



INVERTER

Plug-in option

FR-A8ND E KIT

INSTRUCTION MANUAL

DeviceNet

communication function



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Safety instructions


Thank you for choosing this Mitsubishi Electric inverter plug-in option.


This Instruction Manual provides handling information and precautions for use of this product. Incorrect handling might cause an unexpected fault. Before using this product, read all relevant instruction manuals 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. 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 of the inverter except for wiring or periodic inspection as you may accidentally touch the charged circuits and get 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 power 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.
- This product must be installed before wiring. Otherwise you may get an electric shock or be injured.
- Do not touch this product 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 this product if it is damaged or has parts missing.
- Do not stand or place heavy objects on this 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 other 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 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 this product.

CAUTION

Usage

- As all parameters return to their initial values after Parameter clear or All parameter clear is performed, the needed parameters for operation of the inverter and this product must be set again before the operation is started.
- To avoid damage to this product 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.

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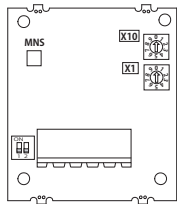

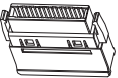
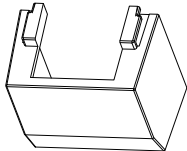
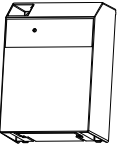



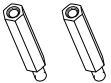
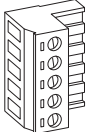
1 PRE-OPERATION INSTRUCTIONS

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-E800 series inverter.

◆ Product confirmation

Check the enclosed items.

<p>Plug-in option: 1</p> 	<p>Mounting screw (M3 × 8 mm): 2 (Refer to page 13, 15.)</p> 	<p>Junction connector: 1 (Refer to page 13, 15.)</p> 	<p>Option small cover: 1 (Refer to page 15.)</p> 	<p>Front cover for plug-in option (with lenses): 1 (Refer to page 13, 15.)</p> 
<p>Recessed neck screw (M3 × 7 mm): 1 (Refer to page 13, 15.)</p> 	<p>Straight spacer: 1 (Refer to page 13, 15.)</p> 	<p>L-shaped spacer: 1 (Refer to page 13, 15.)</p> 	<p>Hexagon spacer: 2 (Refer to page 13, 15.)</p> 	<p>Terminal block: 1 (Refer to page 25.)</p> 

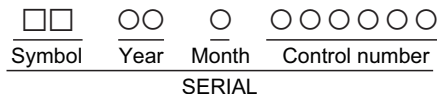
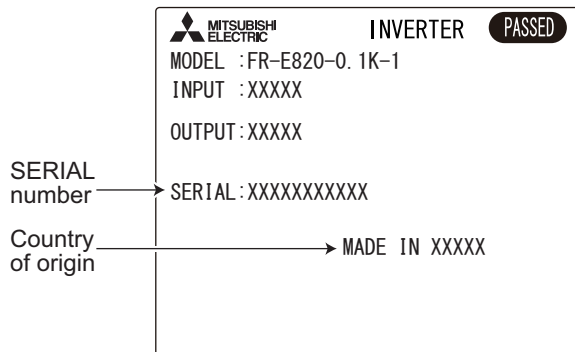
NOTE

- DeviceNet is a registered trademark of ODVA (Open DeviceNet Vender Association, INC).

◆ SERIAL number check

The FR-A8ND can be used for the inverter models listed below with the following SERIAL number or later. Check the SERIAL number indicated on the inverter rating plate or package.

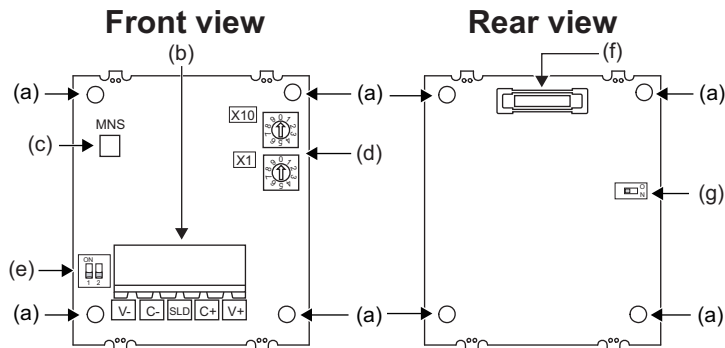
Rating plate example





The SERIAL consists of two symbols, three characters indicating the production year and month, and six characters indicating the control number. The last digit 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
FR-E820-0008(0.1K) to 0330(7.5K) FR-E840-0016(0.4K) to 0170(7.5K) FR-E860-0017(0.75K) to 0120(7.5K) FR-E820S-0008(0.1K) to 0110(2.2K)	MADE in Japan	□□ 205 〇〇〇〇〇〇 or later

1.2 Component names



Symbol	Name	Description	Refer to page
a	Mounting hole	Fixes the option to the inverter with screws, or installs spacers.	12
b	Connector for communication	Mount the accessory terminal block to connect to the network.	26
c	MNS LED (operation status indication)	Lit/flicker/off of the LED indicate inverter operation status.	9
d	Node address switch	Set the node address. (In the initial setting, "0" is set for both X10 and X1.)	20
e	Switch for manufacturer setting	Switch for manufacturer setting. Do not change from the initially-set status (OFF ).	—
f	Connector	Connect to the inverter option connector.	12
g	Switch for manufacturer setting	Switch for manufacturer setting. Do not change from the initially-set status (OFF ).	—

1.3 MNS LED (operation status indication)

The MNS LED indicates the operating status of the option unit by its indication status.

Check the position of LED on [page 8](#).

LED indicator	Description	Corrective action
OFF	Inverter power OFF	Supply power to the inverter.
	Network power OFF	Supply power to the network.
	Cable disconnected	Check for a DeviceNet cable disconnection, connector contact fault, and misplaced terminating resistor.
	Own node only on the network	Supply power to the master.
	Different baud rate between the inverter and master	Set the same baud rate for the inverter (Pr.346) and master.
Green (flickering)	Connection not established (Cable connection and network power are normal.)	Check the node address setting (node address switches and Pr.345) of the inverter.
		Set the master to the RUN mode.
		Check that the size (number of bytes) of the I/O communication from the master matches with that set in Pr.346 of the inverter. (For how to check the I/O communication size of the master, refer to the Instruction Manual of the master device.)
Green (ON)	Connection established (The inverter power is ON and the master on the network has recognized this option unit. The green LED stays ON during communication.)	<p><When the inverter is not running even with the green LED ON></p> <ul style="list-style-type: none"> • Check that the correct data is sent from the master to the I/O communication format specified in Pr.346. (For how to check the data to be sent from the master, refer to the Instruction Manual of the master device.) <p>Check that the inverter is in the NET operation mode or communication is specified as the communication operation command source or the operation command source of the inverter.</p>
Red (flickering)	I/O communication connection timeout *1	Check the EPR (Expected Packet Rate) setting *2 of the I/O communication of the master again. (For how to set the EPR, refer to the Instruction Manual of the master device.)
		Check for a DeviceNet cable disconnection, connector contact fault, and misplaced terminating resistor.
	Network power OFF	Review the power supply method for the network so that the power does not turn OFF again.

LED indicator	Description	Corrective action
Red (ON)	Overlapping node address	Check that the node address is not overlapping with those of other devices.
	Incorrect baud rate setting	Set the same baud rate for the inverter (Pr.346) and master.
	Communication error due to cable disconnection or intermittent network power OFF *1	After connecting a master to an inverter (FR-A8ND) with terminating resistors, check for a cable disconnection, connector contact fault, and network power supply drop.

*1 If the inverter is operated while the communication is set as the operation or speed command source, a communication error occurs. For the inverter operation at communication error, refer to [page 37](#).

*2 Time limit = $4 \times \text{EPR}$.
(EPR = Expected Pack Rate Class 0x05 Instance 2 Attribute 9 (Refer to [page 72](#).))

1.4 Specifications

Item		Specifications
Power supply	Control power supply	Supplied from the inverter
	Network power	Input voltage: 11 to 28 V Consumption current: 90 mA maximum
Connector type		Open-type connector
DeviceNet communication specifications		Conforms to ODVA DeviceNet Specification. Group2 server. Support UCMM
Communication cable		Use a DeviceNet standard thick or thin cable
Maximum cable length		500 m (125 kbps) 250 m (250 kbps) 100 m (500 kbps)
Communication speed		125 kbps, 250 kbps, 500 kbps
Number of inverters connected		64 (including master) The number of inverters connectable is $64 - 1 = 63$ when a minimum of one node as a master is connected.
Response time		Refer to page 50 .

2 INSTALLATION

2.1 Pre-installation instructions

Check that the inverter's input power and the control circuit power are both OFF.

CAUTION

- Do not install or remove this product while the inverter power is ON. Doing so may damage the inverter or this product.
- To avoid damage due to static electricity, static electricity in your body must be discharged before you touch this product.

2.2 Installation procedure

◆ Installing the option

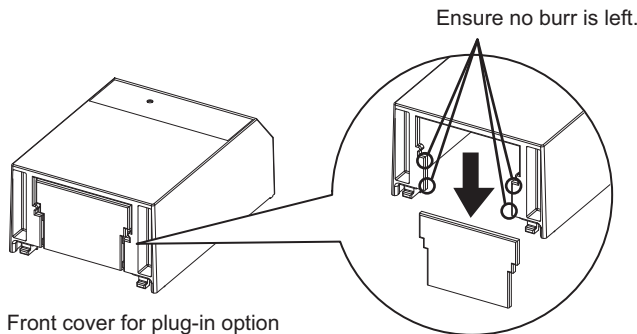
The FR-E800 series inverter has only one plug-in option connector.

NOTE

- When installing the plug-in option, prevent cables being caught between parts. Otherwise the inverter and the option may be damaged.
-

■ For the FR-E820-0175 (3.7K) or lower, FR-E840-0170 (7.5K) or lower, and FR-E860-0120 (7.5K) or lower

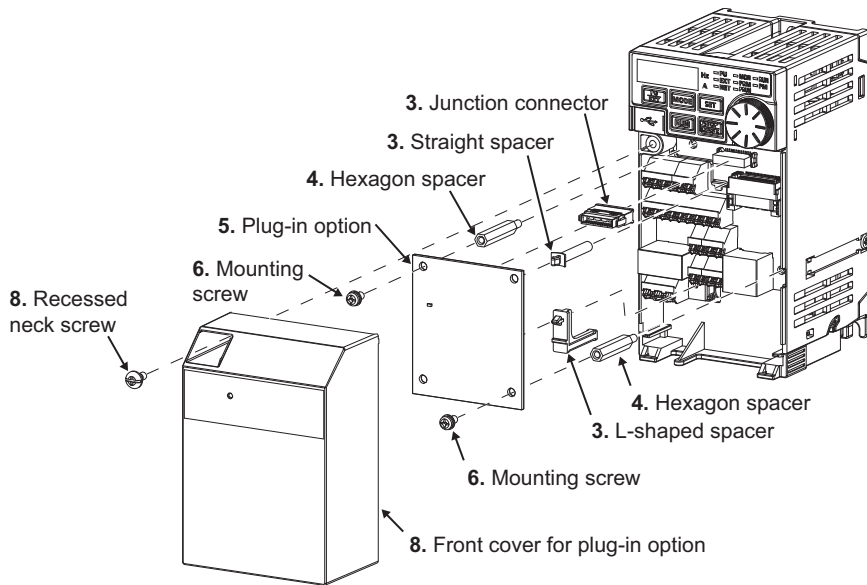
1. Remove the inverter front cover. (Refer to the FR-E800 Instruction Manual (Connection) for instructions to remove the cover.)
2. Use a nipper or the like to cut off the bottom of the front cover for plug-in option.



2. Front cover for plug-in option

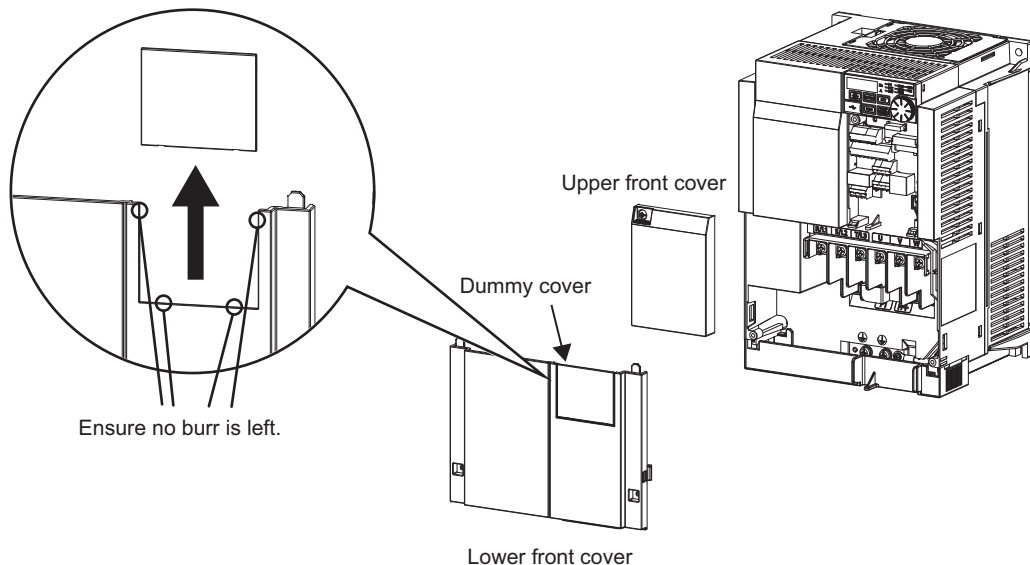
3. Fit the L-shaped spacer, straight spacer, and junction connector to the plug-in option as shown in the figure on the [page 14](#). Fit the junction connector to the guide of the connector of the plug-in option, and insert the junction connector as far as it goes. Fit the L-shaped spacer to the plug-in option so that the lower edge of the option placed on the ridge of the spacer.

4. Remove the body screws of the inverter, then install the hexagon spacers to the inverter (tightening torque 0.33 to 0.40 N·m).
5. Fit the junction connector, which has been connected to the plug-in option, to the guide of the option connector on the inverter, and insert the junction connector as far as it goes.
6. Fasten this product to the inverter using the two mounting screws through the holes on either side (tightening torque 0.33 to 0.40 N·m). If the connector is not inserted deep enough, the screws cannot be tightened properly. Check the connector.
7. Connect the terminal block to the connector of the communication option mounted on the inverter.
8. After wiring of the plug-in option has been completed, mount the front cover for the plug-in option to the inverter.



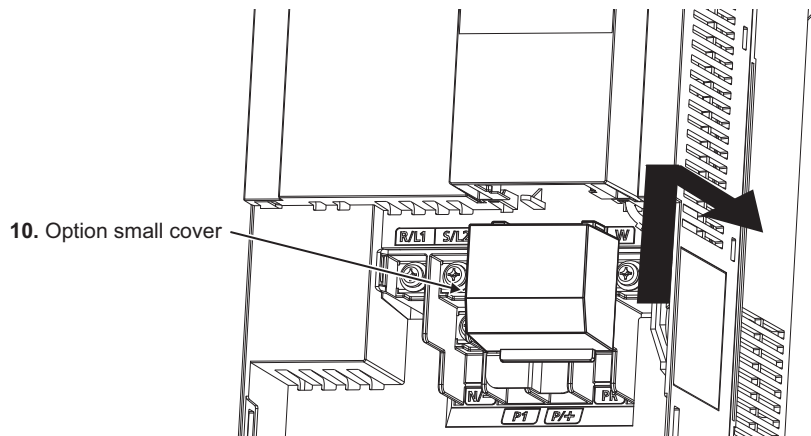
■ For the FR-E820-0240(5.5K) or higher

1. Remove the upper front cover and the lower front cover from the inverter. (Refer to the FR-E800 Instruction Manual (Connection) for instructions to remove the covers.)
2. Use a nipper or the like to cut off the dummy cover of the lower front cover in order to install the option small cover.

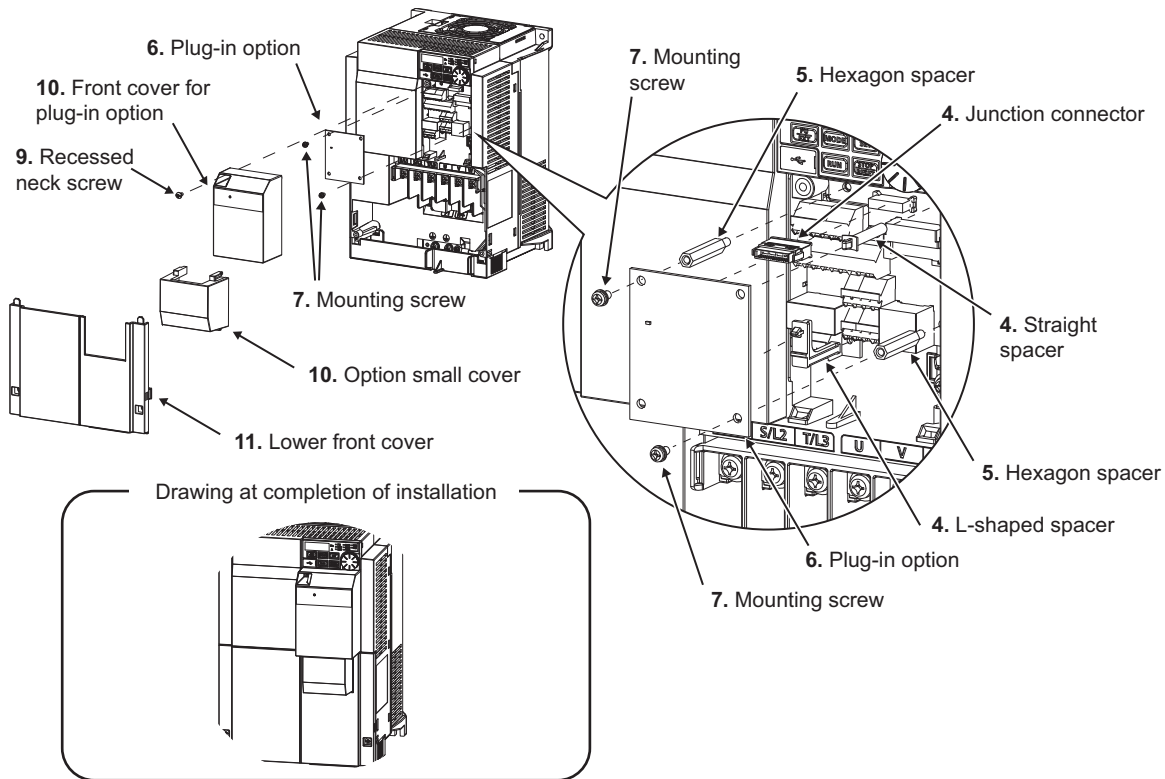


3. Use a nipper or the like to cut off the bottom of the front cover for plug-in option. (For details, refer to [page 13](#).)
4. Fit the L-shaped spacer, straight spacer, and junction connector to the plug-in option as shown in the figure on the [page 17](#). Fit the junction connector to the guide of the connector of the plug-in option, and insert the junction connector as far as it goes. Fit the L-shaped spacer to the plug-in option so that the lower edge of the option placed on the ridge of the spacer.

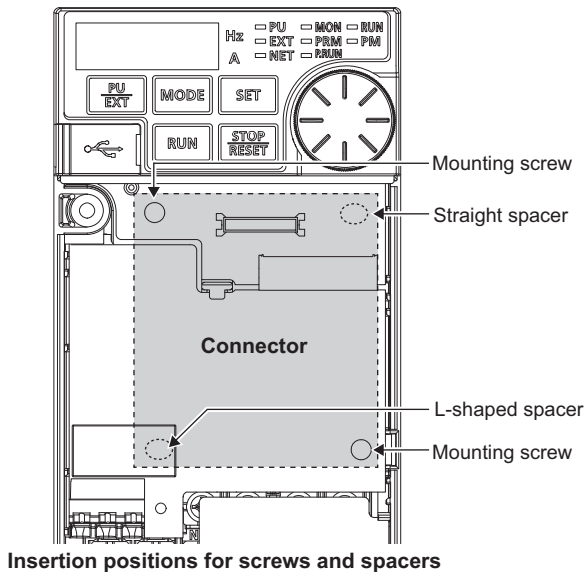
5. Remove the body screws of the inverter, then install the hexagon spacers to the inverter (tightening torque 0.33 to 0.40 N·m)
6. Fit the junction connector, which has been connected to the plug-in option, to the guide of the option connector on the inverter, and insert the junction connector as far as it goes.
7. Fasten this product to the inverter using the two mounting screws through the holes on either side (tightening torque 0.33 to 0.40 N·m). If the connector is not inserted deep enough, the screws cannot be tightened properly. Check the connector.
8. Connect the terminal block to the connector of the communication option mounted on the inverter.
9. After wiring of the plug-in option has been completed, mount the front cover for the plug-in option to the inverter.
10. Install the option small cover to the front cover for plug-in option by inserting the small cover into the front cover and slide it toward the rear of the inverter.



11. Install the lower front cover to the inverter.



◆ Insertion positions for screws and spacers



NOTE

- When the junction connector is installed to the plug-in option, the option is fixed with the hooks of the connector. The junction connector cannot be removed from the plug-in option.
- When removing the front cover for plug-in option from the inverter, note that the recessed neck screw cannot be removed from the front cover for plug-in option.
- When installing/removing the plug-in 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.
- Be careful not to drop mounting screws during the installation or removal of the plug-in option.
- In the following cases, the inverter cannot be operated due to the protective function (E.1).

The inverter cannot recognize the option due to improper installation or any other reason.

The FR-A8ND manufactured in March 2020 or earlier is mounted. (Refer to [page 97](#) to check the production year and month.)
Switch 1 for manufacturer setting is turned ON.

Mounted position	Fault indication
Option connector	E. 1

- When removing the plug-in option, remove the two screws on either side, and, then pull it straight out. Pressure applied to the option connector and to the option board may break the option.



2.3 Node address setting

◆ Setting with node address switch

Set the node address between "0 and 63" using the node address switches on the FR-A8ND board. (Refer to [page 8](#).)
The setting is applied at the next power-ON or inverter reset.

Set the arrow (↑) of the corresponding switches to the number to set a desired address.

- Setting example

Node address 1	Node address 26
Set the "↑" of X10 to "0" and the "↑" of X1 to "1". 	Set the "↑" of X10 to "2" and the "↑" of X1 to "6". 

NOTE

- Set the inverter node address before switching ON the inverter and do not change the setting while the power is ON. Otherwise you may get an electric shock.
- Set the node address switch to the switch number position correctly. If the switch is set between numbers, normal data communication can not be made.

Good example



Bad example



- When the node address switches are set to "64 or higher", the node address set by **Pr.345** or in "Class 0x03, Instance 1, Attribute 1" becomes valid.
- You cannot set the same node address to other devices on the network. (If different devices have the same node address, the communication cannot be established properly.)

◆ **Set with parameter (Pr.345)**

After setting the node address switches to "64 or higher", set the inverter parameter (**Pr.345 DeviceNet address**). When the node address switches are set to "0 to 63", the node address switch setting is valid. The setting is applied at the next power-ON or inverter reset. (Refer to [page 30](#).)

◆ **Setting with master**

After setting the node address switches to "64 or higher", set "Class 0x03, Instance 1, Attribute 1" using the master. The setting value is applied to **Pr.345**. When the node address switches are set to "0 to 63", the node address switch setting is valid. (Refer to [page 68](#).)

All connections are released and a set value is immediately applied.

3 WIRING

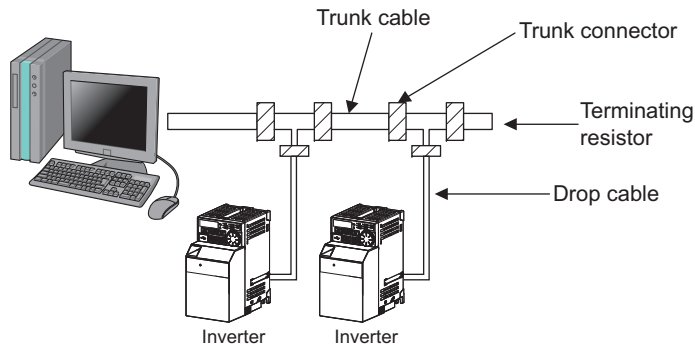
3.1 Connection to network

1. Be sure to check the following before connecting the inverter to the network.
 - Check that the FR-A8ND is securely inserted into the inverter. (Refer to [page 12](#).)
 - Check that the correct node address is set. (Refer to [page 20](#).)
 - Check that a drop cable is firmly connected to the FR-A8ND. (Refer to [page 23](#).)
2. Make sure that the terminating resistor is installed at each end (between C+ and C-) of the trunk cable. These resistors must meet the following requirements.

Requirements of terminating resistors		
R (resistance value) = 121 Ω	1% metal film	0.25 W

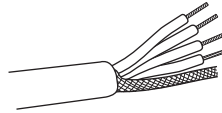
3. Connect drop cables to the trunk cable.

- If the trunk connector is a DeviceNet sanctioned pluggable or sealed connector, the connection to the active network can be made at any time whether the inverter is ON or OFF. The option unit automatically detects when the connection is completed.
- If connecting to the network with free wires, power to the network and inverter should be shut off as a safety precaution in case two or more signal wires are accidentally shorted together.



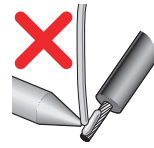
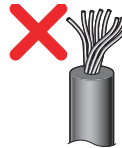
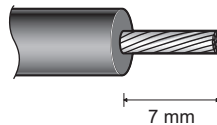
3.2 Wiring

1. Strip the sheath back about 40 mm on the free wire end of the drop cable to expose the four colored signal wires and the silver shield wire.



2. Strip the sheath back of each signal cable to use. If the length of the sheath peeled is too long, a short circuit may occur among neighboring wires. If the length is too short, wires might come off. Wire the stripped cable after twisting it to prevent it from becoming loose. In addition, do not solder it.

Cable stripping length



Use a blade type terminal as required.

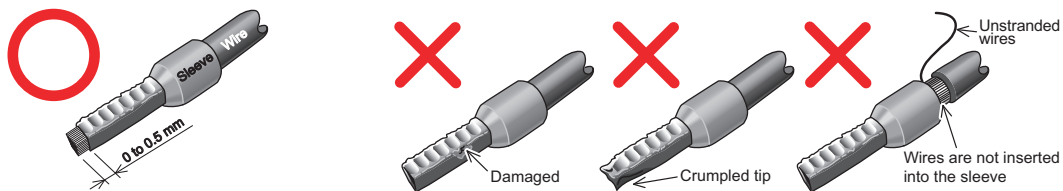
NOTE

Blade terminals available on the market (as of December 2019)

Terminal screw size	Wire size (mm ²)	Ferrule terminal model		Manufacturer	Crimping tool name
		With insulation sleeve	Without insulation sleeve		
M3	0.3 to 0.5	Al 0,5-6WH	A 0,5-6	Phoenix Contact Co.,Ltd.	CRIMPFOX 6
	0.5 to 0.75	Al 0,75-6GY	A 0,75-6		

Insert wires to a blade terminal, and check that the wires come out for about 0 to 0.5 mm from a sleeve.

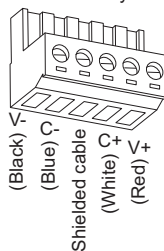
Check the condition of the blade terminal after crimping. Do not use a blade terminal of which the crimping is inappropriate, or the face is damaged.



3. Loosen the terminal screw and insert the cable into the terminal according to the terminal assignment.
Tighten each cable with fixing screws to the recommended tightening torque.

Screw size	Tightening torque	Cable size	Screwdriver
M3	0.5 N·m to 0.6 N·m	0.3 mm ² to 0.75 mm ²	Small ⊖ flat-blade screwdriver (Tip thickness: 0.4 mm/ tip width: 2.5 mm)

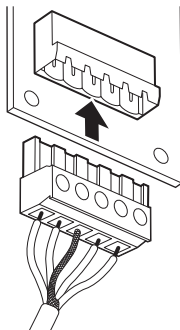
Terminal layout



NOTE

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

4. Connect the terminal block to the connector for communication of the communication option mounted on the inverter.



⚠ CAUTION

- After wiring, wire offcuts must not be left in the inverter. They may cause an error, failure or malfunction.
-

4 INVERTER SETTING

4.1 Parameter list

The following parameters are used for the communication option (FR-A8ND).
Set the values according to need.

Pr.	Pr. group	Name	Setting range	Minimum setting increments	Initial value	Refer to page
79	D000	Operation mode selection	0 to 4, 6, 7	1	0	33
338	D010	Communication operation command source	0, 1	1	0	*3
339	D011	Communication speed command source	0, 1, 2	1	0	*3
340*2	D001*2	Communication startup mode selection	0, 1, 10	1	0*5/10*6	33
342	N001	Communication EEPROM write selection	0, 1	1	0	*4
345*1*2	N200*1*2	DeviceNet address	0 to 4095	1	63	30
346*1*2	N201*1*2	DeviceNet baud rate	0 to 4095	1	132	31
349*1	N010*1	Communication reset selection	0, 1	1	0	43
500*1	N011*1	Communication error execution waiting time	0 to 999.8 s	0.1 s	0 s	36
501*1	N012*1	Communication error occurrence count display	0	1	0	37
502	N013	Stop mode selection at communication error	0, 1, 2, 6	1	0	37
550*2	D012*2	NET mode operation command source selection	0, 2, 5, 9999	1	9999	*3
779	N014	Operation frequency during communication error	0 to 590 Hz, 9999	0.01 Hz	9999	37

*1 Parameters which can be displayed when the plug-in option (FR-A8ND) is mounted.

*2 The setting is reflected after inverter reset or at the next power-ON.

- *3 Refer to the FR-E800 Instruction Manual (Function) for the parameter details.
- *4 Refer to the FR-E800 Instruction Manual (Communication) for the parameter details.
- *5 The initial value is for the standard model.
- *6 The initial value is for the Ethernet model.

4.2 DeviceNet data

DeviceNet communication startup data can be set with the inverter parameter without using a DeviceNet configuration tool. For the setting method with an EDS file (Refer to [page 93](#)) DeviceNet configuration tool, refer to the configuration tool manual.

4.2.1 DeviceNet address (Pr.345)

Pr.	Name	Setting range	Minimum setting increments	Initial value
345	DeviceNet address	0 to 4095	1	63

The definition of **Pr.345** is as follows.

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Reserved				ResCom	Reserved						Device Node Address				

Communication continuation selection (ResCom)

Bit	Item	Initial value	Setting range	Definition	
0 to 5	Device Node Address	63	0 to 63	Node Address (MAC ID) of device is set between 0 and 63. ^{*1}	Node address can be set with DeviceNet Object Class 0x03, Instance1, Attribute1. (Refer to page 68 .)
11	Selection of continuous communication at inverter reset (ResCom)	0	0	Reset the option unit in synchronization with the inverter. When connection is timed out, communication may not resume according to the master action. In this case, release connection and reestablish to make communication enabled. ^{*2}	
			1	The option unit will not be reset even if the inverter is reset and communication continues. After inverter reset, preset a value other than "0" in Pr.340 so that the inverter starts in Network operation mode.	
12 to 15	Reserved	0	0	Set "0" always. When a value other than "0" is set, the inverter operates as when "63" (initial value) is set in Pr.345 .	

*1 To enable the device node address of bit 0 to 5, set the node address switches to "64 or higher". (Refer to [page 20](#).)

*2 For an error reset via DeviceNet communication, the communication continues.

When operating the inverter through the DeviceNet communication, set **Pr.340** ≠ 0 in advance to enable the inverter to run in the NET operation mode after the inverter reset.

4.2.2 DeviceNet baud rate (Pr.346)

Pr.	Name	Setting range	Minimum setting increments	Initial value
346	DeviceNet baud rate	0 to 4095	1	132

Set baud rate etc. to start DeviceNet communication.

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Reserved				Input Assembly				Output Assembly				Baud Rate			

Bit	Item	Initial value	Setting range	Definition	
0, 1	Baud Rate	0	0, 3	125 kbps	This value can be set with DeviceNet Object Class 0x03 Instance 1 Attribute 2. (Refer to page 68.)
			1	250 kbps	
			2	500 kbps	
2 to 6	Output Assembly	1	0	Output Instance 20 (0x14)	<ul style="list-style-type: none"> • Set the same value for input assembly and output assembly. • The value can be set with Control Supervisor Class 0x29 Instance 1 Attribute 140, 141. (Refer to page 78.)
			1	Output Instance 21 (0x15)	
			6	Output Instance 126 (0x7E)	
			7	Output Instance 127 (0x7F)	
			8, 14	For manufacturer setting. Do not set.	
Other than the above	Output Instance 21 (0x15)				
7 to 11	Input Assembly	1	0	Input Instance 70 (0x46)	
			1	Input Instance 71 (0x47)	
			6	Input Instance 176 (0xB0)	
			7	Input Instance 177 (0xB1)	
			8, 14	For manufacturer setting. Do not set.	
Other than the above	Input Instance 71 (0x47)				

Bit	Item	Initial value	Setting range	Definition
12 to 15	Reserved	0	0	Set "0" always.

Set **Pr.346** according to the baud rate and Output/Input Instances (number of bytes of communicated data) of the I/O communication as shown in the following table.

Baud rate	Output/Input Instances (No. of bytes of communicated data) of the I/O communication			
	20/70 (4)	21/71 (4)	126/176 (6)	127/177 (8)
125 kbps	0, 3	132 (initial value), 135	792, 795	924, 927
250 kbps	1	133	793	925
500 kbps	2	134	794	926

4.3 Operation mode setting

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

◆ Operation mode switching conditions

Check the following before switching the operation mode.

- The inverter is at a stop.
- Both the STF and STR signals are off.
- The **Pr.79 Operation mode selection** setting is correct.

(Check the setting on the operation panel of the inverter.)

◆ 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 Communication startup mode selection** to select the network operation mode.

After started in network operation mode, parameter write from the network is enabled.

NOTE

- Change of the **Pr.340** setting is valid when powering on or resetting the inverter.
- **Pr.340** can be changed with the operation panel independently of the operation mode.
- Ensure that the communication setting of the inverter is completed before setting **Pr.340** ≠ "0".
- For the details of **Pr.79** and **Pr.340**, refer to the FR-E800 Instruction Manual (Function).

Pr.340 setting	Pr.79 setting	Operation mode at power ON or power restoration	Operation mode switchover
0	0 (initial value)	External operation mode	Switching among the External, PU, and NET operation mode is enabled. *1*3
	1	PU operation mode	PU operation mode fixed
	2	External operation mode	Switching between the External and Net operation mode is enabled. *3 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. *3
	7	X12 (MRS) signal ON: external operation mode	Switching among the External, PU, and NET operation mode is enabled. *1*3
		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*4	NET operation mode	
	7	X12 (MRS) signal ON: NET operation mode	
		X12 (MRS) signal OFF: external operation mode	

Pr.340 setting	Pr.79 setting	Operation mode at power ON or power restoration	Operation mode switchover
10	0	NET operation mode	Switching between the PU and NET operation mode is enabled. *2*3
	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*4	NET operation mode	Switching between the PU and NET operation mode is enabled while running. *2*3
	7	External operation mode	Same as when Pr.340 = "0"

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

*2 Switching between the PU and NET operation modes is available with the key on the operation panel or the X65 signal.

*3 Refer to [page 81](#) for a switching method from the network.

*4 When Pr.79 = "6", Pr.128 to Pr.134 (PID control) are disabled. The switchover mode and the PID control are disabled, and the same operation mode as when Pr.79 = "0" is selected.

4.4 Operation at communication error occurrence

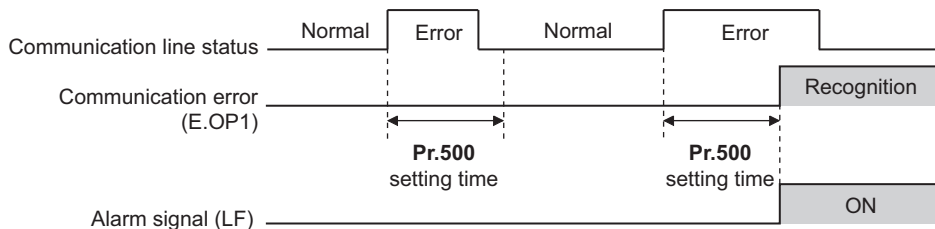
4.4.1 Operation selection at communication error occurrence (Pr.500 to Pr.502, Pr.779)

You can select operations at communication error occurrences by setting **Pr.500 to Pr.502, Pr.779** under network operation.

◆ **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.

Pr.	Name	Setting range	Minimum setting increments	Initial value
500	Communication error execution waiting time	0 to 999.8 s	0.1 s	0 s

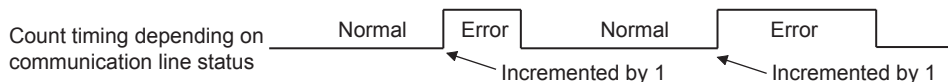


When a communication line error occurs and lasts longer than the time set in **Pr.500**, it is recognized as a communication error. If the communication returns to normal within the time, it is not recognized as a communication error, and the operation continues.

◆ Displaying and clearing the communication error count

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

Pr.	Name	Setting range	Minimum setting increments	Initial value
501	Communication error occurrence count display	0	1	0



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.

NOTE

- Communication error count is temporarily stored in the RAM memory. 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.

◆ Inverter operation at a communication error occurrence

How the inverter operates at a communication line error or an option unit fault can be set.

Pr.	Name	Setting range	Description
502	Stop mode selection at communication error	0 (initial value), 1, 2, 6	Refer to page 38 .
779*1	Operation frequency during communication error	0 to 590 Hz	When a communication error occurs, the inverter operates at the set frequency.
		9999 (initial value)	The inverter operates at the frequency set before the communication error occurs.

*1 Valid when **Pr.502** = "6".

◆ About setting

- Operation at an error occurrence

Fault description	Pr.502 setting	Operation	Indication	Fault output
Communication line	0	Continued ^{*1}	Normal ^{*1}	Not output ^{*1}
	1			
	2			
	6			
Communication option	0	Output shutoff	"E. 1"	Provided
	1, 2	Output to decelerate and stop the motor	"E. 1" after stop	Provided after stop
	6	Operation continued at the set frequency of Pr.779	"CF" warning	Not output

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

- Operation after the time in **Pr.500** elapses after an error occurrence

Fault description	Pr.502 setting	Operation	Indication	Fault output
Communication line	0	Output shutoff	"E.OP1"	Provided
	1	Output to decelerate and stop the motor	"E.OP1" after stop	Provided after stop
	2			Not output
	6	Operation continued at the set frequency of Pr.779 ^{*3}	"CF" warning	
Communication option itself	0	Output stop status continues. ^{*2}	"E.1" kept ^{*2}	Kept provided ^{*2}
	1, 2			
	6	Operation continued at the set frequency of Pr.779 ^{*3}	"CF" warning	Not output

*2 When an error occurs, the inverter outputs a command to decelerate the motor or shuts off the output, and outputs the fault, independently of the **Pr.500** setting.

*3 When the frequency command source is changed from NET to any other source, frequency commands given from an external device are enabled.

- Operation at error removal

Fault description	Pr.502 setting	Operation	Indication	Fault output
Communication line	0	Output stop status continues.	"E.OP1" kept	Kept provided
	1			
	2	Restart ^{*4}	Normal	Not output
	6	Normal		
Communication option itself	0	Output stop status continues.	"E. 1" kept	Kept provided
	1, 2			
	6	Operation continued at the set frequency of Pr.779	"CF" warning	Not output

*4 When the communication error is removed during deceleration, the motor re-accelerates.

NOTE

- The protective function [E.OP1 (fault data: HA1)] is activated at error occurrences on the communication line. The protective function [E.1 (fault data: HF1)] is activated at error occurrences in the communication circuit inside the option.
- Fault output indicates the fault (ALM) signal and fault bit output.
- When the fault output setting is active, fault records are stored in the fault history. (A fault record is written to the fault history at a fault output.)
- When the fault output setting is not active, fault record is overwritten to the fault 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 fault history.
- When **Pr.502** is set to "1, 2", the normal deceleration time setting (such as **Pr.8/Pr.44/Pr.45** setting) is applied.
- When a communication line error occurs while **Pr.502** = "2", the motor re-accelerates if the error is removed during deceleration. The operation command and the speed command before the fault occurred will be applied for restarting. The normal acceleration time setting (such as **Pr.7/Pr.44** setting) is applied for restart. (Acceleration is not restarted if the error is that of the option unit itself.)

 **CAUTION**

- When **Pr.502** = "6", operation continues even if a communication option fault (E.OP1) or an option fault (E.1) is displayed. When setting "6" in **Pr.502**, provide a safety stop countermeasure other than via communication. For example, input a signal through an external terminal (RES, MRS, or X92) or press the PU stop on the operation panel.
-

4.4.2 Fault and measures

◆ Inverter operation in each operation mode at error occurrences

Location	Status		Operation mode		
			Network operation *1	External operation	PU operation
Inverter	Inverter operation		Output shutoff	Output shutoff	Output shutoff
	Data communication		Continued	Continued	Continued
Communication line	Inverter operation		Output shutoff *2	Continued	Continued
	Data communication		Stop	Stop	Stop
Communication option	Communication option connection error	Inverter operation	Output shutoff *2	Output shutoff *2	Output shutoff *2
		Data communication	Continued	Continued	Continued
	Error of communication option itself	Inverter operation	Output shutoff *2	Continued	Continued
		Data communication	Stop	Stop	Stop

*1 When the communication option is set as the operation command source.

*2 Depends on the Pr.502 setting.

◆ Measures at error occurrences

Fault indication	Name	Measures
E.OP1	Communication option fault	<ul style="list-style-type: none"> Check the LED status of the option unit and remove the cause of the alarm (Refer to page 9 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.

*1 When a fault other than the above is displayed, refer to the FR-E800 Instruction Manual (Maintenance) to remove the cause of the fault.

4.5 Inverter reset

◆ Operation conditions of inverter reset

Which resetting method is allowed or not allowed in each operation mode is described below.

Resetting method		Operation mode		
		Network operation	External operation	PU operation
Reset from the network	Inverter reset (Class 0x2A Instance 1 Attribute 101) (Refer to page 81.) *1	Allowed	Disallowed	Disallowed
	Error reset at inverter fault (Refer to page 52, 54, 56, 60, 78.) *2			
			Pr.349 = 0	Allowed
			Pr.349 = 1	Disallowed
Turn on the RES signal (terminal RES) of the inverter		Allowed	Allowed	Allowed
Switch off inverter power		Allowed	Allowed	Allowed
Reset on the operation panel	Inverter reset	Allowed	Allowed	Allowed
	Reset at inverter fault	Allowed	Allowed	Allowed

*1 Inverter reset can be made any time.

*2 Reset can be made only when the protective function of the inverter is activated.

NOTE

- When a communication line error has occurred, reset cannot be made from the 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 the Network operation mode. (Refer to [page 33.](#))
- Communication continues during inverter reset. (The inverter cannot be controlled for about 1 second after release of a reset command.)

◆ Error reset operation selection at inverter fault

An error reset command from communication option can be invalid in the External operation mode or PU operation mode. Use Bit 2 of Byte 0 of Output Instances 20, 21, 126, or 127, or Class 0x29 Instance 1 Attribute 12 for an error reset command from network. (Refer to [page 52](#), [54](#), [56](#), [60](#), [78](#).)

Pr.	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.

4.6 Frequency and speed settings

- For the output/set frequency monitor, frequency setting, and parameter setting through the FR-A8ND, the unit of 0.01 Hz is always applied regardless of the **Pr.37 Speed display** setting. The setting unit for running speed (actual speed) monitor is determined by the setting of **Pr.53 Frequency / rotation speed unit switchover.**)

Pr.53 setting	Output frequency monitor	Set frequency monitor	Running speed (actual speed) monitor	Frequency setting, parameter setting
0,1	0.01 Hz	0.01 Hz	1 r/min ^{*1}	0.01 Hz
4	0.01 Hz	0.01 Hz	1 (machine speed ^{*1})	0.01 Hz

*1 Running speed r/min conversion formula: frequency \times 120 / number of motor poles (**Pr.81** or **Pr.454**)

Machine speed conversion formula: **Pr.37** \times frequency / **Pr.505 Speed setting reference**

Pr.505 is always set as frequency (Hz).

When **Pr.81** (**Pr.454**) = "9999", the number of motor poles is assumed to be four.

- When setting a speed through the FR-A8ND, the speed is calculated with the **Pr.81** or **Pr.454** setting as shown below.

Speed value (1 r/min) = frequency \times 120 / number of motor poles (**Pr.81** or **Pr.454**)

NOTE

- To apply the unit 1 r/min to the running speed (actual speed) monitor, set the initial values in **Pr.37**.
- Refer to the FR-E800 Instruction Manual (Function) for the details of **Pr.37**, **Pr.53**, **Pr.81**, **Pr.454** and **Pr.811**.

5 FUNCTIONS

5.1 Output from the inverter to the network

Main items to be output from the inverter (FR-A8ND) to the network and their descriptions are explained below.

Item	Description	Refer to page
Inverter monitor	Monitor various items such as inverter output frequency and output current.	81, 91
Operation mode read	Read the operation mode of the inverter.	81
Parameter read	Read parameter settings of the inverter.	87, 88, 90
Inverter status	Monitor the output signal of the inverter.	81
Fault record	Monitor the faults history of the inverter.	81



NOTE

- Refer to the FR-E800 Instruction Manual (Function) for functions controllable from the network in each operation mode.

5.2 Input to the inverter from the network

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

Item	Description	Refer to page
Frequency setting	Set the running frequency of the inverter.	52
Operation mode write	Set the operation mode of the inverter.	81
Run command	Set the control input command such as forward operation signal (STF) and reverse rotation signal (STR).	52, 81
Inverter reset	Reset the inverter.	67, 81
Parameter write	Set parameters of the inverter.	87, 88, 90
Parameter clear	Return parameters to the initial values.	67, 81



NOTE

- Refer to the FR-E800 Instruction Manual (Function) for functions controllable from the network in each operation mode.

6 OBJECT MAP DEFINITIONS

6.1 Object model of DeviceNet

For DeviceNet communication, each node is modeled as collections of objects (abstraction of particular functions of the products). The following four terms are used to describe object.

Item	Definition
Class	Collections of all objects which have same types of functions. Generalization of object
Instance	Concrete expression of object
Attribute	Expression of object characteristic
Service	Function supported by object or class

The following explains object definitions for use of the FR-A8ND DeviceNet.

For details of the definitions, consult the DeviceNet documentation available from ODVA.

6.2 Data communication type

The FR-A8ND supports "I/O communication (polling)" and "message communication (Explicit message connection)".

6.2.1 Overview of the I/O communication (polling)

Set Output/Input Instances using either of the following methods.

- Using **Pr.346** (Refer to [page 31.](#))
- Using Class 0x29 Instance 1 Attribute 140 or 141 (Refer to [page 78.](#))

Instance ID (output/input) *1	No. of bytes of communicated data	Function	Refer to page
20/70	4	The following is available: inverter forward operation and error reset of the inverter.	52
21/71	4	The following is available: inverter forward/reverse operation and error reset of the inverter.	54
126/176	6	The following is available: inverter forward/reverse operation, error reset of the inverter, and access to 16-bit parameters of the inverter.	56
127/177	8	The following is available: inverter forward/reverse operation, error reset of the inverter, access to 16/32-bit parameters, speed command setting in units of Hz, access to inverter input/output terminals.	60

*1 "Output" is a command to the inverter, and "input" is a response from the inverter.

6.2.2 Overview of the message communication (Explicit message connection)

- The data size of parameter writing or reading (Class 0x66, 0x67, 0x70 to 0x79, and 0x90 to 0x93) through the Explicit message is 2 bytes.
- When the 32-bit parameter setting is read through the Explicit message and the read value exceeds 0xFFFF, the reply data will be 0xFFFF.
- When reading or writing 32-bit parameters, use Instance 127 or 177 of the I/O communication.
- When reading 32-bit monitor (Class 0x80), use Instance 127 or 177 of the I/O communication or use the Explicit communication.

Class	Object name	Page
0x01	Identity Object	66
0x03	DeviceNet Object	68
0x04	Assembly Object	69
0x05	DeviceNet Connection Object	70
0x28	Motor Data Object	77
0x29	Control Management Object	78
0x2A	AC Drive Object	81
0x66	Extended Object I	87
0x67	Extended Object II	88
0x70 to 0x79	Extended Object III	90
0x80	Extended Object IV	91
0x90 to 0x94	Extended Object V	92

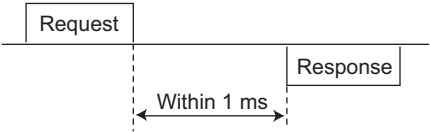
NOTE

- In the following tables, "Get" means reading from the inverter, and "Set" means writing to the inverter.

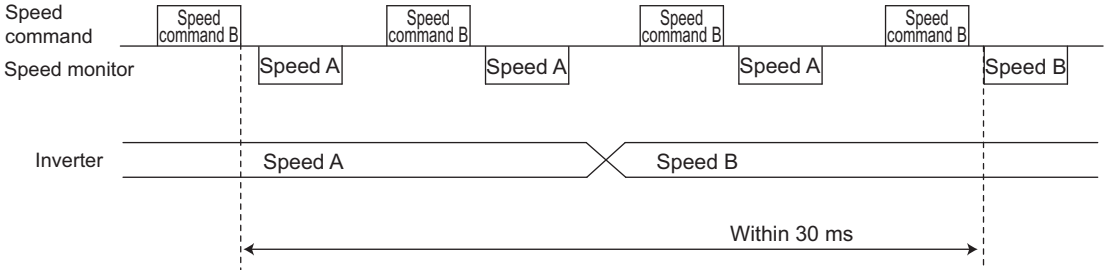
6.3 Response level

6.3.1 Response level of the I/O communication (polling)

◆ Response level of DeviceNet bus

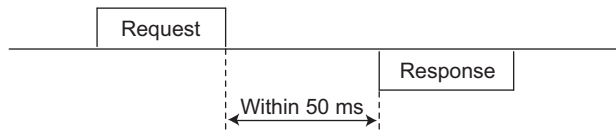


◆ Reflect timing on the actual speed or speed monitor after speed setting

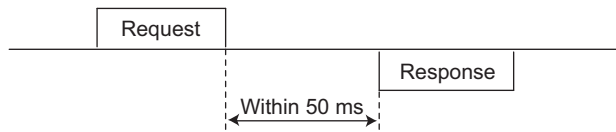


6.3.2 Response level of the message communication (Explicit message connection)

◆ Reading



◆ Writing



◆ Parameter clearing

The inverter will not respond until the parameter clear processing completes (about 5 s) after sending parameter clear or all parameter clear command.

6.4 Recommendation for software developers

Please note the followings when developing software.

- After sending request to the FR-A8ND, wait for response from the FR-A8ND, then send the next request.
- Set waiting time between each message based on FR-A8ND response time on [page 50](#). For example, after sending a writing request by Explicit message, wait for more than 50 ms, then send the next request.

7 OBJECT MAP

7.1 Format of the I/O communication (polling)

7.1.1 Output Instance 20/Input Instance 70

◆ Output Instance 20 (master → inverter)

When using Output Instance 20, set Input Instance to 70.

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved (0)	Reserved (0)	Reserved (0)	Reserved (0)	Reserved (0)	Fault Reset	Reserved (0)	Run Fwd
1	Reserved (0x00)							
2	Speed reference (low byte)							
3	Speed reference (high byte)							

• Output Instance 20 details

Byte 0	Bit 0	Run Fwd	Forward rotation signal (0: forward rotation OFF 1: forward rotation ON)
	Bit 2	Fault Reset	Reset request at an error occurrence ^{*1} Valid only at in inverter trip (0: no function 1: fault reset request)
Byte 2 Byte 3		Speed Ref	Speed reference (1 r/min) Conversion of speed and frequency depends on the Pr.81 or Pr.454 setting. (Refer to page 44.)

*1 The communication continues during the error reset of the inverter.

◆ Input Instance 70 (inverter → master)

When using Input Instance 70, set Output Instance to 20.

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved (0)	Reserved (0)	Reserved (0)	Reserved (0)	Reserved (0)	Running Fwd	Reserved (0)	Faulted
1	Reserved (0x00)							
2	Speed actual (low byte)							
3	Speed actual (high byte)							

• Input Instance 70 details

Byte 0	Bit 0	Faulted	Inverter error signal (0: inverter is under normal operation 1: inverter is in a fault state)
	Bit 2	Running Fwd	Forward rotation (0: other than forward rotation 1: forward rotation)
Byte 2 Byte 3	Speed Actual		Inverter running speed (1 r/min increments) Display range: 0 to 32767 The setting values of Pr.53 , Pr.81 , Pr.454 are effective. (Refer to page 44.)

7.1.2 Output Instance 21/Input Instance 71

◆ Output Instance 21 (initial value) (master → inverter)

When using Output Instance 21, set Input Instance to 71.

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Reserved (0)	Net Ref	Net Ctrl	Reserved (0)	Reserved (0)	Fault Reset	Run Rev	Run Fwd
1	Reserved (0x00)							
2	Speed reference (low byte)							
3	Speed reference (high byte)							

• Output Instance 21 details

Byte 0	Bit 0	Run Fwd	Forward rotation signal (0: forward rotation OFF 1: forward rotation ON) ^{*1}	Only NetCtrl (Bit 5) = 1 is valid.
	Bit 1	Run Rev	Reverse rotation signal (0: reverse rotation OFF 1: reverse rotation ON) ^{*1}	
	Bit 2	Fault Reset	Reset request at an error occurrence ^{*2} Valid only at an inverter trip (0: no function 1: fault reset request)	
	Bit 5	NetCtrl	0: The values set in Bit 0 to 2 of Byte 0 are not written to the inverter. 1: The values set in Bit 0 to 2 of Byte 0 are written to the inverter.	
	Bit 6	NetRef	0: The speed reference is not written to the inverter. 1: The speed reference is written to the inverter.	
Byte 2 Byte 3		Speed Ref	Speed reference (1 r/min) Conversion of speed and frequency depends on the Pr.81 or Pr.454 setting. (Refer to page 44.) To write the speed reference to the inverter, set NetRef (Bit 6 of Byte 0) = "1".	

*1 If both Run Fwd and Run Rev are ON, the start signal is not changed. (The previous status remains unchanged.)

*2 The communication continues during the error reset of the inverter.

◆ Input Instance 71 (initial value) (inverter → master)

When using Input Instance 71, set Output Instance to 21.

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	AtReference	Ref From Net	Ctrl From Net	Ready	Running Rev	Running Fwd	Reserved (0)	Faulted
1	Reserved (0x00)							
2	Speed actual (low byte)							
3	Speed actual (high byte)							

• Input Instance 71 details

Byte 0	Bit 0	Faulted	Inverter fault signal (0: inverter is under normal operation 1: inverter is in a fault state)
	Bit 2	Running Fwd	Forward rotation (0: other than forward rotation 1: forward rotation)
	Bit 3	Running Rev	Reverse rotation (0: other than reverse rotation 1: reverse rotation)
	Bit 4	Ready	Ready signal (0: operation preparation 1: operation ready) Always "1" after power ON
	Bit 5	CtrlFromNet	0: The inverter is set not to accept the commands Bit 0 and Bit 1 of Byte 0. 1: The inverter is set to accept the commands Bit 0 and Bit 1 of Byte 0.
	Bit 6	RefFromNet	0: The inverter is set not to accept the speed commands. 1: The inverter is set to accept the speed commands.
	Bit 7	AtReference	Up-to-frequency signal (SU signal) (Same definition with Class 0x2A Instance 1 Attribute 3. Refer to page 81.)
Byte 2 Byte 3	Speed Actual	Inverter running speed (1 r/min increments) Display range: 0 to 32767 The setting values of Pr.53 , Pr.81 , Pr.454 are effective. (Refer to page 44.)	

7.1.3 Output Instance 126/Input Instance 176

◆ Output instance 126 (master → inverter)

When using Output Instance 126, set Input Instance to 176.

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Write Attr	Net Ref	Net Ctrl	Reserved (0)	Reserved (0)	Fault Reset	Run Rev	Run Fwd
1	Parameter Instance ID							
2	Speed reference or parameter write data (low byte)							
3	Speed reference or parameter write data (high byte)							
4	Parameter class ID							
5	Parameter attribute ID							

• Output Instance 126 details

Byte 0	Bit 0	Run Fwd	Forward rotation signal (0: forward rotation OFF 1: forward rotation ON) ^{*1}	Only NetCtrl (Bit 5) = 1 is valid.
	Bit 1	Run Rev	Reverse rotation signal (0: reverse rotation OFF 1: reverse rotation ON) ^{*1}	
	Bit 2	Fault Reset	Reset request at an error occurrence ^{*2} Valid only at in inverter trip (0: no function 1: fault reset request)	
	Bit 5	NetCtrl	0: The values set in Bit 0 to 2 of Byte 0 are not written to the inverter. 1: The values set in Bit 0 to 2 of Byte 0 are written to the inverter.	
	Bit 6	NetRef ^{*3}	0: The speed reference is not written to the inverter. 1: The speed reference is written to the inverter.	
	Bit 7	Write Attr ^{*3}	0: Byte 2 and Byte 3 are set to the speed reference. 1: Byte 2 and Byte 3 are set to the value to be written to the attribute.	
Byte 1		Parameter Instance ID	Instance ID can be specified. When 00 is specified, instance ID is regarded as 1.	

Byte 2 Byte 3	Speed Ref or Parameter Write Data	Speed reference (1 r/min) or parameter write data. Selection conditions are determined according to a combination of "NetRef (Bit 6 of Byte 0)" and "Write Attr (Bit 7 of Byte 0)". [When speed reference is selected] Conversion of speed and frequency depends on the Pr.81 or Pr.454 setting. (Refer to page 44.)
Byte 4	Parameter Class ID	Class ID to access to the inverter parameter (class 0x2A, 0x66, 0x67 etc.)
Byte 5	Parameter Attribute ID	Attribute ID to access to the inverter parameter

*1 If both Run Fwd and Run Rev are ON, the start signal is not changed. (The previous status remains unchanged.)

*2 The communication continues during the error reset of the inverter.

*3 The following table shows the relation among Write Attr (Bit 7 of Byte 0), NetRef (Bit 6 of Byte 0), and Byte 1 to Byte 5.

Write Attr (Bit 7 of Byte 0)	NetRef (Bit 6 of Byte 0)	Byte 2, Byte 3	Byte 4 (Class ID) Byte 1 (Instance ID) Byte 5 (Attribute ID)
0	0	Speed reference invalid	Specifies the attribute to be read.
0	1	Speed reference valid	
1	0	Value to be written to the attribute	Specifies the attribute to be read or written.
1	1		

◆ Input Instance 176 (inverter → master)

When Input Instance 176 is used, 16 bits parameter data is provided.

When using Input Instance 176, set Output Instance to 126.

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	AtReference	Ref From Net	Ctrl From Net	Ready	Running Rev	Running Fwd	Run command mode	Faulted
1	PrEnd	Reserved (0)						
2	Speed actual (low byte)							
3	Speed actual (high byte)							
4	Parameter read data (low byte)							
5	Parameter read data (high byte)							

• Input Instance 176 details

Byte 0	Bit 0	Faulted	Inverter fault signal (0: inverter is under normal operation 1: inverter is in a fault state)
	Bit 1	Run Command Mode *1	0: Command is disabled in network operation 1: Command is enabled in network operation
	Bit 2	Running Fwd	Forward rotation (0: other than forward rotation 1: forward rotation)
	Bit 3	Running Rev	Reverse rotation (0: other than reverse rotation 1: reverse rotation)
	Bit 4	Ready	Ready signal (0: operation preparation 1: operation ready) Always "1" after power ON
	Bit 5	CtrlFromNet	0: The inverter is set not to accept the commands Bit 0 and Bit 1 of Byte 0. 1: The inverter is set to accept the commands Bit 0 and Bit 1 of Byte 0.
	Bit 6	RefFromNet	0: The inverter is set not to accept the speed commands. 1: The inverter is set to accept the speed commands.
	Bit 7	AtReference	Up-to-frequency signal (SU signal) (Same definition with Class 0x2A Instance 1 Attribute 3. Refer to page 81.)
Byte 1	Bit 7	PrEnd	Parameter write is completed 0: Parameter write is not performed 1: During parameter write processing (during inverter processing)

Byte 2 Byte 3	Speed Actual	Inverter running speed (1 r/min increments) Display range: 0 to 65535 The setting values of Pr.53 , Pr.81 , Pr.454 are effective. (Refer to page 44.)
Byte 4 Byte 5	Parameter Read Data	Parameter read data specified with Parameter Class ID of Instance 126 Parameter Attribute ID (Refer to page 56.)

*1 Bit status in the run command mode is as follows.
(For the run/ speed command, refer to the FR-E800 Instruction Manual (Function).)

Inverter status			Run command mode
Operation mode	Pr.338	Pr.339	
NET	0: NET	0: NET	1
	0: NET	1: External	0
	1: External	0: NET	
	1: External	1: External	
Other than NET	—	—	

7.1.4 Output Instance 127/Input Instance 177

◆ Output instance 127 (master → inverter)

When using Output Instance 127, set Input Instance to 177.

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Remarks
0	AU signal	RT signal	Terminal RH	Terminal RM	Terminal RL	Fault Reset	Run Rev	Run Fwd	
1	32 Bit Format	Hz	Write Attr	Terminal RES	—	Terminal MRS	—	JOG2 signal	
2	Speed/frequency setting value or writing data (16 bits: L)								Format for 16-bit data (32 Bit Format (Bit 7 of Byte 1) = 0)
3	Speed/frequency setting value or writing data (16 bits: H)								
4	Attribute 2 class ID (reading specified only)								
5	Attribute 2 attribute ID (reading specified only)								
6	Attribute 1 class ID (both reading and writing)								
7	Attribute 1 attribute ID (both reading and writing)								
2	Speed/frequency setting value or writing data (32 bits: LL)								Format for 32-bit data (32 Bit Format (Bit 7 of Byte 1) = 1)
3	Speed/frequency setting value or writing data (32 bits: LH)								
4	Writing data (32 bits: HL)								
5	Writing data (32 bits: HH)								
6	Attribute 1 class ID								
7	Attribute 1 attribute ID								

• Output Instance 127 details

Byte 0	Bit 0	Run Fwd ^{*2}	Forward rotation signal (0: forward rotation OFF 1: forward rotation ON)
	Bit 1	Run Rev ^{*2}	Reverse rotation signal (0: reverse rotation OFF 1: reverse rotation ON)
	Bit 2	Fault Reset	Reset request at an error occurrence ^{*1} Valid only at in inverter trip (0: no function 1: fault reset request)
	Bit 3	Terminal RL ^{*3}	Terminal RL (0: OFF 1: ON)
	Bit 4	Terminal RM ^{*3}	Terminal RM (0: OFF 1: ON)
	Bit 5	Terminal RH ^{*3}	Terminal RH (0: OFF 1: ON)
	Bit 6	RT signal	Second function selection (0: OFF 1: ON)
	Bit 7	AU signal	Terminal 4 input selection (0: OFF 1: ON)
Byte 1	Bit 0	JOG2 signal	JOG operation selection 2 (0: OFF 1: ON)
	Bit 2	Terminal MRS ^{*3}	Terminal MRS (0: OFF 1: ON)
	Bit 4	Terminal RES ^{*3}	Terminal RES (0: OFF 1: ON)
	Bit 5	Write Attr	0: Byte 2 and Byte 3 are set to the speed/frequency setting value. 1: Byte 2 and Byte 3 (Byte 2 to Byte 5 for the format for the 32-bit data) are set to the data to be written to the attribute.
	Bit 6	Hz	0: When Byte 2 and Byte 3 are the speed/frequency setting value, the increment is 1 r/min. 1: When Byte 2 and Byte 3 are the speed/frequency setting value, the increment is 0.01 Hz.
	Bit 7	32 Bit Format	0: The format for 16-bit data is being selected. 1: The format for 32-bit data is being selected.

Byte	Format for 16-bit data (32 Bit Format (Bit 7 of Byte 1) = 0)	Format for 32-bit data (32 Bit Format (Bit 7 of Byte 1) = 1)
Byte 2 Byte 3	<ul style="list-style-type: none"> • WriteAttr (Bit 5 of Byte 1) = 0, Hz (Bit 6 of Byte 1) = 0 Speed setting value (1 r/min increments) (Refer to page 44.) • WriteAttr (Bit 5 of Byte 1) = 0, Hz (Bit 6 of Byte 1) = 1 Frequency setting value (0.01 Hz increments) • WriteAttr (Bit 5 of Byte 1) = 1 Value to be written to the attribute specified by Byte 6 and Byte 7. ^{*4} 	<ul style="list-style-type: none"> • WriteAttr (Bit 5 of Byte 1) = 0, Hz (Bit 6 of Byte 1) = 0 Speed setting value (1 r/min increments) ^{*5} (Refer to page 44.) • WriteAttr (Bit 5 of Byte 1) = 0, Hz (Bit 6 of Byte 1) = 1 Frequency setting value (0.01 Hz increments) ^{*5} • WriteAttr (Bit 5 of Byte 1) = 1 Value to be written to the attribute specified by Byte 6 and Byte 7. ^{*6}
Byte 4	Class ID of Attribute 2 to be read (reading only)	
Byte 5	Attribute ID of Attribute 2 to be read (reading only)	
Byte 6	Class ID when Attribute 1 is read or written Write Attr (Bit 5 of Byte 1) = 0: Reading the attribute Write Attr (Bit 5 of Byte 1) = 1: Writing the attribute	
Byte 7	Attribute ID when Attribute 1 is read or written Write Attr (Bit 5 of Byte 1) = 0: Reading the attribute Write Attr (Bit 5 of Byte 1) = 1: Writing the attribute	

*1 The communication continues during the error reset of the inverter.

*2 If both Run Fwd and Run Rev are ON, the start signal is not changed. (The previous status remains unchanged.)

*3 Using **Pr.180 to Pr.184**, input signals assigned to the device numbers can be changed. Some signals are not controllable via network depending on the settings of **Pr.338 and Pr.339**. For example, Bit 4 of Byte 1 (terminal RES function) cannot be controlled via network when **Pr.184** is set to the initial value (RES signal).

For the details of **Pr.180 to Pr.184, Pr.338, and Pr.339**, refer to the FR-E800 Instruction Manual (Function).

*4 The setting value exceeding the data size of the target attribute is invalid. When the data size is 1 byte, the value set in Byte 3 is invalid.

*5 For the speed/frequency setting value, the set values only in Byte 2 and Byte 3 are valid. The set values in Byte 4 and Byte 5 are invalid.

*6 The setting value exceeding the data size of the target attribute is invalid. When the data size is 1 byte, the values set in Byte 3, Byte 4, and Byte 5 are invalid.

◆ Input Instance 177 (inverter → master)

When using Input Instance 177, set Output Instance to 127.

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Remarks
0	OL signal	—	SU signal	Terminal RUN	Run command mode	Faulted	Running Rev	Running Fwd	
1	32 Bit Format	Hz	Reserved (0)	Reserved (0)	Reserved (0)	—	Terminal ABC	Terminal FU	
2	Actual speed/output frequency (16 bits: L)								Format for 16-bit data (32 Bit Format (Bit 7 of Byte 1) = 0)
3	Actual speed/output frequency (16 bits: H)								
4	Attribute 1 read data (16 bits: L)								
5	Attribute 1 read data (16 bits: H)								
6	Attribute 2 read data (16 bits: L)								
7	Attribute 2 read data (16 bits: H)								
2	Actual speed/output frequency (32 bits: L)								
3	Actual speed/output frequency (32 bits: H)								
4	Attribute 1 read data 1 (32 bits: LL)								
5	Attribute 1 read data 1 (32 bits: LH)								
6	Attribute 1 read data 1 (32 bits: HL)								
7	Attribute 1 read data 1 (32 bits: HH)								

• Input Instance 177 details

Byte 0	Bit 0	Running Fwd	Forward rotation (0: other than forward rotation 1: forward rotation)
	Bit 1	Running Rev	Reverse rotation (0: other than reverse rotation 1: reverse rotation)
	Bit 2	Faulted	Inverter fault signal (0: inverter is under normal operation 1: inverter is in a fault state)
	Bit 3	Run command mode	0: Command is disabled in network operation 1: Command is enabled in network operation
	Bit 4	Terminal RUN *1	Terminal RUN (0: OFF 1: ON)
	Bit 5	SU signal	Up to frequency (0: OFF 1: ON)
	Bit 7	OL signal	Overload alarm (0: OFF 1: ON)
Byte 1	Bit 0	Terminal FU *1	Terminal FU (0: OFF 1: ON)
	Bit 1	Terminal ABC *1	Terminal ABC (0: OFF 1: ON)
	Bit 6	Hz	0: The increment of 1 r/min is used for Byte 2 and Byte 3. 1: The increment of 0.01 Hz is used for Byte 2 and Byte 3.
	Bit 7	32 Bit Format	0: The format for 16-bit data is being selected. 1: The format for 32-bit data is being selected.

Byte	Format for 16-bit data (32 Bit Format (Bit 7 of Byte 1) = 0)	Format for 32-bit data (32 Bit Format (Bit 7 of Byte 1) = 1)
Byte 2 Byte 3	<ul style="list-style-type: none"> • Hz bit of Instance 127 (Bit 6 of Byte 1) = 0 Inverter running speed (1 r/min increments) The setting values of Pr.53, Pr.81, Pr.454 are effective. (Refer to page 44.) • Hz bit of Instance 127 (Bit 6 of Byte 1) = 1 Output frequency (0.01 Hz increments) 	
Byte 4 Byte 5	Read data 1 *2 Read value of the attribute specified by Byte 6 and Byte 7 of Instance 127 When an unsupported attribute is specified, 0 is returned.	Read data 1 Read value of the attribute specified by Byte 6 and Byte 7 of Instance 127 When an unsupported attribute is specified, 0 is returned.
Byte 6 Byte 7	Read data 2 *2 Read value of the attribute specified by Byte 4 and Byte 5 of Instance 127 When an unsupported attribute is specified, 0 is returned.	

*1 Using **Pr.190 to Pr.192**, output signals assigned to the device numbers can be changed.
For the details of **Pr.190 to Pr.192**, refer to the FR-E800 Instruction Manual (Function).

*2 If the value to be read exceeds two bytes, 0xFFFF is returned to the master.

7.2 Message communication (Explicit message connection)

7.2.1 Class 0x01 (Identity-Object)

◆ Class 0x01 Instance 0

[Attribute]

Class 0x01 Instance 0					
Attribute ID	Access	Definition	Data type	No. of data bytes	Attribute value
1	Get	Revision	UINT	2	1
2	Get	Maximum Instance	UINT	2	1
6	Get	Max Class Attributes	UINT	2	7
7	Get	Max Instance Attributes	UINT	2	7

[Service]

Service code	Definition
0x0E	Get Attribute Single

◆ Class 0x01 Instance 1

[Attribute]

Class 0x01 Instance 1					
Attribute ID	Access	Definition	Data type	No. of data bytes	Attribute value
1	Get	Vendor ID (Mitsubishi electric)	UINT	2	161
2	Get	Device Type (AC drive)	UINT	2	02
3	Get	Product Code	UINT	2	68
4	Get	Revision	STRUCT	2	1.YYY ^{*1}
5	Get	Status	WORD	2	^{*2}
6	Get	Serial Number	UDINT	4	xxxxxxx
7	Get	Product Name (FR-E800)	SHORT_STRING	5	E800 ^{*3}

*1 High byte of hexadecimal word data means integer, and low byte means decimal.

For example, when the read data is 0x010A, it means version 1.010.

*2 Bit definition

Bit 0: 0 = allocated, 1 = not allocated, Bit 2: always 0, Bit 8: 1 = alarm occurrence, Bit 9: always 0, Bit 10: 1 = LED is flickering red, Bit 11: 1 = LED is lit red

*3 The actual data are 0x04, 0x45, 0x38, 0x30, and 0x30.

0x04 means 4 byte data, and the rest means ASCII code of "A800"/"F800".

[Service]

Service code	Symbol	Name	Setting range	Description
0x05	Reset	Reset ^{*4}	0	Inverter reset ^{*5}
			1	Inverter reset after all parameter clear ^{*5}
0x0E	Get	Get_Attribute_Single	—	Get Attribute Single

*4 As set in **Pr.75**. Refer to the FR-E800 Instruction Manual (Function) for details of **Pr.75**.

*5 If the inverter does not accept the command, neither inverter reset nor all parameter clear will be performed.

7.2.2 Class 0x03 (DeviceNet Object)

◆ Class 0x03 Instance 1

[Attribute]

Class 0x03 Instance 1						
Attribute ID	Access	Name	Data type	No. of data bytes	Initial value	Description
1	Get/Set	MAC ID *1	USINT	1	—	00 to 63: Node address value *2 When the node address switches are set to any of "0 to 63", the value is returned. In this case, writing (Set) is unavailable.
2	Get/Set	Baud Rate *1	USINT	1	00	00: 125 kbps, 01: 250 kbps, 02: 500 kbps
5	Get	Allocation Information	STRUCT	2	0	Allocation Choice Byte Bit 0 = 1: Explicit allocation requested Bit 1 = 1: Poll allocation requested Others: Fixed to 0
						Master's MAC ID
6	Get	MAC ID Switch Changed	BOOL	1	0	0: The set values of the node address switches are the same as those before power ON or inverter reset. 1: The set values of the node address switches are different compared to the ones before power ON or inverter reset.
8	Get	MAC ID Switch Value	USINT	1	00	00 to 99: Node address value

*1 Can be read with Class 0x67 Instance 1 Attribute 45 and 46 also. (Refer to [page 88](#).)

*2 To enable the MAC ID, set the node address switches to "64 or higher". (Refer to [page 20](#).) The setting value is applied to bit 0 to 5 of Pr.345.

[Service]

Service code	Service
0x0E	Get Attribute Single
0x10	Set Attribute Single

7.2.3 Class 0x04 (Assembly Object)

[Attribute]

Instance ID	Attribute ID	Access	Name	Data type	No. of data bytes	Description
20	3	Get	Data	BYTE array	4	The data of Input Instance 70 of the I/O communication is returned.
21	3	Get	Data	BYTE array	4	The data of Input Instance 71 of the I/O communication is returned.
126	3	Get	Data	BYTE array	6	The data of Input Instance 176 of the I/O communication is returned.
127	3	Get	Data	BYTE array	6	The data of Input Instance 177 of the I/O communication is returned.
70	3	Get	Data	BYTE array	4	The data of Input Instance 70 of the I/O communication is returned.
71	3	Get	Data	BYTE array	4	The data of Input Instance 71 of the I/O communication is returned.
176	3	Get	Data	BYTE array	6	The data of Input Instance 176 of the I/O communication is returned.
177	3	Get	Data	BYTE array	6	The data of Input Instance 177 of the I/O communication is returned.

[Service]

Service code	Service
0x0E	Get Attribute Single

7.2.4 Class 0x05 (DeviceNet connection object)

FR-A8ND supports only Polled I/O and Explicit Msg, not Bit-Strobed I/O. In addition, Instance 4 to 6 are Explicit messaging Instance.

◆ Class 0x05 Instance 1 attribute (Explicit messaging connection)

Class 0x05 Instance 1						
Attribute ID	Access	Name	Data type	No. of data bytes	Range	Definition
1	Get	State	USINT	1	00	Non-existent
					01	Configuring
					03	Established
					04	Timed out
2	Get	Instance Type	USINT	1	00	Explicit messaging connection
3	Get	Transport Trigger class	BYTE	1	00 to 0xFF	0x83: Server Transport Class 3
4	Get	Produced Connection ID	UINT	2	0 to 0xFFFF	CAN ID that the inverter sends
5	Get	Consumed Connection ID	UINT	2	0 to 0xFFFF	CAN ID that the inverter receives
6	Get	Initial Command Characteristics	BYTE	1	00 to 0xFF	The value defines sent and received message groups. 0x21: Both send and receive messages are Group 2 message
7	Get	Produced Connection Size	UINT	2	0 to 0xFFFF	This value specifies the maximum number of Message Body bytes that a module is able to transmit across the connection. 7: 7 byte
8	Get	Consumed Connection Size	UINT	2	0 to 0xFFFF	This value specifies the maximum number of Message Body bytes that a module is able to receive across the connection. 7: 7 byte

Class 0x05 Instance 1

Attribute ID	Access	Name	Data type	No. of data bytes	Range	Definition
9	Get/Set	Expected Pack Rate (EPR)	UINT	2	0 to 0xFFFF	(Example) 2500: 2500 ms
12	Get/Set	Watchdog Action	USINT	1	00	Invalid
					01 (Initial value)	Auto Delete
					02	Invalid
					03	Deferred Delete
13	Get	Produced Connection Path Length	UINT	2	0	Specifies the number of bytes of information within the produced_connection_path attriburte. (always 0)
14	Get	Produced Connection Path	EPATH	3	Variable	Specifies the application object that sends the data.
15	Get	Consumed Connection Path Length	UINT	2	0	Specifies the number of bytes of information within the consumed_connection_path attriburte. (always 0)
16	Get	Consumed Connection Path	EPATH	3	Variable	Specifies the application object that receives the data.

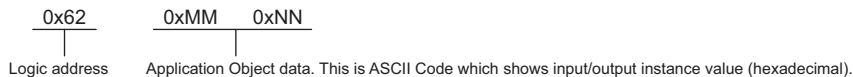
◆ Class 0x05 Instance 2 attribute (Polled I/O connection)

Class 0x05 Instance 2						
Attribute ID	Access	Name	Data type	No. of data bytes	Range	Definition
1	Get	State	USINT	1	00	Non-existent
					01	Configuring
					03	Established
					04	Timed out
2	Get	Instance Type	USINT	1	01	Polled I/O connection
3	Get	Transport Trigger class	BYTE	1	00 to 0xFF	0x82: Server Transport Class 2
4	Get	Produced Connection ID	UINT	2	0 to 0xFFFF	CAN ID that the inverter sends
5	Get	Consumed Connection ID	UINT	2	0 to 0xFFFF	CAN ID that the inverter receives
6	Get	Initial Command Characteristics	BYTE	1	00 to 0xFF	Source: Group 1 Message Destination: Group 2 Message
7	Get	Produced Connection Size	UINT	2	0 to 0xFFFF	Number of bytes of I/O data transmittable 4: Assembly Instance 70, 71 6: Assembly Instance 176 8: Assembly Instance 177
8	Get	Consumed Connection Size	UINT	2	0 to 0xFFFF	Number of bytes of I/O data receivable 4: Assembly Instance 20, 21 6: Assembly Instance 126 8: Assembly Instance 127
9	Get/Set	Expected Packet Rate (EPR)	UINT	2	0 to 0xFFFF	(Example) 2500: 2500 ms

Class 0x05 Instance 2

Attribute ID	Access	Name	Data type	No. of data bytes	Range	Definition
12	Get/Set	Watchdog Action	USINT	1	0 (initial value)	Transition to time out
					1	Auto Delete
					2	Auto reset
					3	Invalid
13	Get	Produced Connection Path Length	UINT	2	0 to 0xFFFF	Specifies the number of bytes of information within the produced_connection_path attribute
14	Get	Produced Connection Path	EPATH	3	00 to 0xFF	The value specifies Application Object of sent data. ^{*1} 0x62, 0x34, 0x36: Assembly Instance 70 0x62, 0x34, 0x37: Assembly Instance 71 0x62, 0x42, 0x30: Assembly Instance 176 0x62, 0x42, 0x31: Assembly Instance 177
15	Get	Consumed Connection Path Length	UINT	2	0 to 0xFFFF	Specifies the number of bytes of information within the consumed_connection_path attribute 3: 3 byte
16	Get	Consumed Connection Path	EPATH	3	00 to 0xFF	The value specifies Application Object of received data. ^{*1} 0x62, 0x31, 0x34: Assembly Instance 20 0x62, 0x31, 0x35: Assembly Instance 21 0x62, 0x37, 0x45: Assembly Instance 126 0x62, 0x37, 0x46: Assembly Instance 127

- *1 Since 2-byte data is sent and received for Polling I/O message communication, the lowest byte is 0x00.
 Produced Connection Path and Consumed Connection Path specifies Application Object of sent and received data. The format is below.



(Example) When Output Instance 21 and Input Instance 71 are used as sent and receive data (For changing Input Output Assembly, refer to [page 78](#).)

Produced Connection Path (send data)	Consumed Connection Path (receive data)
Input Instance 71 = 0x47 ASCII code: 4 = 0x34, 7 = 0x37 Therefore, Produced Connection Path = 0x62 0x34 0x37	Output Instance 21 = 0x15 ASCII code: 1 = 0x31, 5 = 0x35 Therefore, Consumed Connection Path = 0x62 0x31 0x35

◆ Class 0x05 Instance 4, 5, 6 attribute (Explicit messaging connection)

Class 0x05 Instance 4, 5, 6						
Attribute ID	Access	Name	Data type	No. of data bytes	Range	Definition
1	Get	State	USINT	1	00	Non-existent
					01	Configuring
					03	Established
					04	Timed out
2	Get	Instance Type	USINT	1	00	Explicit messaging connection
3	Get	Transport Trigger class	BYTE	1	00 to 0xFF	0x83: Server Transport Class 3
4	Get	Produced Connection ID	UINT	2	0 to 0xFFFF	CAN ID that the inverter sends
5	Get	Consumed Connection ID	UINT	2	0 to 0xFFFF	CAN ID that the inverter receives
6	Get	Initial Command Characteristics	BYTE	1	00 to 0xFF	The value defines sent and received message groups. 0x33: Both send and receive messages are Group 2 message
7	Get	Produced Connection Size	UINT	2	0 to 0xFFFF	This value specifies the maximum number of Message Body bytes that a module is able to transmit across the connection. 7: 7 bytes
8	Get	Consumed Connection Size	UINT	2	0 to 0xFFFF	This value specifies the maximum number of Message Body bytes that a module is able to receive across the connection. 7: 7 bytes
9	Get/Set	Expected Pack Rate (EPR)	UINT	2	0 to 0xFFFF	(Example) 2500: 2500 ms

Class 0x05 Instance 4, 5, 6						
Attribute ID	Access	Name	Data type	No. of data bytes	Range	Definition
12	Get/Set	Watchdog Action	USINT	1	00, 02	Invalid
					01 (Initial value)	Auto Delete
					03	Deferred Delete
13	Get	Produced Connection Path Length	UINT	2	0	Specifies the number of bytes of information within the produced_connection_path attribute. (always 0)
14	Get	Produced Connection Path	EPATH	3	Variable	Specifies the application object that sends the data.
15	Get	Consumed Connection Path Length	UINT	2	0	Specifies the number of bytes of information within the consumed_connection_path attribute. (always 0)
16	Get	Consumed Connection Path	EPATH	3	Variable	Specifies the application object that receives the data.

◆ Class 0x05 Instance 1, 2, 4, 5, 6 service

Service code	Definition
0x0E	Get Attribute Single
0x10	Set Attribute Single

7.2.5 Class 0x28 (Motor data object)

◆ Class 0x28 Instance 1

[Attribute]

Class 0x28 Instance 1						
Attribute ID	Access	Name	Data type	No. of data bytes	Range	Definition
3	Get	Motor Type	USINT	1	3, 7	3: PM motor 7: Squirrel-cage induction motor
6	Get/Set	Rated Motor Current (Pr.9)	UINT	2	0 to 0xFFFF	[GET] Return the Pr.9 setting in 0.1 A increments. (The value is rounded off to the first decimal place.) [SET] Write the value to Pr.9 in 0.1 A increments.
7	Get/Set	Rated Voltage (Pr.19)	UINT	2	0 to 0xFFFF	[GET] • When Pr.19 = "9999" or "8888", return "200" for the 200 V class and "400" for the 400 V class. • When Pr.19 = "0 to 1000", return the Pr.19 setting. (decimal places are rounded) [SET] Write the setting value ("0 to 1000, 65535 (9999), or 65520 (8888)") to Pr.19 .

[Service]

Service code	Definition
0x0E	Get Attribute Single
0x10	Set Attribute Single

7.2.6 Class 0x29 (Control supervisor object)

◆ Class 0x29 Instance 1

[Attribute]

Class 0x29 Instance 1								
Attribute ID	Access	Name	Data type	No. of data bytes	Initial value	Range	Definition	
3	Get/Set	RUN1	BOOL	1	00	0	Stop	
						1	Forward rotation *1	
4	Get/Set	RUN2	BOOL	1	00	0	Stop	
						1	Reverse rotation *1	
5	Get/Set	NetCtrl (operation command source) (Pr.338)	BOOL	1	1	0	Other than DeviceNet communication operation (Pr.338 = 1)	Actual state of operation command can be monitored with Attribute 15.
						1	DeviceNet communication operation(Pr.338 = 0) *2	
6	Get	State	USINT	1	3	1	Startup	
						2	Not_Ready (during reset)	
						3	Ready (during stop)	
						4	Enabled (during acceleration, during constant speed, during reverse deceleration)	
						5	Stopping (during deceleration)	
						6	Fault_Stop (during deceleration with Pr.502)	
						7	Faulted (during fault occurrence)	
7	Get	Running1 (forward rotation command)	BOOL	1	0	0	During stop	
						1	During forward rotation	

Class 0x29 Instance 1

Attribute ID	Access	Name	Data type	No. of data bytes	Initial value	Range	Definition
8	Get	Running2 (reverse rotation command)	BOOL	1	0	0	During stop
						1	During reverse rotation
9	Get	Ready	BOOL	1	1	0	During reset or fault occurrence
						1	Stop or running
10	Get	Faulted	BOOL	1	0	0	No fault present
						1	Fault occurred (latched)
12	Get/Set	FaultRst (fault reset) *3*4	BOOL	1	0	0	Reset release at fault occurrence
						1	Reset execution at fault occurrence
15	Get	CtrlFromNet (operation command source monitor) *5	BOOL	1	1	0	Other than DeviceNet communication operation
						1	DeviceNet communication operation
140	Get/Set	Instance ID of Input Assembly *6	USINT	1	0x47 (71)	0x46	Input Instance 70
						0x47	Input Instance 71
						0xB0	Input Instance 176
						0xB1	Input Instance 177
141	Get/Set	Instance ID of Output Assembly *7	USINT	1	0x15 (21)	0x14	Output Instance 20
						0x15	Output Instance 21
						0x7E	Output Instance 126
						0x7F	Output Instance 127

*1 If both Run1 and Run2 are turned ON, the start signal is not changed. (The previous status remains unchanged.)

*2 The value cannot be written while the inverter is running.

*3 After reset with 01 set, this value must be set to 00 before inverter reset may be performed.

*4 The communication continues during the error reset of the inverter.

*5 This data is only updated after inverter reset or power-ON reset.

*6 When this ID is set, it is reflected to bit 7 to 11 of **Pr.346** and Class 0x05 Instance 2 Attribute 7, 13, 14.

*7 When this ID is set, it is reflected to bit 2 to 6 of **Pr.346** and Class 0x05 Instance 2 Attribute 8, 15, 16.

[Service]

Service code	Definition
0x0E	Get Attribute Single
0x10	Set Attribute Single

7.2.7 Class 0x2A (AC drive object)

◆ Class 0x2A Instance 1

[Attribute]

Class 0x2A Instance 1						
Attribute ID	Access	Name	Data type	No. of data bytes	Range	Definition
3	Get	AtReference (up to frequency)	BOOL	1	0	Output frequency has not reached the set frequency
					1	Output frequency has reached the set frequency
4	Get/Set	NetRef (speed command source) (Pr.339)	BOOL	1	0	Other than DeviceNet communication operation (Pr.339 = 1)
					1	DeviceNet communication operation (Pr.339 = 0 or 2) *1
6	Get	DriveMode (control method)	USINT	1	1	Speed control without encoder
					3	Torque control
7	Get	SpeedActual (actual speed)	INT	2	0 to 32767 r/min	Inverter running speed (1 r/min increments) The setting values of Pr.53, Pr.81, Pr.454 are effective. (Refer to page 44.)
8	Get/Set	SpeedRef (speed setting value)	INT	2	0 to 32767 r/min	Set speed (1 r/min increments) Conversion of frequency and speed depends on the Pr.81 or Pr.454 settings. (Refer to page 44.)
9	Get	CurrentActual (output current)	INT	2	0 to 3276.7 A	The output current is monitored in 0.1 A increments.
15	Get	PowerActual (output power)	INT	2	0 to 65535 W	Output power is monitored in 1 W increments.

Class 0x2A Instance 1

Attribute ID	Access	Name	Data type	No. of data bytes	Range	Definition
17	Get	OutputVoltage (output voltage)	INT	2	0 to 3276.7 V	The output voltage is monitored in 0.1 V increments.
18	Get/Set	AccelTime (acceleration time)	UINT	2	0 to 65535 ms	Acceleration time = $\text{Pr.7} \times (\text{Pr.18} / \text{Pr.20})$ Set the increments in ms regardless of the Pr.21 setting.
19	Get/Set	DecelTime (deceleration time)	UINT	2	0 to 65535 ms	Deceleration time = $\text{Pr.8} \times (\text{Pr.18} / \text{Pr.20})$ Set the increments in ms regardless of the Pr.21 setting.
20	Get/Set	LowSpdLimit (minimum frequency) (Pr.2)	UINT	2	0 to 65535 r/min	Minimum speed (1 r/min increments) Conversion of frequency and speed depends on the Pr.81 or Pr.454 settings. (Refer to page 44.)
21	Get/Set	HighSpdLimit (maximum frequency) (Pr.18)	UINT	2	0 to 65535 r/min	Maximum speed (1 r/min increments) Conversion of frequency and speed depends on the Pr.81 or Pr.454 settings. (Refer to page 44.)
29	Get	RefFromNet (speed command source monitor)	BOOL	1	0	Other than DeviceNet communication operation
					1	DeviceNet communication operation

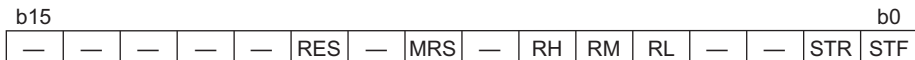
Class 0x2A Instance 1

Attribute ID	Access	Name	Data type	No. of data bytes	Range	Definition
101	Set	UINT	2	Any	Inverter reset Set a value other than "0" in Pr.340 to start in Network operation mode after reset. (Refer to page 33.) ^{*2}	
102	Set	UINT	2	0x965A	Parameter clear ^{*2}	
103	Set	UINT	2	0x99AA	All parameter clear ^{*2}	
105	Set	UINT	2	0x5A96	Clear parameters ^{*2}	Communication parameters are not cleared.
106	Set	UINT	2	0xAA99	All parameter clear ^{*2}	
112	Get/Set	UINT	2	0 to 0xE678	Set frequency (RAM) ^{*3}	Either write the set frequency to RAM or read from RAM. (0.01 Hz increments)
113	Set	UINT	2	0 to 0xE678	Set frequency (EEPROM) ^{*3}	Write the set frequency to EEPROM (0.01 Hz increments)
114	Get/Set	UINT	2	—	Inverter status monitor/run command (Refer to page 86.)	
120	Get/Set	UINT	2	0	External operation	Operation mode read (Get)
				1	PU operation	
				2	External JOG operation	
				3	PU JOG operation	
				4	Network operation	
				5	External/PU combined operation	
				0x0010	External operation	Operation mode write (Set) Input 2-byte data.
				0x0011	PU operation (when Pr.79 = 6)	
				0x0014	Network operation	

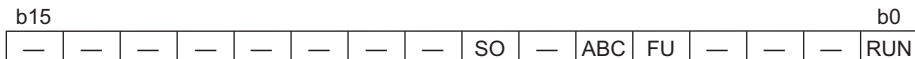
Class 0x2A Instance 1				
Attribute ID	Access	Data type	No. of data bytes	Definition
141	Get/Set	UINT	2	Faults history 1 (latest) Faults history all clear ^{*4}
142	Get	UINT	2	Faults history 2 (second fault in past)
143	Get	UINT	2	Faults history 3 (third fault in past)
144	Get	UINT	2	Faults history 4 (fourth fault in past)
145	Get	UINT	2	Faults history 5 (fifth fault in past)
146	Get	UINT	2	Faults history 6 (sixth fault in past)
147	Get	UINT	2	Faults history 7 (seventh fault in past)
148	Get	UINT	2	Faults history 8 (eighth fault in past)
170	Get	UINT	2	Output frequency (0.01 Hz) ^{*7}
171	Get	UINT	2	Output current (0.01 A) ^{*7}
172	Get	UINT	2	Output voltage (0.1 V) ^{*7}
174	Get	UINT	2	Frequency setting value (0.01 Hz)
175	Get	UINT	2	Running speed (1 r/min) The setting values of Pr.53, Pr.81 and Pr.454 are effective. (Refer to page 44.)
176	Get	UINT	2	Motor torque (0.1%)
177	Get	UINT	2	Converter output voltage (0.1 V)
178	Get	UINT	2	Regenerative brake duty (0.1%)
179	Get	UINT	2	Electronic thermal relay function load factor (0.1%)
180	Get	UINT	2	Output current peak value (0.01 A)
181	Get	UINT	2	Converter output voltage peak value (0.1 V)
182	Get	UINT	2	Input power (0.01 kW)
183	Get	UINT	2	Output power (0.01 kW)
184	Get	UINT	2	Input terminal status ^{*5}
185	Get	UINT	2	Output terminal status ^{*6}

Class 0x2A Instance 1				
Attribute ID	Access	Data type	No. of data bytes	Definition
186	Get	UINT	2	Load meter
187	Get	UINT	2	Motor excitation current (0.01 A)
189	Get	UINT	2	Cumulative energization time (1 h)
192	Get	UINT	2	Actual operation time (1 h)
193	Get	UINT	2	Motor load factor (0.1%)
194	Get	UINT	2	Cumulative power (1 kWh)

- *1 The value cannot be written while the inverter is running.
- *2 Error response is returned when the inverter will not accept the same order.
- *3 The data written to Attribute 112, 113 can be read from Attribute 112.
- *4 Writing any value will clear the fault records.
- *5 Input terminal monitor details (when the terminal is ON: 1, when the terminal is OFF: 0, —: undetermined value)



- *6 Output terminal monitor details (when the terminal is ON: 1, when the terminal is OFF: 0, —: undetermined value)



- *7 The monitored values are retained even if an inverter fault occurs. Resetting will clear the retained values.

■ Inverter status monitor/bit map of run command

Inverter status (Get)	
bit	Definition
0	RUN (inverter running)
1	FWD (during forward rotation)
2	REV (during reverse rotation)
3	SU (up-to-frequency)
4	OL (overload)
5	(blank)
6	FU (frequency detection)
7	ALM (alarm)
8 to 14	(blank)
15	Operation ready completion (READY)

Run command (Set)			
bit	Definition	bit	Definition
0	(blank)	7	RT (Second function selection)
1	STF (forward rotation command)	8	AU (Terminal 4 input selection)
2	STR (reverse rotation command)	9	(blank)
3	RH (high-speed operation command) *1	10	MRS (output shutoff) *1
4	RM (middle-speed operation command) *1	11	(blank)
5	RL (low-speed operation command) *1	12	RES (reset) *1
6	JOG2 (JOG operation selection 2)	13 to 15	(blank)

*1 Signal names are initial values. Definitions change according to the **Pr.180 to Pr.184 (input terminal function selection)**.

[Service]

Service code	Definition
0x0E	Get Attribute Single
0x10	Set Attribute Single

7.2.8 Class 0x66 (Extended object I)

◆ Class 0x66 Instance 1

Set parameters of the inverter. The data type of each attribute is UINT, and the size is 2 bytes.

The usable parameters depend on the inverter. Refer to the FR-E800 Instruction Manual (Function) for details of the parameters.

NOTE

- For parameter writing or reading, Class 0x70 to 0x79 (Extended object III) is recommended. (Refer to [page 90](#).)

[Attribute]

Class 0x66 Instance 1				
Attribute ID	Pr.	Access	Name	Remarks
10 to 209	Pr.0 to Pr.199	Refer to the FR-E800 Instruction Manual (Function) for the parameter names and access attributes (Get/Set). (Only Get is available for Pr.77 and Pr.79 .)		The attribute ID is a value calculated with the following formula: parameter number + 10. (Example) 10 for Pr.0
210 to 249	Pr.230 to Pr.269			The attribute ID is a value calculated with the following formula: parameter number - 20. (Example) 212 for Pr.232

NOTE

- Values "8888" and "9999" displayed on the parameter unit indicate 65520 (0xFFFF0) and 65535 (0xFFFFF) respectively.

[Service]

Service code	Definition
0x0E	Get Attribute Single
0x10	Set Attribute Single

7.2.9 Class 0x67 (Extended object II)

◆ Class 0x67 Instance 1

Set parameters of the inverter. The data type of each attribute is UINT, and the size is 2 bytes.

The usable parameters depend on the inverter. Refer to the FR-E800 Instruction Manual (Function) of the parameters.

NOTE

- For parameter writing or reading, Class 0x70 to 0x79 (Extended object III) is recommended. (Refer to [page 90](#).)

[Attribute]

Class 0x67 Instance 1				
Attribute ID	Pr.	Access	Name	Remarks
10 to 27	Pr.270 to Pr.287	Refer to the FR-E800 Instruction Manual (Function) for the parameter names and access attributes (Get/Set).		The attribute ID is a value calculated with the following formula: parameter number - 260. (Example) 10 for Pr.270
38 to 42	Pr.338 to Pr.342			The attribute ID is a value calculated with the following formula: parameter number - 300. (Example) 38 for Pr.338
45	Pr.345	Get	DeviceNet address	
46	Pr.346	Get	DeviceNet baud rate	
192	Pr.500	Get/Set	Communication error execution waiting time	
193	Pr.501	Get/Set	Communication error occurrence count display	
194	Pr.502	Get/Set	Stop mode selection at communication error	
202	C2 (Pr.902)	Get/Set	Terminal 2 frequency setting bias frequency	
203	C3 (Pr.902)	Get/Set	Terminal 2 frequency setting bias	

Class 0x67 Instance 1				
Attribute ID	Pr.	Access	Name	Remarks
204	Pr.125 (Pr.903)	Get/Set	Terminal 2 frequency setting gain frequency	
205	C4 (Pr.903)	Get/Set	Terminal 2 frequency setting gain	
206	C5 (Pr.904)	Get/Set	Terminal 4 frequency setting bias frequency	
207	C6 (Pr.904)	Get/Set	Terminal 4 frequency setting bias	
208	Pr.126 (Pr.905)	Get/Set	Terminal 4 frequency setting gain frequency	
209	C7 (Pr.905)	Get/Set	Terminal 4 frequency setting gain	

NOTE

- Values "8888" and "9999" displayed on the parameter unit indicate 65520 (0xFFFF0) and 65535 (0xFFFFF) respectively.

[Service]

Service code	Definition
0x0E	Get Attribute Single
0x10	Set Attribute Single

7.2.10 Class 0x70 to 0x79 (Extended object III)

◆ Class 0x70 to 0x79 Instance 1, 2

Set parameters of the inverter. Refer to the FR-E800 Instruction Manual (Function) for details of the parameters.

[Attribute]

Class 0x70 to 0x79 Instance 1, 2							
Class	Instance	Attribute	Pr.	Access	Data type	Number of bytes	Definition
0x70	1	10 to 109	Pr.0 to Pr.99	Get/Set	UINT	2	
0x71	1	10 to 109	Pr.100 to Pr.199	Get/Set	UINT	2	
0x72	1	10 to 109	Pr.200 to Pr.299	Get/Set	UINT	2	
0x73	1	10 to 109	Pr.300 to Pr.399	Get/Set	UINT	2	
0x74	1	10 to 109	Pr.400 to Pr.499	Get/Set	UINT	2	
0x75	1	10 to 109	Pr.500 to Pr.599	Get/Set	UINT	2	
0x76	1	10 to 109	Pr.600 to Pr.699	Get/Set	UINT	2	
0x77	1	10 to 109	Pr.700 to Pr.799	Get/Set	UINT	2	
0x78	1	10 to 109	Pr.800 to Pr.899	Get/Set	UINT	2	
0x79	1	10 to 109	Pr.900 to Pr.999	Get/Set	UINT	2	Parameter offset for calibration, gain
	2	10 to 49	Pr.900 to Pr.939	Get/Set	UINT	2	Analog value of calibration parameter

[Service]

Service code	Definition
0x0E	Get Attribute Single
0x10	Set Attribute Single

7.2.11 Class 0x80 (Extended object IV)

◆ Class 0x80 Instance 1

Inverter monitored value can be read. The data type of each attribute is UINT, and the size is 2 bytes.

[Attribute]

Class 0x80 Instance 1			
Attribute ID	Access	Monitor item	Remarks
11 to 107	Get	For the details of the monitor items, refer to the FR-E800 Instruction Manual (Function).	The attribute ID is a value calculated with the following formula: (setting value of Pr.52, Pr.774 to Pr.776, Pr.992) + 10. (Example) 11 for 1 (Output frequency)

[Service]

Service code	Definition
0x0E	Get Attribute Single

7.2.12 Class 0x90 to 0x94 (Extended object V)

◆ Class 0x90 to 0x94 Instance 1

Set parameters of the inverter. Refer to the FR-E800 Instruction Manual (Function) for details of the parameters.

[Attribute]

Class 0x90 to 0x94 Instance 1							
Class	Instance	Attribute	Pr.	Access	Data type	Number of bytes	Definition
0x90	1	10 to 109	Pr.1000 to Pr.1099	Get/Set	UINT	2	
0x91	1	10 to 109	Pr.1100 to Pr.1199	Get/Set	UINT	2	
0x92	1	10 to 109	Pr.1200 to Pr.1299	Get/Set	UINT	2	
0x93	1	10 to 109	Pr.1300 to Pr.1399	Get/Set	UINT	2	
0x94	1	10 to 109	Pr.1400 to Pr.1499	Get/Set	UINT	2	

APPENDIX

Appendix 1 EDS file

EDS file can be downloaded from the web site.
Use the EDS file for FR-E800.

Mitsubishi Electric FA Site
www.MitsubishiElectric.co.jp/fa

The download is free.

Contact your sales representative for details.

NOTE

- The EDS file has been constructed to ODVA standards on condition that a configuration software is used. Consult your DeviceNet configuration software instruction manual for the proper installation of the EDS file.
 - The initial values set in the EDS file are the values for the FR-E820-0.1K-1.
-

Appendix 2 DeviceNet Error Code List

The following shows the error response format of the Explicit communication.

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	0	XID *1	MAC ID of the reception side (master)					
1	0x94							
2	Error code							
3	Added error code							

*1 The bit set by the master is reverted back.

Error code	Added error code	Name	Definition
0x08	0xFF	Service not supported	The requested service was not implemented or was not defined for this Object Class/Instance.
0x09	0xFF	Invalid attribute value	The setting is out of the attribute data range.
0x0C	0xFF	Object state conflict	The object cannot perform the requested service in its current mode/ state.
0x0E	0xFF	Attribute not settable	A request to modify a non-modifiable attribute was received.
0x13	0xFF	Not enough data	The data sent from the master does not reach the specified number of bytes.
0x14	0xFF	Attribute not supported	The attribute is not supported.
0x15	0xFF	Too much data	The data sent from the master exceeds the specified number of bytes.
0x16	0xFF	Object does not exist	The object (instance) does not exist.
0x1F	0xFF	Vender specific error	An FR-A8ND-specific error occurred.
0x1F	0x11	Vender specific error	A value out of the range was written to the parameter.
0x1F	0x12	Vender specific error	A parameter was written when the inverter was not in NET operation mode, it did not have the operation command source, or it was running.
0x1F	0x13	Vender specific error	An instruction code that does not exist was specified.
0x1F	0x14	Vender specific error	Invalid data was specified for parameter writing, running frequency setting, etc.

Appendix 3 Replacement of the FR-E700

The differences between the FR-E700 (FR-A7ND E kit) and the FR-E800 (FR-A8ND E kit) are as follows.

Item	FR-E700 (FR-A7ND)	FR-E800 (FR-A8ND)	Remarks
EDS file	The EDS file of the FR-E800 differs from that of the FR-E700. Use the EDS file according to configuration software used. The download is free at the Mitsubishi Electric FA Global Website (http://www.MitsubishiElectric.co.jp/fa).		
Node address setting	When Pr.345 = "63 (initial value)", the node address switch setting is valid. When Pr.345 ≠ "63 (initial value)", the node address set by Pr.345 is valid.	When the node address switches are set to "0 to 63", the node address switch setting is valid. When the node address switches are set to "64 or higher", the node address set by Pr.345 is valid.	
I/O communication Output Instance 20/Input Instance 70	Compatible (Available in the FR-E800 in the same way as the FR-E700)		Refer to page 44 for parameters used to set the number of motor poles.
I/O communication Output Instance 21/Input Instance 71	Compatible (Available in the FR-E800 in the same way as the FR-E700)		Refer to page 44 for parameters used to set the number of motor poles.
I/O communication Output Instance 126/Input Instance 176	Names are different (functions are the same). FR-E700: Write Param, FR-E800: Write Attr Relevant parameters are different between the FR-E700 and the FR-E800. Refer to the object map and the FR-E800 Instruction Manual (Function).		Refer to page 44 for parameters used to set the number of motor poles.
Message communication	Relevant parameters are different between the FR-E700 and the FR-E800. Refer to the object map and the FR-E800 Instruction Manual (Function).		
FR-E5ND (FR-E500-KND) compatible mode	Available	Not available	Use the compatible I/O communication or message communication for the FR-E800.

Appendix 4 Instructions for compliance with the EU Directives

The EU Directives are issued to standardize different national regulations of the EU Member States and to facilitate free movement of the equipment, whose safety is ensured, in the EU territory.

Since 1996, compliance with the EMC Directive that is one of the EU Directives has been legally required. Since 1997, compliance with the Low Voltage Directive, another EU Directive, has been also legally required. When a manufacturer confirms its equipment to be compliant with the EMC Directive and the Low Voltage Directive, the manufacturer must declare the conformity and affix the CE marking.



- The authorized representative in the EU

The authorized representative in the EU is shown below.

Name: Mitsubishi Electric Europe B.V.

Address: Mitsubishi-Electric-Platz 1, 40882 Ratingen, Germany

◆ EMC Directive

We declare that this product conforms with the EMC Directive when installed in a compatible inverter, and affix the CE marking on the packaging plate.

- EMC Directive: 2014/30/EC
- Standard(s): EN 61800-3:2004+A1:2012 (Second environment / PDS Category "C3")

■ Note

- To install and wire the inverter, refer to the "Instructions for compliance with the EU Directives" in the Instruction Manual enclosed with the inverter.
- Confirm that the final integrated system with the inverter conforms with the EMC Directive.

Appendix 5 Instructions for EAC

The product certified in compliance with the Eurasian Conformity has the EAC marking on the packaging plate.

Note: EAC marking

In 2010, three countries (Russia, Belarus, and Kazakhstan) established a Customs Union for the purposes of revitalizing the economy by forming a large economic bloc by abolishing or reducing tariffs and unifying regulatory procedures for the handling of articles.

Products to be distributed over these three countries of the Customs Union must comply with the Customs Union Technical Regulations (CU-TR), and the EAC marking must be affixed to the products.

For information on the country of origin, manufacture year and month, and authorized sales representative (importer) in the CU area of this product, refer to the following:

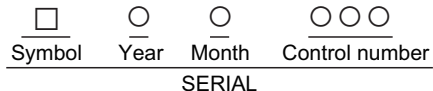
- Country of origin indication

Check the package of this product.

Example: MADE IN JAPAN

- Manufactured year and month

Check the SERIAL number indicated on this product.



The SERIAL consists of one symbol, two characters indicating the production year and month, and three characters indicating the control number. The last digit 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).

- Authorized sales representative (importer) in the CU area

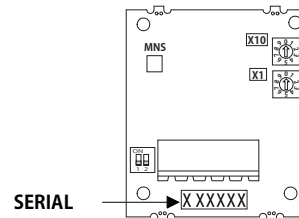
The authorized sales representative (importer) in the CU area is shown below.

Name: Mitsubishi Electric (Russia) LLC

Address: 52, bld 1 Kosmodamianskaya Nab 115054, Moscow, Russia

Phone: +7 (495) 721-2070

Fax: +7 (495) 721-2071



Appendix 6 Restricted Use of Hazardous Substances in Electronic and Electrical Products

The mark of restricted use of hazardous substances in electronic and electrical products is applied to the product as follows based on the "Management Methods for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products" of the People's Republic of China.

电器电子产品有害物质限制使用标识要求



本产品中所含有的有害物质的名称、含量、含有部件如下表所示。

• 产品中所含有害物质的名称及含量

部件名称 *2	有害物质 *1					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr (VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
电路板组件 (包括印刷电路板及其构成的零部件, 如电阻、电容、集成电路、连接器等)、电子部件	×	○	×	○	○	○
金属壳体、金属部件	×	○	○	○	○	○
树脂壳体、树脂部件	○	○	○	○	○	○
螺丝、电线	○	○	○	○	○	○

上表依据 SJ/T11364 的规定编制。

○：表示该有害物质在该部件所有均质材料中的含量均在 GB/T26572 规定的限量要求以下。

×：表示该有害物质在该部件的至少一种均质材料中的含量超出 GB/T26572 规定的限量要求。

*1 即使表中记载为 ×，根据产品型号，也可能会有有害物质的含量为限制值以下的情况。

*2 根据产品型号，一部分部件可能不包含在产品中。

Appendix 7 Referenced Standard (Requirement of Chinese standardized law)

This Product is designed and manufactured accordance with following Chinese standards.

EMC: GB/T 12668.3

REVISIONS

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

Revision Date	*Manual Number	Revision
Apr. 2020	IB(NA)-0600926ENG-A	First edition

INVERTER

mitsubishi electric corporation

HEAD OFFICE: TOKYO BUILDING 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN