



# INVERTER

Plug-in option

## FR-A8AY

### INSTRUCTION MANUAL

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*Analog output function*

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*Digital output function*

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## Safety instructions

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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 this Instruction Manual carefully to ensure proper use.

Please forward this Instruction Manual to the end user.

Do not attempt to install, operate, maintain or inspect this product until you have read this Instruction Manual and supplementary documents carefully. Do not use this product until you have a full knowledge of this product mechanism, safety information and instructions. In this Instruction Manual, the safety instruction levels are classified into "WARNING" and "CAUTION".

 **WARNING** Incorrect handling may cause hazardous conditions, resulting in death or severe injury.

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

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

### ◆ Electric shock prevention

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#### **WARNING**

- Do not remove the front cover or the wiring cover of the inverter while the inverter power is ON, and do not operate the inverter with the front cover or the wiring cover removed as the exposed high voltage terminals or the charging part of the circuitry can be touched. Doing so may cause an electric shock.
  - Even if power is OFF, do not remove the front cover of the inverter except for wiring or periodic inspection as the inside of the inverter is charged. Doing so may cause an electric shock.
  - Before wiring or inspection, check that the display of the inverter operation panel is OFF. Any person who is involved in wiring or inspection shall wait for 10 minutes or longer after the power supply has been cut off, and check that there are no residual voltage using a digital multimeter 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.
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## ◆ Injury prevention

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### CAUTION

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- 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.
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## ◆ 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.

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### CAUTION

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#### 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 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.
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### WARNING

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#### 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.
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## CAUTION

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### Usage

- As all parameters return to their initial values after Parameter clear or All parameter clear is performed, the parameters must be set again as required before the operation is started.
- To avoid damage 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.
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## General instruction

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- 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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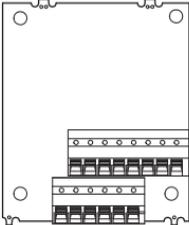
# 1 PRE-OPERATION INSTRUCTIONS

## 1.1 Unpacking and checking the product

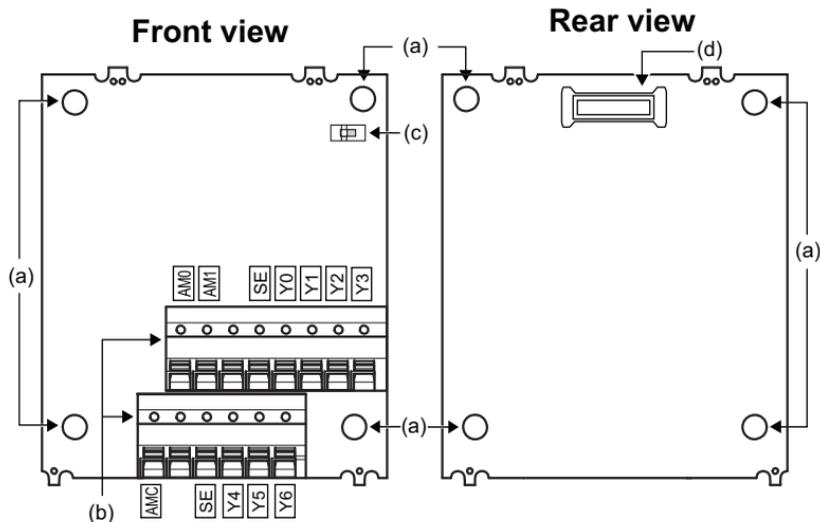
Take the plug-in option out of the package, check the product name, and confirm that the product is as you ordered and intact. This product is a plug-in option made for the FR-A800/F800 series.

### 1.1.1 Product confirmation

Check the enclosed items.

<p>Plug-in option: 1</p>  A technical drawing of a rectangular plug-in option. It features a central section with two rows of pins. The top row has 8 pins, and the bottom row has 8 pins. There are four circular mounting holes, one in each corner of the main rectangular frame.	<p>Mounting screw (M3 × 8 mm): 2 (Refer to <a href="#">page 11.</a>)</p>  Two screws with a Phillips head and a hexagonal base, shown from a top-down perspective.	<p>Spacer: 2 (Refer to <a href="#">page 11.</a>)</p>  Two cylindrical spacers with a hexagonal base and a flange at the top, shown from a top-down perspective.
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## 1.2 Component names



Symbol	Name	Description	Refer to page
a	Mounting hole	Used to fix this product to the inverter by inserting a mounting screw or a spacer.	11
b	Terminal block	Used to connect the device to input signals to the inverter, and the device to receive the signal from the inverter.	15
c	Switch for manufacturer setting	Switch for manufacturer setting. Do not change the initial setting (  ).	—
d	Board mounted option connector	Used to connect this product to the option connector on the inverter.	11

## 1.3 Specifications

### ◆ Analog output

Item	Voltage output	Current output
Output signal	0 to $\pm 10$ VDC max (across terminals AM0 to AMC)	0 to 20 mADC (across terminals AM1 to AMC)
Output resolution	3 mV	10 $\mu$ A
Applicable meter	DC voltmeter Full-scale $\pm 10$ V (internal impedance: 10 k $\Omega$ or more)	DC ammeter Full-scale 20 mA (internal impedance: 300 $\Omega$ or less)
	Wiring length maximum 10 m	

### ◆ Digital output

Open collector output specification: permissible load of 24 VDC 0.1 A

# 2 INSTALLATION

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## 2.1 Pre-installation instructions

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

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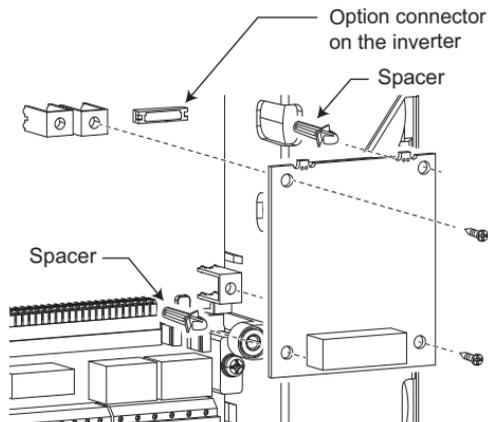
### CAUTION

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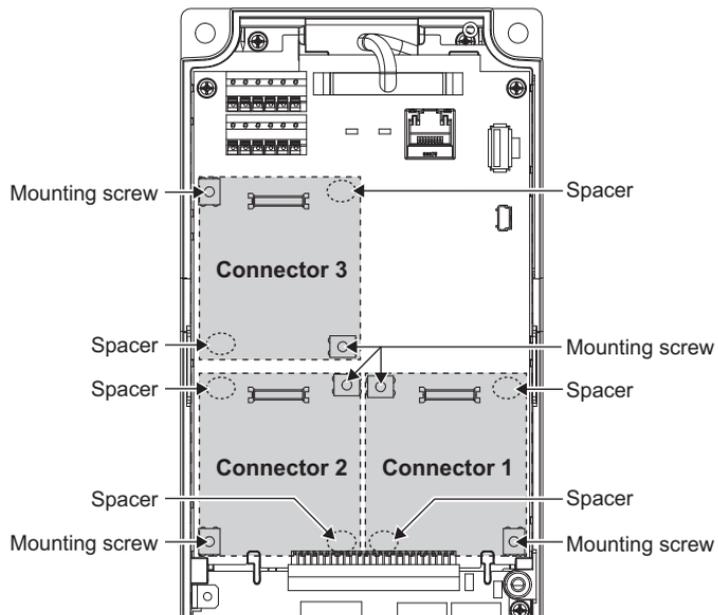
## 2.2 Installation procedure

1. Remove the inverter front cover. (Refer to Chapter 2 of the Instruction Manual (Detailed) of the inverter instructions for removing the front cover.)
2. Insert two spacers into the mounting holes that will not be used for mounting screws (see the diagrams on [page 12](#) to identify the holes).
3. Fit the board mounted option connector on this product to the guide of the option connector on the inverter, and insert the option as far as it goes.
4. Fasten this product to the inverter using the two mounting screws through the holes on either side (tightening torque 0.33 N·m to 0.40 N·m). If the screw holes do not line up, the connector may not be inserted deep enough. Check the connector.

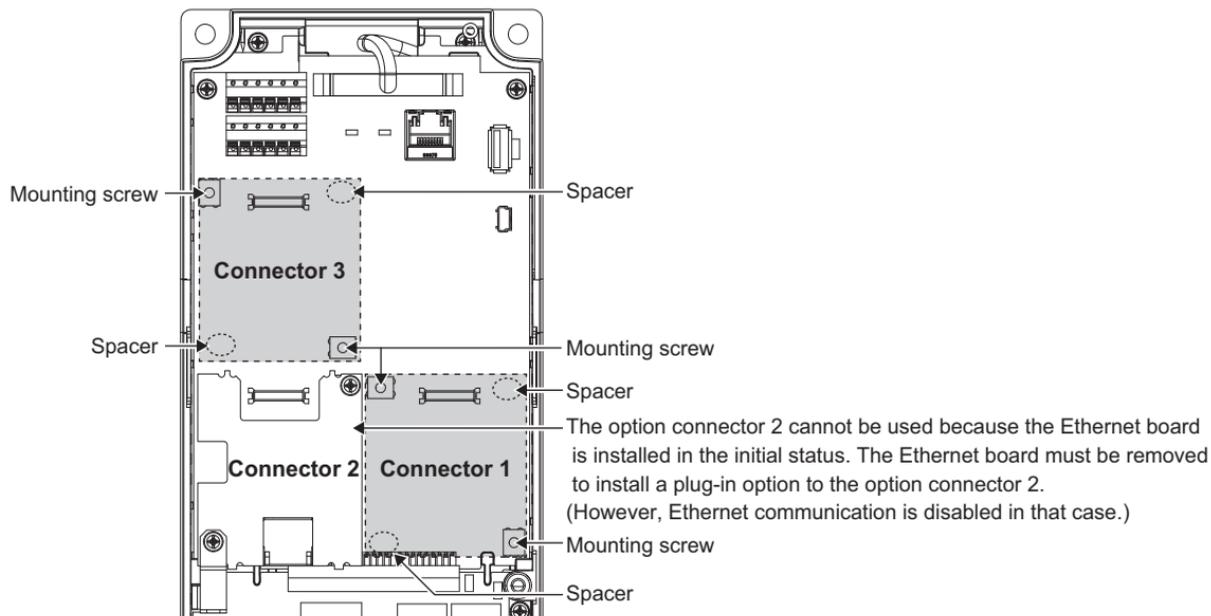


Example of installation to connector 1

◆ **Insertion positions of screws and spacers (RS-485 model)**



## ◆ Insertion positions of screws and spacers (Ethernet model)



**NOTE**

- 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.
- Only one option attached to the option connector with high priority can function at once if more than one option of the same name are installed together on an inverter. Priority is given to option connectors in descending order (1 to 3), and options having a lower priority do not function.
- When the inverter cannot recognize the option due to improper installation or any other reason, the protective function (E.1 to E.3) is activated and the inverter cannot be operated. The indication shown (when a fault occurs) depends on the connector used (option connector 1 to 3).

Mounted position	Fault indication
Option connector 1	E. 1
Option connector 2	E. 2
Option connector 3	E. 3

- 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.

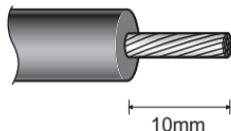
## 2.3 Wiring

1. For the wiring, strip off the sheath of a cable, and use it with a crimp terminal. For single wire, the stripped wire can be used without crimp terminal. Connect the end of wires (crimp terminal or stranded wire) to the terminal block.

Strip the signal wires as follows. If too much of the wire is stripped, a short circuit may occur with neighboring wires. If not enough of the wire is stripped, wires may become loose and fall out.

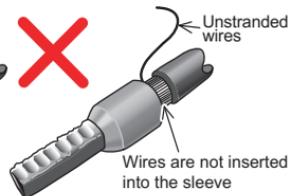
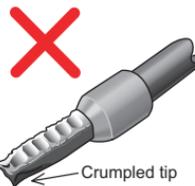
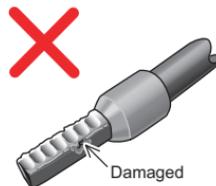
Twist the stripped end of wires to prevent them from fraying. Do not solder them.

Wire strip length



Crimp the terminals on the wire.

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



### CAUTION

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

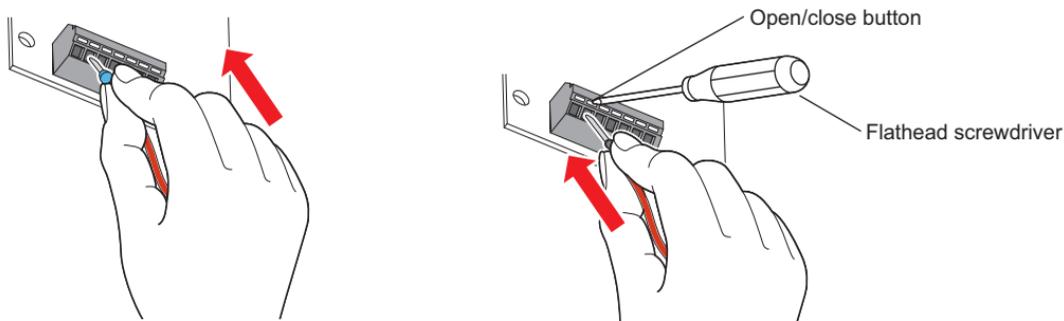
Crimp terminals commercially available (as of October 2020. The product may be changed without notice.)

Wire gauge (mm <sup>2</sup> )	Ferrule part No.			Manufacturer	Crimping tool model No.
	With insulation sleeve	Without insulation sleeve	For UL wire <sup>*1</sup>		
0.3	AI 0,34-10TQ	—	—	Phoenix Contact Co., Ltd.	CRIMPFOX 6
0.5	AI 0,5-10WH	—	AI 0,5-10WH-GB		
0.75	AI 0,75-10GY	A 0,75-10	AI 0,75-10GY-GB		
1	AI 1-10RD	A 1-10	AI 1-10RD/1000GB		
1.25, 1.5	AI 1,5-10BK	A 1,5-10	—		
0.75 (for two cables)	AI-TWIN 2 × 0,75-10GY	—	—		

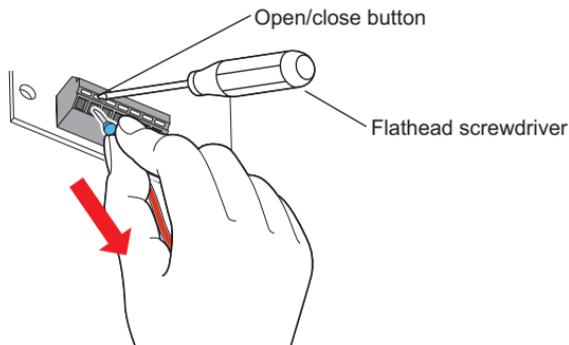
\*1 A ferrule terminal with an insulation sleeve compatible with the MTW wire which has a thick wire insulation.

Wire gauge (mm <sup>2</sup> )	Blade terminal part No.	Insulation cap part No.	Manufacturer	Crimping tool model No.
0.3 to 0.75	BT 0.75-11	VC 0.75	NICHIFU Co., Ltd.	NH 69

- 2.** Insert the wire into the socket.  
When using single wire or stranded wires without crimp terminal, push an open/close button all the way down with a flathead screwdriver, and insert the wire.



- Wire removal  
Pull the wire while pushing the open/close button all the way down firmly with a flathead screwdriver.



**NOTE**

- When using stranded wires without a crimp terminal, twist enough to avoid short circuit with a nearby terminals or wires.
- Pulling out the wire forcefully without pushing the open/close button all the way down may damage the terminal block.
- Use a small flathead screwdriver (tip thickness: 0.4 mm/tip width: 2.5 mm). If a flathead screwdriver with a narrow tip is used, terminal block may be damaged.

Commercially available products (as of October 2020. The product may be changed without notice.)

Product name	Model	Manufacturer
Screwdriver	SZF 0- 0,4 × 2,5	Phoenix Contact Co., Ltd.

- Place the flathead screwdriver vertical to the open/close button. In case the blade tip slips, it may cause an inverter damage or injury.
- When wiring cables to the inverter's RS-485 terminals while a plug-in option is mounted, take caution not to let the cables touch the circuit board of the option or of the inverter. Otherwise, electromagnetic noises may cause malfunctions.

### 3 PARAMETER LIST

When the FR-A8AY is mounted on the inverter, the following parameters are extended.

Pr.	Pr. group	Name	Setting range	Minimum setting increments	Initial value	Refer to page
Extended analog output	306	M303	Analog output signal selection	*1	1	2
	307	M340	Setting for zero analog output	0 to 100%	0.1%	0%
	308	M341	Setting for maximum analog output	0 to 100%	0.1%	100%
	309	M342	Analog output signal voltage/current switchover	0, 1, 10, 11	1	0
	310	M343	Analog meter voltage output selection	*1	1	2
	311	M344	Setting for zero analog meter voltage output	0 to 100%	0.1%	0%
	312	M345	Setting for maximum analog meter voltage output	0 to 100%	0.1%	100%
	323	M346	AM0 0V adjustment	900 to 1100%	1%	1000%
	324	M347	AM1 0mA adjustment	900 to 1100%	1%	1000%
	C0 (900)	M310	FM/CA terminal calibration	—	—	—
	C1 (901)	M320	AM terminal calibration	—	—	—
	1019	M305	Analog meter voltage negative output selection	0, 1	1	0

21 and later

Pr.	Pr. group	Name	Setting range	Minimum setting increments	Initial value	Refer to page	
Digital output	313	M410	DO0 output selection	*2	1	9999	32 and later
	314	M411	DO1 output selection				
	315	M412	DO2 output selection				
	316	M413	DO3 output selection				
	317	M414	DO4 output selection				
	318	M415	DO5 output selection				
	319	M416	DO6 output selection				
418	M432	Extension output terminal filter	5 to 50 ms, 9999	1 ms	9999		

\*1 The setting range depends on the inverter. For details, refer to **Pr.158 AM terminal function selection** in the Instruction Manual (Detailed) of the inverter.

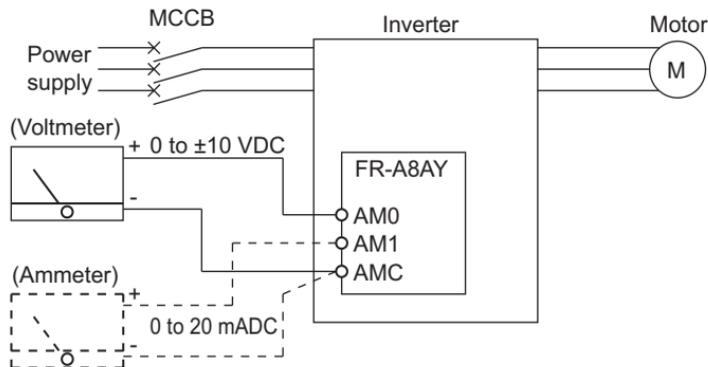
\*2 The setting range depends on the inverter. For details, refer to **Pr.190 to Pr.196 (output terminal function selection)** in the Instruction Manual (Detailed) of the inverter.

# 4 ANALOG OUTPUT

## 4.1 Connection diagram

By setting **Pr.306 to Pr.312**, analog signals such as the output frequency and output current can be output from the voltage output terminal (AM0) and current output terminal (AM1).

Connect the voltmeter or ammeter as shown below:

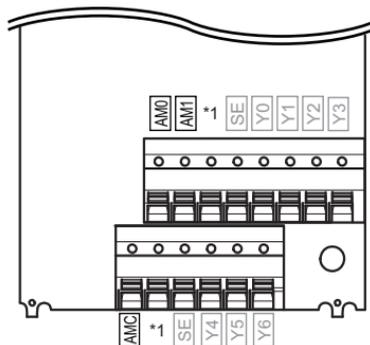


### NOTE

- The wiring length for the voltmeter/ammeter should be within 10 m.
- Notes on descriptions in this Instruction Manual

Connection diagrams in this Instruction Manual appear with the control logic of the input terminals as sink logic, unless otherwise specified.

## 4.2 Terminals



\*1 Empty terminal. Do not use.

Terminal symbol	Terminal name	Description
AM0	Voltage output terminal	Connects the DC voltmeter ( $\pm 10$ VDC).
AM1	Current output terminal	Connects the DC ammeter (20 mA DC).
AMC	Common terminal	Common terminal for AM0 and AM1.
Y0 to Y6	Used for digital output function. (Refer to <a href="#">page 32.</a> )	
SE		

## 4.3 Extended analog output function parameter list

Parameter number	Name	Setting range	Minimum increments	Initial value
306	Analog output signal selection	*1	1	2
307	Setting for zero analog output	0 to 100%	0.1%	0%
308	Setting for maximum analog output	0 to 100%	0.1%	100%
309	Analog output signal voltage/current switchover	0, 1, 10, 11	1	0
310	Analog meter voltage output selection	*1	1	2
311	Setting for zero analog meter voltage output	0 to 100%	0.1%	0%
312	Setting for maximum analog meter voltage output	0 to 100%	0.1%	100%
323	AM0 0V adjustment	900 to 1100%	1%	1000%
324	AM1 0mA adjustment	900 to 1100%	1%	1000%
C0(900)	FM/CA terminal calibration	—	—	—
C1(901)	AM terminal calibration	—	—	—
1019	Analog meter voltage negative output selection	0, 1	1	0

\*1 The setting range depends on the inverter. For details, refer to **Pr.158 AM terminal function selection** in the Instruction Manual (Detailed) of the inverter.

### NOTE

- **Pr.306, Pr.310** can be written even when the inverter is operating.

## 4.4 Adjustment procedure

### 4.4.1 Analog output signal voltage/current switchover (Pr.309) setting

Use **Pr.309 Analog output signal voltage/current switchover** to select whether to send the same signal from terminal AM0 (voltage output) and terminal AM1 (current output), or to send the signals separately.

Pr.309 setting value	Description	Terminal	Parameter setting	Calibration parameter
0 (Initial value)	Outputs the same selection signal from both the voltage output terminal (AM0) and the current output terminal (AM1). The signal that set in <b>Pr.306 Analog output signal selection</b> is enabled. (The <b>Pr.310</b> setting is disabled.)	AM0	<b>Pr.306:</b> Selects the output signal. <b>Pr.307:</b> Output signal value when analog output is zero.	<b>Pr.323</b> <b>Pr.324</b> <b>C1 (Pr.901)</b>
		AM1	<b>Pr.308:</b> Output signal value when analog output is at maximum.	
AM0		<b>Pr.306:</b> Selects the output signal. <b>Pr.307:</b> Analog output value when output signal is zero.		
AM1		<b>Pr.308:</b> Analog output value when output signal is at maximum.		

Pr.309 setting value	Description	Terminal	Parameter setting	Calibration parameter
1	Outputs separate selection signals from the voltage output terminal (AM0) and the current output terminal (AM1).	AM0	<b>Pr.310:</b> Selects the output signal. <b>Pr.311:</b> Output signal value when analog output is zero. <b>Pr.312:</b> Output signal value when analog output is at maximum.	<b>Pr.323 C0 (Pr.900)</b>
		AM1	<b>Pr.306:</b> Selects the output signal. <b>Pr.307:</b> Output signal value when analog output is zero. <b>Pr.308:</b> Output signal value when analog output is at maximum.	<b>Pr.324 C1 (Pr.901)</b>
AM0		<b>Pr.310:</b> Selects the output signal. <b>Pr.311:</b> Analog output value when output signal is zero. <b>Pr.312:</b> Analog output value when output signal is at maximum.	<b>Pr.323 C0 (Pr.900)</b>	
AM1		<b>Pr.306:</b> Selects the output signal. <b>Pr.307:</b> Analog output value when output signal is zero. <b>Pr.308:</b> Analog output value when output signal is at maximum.	<b>Pr.324 C1 (Pr.901)</b>	
11				

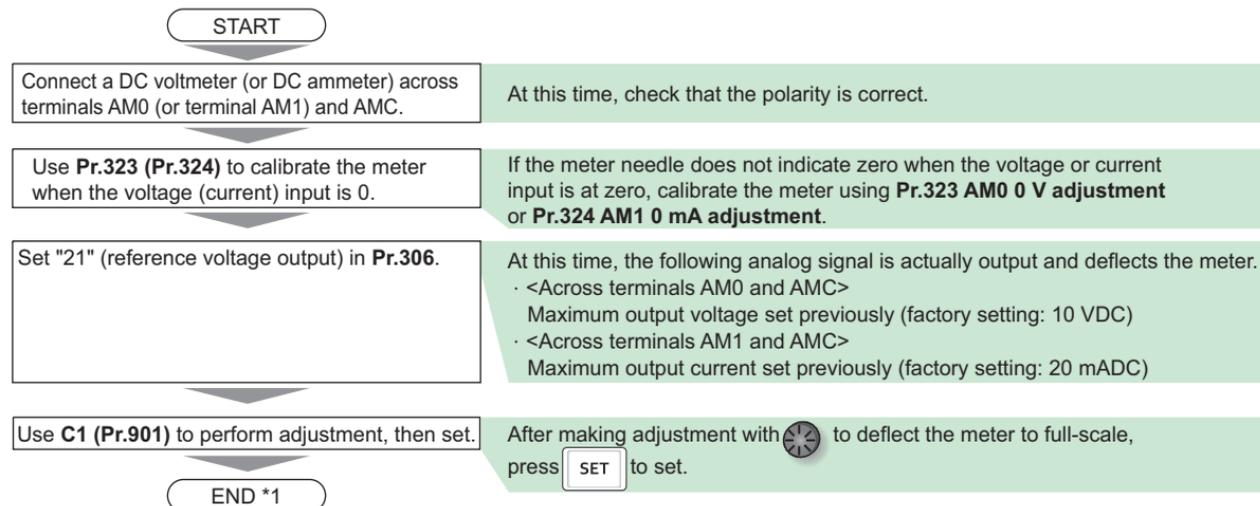


## NOTE

- "Analog output" means the voltage (0 to  $\pm 10$  V) and current (0 to 20 mA) output from terminals AM0 and AM1; while "output signal" indicates the monitor signal (refer to [page 28](#)) set in parameters **Pr.306** and **Pr.310**.

## 4.4.2 Meter calibration

1. Outputting the same signal from terminals AM0 and AM1 (**Pr.309** = "0 or 10")

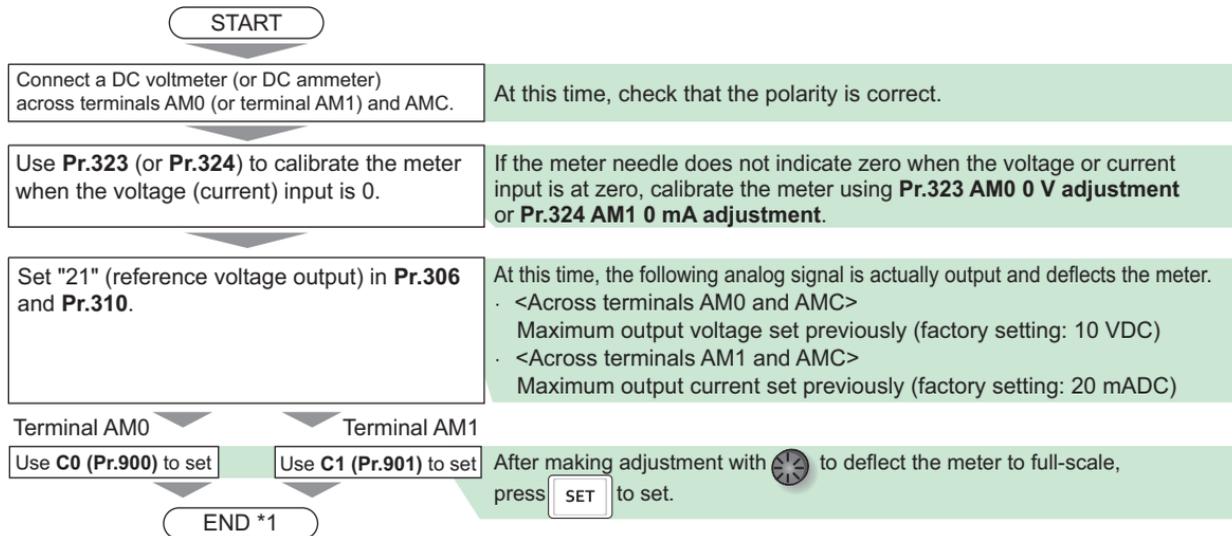


\*1 In **Pr.306**, set the types of the signals to be output. (Refer to [page 28](#).)

### NOTE

- If calibration is performed without setting **Pr.306** = "21 (reference voltage output)", terminal AM of the inverter is calibrated. To calibrate the extended analog output, always set to "21".
- When the plug-in option used was remounted on another inverter, use **Pr.323 and Pr.324** to calibrate again.

## 2. Outputting separate signals from terminals AM0 and AM1 (Pr.309 = "1 or 11")



\*1 In Pr.306 and Pr.310, set the types of the signals to be output. (Refer to [page 28](#).)

### NOTE

- If calibration is performed without setting "21 (reference voltage output)" in Pr.306 or Pr.310, terminal FM, CA, or AM of the inverter is calibrated. To calibrate the extended analog output, always set to "21".
- When the plug-in option used was remounted on another inverter, use Pr.323 and Pr.324 to calibrate again.

### 4.4.3 Setting output signals

Set the output signals to be monitored. Set **Pr.306** to output the same signal from terminals AM0 and AM1, and **Pr.306** and **Pr.310** to output different signals. The AM0 terminal can be used for negative output (from -10 VDC to +10 VDC). The settings of **Pr.306** and **Pr.310** are the same as those of **Pr.54 FM/CA terminal function selection** and **Pr.158 AM terminal function selection**. For details on **Pr.54** and **Pr.158**, refer to the Instruction Manual (Detailed) of the inverter.

### 4.4.4 Analog meter voltage negative output selection (Pr.1019)

The output from terminal AM0 (analog voltage output) can be displayed with minus signs on the monitor. For the monitored items that can be indicated with minus signs, refer to the description of **Pr.54 FM/CA terminal function selection** and **Pr.158 AM terminal function selection** in the Instruction Manual (Detailed) of the inverter.

Pr.1019 setting	Minus sign output from terminal AM0
0 (initial value)	Output without minus sign (positive values only)
1	Output with minus sign

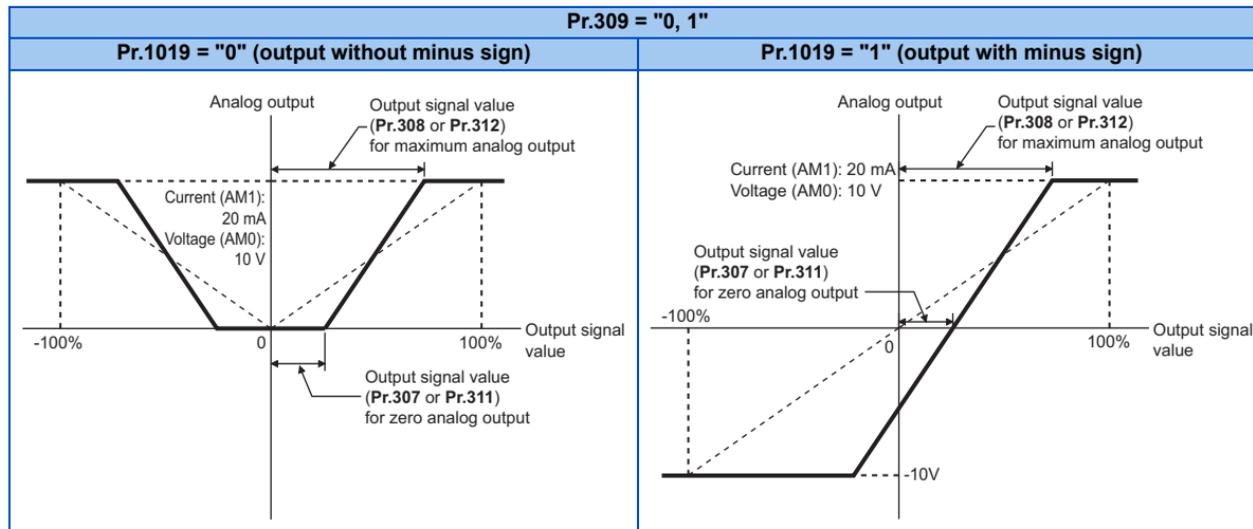
#### NOTE

- When terminal AM0 (analog voltage output) is set to "output with minus sign", the output will be within the -10 VDC to +10 VDC range. Connect the meter with which output level is matched.
- Parameter unit (FR-PU07) displays only positive values.
- When the remote output 1 to 4 is set to terminal AM0 (**Pr.306** = "87 to 90"), regardless of the **Pr.1019** setting, minus outputs can be made.

#### 4.4.5 Adjusting the analog signal (Pr.307, Pr.308, Pr.311, Pr.312)

Use **Pr.307** or **Pr.311** to set the values for zero analog output (meter zero) and **Pr.308** or **Pr.312** for maximum analog output (full scale).

When outputting the same signal from terminals AM0 and AM1, use **Pr.307** to set the value for zero analog output and **Pr.308** for maximum analog output. When outputting separate signals from terminals AM0 and AM1, use **Pr.307** (for terminal AM1) and **Pr.311** (for terminal AM0) to set the value for zero analog output, and **Pr.308** (for terminal AM1) and **Pr.312** (for terminal AM0) for maximum analog output. (Refer to [page 24](#).)



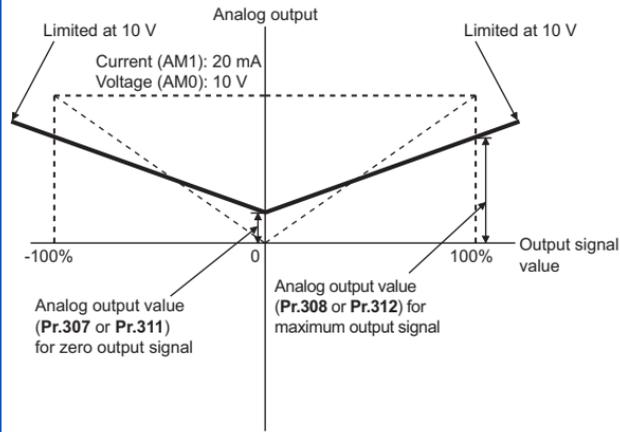
4

#### NOTE

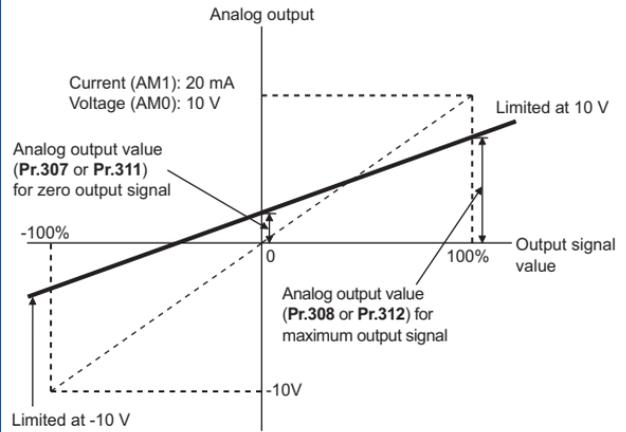
- When **Pr.307**  $\geq$  **Pr.308** and **Pr.311**  $\geq$  **Pr.312**, the output values from terminals AM0 and AM1 will always be zero.

Pr.309 = "10, 11"

Pr.1019 = "0" (output without minus sign)



Pr.1019 = "1" (output with minus sign)



**NOTE**

- When Pr.307 = Pr.308 and Pr.311 = Pr.312, the output values from terminals AM0 and AM1 will always be the values that are set in the parameters.

## 4.5 Precautions

---

- When using a voltmeter with a lower internal impedance or an ammeter having a greater internal impedance than the value indicated in the specifications (refer to [page 9](#)), the indicator may not go to full-scale, making it unable to calibrate in some cases.
  - When calibrating a meter with small full scale, first adjust the outputs from terminals AM0 and AM1 accordingly, then connect the meter.
- 

### CAUTION

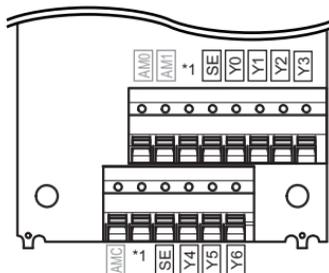
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- In the initial setting, the full-scale output is set to 10 VDC and 20 mADC. Small full-scale voltmeters (7 VDC or less) or ammeters (14 mADC or less) may accidentally be damaged during calibration. Use caution.
- When calibrating the meter using **Pr.323, Pr.324, C0 (Pr.900), and C1 (Pr.901)** while **Pr.309 = "10 or 11"**, set "0%" in **Pr.307** or **Pr.311**, and "100%" in **Pr.308** or **Pr.312** to prevent calibration value deviation.
- All the outputs are shut off when a protective function (E.1 to E.3) is activated.

# 5 DIGITAL OUTPUT

## 5.1 Terminals

Use **Pr.313 to Pr.319** to output inverter signals (RUN, SU, etc.) as open collector outputs.



\*1 Empty terminal. Do not use.

Terminal symbol	Terminal name	Description
Y0	Digital output terminal	Assigns the function using <b>Pr.313</b> .
Y1		Assigns the function using <b>Pr.314</b> .
Y2		Assigns the function using <b>Pr.315</b> .
Y3		Assigns the function using <b>Pr.316</b> .
Y4		Assigns the function using <b>Pr.317</b> .
Y5		Assigns the function using <b>Pr.318</b> .
Y6		Assigns the function using <b>Pr.319</b> .
SE	Common terminal	Common terminals for terminals Y0 to Y6. Isolated from terminal SE of the inverter.
AM0	Used for analog output function. (Refer to <a href="#">page 21</a> .)	
AM1		
AMC		

## 5.2 Digital output function parameter list

Parameter number	Name	Initial value	Setting range
313	DO0 output selection	9999	
314	DO1 output selection	9999	
315	DO2 output selection	9999	
316	DO3 output selection	9999	
317	DO4 output selection	9999	
318	DO5 output selection	9999	
319	DO6 output selection	9999	
418	Extension output terminal filter	9999	5 to 50 ms, 9999

\*1 The setting range depends on the inverter. For details, refer to **Pr.190 to Pr.196 (output terminal function selection)** in the Instruction Manual (Detailed) of the inverter.

## 5.3 Parameter setting

### ◆ Setting output signals

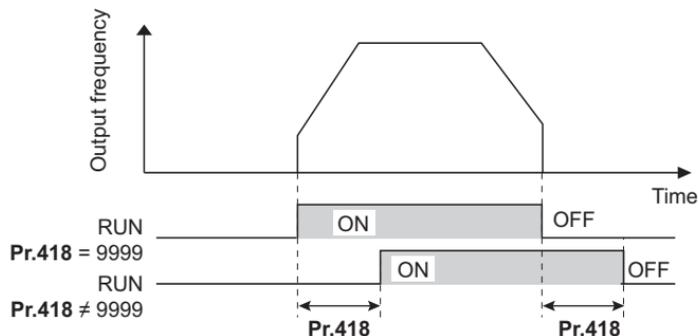
Use **Pr.313 to Pr.319** to assign signals to terminals DO0 to DO6. The settings of **Pr.313 to Pr.319** are the same as those of **Pr.190 to Pr.196 (Output terminal function selection)**. For details on **Pr.190 to Pr.196**, refer to the Instruction Manual (Detailed) of the inverter.

#### NOTE

- The same function can be set to two output terminals or more.

### ◆ Adjusting the output terminal response level (Pr.418)

The response level of the output terminals can be delayed in a range of 5 to 50 ms. (Operation example for the RUN signal.)



#### NOTE

- The response level is not adjusted while **Pr.418** = "9999".
- When **Pr.157 OL signal output timer** is set for the Overload warning (OL) signal output, the OL signal is output after the time period calculated by adding the **Pr.418** setting to the **Pr.157** setting elapsed.

# APPENDIX

## Appendix 1 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. When a manufacturer confirms its equipment to be compliant with the EMC 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 (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.

### ◆ EU RoHS Directive

We declare that this product conforms with the EU RoHS Directive (2011/65/EU) when installed in a compatible inverter, and affix the CE marking on the packaging plate.



## Appendix 2 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

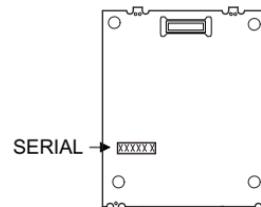
The authorized sales representative (importer) in the CU area is shown below.

Name: Mitsubishi Electric Turkey A.S. Head Office

Address: Serifali Mahallesi Kale Sokak. No:41 34775 Umraniye, Istanbul, Turkey

Phone: +90-216-969-25-00

Fax: +90-216-661-44-47



## Appendix 3 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 4 Referenced Standard (Requirement of Chinese standardized law)**

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

EMC: GB/T 12668.3

## Appendix 5 Regarding Directive on Waste Electrical and Electronic Equipment

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This symbol mark is for EU countries only, and is according to the directive 2012/19/ EU Article 14 Information for users and Annex IX.

This symbol mark means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from your household waste.



## Appendix 6 Compliance with the UK certification scheme

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We declare that this product conforms with the related technical requirements under UK legislation when installed in a compatible inverter, and affix the UKCA (UK Conformity Assessed) marking on the packaging plate.

Approval conditions are the same as those for the EU Directives. (Refer to [page 35.](#))



UKCA marking:

The UKCA marking is used for products sold in the markets of Great Britain (England, Wales, and Scotland) from January 1, 2021 after the departure of the UK from the EU on January 31, 2020.

# MEMO

# MEMO

## REVISIONS

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

Revision date	*Manual number	Revision
Aug. 2013	IB(NA)-0600497ENG-A	First edition
Sep. 2018	IB(NA)-0600497ENG-B	Added • Compatibility with the FR-F800 series
Dec. 2023	IB(NA)-0600497ENG-C	Added • Instructions for compliance with the EU Directives • Instructions for EAC • Restricted Use of Hazardous Substances in Electronic and Electrical Products • Referenced Standard (Requirement of Chinese standardized law) • Regarding Directive on Waste Electrical and Electronic Equipment • Compliance with the UK certification scheme

INVERTER

**mitsubishi electric corporation**

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