9. Compliance with Standards

9-1 Compliance with UL/cUL Standards

9-1-1 Overview

The UL standard is an abbreviation for Underwriters Laboratories Inc. and is a safety standard for preventing fires and other accidents, and protecting users, servicemen, and general people in the United States.
The cUL standard is a standard which the UL constituted to meet the CSA standard. Products approved by the cUL standard are as valid as produces approved by the CSA standard.

9-1-2 Notes

See the notes on page 0-7 when you use inverters as UL/cUL approved products.

9-2 Compliance with European Standard

The CE marking presented on Fuji products is related to the Council Directive 89/336/EEC and the Low Voltage Directive 73/23/EEC for the Electromagnetic Compatibility (EMC) in Europe.

Compliant standards - EN 61800 - 3: 1997
- EN 50178: 1997

Only the models in the 400V series comply with the standards above among the "FRENIC5000 VG7S" series. The 200V series do not conform to the standards. Please note that products of the CT/HT use 18.5 kW and the VT use 22 kW do not comply with the standards, and if you need to use compliant products, you should use the products of the CT/HT use 22 kW and the VT use 30 kW which are models with larger capacities by one grade.

9-3 Compliance with Low Voltage Directive

9-3-1 Overview

Inverters are subject to the Low Voltage Directive in Europe. Fuji has obtained an approval for the compliance from a European inspection organization, and voluntarily declares the compliance with the Low Voltage Directive.

9-3-2 Notes

See the notes on page 0-12 when you use inverters as products compliant to the Low Voltage Directive in Europe.

9-4 Compliance with EMC Standard

9-4-1 Overview

This CE marking does not certify that the entire machine to which you apply Fuji product complies with the EMC Directive. Thus presenting the CE marking for the entire machine will be up to the responsibility of a machine manufacturer. The reason is that the CE marking of Fuji product assumes the product is used under a certain condition. Using the product under the condition is up to the machine manufacturer.
In general, various products in addition to Fuji product are used in a machine. Thus the machine manufacturer should take care of the entire machine.
As the certain condition described above, you should combine the RFI filter recommended in this appendix with Fuji "FRENIC5000VG7S" series, store them in a metal control panel, and install them following this appendix.

9-4-2 RFI Filter

The Table 9-1 shows RFI filter types recommended by Fuji and applicable inverters. These filters have been developed for the Fuji inverters, and are structured such that an inverter is installed on the side of the filter.

9-4-3 Recommended Installation

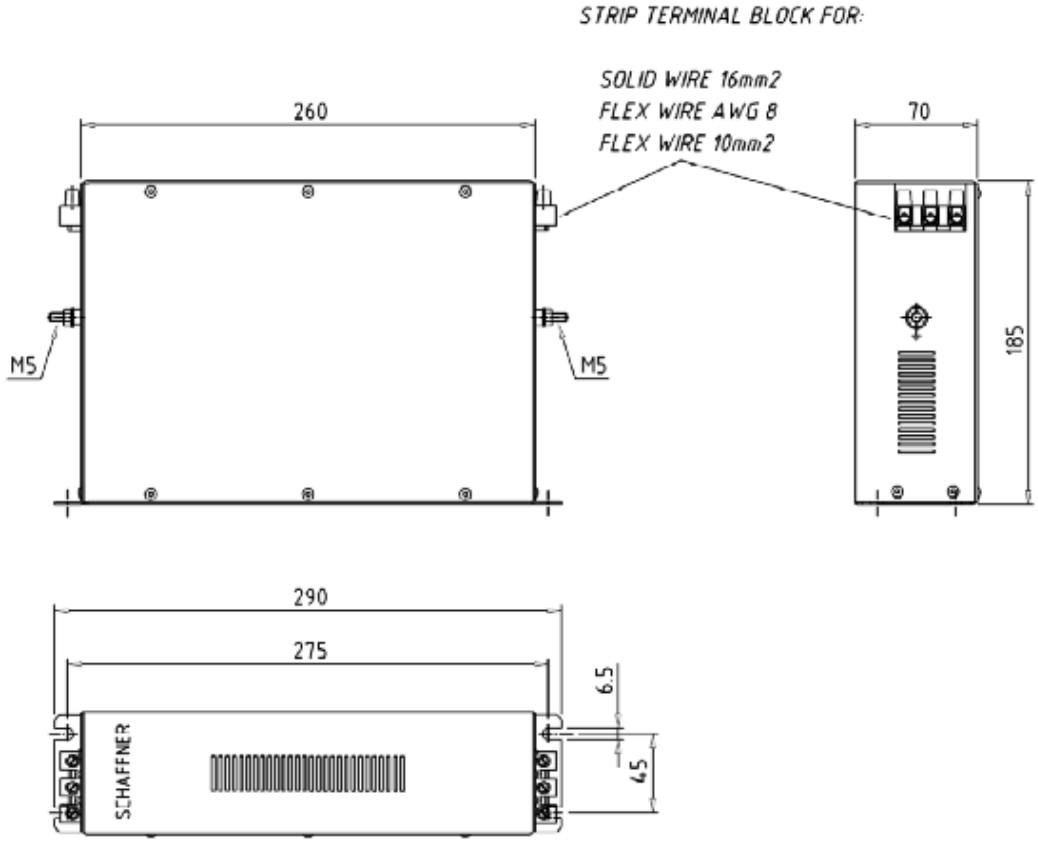
Let your electrical engineer follow the steps below to wire your inverter, filter and motor. To comply with the EMC directive, you must follow as close to these steps as possible.

1) First, check if your filter's rated current, voltage, and type are correct.
2) Make holes according to the installation position of the filter on the control panel. To reduce the contact resistance between the filter and the control panel, remove paint around the installation holes to make the metal surface in contact with the installation surface of the filter sufficiently.
3) Connect the input power supply to the input terminal (LINE) and the earth line to the earth stud of the filter. Then, use a wire as short as possible to connect the output terminal (LOAD) of the filter to the power supply input terminal of your inverter.

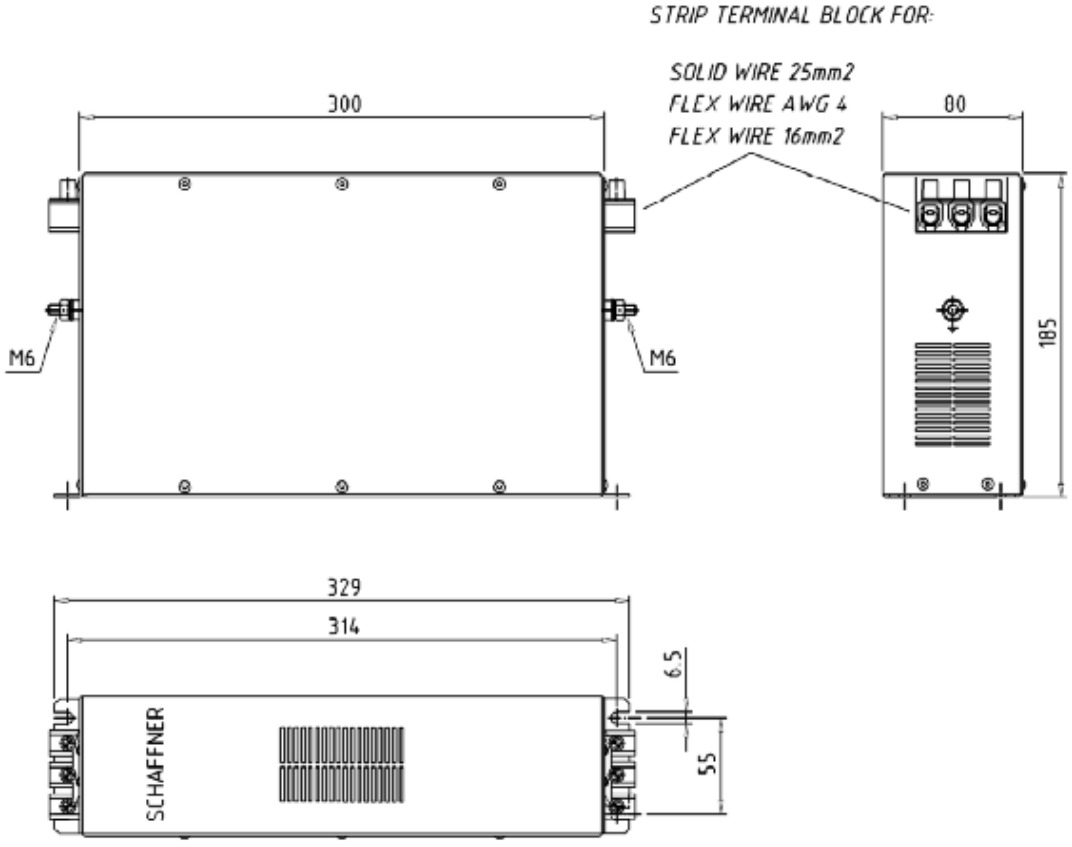
4) Use shield wires to connect the output lines to the motor. Use as short wires as possible.
   Connect the earth to the earth terminals on both the motor and the inverter.
   Electrically connect the shield wires such that the shield of the shield wires completely fills the periphery of the holes at the entrance to the control panel.
5) If a ferrite ring is provided, make sure the wire pass through the ferrite ring. Wiring depends on the type of your inverter, and follow the Figure 9-8, 9-9, or 9-10 to wire.
6) Use a shield wire to wire to the control terminals on your inverter. Make sure that the shield of the shield wire is connected to earth. Use as short wires as possible for all places. Separate the wiring from the power supply to the filter and that from the inverter to the motor as far as possible.

Table 9-1 RFI Filter Dimension List

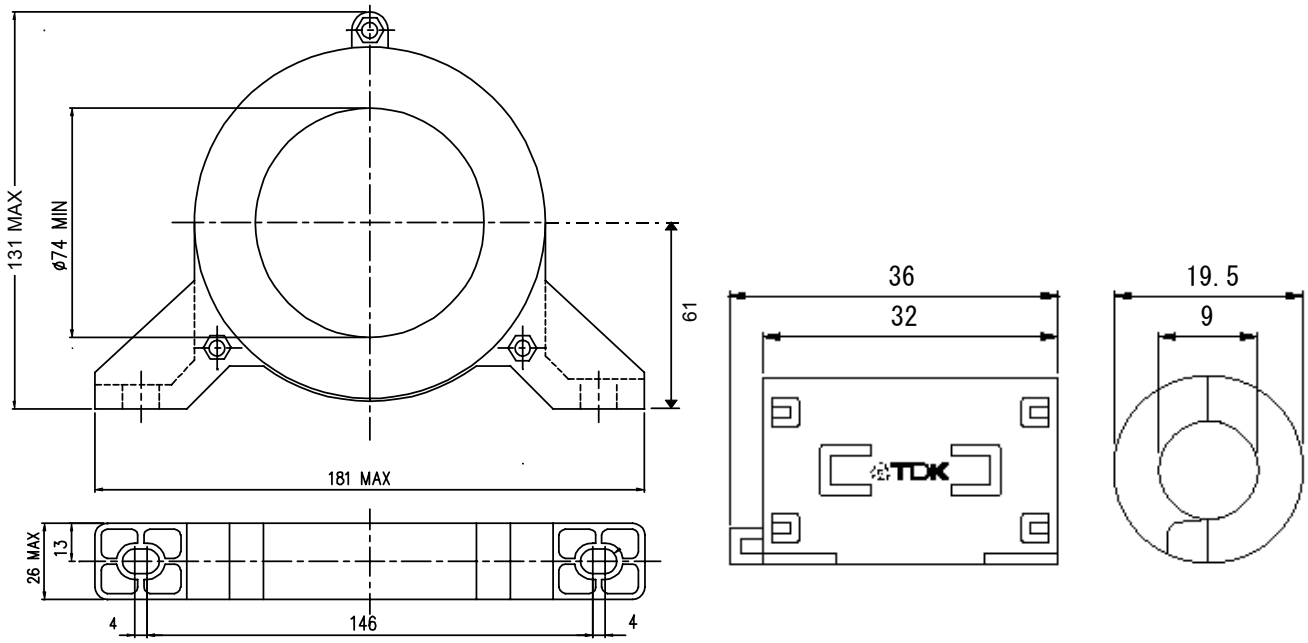
Filter type	Applicable inverter type	Rated current	Maximum rating	External dimension L,W,H[mm]	Installation dimension Y,X[mm]	Filter installation	Ferrite ring (number)			Figure
							Main circuit cable	Control terminal cable	Communi-cation cable	
FS5941-40-47	FRN3.7VG7S-4(CT/HT/VT) FRN5.5VG7S-4(CT/HT/VT) FRN7.5VG7S-4(CT/HT/VT)	40A	Three-phase 480VAC	290x70 x185	275x45	M6(4)	-	-	-	9-1
FS5941-60-52	FRN11VG7S-4(CT/HT/VT) FRN15VG7S-4(CT/HT/VT)	60A		329x80 x185	314x55	M6(4)	ACL-74B (1)	ZCAT2032-0930 (2)	ZCAT2032-0930 (2)	9-2 9-3
FS5941-86-52	FRN22VG7S-4(CT/HT/VT)	86A					-	-	-	9-2
RF3100-F11	FRN30VG7S-4(CT/HT)	100A		435x200 x130	408x166	M6(4)	-	-	-	9-4
RF3180-F11	FRN30VG7S-4(VT) FRN37VG7S-4(CT/HT/VT) FRN45VG7S-4(CT/HT/VT) FRN55VG7S-4(CT/HT/VT) FRN75VG7S-4(CT/VT) FRN90VG7S-4(CT)	180A		495x200 x160	468x166	M6(4)	-	-	-	
RF3280-F11	FRN90VG7S-4(VT) FRN110VG7S-4(CT/VT) FRN132VG7S-4(CT)	280A		250x587 x205	560x85	M6(6)	-	-	-	9-5
RF3400-F11	FRN132VG7S-4(VT) FRN160VG7S-4(CT/VT) FRN200VG7S-4(CT/VT) FRN220VG7S-4(CT)	400A		250x587 x205	560x85	M6(6)	-	-	-	
RF3880-F11	FRN220VG7S-4(VT) FRN280VG7S-4(CT/VT) FRN315VG7S-4(CT/VT) FRN355VG7S-4(CT/VT) FRN400VG7S-4(CT/VT)	880A		688x364 x180	648x150	M6(6)	-	-	-	9-6
							F200160 (3)	-	-	9-6 9-7



(FS5941-40-47)
Figure 9-1

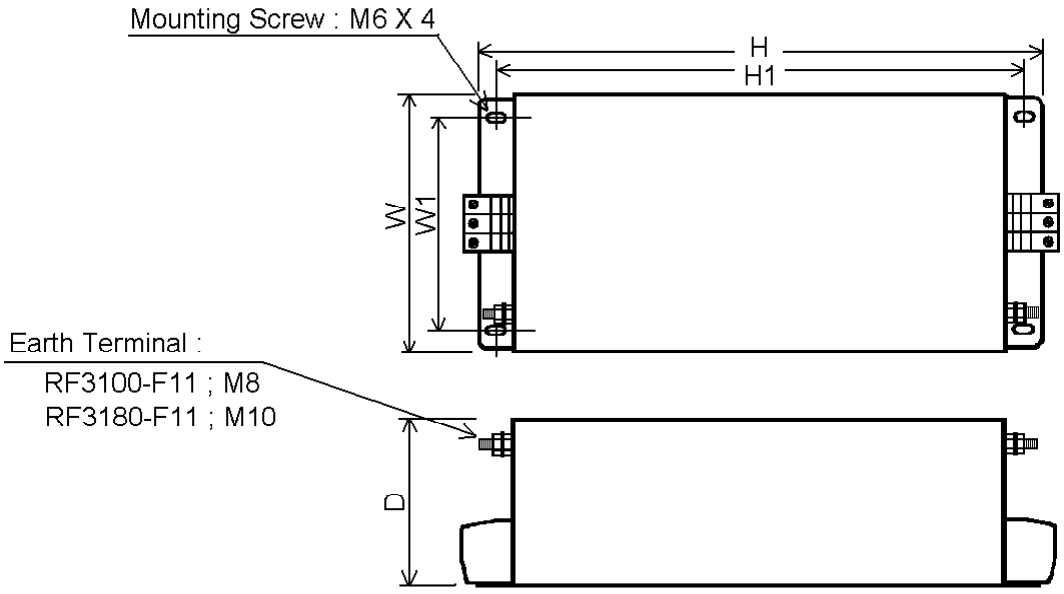


(FS5941-60-52,FS5941-86-52)
Figure 9-2



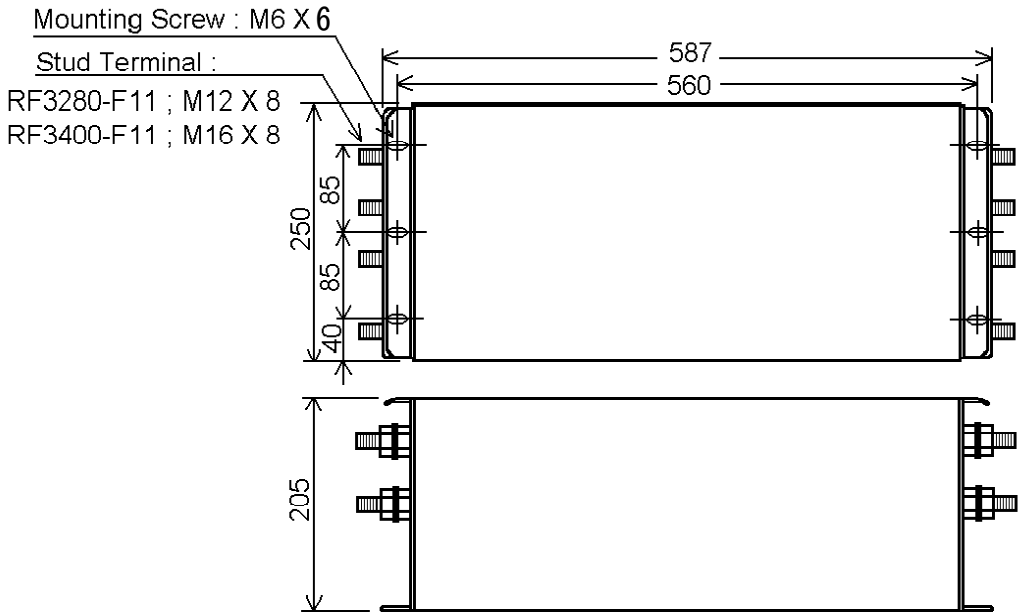
(ACL-74B) (ZCAT2032-0930)

Figure 9-3



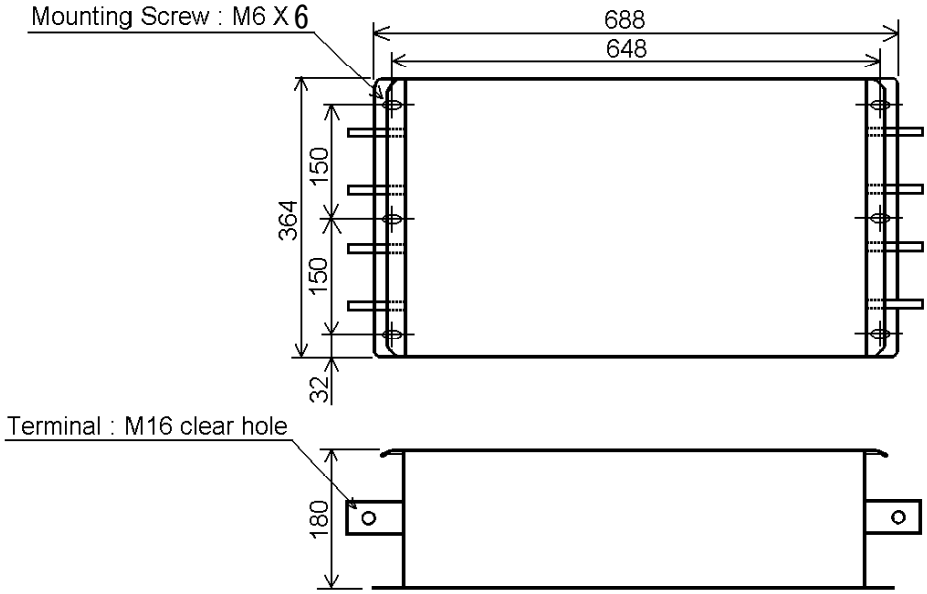
Filter type	Dimension [mm]				
	W	W1	H	H1	D
RF3100-F11	200	166	435	408	130
RF3180-F11	200	166	495	468	160

(RF3100-F11, RF3180-F11)
Figure 9-4



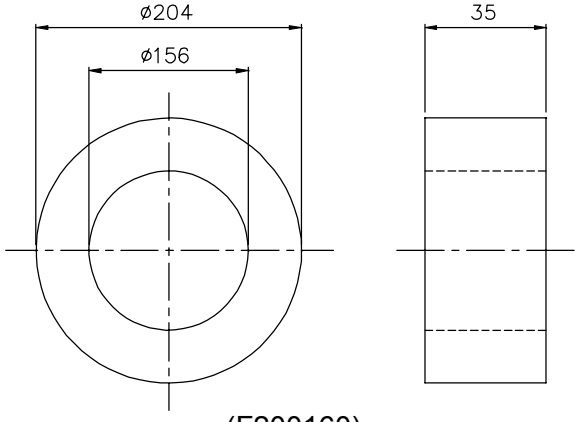
(RF3280-F11, RF3400-F11)

Figure 9-5



(RF3880-F11)

Figure 9-6



(F200160)

Figure 9-7

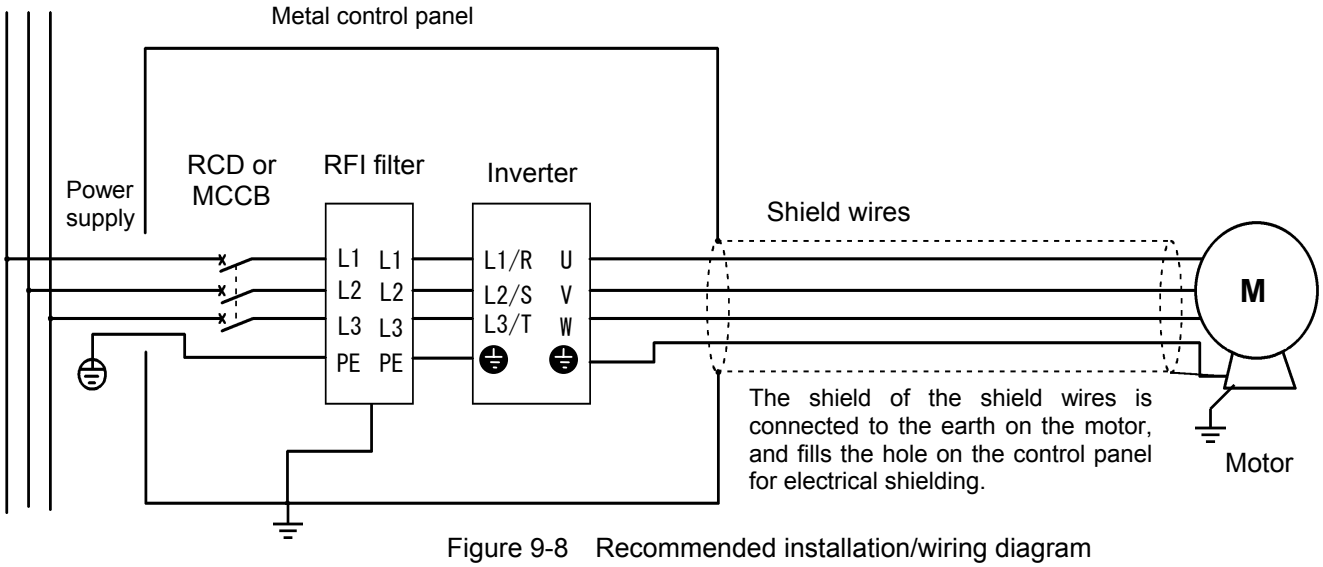


Figure 9-8 Recommended installation/wiring diagram
- For FRN3.7VG7S-4 to FRN7.5VG7S-4, FRN22VG7S-4 to FRN220VG7S-4

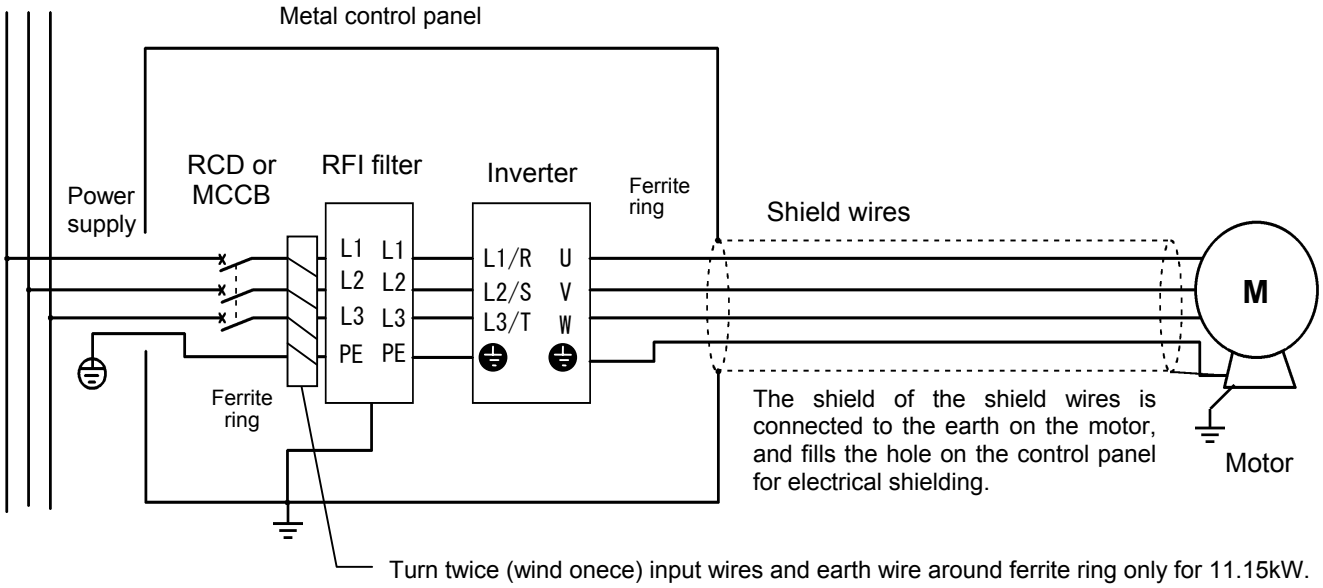


Figure 9-9 Recommended installation/wiring diagram
- For FRN11VG7S-4 to FRN15VG7S-4

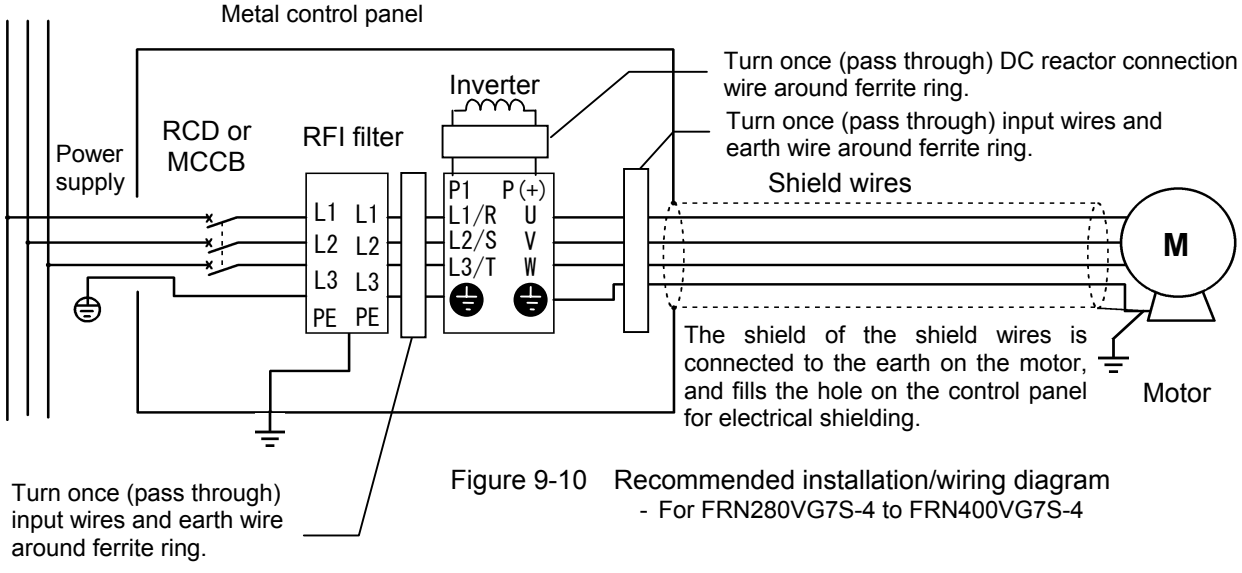


Figure 9-10 Recommended installation/wiring diagram
- For FRN280VG7S-4 to FRN400VG7S-4

- MEMO -

- MEMO -

- MEMO -