

MODELS: FR-E800

TITLE: Protruding the heat sink through the enclosure for the FR-E800 series
CATEGORY: Structure

1. Overview

This document describes how to protrude the heat sink through the enclosure for the FR-E800 series and provides information on the panel through attachment.

When installing the inverter in an enclosure, the heat sink of the inverter can be protruded through the rear panel of the enclosure to dissipate the heat generated by the inverter. When installing the inverter in a compact enclosure, this installation method is recommended.

2. Precautions

- (1) Do not touch the inverter or attachment while the power is ON and for some time after power OFF as they will be extremely hot. Doing so may cause burns.
- (2) Transport the product in the correct way according to the mass of the product. Failure to do so may lead to injuries. Pay special attention to the edges of the product.
- (3) Prevent foreign materials such as screws and metal fragments or flammable substances such as oil from entering this product.
- (4) To prevent injury, be careful with parts such as metal sheets when installing or removing parts such as the fan cover. It is recommended to use a tool such as a flathead screwdriver. To tighten or remove the fan cover installation screws, it is recommended to use a tool such as an L-shaped screwdriver or a ratchet screwdriver.
- (5) The CAD data does not guarantee the specifications of our products. We will not be liable for any loss or damages caused by using the CAD data. Before using any self-made attachment in the system, verify that the inverter can be installed without problems.

3. Applicable inverters

The panel through attachment CAD data can be downloaded from the Mitsubishi Electric FA Website.

<https://www.mitsubishielectric.co.jp/fa/download/cad/search.do?mode=cad&kisyu=/inverter&category1=1&category2=35&categoryb1=&categoryb2=&categoryb3=&categoryb4=>

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The following table lists the combinations of the inverter and the panel through attachment data.

No.	Applicable inverter	File data	Extension	Download file
1	FR-E820-1.5K, 2.2K FR-E820S-1.5K	2D	dxf	e8cn01_dxf.zip
		2D	dwg	e8cn01_dwg.zip
		3D	igs	e8cn01_igs.zip
		3D	stp	e8cn01_stp.zip
		Outline dimension drawings	pdf	C112D896_FR-E8CN01.pdf
2	FR-E820-3.7K FR-E820S-2.2K	2D	dxf	e8cn02_dxf.zip
		2D	dwg	e8cn02_dwg.zip
		3D	igs	e8cn02_igs.zip
		3D	stp	e8cn02_stp.zip
		Outline dimension drawings	pdf	C112D897_FR-E8CN02.pdf
3	FR-E820-5.5K, 7.5K	2D	dxf	e8cn03_dxf.zip
		2D	dwg	e8cn03_dwg.zip
		3D	igs	e8cn03_igs.zip
		3D	stp	e8cn03_stp.zip
		Outline dimension drawings	pdf	C112D898_FR-E8CN03.pdf

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No.	Applicable inverter	File data	Extension	Download file
4	FR-E840-1.5K	2D	dxf	e8cn04_dxf.zip
		2D	dwg	e8cn04_dwg.zip
		3D	igs	e8cn04_igs.zip
		3D	stp	e8cn04_stp.zip
		Outline dimension drawings	pdf	C112D899_FR-E8CN04.pdf
5	FR-E840-2.2K, 3.7K FR-E860-1.5K, 2.2K	2D	dxf	e8cn05_dxf.zip
		2D	dwg	e8cn05_dwg.zip
		3D	igs	e8cn05_igs.zip
		3D	stp	e8cn05_stp.zip
		Outline dimension drawings	pdf	C112D900_FR-E8CN05.pdf
6	FR-E840-5.5K, 7.5K FR-E860-3.7K to 7.5K	2D	dxf	e8cn06_dxf.zip
		2D	dwg	e8cn06_dwg.zip
		3D	igs	e8cn06_igs.zip
		3D	stp	e8cn06_stp.zip
		Outline dimension drawings	pdf	C112D901_FR-E8CN06.pdf
7	FR-E820-11K, 15K FR-E840-11K, 15K	2D	dxf	e8cn07_dxf.zip
		2D	dwg	e8cn07_dwg.zip
		3D	igs	e8cn07_igs.zip
		3D	stp	e8cn07_stp.zip
8	FR-E820-18.5K, 22K FR-E840-18.5K, 22K	2D	dxf	e8cn08_dxf.zip
		2D	dwg	e8cn08_dwg.zip
		3D	igs	e8cn08_igs.zip
		3D	stp	e8cn08_stp.zip

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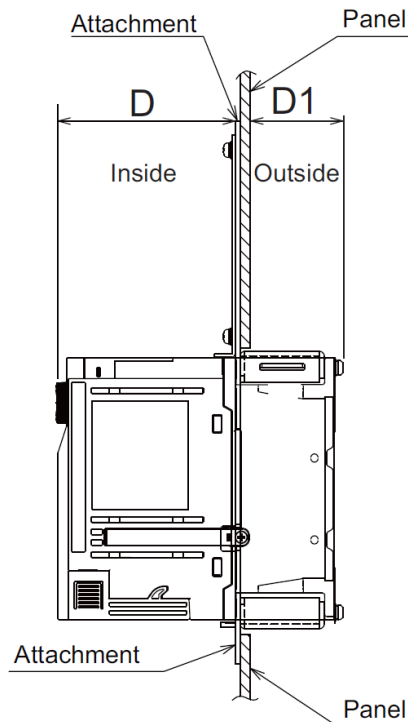
When the FR-E7CN is used, the enclosure can be used for the FR-E8CN (additional enclosure cutting is required depending on the inverter model). For details, refer to "5.3 When the enclosure has been cut for the FR-E7CN".

When the FR-E700 series is replaced with the FR-E800 series, the depth changes for the outside and inside of the enclosure as shown in the following table.

After				Before			
FR-E800 model	Attachment model	D (mm)	D1 (mm)	FR-E700 model	Attachment model	D (mm)	D1 (mm)
FR-E820-1.5K, 2.2K	FR-E8CN01	89.7	45.8	FR-E720-1.5K, 2.2K	FR-E8CN01	75.5	60
FR-E820S-1.5K		115	45.8	FR-E720S-0.75K, 1.5K		101	60
FR-E820-3.7K	FR-E8CN02	90	52.5	FR-E720-3.7K	FR-E8CN02	76	66.5
FR-E820S-2.2K		90	52.5	FR-E720S-2.2K	FR-E8CN04	95.5	60
FR-E820-5.5K, 7.5K	FR-E8CN03	93.5	71.5	FR-E720-5.5K, 7.5K	FR-E8CN03	93.5	71.5
FR-E840-1.5K	FR-E8CN04	89.7	45.3	FR-E740-1.5K	FR-E8CN04	75	60
FR-E840-2.2K, 3.7K	FR-E8CN05	91.5	43.5	FR-E740-2.2K, 3.7K		75	60
FR-E840-5.5K, 7.5K	FR-E8CN06	79	68	FR-E740-5.5K, 7.5K	FR-E8CN05	79	68
FR-E820-11K, 15K	E8CN07 *1	105.4	84.6	FR-E720-11K, 15K	FR-E8CN06	86	84
FR-E840-11K, 15K		105.4	84.6	FR-E740-11K, 15K		86	84
FR-E820-18.5K, 22K	E8CN08 *1	105.4	84.6	—	—	—	—
FR-E840-18.5K, 22K		105.4	84.6	—	—	—	—

*1 Only CAD data is provided.

The attachment model is not a product model, but a model represented using a part of the download file name.



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4. Parts configuration and assembly example

(1) Components

The attachment consists of the following parts.

Part name	Attachment model							
	FR-E8CN[]						E8CN[] *2	
	01	02	03	04	05	06	07	08
Upper installation frame	1	1	1	1	1	1	1	1
Upper cover	1	1	1	1	1	1	1	1
Lower installation frame	1	1	1	1	1	1	1	1
Side cover (A)*1	1	—	2	—	1	—	—	—
Side cover (B)*1	1	—	—	—	1	—	—	—
Upper cover installation screw (size)	4 (M4 × 8)	4 (M4 × 8)	4 (M4 × 8)	4 (M4 × 8)	4 (M4 × 8)	4 (M4 × 8)	2 (M4 × 10)	2 (M4 × 10)
Frame installation screw (size)	4 (M4 × 12)	4 (M4 × 12)	4 (M4 × 20)	4 (M4 × 12)	4 (M4 × 12)	4 (M4 × 16)	4 (M5 × 20)	4 (M8 × 16)

*1 Use side covers for a rectangular cut.

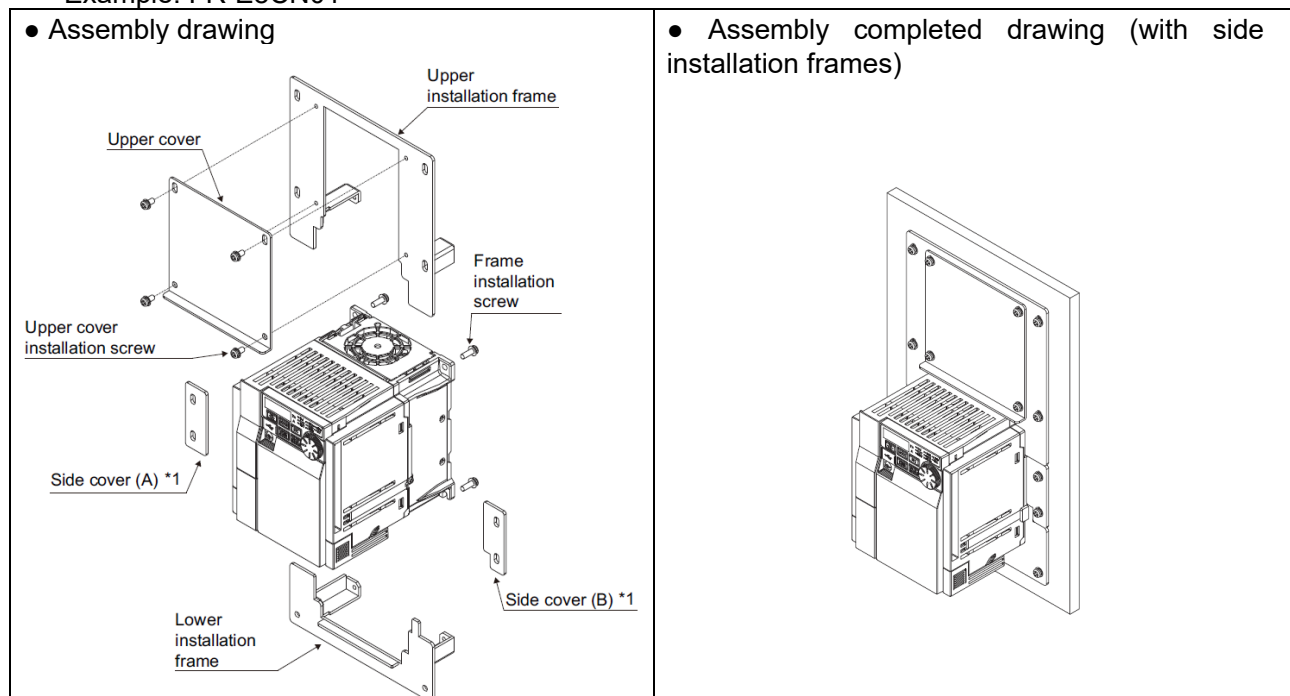
(For the enclosure cut dimensions, refer to 5. Enclosure cut dimensions.)

*2 Only CAD data is provided.

The attachment model is not a product model, but a model represented using a part of the download file name.

(2) Assembly example

Example: FR-E8CN01



*1 FR-E8CN02, 04, and 06 and E8CN07 and 08 do not have side covers. Two A-type side covers are provided for both sides of the FR-E8CN03.

To replace the cooling fan, remove the upper cover and then replace the cooling fan through its opening.

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5. Enclosure cut dimensions

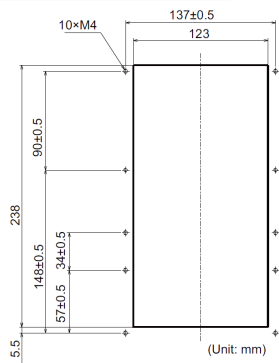
Cut an enclosure to the following dimensions according to the inverter capacity.
 The cutting procedure differs according to whether or not the enclosure has been cut for the FR-E7CN.

5.1 Precautions for cutting the enclosure

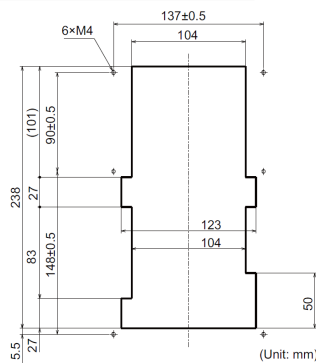
- (1) As the heat sink section that protrudes through the panel includes a cooling fan, this type of installation is not suitable for environments which expose the inverter to water droplets, oil mist, dust, etc.
- (2) Be careful not to drop screws, dust etc. into the inverter and cooling fan section.
- (3) There is 1 mm of space between the attachment and the inverter.
 (The inverter is not fully enclosed.)

5.2. When re-cutting the enclosure

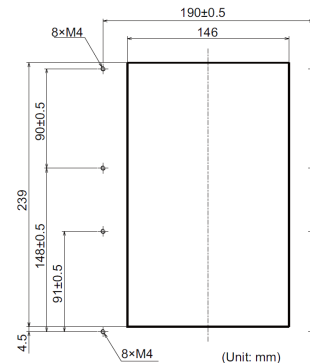
FR-E8CN01 (with side covers)



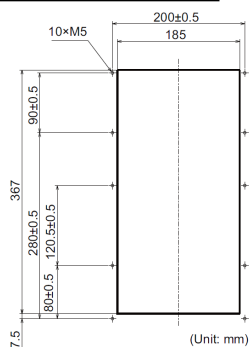
FR-E8CN01 (without side covers)



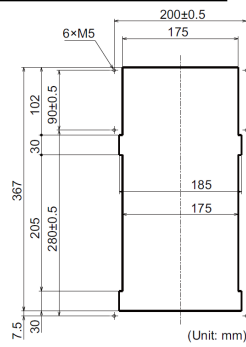
FR-E8CN02



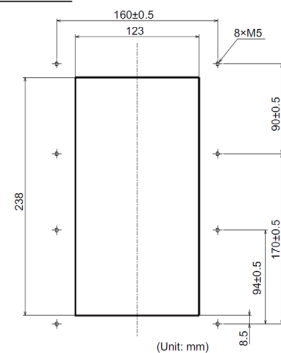
FR-E8CN03 (with side covers)



FR-E8CN03 (without side covers)

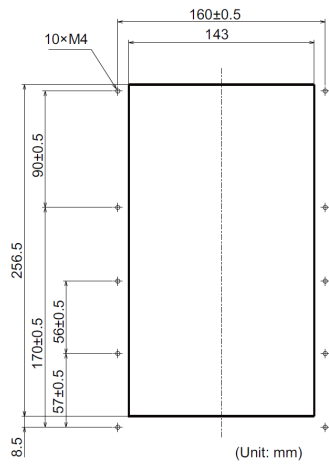


FR-E8CN04

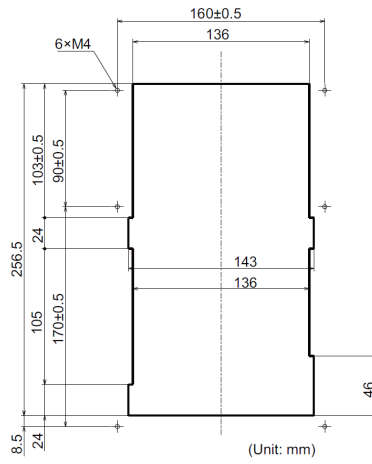


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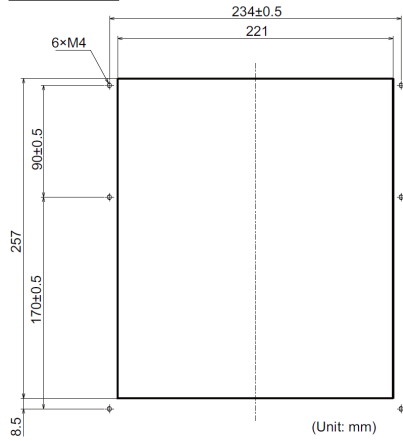
FR-E8CN05 (with side covers)



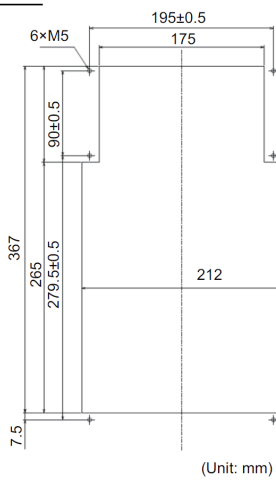
FR-E8CN05 (without side covers)



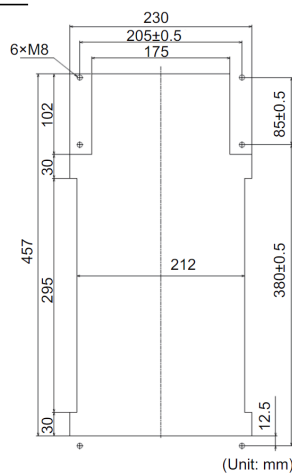
FR-E8CN06



E8CN07



E8CN08



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5.3 When the enclosure has been cut for the FR-E7CN

For the inverters shown in the following table, the enclosure used for the FR-E7CN can be used for the FR-E8CN (additional enclosure cutting is required depending on the inverter model). However, the enclosure cut for the FR-E700 series inverter cannot be used for the E8CN08 as the corresponding FR-E7CN model does not exist.

(1) Replacing the FR-E700 inverter with the FR-E800 inverter

Replacing model			Model to be replaced			Refer to
Attachment model		Inverter model	Attachment model		Inverter model	
	Side cover			Side cover		
FR-E8CN01	With	FR-E820-1.5K, 2.2K	FR-E7CN01	With	FR-E720-1.5K, 2.2K	—
		FR-E820S-1.5K			FR-E720S-0.75K, 1.5K	
	Without	FR-E820-1.5K, 2.2K		Without	FR-E720-1.5K, 2.2K	Figure (a)
		FR-E820S-1.5K			FR-E720S-0.75K, 1.5K	
FR-E8CN02		FR-E820-3.7K	FR-E7CN02	With	FR-E720-3.7K	—
			Without	Figure (b)		
		FR-E820S-2.2K	FR-E7CN04	With	FR-E720S-2.2K	Figure (c)
				Without		Figure (d)
FR-E8CN03	With	FR-E820-5.5K, 7.5K	FR-E7CN03	With	FR-E720-5.5K, 7.5K	—
	Without			Without		
FR-E8CN04		FR-E840-1.5K	FR-E7CN04	With	FR-E740-1.5K	Figure (e)
				Without		Figure (f)
FR-E8CN05	With	FR-E840-2.2K, 3.7K		With	FR-E740-2.2K, 3.7K	—
	Without			Without		Figure (g)
FR-E8CN06		FR-E840-5.5K, 7.5K	FR-E7CN05		FR-E740-5.5K, 7.5K	—
E8CN07 *1		FR-E820-11K, 15K	FR-E7CN06		FR-E720-11K, 15K	—
		FR-E840-11K, 15K			FR-E740-11K, 15K	
E8CN08 *1		FR-E820-18.5K, 22K	—		—	—
		FR-E840-18.5K, 22K			—	

—: Additional cutting is not required.

*1 Only CAD data is provided.

The attachment model is not a product model, but a model represented using a part of the download file name.

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(2) Additional enclosure cutting

Figure (a)
(Partial cutting)

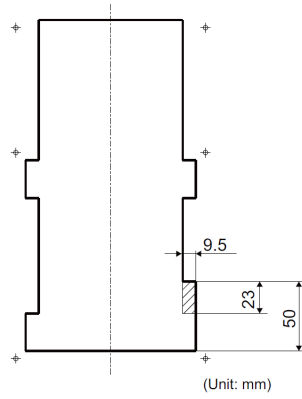


Figure (b)
(Tapping for two M4 screw holes)

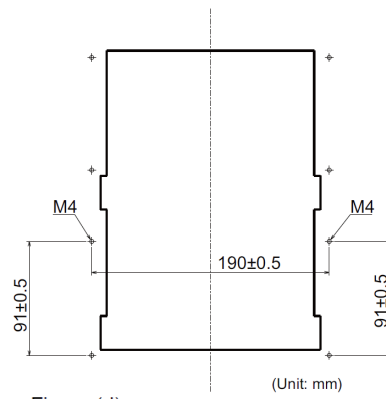


Figure (c)
(Partial cutting, tapping for eight M4 screw holes)

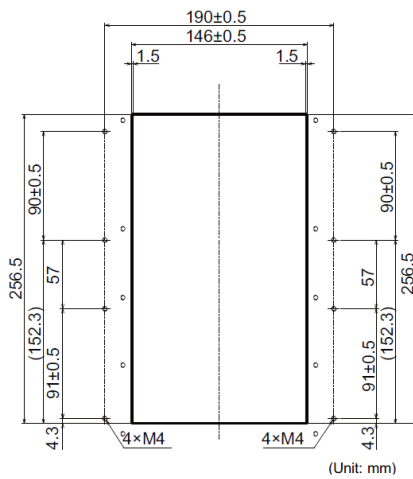


Figure (d)
(Partial cutting, tapping for eight M4 screw holes)

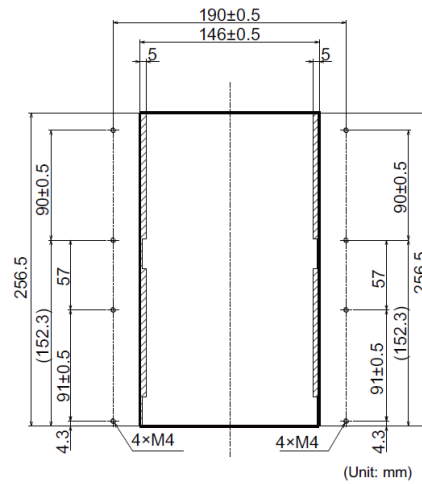


Figure (e)
(Tapping for two M4 screw holes)

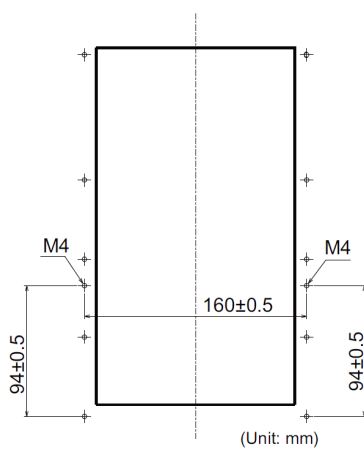
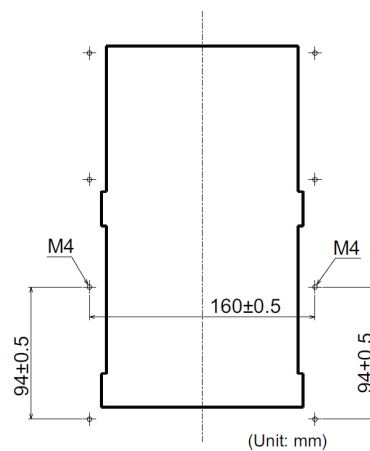
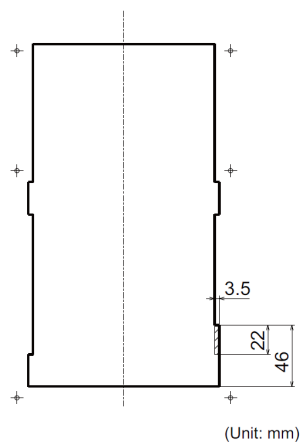


Figure (f)
(Tapping for two M4 screw holes)



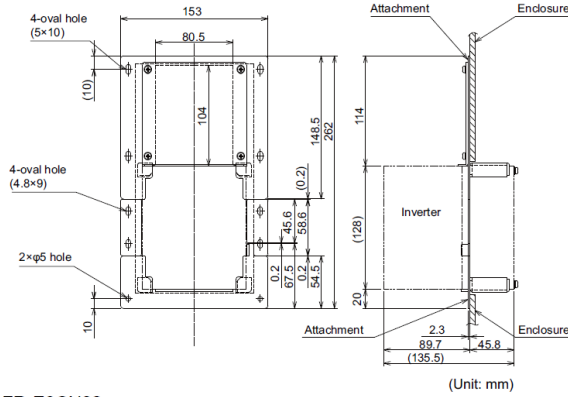
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Figure (g)
(Partial cutting)

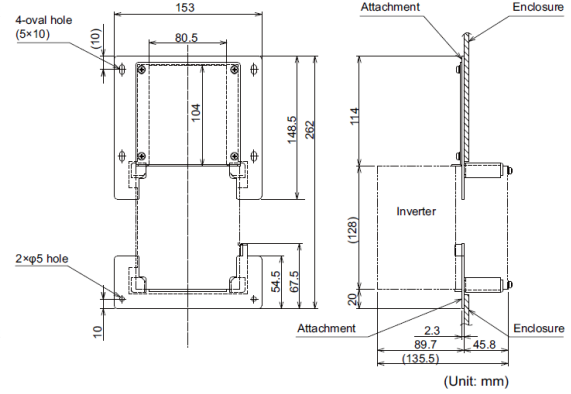


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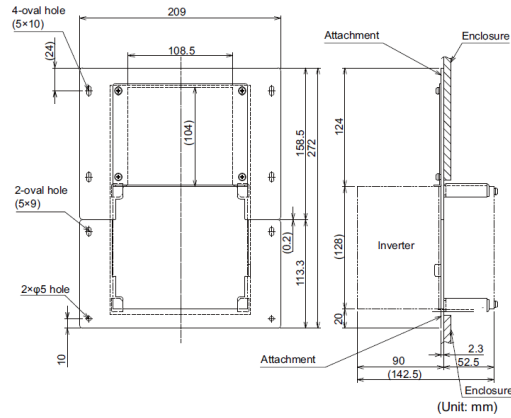
6. Outline dimensions
 (----- : enclosure cut lines)
 FR-E8CN01 (with side covers)



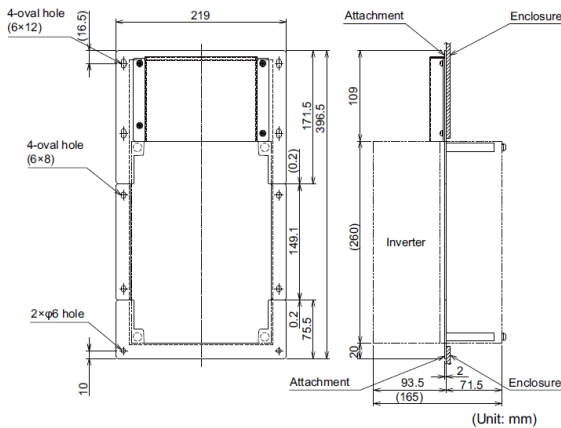
FR-E8CN01 (without side covers)



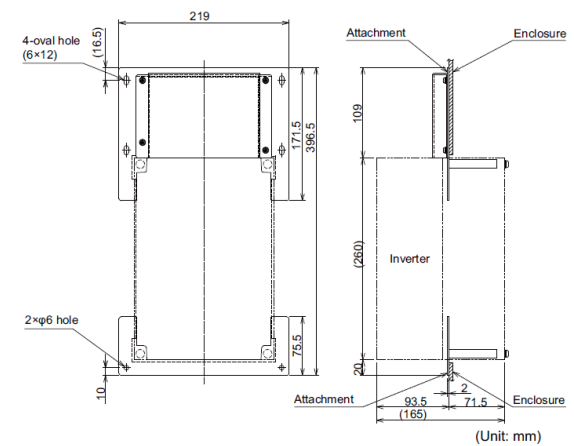
FR-E8CN02



FR-E8CN03 (with side covers)

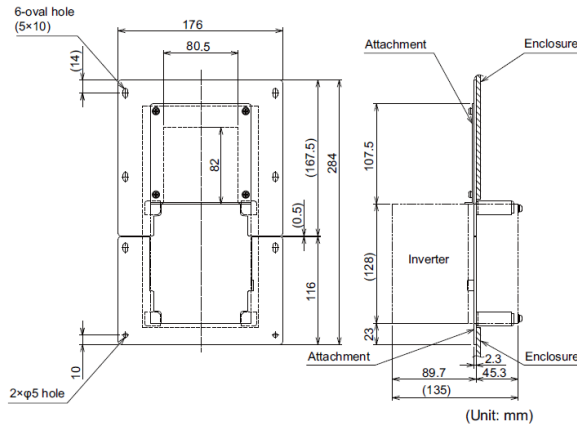


FR-E8CN03 (without side covers)

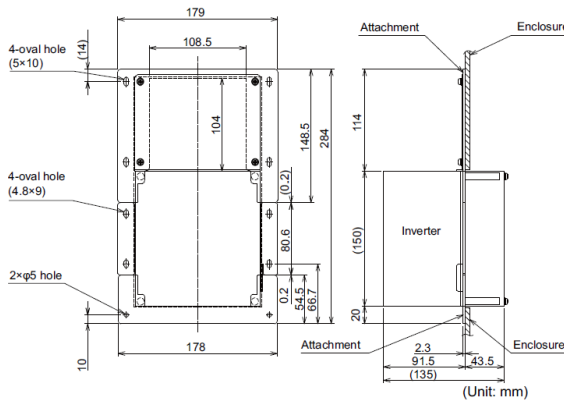


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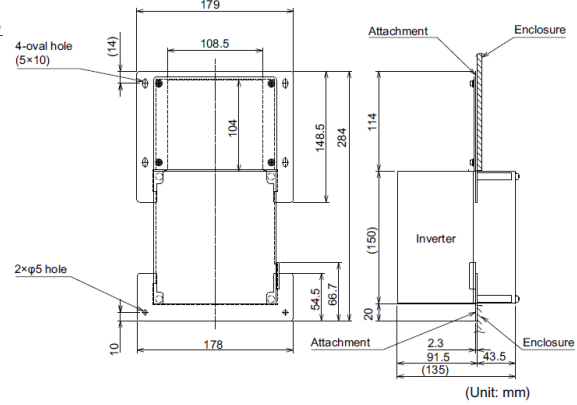
FR-E8CN04



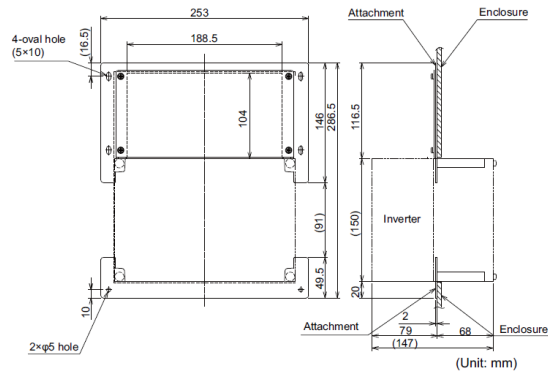
FR-E8CN05(with side covers)



FR-E8CN05 (without side covers)



FR-E8CN06

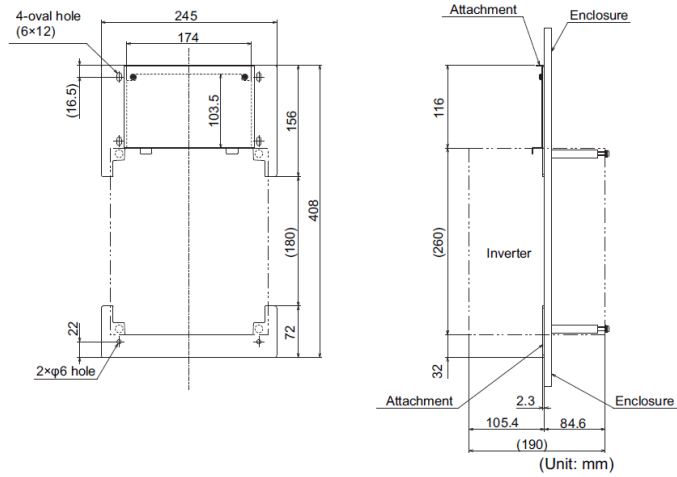


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