MITSUBISHI ELECTRIC

800 series

INVERTER

Control terminal option

FR-E8TR

INSTRUCTION MANUAL

RS-485 2 port terminal block

Safety Instructions

Thank you for choosing this Mitsubishi Electric inverter control terminal option.
This Instruction Manual provides handling information and precautions for use of the this product. Incorrect handling might cause an unexpected fault.
Before using this product, always read this Instruction Manual carefully to ensure proper use.
Please forward this Instruction Manual to the end user.

Do not attempt to install, operate, maintain or inspect this product until you have read this Instruction Manual and supplementary documents carefully. Do not use this product until you have a full knowledge of this product mechanism, 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.

Note that even the **⚠CAUTION** level may lead to a serious consequence depending on conditions. Be sure to follow the instructions of both levels as they are critical to personnel safety.

◆ **Electric shock prevention**

⚠WARNING

- Do not remove the front cover or the wiring cover while the power of the inverter is ON, and do not run the inverter with the front cover or the wiring cover removed as the exposed high voltage terminals or the charging part of the circuitry can be touched. Doing so may cause an electric shock.
- Even if power is OFF, do not remove the front cover of the inverter except for wiring or periodic inspection as the inside of this product is charged. Doing so may cause an electric shock.
- Before wiring or inspection, check that the display of the inverter operation panel is OFF. Any person who is involved in wiring or inspection shall wait for 10 minutes or longer after the power supply has been cut 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 product shall be fully competent to do the work.
- The control terminal option must be installed before wiring. Otherwise you may get an electric shock or be injured.
- Do not touch the control terminal option or handle the cables with wet hands. Doing so may cause an electric shock.
- Do not subject the cables to scratches, excessive stress, heavy loads or pinching. Doing so may cause an electric shock.

◆ **Injury prevention**

⚠CAUTION

- The voltage applied to each terminal must be as specified in the Instruction Manual. Otherwise an explosion or damage may occur.
- The cables must be connected to the correct terminals. Otherwise an explosion or damage may occur.
- The polarity (+ and -) must be correct. Otherwise an explosion or damage may occur.
- While power is ON or for some time after power OFF, do not touch the inverter as it will be extremely hot. Doing so may cause burns.

◆ **Additional instructions**

The following instructions must be also followed. If this product is handled incorrectly, it may cause unexpected fault, an injury, or an electric shock.

⚠CAUTION

Transportation and installation

- Do not install or operate the control terminal option if it is damaged or has parts missing.
- Do not stand or place any heavy object on the product.
- Ensure the mounting orientation of this product is correct.
- Foreign conductive objects must be prevented from entering the inverter. That includes screws and metal fragments or flammable substance such as oil.
- If halogens (including fluorine, chlorine, bromine, and iodine) contained in fumigants for wood packages enter this product, the product may be damaged. Prevent the entry of fumigant residuals or use an alternative method such as heat disinfection. Note that sterilization or disinfection of wood packages should be performed before packing the product.

Test operation

- Before starting the test operation, confirm or adjust the parameter settings. Failure to do so may cause some machines to make unexpected motions.

⚠WARNING

Usage

- Do not modify this product.
- Do not remove any part which is not instructed to be removed in the Instruction Manuals. Doing so may lead to a failure or damage of the product.

⚠CAUTION

Usage

- As all parameters return to their initial values after Parameter clear or All parameter clear is performed, the parameters must be set again as required before the operation is started.
- To avoid damage due to static electricity, static electricity in your body must be discharged before you touch this product.

Maintenance, inspection and parts replacement

- Do not carry out a megger (insulation resistance) test.

Disposal

- This product must be treated as industrial waste.

General instruction

- For clarity, illustrations in this Instruction Manual may be drawn with covers or safety guards removed. Ensure all covers and safety guards are properly installed prior to starting operation.

— CONTENTS —

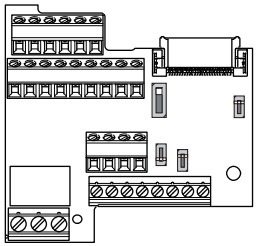
1 PRE-OPERATION INSTRUCTIONS

1.1 Unpacking and product confirmation

Take the control terminal option out of the package, check the product name, and confirm that the product is as you ordered and intact.
This product is a control terminal option made for the FR-E800 series inverters.
This product cannot be connected to the Ethernet model and the safety communication model.
When this product is used, the inverter does not support functional safety functions as the safety stop input/output terminals (S1, S2, SO, and SOC) on the inverter cannot be used.
Terminal 2 of this product is used for voltage input only.

1.1.1 Product confirmation

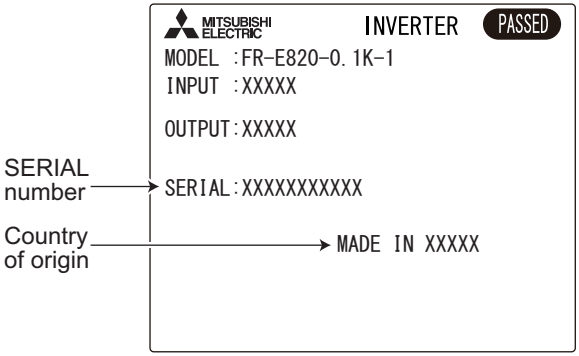
Check the enclosed items.

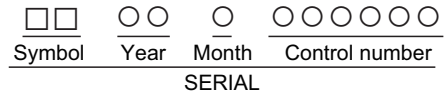
Control terminal option: 1	Control terminal change indication label: 2 (Refer to page 24.)
	

1.1.2 SERIAL number check

The FR-E8TR can be used with the inverters which have the following SERIAL number or later. Check the SERIAL number indicated on the inverter rating plate or package.

Rating plate example





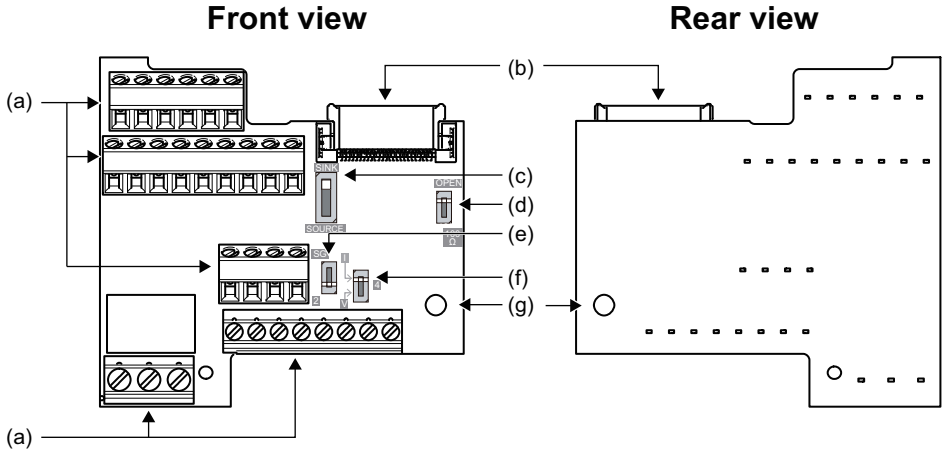
The SERIAL consists of two symbols, three characters indicating the production year and month, and six characters indicating the control number.
The last two digits of the production year is indicated as the Year, and the Month is indicated by 1 to 9, X (October), Y (November), or Z (December).

Model	Country of origin indication	SERIAL number
Standard model	MADE in Japan	□□237○○○○○○ or later
	MADE in China	□□238○○○○○○ or later

NOTE

- The inverter firmware can be updated by using Firmware Update Tool of FR Configurator2. Even for an inverter which has a SERIAL number earlier than the above, the FR-E8TR can be used by updating the inverter firmware to version 12 or later. For details on firmware update, refer to the FR Configurator2 Instruction Manual.

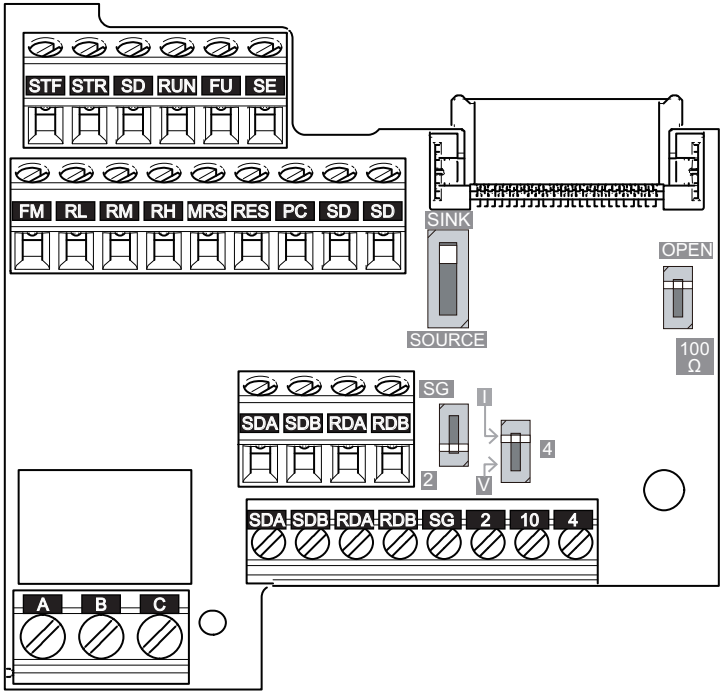
1.1.3 Component names



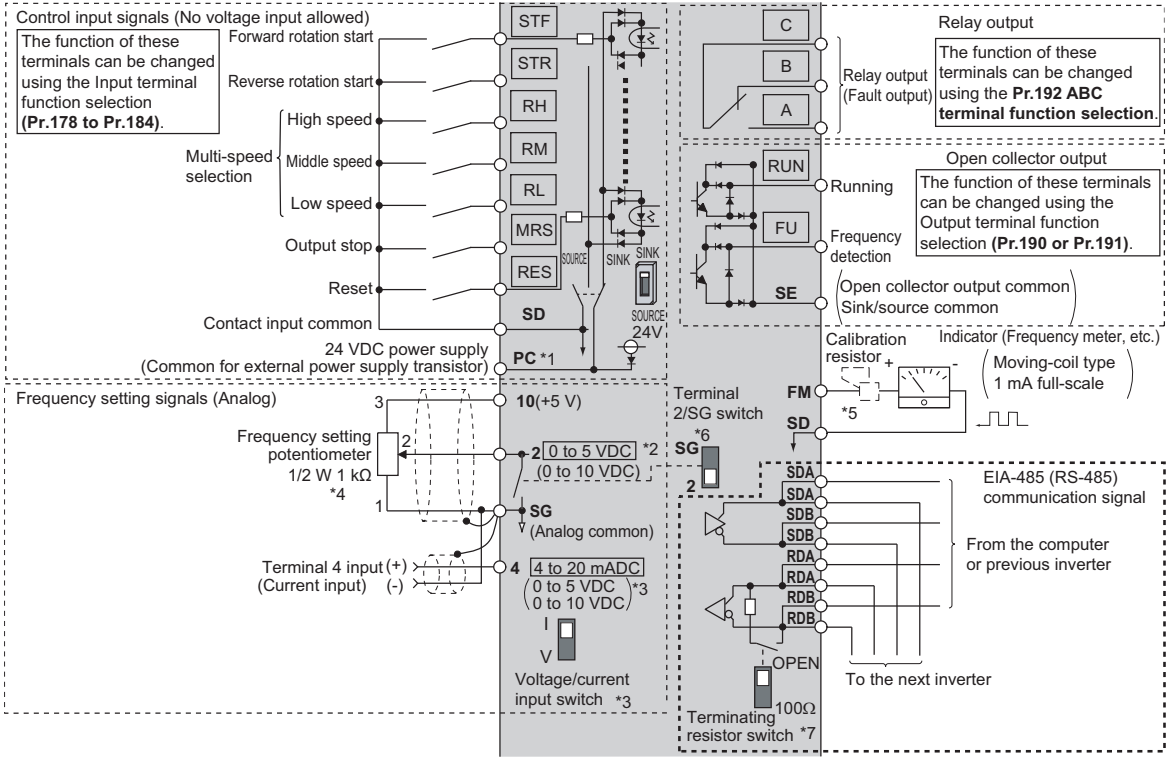
Symbol	Name	Description	Refer to page
a	Terminal block	Used to connect the device to input signals to the inverter, and the device to receive the signal from the inverter.	11
b	Board mounted option connector	Connected to the control circuit connection connector of the inverter.	21
c	Control logic switch	Control logic (sink logic, source logic) can be switched. The control logic of input signals is initially set to the sink logic (SINK).	FR-E800 Instruction Manual (Connection)
d	Terminating resistor switch	Initially set to "OPEN". Set only the terminating resistor switch of the remotest inverter to the "100 Ω" position.	27
e	Terminal 2/SG switch	Set the terminal 2/SG switch to the SG position to pass a shielded wire across terminal SG. As a result, terminal 2 changes to terminal SG. (Note that analog input of terminal 2 is invalid.)	29

Symbol	Name	Description	Refer to page
f	Voltage/current input switch	For terminal 4 used for analog input, the voltage input (0 to 5 V, 0 to 10 V) and current input (4 to 20 mA) (initial setting) are selectable. To change the input specification, change the setting of **Pr.267** and the voltage/current input switch. (For details of **Pr.267**, refer to the FR-E800 Instruction Manual (Function).)	15
g	Mounting hole	Used to fix this product to the inverter by inserting a screw.	21

1.1.4 Terminal layout



1.2 Terminal connection diagram



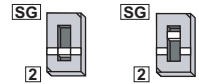
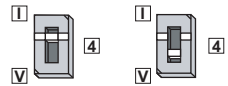
*1 To use terminals PC and SD for a 24 VDC power supply, check the wiring to avoid short circuit between these terminals.
*2 Terminal input specifications can be changed by analog input specification switchover (**Pr.73**). This terminal is used for voltage input only.
*3 Terminal input specifications can be changed by analog input specification switchover (**Pr.267**). To select voltage input (0 to 5 V / 0 to 10 V), set the voltage/current input switch to the "V" position. To select current input (4 to 20 mA), set the voltage/current input switch to the "I" position (initial setting). To use terminal 4 (current input at initial setting), assign "4" to any parameter from **Pr.178 to Pr.184 (Input terminal function selection)** before turning ON the AU signal.
*4 It is recommended to use 2 W 1 kΩ when the frequency setting signal is changed frequently.
*5 Not required when calibrating the scale with the operation panel.
*6 Set the switch to the SG position to pass a shielded wire across terminal SG.
*7 Set only the terminating resistor switch of the remotest inverter to the "100 Ω" position.

1.3 Control terminal specifications

◆ RS-485 communication

Terminal symbol	Terminal name	Terminal function description
SDA (2 terminals)	Inverter send +	Output terminal for inverter sending signals.
SDB (2 terminals)	Inverter send -	Output terminal for inverter inverse sending signals.
RDA (2 terminals)	Inverter receive +	Input terminal for inverter receiving signals. Changing the terminating resistor switch to "100 Ω" position connects the inverter to the 100 Ω terminating resistor.
RDB (2 terminals)	Inverter receive -	Input terminal for inverter inverse receiving signals. Changing the terminating resistor switch to "100 Ω" position connects the inverter to the 100 Ω terminating resistor.

◆ Frequency setting

Terminal symbol	Common	Terminal name	Terminal function description	Rated specification
10	SG	Power supply for a frequency setting potentiometer	Used as the power supply for an external frequency setting (speed setting) potentiometer.	5 ±0.5 VDC Permissible load current: 10 mA
2	SG	Frequency setting (voltage) / common terminal	Inputting 0 to 5 VDC (or 0 to 10 VDC) provides the maximum output frequency at 5 V (or 10 V) and makes input and output proportional. Use **Pr.73** to switch between input 0 to 5 VDC (initial setting) and 0 to 10 VDC. This terminal can be used for voltage input only. When a shielded wire is passed across terminal SG during the RS-485 communication, terminal 2 can be used as terminal SG by setting the terminal 2/SG switch (refer to page 9) to the SG position. In that setting, 0 V is input to terminal 2.	Input resistance: 10 to 11 kΩ Maximum permissible voltage: 20 VDC When selecting SG: Common terminal **Terminal 2 (Initial status)** **Terminal SG** 
4	SG	Frequency setting (current)	Inputting 4 to 20 mADC (or 0 to 5 V, 0 to 10 V) provides the maximum output frequency at 20 mA and makes input and output proportional. This input signal is valid only when the AU signal is ON (terminal 2 input is invalid). Use **Pr.267**[*1] to switch among input 4 to 20 mA (initial setting), 0 to 5 VDC, and 0 to 10 VDC. Set the voltage/current input switch to the "V" position to select voltage input (0 to 5 V or 0 to 10 V).	For current input, Input resistance 245 ±5 Ω Permissible maximum current: 30 mA For voltage input, Input resistance: 10 to 11 kΩ Maximum permissible voltage: 20 VDC **Current input (Initial status)** **Voltage input** 

*1 For details of **Pr.267**, refer to the FR-E800 Instruction Manual (Function).

◆ Input signal (contact input)

Terminal symbol	Common	Terminal name	Terminal function description		Rated specification
STF[*1]	SD (sink (negative common)) PC (source (positive common))	Forward rotation start	Turn ON the STF signal to start forward rotation and turn it OFF to stop.	When the STF and STR signals are turned ON simultaneously, the stop command is given.	Input resistance: 4.7 kΩ Voltage when contacts are open: 21 to 26 VDC Current when contacts are short-circuited: 4 to 6 mADC
STR[*1]		Reverse rotation start	Turn ON the STR signal to start reverse rotation and turn it OFF to stop.		
RH, RM, RL[*1]		Multi-speed selection	Multi-speed can be selected according to the combination of RH, RM and RL signals.		
MRS[*1]		Output stop	Turn ON the MRS signal (2 ms or more) to stop the inverter output. Use this signal to shut off the inverter output when stopping the motor with an electromagnetic brake.		
RES[*1]		Reset	Use this signal to reset a fault output provided when a protective function is activated. Turn ON the RES signal for 0.1 second or more, then turn it OFF. In the initial setting, reset is always enabled. By setting **Pr.75**, reset can be enabled only at an inverter fault occurrence. The inverter recovers about 1 second after the reset is released. (For details of **Pr.75**, refer to the FR-E800 Instruction Manual (Function).)		

*1 Terminal functions can be selected using **Pr.178 to Pr.184 (Input terminal function selection)**. (Refer to the FR-E800 Instruction Manual (Function).)

◆ Output signal

Type	Terminal symbol	Common	Terminal name	Terminal function description		Rated specification
Relay	A, B, C[*1*3]	—	Relay output (fault output)	1 changeover contact output that indicates that an inverter's protective function has been activated and the outputs are stopped. Fault: discontinuity across B and C (continuity across A and C), Normal: continuity across B and C (discontinuity across A and C)		Contact capacity: 230 VAC 0.3 A (power factor = 0.4) 30 VDC 0.3 A
Open collector	RUN[*1]	SE	Inverter running	The output is in LOW state when the inverter output frequency is equal to or higher than the starting frequency (initial value: 0.5 Hz). The output is in HIGH state during stop or DC injection brake operation.[*2]		Permissible load: 24 VDC (27 VDC at maximum) 0.1 A (The voltage drop is 3.4 V at maximum while the signal is ON.)
	FU[*1]	SE	Frequency detection	The output is in LOW state when the inverter output frequency is equal to or higher than the preset detection frequency, and is in HIGH state when it is less than the preset detection frequency. [*2]		
Pulse	FM	SD	For meter	Among several monitor items such as output frequency, select one to output it via this terminal. (The signal is not output during an inverter reset.) The size of output signal is proportional to the magnitude of the corresponding monitor item.	Output item: Output frequency (initial setting)	Permissible load current: 1 mA 1440 pulses/s at 60 Hz

*1 Terminal functions can be selected using **Pr.190 to Pr.192 (Output terminal function selection)**. (Refer to the FR-E800 Instruction Manual (Function).)

*2 The open collector transistor is ON (conductive) in LOW state. The transistor is OFF (not conductive) in HIGH state.

*3 To comply with the Low Voltage Directive (conforming standard EN 61800-5-1) and UL or cUL standards (conforming standard UL 61800-5-1), the operating capacity of the relay outputs (terminal symbols A, B, and C) should be 30 VDC, 0.3 A. (Relay output has basic isolation from the inverter internal circuit.)

◆ Common terminal

Terminal symbol	Common	Terminal name	Terminal function description	Rated specification
SG	—	RS-485 communication common, analog common	Common terminal for RS-485 communication and frequency setting signals (terminal 2 or 4). Do not earth (ground).	—
SD	—	Contact input common (sink (negative common))	Common terminal for the contact input terminal (sink logic) and terminal FM.	—
		External transistor common (source (positive common))	Connect this terminal to the power supply common terminal of a transistor output (open collector output) device, such as a programmable controller, in the source logic to avoid malfunction by undesirable current.	
		24 VDC power supply common	Common output terminal for 24 VDC 0.1 A power supply (terminal PC). Isolated from terminals SG and SE.	
PC	—	External transistor common (sink (negative common))	Connect this terminal to the power supply common terminal of a transistor output (open collector output) device, such as a programmable controller, in the sink logic to avoid malfunction by undesirable current.	Power supply voltage range: 22 to 26.5 VDC Permissible load current: 100 mA
		Contact input common (source (positive common))	Common terminal for contact input terminal (source logic).	
	SD	24 VDC power supply	This terminal can be used as 24 VDC 0.1 A power supply.	
SE	—	Open collector output common	Common terminal for terminals RUN and FU.	—

NOTE

- Terminals SD, SG and SE are common terminals for I/O signals. (All common terminals are isolated from each other.) Do not earth (ground) these terminals. Avoid connecting terminals SD and SG and terminals SE and SG.
- Terminal SD is a common terminal for the contact input terminals (STF, STR, RH, RM, RL, MRS, and RES) and the pulse train output terminal (FM). The open collector circuit is isolated from the internal control circuit by photocoupler.
- Terminal SG is a common terminal for the frequency setting signal (terminal 2 or 4) and RS-485 communication. Use a shielded or twisted cable to protect the terminal from external noise.
- Terminal SE is a common terminal for the open collector output terminals (RUN and FU). The contact input circuit is isolated from the internal control circuit by photocoupler.

1.4 Communication specifications

Item	Description		
Communication protocol	Mitsubishi inverter protocol (computer link)	MODBUS RTU protocol	BACnet MS / TP protocol
Conforming standard	EIA-485 (RS-485)		
Number of connectable units	1:N (maximum 32 units), for stations No. 0 to 31	1:N (maximum 32 units), for stations No. 0 to 247	255 (up to 32 for one segment, addition with a repeater available)
Communication speed	Selected among 4800/9600/19200/38400/57600/76800/115200 bps.		Selected among 9600/19200/38400/57600/76800/115200 bps.
Control procedure	Asynchronous method		—
Communication method	Half-duplex system, full-duplex system		—
Terminating resistor	100 Ω (The availability can be switched by terminating resistor switch.)		

2 INSTALLATION

2.1 Pre-installation instructions

Check that all the power supplies to be input to the inverter are OFF.

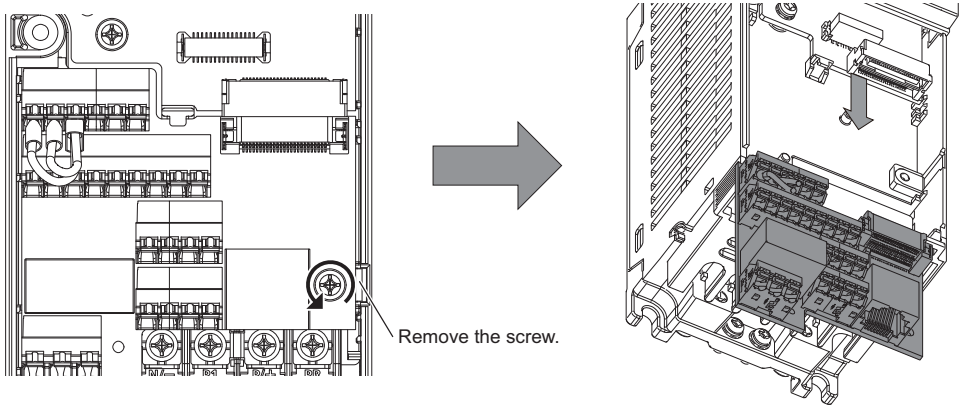
⚠CAUTION

- Do not install or remove the control terminal option while the input power is ON. Doing so may damage the inverter or the control terminal option.

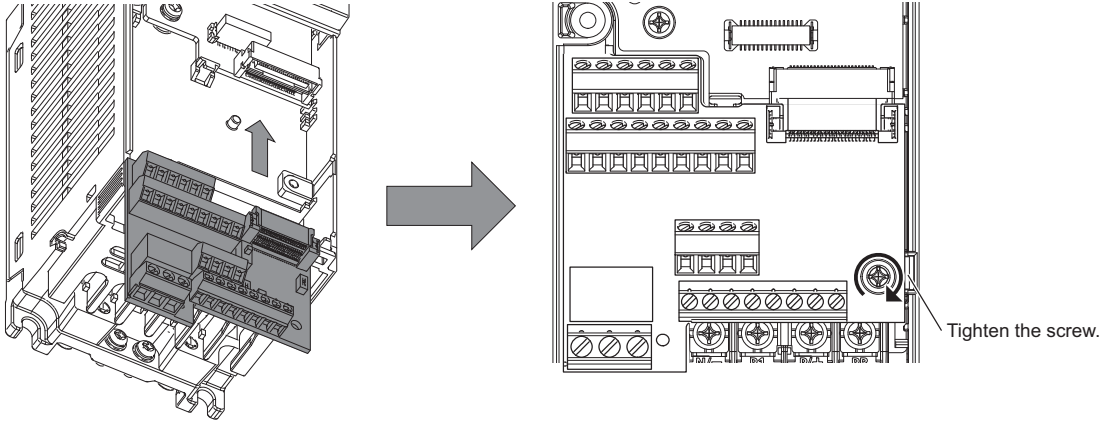
2.2 Installation procedure

1. Remove the inverter front cover.
(Refer to the FR-E800 Instruction Manual (Connection) for instructions to remove the cover.)

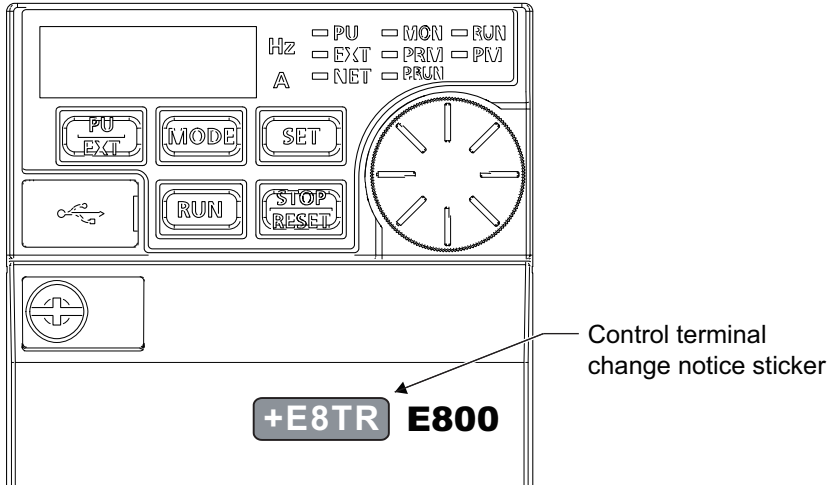
2. Remove the installation screw of the standard control circuit terminal block.
Slide down the standard control circuit terminal block to remove it.



3. Be careful not to bend the pins of the inverter's control circuit connector, insert the control terminal option and fix it with the installation screw.
(Tightening torque: 0.33 to 0.40 N·m)



4. Install the inverter front cover.
(Refer to the FR-E800 Instruction Manual (Connection) for instructions to install the cover.)
Affix the control terminal change indication label, which is enclosed with this product, next to the model name on the front cover to indicate that the control terminal block has been replaced with the FR-E8TR. (Two control terminal change indication labels are provided. One of them is a spare.)



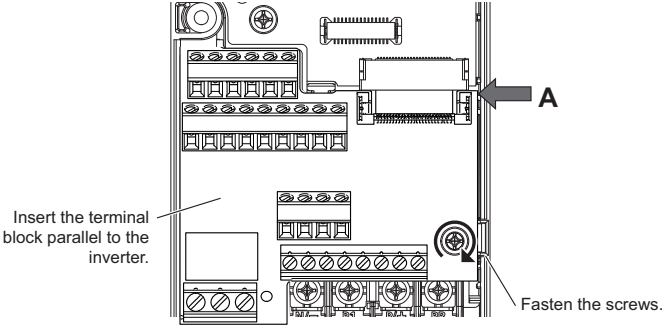
NOTE

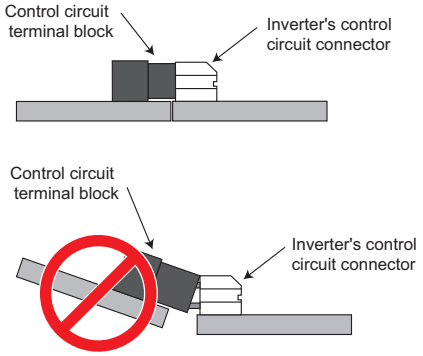
- The inverter recognizes the control terminal option when the state of the power supply is changed from OFF to ON.

◆ Removal and reinstallation precautions

Precautions to be taken when removing or reinstalling the control circuit terminal block are shown below. Observe the following precautions and handle the inverter properly to avoid malfunctions or failures.

- To remove or reinstall the control circuit terminal block, keep it upright so that it is parallel with the inverter.
- Check that the terminal block is parallel to the inverter and the pins on the inverter control circuit connector are not bent. After checking proper connection, tighten the screw to fix the terminal block.





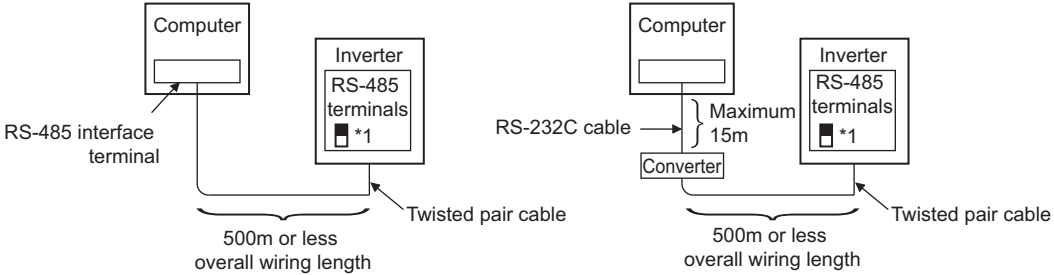
View from side A

NOTE

- Do not tilt the terminal block while tightening the screws or removing it from the inverter. (Otherwise, stress applied to the control circuit terminal block or the control circuit connector may damage the pins.)
- After replacing the control terminal block, set the control logic switch to the correct position in accordance with the control logic of input signals. (Refer to the FR-E800 Instruction Manual (Connection).)
- When the control circuit terminal block is not connected to the inverter properly, a board combination fault (E.CMB) occurs.

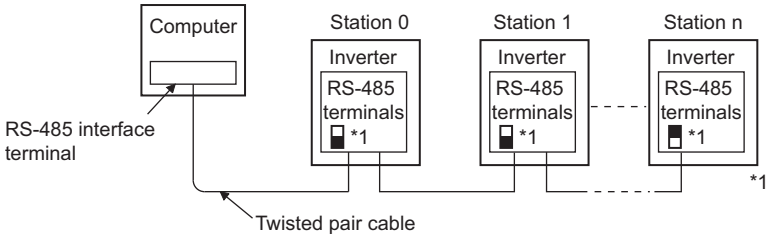
3.1 System configuration of RS-485 terminals

◆ **Computer and inverter connection (1:1)**

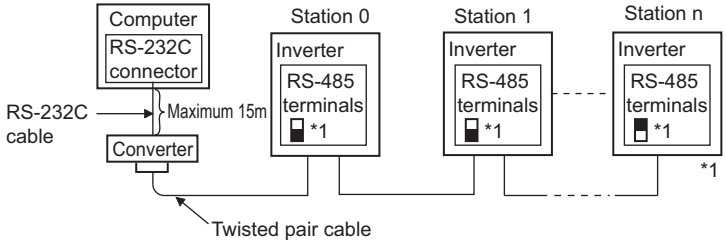


*1 Set the terminating resistor switch to the "100Ω" position.

◆ Combination of a computer and multiple inverters (1:n)



*1 Set only the terminating resistor switch of the remotest inverter to the "100 Ω" position.

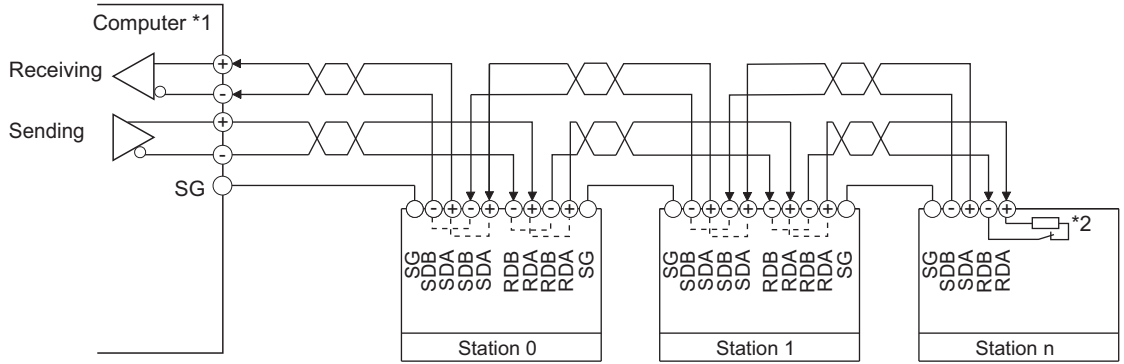


*1 Set only the terminating resistor switch of the remotest inverter to the "100 Ω" position.

3.2 RS-485 terminal wiring method

◆ Four-wire type connection

■ Wiring between a computer and multiple inverters for RS-485 communication

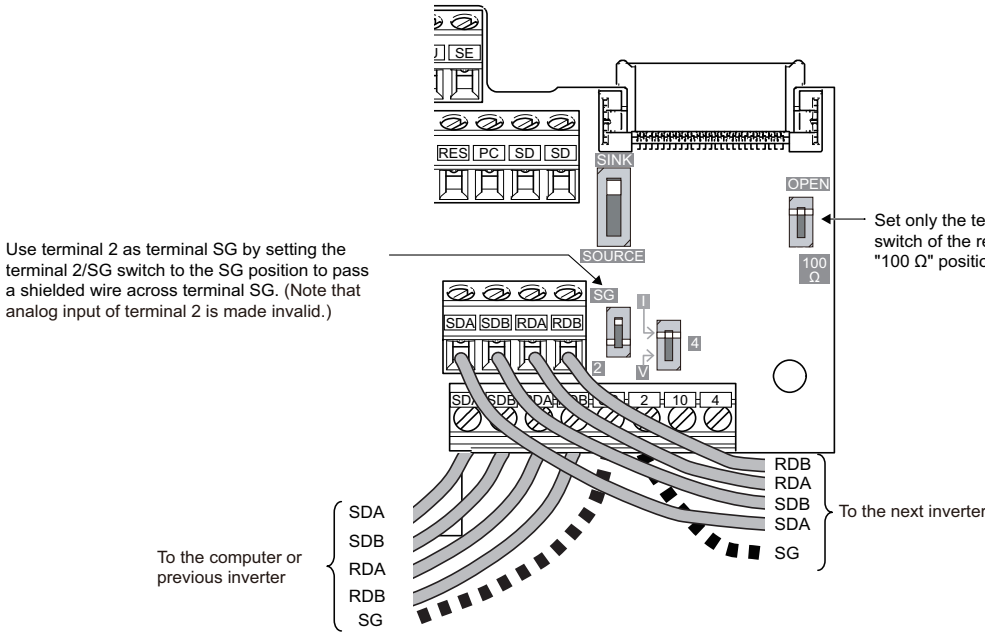


*1 Make connection in accordance with the Instruction Manual of the computer to be used with.
Fully check the terminal numbers of the computer since they vary with the model.

*2 On the inverter most remotely connected with the computer, set the terminating resistor switch in the ON (100 Ω) position.

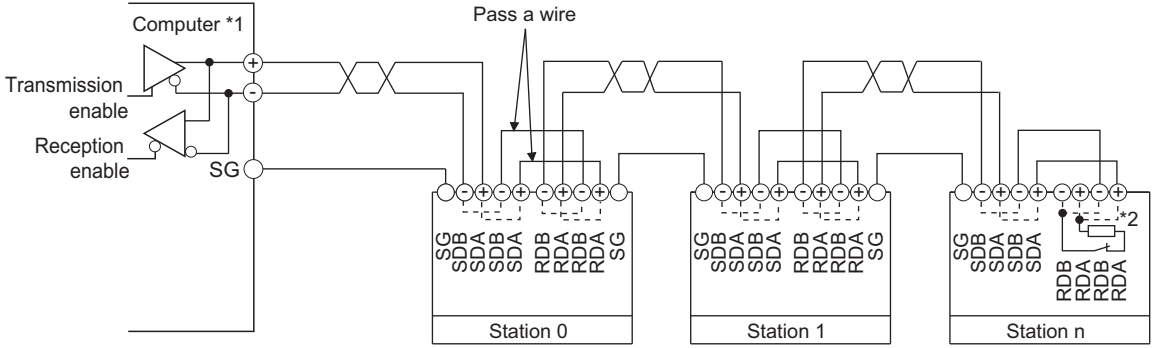
NOTE

- Refer to the following figure for branch wiring in the case of full-duplex system.



◆ Two-wire type connection

If the computer is 2-wire type, a connection from the inverter can be changed to 2-wire type by passing wires across reception terminals and transmission terminals of the RS-485 terminals.

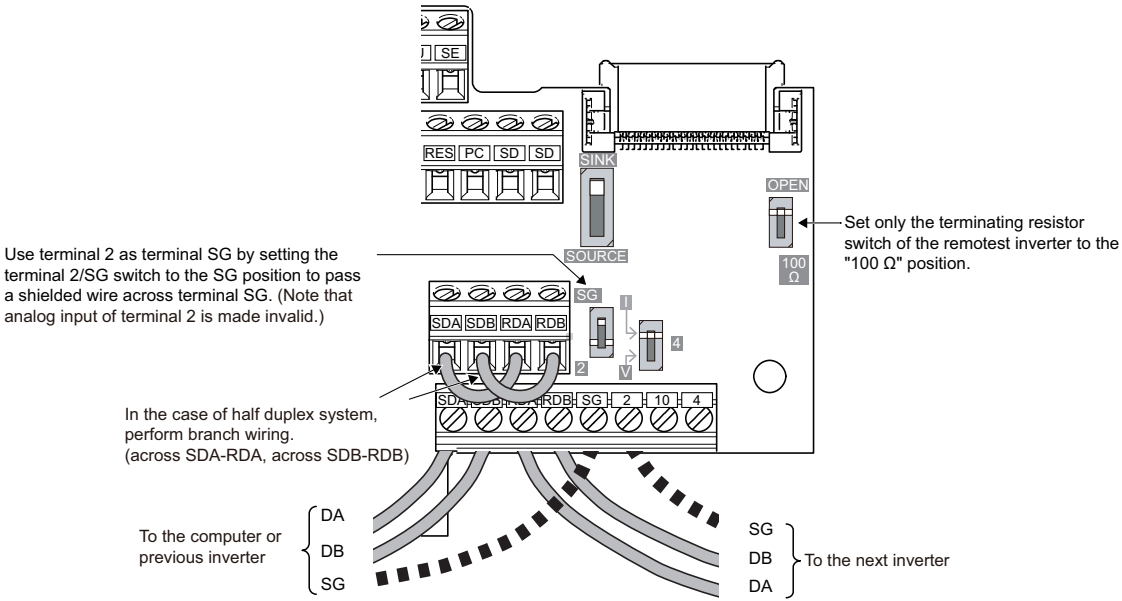


*1 Make connection in accordance with the Instruction Manual of the computer to be used with.
Fully check the terminal numbers of the computer since they vary with the model.

*2 On the inverter most remotely connected with the computer, set the terminating resistor switch in the ON (100 Ω) position.

NOTE

- Refer to the following figure for branch wiring in the case of half-duplex system.

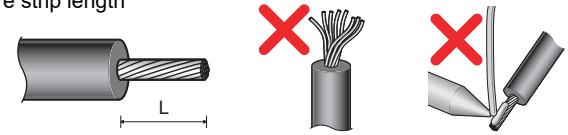


- A program should be created so that transmission is disabled (receiving state) when the computer is not sending and reception is disabled (sending state) during sending to prevent the computer from receiving its own data.

3.3 Wiring

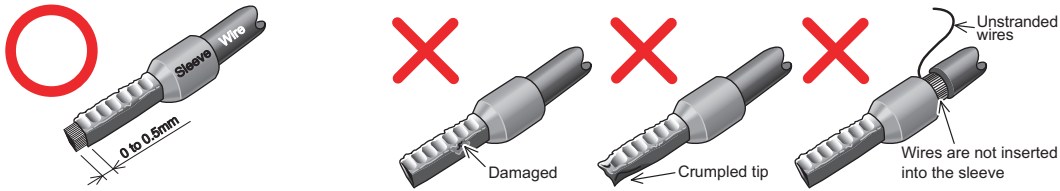
1. For the wiring, strip off the sheath of a cable, and use it with a crimp terminal. For a single wire, strip off the sheath of the wire and apply directly.
Insert the crimp terminal or the single wire into a socket of the terminal.
Strip the signal wires as follows. If too much of the wire is stripped, a short circuit may occur with neighboring wires. If not enough of the wire is stripped, wires may become loose and fall out. Twist the stripped end of wires to prevent them from fraying. Do not solder them. Use a crimp terminal as necessary.

Wire strip length



	L (mm)
Terminals A, B, C	6
Other than the above	5

Crimp the terminals on the wire.
Insert the wire into a crimp terminal, making sure that 0 to 0.5 mm of the wire protrudes from the end of the sleeve.
Check the condition of the crimp terminals after crimping. Do not use the crimp terminals of which the crimping is inappropriate, or the face is damaged.



⚠CAUTION

• After wiring, wire offcuts must not be left in the inverter. Wire offcuts can cause an alarm, failure or malfunction.

NOTE

Crimp terminals commercially available (as of October 2020)

- Phoenix Contact Co., Ltd.

Terminal screw size	Wire gauge (mm^2)	Ferrule part No.		Crimping tool model No.
		With insulation sleeve	Without insulation sleeve	
M3 (Terminals A, B, C)	0.3	AI 0,34-6TQ	A 0,5-6	CRIMPFOX 6
	0.5	AI 0,5-6WH	A 0,5-6	
	0.75	AI 0,75-6GY	A 0,75-6	
M2 (Terminals other than the above)	0.3, 0.5	AI 0,5-6WH	A 0,5-6	

- NICHIFU Co., Ltd.

Terminal screw size	Wire gauge (mm^2)	Blade terminal part No.	Insulation cap part No.	Crimping tool model No.
M3 (Terminals A, B, C) M2 (Terminals other than the above)	0.3 to 0.75	BT 0.75-7	VC 0.75	NH 69

2. Loosen the terminal screws, and insert each wire into the terminal.

3. Tighten the screw according to the specified tightening torque.
Undertightening may cause cable disconnection or malfunction. Overtightening may cause a short circuit or malfunction due to damage to the screw or unit.

Terminal	Tightening torque (N·m)	Screwdriver
A, B, C	0.5 to 0.6	Small flathead screwdriver (tip thickness: 0.4 mm / tip width: 2.5 mm)
Other than the above	0.22 to 0.25	

NOTE

- Before wiring, remove the wiring cover of the inverter. (Refer to the FR-E800 Instruction Manual (Connection) for instructions to remove or reinstall the cover.)

4 OPERATION VIA COMMUNICATION FROM RS-485 TERMINALS

Installing the control terminal option FR-E8TR allows RS-485 communication via the RS-485 terminals instead of the PU connector on the standard control circuit terminal block.
Required parameter settings (refer to page 37) are the same as those for RS-485 communication via the PU connector.
For the initial setting and specifications for RS-485 communication via the RS-485 terminals, refer to the FR-E800 Instruction Manual (Communication).
As is the case with RS-485 communication via the PU connector when the standard control circuit terminal block is installed, RS-485 communication via the RS-485 terminals allows communication operation and parameter settings using the Mitsubishi inverter protocol (computer link communication), MODBUS RTU communication protocol, or BACnet MS/TP protocol.
For the details on communication specifications and initial settings for the Mitsubishi inverter protocol (computer link communication), MODBUS RTU communication protocol, and BACnet MS/TP protocol, refer to the FR-E800 Instruction Manual (Communication).

⚠CAUTION

Always reset the inverter after making the initial settings of the parameters. After changing the communication-related parameters, communication cannot be made until the inverter is reset.

4.1 Parameter list

The following parameters are used for RS-485 communication with the FR-E8TR.
Set the parameters as required. For the parameter details, refer to the FR-E800 Instruction Manual (Function) and the FR-E800 Instruction Manual (Communication).

Pr.	Name	Initial value	Setting range	Description	
73 T000	Analog input selection	1	0, 1, 6[*1], 10, 11, 16[*1]	The terminal 2 input specification (0 to 5 V, 0 to 10 V) is selectable. Also the reversible operation setting is selectable.	
117 N020	PU communication station number	0	0 to 31 (0 to 247)[*2] (0 to 127)[*3]	Specify the inverter station number. Enter the inverter station numbers when two or more inverters are connected to one personal computer.	
118 N021	PU communication speed	192	48, 96, 192, 384, 576, 768, 1152 (96, 192, 384, 576, 768, 1152)[*3]	Select the communication speed. Select a value which equals one-hundredth of the number of the communication speed. For example, select "192" to set the communication speed of 19200 bps.	
N022	PU communication data length	0	0	Data length 8 bits	
		1	1	Data length 7 bits	
N023	PU communication stop bit length	1	0	Stop bit length 1 bit	
			1	Stop bit length 2 bits	
119	PU communication stop bit length / data length	1	0	Stop bit length 1 bit	Data length 8 bits
			1	Stop bit length 2 bits	
			10	Stop bit length 1 bit	Data length 7 bits
			11	Stop bit length 2 bits	
120 N024	PU communication parity check	2	0	Parity check disabled.	
			1	Parity check (odd parity) enabled.	
			2	Parity check (even parity) enabled.	

Pr.	Name	Initial value	Setting range	Description
121 N025	Number of PU communication retries	1	0 to 10	Set the permissible number of retries for unsuccessful data reception. If the number of consecutive errors exceeds the permissible value, the inverter output is shut off.
			9999	The inverter output will not be shut off even when a communication error occurs.
122 N026	PU communication check time interval	0	0	RS-485 communication is enabled. However, the inverter output is shut off if the operation mode is changed to the one for the selected command interface.
			0.1 to 999.8 s	Set the interval of the communication check (signal loss detection) time. If a no-communication state persists for longer than the permissible time, the inverter output will be shut off.
			9999	No communication check (signal loss detection)
123 N027	PU communication waiting time setting	9999	0 to 150 ms	Set the waiting time between data transmission to the inverter and the response.
			9999	Set with communication data. Waiting time: setting data × 10 ms
124 N028	PU communication CR/LF selection	1	0	Without CR/LF
			1	With CR
			2	With CR/LF
343 N080	Communication error count	0	(0 to 999)	Displays the communication error count during MODBUS RTU communication. (Read-only)
390 N054	% setting reference frequency	60 Hz / 50 Hz*4	1 to 590 Hz	Set a reference frequency of the set frequency.
549 N000	Protocol selection	0	0	Mitsubishi inverter protocol (computer link)
			1	MODBUS RTU protocol
			2	BACnet MS / TP protocol

Pr.	Name	Initial value	Setting range	Description
550 D012	NET mode operation command source selection	9999	0	The communication option is the command source in the NET operation mode.
			2	The RS-485 terminals are the command source in the NET operation mode.
			9999	Communication option is recognized automatically. Normally, the RS-485 terminals are the command source. When the communication option is installed, the communication option is the command source.
551 D013	PU mode operation command source selection	9999	2	The RS-485 terminals are the command source in the PU operation mode.
			3	The USB connector is the command source in the PU operation mode.
			4	The operation panel is the command source in the PU operation mode.
			9999	The USB is recognized automatically. Normally, the operation panel is the command source. When the USB is connected, the USB connector is the command source.
726 N050	Auto Baudrate/Max Master	255	0 to 255	Auto baud rate (bit 7) 0: inactive, 1: active
				Max Master (bit 0 to bit 6) setting range: 0 to 127 Maximum address for master node
727 N051	Max Info Frames	1	1 to 255	Set the maximum number of frames that the inverter can transmit while it owns the token.

Pr.	Name	Initial value	Setting range	Description
728 N052	Device instance number (Upper 3 digits)	0	0 to 419 (0 to 418)	Device identifier When the figure obtained by combining the **Pr.728 and Pr.729** settings is not within "0 to 4194302", the setting is out of range. When **Pr.728** = "419", the setting range of **Pr.729** is "0 to 4302". When **Pr.729** = "4303" or more, the setting range of **Pr.728** is "0 to 418".
729 N053	Device instance number (Lower 4 digits)	0	0 to 9999 (0 to 4302)	

*1 When **Pr.73** = "6", the operation is the same as the one when the setting is "1". When **Pr.73** = "16", the operation is the same as the one when the setting is "11".

*2 When "1" (MODBUS RTU protocol) is set in **Pr.549**, the setting range within parentheses is applied.

*3 When **Pr.549** = "2" (BACnet MS/TP protocol), the setting range within parentheses is applied.

*4 Initial values of parameters differ depending on the parameter initial value group (1 or 2).

4.2 Analog input selection

The analog terminal specification and the function to switch forward/reverse rotation by the input signal can be selected.

Pr.	Name	Initial value	Setting range	Description
73 T000	Analog input selection	1	0, 1, 6[*1], 10, 11, 16[*1]	The terminal 2 input specification (0 to 5 V, 0 to 10 V) is selectable. Also the reversible operation setting is selectable.

*1 When **Pr.73** = "6", the operation is the same as the one when the setting is "1". When **Pr.73** = "16", the operation is the same as the one when the setting is "11".

◆ Analog input specification selection

• To change the input specification, change the setting of **Pr.73**.

Pr.73 setting	Terminal 2 input	Reversible operation
0	0 to 10 V	Disabled
1 (initial value), 6	0 to 5 V	
10	0 to 10 V	Enabled
11, 16	0 to 5 V	

5 COMMON SPECIFICATIONS

◆ Environment

Item	Specifications
Surrounding air temperature	-10°C to +50°C (non-freezing)
Surrounding air humidity	90% RH or less (non-condensing)
Storage temperature*1	-20°C to +65°C
Atmosphere	Indoors (free from corrosive gas, flammable gas, oil mist, dust and dirt)
Altitude/vibration	Maximum 1000 m, 5.9 m/s^2 or less at 10 to 55 Hz (directions of X, Y, Z axes)

*1 Temperature applicable for a short time, for example, in transit.

Revisions

*The manual number is given on the bottom left of the back cover.

Revision date	* Manual number	Revision
Jun. 2023	IB(NA)-0601001ENG-A	First edition

INVERTER

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