



# INVERTER

## Front cover for plug-in option

# FR-A7NC E kit cover SC

## INSTRUCTION MANUAL

Thank you for choosing this Mitsubishi Inverter plug-in option.

This Instruction Manual gives handling information and precautions for use of this equipment. Incorrect handling might cause an unexpected fault. Before using the equipment, please read this manual carefully to use the equipment to its optimum.

Please forward this manual to the end user.

### **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.

# 1 PRE-OPERATION INSTRUCTIONS

## 1.1 Unpacking and Product Confirmation

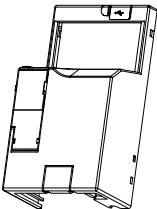
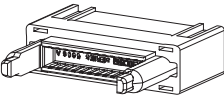
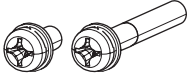

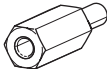
Take the front cover for plug-in option out of the package and confirm that the product is as you ordered and intact. This product is a front cover for plug-in option dedicated for the FR-E700-SC series (Safety stop function model). This product is used to mount the plug-in option FR-A7NC (CC-Link communication)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

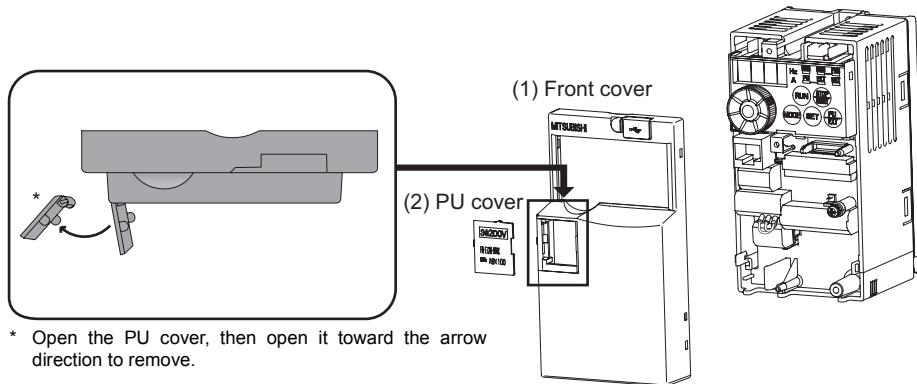
- Always perform wiring to the main circuit terminals and control circuit terminals before installing the plug-in option. Wiring cannot be performed after installing the plug-in option.
- When mounting the plug-in option, do not let wires get caught in the plug-in option or the spacer for option mounting. 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. I" (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.

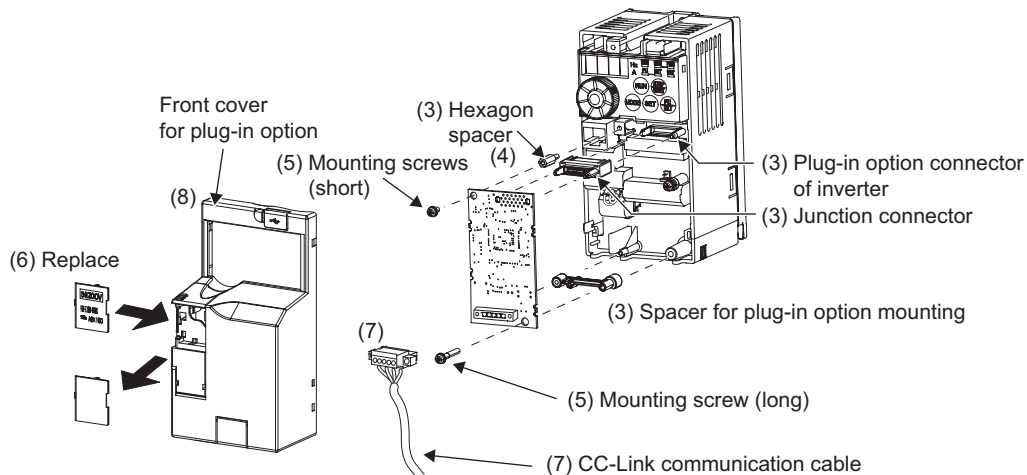
● For FR-E720-3.7K (FR-E720-175) or less and FR-E740-7.5K (FR-E740-170) or less

- (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.



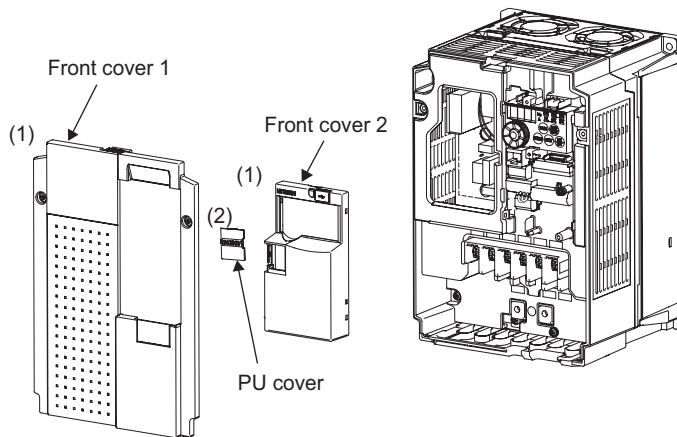
- (3) Mount the spacer for plug-in option mounting, the hexagon spacer, and the junction connector. Fit the junction connector to the guide of the connector at the inverter side, and insert the junction connector as far as it goes.
- (4) Fit the connector of the plug-in option to the guide of the junction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

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



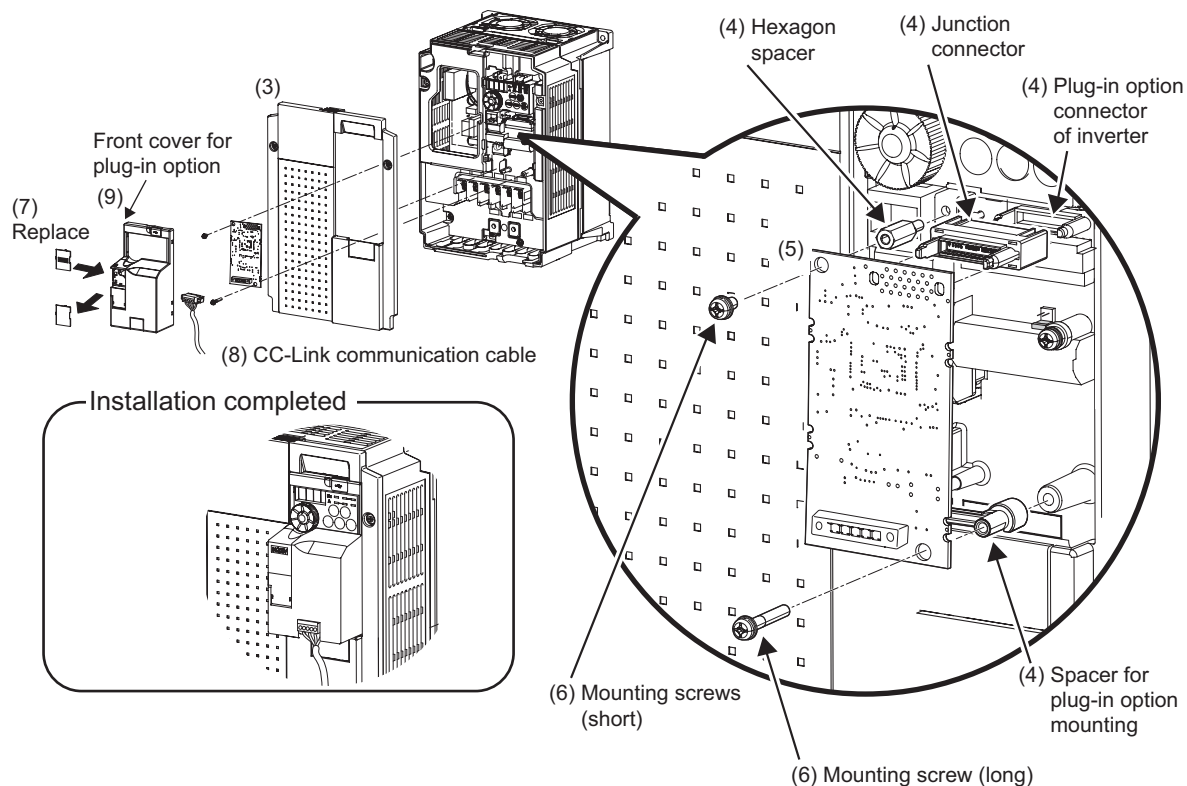
● For FR-E720-5.5K (FR-E720-240) or more and FR-E740-11K (FR-E740-230) or more

- (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*.





- (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.





# 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	Device No.	Signal
RYn0	Forward rotation command	RXn0	Forward running
RYn1	Reverse rotation command	RXn1	Reverse running
RYn2	High-speed operation command (terminal RH function) *1	RXn2	Running (terminal RUN function) *3
RYn3	Middle-speed operation command (terminal RM function) *1	RXn3	Up to frequency (SU signal)
RYn4	Low-speed operation command (terminal RL function) *1	RXn4	Overload alarm (OL signal)
RYn5	Not used	RXn5	Not used
RYn6	Second function selection (RT signal) *2	RXn6	Frequency detection (terminal FU function) *3
RYn7	Current input selection (AU signal) *2	RXn7	Error (terminal ABC1 function) *3
RYn8	Not used	RXn8	Not used
RYn9	Output stop (MRS signal) *1	RXn9	Pr. 313 assignment function (DO0) *4
RYnA	Not used	RXnA	Pr. 314 assignment function (DO1) *4
RYnB	Reset (terminal RES function) *1	RXnB	Pr. 315 assignment function (DO2) *4
RYnC	Monitor command	RXnC	Monitoring
RYnD	Frequency setting command (RAM)	RXnD	Frequency setting completion (RAM)
RYnE	Frequency setting command (RAM, EEPROM)	RXnE	Frequency setting completion (RAM, EEPROM)

Device No.	Signal	Device No.	Signal
RYnF	Instruction code execution request	RXnF	Instruction code execution completion
RY(n+1)0 to RY(n+1)7	Reserved	RX(n+1)0 to RX(n+1)7	Reserved
RY(n+1)8	Not used (initial data process completion flag)	RX(n+1)8	Not used (initial data process request flag)
RY(n+1)9	Not used (initial data process request flag)	RX(n+1)9	Not used (initial data process completion flag)
RY(n+1)A	Error reset request flag	RX(n+1)A	Error status flag
RY(n+1)B to RY(n+1)F	Reserved	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		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	
	Upper 8 Bits	Lower 8 Bits
RWwn	Monitor code 2	Monitor code 1
RWwn+1	Set frequency (0.01Hz increments) *1	
RWwn+2	Link parameter extended setting	Instruction code
RWwn+3	Write data	
RWwn+4	Monitor code 3	
RWwn+5	Monitor code 4	
RWwn+6	Monitor code 5	
RWwn+7	Monitor code 6	

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

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

Address	Description	
	Upper 8 Bits	Lower 8 Bits
RWrn	First monitor value	
RWrn+1	Second monitor value	
RWrn+2	Reply code 2	Reply code 1
RWrn+3	Read data	
RWrn+4	Third monitor value	
RWrn+5	Fourth monitor value	
RWrn+6	Fifth monitor value	
RWrn+7	Sixth monitor value	
RWrn+8	Alarm definition No.	Alarm definition data
RWrn+9	Alarm definition (output frequency)	
RWrn+A	Alarm definition (output current)	
RWrn+B	Alarm definition (output voltage)	
RWrn+C	Alarm definition (energization time)	
RWrn+D	H00 (Free)	
RWrn+E		
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	
	Upper 8 Bits	Lower 8 Bits
RWwn+10	Link parameter extended setting	Instruction code
RWwn+11	Write data	
RWwn+12	Link parameter extended setting	Instruction code
RWwn+13	Write data	
RWwn+14	Link parameter extended setting	Instruction code
RWwn+15	Write data	
RWwn+16	Link parameter extended setting	Instruction code
RWwn+17	Write data	
RWwn+18	Link parameter extended setting	Instruction code
RWwn+19	Write data	
RWwn+1A to RWwn+1F	H00 (Free)	

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

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

## REVISIONS

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

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Oct. 2010	IB(NA)-0600443ENG-A	First edition

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