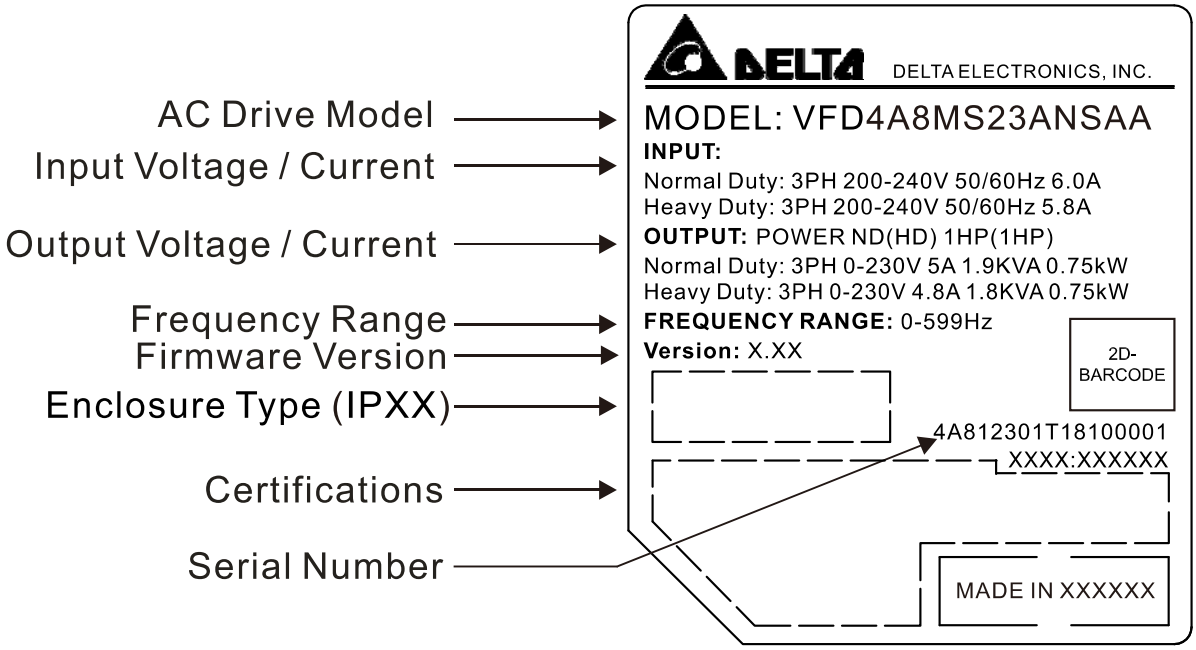
Chapter 1 Introduction

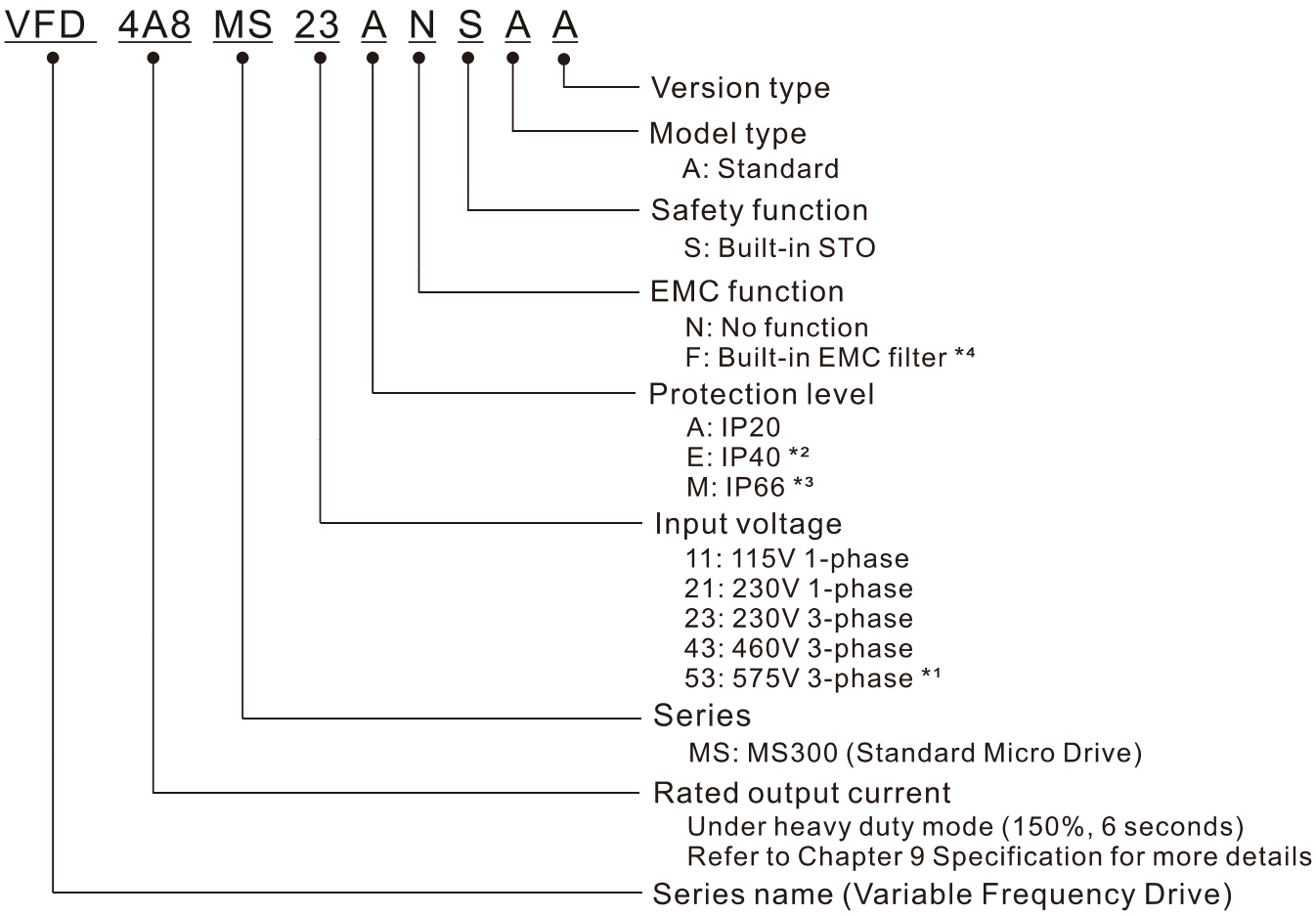
After receiving the AC motor drive, check for the following:

1. Inspect the unit after unpacking to ensure that it was not damaged during shipment. Make sure that the part number printed on the package matches the part number indicated on the nameplate.
2. Make sure that the mains voltage is within the range indicated on the nameplate. Install the AC motor drive according to the instructions in this manual.
3. Before applying power, make sure that all devices, including mains power, motor, control board and digital keypad, are connected correctly.
4. When wiring the AC motor drive, make sure that the wiring of input terminals “R/L1, S/L2, T/L3” and output terminals “U/T1, V/T2, W/T3” are correct to prevent damage to the drive.
5. When power is applied, use the digital keypad (KPMS-LE01) to select the language and set parameters. When executing a trial run, begin with a low speed and then gradually increase the speed to the desired speed.

1-1 Nameplate Information



1-2 Model Name



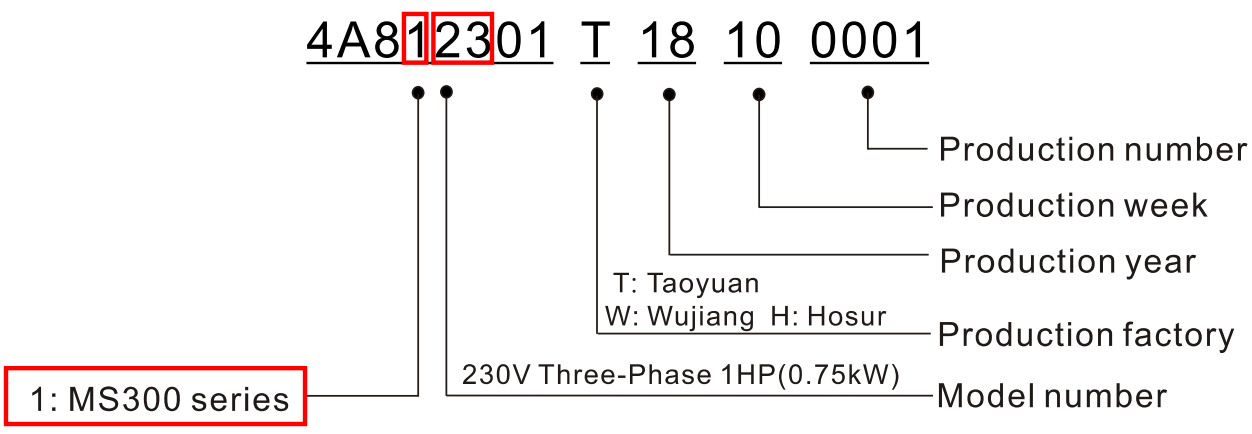
*1. For IP20 models only.

*2. Not applicable for models of 575V input voltage.

*3. Not applicable for models of 115V and 575V input voltage.

*4. For 230V input voltage (one-phase) and 460V input voltage (three-phase) models only.

1-3 Serial Number

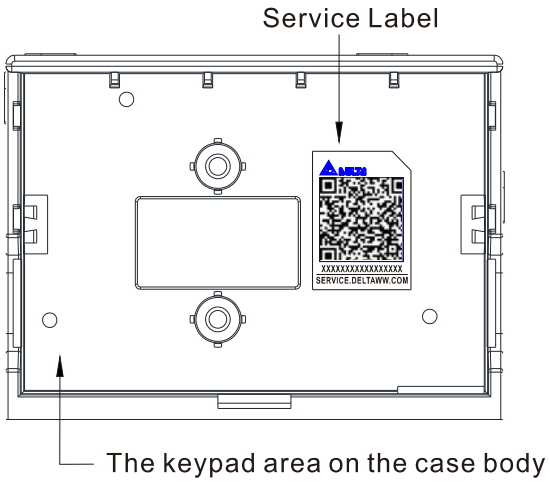


1-4 Apply After Service by Mobile Device

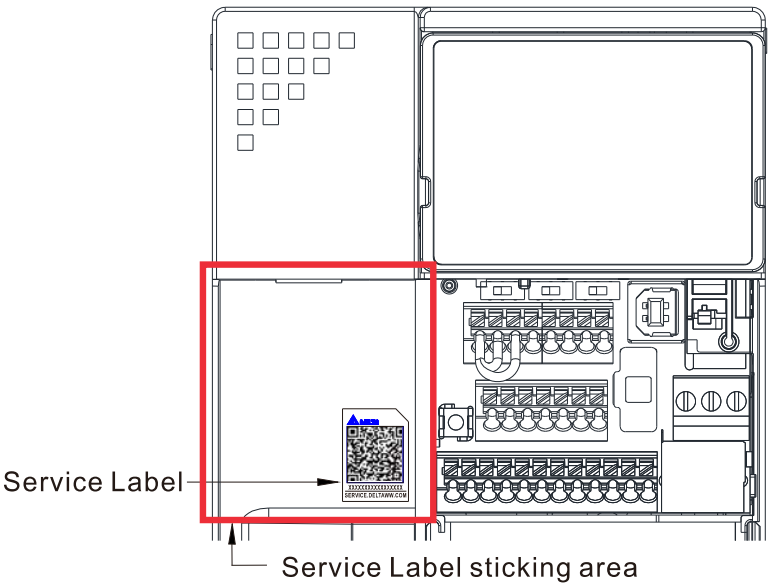
1-4-1 Location of Service Link Label

Service link label (Service Label) is pasted on the area as the drawing below shows.

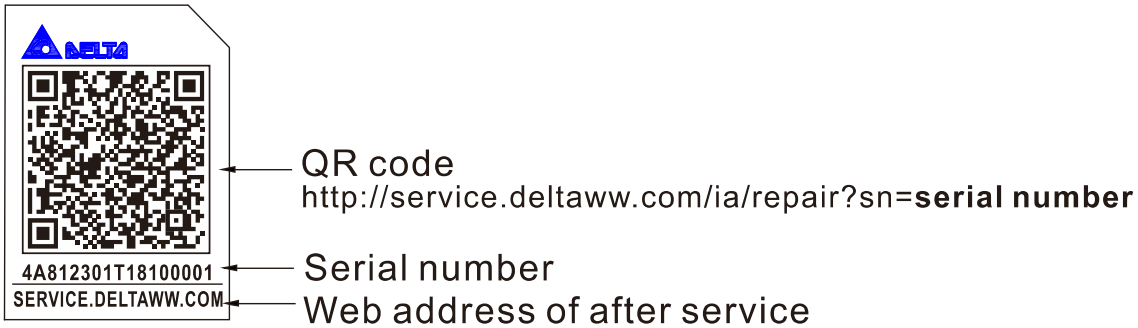
Frame A, B



Frame C–F



1-4-2 Service Link Label



Scan QR Code to request service

1. Find the QR code sticker (as shown above).
2. Use a smartphone to run a QR Code reader APP.
3. Point your camera at the QR Code. Hold your camera steady until the QR code comes into focus.
4. Access the Delta After Service website.
5. Fill your information into the column marked with an orange star.
6. Enter the CAPTCHA and click “Submit” to complete the application.

Cannot find the QR Code?

1. Open a web browser on your computer or smartphone.
2. Enter https://service.deltaww.com/ia/repair in browser address bar and press the Enter key.
3. Fill your information into the columns marked with an orange star.
4. Enter the CAPTCHA and click “Submit” to complete the application.

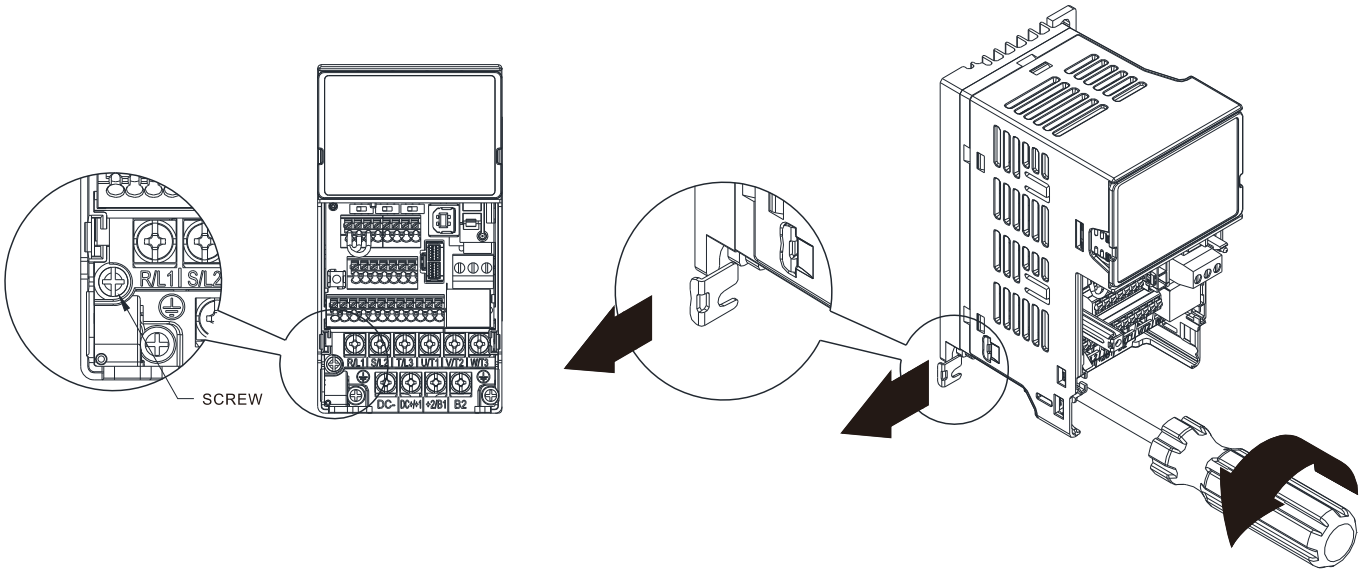
1-5 RFI Jumper

1 The drive contains Varistors / MOVs that are connected from phase to phase and from phase to ground to prevent the drive from unexpected stop or damage caused by mains surges or voltage spikes. Because the Varistors / MOVs from phase to ground are connected to ground with the RFI jumper, removing the RFI jumper disables the protection.

2 In models with a built-in EMC filter, the RFI jumper connects the filer capacitors to ground to form a return path for high frequency noise in order to isolate the noise from contaminating the mains power. Removing the RFI jumper strongly reduces the effect of the built-in EMC filter. Although a single drive complies with the international standards for leakage current, an installation with several drives with built-in EMC filters can trigger the RCD. Removing the RFI jumper helps, but the EMC performance of each drive is no longer guaranteed.

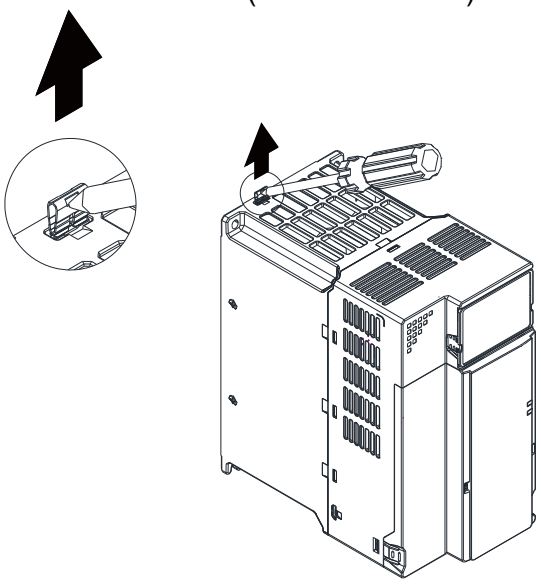
Frame A–F Screw Torque: 4–6 kg-cm / [3.5–5.2 lb-in.] / [0.39–0.59 Nm]

Loosen the screw and remove the RFI jumper (as shown below).
Tighten the screw again after you remove the RFI jumper.



Frame B–F (model with built-in EMC filter)

Remove the RFI jumper with a slotted screwdriver (as shown below).

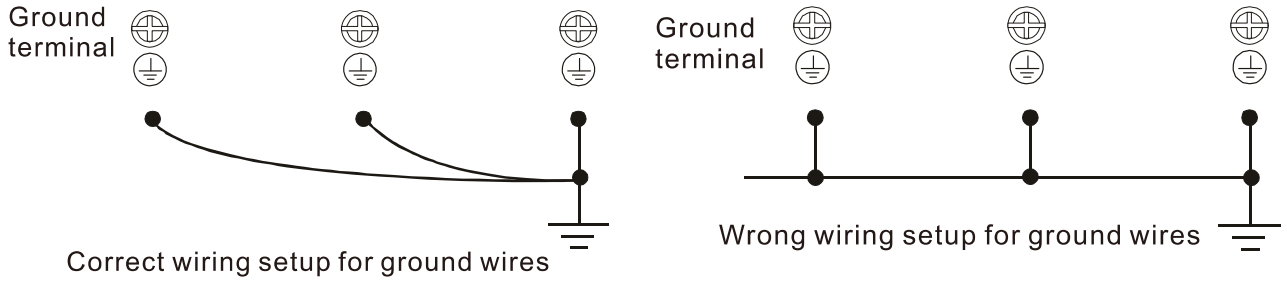


Isolating main power from ground:

When the power distribution system for the drive is a floating ground system (IT Systems) or an asymmetric ground system (Corner Grounded TN Systems), you must remove the RFI jumper. Removing the RFI jumper disconnects the internal capacitors from ground to avoid damaging the internal circuits and to reduce the ground leakage current.

Important points regarding ground connection

- ☑ To ensure the safety of personnel, proper operation, and to reduce electromagnetic radiation, you must properly ground the motor and drive during installation.
- ☑ The diameter of the grounding cables must comply with the local safety regulations.
- ☑ You must connect the shielded cable to the motor drive's ground to meet safety regulations.
- ☑ Only use the shielded cable as the ground for equipment when the aforementioned points are met.
- ☑ When installing multiple drives, do not connect the grounds of the drives in series but connect each drive to ground. The following pictures show the correct and wrong ways to connect the grounds.



Pay particular attention to the following points:

- ☑ Do not remove the RFI jumper while the power is on.
- ☑ Removing the RFI jumper also cuts the capacitor conductivity of the surge absorber to ground and the built-in EMC filter capacitors. Compliance with the EMC specifications is no longer guaranteed.
- ☑ Do not remove the RFI jumper if the mains power is a symmetrical grounded power system in order to maintain the efficiency for EMC circuit.
- ☑ Remove the RFI jumper when conducting high voltage tests. When conducting a high voltage test to the entire facility, disconnect the mains power and the motor if the leakage current is too high.

Floating Ground System (IT Systems)

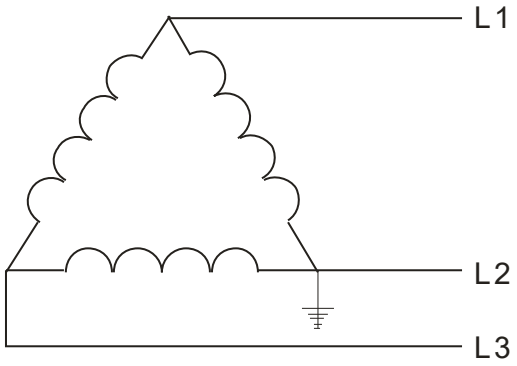
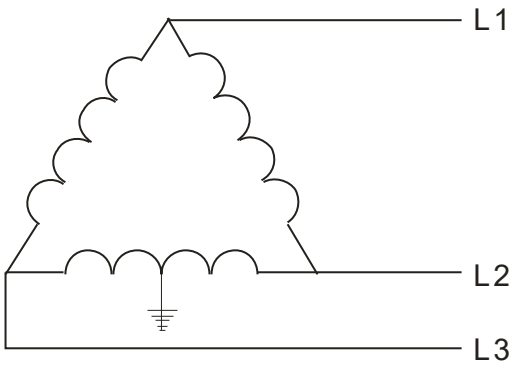
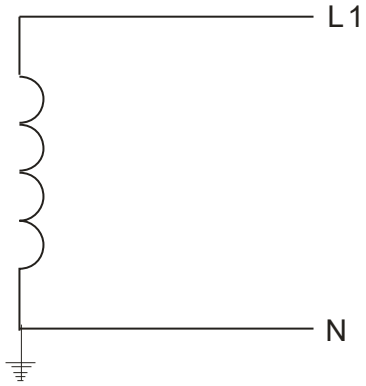
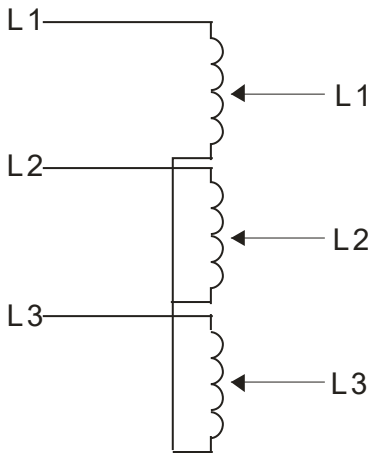
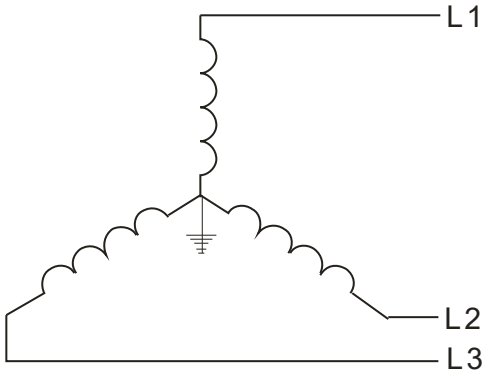
A floating ground system is also called an IT system, an ungrounded system, or a high impedance/ resistance (greater than 30 Ω) grounded system.

- ☑ Remove the RFI jumper to disconnect the ground cable from the internal filter capacitor and surge absorber.
- ☑ Do not install an external RFI/EMC filter. The external EMC filter passes through a filter capacitor and connects power input to the ground. This is very dangerous and damages the motor drive.
- ☑ In situations where EMC is required, use an EMC filter specifically for IT system if necessary. Disconnecting the ground cable from the filter prevents damage to the motor drive but compliance with EMC is no longer guaranteed.
- ☑ In situations where EMC is required, check for excess electromagnetic radiation affecting nearby low-voltage circuits. In some situations, the adapter and cable naturally provide enough suppression. If in doubt, install an extra electrostatic shielded cable on the power supply side between the main circuit and the control terminals to increase shielding.

Asymmetric Ground System (Corner Grounded TN Systems)

Caution: Do not remove the RFI jumper while power to the input terminal of the drive is ON.

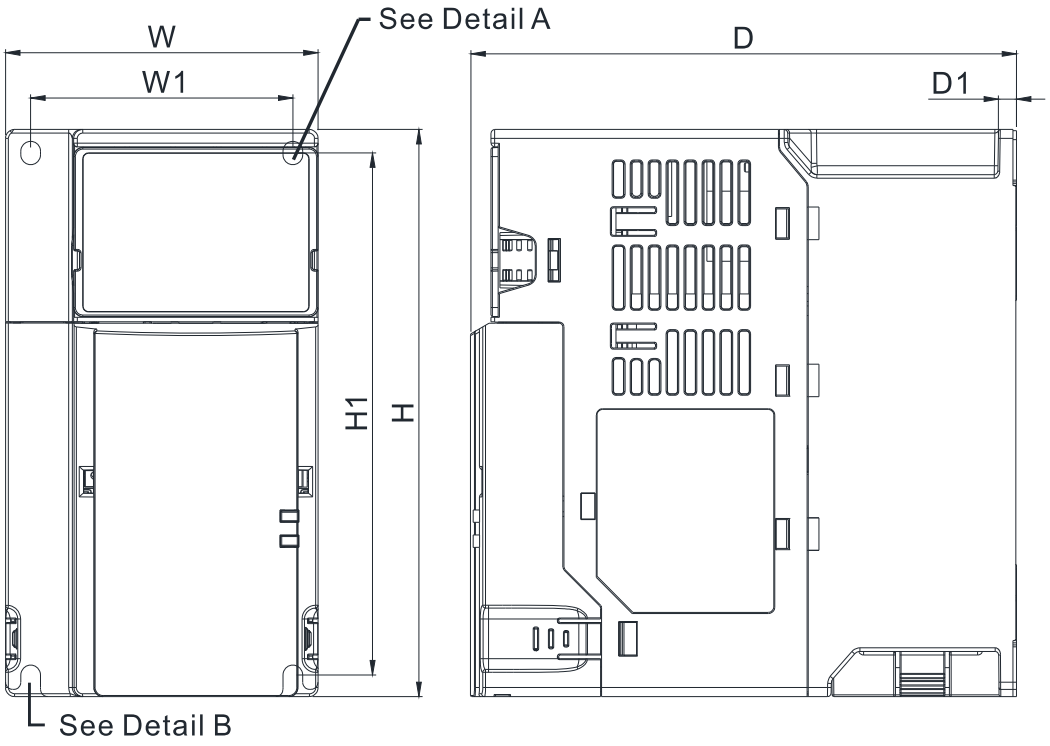
In the following four situations, you must remove the RFI jumper. This is to prevent the system from grounding through the RFI and filter capacitors and damaging the drive.

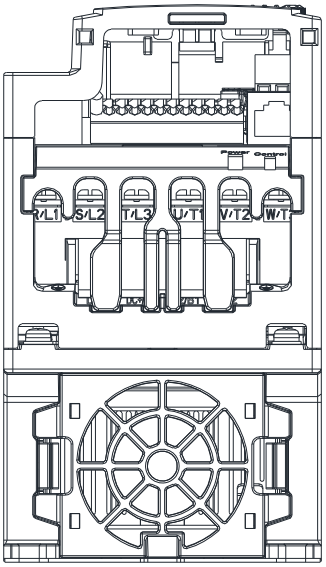
You must remove the RFI jumper for an asymmetric ground system	
1. Grounding at a corner in a triangle configuration  	2. Grounding at a midpoint in a polygonal configuration 
3. Grounding at one end in a single-phase configuration  	4. No stable neutral grounding in a three-phase autotransformer configuration 
You can use the RFI jumper for a symmetrical grounding power system	
In a situation with a symmetrical grounding power system, you can use the RFI jumper to maintain the effect of the built-in EMC filter and surge absorber. For example, the diagram on the right is a symmetrical grounding power system.	

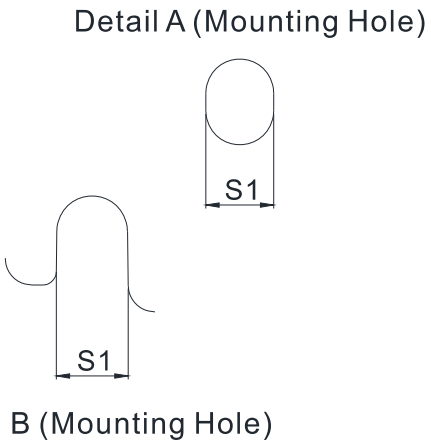
2-3 Frame C

C1: VFD4A8MS11ANSAA; VFD4A8MS11ENSAA; VFD7A5MS21ANSAA; VFD7A5MS21ENSAA; VFD11AMS21ANSAA; VFD11AMS21ENSAA; VFD11AMS23ANSAA; VFD11AMS23ENSAA; VFD17AMS23ANSAA; VFD17AMS23ENSAA; VFD5A5MS43ANSAA; VFD5A5MS43ENSAA; VFD7A3MS43ANSAA; VFD7A3MS43ENSAA; VFD9A0MS43ANSAA; VFD9A0MS43ENSAA; VFD4A2MS53ANSAA; VFD6A6MS53ANSAA

C2: VFD7A5MS21AFSAA; VFD11AMS21AFSAA; VFD5A5MS43AFSAA; VFD7A3MS43AFSAA; VFD9A0MS43AFSAA







Unit: mm [inch]

Frame	W	H	D	W1	H1	D1	S1
C1	87.0 [3.43]	157.0 [6.18]	152.0 [5.98]	73.0 [2.87]	144.5 [5.69]	5.0 [0.20]	5.5 [0.22]
C2	87.0 [3.43]	157.0 [6.18]	179.0 [7.05]	73.0 [2.87]	144.5 [5.69]	5.0 [0.20]	5.5 [0.22]

Frame	Airflow Rate for Cooling			Power Dissipation for AC Motor Drive		
	Model No.	Flow Rate (Unit: cfm)	Flow Rate (Unit: m^3 / hr)	Loss External (Heat sink, unit: W)	Internal (Unit: W)	Total (Unit: W)
C	VFD5A5MS43ANSAA VFD5A5MS43ENSAA VFD5A5MS43AFSAA	16.0	27.2	60.6	22.8	83.4
	VFD7A3MS43ANSAA VFD7A3MS43ENSAA VFD7A3MS43AFSAA			75.2	30	105.2
	VFD9A0MS43ANSAA VFD9A0MS43ENSAA VFD9A0MS43AFSAA			93.1	42	135.1
	VFD4A2MS53ANSAA			46.6	22.2	68.8
	VFD6A6MS53ANSAA			76.1	30	106.1
D	VFD25AMS23ANSAA VFD25AMS23ENSAA	23.4	39.7	192.8	53.3	246.1
	VFD13AMS43ANSAA VFD13AMS43ENSAA VFD13AMS43AFSAA			132.8	39.5	172.3
	VFD17AMS43ANSAA VFD17AMS43ENSAA VFD17AMS43AFSAA			164.7	55.8	220.5
	VFD9A9MS53ANSAA			93.9	37	130.9
	VFD12AMS53ANSAA			108.4	51	159.4
E	VFD33AMS23ANSAA VFD33AMS23ENSAA	53.7	91.2	244.5	79.6	324.1
	VFD49AMS23ANSAA VFD49AMS23ENSAA			374.2	86.2	460.4
	VFD25AMS43ANSAA VFD25AMS43ENSAA VFD25AMS43AFSAA			234.5	69.8	304.3
	VFD32AMS43ANSAA VFD32AMS43ENSAA VFD32AMS43AFSAA			319.8	74.3	394.1
F	VFD65AMS23ANSAA VFD65AMS23ENSAA	67.9	115.2	492.0	198.2	690.2
	VFD38AMS43ANSAA VFD38AMS43ENSAA VFD38AMS43AFSAA			423.5	181.6	605.1
	VFD45AMS43ANSAA VFD45AMS43ENSAA VFD45AMS43AFSAA			501.1	200.3	701.4

Table 3-2

Frame C

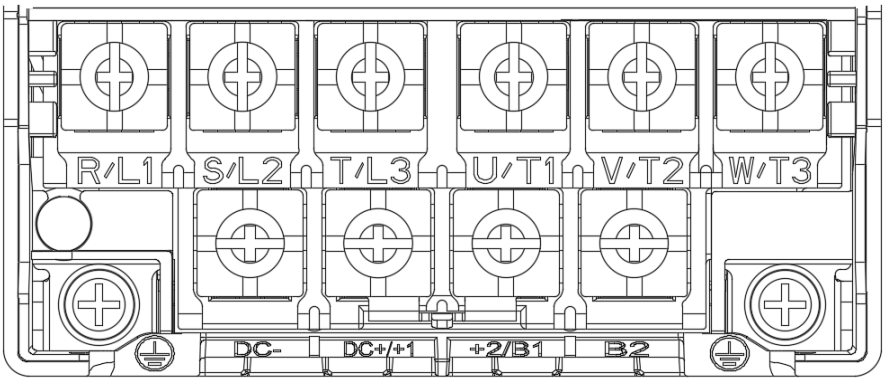


Figure 5-10

- If you install at Ta 50˚C above environment, use copper wires that have a voltage rating of 600 V and are temperature resistant to 90˚C or above.
- If you install at Ta 50˚C environment, use copper wires that have a voltage rating of 600 V and are temperature resistant to 75˚C or 90˚C.
- To be UL installation compliant, you must use copper wires when installing. The wire gauge is based on a temperature resistance of 75˚C, in accordance with UL requirements and recommendations. Do not reduce the wire gauge when using high-temperature resistant wires.

Models	Main Circuit Terminals R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, DC-, DC+/+1, +2/B1, B2			Grounding Terminals ⏚		
	Max. Wire Gauge	Min. Wire Gauge	Screw Size & Torque (±10%)	Max. Wire Gauge	Min. Wire Gauge	Screw Size & Torque (±10%)
VFD4A8MS11ANSAA VFD4A8MS11ENSAA	10 mm² [8 AWG]	10 mm² [8 AWG]	M4 20 kg-cm [17.4 lb-in.] [1.96 Nm]	10 mm² [8 AWG]	10 mm² [8 AWG]	M4 20 kg-cm [17.4 lb-in.] [1.96 Nm]
VFD7A5MS21ANSAA VFD7A5MS21ENSAA VFD7A5MS21AFSAA						
VFD11AMS21ANSAA VFD11AMS21ENSAA VFD11AMS21AFSAA						
VFD11AMS23ANSAA VFD11AMS23ENSAA		6 mm² [10 AWG]		6 mm² [10 AWG]	6 mm² [10 AWG]	
VFD17AMS23ANSAA VFD17AMS23ENSAA		10 mm² [8 AWG]		10 mm² [8 AWG]	10 mm² [8 AWG]	
VFD5A5MS43ANSAA VFD5A5MS43ENSAA VFD5A5MS43AFSAA		2.5 mm² [14AWG]		2.5 mm² [14 AWG]	2.5 mm² [14AWG]	
VFD7A3MS43ANSAA VFD7A3MS43ENSAA VFD7A3MS43AFSAA						
VFD9A0MS43ANSAA VFD9A0MS43ENSAA VFD9A0MS43AFSAA		4 mm² [12 AWG]		4 mm² [12 AWG]	4 mm² [12 AWG]	
VFD4A2MS53ANSAA		2.5 mm² [14 AWG]		2.5 mm² [14 AWG]	2.5 mm² [14 AWG]	
VFD6A6MS53ANSAA		4 mm² [12 AWG]		4 mm² [12 AWG]	4 mm² [12 AWG]	

Table 5-5

460V three-phase

Model	Applicable Motor		*1 125% Braking Torque / 10% ED						Max. Braking Torque		
	HP	KW	*2 Braking Torque (kg-m)	Resistor Value Spec. for Each AC Motor Drive	Brake Resistor for each Brake Unit			Braking Current (A)	Min. Resistor Value (Ω)	Max. Total Braking Current (A)	Peak Power (kW)
					*3 Part No.	Q'ty	Usage				
VFD1A5MS43XNSAA VFD1A5MS43AFSAA	0.5	0.4	0.3	80 W 750 Ω	BR080W750	1		1	380.0	2	1.5
VFD2A7MS43XNSAA VFD2A7MS43AFSAA	1	0.75	0.5	80 W 750 Ω	BR080W750	1		1	190.0	4	3.0
VFD4A2MS43XNSAA VFD4A2MS43AFSAA	2	1.5	1	200 W 360 Ω	BR200W360	1		2.1	126.7	6	4.6
VFD5A5MS43XNSAA VFD5A5MS43AFSAA	3	2.2	1.5	300 W 250 Ω	BR300W250	1		3	108.6	7	5.3
VFD7A3MS43ANSAA VFD7A3MS43ENSAA VFD7A3MS43AFSAA	4	3	2	400W 150Ω	BR400W150	1	2 in series	5.1	95.0	8	6.1
VFD9A0MS43XNSAA VFD9A0MS43AFSAA	5	3.7/4	2.5	400 W 150 Ω	BR400W150	1		5.1	84.4	9	6.8
VFD13AMS43XNSAA VFD13AMS43AFSAA	7.5	5.5	3.7	1000 W 75 Ω	BR1K0W075	1		10.2	50.7	15	11.4
VFD17AMS43XNSAA VFD17AMS43AFSAA	10	7.5	5.1	1000 W 75 Ω	BR1K0W075	1		10.2	40.0	19	14.4
VFD25AMS43XNSAA VFD25AMS43AFSAA	15	11	7.4	1500 W 43 Ω	BR1K5W043	1		17.6	33.0	23	17.5
VFD32AMS43XNSAA VFD32AMS43AFSAA	20	15	10.2	2000 W 32 Ω	BR1K0W016	2	2 in series	24	26.2	29	22.0
VFD38AMS43XNSAA VFD38AMS43AFSAA	25	18	12.2	2000 W 32 Ω	BR1K0W016	2	2 in series	24	26.2	29	22.0
VFD45AMS43XNSAA VFD45AMS43AFSAA	30	22	14.9	3000 W 26 Ω	BR1K5W013	2	2 in series	29	23.0	33	25.1

Table 7-1-4

575V three-phase

Model	Applicable Motor		*1 125% Braking Torque / 10% ED						Max. Braking Torque		
	HP	KW	*2 Braking Torque (kg-m)	Resistor Value Spec. for Each AC Motor Drive	Brake Resistor for each Brake Unit			Braking Current (A)	Min. Resistor Value (Ω)	Max. Total Braking Current (A)	Peak Power (kW)
					*3 Part No.	Q'ty	Usage				
VFD1A7MS53ANSAA	1	0.75	0.5	80W 750Ω	BR080W750	1	-	1.2	280.0	4	4.5
VFD3A0MS53ANSAA	2	1.5	1	200W 360Ω	BR200W360	1	-	2.6	186.7	6	6.7
VFD4A2MS53ANSAA	3	2.2	1.5	300W 400Ω	BR300W400	1	-	2.3	160.0	7	7.8
VFD6A6MS53ANSAA	5	3.7	2.5	500W 100Ω	BR500W100	1	-	9.2	93.3	12	13.4
VFD9A9MS53ANSAA	7.5	5.5	3.7	750W 140Ω	BR750W140	1	-	6.6	80.0	14	15.7
VFD12AMS53ANSAA	10	7.5	5.1	1000W 75Ω	BR1K0W075	1	-	12.3	70.0	16	17.9

Table 7-1-5

*1 Calculation for 125% brake torque: (kW)*125%*0.8; where 0.8 is motor efficiency.

Because of the limited resistor power, the longest operation time for 10% ED is 10 seconds (ON: 10 sec. / OFF: 90 sec.).

*2 The calculation of the brake resistor is based on a four-pole motor (1800 rpm).

*3 For heat dissipation, a resistors of 400 W or lower should be fixed to the frame and maintain the surface temperature below 250°C; a resistor of 1000 W and above should maintain the surface temperature below 350°C.

(If the surface temperature is higher than the temperature limit, install extra cooling or increase the size of the resistor.)

460V Models

Frame	Model	Heavy Duty Output Current [A]	Heavy Duty Input Current [A]	MC/ACB Selection [A]
A	VFD1A5MS43ANSAA	2.1	1.5	7
	VFD2A7MS43ANSAA	3.7	2.7	7
B	VFD4A2MS43ANSAA	5.8	4.2	9
	VFD1A5MS43AFSAA	2.1	1.5	7
	VFD2A7MS43AFSAA	3.7	2.7	7
	VFD4A2MS43AFSAA	5.8	4.2	9
C	VFD5A5MS43ANSAA	6.1	5.5	12
	VFD7A3MS43ANSAA	8.1	7.3	18
	VFD9A0MS43ANSAA	9.9	9	18
	VFD5A5MS43AFSAA	6.1	5.5	12
	VFD7A3MS43AFSAA	8.1	7.3	18
	VFD9A0MS43AFSAA	9.9	9	18
D	VFD13AMS43ANSAA	14.3	13	22
	VFD13AMS43AFSAA	14.3	13	22
	VFD17AMS43ANSAA	18.7	17	32
	VFD17AMS43AFSAA	18.7	17	32
E	VFD25AMS43ANSAA	27.5	25	65
	VFD32AMS43ANSAA	35.2	32	65
	VFD25AMS43AFSAA	27.5	25	65
	VFD32AMS43AFSAA	35.2	32	65
F	VFD38AMS43ANSAA	41.8	38	65
	VFD45AMS43ANSAA	49.5	45	75
	VFD38AMS43AFSAA	41.8	38	65
	VFD45AMS43AFSAA	49.5	45	75

Table 7-2-3

575V Models

Frame	Model	Heavy Duty Output Current [A]	Heavy Duty Input Current [A]	MC/ACB Selection [A]
A	VFD1A7MS53ANSAA	2	1.7	6
B	VFD3A0MS53ANSAA	3.5	3	6
C	VFD4A2MS53ANSAA	4.9	4.2	12
	VFD6A6MS53ANSAA	7.7	6.6	12
D	VFD9A9MS53ANSAA	11.5	9.9	20
	VFD12AMS53ANSAA	14.2	12.2	28

Table 7-2-4

Model	Voltage / One-phase (Three-phase)	Breaker Rated Input Recommended Current [A]
VFD1A5MS43ANSAA VFD1A5MS43ENSAA VFD1A5MS43AFSAA	460V / Three-phase	15
VFD2A7MS43ANSAA VFD2A7MS43ENSAA VFD2A7MS43AFSAA		15
VFD4A2MS43ANSAA VFD4A2MS43ENSAA VFD4A2MS43AFSAA		15
VFD5A5MS43ANSAA VFD5A5MS43ENSAA VFD5A5MS43AFSAA		20
VFD7A3MS43ANSAA VFD7A3MS43ENSAA VFD7A3MS43AFSAA		25
VFD9A0MS43ANSAA VFD9A0MS43ENSAA VFD9A0MS43AFSAA		30
VFD13AMS43ANSAA VFD13AMS43ENSAA VFD13AMS43AFSAA		32
VFD17AMS43ANSAA VFD17AMS43ENSAA VFD17AMS43AFSAA		45
VFD25AMS43ANSAA VFD25AMS43ENSAA VFD25AMS43AFSAA		60
VFD32AMS43ANSAA VFD32AMS43ENSAA VFD32AMS43AFSAA		80
VFD38AMS43ANSAA VFD38AMS43ENSAA VFD38AMS43AFSAA		90
VFD45AMS43ANSAA VFD45AMS43ENSAA VFD45AMS43AFSAA		100
VFD1A7MS53ANSAA	575V / Three-phase	6
VFD3A0MS53ANSAA		10
VFD4A2MS53ANSAA		16
VFD6A6MS53ANSAA		25
VFD9A9MS53ANSAA		25
VFD12AMS53ANSAA		32

Table 7-2-5

Model	Voltage / One-phase (Three-phase)	Branch Circuit Fuses Output [A]
VFD1A5MS43ANSAA VFD1A5MS43ENSAA VFD1A5MS43AFSAA	460V / Three-phase	7.2 Class T JJS-10 600 V_{AC}
VFD2A7MS43ANSAA VFD2A7MS43ENSAA VFD2A7MS43AFSAA		12 Class T JJS-15 600 V_{AC}
VFD4A2MS43ANSAA VFD4A2MS43ENSAA VFD4A2MS43AFSAA		18.4 Class T JJS-20 600 V_{AC}
VFD5A5MS43ANSAA VFD5A5MS43ENSAA VFD5A5MS43AFSAA		26 Class T JJS-25 600 V_{AC}
VFD7A3MS43ANSAA VFD7A3MS43ENSAA VFD7A3MS43AFSAA		35 Class T JJS-35 600 V_{AC}
VFD9A0MS43ANSAA VFD9A0MS43ENSAA VFD9A0MS43AFSAA		42 Class T JJS-45 600 V_{AC}
VFD13AMS43ANSAA VFD13AMS43ENSAA VFD13AMS43AFSAA		34.54 Class T JJS-35 600 V_{AC}
VFD17AMS43ANSAA VFD17AMS43ENSAA VFD17AMS43AFSAA		45.1 Class T JJS-45 600 V_{AC}
VFD25AMS43ANSAA VFD25AMS43ENSAA VFD25AMS43AFSAA		61.6 Class T JJS-60 600 V_{AC}
VFD32AMS43ANSAA VFD32AMS43ENSAA VFD32AMS43AFSAA		79.2 Class T JJS-80 600 V_{AC}
VFD38AMS43ANSAA VFD38AMS43ENSAA VFD38AMS43AFSAA		91.3 Class T JJS-90 600 V_{AC}
VFD45AMS43ANSAA VFD45AMS43ENSAA VFD45AMS43AFSAA		107.8 Class T JJS-110 600 V_{AC}
VFD1A7MS53ANSAA	575V / Three-phase	4.62 Class T JJS-6 600 V_{AC}
VFD3A0MS53ANSAA		7.92 Class T JJS-10 600 V_{AC}
VFD4A2MS53ANSAA		11 Class T JJS-10 600 V_{AC}
VFD6A6MS53ANSAA		17.6 Class T JJS-20 600 V_{AC}
VFD9A9MS53ANSAA		25.3 Class T JJS-25 600 V_{AC}
VFD12AMS53ANSAA		33 Class T JJS-30 600 V_{AC}

Table 7-3-1

Model	Rated Current [Arms]	Saturation Current [Arms]	Input / Output Reactor [mH]	Input Reactor Delta Part #	Output Reactor Delta Part #	DC Reactor [mH]	DC Reactor Delta Part #
VFD9A0MS43AFSAA VFD9A0MS43ANSAA VFD9A0MS43ENSAA	10.5	15.75	2.315	DR010A0231	DR010L0231	5.345	DR010D0534
VFD13AMS43AFSAA VFD13AMS43ANSAA VFD13AMS43ENSAA	15.7	23.55	1.174	DR018A0117	DR018L0117	3.119	DR018D0311
VFD17AMS43AFSAA VFD17AMS43ANSAA VFD17AMS43ENSAA	20.5	30.75	0.881	DR024AP881	DR024LP881	3.119	DR018D0311
VFD25AMS43AFSAA VFD25AMS43ANSAA VFD25AMS43ENSAA	28	42	0.66	DR032AP660	DR032LP660	2.338	DR024D0233
VFD32AMS43AFSAA VFD32AMS43ANSAA VFD32AMS43ENSAA	36	54	0.639	DR038AP639	DR038LP639	1.754	DR032D0175
VFD38AMS43AFSAA VFD38AMS43ANSAA VFD38AMS43ENSAA	41.5	62.25	0.541	DR045AP541	DR045LP541	1.477	DR038D0147
VFD45AMS43AFSAA VFD45AMS43ANSAA VFD45AMS43ENSAA	49	73.5	0.405	DR060AP405	DR060LP405	1.247	DR045D0124

Table 7-4-7

460V, 50–60 Hz / Three-phase - Heavy Duty

Model	Rated Current [Arms]	Saturation Current [Arms]	Input / Output Reactor [mH]	Input Reactor Delta Part #	Output Reactor Delta Part #	DC Reactor [mH]	DC Reactor Delta Part #
VFD1A5MS43ANSAA VFD1A5MS43ENSAA VFD1A5MS43AFSAA	1.5	3	8.102	DR003A0810	DR003L0810	18.709	DR003D1870
VFD2A7MS43ANSAA VFD2A7MS43ENSAA VFD2A7MS43AFSAA	2.7	5.4	8.102	DR003A0810	DR003L0810	18.709	DR003D1870
VFD4A2MS43AFSAA VFD4A2MS43ANSAA VFD4A2MS43ENSAA	4.2	8.4	6.077	DR004A0607	DR004L0607	14.031	DR004D1403
VFD5A5MS43AFSAA VFD5A5MS43ANSAA VFD5A5MS43ENSAA	5.5	11	4.05	DR006A0405	DR006L0405	9.355	DR006D0935
VFD7A3MS43ANSAA VFD7A3MS43ENSAA VFD7A3MS43AFSAA	8.1	16.2	2.7	DR009A0270	DR009L0270	6.236	DR009D0623
VFD9A0MS43AFSAA VFD9A0MS43ANSAA VFD9A0MS43ENSAA	9	18	2.7	DR009A0270	DR009L0270	6.236	DR009D0623
VFD13AMS43AFSAA VFD13AMS43ANSAA VFD13AMS43ENSAA	13	26	1.174	DR018A0117	DR018L0117	4.677	DR012D0467
VFD17AMS43AFSAA VFD17AMS43ANSAA VFD17AMS43ENSAA	17	34	1.174	DR018A0117	DR018L0117	3.119	DR018D0311
VFD25AMS43AFSAA VFD25AMS43ANSAA VFD25AMS43ENSAA	25	50	0.881	DR024AP881	DR024LP881	2.338	DR024D0233

460V Three-phase Drive Model	Normal Duty Rated Current [Arms]	Without an AC Output Reactor		With an AC Output Reactor	
		Shielded Cable [meter]	Non-shielded Cable [meter]	Shielded Cable [meter]	Non-shielded Cable [meter]
VFD7A3MS43ANSAA VFD7A3MS43ENSAA VFD7A3MS43AFSAA	8.9	75	150	150	225
VFD9A0MS43ANSAA VFD9A0MS43ENSAA VFD9A0MS43AFSAA	10.5	50	75	75	15
VFD13AMS43ANSAA VFD13AMS43ENSAA VFD13AMS43AFSAA	15.7				
VFD17AMS43ANSAA VFD17AMS43ENSAA VFD17AMS43AFSAA	20.5	100	150	150	225
VFD25AMS43ANSAA VFD25AMS43ENSAA VFD25AMS43AFSAA	28				
VFD32AMS43ANSAA VFD32AMS43ENSAA VFD32AMS43AFSAA	36				
VFD38AMS43ANSAA VFD38AMS43ENSAA VFD38AMS43AFSAA	41.5				
VFD45AMS43ANSAA VFD45AMS43ENSAA VFD45AMS43AFSAA	49				

Table 7-4-29

575V Three-phase Drive Model	Normal Duty Rated Current [Arms]	Without an AC Output Reactor*1		With an AC Output Reactor	
		Shielded Cable [meter]	Non-shielded Cable [meter]	Shielded Cable [meter]	Non-shielded Cable [meter]
VFD1A7MS53ANSAA	2.1	15	55	N/A	N/A
VFD3A0MS53ANSAA	3.6	50	80		
VFD4A2MS53ANSAA	5	65	120		
VFD6A6MS53ANSAA	8.5		295		
VFD9A9MS53ANSAA	11.5	145	320		
VFD12AMS53ANSAA	15				

Table 7-4-30

*1 Without an AC output reactor: Use the motor cable length of the 575V drive model only for 4 kHz carrier frequency (Pr.00-17=4). If you use it for > 4 kHz carrier frequency, you may need to reduce the motor cable length to prevent over-current protection caused by large leakage current, depending on the actual on-site situations.

The table below is the maximum shielded cable length for drive models with built-in EMC filters. You can choose the corresponding shielded cable length according to the required noise emission and electromagnetic interference class.

Drive Models with Built-in Filters		Rated Current (HD)	Compliance with EMC (IEC 61800-3) Class C3		Compliance with EMC (IEC 61800-3) Class C2	
Frame	Models		Shielded Cable Length	Fc	Shielded Cable Length	Fc
B	VFD1A5MS43AFSAA	1.5	30 m	4 kHz	20 m	4 kHz
	VFD2A7MS43AFSAA	2.7				
	VFD4A2MS43AFSAA	4.2				
	VFD1A6MS21AFSAA	1.6				
	VFD2A8MS21AFSAA	2.8				
	VFD4A8MS21AFSAA	4.8				
C	VFD5A7MS43AFSAA	5.7				
	VFD7A5MS21AFSAA	7.5				
	VFD7A3MS43AFSAA	8.9				
	VFD9A0MS43AFSAA	9				
	VFD11AMS21AFSAA	11				
D	VFD13AMS43AFSAA	13				
	VFD17AMS43AFSAA	17				
E	VFD25AMS43AFSAA	25				
	VFD32AMS43AFSAA	32				
F	VFD38AMS43AFSAA	38				
	VFD45AMS43AFSAA	45				

Table 7-6-2