MITSUBISHI ELECTRIC

INVERTER
Front cover for plug-in option
FR-A7NC E kit cover SC
INSTRUCTION MANUAL

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

SAFETY INSTRUCTIONS

⚠ While power is ON or for some time after power-OFF, do not touch the inverter as it will be extremely hot. Doing so can cause burns.

⚠ The product must be transported in correct method that corresponds to the weight. Failure to do so may lead to injuries. Special attention must be paid to the edges of the product.

⚠ Foreign conductive objects must be prevented from entering the inverter. That includes screws and metal fragments or other flammable substances such as oil.

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1 PRE-OPERATION INSTRUCTIONS
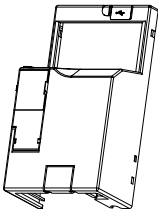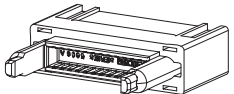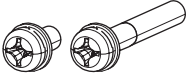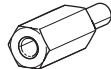
1.1 Unpacking and Product Confirmation

Take the front cover for plug-in option out of the package and confirm that the product is as you ordered and intact. This product is a front cover for plug-in option dedicated for the FR-E700-SC series (Safety stop function model). This product is used to mount the plug-in option FR-A7NC (CC-Link communication) to the inverter.

When mounting this product to the inverter, use the following items: the plug-in option FR-A7NC, the terminal block of the plug-in option FR-A7NC, and the enclosed items of this product.

=== **CAUTION** ===

• **Instead of the standard inverter front cover, fit this front cover of the plug-in option for the operation.**
• **The mounting screws and the LED display cover supplied with the plug-in option FR-A7NC are not used.**

1.1.1 Packing confirmation

Check the enclosed items.

Front cover for plug-in option............ 1 *(Refer to page 4, 7.)*	Junction connector .... 1 *(Refer to page 4, 7.)*	M3 mounting screw (Long) (M3 × 20mm) .... 1 (Short) (M3 × 6mm)........................... 1 *(Refer to page 4, 7.)*
	Spacer for plug-in option mounting ... 1 *(Refer to page 4, 7.)*	Hexagon spacer.................................. 1 *(Refer to page 4, 7.)*

2 INSTALLATION AND WIRING

2.1 Installation Procedure

The FR-E700-SC (safety stop function model) series has one connection connector for the plug-in option.

=== **CAUTION** ===

- **Always perform wiring to the main circuit terminals and control circuit terminals before installing the plug-in option. Wiring cannot be performed after installing the plug-in option.**
- **When mounting the plug-in option, do not let wires get caught in the plug-in option or the spacer for option mounting. If a wire gets caught, the inverter and the plug-in option may be damaged.**
- **When the inverter cannot recognize that the plug-in option is mounted due to improper installation, etc.,**

  "$E.\ \ 1$" (option alarm) is displayed.
- **Take care not to drop a mounting screws during mounting and removal.**
- **Pull out the plug-in option straight to remove. Otherwise, the connector may be damaged.**


REMARKS

- Because the voltage class, model name and serial number (only voltage class is labeled for FR-E720-5.5K (FR-E720-240), FR-E740-5.5K (FR-E740-120) or more) are written on the PU cover, replace the PU cover of the plug-in option with the removed PU cover of the inverter.
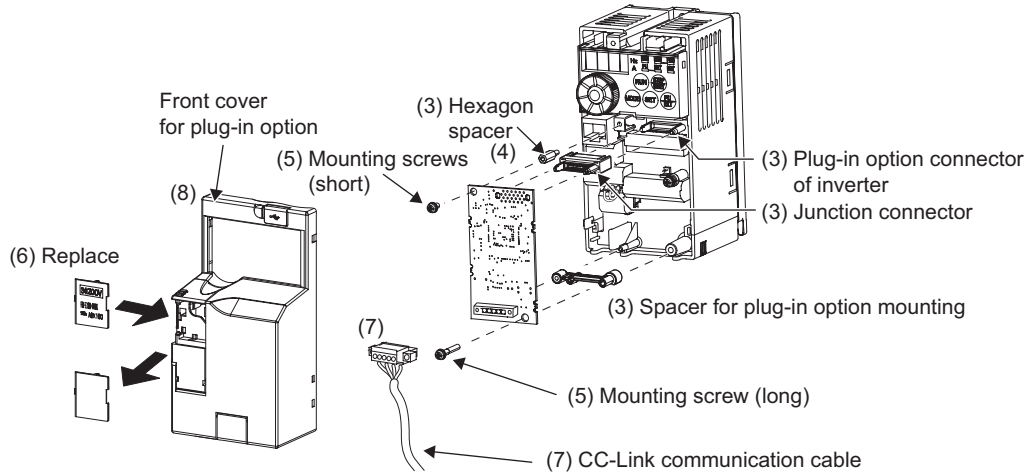
● For FR-E720-3.7K (FR-E720-175) or less and FR-E740-7.5K (FR-E740-170) or less

(1) Remove the front cover from the inverter. (For removing the front cover, refer to the FR-E700 Instruction Manual.)

(2) Remove the PU cover from the front cover. Open the PU cover with a driver, etc. and remove it in the direction of arrow as shown below.

(1) Front cover

(2) PU cover

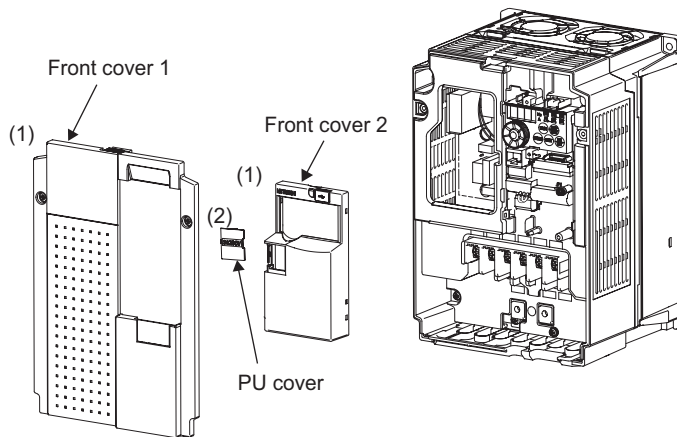* Open the PU cover, then open it toward the arrow direction to remove.
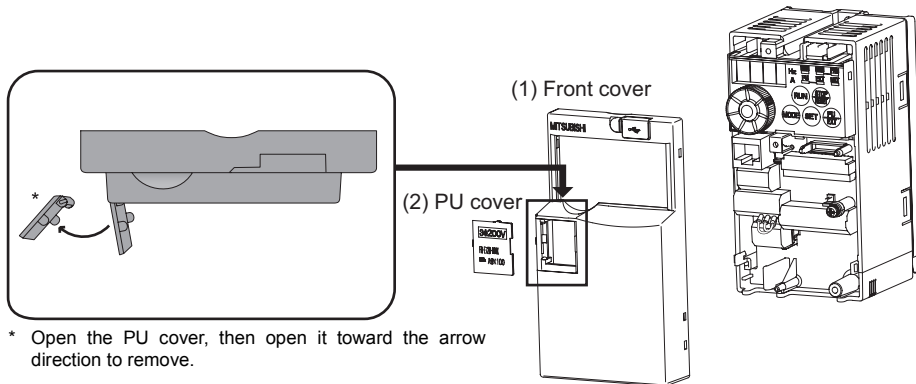
(3) Mount the spacer for plug-in option mounting, the hexagon spacer, and the junction connector. Fit the junction connector to the guide of the connector at the inverter side, and insert the junction connector as far as it goes.

(4) Fit the connector of the plug-in option to the guide of the junction connector, and insert the plug-in option as far as it goes.

(5) Fix the plug-in option securely by using the supplied mounting screw (short) to the upper screw hole and the other supplied mounting screw (long) to the lower screw hole of the plug-in option. If the screw holes do not line up, the connector may not have been plugged properly. Check for loose plugging.

(6) Remove the PU cover provided on the front cover for plug-in option and install the other PU cover, which was removed in (2).

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(7) Mount the already wired terminal block to the plug-in option.
(8) Install the front cover for plug-in option to the inverter.

Front cover for plug-in option

(3) Hexagon spacer
(4)

(5) Mounting screws (short)

(8)

(6) Replace

(7)

(3) Plug-in option connector of inverter

(3) Junction connector

(3) Spacer for plug-in option mounting

(5) Mounting screw (long)

(7) CC-Link communication cable
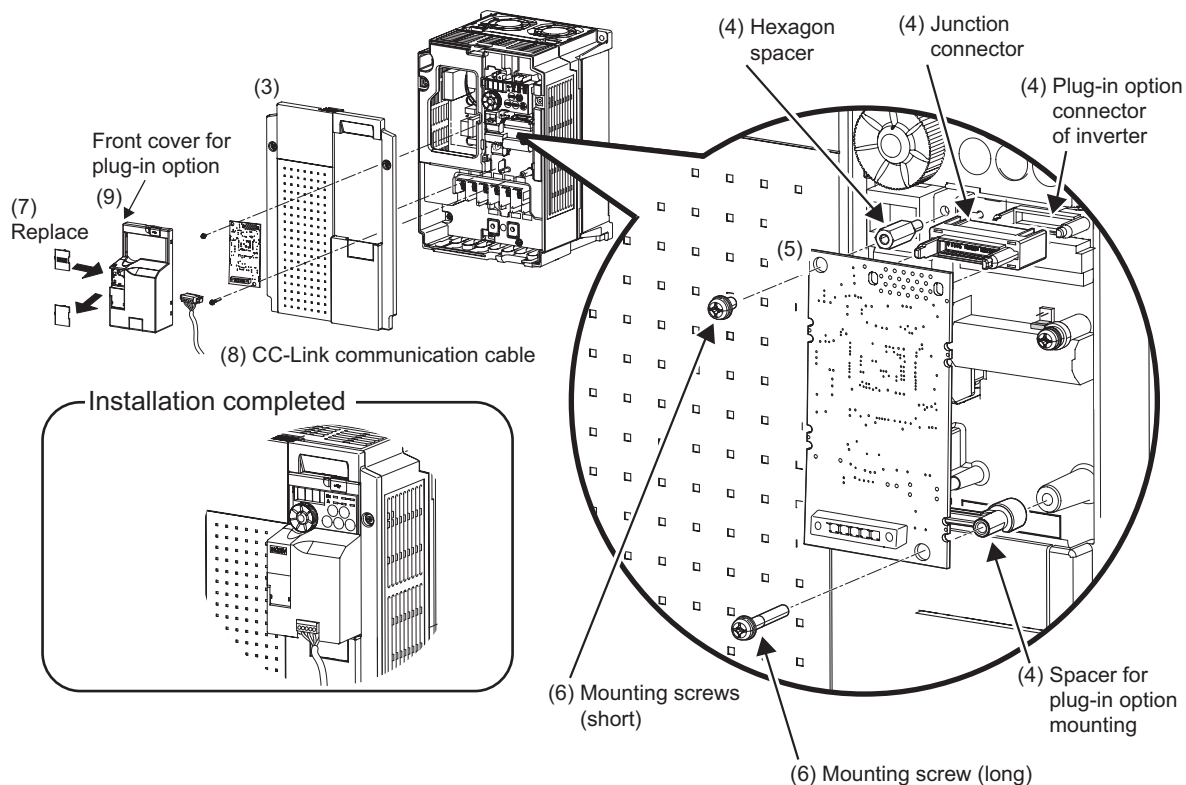
● For FR-E720-5.5K (FR-E720-240) or more and FR-E740-11K (FR-E740-230) or more
(1) Remove the front cover 1 and 2 from the inverter. (For removing the front cover, refer to the FR-E700 Instruction Manual.)
(2) Remove the PU cover from the front cover 2. For removing the PU cover, refer to *page 4*.

Front cover 1

(1)

Front cover 2

(1)

(2)

PU cover

(3) Install the front cover 1 to the inverter.

(4) Mount the spacer for plug-in option mounting, the hexagon spacer, and the junction connector. Fit the junction connector to the guide of the connector at the inverter side, and insert the junction connector as far as it goes.

(5) Fit the connector of the plug-in option to the guide of the junction connector, and insert the plug-in option as far as it goes.

(6) Fix the plug-in option securely by using the supplied mounting screw (short) to the upper screw hole and the other supplied mounting screw (long) to the lower screw hole of the plug-in option. If the screw holes do not line-up, the connector may not have been plugged properly. Check for loose plugging.

(7) Remove the PU cover provided on the front cover for plug in option and install the other PU cover, which was removed in (2).

(8) Mount the already wired terminal block to the plug-in option.
Pass the CC-Link cable over the front cover 1 of the inverter. (Refer to the finished installation figure in the next page.) If a CC-Link cable is passed through underneath the front cover 1, the bending radius of the cable shortens, stressing the cable.

(9) Install the front cover for plug-in option to the inverter.

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Front cover for plug-in option

(7) Replace

(9)

(3)

(8) CC-Link communication cable

(4) Hexagon spacer

(4) Junction connector

(4) Plug-in option connector of inverter

(5)

(6) Mounting screws (short)

(6) Mounting screw (long)

(4) Spacer for plug-in option mounting

Installation completed

3 I/O SIGNAL LIST

3.1 I/O Signal List

3.1.1 I/O signal when CC-Link Ver.1 one station (FR-A5NC compatible) is occupied (Pr. 544 = "0")

(1) Remote I/O (32 points)

Device No.	Signal
RYn0	Forward rotation command
RYn1	Reverse rotation command
RYn2	High-speed operation command (terminal RH function) *1
RYn3	Middle-speed operation command (terminal RM function) *1
RYn4	Low-speed operation command (terminal RL function) *1
RYn5	Not used
RYn6	Second function selection (RT signal) *2
RYn7	Current input selection (AU signal) *2
RYn8	Not used
RYn9	Output stop (MRS signal) *1
RYnA	Not used
RYnB	Reset (terminal RES function) *1
RYnC	Monitor command
RYnD	Frequency setting command (RAM)
RYnE	Frequency setting command (RAM, EEPROM)

Device No.	Signal
RXn0	Forward running
RXn1	Reverse running
RXn2	Running (terminal RUN function) *3
RXn3	Up to frequency (SU signal)
RXn4	Overload alarm (OL signal)
RXn5	Not used
RXn6	Frequency detection (terminal FU function) *3
RXn7	Error (terminal ABC1 function) *3
RXn8	Not used
RXn9	Pr. 313 assignment function (DO0) *4
RXnA	Pr. 314 assignment function (DO1) *4
RXnB	Pr. 315 assignment function (DO2) *4
RXnC	Monitoring
RXnD	Frequency setting completion (RAM)
RXnE	Frequency setting completion (RAM, EEPROM)

Device No.	Signal
RYnF	Instruction code execution request
RY(n+1)0 to RY(n+1)7	Reserved
RY(n+1)8	Not used (initial data process completion flag)
RY(n+1)9	Not used (initial data process request flag)
RY(n+1)A	Error reset request flag
RY(n+1)B to RY(n+1)F	Reserved

Device No.	Signal
RXnF	Instruction code execution completion
RX(n+1)0 to RX(n+1)7	Reserved
RX(n+1)8	Not used (initial data process request flag)
RX(n+1)9	Not used (initial data process completion flag)
RX(n+1)A	Error status flag
RX(n+1)B	Remote station ready
RX(n+1)C to RX(n+1)F	Reserved

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

*1 Signal names are initial values. Using *Pr. 180* to *Pr. 184*, you can change input signal functions.
Signals of the RYn0 and RYn1 can not be changed. Even when changed using *Pr. 178* and *Pr. 179*, the settings are invalid. Refer to the Inverter Manual for details of *Pr. 178* to *Pr. 184*.

*2 RY6 is fixed as the Second function selection (RT signal), and RY7 is fixed as the Terminal 4 input selection (AU signal). These assignments cannot be changed.

*3 Signal names are initial values. Using *Pr. 190* to *Pr. 192*, you can change output signal functions.
Refer to the Inverter Manual for details of *Pr. 190* to *Pr. 192*.

*4 Output signal can be assigned using *Pr. 313 to Pr. 315*.
Refer to *Pr. 190* to *Pr. 192* of the Inverter Manual for details of signals.

(2) Remote register

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

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

*1   The above 8 bit is always H00 even if a value other than H00 is set.

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

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

(1) Remote I/O (32 points)

Same as when *Pr. 544* = "0"   (☞ *Refer to page 9)*

(2) Remote register

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

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

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

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

(1) Remote I/O (32 points)

Same as when *Pr. 544* = "0" *(☞ Refer to page 9)*

(2) Remote register

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

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

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

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

(1) Remote I/O (32 points)

Same as when *Pr. 544* = "0" *(☞ Refer to page 9)*

(2) Remote register

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

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

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

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

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

(1) Remote I/O (32 points)

Same as when *Pr. 544* = "0" (☞ *Refer to page 9*)

(2) Remote register

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

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

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

Address	Description		Address	Description	
	Upper 8 Bits	Lower 8 Bits		Upper 8 Bits	Lower 8 Bits
RWwn+10	Link parameter extended setting	Instruction code	RWrn+10	Reply code	
RWwn+11	Write data		RWrn+11	Read data	
RWwn+12	Link parameter extended setting	Instruction code	RWrn+12	Reply code	
RWwn+13	Write data		RWrn+13	Read data	
RWwn+14	Link parameter extended setting	Instruction code	RWrn+14	Reply code	
RWwn+15	Write data		RWrn+15	Read data	
RWwn+16	Link parameter extended setting	Instruction code	RWrn+16	Reply code	
RWwn+17	Write data		RWrn+17	Read data	
RWwn+18	Link parameter extended setting	Instruction code	RWrn+18	Reply code	
RWwn+19	Write data		RWrn+19	Read data	
RWwn+1A to RWwn+1F	H00 (Free)		RWwn+1A to RWwn+1F	H00 (Free)	

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

REVISIONS

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INVERTER

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