communication error occurrence (Pr. 500 to Pr. 502)

You can select operations at communication error occurrences by setting *Pr. 500 to Pr. 502* under network operation.

(1) Waiting time for the communication line error output after a communication error

Waiting time for the communication error output after a communication line error occurrence can be set.

Parameter Number	Name	Setting Range	Minimum Setting Increments	Initial Value
500	Communication error execution waiting time	0 to 999.8s	0.1s	0s
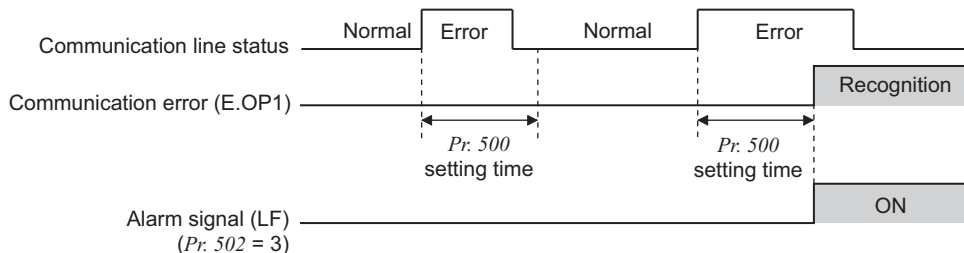
When a communication line error occurs and lasts longer than the time set in *Pr. 500*, it is recognized as a communication error.
If the communication returns to normal within the time, it is not recognized as a communication error, and the operation continues.

(2) Displaying and clearing the communication error count

The cumulative count of communication error occurrences can be displayed.
Write "0" to clear the cumulative count.

Parameter Number	Name	Setting Range	Minimum Setting Increments	Initial Value
501	Communication error occurrence count display	0	1	0

Count timing depending on communication line status

Normal	Error	Normal	Error

Incremented by 1   Incremented by 1
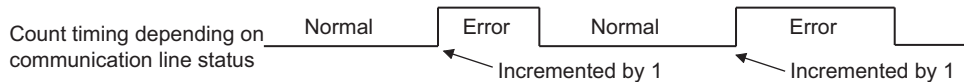
At the point of communication line error occurrence, *Pr. 501 Communication error occurrence count display* is incremented by 1.
The cumulative count of communication error occurrences is counted from 0 to 65535.
When the count exceeds 65535, the displayed value is cleared and the counting starts over from 0 again.

=== CAUTION ===

• **Communication error count is temporarily stored in the RAM. The error count is stored in EEPROM only once per hour. If power reset or inverter reset is performed, *Pr. 501* setting will be the one that is last stored to EEPROM depending on the reset timing.**

25

(3) Inverter operation at a communication error occurrence

The inverter operation at a communication line error or an option unit fault can be set.

Parameter Number	Name	Setting Range	Minimum Setting Increments	Initial Value
502	Stop mode selection at communication error	0, 1, 2, 3	1	0

Details of the setting

● **Operation at an error occurrence**

Error Definition	*Pr. 502* Setting	Operation	Indication	Fault Output
Communication line	0	Continued *	Normal indication *	Not provided *
	1			
	2			
	3			
Communication option	0, 3	Coast to stop	"E.1"	Provided
	1, 2	Decelerated to stop	"E.1" after stop	Provided after stop

* When the communication returns to normal within the time period set in *Pr. 500*, the communication option error (E.OP1) does not occur.

● **Operation at error recognition after elapse of *Pr. 500* time**

Error Definition	*Pr. 502* Setting	Operation	Indication	Fault Output
Communication line	0	Coast to stop	"E.OP1"	Provided
	1	Decelerated to stop	"E.OP1" after stop	Provided after stop
	2			Not provided
	3	Continued	Normal indication	
Communication option	0, 3	Coast to stop	"E.1"	Provided
	1, 2	Decelerated to stop	"E.1" after stop	Provided after stop

● **Operation at error removal**

Error Definition	*Pr. 502* Setting	Operation	Indication	Fault Output
Communication line	0	Stopped, continuously	"E.OP1", continuously	Output, continuously
	1	Stopped, continuously	"E.OP1", continuously	Output, continuously
	2	Restart	Normal indication	Not provided
	3	Continued	Normal indication	Not provided
Communication option itself	0, 3	Stopped, continuously	"E.1", continuously	Output, continuously
	1, 2	Stopped, continuously	"E.1", continuously	Output, continuously

═══ CAUTION ═══

• **Communication line error [E.OP1 (fault data: HA1)] is an error that occurs on the communication line. Communication option error [E. 1 (fault data: HF1)] is an error that occurs in the communication circuit inside the option.**

• **Fault output indicates the fault output signal (ALM signal) and fault bit output.**

• **When the fault output setting is active, fault records are stored in the faults history. When the fault output setting is not active, fault record is overwritten to the faults history temporarily but not stored. After the error is removed, the fault indication is reset, changing the display back to normal, and the last fault is displayed in the faults history.**

• **When the *Pr. 502* setting is "1" or "2", the deceleration time is the normal deceleration time setting (e.g. *Pr. 8*, *Pr. 44*, *Pr. 45*).**

• **The acceleration time at a restart is the normal acceleration time setting (e.g. *Pr. 7*, *Pr. 44*).**

• **When the *Pr. 502* setting is "2", the operation/speed command at a restart is the one given before the error occurrence.**

• **When a communication line error occurs at the *Pr. 502* setting of "2", removing the error during deceleration causes acceleration to restart at that point. (Acceleration is not restarted if the error is that of the option unit itself.)**

4

4.3.2 Fault and measures

(1) The inverter operates as follows at fault occurrences.

Source	Status		Operation Mode		
			Network Operation	**External Operation**	**PU Operation**
Inverter	Inverter operation		**Inverter trip**	Inverter trip	Inverter trip
	Data communication		**Continued**	Continued	Continued
Communication line	Inverter operation		**Inverter trip ***	Continued	Continued
	Data communication		**Stop**	Stop	Stop
Communication option	Communication option connection error	Inverter operation	**Inverter trip ***	Inverter trip *****	Inverter trip *****
		Data communication	**Continued**	Continued	Continued
	Error of communication option	Inverter operation	**Inverter trip ***	Continued	Continued
		Data communication	**Stop**	Stop	Stop

* Depends on the *Pr. 502* setting.

(2) Measures at error occurrences

Fault Indication	Error Definition	Measures
E.OP1	Communication line error	Check the LED status of the option unit and remove the cause of the alarm. (Refer to *page 77* for LED indication status.) Inspect the master.
E.1	Option fault	Check the connection between the inverter and option unit for poor contact, etc. and remove the cause of the error.

When faults other than the above are displayed, refer to the Instruction Manual of the inverter and remove the cause of the error.

4.4   Inverter reset

(Refer to *page 74* for an inverter reset program example.)

(1) Operation conditions of inverter reset
    The following table shows the availability of the inverter reset in each operation mode.

Resetting Method			Operation Mode		
			Network Operation	**External Operation**	**PU Operation**
Reset command through network	Inverter reset *(Refer to page 60.)* *1		Enabled	Disabled	Disabled
	Error reset (RY1A) at inverter fault *(Refer to page 47.)* *2	*Pr. 349* = 0	Enabled	Enabled	Enabled
		Pr. 349 = 1		Disabled	Disabled
Turning ON the inverter RES signal (via terminal RES)			Enabled	Enabled	Enabled
Powering OFF the inverter			Enabled	Enabled	Enabled
Reset command from the PU/ operation panel	Inverter reset		Enabled	Enabled	Enabled
	Reset at inverter fault		Enabled	Enabled	Enabled

*1   Inverter reset can be made any time.
*2   Reset can be made only when the protective function of the inverter is activated.

======= CAUTION =======

• **During a communication line error or option fault, the inverter cannot be reset through network.**
• **The inverter is set to the External operation mode if it has been reset in Network operation mode in the initial status.**
  To resume the network operation, the inverter must be switched to the Network operation mode again.
  Set a value other than "0" in *Pr. 340* to start in Network operation mode. *(Refer to page 22.)*
• **Communication continues during inverter reset. (The inverter cannot be controlled for about 1s after release of a reset command.)**

4

(2) Error reset operation selection at inverter fault

When the inverter operates with the communication option installed in the External operation mode or PU operation mode, an error reset command* through network can be invalid.

Parameter Number	Name	Initial Value	Setting Range	Function
349	Communication reset selection	0	0	Error reset* is enabled independently of operation mode.
			1	Error reset* is enabled only in the Network operation mode.

* RY1A *(Refer to page 47.)*

4.5 CC-Link function setting

4.5.1 Station number setting (Pr. 542)

Use *Pr. 542 Communication station number (CC-Link)* to set station number of the inverter. Set the value within the range of 1 to 64.

Parameter Number	Name	Initial Value	Setting Range
542	Communication station number (CC-Link)	1	1 to 64

====== CAUTION ======

• **Assign a unique station number to each device. (If multiple devices have the same station number assigned, the communication cannot be performed properly.)**

Connection example

CC-Link master module — Station 00

Programmable controller remote I/O station (occupies one station) — Station 01

Inverter No.1 (FR-A7NC) Remote device station — Station 02

Inverter No.2 (FR-A7NC) Remote device station — Station 03

Inverter No.3 (FR-A7NC) Remote device station — Station 04

Number of stations connected is 4

4
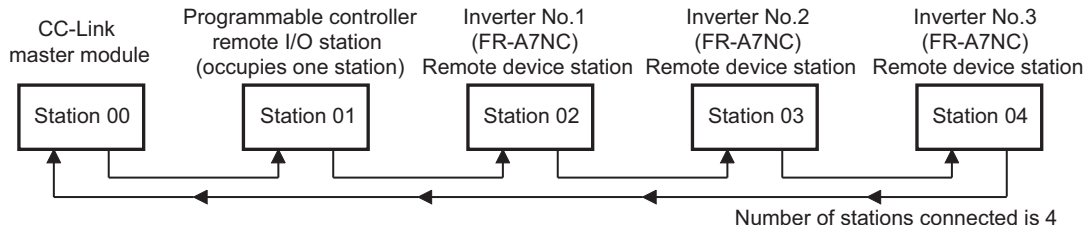
REMARKS

• Set consecutive numbers for the station numbers. (Do not skip a number in sequence like "station number 1 - station number 2- station number 4".)
   The station number does not have to match with the physical connection sequence. (There is no problem with having the physical connection sequence like "station number 1 - station number 3 - station number 4 - station number 2".)
• One inverter occupies one station. (One remote device station)
• "L.ERR" LED flickers if the setting is changed. When power is switched ON again or the RES signal is turned ON, the setting value is applied and the LED turns OFF.

4.5.2 Baud rate setting (Pr. 543)

Set the transmission speed. (Refer to the manual for the CC-Link master module for details of transmission speed.)

Parameter Number	Name	Initial Value	Setting Range	Transmission Speed
543	Baud rate selection (CC-Link)	0	0	156kbps
			1	625kbps
			2	2.5Mbps
			3	5Mbps
			4	10Mbps

REMARKS

• "L.ERR" LED flickers if the setting is changed. When power is switched ON again or the RES signal is turned ON, the setting value is applied and the LED turns OFF.

4.5.3 Frequency command with sign (Pr. 541)

By adding a sign to the frequency command value, the start command (forward/reverse rotation) can be inverted to start operation.

Make a selection of the sign for the frequency command from RWw1.

Parameter Numbers	Name	Initial Value	Setting Range
541	Frequency command sign selection (CC-Link)	0	0, 1

Pr. 541 Setting	Sign	Setting Range	Actual Frequency Command
0	Without	0 to 40000	0 to 400.00Hz
1	With	-32768 to 32767 (two's complement)	-327.68 to 327.67Hz

Relation between the start command and sign (*Pr. 541* = "1")

Start Command	Sign of the Frequency Command	Actual Run Command
Forward rotation	+	Forward rotation
	-	Reverse rotation
Reverse rotation	+	Reverse rotation
	-	Forward rotation

4

REMARKS

- When *Pr. 541* = 1 (with sign)
  - When EEPROM write is specified with the RYE, write mode error (error code H01) will occur.
  - When concurrent execution of both RYD and RYE is enabled (when a value other than 0 is set in *Pr. 544*) and both RYD and RYE are turned ON, RYD has precedence.
  - When power is turned ON (inverter reset), the initial setting status of the sign bit is "positive" and the set frequency is "0Hz". (The motor does not operate at the frequency set before turning OFF the power (inverter reset).)
  - When set frequency is written with the instruction code of HED and HEE, the sign of the frequency command is not changed.

5 FUNCTION OVERVIEW

5.1 Function block diagram

The function blocks show I/O data transfer to/from an inverter in CC-Link.
• Link refresh is continuously executed between the master station and inverter in the CC-Link system at intervals of 1.1ms to 141ms (per station).
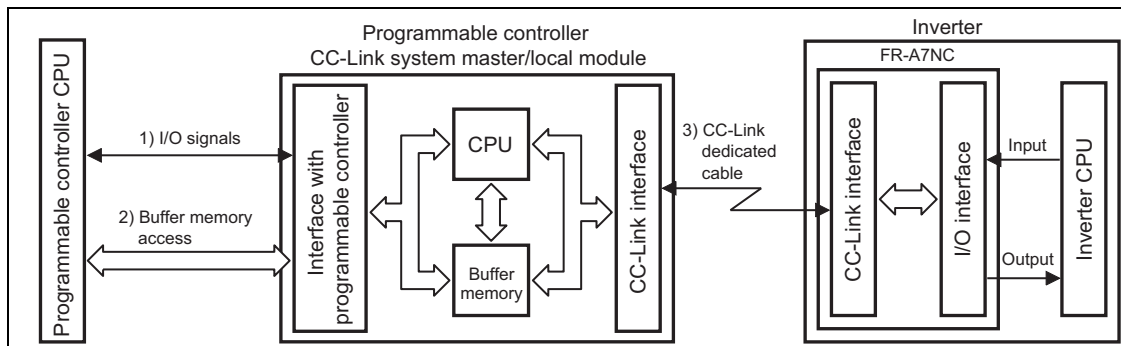
1) These are I/O signals assigned to the CC-Link system master/local module. These signals are used for communication between the programmable controller CPU and CC-Link system master/local module. Refer to *page 46* for details of the signal.
2) Reading of data input to the inverter, writing of inverter output data, and reading of a faulty CC-Link station are available. Automatic refresh function enables reading from/writing to buffer memory. (Use FROM/TO command of the sequence program to synchronize without using the automatic refresh function.) Refer to CC-Link system master/local module manual for the buffer memory details.
3) CC-Link communication start command is given from the sequence program. After the CC-Link communication starts, link refresh is always performed asynchronously (or synchronously) with execution of sequence program.
For details, refer to the CC-Link system master/local module manual.

5.2   Output from the inverter through network

Main items which can be output from the inverter to the master and their descriptions are explained below.

Item	Description	Refer to Page
Inverter status monitor	The output terminal status of the inverter can be monitored.	*48*
Output frequency monitor	The output frequency can be monitored.	*54, 57*
Output current monitor	The output current can be monitored.	*57*
Output voltage monitor	The output voltage can be monitored.	*57*
Special monitor	The monitor data selected can be checked.	*57*
Faults history	Fault records can be checked.	*55, 58*
Data at alarm occurrence	The inverter status at alarm occurrence can be checked.	*55*
Operation mode	The current operation mode can be checked.	*57*
Parameter read	Parameter settings can be read.	*59*
Read of set frequency	The current set frequency can be read.	*58*

5

REMARKS
• Refer to the Instruction Manual (Applied) of the inverter for functions controllable through network in each operation mode.

5.3 Input to the inverter through network

Main items which can be commanded from the master to the inverter and their descriptions are explained below.

Item	Description	Refer to Page
Forward rotation command	Give the forward rotation command.	*46*
Reverse rotation command	Give the reverse rotation command.	*46*
Input terminal function command	Execute functions assigned to the inverter input terminals.	*46*
Inverter output stop command	Stop the inverter output.	*46*
Error reset	Reset the inverter only when an inverter alarm occurs.	*47*
Frequency setting	Set the frequency.	*51, 58*
Monitor command	Specify the description monitored.	*51, 57*
Operation mode specification	Set the operation mode.	*57*
Faults history clear	Erase past eight fault records.	*59*
All parameter clear	Return the parameter descriptions to the initial value.	*59*
Inverter reset	Reset the inverter.	*60*
Parameter write	Write parameter settings.	*59*
PID control	PID set point, PID measured value and PID deviation can be input through network.	*53*

REMARKS
• Refer to the Instruction Manual (Applied) of the inverter for functions controllable through network in each operation mode.

6 I/O SIGNAL LIST

6.1 CC-Link extended setting (Pr. 544)

Remote register function can be extended.

Parameter Number	Name	Initial Value	Setting Range	CC-Link Ver.	Description	Refer to Page
544	CC-Link extended setting	0	0	1	Occupies one station (FR-E500 series compatible) *1	*37*
			1		Occupies one station	*41*
			12 *2	2	Occupies one station double	*42*
			14 *2		Occupies one station quadruple	*43*
			18 *2		Occupies one station octuple	*44*

*1 The program used for conventional series inverter (FR-E500 series) can be used.
   When RYD, RYE, and RYF turn ON simultaneously, only one of them is executed.
   The upper 8 bits of RWw2 are not link parameter extended setting.
*2 When using double, quadruple and octuple settings of the CC-Link ver.2, station data of the master station must be set to double, quadruple and octuple also.
   (If the master station is CC-Link ver.1 compatible station, the above setting cannot be made.)

REMARKS

• The setting change is applied after an inverter reset. (Refer to *page 29* for inverter reset.)

6

6.2　I/O signal list

6.2.1　I/O signal when CC-Link ver.1 one station (FR-E500 series compatible) is occupied (Pr. 544 = 0)

(1)　Remote I/O (32 points)

Device No.	Signal	Refer to Page	Device No.	Signal	Refer to Page
RYn0	Forward rotation command *2	*46*	RXn0	Forward running	*48*
RYn1	Reverse rotation command *2	*46*	RXn1	Reverse running	*48*
RYn2	High-speed operation command (terminal RH function) *1	*46*	RXn2	Running (terminal RUN function) *3	*48*
RYn3	Middle-speed operation command (terminal RM function) *1	*46*	RXn3	Up to frequency (SU signal) *2	*48*
RYn4	Low-speed operation command (terminal RL function) *1	*46*	RXn4	Overload alarm (OL signal) *2	*48*
RYn5	JOG operation selection 2 (JOG2 signal) *2, *5	*46*	RXn5	No function (NET Y1 function) *3, *5	*48*
RYn6	Second function selection (RT signal) *2	*46*	RXn6	Frequency detection(terminal FU function) *3	*48*
RYn7	Terminal 4 input selection (AU signal) *2	*46*	RXn7	Error (terminal ABC function) *3	*48*
RYn8	No function (NET X1 function) *1, *5	*46*	RXn8	No function (NET Y2 function) *3, *5	*48*
RYn9	Output stop (terminal MRS function) *1	*46*	RXn9	*Pr. 313* assignment function (DO0) *4	*48*
RYnA	No function (NET X2 function) *1, *5	*46*	RXnA	*Pr. 314* assignment function (DO1) *4	*48*
RYnB	Reset (terminal RES function) *1	*46*	RXnB	*Pr. 315* assignment function (DO2) *4	*48*
RYnC	Monitor command	*46*	RXnC	Monitoring	*48*
RYnD	Frequency setting command (RAM)	*47*	RXnD	Frequency setting completion (RAM)	*49*
RYnE	Frequency setting command (RAM, EEPROM)	*47*	RXnE	Frequency setting completion (RAM, EEPROM)	*49*
RYnF	Instruction code execution request	*47*	RXnF	Instruction code execution completion	*49*

Device No.	Signal	Refer to Page	Device No.	Signal	Refer to Page
RY(n+1)0 to RY(n+1)7	Reserved	—	RX(n+1)0 to RX(n+1)5	Reserved	—
			RX(n+1)6	No function (NET Y3 function) *3, *5	*49*
			RX(n+1)7	No function (NET Y4 function) *3, *5	*49*
RY(n+1)8	Not used (initial data process completion flag)	—	RX(n+1)8	Not used (initial data process request flag)	—
RY(n+1)9	Not used (initial data process request flag)	—	RX(n+1)9	Not used (initial data process completion flag)	—
RY(n+1)A	Error reset request flag	*47*	RX(n+1)A	Error status flag	*49*
RY(n+1)B	No function (NET X3 function) *1, *5	*47*	RX(n+1)B	Remote station ready	*49*
RY(n+1)C	No function (NET X4 function) *1, *5	*47*	RX(n+1)C	In-position (Y36 signal) *2, *5	*50*
RY(n+1)D	No function (NET X5 function) *1, *5	*47*	RX(n+1)D	Position command creating (PBSY signal) *2, *5	*50*
RY(n+1)E to RY(n+1)F	Reserved	—	RX(n+1)E	Home position return completed (ZP signal) *2, *5	*50*
			RX(n+1)F	Home position return failure warning (ZA signal) *2, *5	*50*

("n" indicates a value determined according to the station number setting.)

*1 These signals are set in the initial status. Using *Pr. 180 to Pr. 189*, you can change input signal functions.
 Refer to the Instruction Manual (Applied) of the inverter for details of *Pr. 180 to Pr. 189*. (The *Pr. 185 to Pr. 189* settings are available only for the FR-E700EX series.)
*2 The signals are fixed. They cannot be changed using parameters.
*3 These signals are set in the initial status. Using *Pr. 190 to Pr. 196*, you can change output signal functions.
 For the details of *Pr. 190 to Pr. 196*, refer to the Instruction Manual (Applied) of the inverter. (The *Pr. 193 to Pr. 196* settings are available only for the FR-E700EX series.)
*4 Output signal can be assigned using *Pr. 313 to Pr. 315*.
 The settings of *Pr. 313 to Pr. 315* are the same as those of *Pr. 190 to Pr. 192 (output terminal function selection)*. For the signal details, refer to the description of *Pr. 190 to Pr. 192* in the Instruction Manual (Applied) of the inverter.
*5 Available only for the FR-E700EX series. For the details, refer to the Instruction Manual (Applied) of the drive unit.

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(2) Remote register

Address	Description		Refer to Page	Address	Description	Refer to Page
	Upper 8 Bits	**Lower 8 Bits**				
RWwn	Monitor code 2	Monitor code 1	*51*	RWrn	First monitor value	*54*
RWwn+1	Set frequency (0.01Hz increments) *2		*51*	RWrn+1	Second monitor value	*54*
RWwn+2	H00 (arbitrary) *1	Instruction code	*52*	RWrn+2	Reply code	*54*
RWwn+3	Write data		*52*	RWrn+3	Read data	*54*

("n" indicates a value determined according to the station number setting.)

*1   It is always H00 even if a value other than H00 is set.
*2   When *Pr. 37* is not equal to "0", this will be machine speed display (1 increments).

6.2.2 I/O signal when CC-Link ver.1 one station is occupied (Pr. 544 = "1")

(1) Remote I/O (32 points)

Same as when *Pr. 544* = "0" *(Refer to page 38.)*

(2) Remote register

Address	Description		Refer to Page	Address	Description		Refer to Page
	Upper 8 Bits	**Lower 8 Bits**			**Upper 8 Bits**	**Lower 8 Bits**	
RWwn	Monitor code 2	Monitor code 1	*51*	RWrn	First monitor value		*54*
RWwn+1	Set frequency (0.01Hz increments) *1		*51*	RWrn+1	Second monitor value		*54*
RWwn+2	Link parameter extended setting	Instruction code	*52*	RWrn+2	Reply code 2	Reply code 1	*54*
RWwn+3	Write data		*52*	RWrn+3	Read data		*54*

("n" indicates a value determined according to the station number setting.)

*1 When *Pr. 37* is not equal to "0", this will be machine speed display (1 increments).

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6.2.3   I/O signal when CC-Link ver.2 double setting is selected (Pr. 544 = "12")

(1) Remote I/O (32 points)

Same as when *Pr. 544* = "0"   *(Refer to page 38.)*

(2) Remote register

Address	Description		Refer to Page	Address	Description		Refer to Page
	Upper 8 Bits	**Lower 8 Bits**			**Upper 8 Bits**	**Lower 8 Bits**	
RWwn	Monitor code 2	Monitor code 1	*51*	RWrn	First monitor value		*54*
RWwn+1	Set frequency (0.01Hz increments) *1		*51*	RWrn+1	Second monitor value		*54*
RWwn+2	Link parameter extended setting	Instruction code	*52*	RWrn+2	Reply code 2	Reply code 1	*54*
RWwn+3	Write data		*52*	RWrn+3	Read data		*54*
RWwn+4	Monitor code 3		*52*	RWrn+4	Third monitor value		*55*
RWwn+5	Monitor code 4		*52*	RWrn+5	Fourth monitor value		*55*
RWwn+6	Monitor code 5		*52*	RWrn+6	Fifth monitor value		*55*
RWwn+7	Monitor code 6		*52*	RWrn+7	Sixth monitor value		*55*

("n" indicates a value determined according to the station number setting.)

*1   When *Pr. 37* is not equal to "0", this will be machine speed display (1 increments).

6.2.4 I/O signal when CC-Link ver.2 quadruple setting is selected (Pr. 544 = "14")

(1) Remote I/O (32 points (64 points occupied))

Same as when *Pr. 544* = "0" *(Refer to page 38.)*

(2) Remote register

Address	Description		Refer to Page	Address	Description		Refer to Page
	Upper 8 Bits	**Lower 8 Bits**			**Upper 8 Bits**	**Lower 8 Bits**	
RWwn	Monitor code 2	Monitor code 1	*51*	RWrn	First monitor value		*54*
RWwn+1	Set frequency (0.01Hz increments)*2		*51*	RWrn+1	Second monitor value		*54*
RWwn+2	Link parameter extended setting	Instruction code	*52*	RWrn+2	Reply code 2	Reply code 1	*54*
RWwn+3	Write data		*52*	RWrn+3	Read data		*54*
RWwn+4	Monitor code 3		*52*	RWrn+4	Third monitor value		*55*
RWwn+5	Monitor code 4		*52*	RWrn+5	Fourth monitor value		*55*
RWwn+6	Monitor code 5		*52*	RWrn+6	Fifth monitor value		*55*
RWwn+7	Monitor code 6		*52*	RWrn+7	Sixth monitor value		*55*
RWwn+8	Faults history No.	H00	*52*	RWrn+8	Faults history No.	Fault data	*55*
RWwn+9	PID set point (0.01% increments) *1		*53*	RWrn+9	Fault record (output frequency)		*55*
RWwn+A	PID measured value (0.01% increments) *1		*53*	RWrn+A	Fault record (output current)		*55*
RWwn+B	PID deviation (0.01% increments) *1		*53*	RWrn+B	Fault record (output voltage)		*55*
RWwn+C	H00 (Free)		—	RWrn+C	Fault record (energization time)		*55*
RWwn+D				RWrn+D	H00 (Free)		—
RWwn+E				RWrn+E			
RWwn+F				RWrn+F			

("n" indicates a value determined according to the station number setting.)

*1   When *Pr. 128* = "50, 51, 60, 61", they are valid.

*2   When *Pr. 37* is not equal to "0", this will be machine speed display (1 increments).

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6.2.5 I/O signal when CC-Link ver.2 octuple setting is selected (Pr. 544 = "18")

(1) Remote I/O (32 points (128 points occupied))

Same as when *Pr. 544* = "0" *(Refer to page 38.)*

(2) Remote register

Address	Description		Refer to Page	Address	Description		Refer to Page
	Upper 8 Bits	**Lower 8 Bits**			**Upper 8 Bits**	**Lower 8 Bits**	
RWwn	Monitor code 2	Monitor code 1	*51*	RWrn	First monitor value		*54*
RWwn+1	Set frequency (0.01Hz increments) *1		*51*	RWrn+1	Second monitor value		*54*
RWwn+2	Link parameter extended setting	Instruction code	*52*	RWrn+2	Reply code 2	Reply code 1	*54*
RWwn+3	Write data		*52*	RWrn+3	Read data		*54*
RWwn+4	Monitor code 3		*52*	RWrn+4	Third monitor value		*55*
RWwn+5	Monitor code 4		*52*	RWrn+5	Fourth monitor value		*55*
RWwn+6	Monitor code 5		*52*	RWrn+6	Fifth monitor value		*55*
RWwn+7	Monitor code 6		*52*	RWrn+7	Sixth monitor value		*55*
RWwn+8	Faults history No.	H00	*52*	RWrn+8	Faults history No.	Fault data	*55*
RWwn+9	PID set point (0.01% increments) *1		*53*	RWrn+9	Fault record (output frequency)		*55*
RWwn+A	PID measured value (0.01% increments) *1		*53*	RWrn+A	Fault record (output current)		*55*
RWwn+B	PID deviation (0.01% increments) *1		*53*	RWrn+B	Fault record (output voltage)		*55*
RWwn+C				RWrn+C	Fault record (energization time)		*55*
RWwn+D	H00 (Free)		—	RWrn+D			
RWwn+E				RWrn+E	H00 (Free)		—
RWwn+F				RWrn+F			
RWwn+10	Link parameter extended setting	Instruction code	*53*	RWrn+10	Reply code		*55*

*1 When *Pr. 128* = "50, 51, 60, 61", they are valid.
*2 When *Pr. 37* is not equal to "0", this will be machine speed display (1 increments).

Address	Description		Refer to Page	Address	Description		Refer to Page
	Upper 8 Bits	**Lower 8 Bits**			**Upper 8 Bits**	**Lower 8 Bits**	
RWwn+11	Write data		*53*	RWrn+11	Read data		*55*
RWwn+12	Link parameter extended setting	Instruction code	*53*	RWrn+12	Reply code		*55*
RWwn+13	Write data		*53*	RWrn+13	Read data		*55*
RWwn+14	Link parameter extended setting	Instruction code	*53*	RWrn+14	Reply code		*55*
RWwn+15	Write data		*53*	RWrn+15	Read data		*55*
RWwn+16	Link parameter extended setting	Instruction code	*53*	RWrn+16	Reply code		*55*
RWwn+17	Write data		*53*	RWrn+17	Read data		*55*
RWwn+18	Link parameter extended setting	Instruction code	*53*	RWrn+18	Reply code		*55*
RWwn+19	Write data		*53*	RWrn+19	Read data		*55*
RWwn+1A	H00 (Free)		—	RWrn+1A	H00 (Free)		—
RWwn+1B				RWrn+1B			
RWwn+1C				RWrn+1C			
RWwn+1D				RWrn+1D			
RWwn+1E				RWrn+1E			
RWwn+1F				RWrn+1F			

("n" indicates a value determined according to the station number setting.)

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7 DETAILS OF INPUT AND OUTPUT SIGNALS

The following device No. are those for station 1.
For stations 2 and later, the device No. are different. (Refer to the instruction manual of CC-Link master module for correspondence between the device No. and station number.)

7.1 Details of remote input and output signals

7.1.1 Output signals (master module to inverter (FR-A7NC))

The output signals from the master module are indicated. (Input signals to inverter)

Device No.	Signal	Description	
RY0	Forward rotation command *2	0 : Stop command 1 : Forward rotation start	When "1" is set, a start command is input to the inverter.
RY1	Reverse rotation command *2	0 : Stop command 1 : Reverse rotation start	When "1" is set in RY0 and RY1, a stop command is input.
RY2	High-speed operation command (terminal RH function) *1	Functions assigned to terminals RH, RM and RL are activated.	
RY3	Middle-speed operation command (terminal RM function) *1		
RY4	Low-speed operation command (terminal RL function) *1		
RY5	JOG operation selection 2 (JOG2 signal) *2, *6	1 : JOG operation is selected	
RY6	Second function selection (RT signal) *2	1 : Second function is selected	
RY7	Terminal 4 input selection (AU signal) *2	1 : Terminal 4 input is the main speed setting	
RY8	—— (NET X1 function) *1, *6	Function assigned to *Pr. 185* is activated.	
RY9	Output stop (terminal MRS function) *1	Function assigned to terminal MRS is activated.	
RYA	—— (NET X2 function) *1, *6	Function assigned to *Pr. 186* is activated.	
RYB	Reset (terminal RES function) *1	Function assigned to terminal RES is activated.	
RYC	Monitor command	When "1" is set in the monitor command (RYC), the monitored value is set in the remote register RWr0, 1, 4 to 7, and "1" is set in the monitoring (RXC). While "1" is set in the monitor command (RYC), the monitored data is always updated.	

Device No.	Signal	Description
RYD *4	Frequency setting command (RAM)	When "1" is set in the frequency setting command (RYD), the set frequency (RWw1) is written to RAM of the inverter. *3 After the writing completes, "1" is set in the frequency setting completion (RXD).
RYE *4	Frequency setting command (RAM, EEPROM)	When "1" is set in the frequency setting command (RYE), the set frequency (RWw1) is written to RAM and EEPROM of the inverter. After the writing completes, "1" is set in the frequency setting completion (RXE). To change the frequency consecutively, be sure to write data to the inverter RAM.
RYF *4	Instruction code execution request	When "1" is set in the instruction code execution request (RYF), processes corresponding to the instruction codes set to RWw2, 10, 12, 14, 16 and18 are executed. "1" is set in the instruction code execution request (RXF) after completion of instruction codes. When an instruction code execution error occurs, a value other than "0" is set in the reply code (RWr2, 10, 12, 14, 16, 18).
RY1A	Error reset request flag	When "1" is set in the error reset request flag (RY1A) at an inverter fault, the inverter is reset, then "0" is set in the error status flag (RX1A). *5
RY1B	— (NET X3 function) *1, *6	Function assigned to *Pr. 187* is activated.
RY1C	— (NET X4 function) *1, *6	Function assigned to *Pr. 188* is activated.
RY1D	— (NET X5 function) *1, *6	Function assigned to *Pr. 189* is activated.

*1 Signal names are initial values. Using *Pr. 180 to Pr. 189*, you can change input signal functions. Note that some of signals do not accept a command through network according to the *Pr. 338* and *Pr. 339* settings. For example, reset (terminal RES function) of RYB cannot be controlled by the network. (Refer to the Instruction Manual (Applied) of the inverter.)
For the details of *Pr. 180 to Pr. 189*, refer to the Instruction Manual (Applied) of the inverter. (The *Pr. 185 to Pr. 189* settings are available only for the FR-E700EX series.)
*2 The signals are fixed. They cannot be changed using parameters.
*3 While "1" is set in the frequency setting command (RYD), the set frequency (RWw1) is always applied.
*4 If "1" is set in these registers at the same time while *Pr. 544* = "0," only one of these is executed.
*5 Refer to *page 29* for operation conditions of inverter reset.
*6 Available only for the FR-E700EX series. For the details, refer to the Instruction Manual (Applied) of the drive unit.

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7.1.2 Input signals (inverter (FR-A7NC) to master module)

The input signals to the master module are indicated. (Output signals from inverter)

Device No.	Signal	Description
RX0	Forward running	0 : Other than forward running (during stop or reverse rotation) 1 : Forward running
RX1	Reverse running	0 : Other than reverse running (during stop or forward rotation) 1 : Reverse running
RX2	Running (terminal RUN function) *1	Functions assigned to terminals RUN are activated.
RX3	Up to frequency (SU signal) *2	1 : Output frequency has reached the set frequency
RX4	Overload alarm (OL signal) *2	1 : Overload alarm occurrence
RX5	⏤ (NET Y1 function) *1, *4	Function assigned to *Pr. 193* is activated.
RX6	Frequency detection (terminal FU function) *1	Functions assigned to terminals FU and ABC activate.
RX7	Fault (terminal ABC function) *1	
RX8	⏤ (NET Y2 function) *1, *4	Function assigned to *Pr. 194* is activated.
RX9	⏤ (DO0 function) *3	
RXA	⏤ (DO1 function) *3	Functions assigned to *Pr. 313 to Pr. 315* are activated.
RXB	⏤ (DO2 function) *3	
RXC	Monitoring	After "1" is set in the monitor command (RYC), and the monitored value is set in the remote register Rwr0, 1, 4 to 7, "1" is set in this signal. When "0" is set in the monitor command (RYC), "0" is set in this signal.

Device No.	Signal	Description
RXD	Frequency setting completion (RAM)	After "1" is set in the frequency setting command/torque command (RYD) and the frequency setting command/torque command is written to the inverter RAM, "1" is set in this signal. When "0" is set in the frequency setting command/torque command (RYD), "0" is set in this signal.
RXE	Frequency setting completion (RAM, EEPROM)	After "1" is set in the frequency setting command/torque command (RYE) and the frequency setting command/torque command is written to the inverter RAM and EEPROM, "1" is set in this signal. When "0" is set in the frequency setting command/torque command (RYE), "0" is set in this signal.
RXF	Instruction code execution completion	After "1" is set in the instruction code execution request (RYF) and the processes corresponding to the instruction codes (RWw2, 10, 12, 14, 16 and 18) are executed, "1" is set in this signal. When "0" is set in the instruction code execution request (RYF), "0" is set in this signal.
RX16	— (NET Y3 function) *1, *4	Function assigned to *Pr. 195* is activated.
RX17	— (NET Y4 function) *1, *4	Function assigned to *Pr. 196* is activated.
RX1A	Error status flag	When an inverter error occurs (protective function is activated), "1" is set in this signal.
RX1B	Remote station ready	When the inverter goes into the ready status upon completion of initial setting after power-ON or hardware reset, "1" is set in this signal. When an inverter error occurs (protective function is activated), "0" is set in this signal. The signal is used as an interlock signal during the write to/read from the master module.

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Device No.	Signal	Description
RX1C	In-position (Y36 signal) *2, *4	1: Number of droop pulses has reached the in-position width setting
RX1D	Position command creating (PBSY signal) *2, *4	1: Position command creating
RX1E	Home position return completed (ZP signal) *2, *4	1: Home position return completed
RX1F	Home position return failure warning (ZA signal) *2, *4	1: Home position return failure

*1   Signal names are initial values. Using *Pr. 190 to Pr. 196*, you can change output signal functions.
Refer to the Instruction Manual (Applied) of the inverter for details of *Pr. 190 to Pr. 196*. (The *Pr. 193 to Pr. 196* settings are available only for the FR-E700EX series.)
*2   The signals are fixed. They cannot be changed using parameters.
*3   Signals are not assigned in the initial setting. Use *Pr. 313 to Pr. 315* to assign signals to the devices RX9 to RXB. The settings of *Pr. 313 to Pr. 315* are the same as those of *Pr. 190 to Pr. 192 (output terminal function selection)*.
Refer to *Pr. 190 to Pr. 192* of the Instruction Manual (Applied) of the inverter for details of signals.
*4   Available only for the FR-E700EX series. For the details, refer to the Instruction Manual (Applied) of the drive unit.

7.2 Details of remote register

7.2.1 Remote register (master module to inverter (FR-A7NC))

●**Remote register definition**

Device No.	Signal	Description
RWw0	Monitor code1/ Monitor code2	Set the monitor code to be monitored. By setting "1" in RYC after setting, the specified monitored data is stored in RWr0/RWr1. Refer to *page 61* for monitor code details.
RWw1	Set frequency *1, *2	· Specify the set frequency or machine speed. At this time, whether to write to RAM or EEPROM is decided with the RYD and RYE settings. After setting the set frequency in this register, set "1" in RYD or RYE to write the frequency. After writing of frequency is completed, "1" is set in RXD or RXE in response to the input command. · The setting range is 0 to 400.00Hz (0.01Hz increments). Write "40000" when setting 400.00Hz.

*1 When *Pr. 37* is not equal to "0", this will be machine speed display (1 increments).
*2 When *Pr. 541 Frequency command sign selection (CC-Link)* = "1", the setting value has either + or -. When the setting value is negative, the command is inversed from starting command.
    Setting range: -327.68Hz to 327.67Hz (-327.68 to 327.67) 0.01Hz increments.
    For details refer to *page 33*.

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Device No.	Signal	Description
RWw2	Link parameter extended setting/ Instruction code	Set the instruction code for execution of operation mode rewrite, parameter read/ write, error reference, error clear, etc. *(Refer to page 57.)* Set "1" in RYF to execute the corresponding instruction after completing the register setting. "1" is set in RXF after completing the execution of the instruction. When a value other than "0" is set in *Pr. 544 CC-Link extended setting*, upper eight bits are link parameter extended setting. Example) When reading *Pr. 160*, instruction code is H0200.
RWw3	Write data	Set the data specified by the RWw2 instruction code. (When required) Set "1" in RYF after setting RWw2 and this register. Set zero when the write code is not required.
RWw4	Monitor code 3 *3	Set the monitor code to be monitored. By setting "1" in RYC after setting, the
RWw5	Monitor code 4 *3	specified monitored data is stored in RWr□.
RWw6	Monitor code 5 *3	(□ indicates a register number. (RWr4 to 7))
RWw7	Monitor code 6 *3	Refer to *page 61* for monitor code details.
RWw8	Faults history No.	Set the individual fault number of the faults history that you want to read. Up to the 8th previous fault can be read. Upper digits: H00 (the latest fault) to H07 (8th oldest fault) / lower digits: H00 When any of H08 to HFF is set to the upper digits, the fault record becomes an undetermined value.

*3   Write data is hexadecimal and only lower two digits are valid. (Upper 2 digits are ignored.)

Device No.	Signal	Description	
RWw9	PID set point *4	Set the PID set point Setting range : "0 to 100.00%"	· Input a value 100 times greater than the value to be set For example, input "10000" when setting 100.00%.
RWwA	PID measured value *4	Set the PID measured value Setting range : "0 to 100.00%"	
RWwB	PID deviation *4	Set the PID deviation. Setting range : "-100.00% to 100.00%"	· Refer to the Instruction Manual (Applied) of the inverter for details of PID control.
RWw10, RWw12, RWw14, RWw16, RWw18	Link parameter extended setting/ Instruction code	Set the instruction code *(refer to page 57)* for execution of operation mode rewrite, parameter read/write, error reference, error clear, etc. The instructions are executed in the following order by setting "1" in RYF after completing the register setting: RWw2, 10, 12, 14, 16, then 18. After completing the execution up to RWw18, "1" is set in RXF. Set HFFFF to disable an instruction by RWw10 to 18. (RWw2 is always executed.) The first 8 bits are link parameter extended setting. Example) When reading *Pr. 160*, instruction code is H0200.	
RWw11, RWw13, RWw15, RWw17, RWw19	Write data	Set the data specified by the instruction code of RWw10, 12, 14, 16, and 18. (when required) RWw10 and 11, 12 and 13, 14 and 15, 16 and 17, and 18 and 19 correspond each other. Set "1" in RYF after setting the instruction codes (RWw10, 12, 14, 16, and 18) and the corresponding register. Set "0" when the write code is not required.	

*4 When *Pr. 128* = "50, 51, 60, 61", they are valid. If the data outside the range is set, the previous setting is retained. Refer to the Instruction Manual (Applied) of the inverter for details of *Pr. 128*.

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7.2.2 Remote register (inverter (FR-A7NC) to master module)

(1) Remote register definition

Device No.	Signal	Description
RWr0	First monitor value *1	When "1" is set in RYC, the specified monitored data is set to the lower 8 bits of the monitor code (RWw0). When *Pr. 37 Speed display* ≠ 0 and output frequency or set frequency monitor is set for monitor code (RWw0), machine speed setting (1 unit) is monitored.
RWr1	Second monitor value (Output frequency) *1	When "0" is set to the upper 8 bits of the monitor code (RWw0), the current output frequency is always set. When a value other than "0" is set to the upper 8 bits of the monitor code (RWw0) while "1" is set in RYC, the monitor data specified by the upper 8 bits of the monitor code (RWw0) is set. When *Pr. 37 Speed display* ≠ 0 and output frequency or set frequency monitor is set for monitor code (RWw0), machine speed setting (1 unit) is monitored.
RWr2	Reply code (when *Pr. 544* = 0)	When "1" is set in RYD or RYE, the reply code for the frequency setting command is set. When "1" is set in RYF, the reply code corresponding to the instruction code RWw2 is set. The value "0" is set for a normal reply and any digit other than "0" is set for data fault, mode error, etc. *(reply code ☞ Refer to page 56.)*
	Reply code 1 (when *Pr. 544* ≠ 0)	Lower 8 bits of RWr2 When "1" is set in RYD or RYE, the reply code for the frequency setting command is set. *(reply code 1 ☞ Refer to page 56.)*
	Reply code 2 (when *Pr. 544* ≠ 0)	Upper 8 bits of RWr2 When "1" is set in RYF, the reply code corresponding to the instruction code RWw2 is set. *(reply code 2 ☞ Refer to page 56.)*
RWr3	Read data	For a normal reply, the reply data to the instruction specified by the instruction code is set.

Device No.	Signal	Description
RWr4	Third monitor value *1	When "1" is set in RYC, the monitored data specified by the monitor code (RWw□) is saved. (□ indicates a register number (RWw4 to 7)
RWr5	Fourth monitor value *1	
RWr6	Fifth monitor value *1	When *Pr. 37 Speed display* ≠ 0 and output frequency or set frequency monitor is set for monitor code (RWw0), machine speed setting (1 unit) is monitored.
RWr7	Sixth monitor value *1	
RWr8	Fault record (fault data)	The fault data of faults history No. specified by RWw8 is stored in the lower 8 bits. Upper 8 bits of RWw8 will be reverted back to the upper 8 bits.
RWr9	Fault record (output frequency)	Output frequency of the faults history No. specified in RWw8 is stored.
RWrA	Fault record (output current)	Output current of the faults history No. specified in RWw8 is stored.
RWrB	Fault record (output voltage)	Output voltage of the faults history No. specified in RWw8 is stored.
RWrC	Fault record (energization time)	Energization time of the faults history No. specified in RWw8 is stored.
RWr10 to RWr19	Reply code	When "1" is set in RYF, the reply codes corresponding to the instruction code RWw10, 12, 14, 16, and 18 are set. The value "0" is set for a normal reply and other than "0" is set for data fault, mode error, etc. *(reply code ☞ Refer to page 56.)*
	Read data	For a normal reply, the reply data to the instruction specified by the instruction code is set.

*1 For the FR-E700EX series, the display with a minus sign can be selected by setting *Pr. 290 Monitor negative output selection*. For the details of *Pr. 290*, refer to the Instruction Manual (Applied) of the drive unit.

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(2) Reply code definition

The reply to the instruction execution is set to RWr2, 10, 12, 14, 16, 18.

When executing the frequency setting (RYD, RYE) or instruction code execution (RYF), check the reply code (RWr2) in the remote register after execution.

	Data	Item	Alarm Definition	Remarks
Reply code	H0000	Normal	No error (normal completion of instruction code execution)	· Reply code to Rwr2 when *Pr. 544* = "0" · Reply code to RWwr10, 12, 14, 16, and 18 when *Pr. 544* = "18"
	H0001	Write mode error	Parameter write was attempted during operation other than a stop in the Network operation mode.	
	H0002	Parameter selection error	Unregistered code number was set.	
	H0003	Setting range error	Set data is outside the permissible data range.	
Reply code 1	H00	Normal	No error (normal completion of instruction code execution)	Reply code to RWwr2 when *Pr. 544* ≠ "0"
	H01	Write mode error	Parameter write was attempted during operation other than a stop in the Network operation mode.	
	H03	Frequency command setting range error	Frequency outside the range is set	
Reply code 2	H00	Normal	No error (normal completion of instruction code execution)	
	H01	Write mode error	Parameter write was attempted during operation other than a stop in the Network operation mode.	
	H02	Parameter selection error	Unregistered code number was set.	
	H03	Setting range error	Set data is outside the permissible data range.	

7.2.3   Instruction codes

Set the instruction code using a remote register (RWw) *(Refer to page 51.)*
The definition read by the instruction code is stored in the remote register (RWr). *(Refer to page 54.)*

Item		Read/ Write	Code Number	Description
Operation mode		Read	H007B	H0000: Network operation mode H0001: External operation mode, External JOG operation mode H0002: PU operation mode, External/PU combined operation mode 1 and 2, PUJOG operation mode
		Write	H00FB	H0000: Network operation mode H0001: External operation mode H0002: PU operation mode (*Pr. 79* = "6")
Monitor	Output frequency *1	Read	H006F	H0000 to HFFFF: Running frequency .....0.01Hz increments Machine speed ....1 increments (When *Pr. 37* ≠ "0")
	Output current	Read	H0070	H0000 to HFFFF: Output current (hexadecimal) Increments 0.01A
	Output voltage	Read	H0071	H0000 to HFFFF: Output voltage (hexadecimal) Increments 0.1V
	Special monitor	Read	H0072	H0000 to HFFFF: Check the data of the monitor selected by the instruction code H00F3.
	Special monitor selection No.	Read	H0073	H01 to H3F: Monitor selection data Refer to monitor code. *(Refer to page 61.)*
		Write	H00F3 *2	

*1   When "100" is set in *Pr. 52 DU/PU main display data selection*, set frequency is monitored during a stop and output frequency is monitored during running.
*2   Write data is hexadecimal and only lower two digits are valid. (Upper 2 digits are ignored.)

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Item		Read/ Write	Code Number	Description
Monitor	Faults history	Read	H0074 to H0077	H0000 to HFFFF: Last two alarm records b15　　　　　　　b8 b7　　　　　　　b0 H74 | Second fault in past | Latest fault | H75 | Fourth fault in past | Third fault in past | H76 | Sixth fault in past | Fifth fault in past | H77 | Eighth fault in past | Seventh fault in past | For the details of fault records (fault codes), refer to the Instruction Manual (Applied) of the inverter.
Set frequency (RAM)		Read	H006D	Read set frequency or machine speed from RAM or EEPROM. · H0000 to HFFFF: 　Set frequency...0.01Hz increments 　Machine speed ..1 increments (When *Pr. 37* ≠ "0")
Set frequency (EEPROM)			H006E	
Set frequency (RAM) *3		Write	H00ED	Write set frequency or machine speed to RAM or EEPROM. · H0000 to H9C40 (0 to 400.00Hz) : 　Frequency........0.01Hz increments · H0000 to H270E (0 to 9998) : " 　Machine speed ..1 increments (When *Pr. 37* ≠ "0") · To change the set frequency consecutively, write data to the inverter RAM. (Instruction code: HED)
Set frequency (RAM and EEPROM) *3		Write	H00EE	

*3　Setting from remote registers can be made.

Item	Read/ Write	Code Number	Description
Parameter	Read	H0000 to H0063	· Refer to the instruction code in the parameter list in the Instruction Manual (Applied) of the inverter to read and write as required. Write to *Pr. 77* and *Pr. 79* is disabled. When setting *Pr. 100* and later, set link parameter extended setting.
	Write	H0080 to H00E3	· Set 65520 (HFFF0) as a parameter value "8888" and 65535 (HFFFF) as "9999". · When changing the parameter values frequently, set "1" in *Pr. 342* to write them to the RAM. For the details of *Pr. 342*, refer to the Instruction Manual (Applied) of the inverter.
Faults history batch clear	Write	H00F4	H9696: Clears the faults history in batch.
Parameter clear All parameter clear	Write	H00FC	All parameters return to the initial values. Whether to clear communication parameters or not can be selected according to data. (○: Clear, ×: Not clear) Refer to the Instruction Manual (Applied) of the inverter for parameter clear, all clear, and communication parameters. <table><tr><th>Clear Type</th><th>Data</th><th>Communication Pr.</th></tr><tr><td rowspan=2>Parameter clear</td><td>H9696</td><td>○</td></tr><tr><td>H5A5A</td><td>× *4</td></tr><tr><td rowspan=2>All parameter clear</td><td>H9966</td><td>○</td></tr><tr><td>H55AA</td><td>× *4</td></tr></table> When clear is executed for H9696 or H9966, communication-related parameter settings also return to the initial values. When resuming operation, set the parameters again. Executing clear will clear the instruction code H00EC, H00F3, and H00FF settings.

*4 Turning OFF the power supply while clearing parameters with H5A5A or H55AA also clears the communication parameter settings back to the initial settings.

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Item	Read/Write	Code Number	Description
Inverter reset	Write	H00FD	H9696: Resets the inverter.
Link parameter extended setting *5	Read	H007F	H0000 to H0009: Parameter description is changed according to the instruction code (extended) setting. Refer to the Instruction Manual (Applied) of the inverter for instruction code (extended) settings.
	Write	H00FF	
Second parameter changing *6	Read	H006C	When setting the bias/gain (instruction codes H5E to H61, HDE to HE1) parameters H00: Frequency *7 H01: Analog value set in parameters H02: Analog value input from the terminal
	Write	H00EC	

*5 Setting is valid only when *Pr. 544* = "0". When *Pr. 544* ≠ "0", set using RWw2 or RWw10, 12, 14, 16, or 18. *(Refer to page 52.)*
*6 Setting can be made when the link parameter extended setting = "1, 9".
*7 Gain frequencies can be written using *Pr. 125* (instruction code H99) and *Pr. 126* (instruction code H9A) also.

7.2.4 Monitor codes

Information about the inverter can be monitored by setting the special monitor selection No. of the instruction code and monitor code using the remote registers, RWw0 and RWw4 to 7.

• For the monitor code (RWw0), select the first monitor description (RWr0) from the lower 8 bits and the second monitor description (RWr1) from the upper 8 bits.

(Example) When output current is selected for the first monitor and output voltage is selected for the second monitor → monitor code is H0302

• When *Pr. 544* = "12, 14, or 18", descriptions of monitor codes 3 (RWw4) to 6 (RWw7) can be selected.

Monitor Code	Second Monitor Description (the First 8 Bits)	First, Third to Sixth Monitor Description (the Last 8 Bits)	Increments
H00	Output frequency/machine speed	No monitoring (monitor value is 0)	0.01Hz/1
H01	Output frequency/machine speed		0.01Hz/1
H02	Output current		0.01A
H03	Output voltage		0.1V
.	.	.	.
.	.	.	.
.	.	.	.

REMARKS

• The monitor code (monitor item) number H01 or later is the same as the special monitor selection number of the Mitsubishi inverter protocol (computer link communication) on the inverter side. For the details of the monitor code and monitor description, refer to the Instruction Manual (Applied) of the inverter.

• When the remote registers RWw0 and RWw4 to 7 are used for monitoring, H00 (output frequency), H01 (output frequency), and H05 (set frequency) always indicate the frequency regardless of the settings of *Pr. 37, Pr. 144*. (The *Pr. 144* setting is available only for the FR-E700EX series.)

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8 PROGRAMMING EXAMPLES

This chapter provides programming examples which control the inverter with sequence programs.

Item	Program Example	Refer to Page
Reading the inverter status	Reading the inverter status from the buffer memory of the master station	*65*
Setting the operation mode	Selecting the Network operation mode	*66*
Setting the operation commands	Commanding the forward rotation and middle speed signals	*67*
Setting the monitoring function	Monitoring the output frequency	*68*
Reading a parameter value	Reading the value of *Pr. 7 Acceleration time*	*69*
Writing a parameter value	Setting "3.0s" in *Pr. 7 Acceleration time*	*70*
Setting the running frequency (running speed)	Setting to 50.00Hz	*71*
Reading the fault records	Reading the inverter faults	*73*
Inverter reset	Perform inverter reset at a fault occurrence.	*74*

(1) System configuration for programming example
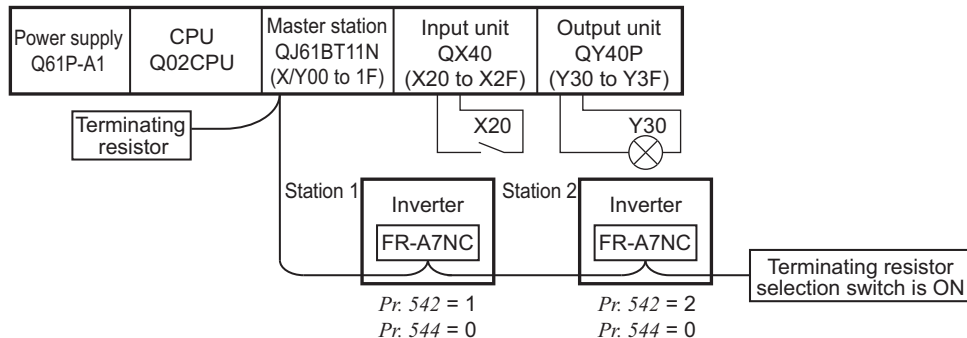
(2) Network parameter setting of the master station
Network parameters are set as below.

Item		Setting Conditions
Start I/O No.		0000
Operation settings	Data link alarm station setting	Input clear
	Setting at CPU stop	Refresh
Type		Master
Mode		Remote net ver.1 mode
All connect count		2
Remote input (RX)		X1000
Remote output (RY)		Y1000
Remote register (RWr)		W0

Item		Setting Conditions
Remote register (RWw)		W100
Special relay (SB)		SB0
Special register (SW)		SW0
Retry count		3
Automatic reconnection station count		1
CPU down select		Stop
Scan mode settings		Asynchronous
Station information	Station type	Remote device station

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(3) The relation between the device of the programmable controller CPU and remote I/O (RX, RY) of the remote device station is as follows: The devices used actually are indicated in shaded regions.
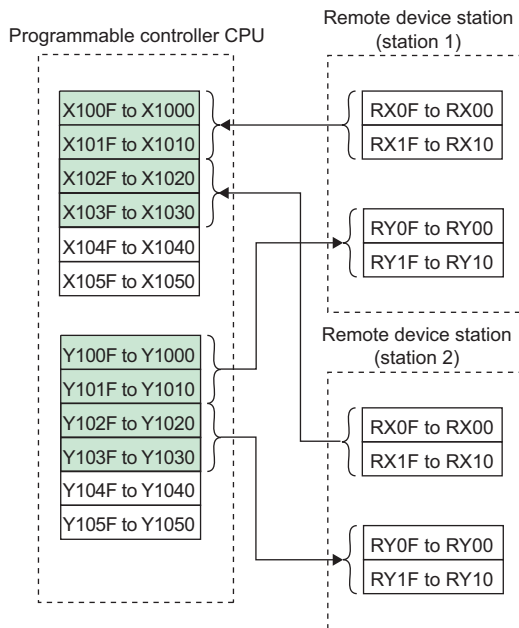
(4) The relation between the device of the programmable controller CPU and remote register (RWw, RWr) of the remote device station is as follows: The devices used actually are indicated in shaded regions.
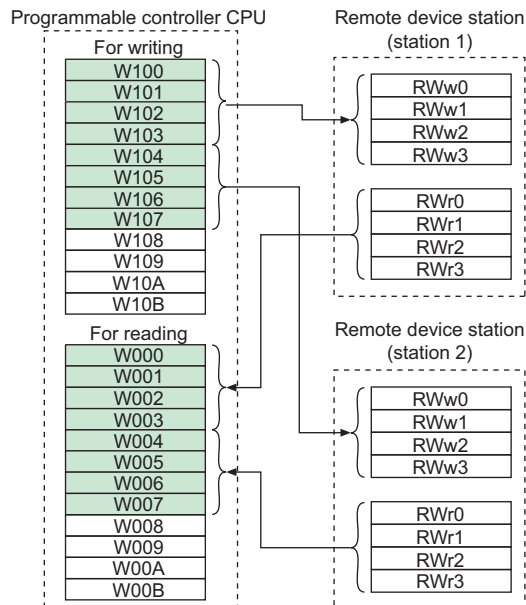
8.1 Program example for reading the inverter status

The following program turns ON Y00 of the output unit when station 1 inverter is running

```
     X0    X0F   X1   SW80.0
0   ─┤╱├──┤ ├──┤ ├──┤╱├──────────────────────────(M0  )─   Check the data link status of the station 1
     M0   X1002
7   ─┤ ├──┤ ├────────────────────────────────────(Y30 )─   Turn ON the output unit (Y00)
         Inverter running (RX02)
10  ─────────────────────────────────────────────[END ]─
```

```
                              X100F                                              X1000
   Remote input              b15 b14 b13 b12 b11 b10 b9 b8 b7 b6 b5 b4 b3 b2 b1 b0
One   ┌ RXF  to RX0 ┐   →    │ 0 │ 0 │ 0 │ 0 │ 0 │ 0 │ 0 │ 0 │ 0 │ 0 │ 0 │ 0 │ 0 │ 0 │ 0 │ 0 │
station └ RX1F to RX10 ┘                                         └──────────────┬──────────────┘
                                                                        [Inverter status]
```
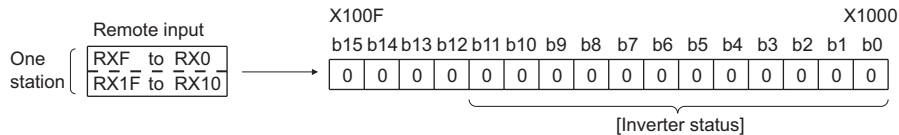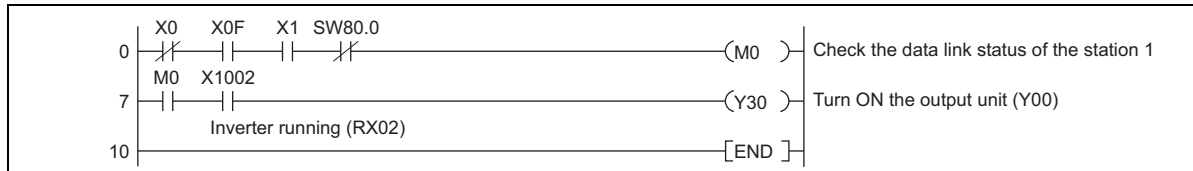
Inverter status
b0 : During forward rotation
b1 : Reverse running
b2 : Running (terminal RUN function) *1
b3 : Up to frequency (SU signal)
b4 : Overload alarm (OL signal)
b5 : — (NET Y1 function) *2
b6 : Frequency detection (terminal FU function) *1
b7 : Fault (terminal ABC function) *1
b8 : — (NET Y2 function) *2
b9 : — (DO0 function) *1
b10 : — (DO1 function) *1
b11 : — (DO2 function) *1

*1   These signals are initial values. You can change output signals using *Pr. 190 to Pr. 192*, *Pr. 313 to Pr. 315 (output terminal function selection)*. (For the details of *Pr. 190 to Pr. 192* and *Pr. 313 to Pr. 315*, refer to the Instruction Manual (Applied) of the inverter.

*2   For the FR-E700EX series, the output signals can be assigned to *Pr. 193* and *Pr. 194 (output terminal function selection)*. (For the details of *Pr. 193* and *Pr. 194*, refer to the Instruction Manual (Applied) of the inverter.)

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8.2   Program example for setting the operation mode

The following explains a program to write various data to the inverter.

The following explains a program to change the operation mode of station 1 inverter to network operation.

· Operation mode writing code number: HFB (hexadecimal)
· Network operation set data: H0000 (hexadecimal) *(Refer to page 57.)*
· The reply code at the time of instruction code execution is set to D2. *(Refer to page 56.)*
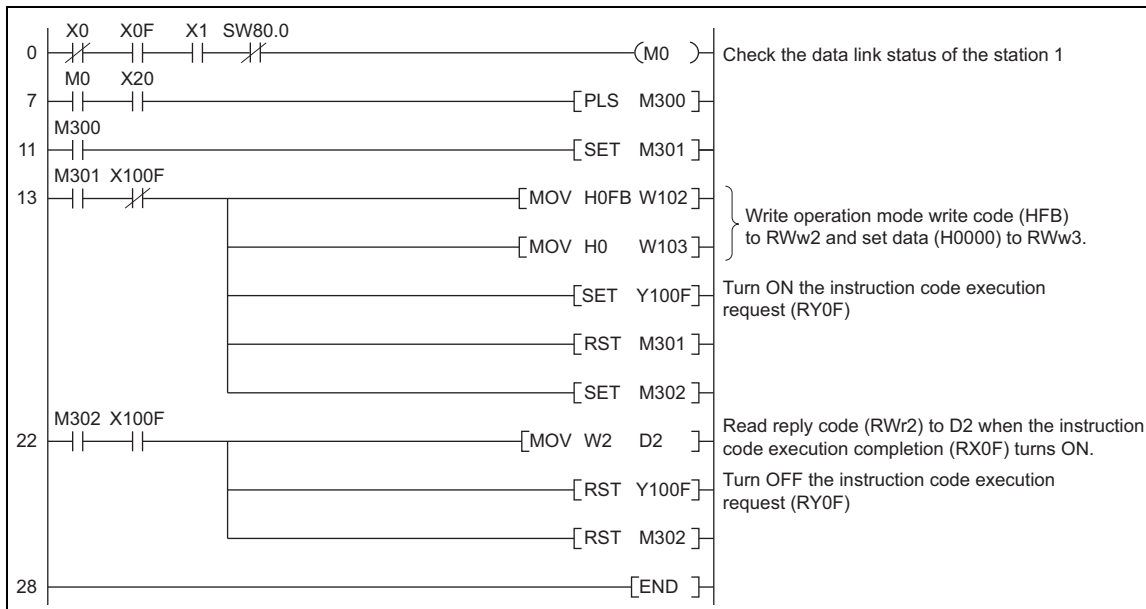
8.3 Program example for setting the operation commands

The following program gives a forward command and middle speed command to station 1 inverter.

b15	b7	b0
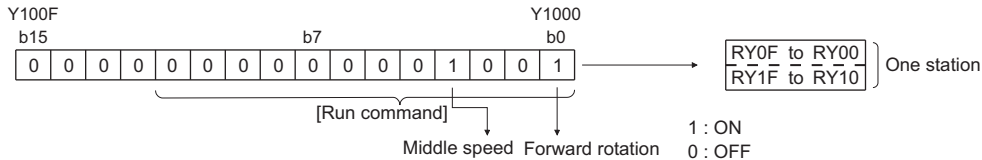
Run command

b0 : Forward rotation command
b1 : Reverse rotation command
b2 : High-speed operation command (terminal RH function) *1
b3 : Middle-speed operation command (terminal RM function) *1
b4 : Low-speed operation command (terminal RL function) *1
b5 : JOG operation selection 2 (JOG2 signal) *2

b6 : Second function selection (RT signal)
b7 : Terminal 4 input selection (AU signal)
b8 : — (NET X1 function) *3
b9 : Output stop (terminal MRS function) *1
b10 : — (NET X2 function) *3
b11 : Inverter reset (terminal RES function) *1

*1 These signals are initial values. You can change input signals using *Pr. 180 to Pr. 184 (input terminal function selection)*. Note that some of the signals do not receive a command from the programmable controller depending on the setting. (For the details of *Pr. 180 to Pr. 184,* refer to the Instruction Manual (Applied) of the inverter.)
*2 Available only for the FR-E700EX series. For the details, refer to the Instruction Manual (Applied) of the drive unit.
*3 For the FR-E700EX series, the input signals can be assigned to *Pr. 185* and *Pr. 186 (input terminal function selection)*. (For the details of *Pr. 185* and *Pr. 186*, refer to the Instruction Manual (Applied) of the inverter.)

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## 8.4 Program example for monitoring the output frequency

The following explains a program to read monitor functions of the inverter.

The following program reads the output frequency of station 1 inverter to D1.
Output frequency reading code number: H0001 (hexadecimal)
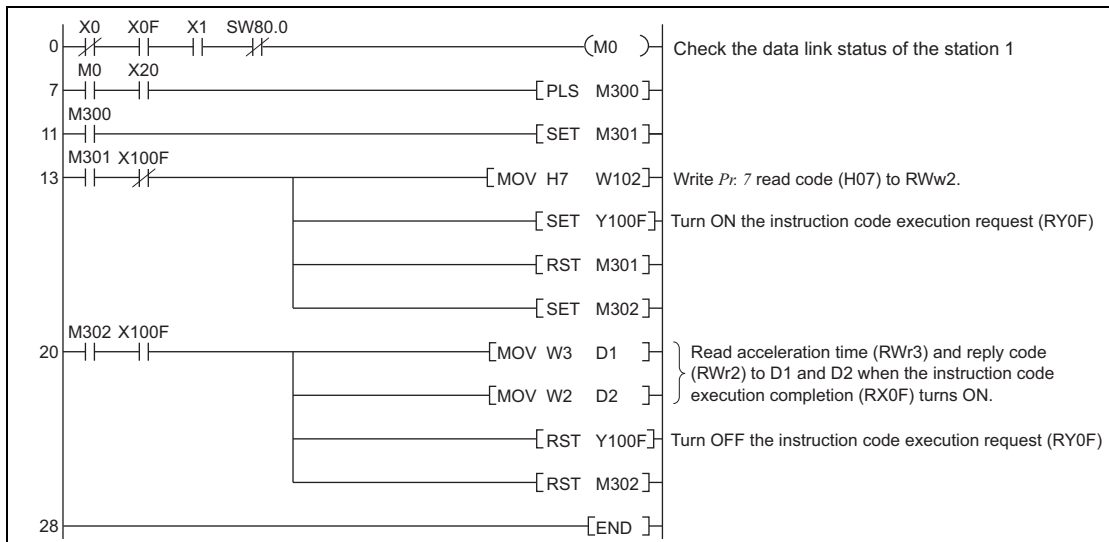Refer to *page 61* for the monitor code numbers.
(Example) The output frequency of 60Hz is indicated as H1770 (6000).
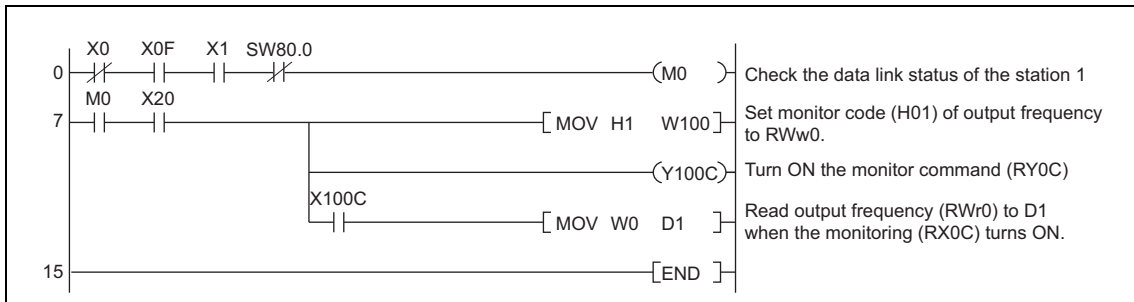
8.5 Program example for parameter reading

The following program reads *Pr. 7 Acceleration time* of station 1 inverter to D1.

· *Pr. 7 Acceleration time* reading code number: H07 (hexadecimal)
· Refer to the Instruction Manual (Applied) of the inverter for details of the parameter codes.
· The reply code at the time of instruction code execution is set to D2. *(Refer to page 56.)*


```
     X0   X0F  X1  SW80.0
 0  ──┤/├──┤├──┤├──┤/├─────────────────────────────(M0    )   Check the data link status of the station 1
     M0   X20
 7  ──┤├──┤├──────────────────────────────────────[PLS  M300 ]
     M300
11  ──┤├─────────────────────────────────────────[SET  M301 ]
     M301 X100F
13  ──┤├──┤/├──────────────────────[MOV  H7    W102 ]   Write Pr. 7 read code (H07) to RWw2.
                                   ─[SET  Y100F]   Turn ON the instruction code execution request (RY0F)
                                   ─[RST  M301 ]
                                   ─[SET  M302 ]
     M302 X100F
20  ──┤├──┤├────────────────────────[MOV  W3    D1   ]  ⎫ Read acceleration time (RWr3) and reply code
                                                        ⎬ (RWr2) to D1 and D2 when the instruction code
                                   ─[MOV  W2    D2   ]  ⎭ execution completion (RX0F) turns ON.
                                   ─[RST  Y100F]   Turn OFF the instruction code execution request (RY0F)
                                   ─[RST  M302 ]
28  ─────────────────────────────────────────────[END  ]
```

REMARKS

• For parameters having numbers 100 and later, change their link parameter extended settings (set them to other than H0000). Refer to the Instruction Manual (Applied) of the inverter for details.
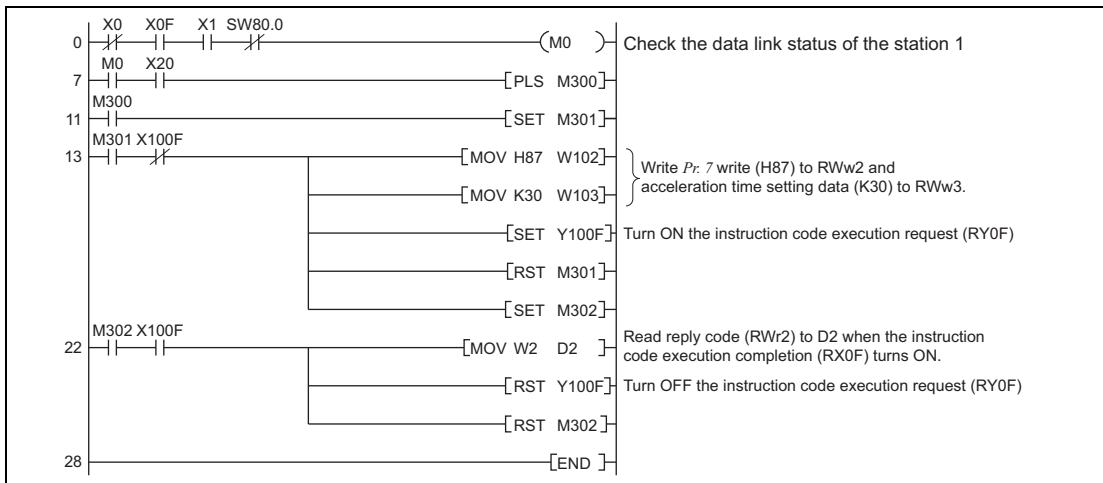
8

8.6 Program example for parameter writing

The following program changes the setting of *Pr. 7 Acceleration time* of station 1 inverter to 3.0s.
· Acceleration time writing code number: H87 (hexadecimal)
· Acceleration time set data: K30 (decimal)
For the parameter code numbers, refer to the Instruction Manual (Applied) of the inverter.
The reply code at the time of instruction code execution is set to D2. *(Refer to page 56.)*

Rung	Ladder	Comment
0	X0 X0F X1 SW80.0 ──(M0)──	Check the data link status of the station 1
7	M0 X20 ──[PLS M300]──	
11	M300 ──[SET M301]──	
13	M301 X100F ──[MOV H87 W102]── ──[MOV K30 W103]── ──[SET Y100F]── ──[RST M301]── ──[SET M302]──	Write *Pr. 7* write (H87) to RWw2 and acceleration time setting data (K30) to RWw3. / Turn ON the instruction code execution request (RY0F)
22	M302 X100F ──[MOV W2 D2]── ──[RST Y100F]── ──[RST M302]──	Read reply code (RWr2) to D2 when the instruction code execution completion (RX0F) turns ON. / Turn OFF the instruction code execution request (RY0F)
28	──[END]──	

REMARKS

• For parameters having numbers 100 and later, change their link parameter extended settings (set them to other than H0000). Refer to the parameter list of the Instruction Manual (Applied) of the inverter for settings.
• For other functions, refer to the instruction codes *(on page 57)*.

8.7　Program example for setting the running frequency

1) The following program example changes the running frequency of station 1 inverter to 50.00Hz.
Set frequency: K5000 decimal
The reply code at the time of instruction code execution is set to D2. *(Refer to page 56.)*
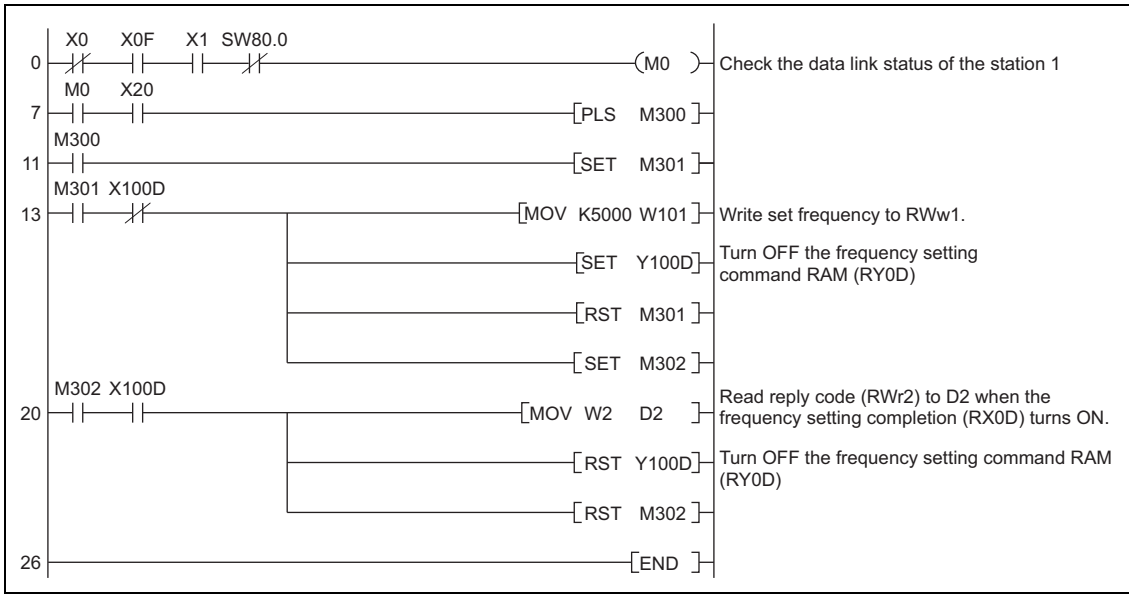
2) To continuously change the running frequency from the programmable controller
   When the frequency (speed) setting completion (example: X100D) switches ON, make sure that the reply code in the remote register is 0000H and change the set data (example: W101) continuously.

3) Program example for writing data to EEPROM
   Modify the program on *page 71* as follows:
   Frequency setting command Y100D → Y100E
   Frequency setting completion X100D → X100E

<Timing chart when writing to RAM>   <Timing chart when writing to EEPROM>
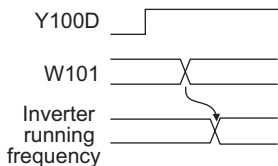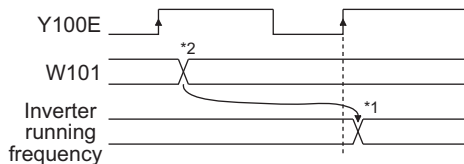
Reflect to the inverter when Y100E turns ON

*1 For EEPROM, write is made only once when Y100E is switched ON.
*2 If the set data is changed with Y100E ON, it is not applied to the inverter.
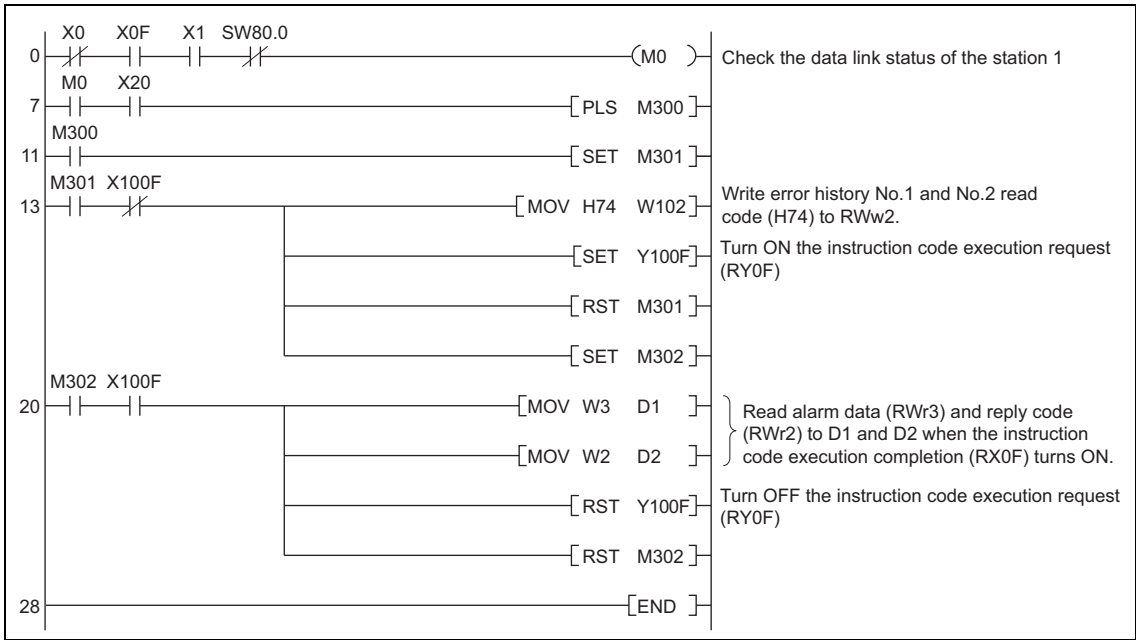
8.8   Program example for fault record reading

The following program reads fault records of station 1 inverter to D1.

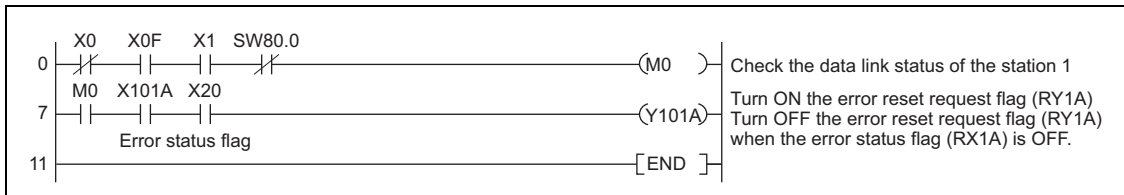· Faults history No. 1, No. 2 reading code number: H74 (hexadecimal)

For the error codes, refer to the Instruction Manual (Applied) of the inverter.

The reply code at the time of instruction code execution is set to D2. *(Refer to page 56.)*

8.9 Program example for resetting the inverter at inverter error

The following is a program example for resetting station 1 inverter at inverter error.

```
        X0    X0F   X1   SW80.0
0      ─┤↑├──┤├──┤├───┤↑├──────────────────────(M0  )─   Check the data link status of the station 1
        M0   X101A  X20
                                                          Turn ON the error reset request flag (RY1A)
7      ─┤├──┤├──┤├──────────────────────────(Y101A)─   Turn OFF the error reset request flag (RY1A)
            Error status flag                              when the error status flag (RX1A) is OFF.
11     ─────────────────────────────────────[ END ]─
```

REMARKS

- The above inverter reset using RY1A is available only when an inverter error occurs.
  When *Pr. 349 Communication reset selection* = "0", inverter reset is available independently of the operation mode.
- When using the instruction code execution request (RYF) with the instruction code (HFD) and data (H9696) to reset the inverter, set a value other than "0" in *Pr. 340 Communication startup mode selection (refer to page 22)* or change the operation mode to the Network operation mode. *(For the program example, refer to page 66.)*
- Refer to *page 29* for operation conditions of inverter reset.
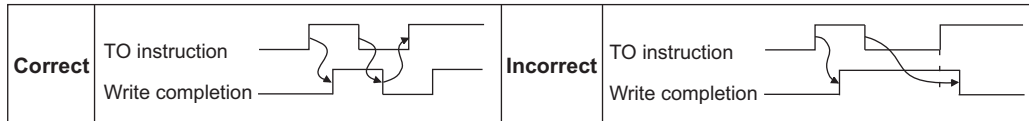
8.10 Instructions

(1) Programming instructions

1) Since the buffer memory data of the master station is kept transferred (refreshed) to/from the inverters, the TO instruction need not be executed every scan in response to data write or read requests.

The execution of the TO instruction every scan does not pose any problem.

2) If the FROM/TO instruction is executed frequently, data may not be written reliably.

When transferring data between the inverter and sequence program via the buffer memory, perform the handshake to confirm that data has been written without error.

(2) Operating and handling instructions

1) Command only from the programmable controller can be accepted during operation in CC-Link communication.

The run command from external and parameter unit is ignored.

2) If the station number set to different inverters is not the same, normal communication cannot be made.

3) The inverter is brought to a fault "E.OP1" if data communication stops for more than the time set in *Pr. 500 Communication error execution waiting time* due to a programmable controller fault, an open CC-Link dedicated cable etc. during CC-Link operation.

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4) If the programmable controller (master station) is reset during CC-Link operation or if the programmable controller is powered OFF, data communication stops and the inverter is brought to a fault "E.OP1".

To reset the programmable controller (master station), switch the operation mode to the External operation once, then reset the programmable controller.

5) When *Pr. 340* = "0 (initial value)", any inverter whose main power is restored is reset to return to the External operation mode. To resume the network operation, therefore, set the operation mode to the network operation using the programmable controller program.

Set a value other than "0" in *Pr. 340* to start in the Network operation mode after inverter reset. *(Refer to page 22.)*

(3) Troubleshooting

1) Operation mode does not switch to the Network operation mode
- Check that the option unit (FR-A7NC) and CC-Link dedicated cables are fitted properly. (Check for contact fault, break in the cable, etc.)
- Check that *Pr. 542 Communication station number (CC-Link)* setting switches are set to the correct positions. (Check that the station number matches the program, the station numbers are not repeated, and the station number is not outside the range.)
- Check that the inverter is in the External operation mode.
- Check that the operation mode switching program is running.
- Check that the operation mode switching program has been written correctly.

2) Inverter does not start in the Network operation mode
- Check that the inverter starting program has been written correctly.
- Check that the inverter starting program is running.
- Check that *Pr. 338 Communication operation command source* is not set to external. (Refer to the Instruction Manual (Applied) of the inverter.)

9 HOW TO CHECK FOR ERROR USING THE LEDS

9.1 When one inverter is connected

The following diagram shows the system configuration with one inverter. The diagram indicates how the cause of the fault can be checked with the LED status of the inverter communication option (FR-A7NC). (In this example, assume SW, M/S, and PRM LEDs of the master module are OFF (master module is in normal operation).)
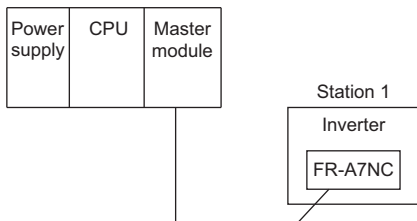
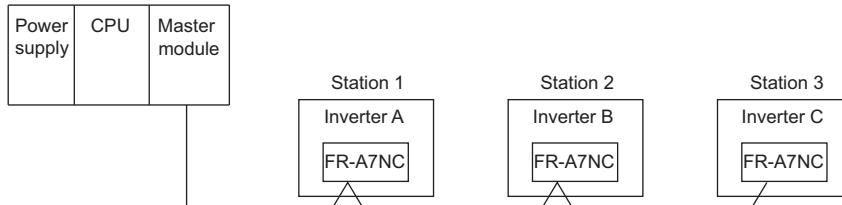

Operation status indication LED
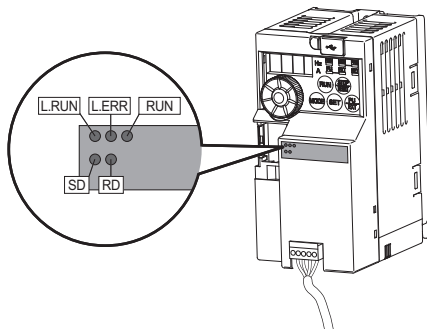
LED Status					Cause
RUN	**L.RUN**	**SD**	**RD**	**L.ERR**	
●	●	◎	◎	◎	Normal communication is made but CRC error has occurred due to noise.
●	●	◎	◎	○	Normal communication
●	●	◎	○	◎	Hardware fault
●	●	◎	○	○	Hardware fault
●	●	○	◎	◎	Cannot answer due to CRC error of receive data.
●	●	○	◎	○	Data sent to the host station does not reach destination.
●	●	○	○	◎	Hardware fault
●	●	○	○	○	Hardware fault
●	○	◎	◎	◎	Polling response is made but refresh receive is in CRC error.
●	○	◎	◎	○	Hardware fault
●	○	◎	○	◎	Hardware fault
●	○	◎	○	○	Hardware fault
●	○	○	◎	◎	Data sent to the host station is in CRC error.
●	○	○	◎	○	There is no data sent to the host station, or data sent to the host station cannot be received due to noise.
●	○	○	○	◎	Hardware fault
●	○	○	○	○	Cannot receive data due to break in the cable, etc.
●	○	○	◎○	●	Invalid baud rate or station number setting
●	●	◎	◎	◎	Baud rate or station number changed during operation.
○	○	○	○	○	Baud rate or station number changed during operation.
◎	—	—	—	—	Master station is connected to CC-Link ver. 1 and FR-A7NC is connected to CC-Link ver. 2.

●: ON, ○: OFF, ◎: Flicker

9.2   When two or more inverters are connected

The following system configuration shows how the cause of a fault can be checked with the LED status of the inverter communication option (FR-A7NC) and countermeasures for the fault.
(In this example, assume SW, M/S, and PRM LEDs of the master module are OFF (master module is in normal operation).)

LED Status				Cause	Corrective Action
Master Module	**Inverters (FR-A7NC)**				
	Station 1	**Station 2**	**Station 3**		
TIME ○ LINE ○ or TIME ● LINE ○	RUN ● L.RUN ● SD ● RD ● L.ERR ○	RUN ● L.RUN ● SD ● RD ● L.ERR ○	RUN ● L.RUN ● SD ● RD ● L.ERR ○	Normal	—
	RUN ○ L.RUN ○ SD ○ RD ○ L.ERR ○	RUN ● L.RUN ● SD ● RD ● L.ERR ○	RUN ● L.RUN ● SD ● RD ● L.ERR ○	Poor contact of the FR-A7NC with the inverter	Plug the FR-A7NC securely. Check the connector.

●: ON, ○: OFF, ◎: Flicker, *: Any of ON, flicker or OFF

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LED Status				Cause	Corrective Action
Master Module	**Inverters (FR-A7NC)**				
	Station 1	**Station 2**	**Station 3**		
	RUN ● L.RUN ● SD ● RD ● L.ERR ○	RUN ● L.RUN ○ SD * RD * L.ERR ○	RUN ● L.RUN ○ SD * RD * L.ERR ○	Since the L.RUN LEDs of the FR-A7NC on station 2 and later are OFF, the transmission cable between the remote I/O units A and B is open or disconnected from the terminal block.	Referring to the LED "ON" condition, search for an open point and repair.
TIME ○ LINE ○ or TIME ● LINE ○	RUN ● L.RUN ○ SD * RD * L.ERR ○	RUN ● L.RUN ○ SD * RD * L.ERR ○	RUN ● L.RUN ○ SD * RD * L.ERR ○	The transmission cable is shorted.	Among the three wires of the transmission cable, search for the shorted wire and repair.
	RUN ● L.RUN ○ SD * RD * L.ERR *	RUN ● L.RUN ○ SD * RD * L.ERR *	RUN ● L.RUN ○ SD * RD * L.ERR *	The transmission cable is wired improperly.	Check the wiring on the inverter terminal block and correct the improper wiring point.

●: ON, ○: OFF, ◎: Flicker, *: Any of ON, flicker or OFF

9.3　Communication stops during operation

- Check that the option unit (FR-A7NC) and CC-Link dedicated cables are fitted properly.
  (Check for contact fault, break in the cable, etc.)
- Check that the programmable controller program is executed properly.
- Check that data communication has not stopped due to an instantaneous power failure, etc.

LED States				Cause	Corrective Action
Master Module	**Inverters (FR-A7NC)**				
	Station 1	**Station 2**	**Station 3**		
TIME ○ LINE ○ or TIME ● LINE ○	RUN ● L.RUN ○ SD * RD ● L.ERR ○	RUN ● L.RUN ● SD ● RD ● L.ERR ○	RUN ● L.RUN ○ SD * RD ● L.ERR ○	Since the L.RUN LEDs of the FR-A7NC on station 1 and the FR-A7NC on station 3 are OFF, the station numbers of the inverters set as stations 1 and 3 are the same.	After correcting the repeated station numbers of the inverters using *Pr. 542 Communication station number (CC-Link)*, switch power ON again.
	RUN ● L.RUN ● SD ● RD ● L.ERR ○	RUN ● L.RUN ○ SD ○ RD ● L.ERR ○	RUN ● L.RUN ● SD ● RD ● L.ERR ○	Since the L.RUN and SD LEDs of the FR-A7NC on station 2 are OFF, the transmission speed setting of the FR-A7NC on station 2 is wrong within the setting range (0 to 4).	After correcting the transmission speed setting using *Pr. 543 Baud rate selection (CC-Link)*, switch power on again.
	RUN ● L.RUN ● SD ● RD ● L.ERR ○	RUN ● L.RUN ● SD ● RD ● L.ERR ○	RUN ● L.RUN ● SD ● RD ● L.ERR ◎	Since the L.ERR LED of the FR-A7NC on station 3 flickers, the setting switch of the FR-A7NC on station 3 was moved during normal operation.	After returning the setting switch of the FR-A7NC to the original position using *Pr. 542 Communication station number (CC-Link)* or *Pr. 543 Baud rate selection (CC-Link)* power ON the inverter again.

●: ON, ○: OFF, ◎: Flicker, *: Any of ON, flicker or OFF

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LED States				Cause	Corrective Action
Master Module	**Inverters (FR-A7NC)**				
	Station 1	**Station 2**	**Station 3**		
	RUN ● L.RUN ● SD ● RD ● L.ERR ○	RUN ● L.RUN ● SD ● RD ● L.ERR ●	RUN ● L.RUN ● SD ● RD ● L.ERR ○	Since the L.ERR LED of the FR-A7NC on station 2 is ON, the FR-A7NC itself on station 2 is affected by noise. (L.RUN may go OFF.)	Securely connect FG of each inverter and master module to ground.
TIME ● LINE ● or TIME ○ LINE ●	RUN ● L.RUN ● SD ● RD ● L.ERR ○	RUN ● L.RUN ● SD ● RD ● L.ERR ●	RUN ● L.RUN ● SD ● RD ● L.ERR ●	Since the L.ERR LEDs of the FR-A7NC on station 2 and later are ON, the transmission cable between the inverters of stations 2 and 3 is affected by noise. (L.RUN may go OFF.)	Check that the transmission cable is connected to SLD. Also run it as far away as possible from the power lines. (100mm or more)
	RUN ● L.RUN ● SD ● RD ● L.ERR ○	RUN ● L.RUN ● SD ● RD ● L.ERR ○	RUN ● L.RUN ● SD ● RD ● L.ERR ●	Terminating resistor is not selected. (L.RUN may go OFF.)	Check that the setting of the terminating resistor selection switch is correct. *(Refer to page 13.)*

●: ON, ○: OFF, ◎: Flicker, *: Any of ON, flicker or OFF

MEMO

REVISIONS

Print Date	*Manual Number	Revision
Dec. 2007	IB(NA)-0600340ENG-A	First edition
Aug. 2010	IB(NA)-0600340ENG-B	Addition • Fault data (OPT) • Monitor code (Cumulative power 2) Modification • Terminating resistor selection switch
Jun. 2011	IB(NA)-0600340ENG-C	Addition • Compliance with the Radio Waves Act (South Korea) Modification • Screw tightening torque of the built-in option
Sep. 2012	IB(NA)-0600340ENG-D	Modification • Remote register RWw8, RWr8
Dec. 2015	IB(NA)-0600340ENG-E	Addition • Compatibility with the FR-E700EX series

INVERTER

MITSUBISHI ELECTRIC CORPORATION

Model	FR-A7NC E-KIT TORISETSU EIBUN
Model code	1AJ003