



**MITSUBISHI  
ELECTRIC**

# **FR-FSU** FLOOR STANDING UNIT INSTALLATION GUIDE

version A



## **Foreword**

FR-FSU option is designed to reduce FR-F740 inverter installation time, cost and space. FR-FSU option hides the DC choke, optional FN3359 EMC filter and most of all, allows large diameter mains and motor cable use.

There are two models of FSU, ordinary FR-FSU-..... with normal input terminals and FR-FSU-.....-RE... with MCCB.

The FSU family will be improved all the time and some changes to these data are possible. The installation guide is updated during process.

## **Contents**

### **1. Product check**

- 1.1 Visual check for transportation damages
- 1.2 Attached separate parts
- 1.3 Type check

### **2. Installation**

- 2.1 Installation place
- 2.2 Inverter preparation for FSU installation
- 2.3 Installation positions
- 2.4 Step 1, front cover and mounting plate removal
- 2.5 Step 2, DC choke installation and wiring
- 2.6 Step 3 (optional), FN3359 EMC filter installation and wiring
- 2.7 Step 4, inverter and FSU connection together
- 2.8 Step 5, mounting plate installation and wiring
- 2.9 Step 6, MCCB installation and wiring in FR-FSU-.....-RE... models
- 2.10 Step 7, complete package installation to final location
- 2.11 Step 8, mains and motor cable connection

### **3. List of separate parts**

- 3.1 Additional screws, nuts and spacers
- 3.2 (optional) FN3359 EMC filter connection cables
- 3.3 Cable inlet covers

### **4. Terminal sizes and maximum connectable cables**

## **1. Product check**

Generally if any part of the FSU is damaged or any attached part is lost during transportation, please contact Your sales representative.

### **1.1 Visual check for transportation damages**

Nevertheless the FSU body is made of thick steel, mechanical damages are possible. Front cover is thin plate and also the weakest part against external force.

### **1.2 Attached separate parts**

Please check that separate parts like screws, nuts, spacers, cables and cable inlet covers are not lost during transportation.

### **1.3 Type check**

After unpacking please verify that the FSU is correct for Your Mitsubishi inverter. You can find the type sticker on the top of the frame.



Type sticker

## **2. Installation**

### **2.1 Installation place**

FR-F740 inverter + FR-FSU are maintained to be installed in dry and clean place, practically in electrical room.

### **2.2 Inverter preparation for FSU installation**

Remove L bar from lower part of the inverter to allow the FSU installation.



### **2.3 Installation position**

Installation can be done in lying or standing position depending on tools to be used. If there is a crane for inverter lifting, standing position is preferred.

### **2.4 Step 1, front cover and mounting plate removal**

Front cover is installed with 6 screws. They don't need to be removed completely but loose enough. After screw loosening the cover can be slid upwards and pulled out. Mounting plate is installed with 6 or 8 screws and can be removed same way.



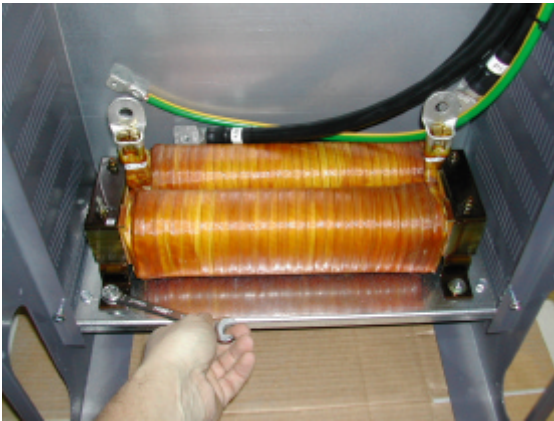
Front cover removal



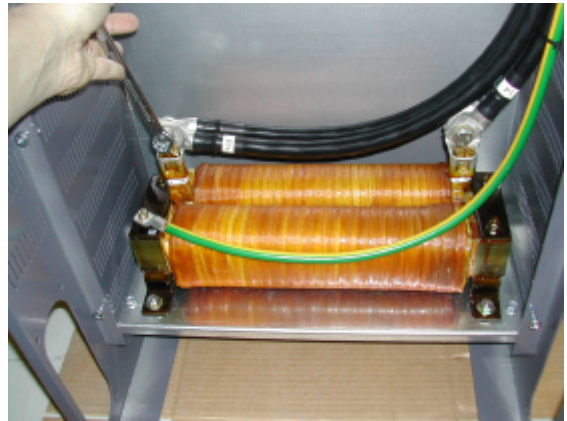
Mounting plate removal

## **2.5 Step 2, DC choke installation and wiring**

For DC choke there is a separate shelf installed in lying position. There are ready installed screws, spacers and nuts on the plate. Remove nuts and install DC choke using spacers. Connect DC choke cables with separate screws, spacers and nuts which are included. DC choke cables are marked with stickers and they are attached to FSU frame with cable bands.



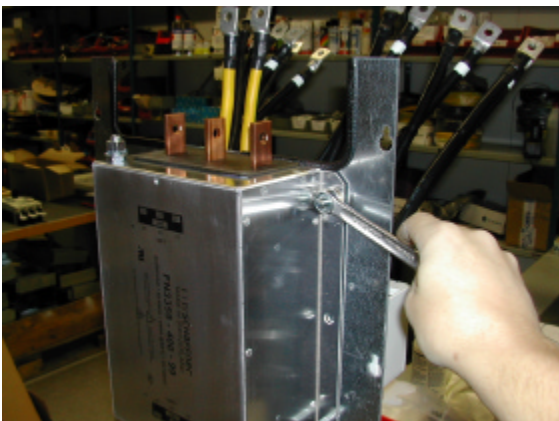
DC choke installation



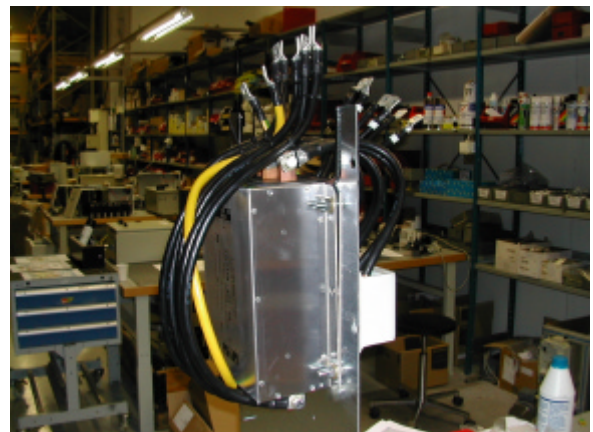
DC choke wiring

## **2.6 Step 3 (optional), FN3359 EMC filter installation and wiring**

If used, there are ready installed screws, spacers and nuts on the mounting plate for FN3359 installation. Remove nuts and install the EMC filter. Connect cables from supply terminals to EMC filter upper part. FN3359-400 and bigger filters need separate screws, spacers and nuts for cabling and they are included. Connect separate cables to EMC filter lower part. Later these cables are connected to inverter supply terminals. Try to separate EMC filter “line” and “load” side cables as much as possible to avoid noise coupling.



Optional FN3359 installation



Optional FN3359 wiring

## **2.7 Step 4, inverter and FSU connection together**

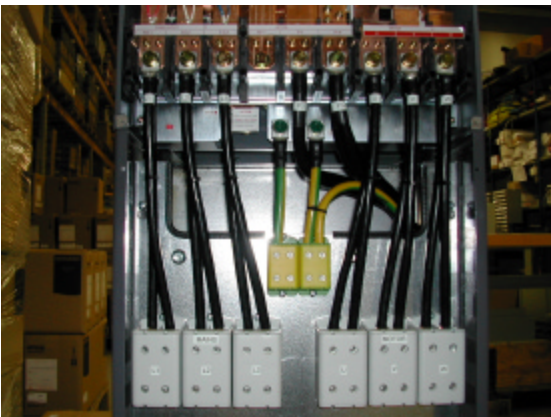
If You chose standing position for installation, lift the inverter on the FSU for example with a crane. Connect the inverter and FSU together with separate screws and spacers which are included.



Inverter and FSU connection together

## **2.8 Step 5, mounting plate installation and wiring**

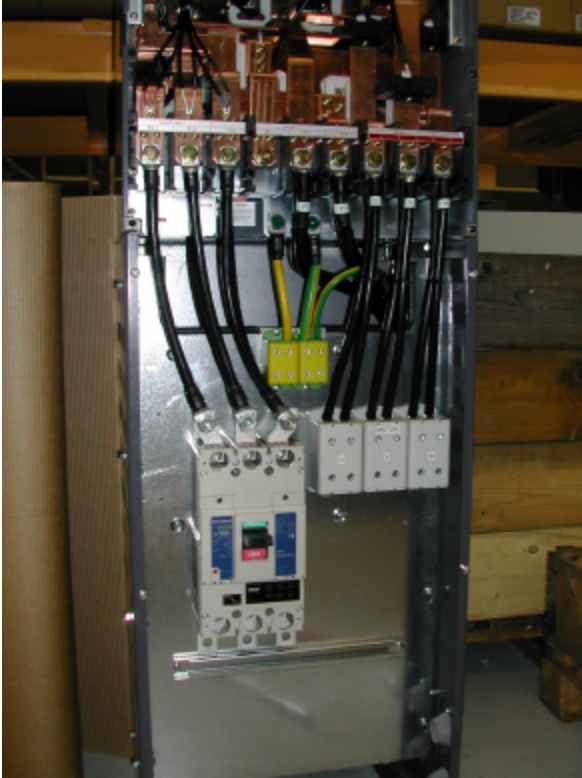
Install the mounting plate and tighten screws. Please see removal photo at step 1. Install supply, DC choke and motor cables to the inverter. Use inverter own screws for cabling. FR-F740-05470 and bigger inverters have already bus bar connections and not normal screw terminals. Cables are marked with stickers to avoid wrong connections.



FSU cabling

## **2.8 Step 6, MCCB installation and wiring in FR-FSU-.....-RE... models**

When -RE models is in question, the MCCB will be installed instead of input terminals. Mains cables will be attached directly to the MCCB. FSU front cover has a cut out for operating breaker handle.



MCCB installation and wiring

## **2.9 Step 6, complete package installation to final location**

Move the complete unit to final location. Inverter can be anchored on to the floor from lowest part of the FSU. Wall attachment will be done using inverter own upper mounting points. You can decide whether only wall or floor attachment is enough but using both is recommended.



Complete unit mounting to floor



Complete unit mounting to wall

## 2.10 Step 7, mains and motor cable connection

Mains and motor cables can be routed in the FSU from below or through side walls. Side wall installation needs cable inlets. You may use included metal plates after punching suitable holes for cable conduits or ready existing glands from market. Cables can be fixed with U clips to C bar which is located at the lower part of mounting plate.



Cable inlet plates

## 3. List of separate parts

### 3.1 Additional screws, nuts and spacers

FR-FSU delivery consist additional screws if they are needed. From following table can be found attached screws, spacers and nuts according to FSU type.

ADDITIONAL SCREWS, NUTS AND SPACERS	QTY/TYPE	FR-FSU-01800	FR-FSU-02600	FR-FSU-03610	FR-FSU-04810	FR-FSU-06830	FR-FSU-08660	FR-FSU-12120
DC-CHOKE WIRING	SCREWS	2 pcs M10/30	2 pcs M10/30	2 pcs M10/30	2 pcs M12/30	4 pcs M12/30	4 pcs M12/30	8 pcs M12/30
	NUTS	2 pcs M10	2 pcs M10	2 pcs M10	2 pcs M12	4 pcs M12	4 pcs M12	8 pcs M12
	SPACERS	4 pcs M10	4 pcs M10	4 pcs M10	4 pcs M12	8 pcs M12	8 pcs M12	16 pcs M12
INVERTER MOUNTING TO FSU	SCREWS	4 pcs M10/30 *	4 pcs M10/30 *	5 pcs M10/30 *	6 pcs M10/30 *	8 pcs M10/30 *	8 pcs M10/30 *	10 pcs M10/30 *
	NUTS	-	-	-	-	-	-	-
	SPACERS	-	-	-	-	-	-	-
CABLE INLET COVERS	SCREWS	8 pcs M8/20 *	8 pcs M8/20 *	8 pcs M8/20 *	8 pcs M8/20 *	8 pcs M8/20 *	8 pcs M8/20 *	16 pcs M8/20 *
	NUTS	-	-	-	-	-	-	-
	SPACERS	-	-	-	-	-	-	-
FN3359 EMC FILTER WIRING	SCREWS	-	6 pcs M10/30	6 pcs M10/30	6 pcs M10/30	6 pcs M10/30	6 pcs M10/30	-
	NUTS	-	6 pcs M10	6 pcs M10	6 pcs M10	6 pcs M10	6 pcs M10	-
	SPACERS	-	12 pcs M10	12 pcs M10	12 pcs M10	12 pcs M10	12 pcs M10	-

\* WÜLOCK TYPE SCREWS



### **3.2 (optional) FN3359 EMC filter connection cables**

Though FR-F740 has an inbuilt EMC filter, additional Schaffner FN3359 filter can be installed inside the FSU. For this purpose additional cables are included to delivery. Cables are marked with stickers.

### **3.3 Cable inlet covers**

Cable through holes are located in both sidewalls of FSU. These holes can be covered with included metal plates if cables come from other direction. These metal plates can also be used as cable inlets after punching suitable holes and installing rubber conduits into them.

## **4. Terminal sizes and maximum connectable cables**

FSU input and output terminals are large to allow use of all kind of cables. If mains cables are protected only with a fuse, it leads automatically to large diameter cables. Also when cables are long and voltage drop is a problem, large cables are in question. Select cables according to country laws and restrictions.

<b>FSU TYPE</b>	<b>MAINS AND MOTOR TERMINALS</b>	<b>GROUNDING TERMINALS</b>
<b>FR-FSU-01800</b>	35-240mm <sup>2</sup> Cu/Al	35-150mm <sup>2</sup> Cu/Al
<b>FR-FSU-02600</b>	35-240mm <sup>2</sup> Cu/Al	35-150mm <sup>2</sup> Cu/Al
<b>FR-FSU-03610</b>	2 x 35-240mm <sup>2</sup> Cu/Al	2 x 16-95mm <sup>2</sup> Cu/Al
<b>FR-FSU-04810</b>	2 x 35-240mm <sup>2</sup> Cu/Al	2 x 16-95mm <sup>2</sup> Cu/Al
<b>FR-FSU-06830</b>	2 x 35-240mm <sup>2</sup> Cu/Al	2 x 35-150mm <sup>2</sup> Cu/Al
<b>FR-FSU-08660</b>	2 x 300mm <sup>2</sup> Cu/Al	2 x 35-150mm <sup>2</sup> Cu/Al
<b>FR-FSU-12120</b>	inverter own bus bars	inverter own grounding