Instruction Leaflet **PUB53675**

Effective June 2020
Supersedes January 2020

PowerXL DM1 and DM1 Pro series VFD

Instruction Leaflet
Montageanweisung
Notice d'installation
Instrucciones de montaje
Istruzioni per il montaggio
安装说明
Инструкция по монтажу
Montagehandleiding
Montagevejledning
Οδηγίες εγκατάστασης
Instruções de montagem
Monteringsanvisning
Asennusohje
Návod k montáži
Paigaldusjuhend
Szerelési utasítás
Montāžas instrukcija
Montavimo instrukcija
Instrukcja montażu
Navodila za montažo
Návod na montáž
Монтажни инструкции
Instrucţiuni de montaj

(en) **Electric Current! Danger to Life!**
Only skilled or instructed persons may carry out the following operations.

(de) **Lebensgefahr durch elektrischen Strom!**
Nur Elektrofachkräfte und elektrotechnisch unterwiesene Personen dürfen die im Folgenden beschriebenen Arbeiten ausführen.

(fr) **Tension électrique dangereuse !**
Seules les personnes qualifiées et averties doivent exécuter les travaux ci-après.

(es) **¡Corriente eléctrica! ¡Peligro de muerte!**
El trabajo a continuación descrito debe ser realizado por personas cualificadas y advertidas.

(it) **Tensione elettrica: Pericolo di morte!**
Solo persone abilitate e qualificate possono eseguire le operazioni di seguito riportate.

(zh) **触电危险！**
只允许专业人员和受过专业训练的人员进行 下列工作。

(ru) **Электрический ток! Опасно для жизни!**
Только специалисты или проинструктированные лица могут выполнять следующие операции.

(nl) **Levensgevaar door elektrische stroom!**
Uitsluitelijk deskundigen in elektriciteit en elektrotechnisch geinstrueerde personen is het toegestaan, de navolgend beschrevene werkzaamheden uit te voeren.

(da) **Livsfare på grund af elektrisk strøm!**
Kun uddannede el-installatører og personer der e instruerede i elektrotekniske arbejdsopgaver, må udføre de nedenfor anførte arbejder.

(el) **Προσοχή, κίνδυνος ηλεκτροπληξίας!**
Οι εργασίες που αναφέρονται στη συνέχεια θα πρέπει να εκτελούνται μόνο από ηλεκτρολόγους και ηλεκτροτεχνίτες.

(pt) **Perigo de vida devido a corrente eléctrica!**
Apenas electricistas e pessoas com formação electrotécnica podem executar os trabalhos que a seguir se descrevem.

(sv) **Livsfara genom elektrisk ström!**
Endast utbildade elektriker och personer som undervisats i elektroteknik får utföra de arbeten som beskrivs nedan.

(fi) **Hengenvaarallinen jännite!**
Vain pätevät sähköasentajat ja opastusta saaneet henkilöt saavat suorittaa seuraavat työt.

Powering Business Worldwide

(cs) **Nebezpečí úrazu elektrickým proudem!**
Níže uvedené práce smějí provádět pouze osoby s elektrotechnickým vzděláním.

(et) **Eluohtlik! Elektrilöögioht!**
Järgnevalt kirjeldatud töid tohib teostada ainult elektriala spetsialist või elektrotehnilise instrueerimise läbinud personal.

(hu) **Életveszély az elektromos áram révén!**
Csak elektromos szakemberek és elektrotechnikában képzett személyek végezhetik el a következőkben leírt munkákat.

(lv) **Elektriskā strāva apdraud dzīvību!**
Tālāk aprakstītos darbus drīkst veikt tikaielektrospeciālisti un darbam ar elektrotehniskām ekārtām instruētās personas!

(lt) **Pavojus gyvybei dėl elektros srovės!**
Tik elektrikai ir elektrotechnikos specialistai gali atlikti žemiau aprašytus darbus.

(pl) **Porażenie prądem elektrycznym stanowi zagrożenie dla życia!**
Opisane poniżej prace mogą przeprowadzać tylko wykwalifikowani elektrycy oraz osoby odpowiednio poinstruowane w zakresie elektrotechniki.

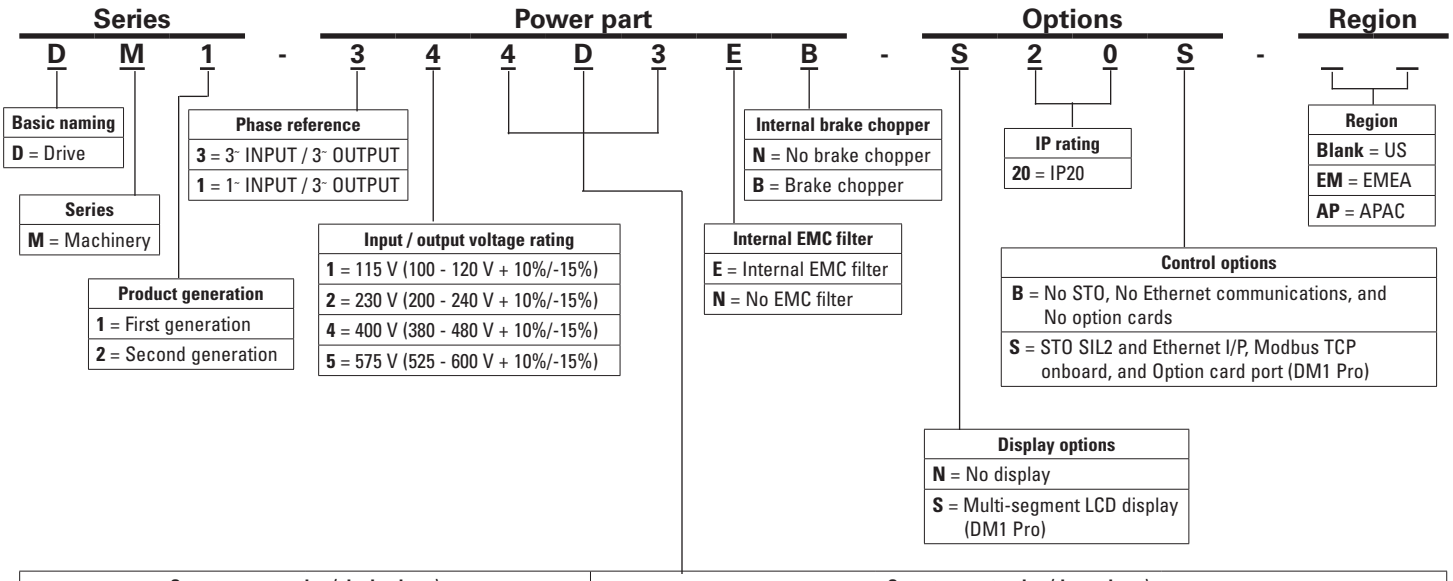
(sl) **Življenjska nevarnost zaradi električnega toka!**
Spodaj opisana dela smejo izvajati samo elektrostrokovnjaki in elektrotehničn poučene osebe.

(sk) **Nebezpečenstvo ohrozenia života elektrickým prúdom!**
Práce, ktoré sú nižšie opísané, smú vykonávať iba elektroodborníci a osoby s elektrotechnickým vzdelaním.

(bg) **Опасност за живота от електрически ток!**
Операциите, описани в следващите раздели, могат да се извършват сам от специалисти-електротехници и инструктиран електротехнически персонал.

(ro) **Atenţie! Pericol electric!**
Toate lucrările descrise trebuie efectuate numai de personal de specialitate calificat şi de persoane cu cunoştiinţe profunde în electrotehnică.

Catalog numbering system



Output current rating (single phase)		Output current rating (three phase)		
100 - 120 v	200 - 240 v	200 - 240 v	380 - 480 v	525 - 600 v
1D6 = 1.6 A, 0.18 kW, 0.25 hp	1D6 = 1.6 A, 0.18 kW, 0.25 hp	1D6 = 1.6 A, 0.18 kW, 0.25 hp	1D5 = 1.5 A, 0.37 kW, 0.50 hp	4D5 = 4.5 A, 2.20 kW, 3.00 hp
3D0 = 3.0 A, 0.37 kW, 0.50 hp	3D0 = 3.0 A, 0.37 kW, 0.50 hp	3D0 = 3.0 A, 0.37 kW, 0.50 hp	2D2 = 2.2 A, 0.75 kW, 1.00 hp	7D5 = 7.5 A, 3.00 kW, 5.00 hp
4D8 = 4.8 A, 0.75 kW, 1.00 hp	4D8 = 4.8 A, 0.75 kW, 1.00 hp	4D8 = 4.8 A, 0.75 kW, 1.00 hp	4D3 = 4.3 A, 1.50 kW, 2.00 hp	010 = 10.0 A, 5.50 kW, 7.50 hp
6D9 = 6.9 A, 1.10 kW, 1.50 hp	7D8 = 7.8 A, 1.50 kW, 2.00 hp	7D8 = 7.8 A, 1.50 kW, 2.00 hp	5D6 = 5.6 A, 2.20 kW, 3.00 hp	013 = 13.5 A, 7.50 kW, 10.00 hp
	011 = 11.0 A, 2.20 kW, 3.00 hp	011 = 11.0 A, 2.20 kW, 3.00 hp	7D6 = 7.6 A, 3.00 kW, 5.00 hp	018 = 18.0 A, 11.00 kW, 15.00 hp
	017 = 17.5 A, 4.00 kW, 5.00 hp	017 = 17.5 A, 4.00 kW, 5.00 hp	012 = 12.0 A, 5.50 kW, 7.50 hp	022 = 22.0 A, 15.00 kW, 20.00 hp
		025 = 25.3 A, 5.50 kW, 7.50 hp	016 = 16.0 A, 7.50 kW, 10.00 hp	
		032 = 32.2 A, 7.50 kW, 10.00 hp	023 = 23.0 A, 11.00 kW, 15.00 hp	
		048 = 48.3 A, 11.00 kW, 15.00 hp	031 = 31.0 A, 15.00 kW, 20.00 hp	
			038 = 38.0 A, 18.50 kW, 25.00 hp	

Shading legend

FR1	FR2	FR3	FR4

DM1 option cards list:

1) DXM-NET-PROFIBUS : DM1 PROFIBUS communications card
2) DXM-NET-CANOPEN : DM1 CANOPEN communication card
3) DXG-NET-SWD-IP20 DG1: Smartwire communication card and module IP20
4) DXG-NET-SWD-IP54 DG1 : Smartwire communication card and module IP54

Dimensions and weights—Dimensões e pesos—Encombrements et poids—Abmessungen und Gewichte—Dimensioni e pesi—Afmetingen en gewichten—Dimensioner og vægt—Διαστάσεις και βάρη—Dimensiones y pesos—Mått och vikter—Mitat ja painot—Rozměry a hmotnosti—Mõõdud ja kaalud—Méretek és tömeg—Izmēri un svars—Matmenys ir masė—Wymiary i ciężary—Mere in tože—Rozmery a hmotnosti—Размери и тегло—Dimensiuni şi greutăţi—Размеры и вес— 尺寸和重量

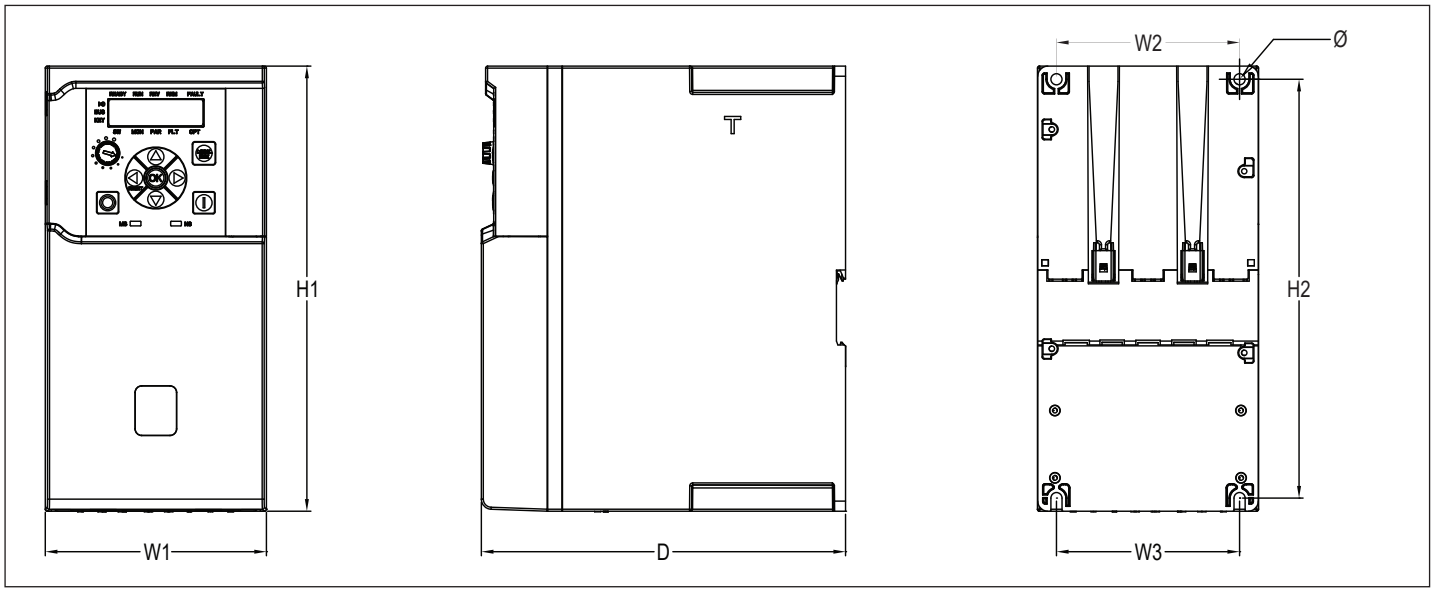


Table 1. Approximate mounting dimensions in inches (mm).

			Output rating		Dimensions							Weight
Input voltage	**Frame size**	**Drive catalog number**	**CT/IH current amps**	**VT/IL current amps**	**D in. (mm)**	**H1 in. (mm)**	**H2 in. (mm)**	**W1 in. (mm)**	**W2 in. (mm)**	**W3 in. (mm)**	**Φ in. (mm)**	**lb (kg)**
100 Vac to 120 Vac 50/60 Hz 1 phase	FR1	DM1-111D6…	1.6	2.5	7.09 (180)	5.98 (152)	5.51 (140)	2.83 (72)	2.26 (57.5)	2.26 (57.5)	0.20 (5.2)	2.6 (1.2)
		DM1-113D0…	3	4.8	7.09 (180)	5.98 (152)	5.51 (140)	2.83 (72)	2.26 (57.5)	2.26 (57.5)	0.20 (5.2)	2.6 (1.2)
	FR2	DM1-114D8…	4.8	6.9	7.09 (180)	8.66 (220)	8.15 (207)	4.29 (109)	3.56 (90.5)	3.56 (90.5)	0.22 (5.5)	5.7 (2.6)
		DM1-116D9…	6.9	7.8	7.09 (180)	8.66 (220)	8.15 (207)	4.29 (109)	3.56 (90.5)	3.56 (90.5)	0.22 (5.5)	5.7 (2.6)
200 Vac to 240 Vac 50/60 Hz 1 phase	FR1	DM1-121D6…	1.6	2.5	7.09 (180)	5.98 (152)	5.51 (140)	2.83 (72)	2.26 (57.5)	2.26 (57.5)	0.20 (5.2)	2.6 (1.2)
		DM1-123D0…	3	4.8	7.09 (180)	5.98 (152)	5.51 (140)	2.83 (72)	2.26 (57.5)	2.26 (57.5)	0.20 (5.2)	2.6 (1.2)
		DM1-124D8…	4.8	7.8	7.09 (180)	5.98 (152)	5.51 (140)	2.83 (72)	2.26 (57.5)	2.26 (57.5)	0.20 (5.2)	2.6 (1.2)
	FR2	DM1-127D8…	7.8	11	7.09 (180)	8.66 (220)	8.15 (207)	4.29 (109)	3.56 (90.5)	3.56 (90.5)	0.22 (5.5)	5.7 (2.6)
		DM1-12011…	11	17.5	7.09 (180)	8.66 (220)	8.15 (207)	4.29 (109)	3.56 (90.5)	3.56 (90.5)	0.22 (5.5)	5.7 (2.6)
	FR3	DM1-12017…	17.5	25.3	7.09 (180)	10.24 (260)	9.72 (247)	5.12 (130)	4.57 (116)	4.57 (116)	0.22 (5.5)	8.2 (3.7)
200 Vac to 240 Vac 50/60 Hz 3 phase	FR1	DM1-321D6…	1.6	2.5	7.09 (180)	5.98 (152)	5.51 (140)	2.83 (72)	2.26 (57.5)	2.26 (57.5)	0.20 (5.2)	2.6 (1.2)
		DM1-323D0…	3	4.8	7.09 (180)	5.98 (152)	5.51 (140)	2.83 (72)	2.26 (57.5)	2.26 (57.5)	0.20 (5.2)	2.6 (1.2)
		DM1-324D8…	4.8	7.8	7.09 (180)	5.98 (152)	5.51 (140)	2.83 (72)	2.26 (57.5)	2.26 (57.5)	0.20 (5.2)	2.6 (1.2)
		DM1-327D8…	7.8	11	7.09 (180)	5.98 (152)	5.51 (140)	2.83 (72)	2.26 (57.5)	2.26 (57.5)	0.20 (5.2)	2.6 (1.2)
	FR2	DM1-32011…	11	17.5	7.09 (180)	8.66 (220)	8.15 (207)	4.29 (109)	3.56 (90.5)	3.56 (90.5)	0.22 (5.5)	5.7 (2.6)
		DM1-32017…	17.5	25.3	7.09 (180)	8.66 (220)	8.15 (207)	4.29 (109)	3.56 (90.5)	3.56 (90.5)	0.22 (5.5)	5.7 (2.6)
	FR3	DM1-32025…	25.3	32.2	7.09 (180)	10.24 (260)	9.72 (247)	5.12 (130)	4.57 (116)	4.57 (116)	0.22 (5.5)	8.2 (3.7)
	FR4	DM1-32032…	32.2	48.3	7.68 (195)	11.81 (300)	11.06 (281)	7.24 (184)	6.3 (160)	6.3 (160)	0.24 (6)	13.9 (6.3)
		DM1-32048…	48.3	62.1	7.68 (195)	11.81 (300)	11.06 (281)	7.24 (184)	6.3 (160)	6.3 (160)	0.24 (6)	13.9 (6.3)

Table 1. Approximate mounting dimensions in inches (mm)(Continued).

			Output rating		Dimensions							Weight
Input voltage	**Frame size**	**Drive catalog number**	**CT/IH current amps**	**VT/IL current amps**	**D in. (mm)**	**H1 in. (mm)**	**H2 in. (mm)**	**W1 in. (mm)**	**W2 in. (mm)**	**W3 in. (mm)**	**Φ in. (mm)**	**lb (kg)**
380 Vac to 480 Vac 50/60 Hz 3 phase	FR1	DM1-341D5…	1.5	2.2	7.09 (180)	5.98 (152)	5.51 (140)	2.83 (72)	2.26 (57.5)	2.26 (57.5)	0.20 (5.2)	2.6 (1.2)
		DM1-342D2…	2.2	4.3	7.09 (180)	5.98 (152)	5.51 (140)	2.83 (72)	2.26 (57.5)	2.26 (57.5)	0.20 (5.2)	2.6 (1.2)
		DM1-344D3…	4.3	5.6	7.09 (180)	5.98 (152)	5.51 (140)	2.83 (72)	2.26 (57.5)	2.26 (57.5)	0.20 (5.2)	2.6 (1.2)
		DM1-345D6…	5.6	7.6	7.09 (180)	5.98 (152)	5.51 (140)	2.83 (72)	2.26 (57.5)	2.26 (57.5)	0.20 (5.2)	2.6 (1.2)
	FR2	DM1-347D6…	7.6	12	7.09 (180)	8.66 (220)	8.15 (207)	4.29 (109)	3.56 (90.5)	3.56 (90.5)	0.22 (5.5)	5.7 (2.6)
		DM1-34012…	12	16	7.09 (180)	8.66 (220)	8.15 (207)	4.29 (109)	3.56 (90.5)	3.56 (90.5)	0.22 (5.5)	5.7 (2.6)
		DM1-34016…	16	23	7.09 (180)	8.66 (220)	8.15 (207)	4.29 (109)	3.56 (90.5)	3.56 (90.5)	0.22 (5.5)	5.7 (2.6)
	FR3	DM1-34023..	23	31	7.09 (180)	10.24 (260)	9.72 (247)	5.12 (130)	4.57 (116)	4.57 (116)	0.22 (5.5)	8.2 (3.7)
	FR4	DM1-34031…	31	38	7.68 (195)	11.81 (300)	11.06 (281)	7.24 (184)	6.3 (160)	6.3 (160)	0.24 (6)	13.9 (6.3)
		DM1-34038…	38	46	7.68 (195)	11.81 (300)	11.06 (281)	7.24 (184)	6.3 (160)	6.3 (160)	0.24 (6)	13.9 (6.3)
525 Vac to 600 Vac 50/60 Hz 3 phase	FR2	DM1-351D7…	1.7	2.7	7.09 (180)	8.66 (220)	8.15 (207)	4.29 (109)	3.56 (90.5)	3.56 (90.5)	0.22 (5.5)	5.7 (2.6)
		DM1-352D7…	2.7	4.5	7.09 (180)	8.66 (220)	8.15 (207)	4.29 (109)	3.56 (90.5)	3.56 (90.5)	0.22 (5.5)	5.7 (2.6)
		DM1-354D5…	4.5	7.5	7.09 (180)	8.66 (220)	8.15 (207)	4.29 (109)	3.56 (90.5)	3.56 (90.5)	0.22 (5.5)	5.7 (2.6)
		DM1-357D5…	7.5	10	7.09 (180)	8.66 (220)	8.15 (207)	4.29 (109)	3.56 (90.5)	3.56 (90.5)	0.22 (5.5)	5.7 (2.6)
		DM1-35010…	10	13.5	7.09 (180)	8.66 (220)	8.15 (207)	4.29 (109)	3.56 (90.5)	3.56 (90.5)	0.22 (5.5)	5.7 (2.6)
	FR3	DM1-35013…	13.5	18	7.09 (180)	10.24 (260)	9.72 (247)	5.12 (130)	4.57 (116)	4.57 (116)	0.22 (5.5)	8.2 (3.7)
	FR4	DM1-35018…	18	22	7.68 (195)	11.81 (300)	11.06 (281)	7.24 (184)	6.3 (160)	6.3 (160)	0.24 (6)	13.9 (6.3)
		DM1-35022…	22	27	7.68 (195)	11.81 (300)	11.06 (281)	7.24 (184)	6.3 (160)	6.3 (160)	0.24 (6)	13.9 (6.3)

Mounting—Montaje—Montage—Montaggio—Montering—Τοποθέτηση—Montagem—Asennus—Montáž—Paigaldamine—Felszerelése—Montāža—Montavimas—Montaż—Montaža—Монтаж—Montarea—Монтаж— 安装

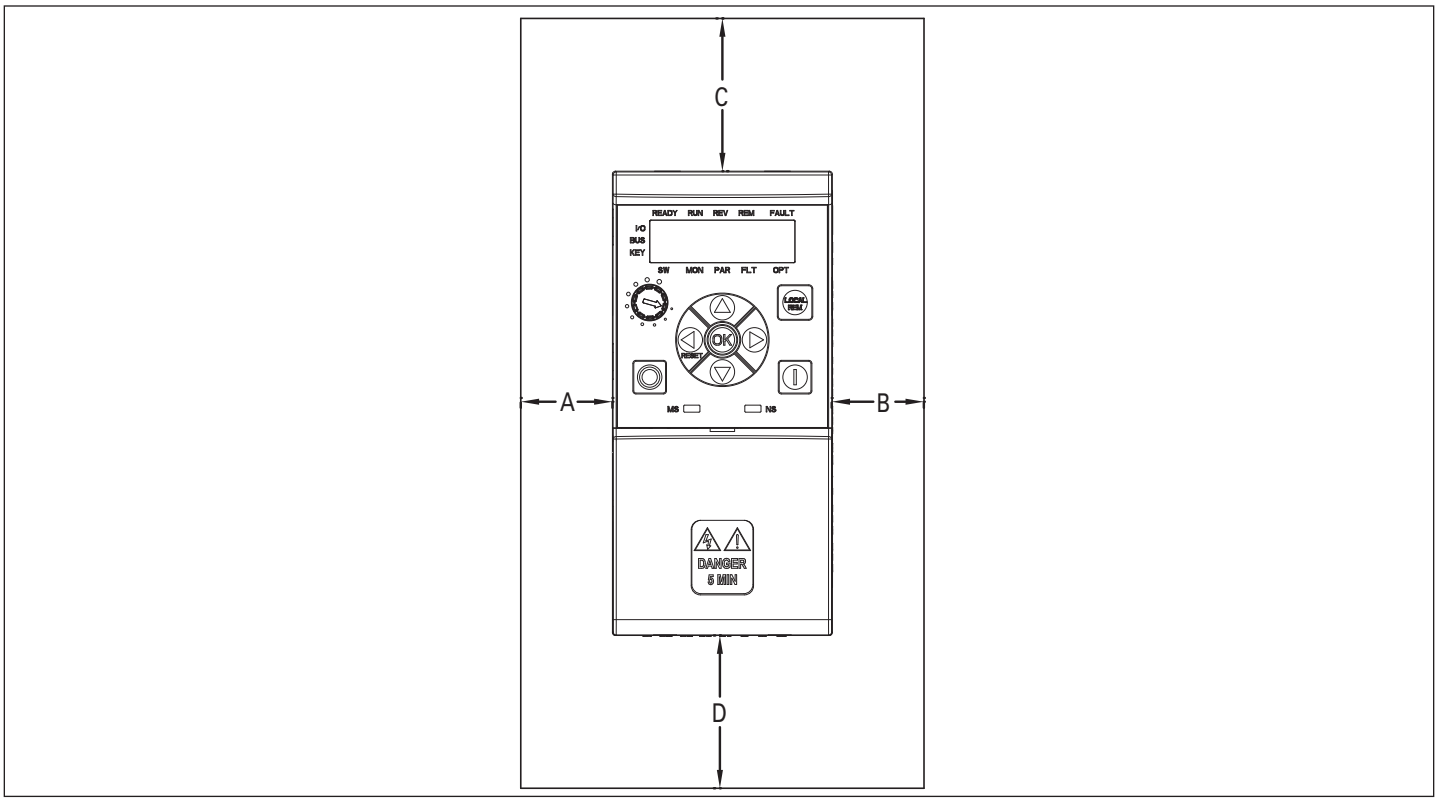


Table 2. Approximate space requirements in inches (mm).

			Output rating		Mounting clearance imperial				Airflow
Input voltage	**Frame size**	**Drive catalog number**	**CT/IH current amps**	**VT/IL current amps**	**A in. (mm)**	**B in. (mm)**	**C in. (mm)**	**D in. (mm)**	**CFM (m3/h)**
100 Vac to 120 Vac, 50/60 Hz 1 phase	FR1	DM1-111D6…	1.6	2.5	0	0	1.97 (50)	1.97 (50)	14.83 (25.2)
		DM1-113D0…	3	4.8	0	0	1.97 (50)	1.97 (50)	14.83 (25.2)
	FR2	DM1-114D8…	4.8	6.9	0	0	1.97 (50)	1.97 (50)	24.72 (42)
		DM1-116D9…	6.9	7.8	0	0	1.97 (50)	1.97 (50)	24.72 (42)
200 Vac to 240 Vac, 50/60 Hz 1 phase	FR1	DM1-121D6…	1.6	2.5	0	0	1.97 (50)	1.97 (50)	14.83 (25.2)
		DM1-123D0…	3	4.8	0	0	1.97 (50)	1.97 (50)	14.83 (25.2)
		DM1-124D8…	4.8	7.8	0	0	1.97 (50)	1.97 (50)	14.83 (25.2)
	FR2	DM1-127D8…	7.8	11	0	0	1.97 (50)	1.97 (50)	24.72 (42)
		DM1-12011…	11	17.5	0	0	1.97 (50)	1.97 (50)	24.72 (42)
	FR3	DM1-12017…	17.5	25.3	0	0	1.97 (50)	1.97 (50)	42.37 (72)
200 Vac to 240 Vac, 50/60 Hz 3 phase	FR1	DM1-321D6…	1.6	2.5	0	0	1.97 (50)	1.97 (50)	14.83 (25.2)
		DM1-323D0…	3	4.8	0	0	1.97 (50)	1.97 (50)	14.83 (25.2)
		DM1-324D8…	4.8	7.8	0	0	1.97 (50)	1.97 (50)	14.83 (25.2)
		DM1-327D8…	7.8	11	0	0	1.97 (50)	1.97 (50)	14.83 (25.2)
	FR2	DM1-32011…	11	17.5	0	0	1.97 (50)	1.97 (50)	24.72 (42)
		DM1-32017…	17.5	25.3	0	0	1.97 (50)	1.97 (50)	24.72 (42)
	FR3	DM1-32025…	25.3	32.2	0	0	1.97 (50)	1.97 (50)	42.37 (72)
	FR4	DM1-32032…	32.2	48.3	0	0	1.97 (50)	1.97 (50)	75.56 (128.4)
		DM1-32048…	48.3	62.1	0	0	1.97 (50)	1.97 (50)	75.56 (128.4)

Note: For DM1 drives with option cards, allow 2.76 in. or 70 mm for dimension A for the option card enclosure.

Table 2. Approximate space requirements in inches (mm) (Continued).

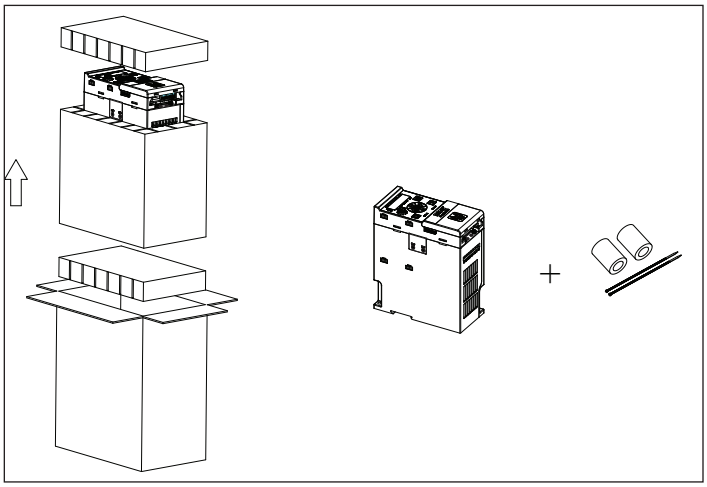
			Output rating		Mounting clearance imperial				Airflow
Input voltage	**Frame size**	**Drive catalog number**	**CT/IH current amps**	**VT/IL current amps**	**A in. (mm)**	**B in. (mm)**	**C in. (mm)**	**D in. (mm)**	**CFM (m3/h)**
380 Vac to 480 Vac, 50/60 Hz 3 phase	FR1	DM1-341D5…	1.5	2.2	0	0	1.97 (50)	1.97 (50)	14.83 (25.2)
		DM1-342D2…	2.2	4.3	0	0	1.97 (50)	1.97 (50)	14.83 (25.2)
		DM1-344D3…	4.3	5.6	0	0	1.97 (50)	1.97 (50)	14.83 (25.2)
		DM1-345D6…	5.6	7.6	0	0	1.97 (50)	1.97 (50)	14.83 (25.2)
	FR2	DM1-347D6…	7.6	12	0	0	1.97 (50)	1.97 (50)	37.43 (63.6)
		DM1-34012…	12	16	0	0	1.97 (50)	1.97 (50)	37.43 (63.6)
		DM1-34016…	16	23	0	0	1.97 (50)	1.97 (50)	37.43 (63.6)
	FR3	DM1-34023..	23	31	0	0	1.97 (50)	1.97 (50)	58.61 (99.6)
	FR4	DM1-34031…	31	38	0	0	1.97 (50)	1.97 (50)	57.56 (97.8)
		DM1-34038…	38	46	0	0	1.97 (50)	1.97 (50)	57.56 (97.8)
525 Vac to 600 Vac, 50/60 Hz 3 phase	FR2	DM1-351D7…	1.7	2.7	0	0	1.97 (50)	1.97 (50)	37.43 (63.6)
		DM1-352D7…	2.7	4.5	0	0	1.97 (50)	1.97 (50)	37.43 (63.6)
		DM1-354D5…	4.5	7.5	0	0	1.97 (50)	1.97 (50)	37.43 (63.6)
		DM1-357D5…	7.5	10	0	0	1.97 (50)	1.97 (50)	37.43 (63.6)
		DM1-35010…	10	13.5	0	0	1.97 (50)	1.97 (50)	37.43 (63.6)
	FR3	DM1-35013…	13.5	18	0	0	1.97 (50)	1.97 (50)	58.61 (99.6)
	FR4	DM1-35018…	18	22	0	0	1.97 (50)	1.97 (50)	57.56 (97.8)
		DM1-35022…	22	27	0	0	1.97 (50)	1.97 (50)	57.56 (97.8)

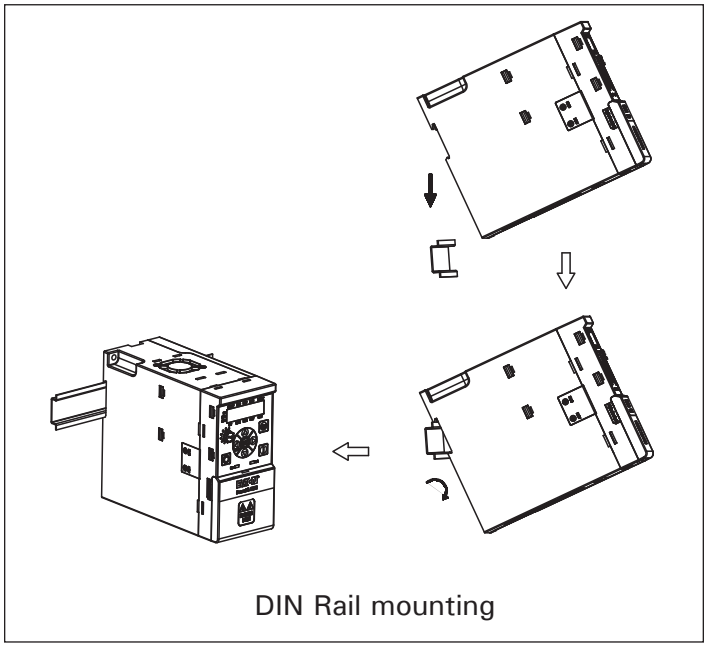
Note: For DM1 drives with option cards, allow 2.76 in. or 70 mm for dimension A for the option card enclosure.

FR1 mounting instructions

Step 1.

Lift the drive out from the carton and remove the packaging. The magnetic cores and cable ties are only included in EMI version drive.



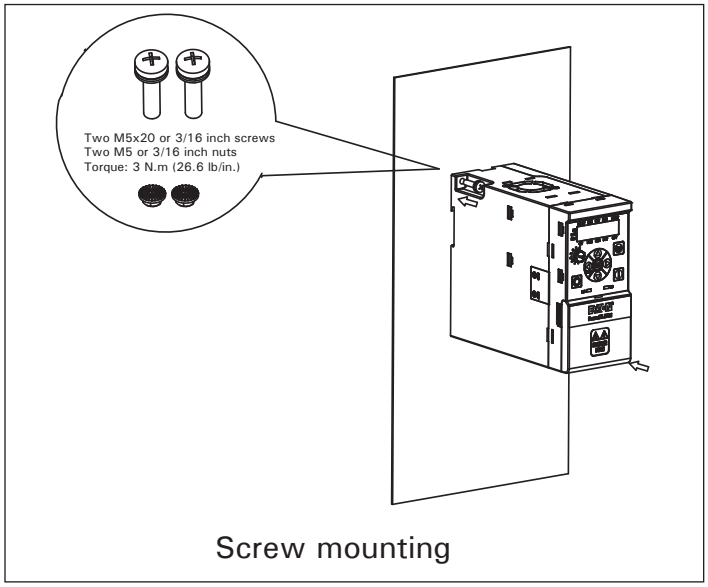


DIN Rail mounting

Step 2.

Screw mounting: Attach the drive to the mounting plate with two M5x20 (or 3/16 in.) screws and two M5 (or 3/16 in.) nuts. The opening dimension on the mounting plate should follow required dimension (refer to the dimension drawing in Table 1 of this document).

DIN Rail mounting: Lift the drive at an angle about 30 degrees. Align the top hooks of drive DIN rail mounting slot with DIN rail top edge. Push down and rotate the drive to clip the bottom hooks on the bottom DIN rail edge.

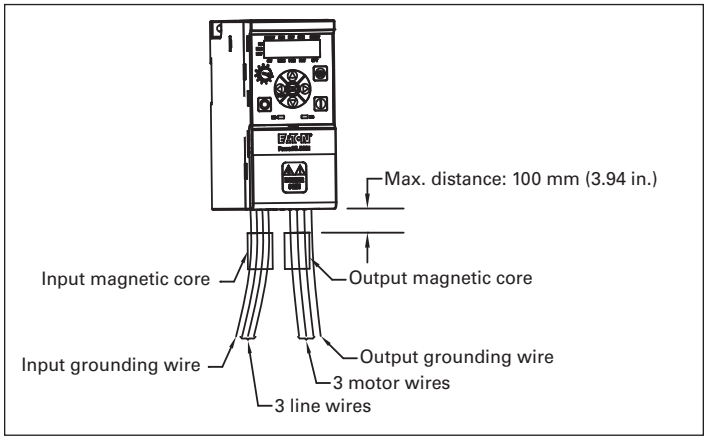


Screw mounting

Step 3. (EMI version only):

The input wires (including 3 line wires and 1 input grounding wire) should run through the input magnetic core before connecting to input terminal block and grounding hole. Use a cable tie to tie the input magnetic cores to the input wires. The output wires (only 3 motor wires) should run through the output magnetic core before connecting to output terminal block.

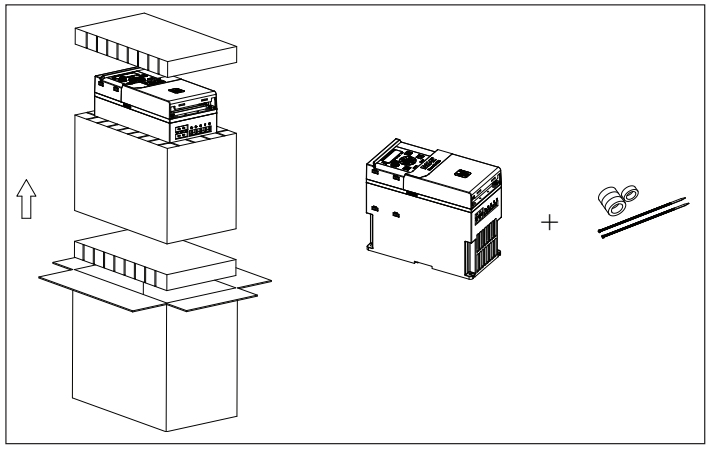
The output grounding wire should not run through the output magnetic core. Use a cable tie to tie the output magnetic cores to the output wires. The maximum distance between input / output magnetic cores top surface and drive bottom surface is 100 mm (3.94 in.). The input magnetic core and output magnetic core are the same for FR1.



FR2 mounting instructions

Step 1.

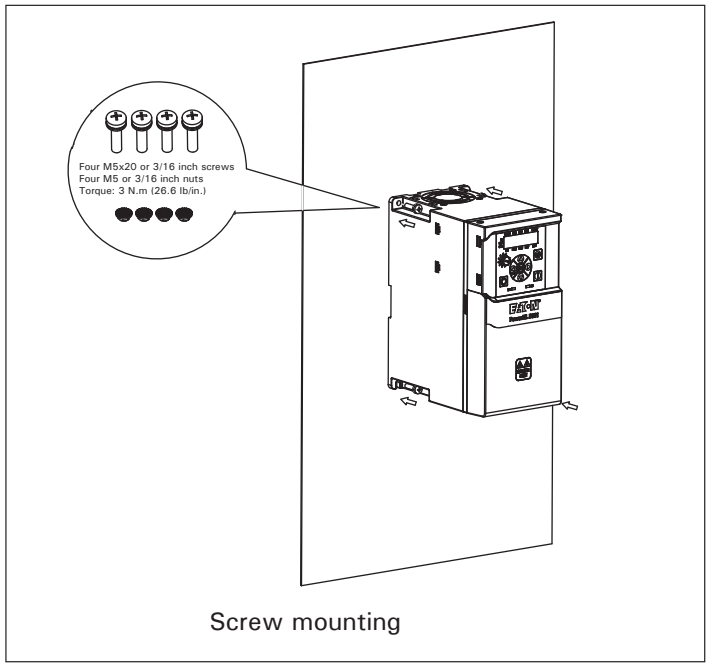
Lift the drive out from the carton, remove the packaging. The magnetic cores and cable ties are only included in EMI version drive.



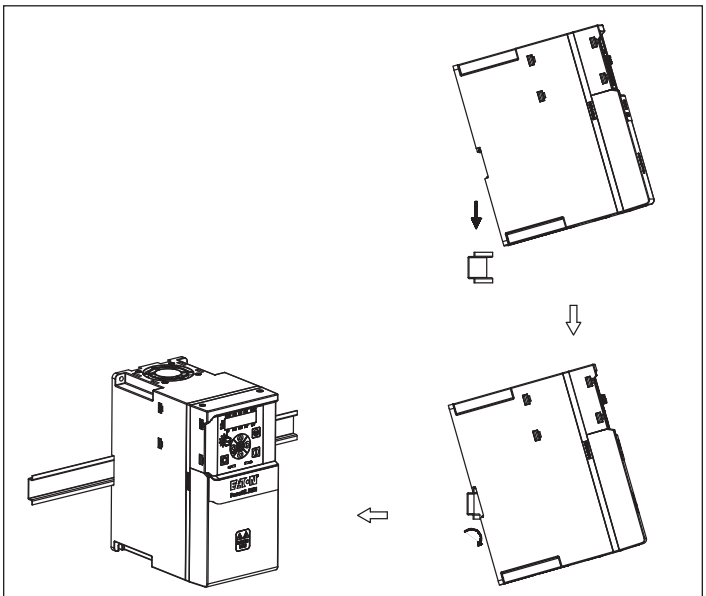
Step 2.

Screw mounting: Attach the drive to the mounting plate with four M5X20 (or 3/16 in.) screws and four M5 (or 3/16 in.) nuts. The opening dimension on the mounting plate should follow required dimension (refer to the dimension drawing in the instruction leaflet).

DIN Rail mounting: Lift the drive at an angle about 30 degrees. Align the top hooks of drive DIN rail mounting slot with DIN rail top edge. Push down and rotate the drive to clip the bottom hooks on the bottom DIN rail edge.



Screw mounting

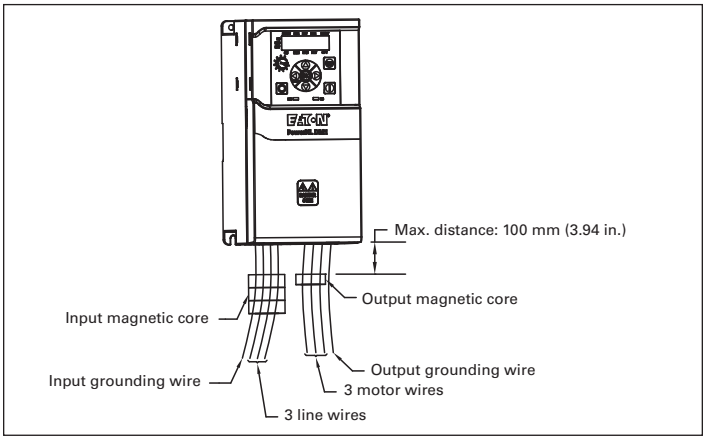


DIN Rail mounting

Step 3. (EMI version only):

The input wires (including 3 line wires and 1 input grounding wire) should run through the input magnetic core before connecting to input terminal block and grounding hole. Use a cable tie to tie the input magnetic cores to the input wires. The output wires (only 3 motor wires) should run through the output magnetic core before connecting to output terminal block.

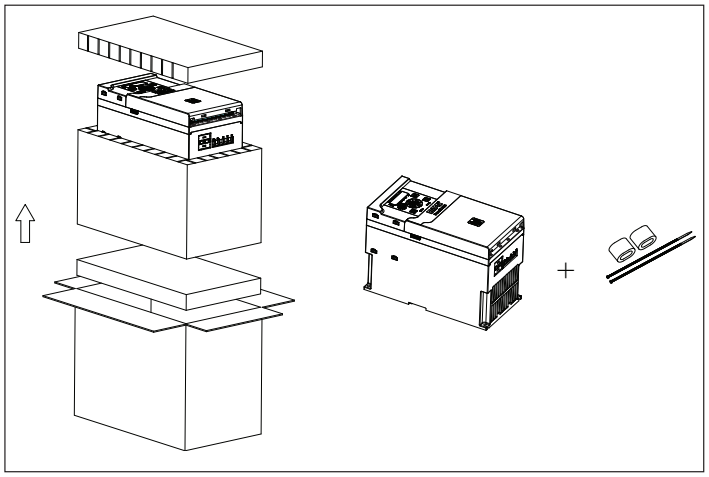
The output grounding wire should not run through the output magnetic core. Use a cable tie to tie the output magnetic cores to the output wires. The maximum distance between input / output magnetic cores top surface and drive bottom surface is 100 mm (3.94 in.). The height of input magnetic core is bigger than output magnetic core for 3 phase FR2 EMI version, but they are the same for 1 phase FR2 EMI version.



FR3 mounting instructions

Step 1.

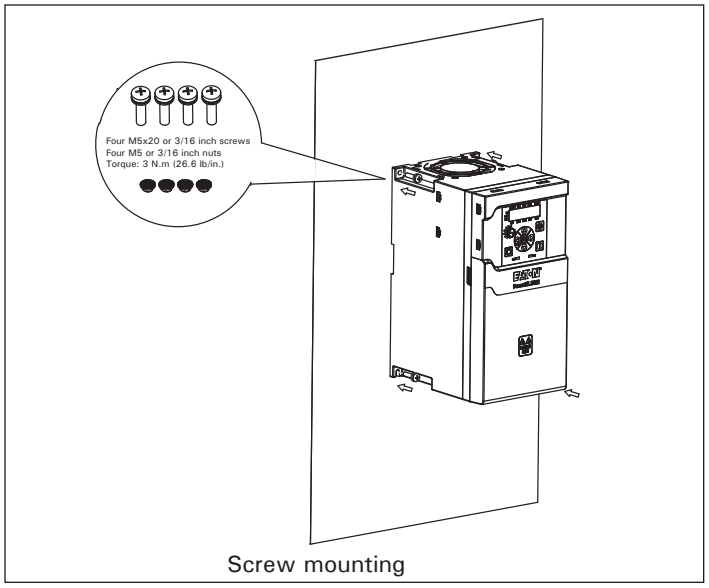
Lift the drive out from the carton, remove the packaging. The magnetic cores and cable ties are only included in EMI version drive.



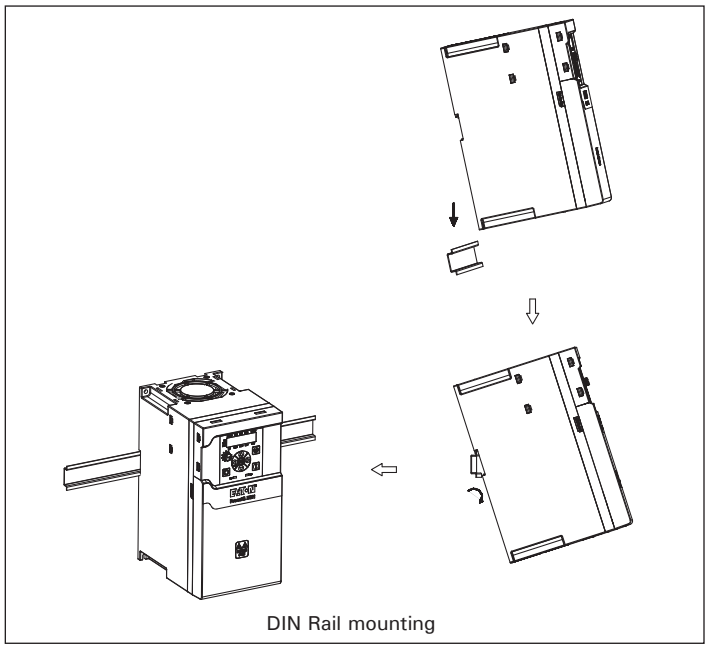
Step 2.

Screw mounting: Attach the drive to the mounting plate with four M5X20 (or 3/16 in.) screws and four M5 (or 3/16 in.) nuts. The opening dimension on the mounting plate should follow required dimension (refer to the dimension drawing in the instruction leaflet).

DIN Rail mounting: Lift the drive at an angle about 30 degrees. Align the top hooks of drive DIN rail mounting slot with DIN rail top edge. Push down and rotate the drive to clip the bottom hooks on the bottom DIN rail edge.



Screw mounting


DIN Rail mounting

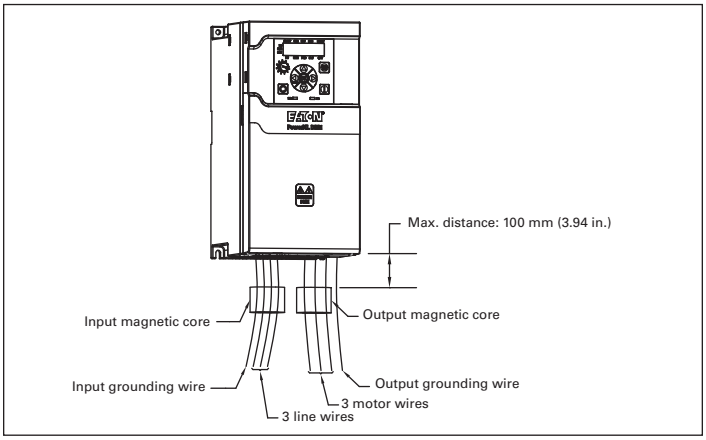
Step 3. (EMI version only):

The input wires (including three line wires and one input grounding wire) should run through the input magnetic core before connecting to input terminal block and grounding hole. Use a cable tie to tie the input magnetic cores to the input wires.

For 3-phase FR3 EMI version, the output wires (only three motor wires) should run through the output magnetic core before connecting to output terminal block. The output grounding wire should not run through the output magnetic core. Use a cable tie to tie the output magnetic cores to the output wires. For 1-phase FR3 EMI version, there is no output magnetic core. The motor wires and output grounding wire can be connected to corresponding terminals directly.

The maximum distance between input / output magnetic cores top surface and drive bottom surface is 100 mm.

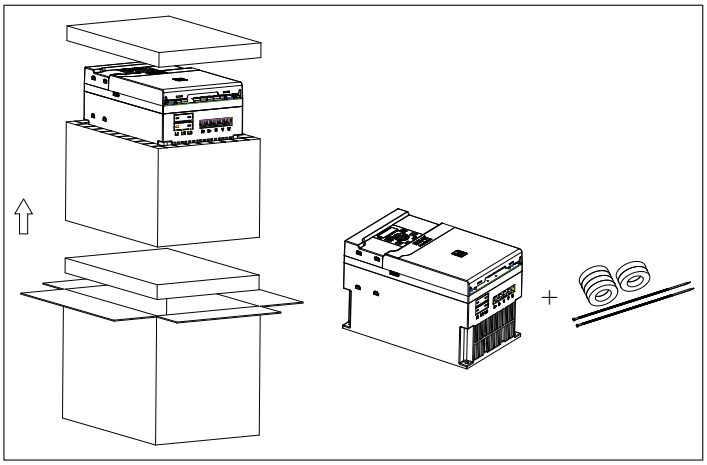
The input magnetic core and output magnetic core are the same for 3-phase FR3 EMI version.



FR4 mounting instructions

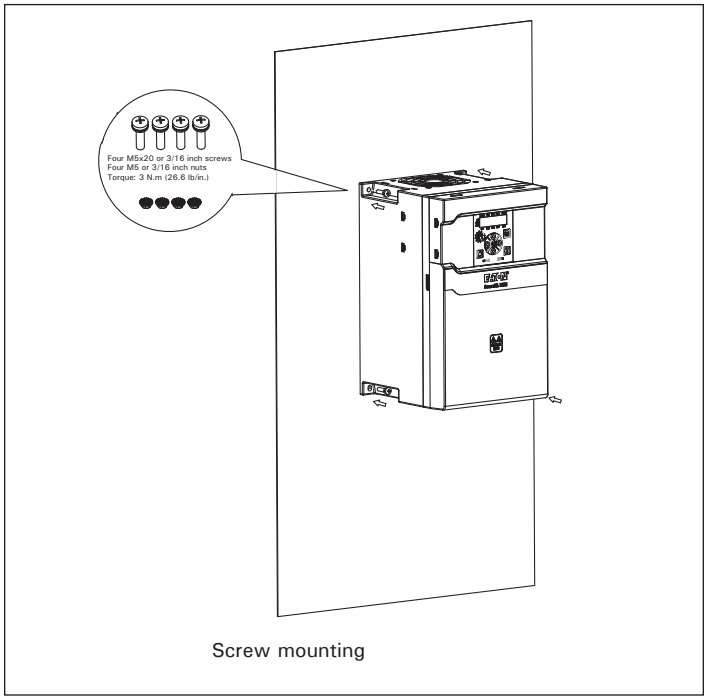
Step 1.

Lift the drive out from the carton, remove the packaging. The magnetic cores and cable ties are only included in EMI version drive.



Step 2.

Screw mounting: Attach the drive to the mounting plate with four M5x20 (or 3/16 in.) screws and four M5 (or 3/16 in.) nuts. The opening dimension on the mounting plate should follow required dimension (refer to the dimension drawing in the instruction leaflet).

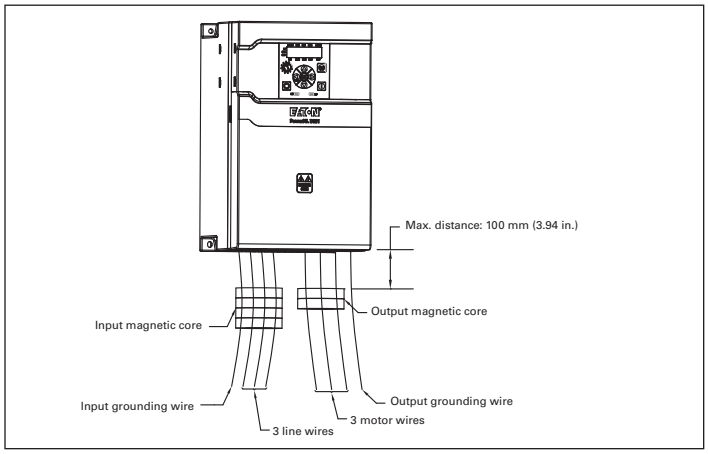


Screw mounting

Step 3. (EMI version only):

The input wires (including 3 line wires and 1 input grounding wire) should run through the input magnetic core before connecting to input terminal block and grounding hole. Use a cable tie to tie the input magnetic cores to the input wires. The output wires (only 3 motor wires) should run through the output magnetic core before connecting to output terminal block.

The output grounding wire should not run through the output magnetic core. Use a cable tie to tie the output magnetic cores to the output wires. The maximum distance between input / output magnetic cores top surface and drive bottom surface is 100 mm (3.94 in.). The height of input magnetic core is bigger than output magnetic core for FR4. .



Mounting instruction for option cards

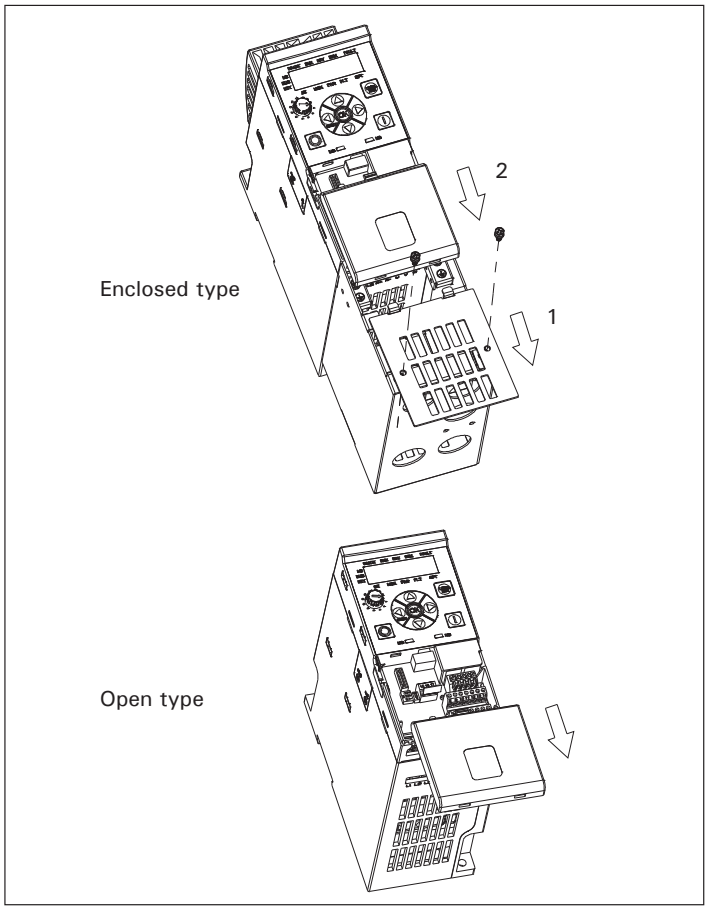
Step 1.

For enclosed type:

Remove the front cover (1) from NEMA 1 kit then remove the terminal cover (2) from drive.

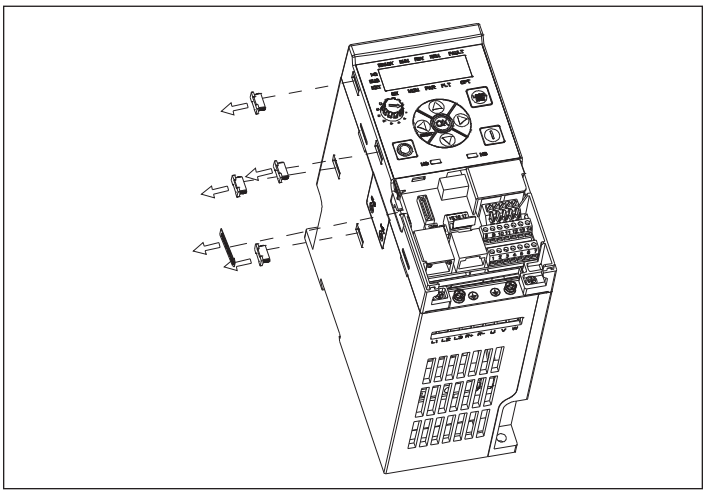
For open type:

Only remove the terminal cover.



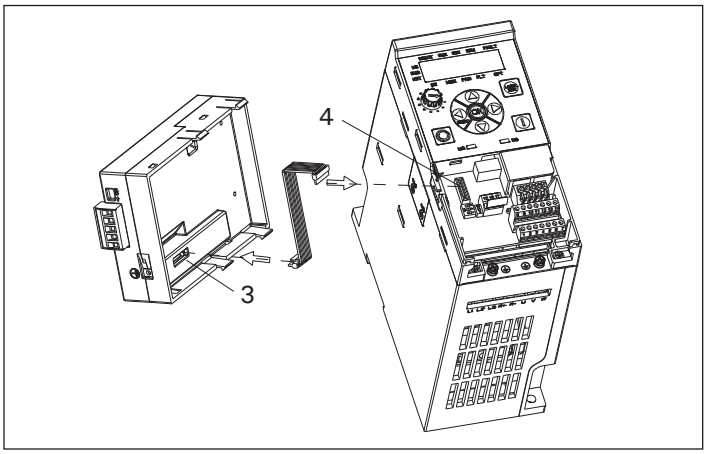
Step 2.

Remove the option card port label and four snap covers from the drive.



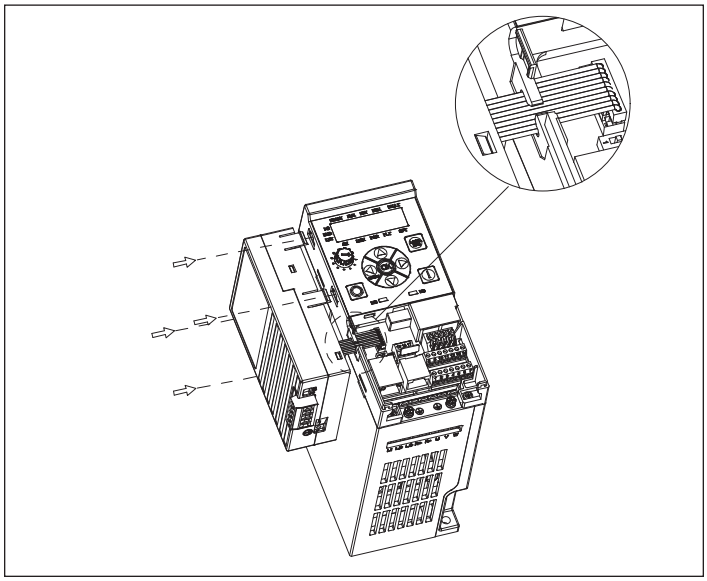
Step 3.

Connect the cable to option card connector (3) and MCU board connector (4).



Step 4.

Clamp the cable with the optional card port. Mount the option card to the drive by inserting the four snaps into the slots on drive.



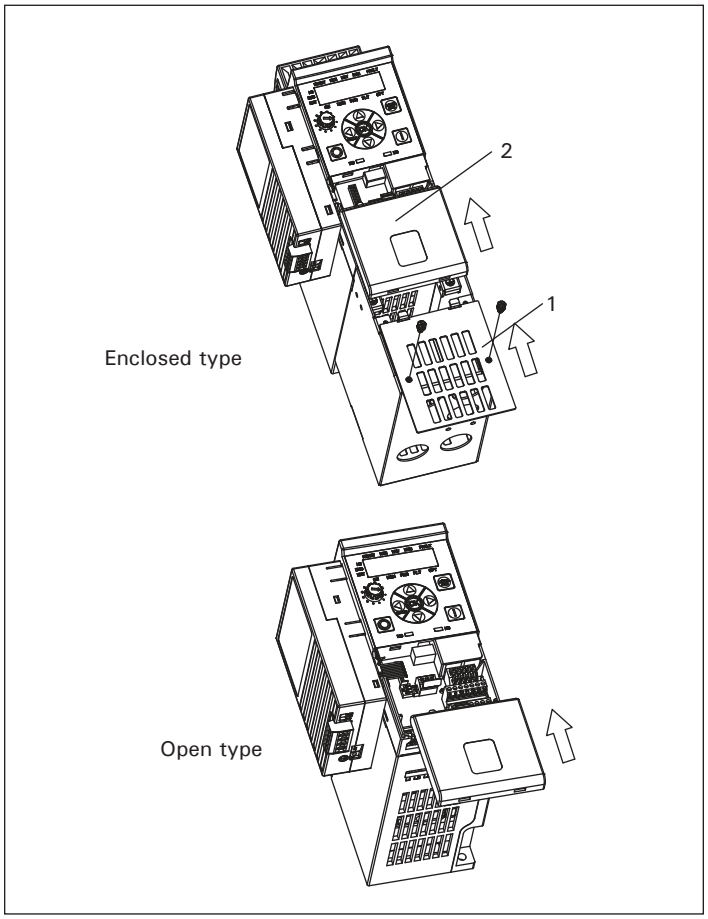
Step 5.

For enclosed type:

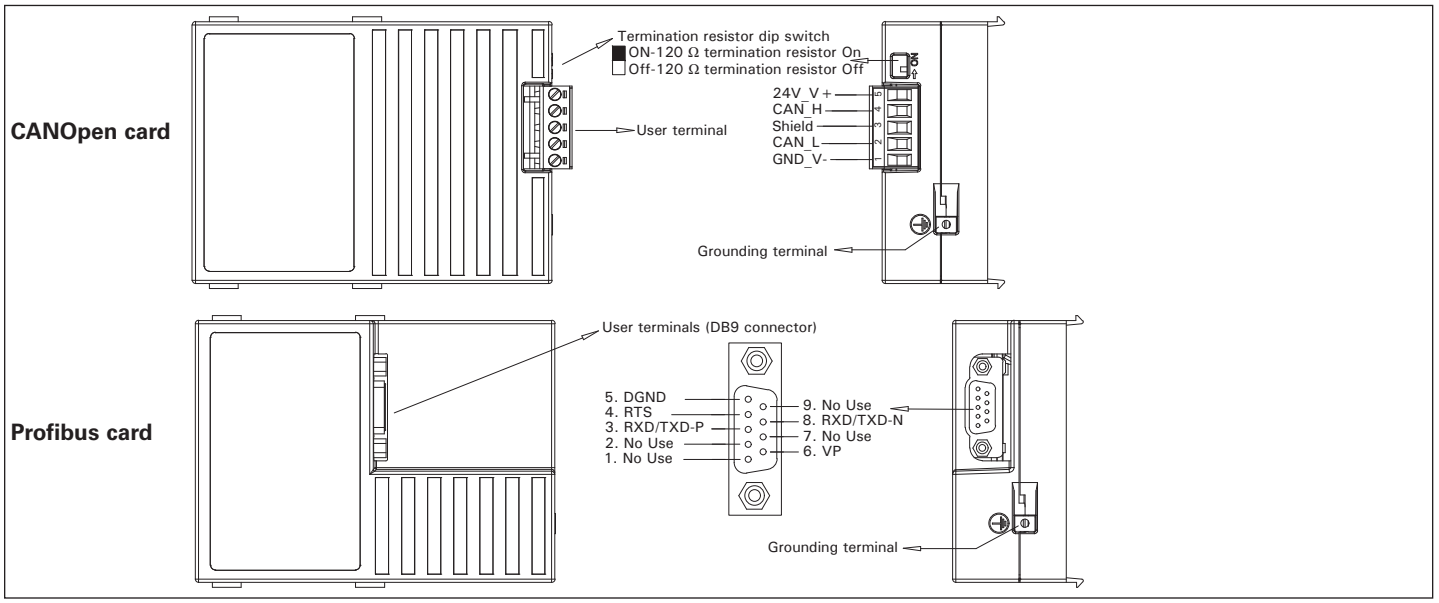
Install the terminal cover (1) to the drive then install the front cover (2) to NEMA 1 kit.

For open type:

Only install the terminal cover to the drive.



Wiring instruction.



(en) **Warning!**
Connect only in voltage-free state!

(es) **¡Advertencia!**
¡Conectar únicamente en estado sin tensión!

(fr) **Avertissement !**
Raccordez l'appareil uniquement hors tension !

(de) **Warnung!**
Nur im spannungsfreien Zustand anschließen!

(it) **Avvertimento!**
Collegare solo in assenza di tensione!

(nl) **Waarschuwing!**
Alleen in spanningsloze toestand aansluiten!

(da) **Advarsel!**
Må kun tilsluttes i spændingsfri tilstand!

(el) **Προειδοποίηση!**
Συνδέστε μόνο όταν δεν επικρατεί τάση!

(pt) **Atenção!**
Ligar apenas com a tensão desligada!

(sv) **Varning!**
Får endast anslutas i spänningsfritt tillstånd!

(fi) **Varoitus!**
Kytke vain jännitteettömässä tilassa!

(cs) **Varování!**
Připojujte jen při zcela odpojeném napájení!

(et) **Hoiatus!**
Ühendada ainult pingevabas olekus!

(hu) **Figyelmeztetés!**
Csak feszültségmentes állapotban csatlakoztassa!

(lv) **Brīdinājums!**
Pieslēgt tikai tad, kad nenotiek sprieguma padeve!

(lt) **Perspėjimas!**
Prijungti tik tada, kai išjungta įtampa!

(pl) **Ostrzeżenie!**
Podłączać zawsze po uprzednim odłączeniu od zasilania elektrycznego!

(sl) **Opozorilo!**
Napravo priključite le, ko ni pod napetostjo!

(sk) **Varovanie!**
Napájat˙ len v stave bez napätia!

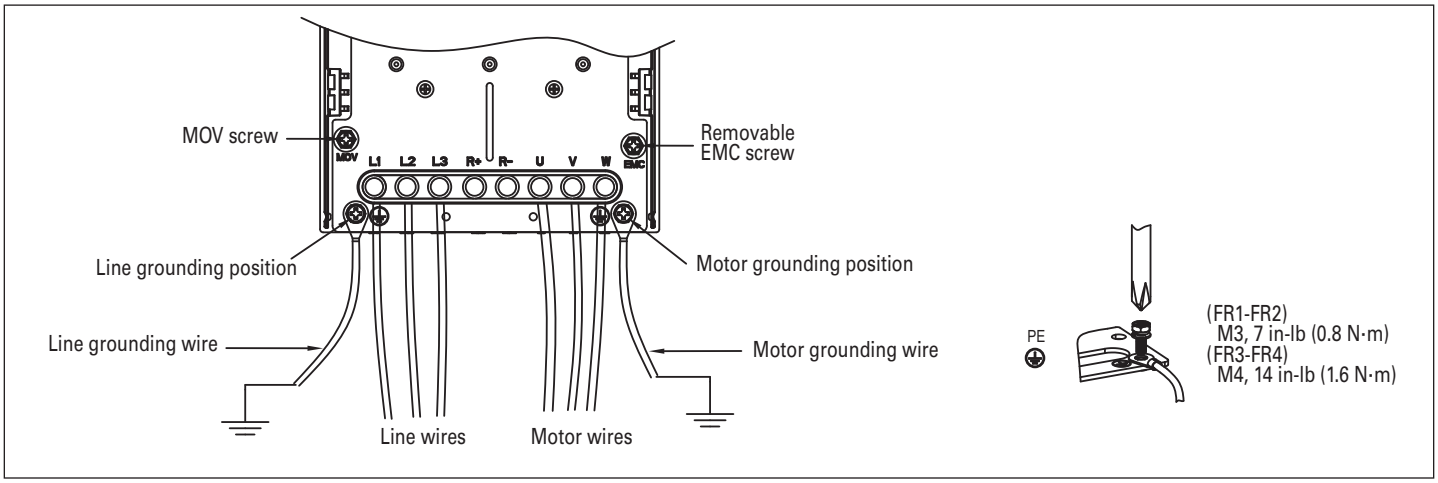
(bg) **Предупреждение!**
Свързвайте само, когато уреда не е под напрежение!

(ro) **Atenţie!**
Conectaţi doar când aparatul nu se află sub tensiune!

(ru) **Предупреждение!**
Подключать только в обесточенном состоянии!

(zh) **警告！**
必须在断电状态下进行连接！

Ground wiring



Input power and motor cable stripping lengths

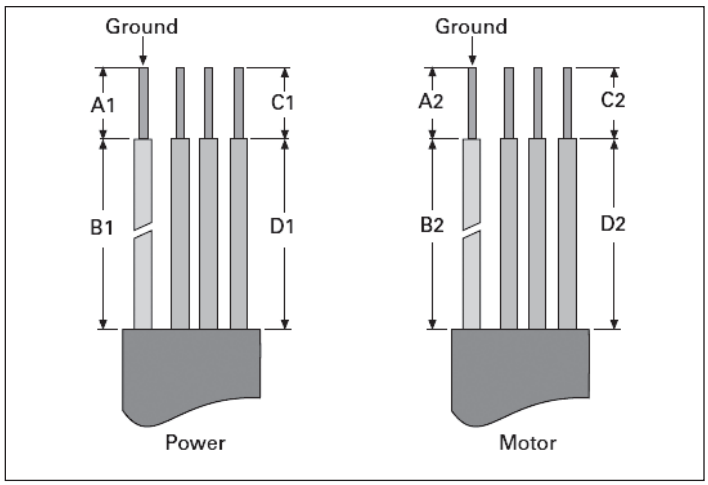


Table 3. Stripping lengths.

Frame size	Power wiring				Motor wiring			
	A1 in. (mm)	B1 in. (mm)	C1 in. (mm)	D1 in. (mm).	A2 in. (mm)	B2 in. (mm)	C2 in. (mm)	D2 in. (mm)
FR1	0.39 (10)	2.76 (70)	0.39 (10)	2.76 (70)	0.39 (10)	2.76 (70)	0.39 (10)	2.76 (70)
FR2	0.47 (12)	2.76 (70)	0.47 (12)	2.76 (70)	0.47 (12)	2.76 (70)	0.47 (12)	2.76 (70)
FR3	0.47 (12)	3.54 (90)	0.47 (12)	3.54 (90)	0.47 (12)	3.54 (90)	0.47 (12)	3.54 (90)
FR4	0.79 (20)	4.53 (115)	0.79 (20)	4.53 (115)	0.79 (20)	4.53 (115)	0.79 (20)	4.53 (115)

Note: For I/O / STO / Relay output wires, the stripping length = 0.236-0.276 in. (6-7 mm).

Table 4. Connection sizes and torques.①②

			Output rating		Size and torque						
Input voltage	Frame size	Drive catalog number	CT/IH current amps	VT/IL current amps	Power wire size AWG (mm2)	Power wire torque in.-lb (N·m)	Ground wire size AWG (mm2)	Ground wire torque in.-lb (N·m)	Control wire size AWG (mm2)	Control wire torque in.-lb (N·m) AI/DI ③	RO
100 Vac to 120 Vac 50/60 Hz 1 phase	FR1	DM1-111D6…	1.6	2.5	14 (2.5)	4.4 (0.5)	14 (2.5)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-113D0…	3	4.8	14 (2.5)	4.4 (0.5)	14 (2.5)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
	FR2	DM1-114D8…	4.8	6.9	10 (6)	10.5 (1.2)	10 (6)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-116D9…	6.9	7.8	10 (6)	10.5 (1.2)	10 (6)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
200 Vac to 240 Vac 50/60 Hz 1 phase	FR1	DM1-121D6…	1.6	2.5	14 (2.5)	4.4 (0.5)	14 (2.5)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-123D0…	3	4.8	14 (2.5)	4.4 (0.5)	14 (2.5)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-124D8…	4.8	7.8	14 (2.5)	4.4 (0.5)	14 (2.5)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
	FR2	DM1-127D8…	7.8	11	10 (6)	10.5 (1.2)	10 (6)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-12011…	11	17.5	10 (6)	10.5 (1.2)	10 (6)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
	FR3	DM1-12017…	17.5	25.3	8 (10)	10.5 (1.2)	8 (10)	14.2 (1.6)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
200 Vac to 240 Vac 50/60 Hz 3 phase	FR1	DM1-321D6…	1.6	2.5	14 (2.5)	4.4 (0.5)	14 (2.5)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-323D0…	3	4.8	14 (2.5)	4.4 (0.5)	14 (2.5)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-324D8…	4.8	7.8	14 (2.5)	4.4 (0.5)	12 (2.5)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-327D8…	7.8	11	12 (4)	4.4 (0.5)	10 (4)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
	FR2	DM1-32011…	11	17.5	10 (6)	10.5 (1.2)	10 (6)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-32017…	17.5	25.3	8 (10)	10.5 (1.2)	10 (10)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
	FR3	DM1-32025…	25.3	32.2	8 (10)	10.5 (1.2)	8 (10)	14.2 (1.6)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
	FR4	DM1-32032…	32.2	48.3	4 (25)	33 (3.73)	8 (16)	14.2 (1.6)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-32048…	48.3	62.1	3 (35)	33 (3.73)	6 (16)	14.2 (1.6)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)

Table 4. Connection sizes and torques (Continued).①②

			Output rating		Size and torque						
Input voltage	**Frame size**	**Drive catalog number**	**CT/IH current amps**	**VT/IL current amps**	**Power wire size AWG (mm2)**	**Power wire torque in.-lb (N·m)**	**Ground wire size AWG (mm2)**	**Ground wire torque in.-lb (N·m)**	**Control wire size AWG (mm2)**	**Control wire torque in.-lb (N·m) AI/DI** ③	**RO**
380 Vac to 480 Vac 50/60 Hz 3 phase	FR1	DM1-341D5…	1.5	2.2	14 (2.5)	4.4 (0.5)	14 (2.5)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-342D2…	2.2	4.3	14 (2.5)	4.4 (0.5)	14 (2.5)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-344D3…	4.3	5.6	14 (2.5)	4.4 (0.5)	14 (2.5)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-345D6…	5.6	7.6	14 (2.5)	4.4 (0.5)	10 (2.5)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
	FR2	DM1-347D6…	7.6	12	12 (4)	10.5 (1.2)	10 (4)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-34012…	12	16	10 (6)	10.5 (1.2)	10 (6)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-34016…	16	23	8 (10)	10.5 (1.2)	10 (10)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
	FR3	DM1-34023..	23	31	8 (10)	10.5 (1.2)	8 (10)	14.2 (1.6)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
	FR4	DM1-34031…	31	38	6 (16)	33 (3.73)	8 (16)	14.2 (1.6)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-34038…	38	46	4 (25)	33 (3.73)	8 (16)	14.2 (1.6)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
525 Vac to 600 Vac 50/60 Hz 3 phase	FR2	DM1-351D7…	1.7	2.7	12 (4)	10.5 (1.2)	10 (4)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-352D7…	2.7	4.5	12 (4)	10.5 (1.2)	10 (4)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-354D5…	4.5	7.5	12 (4)	10.5 (1.2)	10 (4)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-357D5…	7.5	10	12 (4)	10.5 (1.2)	10 (4)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-35010…	10	13.5	12 (4)	10.5 (1.2)	10 (4)	7.1 (0.8)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
	FR3	DM1-35013…	13.5	18	8 (10)	10.5 (1.2)	8 (10)	14.2 (1.6)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
	FR4	DM1-35018…	18	22	6 (16)	33 (3.73)	8 (16)	14.2 (1.6)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)
		DM1-35022…	22	27	4 (25)	33 (3.73)	8 (16)	14.2 (1.6)	28-16 (0.5-1.5)	1.73 (0.2)	4.5 (0.5)

Notes:
① Strip the motor and power cables as shown above.
② Both UL® and IEC tools may be used.
③ Applies to strained wire, solid wire, or ferrule installations.

Cable and fuse guidelines

Table 5. North America cable and fuse sizes. ①②

UL cable and fuse sizes

			Output rating		Input rating		UL application							
Input voltage	**Frame size**	**Drive catalog number**	**CT/IH current amps**	**VT/IL current amps**	**CT/IH current amps**	**VT/IL current amps**	**Recommended fuse (Max. rating) 100 kAIC③**	**Recommended miniature circuit breaker (Max. rating) 10/14 kAIC**	**Recommended Type E CMC (Max. Rating) 65 kAIC**	**Recommended circuit breaker (Max. rating) 100 kAIC (Open type only)**	**NEC wire size line and motor AWG**	**NEC wire size ground AWG**	**Terminal size line and motor AWG**	**Terminal size ground AWG**
100 Vac to 120 Vac 50/60 Hz 1 phase	FR1	DM1-111D6…	1.6	2.5	6.4	9.6								
		DM1-113D0…	3	4.8	12	20								
	FR2	DM1-114D8…	4.8	6.9	20	29								
		DM1-116D9…	6.9	7.8	29	34.3								
200 Vac to 240 Vac 50/60 Hz 1 phase	FR1	DM1-121D6…	1.6	2.5	3.2	5								
		DM1-123D0…	3	4.8	6	9.6								
		DM1-124D8…	4.8	7.8	10	16								
	FR2	DM1-127D8…	7.8	11	16	23								
		DM1-12011…	11	17.5	23	35								
	FR3	DM1-12017…	17.5	25.3	39.6	49.6								
200 Vac to 240 Vac 50/60 Hz 3 phase	FR1	DM1-321D6…	1.6	2.5	2.1	3.3	6	5	6.3	15	14	14	18-8	16-10
		DM1-323D0…	3	4.8	3.9	5.8	15	10	6.3	15	14	14	18-8	16-10
		DM1-324D8…	4.8	7.8	5.8	9.4	20	15	10	15	14	12	18-8	16-10
		DM1-327D8…	7.8	11	9.4	13.2	30	20	16	20	12	10	18-8	16-10
	FR2	DM1-32011…	11	17.5	12.7	20.1	40	30	25	30	10	10	20-6	12-8
		DM1-32017…	17.5	25.3	20.1	29.1	60	40	32	45	8	10	20-6	12-8
	FR3	DM1-32025…	25.3	32.2	29.1	37	70	50	40	50	8	8	20-6	10-8
	FR4	DM1-32032…	32.2	48.3	35.4	53.1	100	\	\	80	4	8	20-2	8-6
		DM1-32048…	48.3	62.1	53.1	68.3	125	\	\	100	3	6	20-2	8-6
380 Vac to 480 Vac 50/60 Hz 3 phase	FR1	DM1-341D5…	1.5	2.2	1.8	2.6	6	4	6.3	15	14	14	18-8	16-10
		DM1-342D2…	2.2	4.3	2.6	5.2	10	8	6.3	15	14	14	18-8	16-10
		DM1-344D3…	4.3	5.6	5.2	6.7	15	10	10	15	14	14	18-8	16-10
		DM1-345D6…	5.6	7.6	6.7	9.1	30	15	10	15	14	10	18-8	16-10
	FR2	DM1-347D6…	7.6	12	9.1	14.4	30	20	16	20	12	10	20-6	12-8
		DM1-34012…	12	16	14.4	19.2	40	25	25	30	10	10	20-6	12-8
		DM1-34016…	16	23	19.2	27.6	60	32	32	40	8	10	20-6	12-8
	FR3	DM1-34023..	23	31	26.5	35.7	70	\	40	50	8	8	20-6	10-8
	FR4	DM1-34031…	31	38	35.7	43.7	70	\	50	70	6	8	20-2	8-6
		DM1-34038…	38	46	43.7	52.9	80	\	58	80	4	8	20-2	8-6
525 Vac to 600 Vac 50/60 Hz 3 phase	FR2	DM1-351D7…	1.7	2.7										
		DM1-352D7…	2.7	4.5										
		DM1-354D5…	4.5	7.5										
		DM1-357D5…	7.5	10										
		DM1-35010…	10	13.5										
	FR3	DM1-35013…	13.5	18										
	FR4	DM1-35018…	18	22										
		DM1-35022…	22	27										

Notes:

① Line and motor cable size is selected according to UL 508C Table 40.3 for copper conductor rated 75°C. Use only with copper wire rated 75°C here. Size requirements for other different wire types are defined in the National Electrical Code®, ANSI/NFPA® 70.

② Earthing conductor size is determined by the maximum overcurrent device rating used ahead of the drive according to UL 508C Table 6.4.

③ If power cubes or bypass are used, a UL listed Class RK5, J, T or equivalent fuse is recommended.

Table 6. Table 6. International cable and fuse sizes. ①②

IEC Cable and Fuse Sizes

			Output rating		Input rating		IEC application							
Input voltage	**Frame size**	**Catalog number**	**CT/IH current amps**	**VT/IL current amps**	**CT/IH current amps**	**VT/IL current amps**	**Recommended fuse (Max. rating) 100 kAIC③**	**Recommended miniature circuit breaker (Max. rating) 10/14 kAIC**	**Recommended Type E CMC (Max. rating) 65 kAIC**	**Recommended circuit breaker (Max. rating) 100 kAIC (Open type only)**	**IEC cable size Line and motor mm²**	**IEC cable size Ground mm²**	**Terminal size Line and motor mm²**	**Terminal size Ground mm²**
100 Vac to 120 Vac 50/60 Hz 1 phase	FR1	DM1-111D6…	1.6	2.5	6.4	9.6	30	30	\	30	2.5	2.5	0.2-6	TBD
		DM1-113D0…	3	4.8	12	20	70	63	\	70	6	6	0.2-6	TBD
	FR2	DM1-114D8…	4.8	6.9	20	29	90	63	\	90	10	10	0.5-16	TBD
		DM1-116D9…	6.9	7.8	29	34.3	125	63	\	125	10	10	0.5-16	TBD
200 Vac to 240 Vac 50/60 Hz 1 phase	FR1	DM1-121D6…	1.6	2.5	3.2	5	15	15	\	15	2.5	2.5	0.2-6	TBD
		DM1-123D0…	3	4.8	6	9.6	30	30	\	30	2.5	2.5	0.2-6	TBD
		DM1-124D8…	4.8	7.8	10	16	60	63	\	60	4	4	0.2-6	TBD
	FR2	DM1-127D8…	7.8	11	16	23	80	63	\	80	6	6	0.5-16	TBD
		DM1-12011…	11	17.5	23	35	125	63	\	125	10	10	0.5-16	TBD
	FR3	DM1-12017…	17.5	25.3	39.6	49.6	200	\	\	200	16	16	0.5-16	TBD
200 Vac to 240 Vac 50/60 Hz 3 phase	FR1	DM1-321D6…	1.6	2.5	2.1	3.3	6	5	6.3	15	2.5	2.5	0.2-6	1.5-6.0
		DM1-323D0…	3	4.8	3.9	5.8	15	10	6.3	15	2.5	2.5	0.2-6	1.5-6.0
		DM1-324D8…	4.8	7.8	5.8	9.4	20	15	10	15	2.5	2.5	0.2-6	1.5-6.0
		DM1-327D8…	7.8	11	9.4	13.2	30	20	16	20	4	4	0.2-6	1.5-6.0
	FR2	DM1-32011…	11	17.5	12.7	20.1	40	30	25	30	6	6	0.5-16	4.0-10
		DM1-32017…	17.5	25.3	20.1	29.1	60	40	32	45	10	10	0.5-16	4.0-10
	FR3	DM1-32025…	25.3	32.2	29.1	37	70	50	40	50	10	10	0.5-16	6.0-10
	FR4	DM1-32032…	32.2	48.3	35.4	53.1	100	\	\	80	25	16	0.5-35	10-16
		DM1-32048…	48.3	62.1	53.1	68.3	125	\	\	100	35	16	0.5-35	10-16
380 Vac to 480 Vac 50/60 Hz 3 phase	FR1	DM1-341D5…	1.5	2.2	1.8	2.6	6	4	6.3	15	2.5	2.5	0.2-6	1.5-6.0
		DM1-342D2…	2.2	4.3	2.6	5.2	10	8	6.3	15	2.5	2.5	0.2-6	1.5-6.0
		DM1-344D3…	4.3	5.6	5.2	6.7	15	10	10	15	2.5	2.5	0.2-6	1.5-6.0
		DM1-345D6…	5.6	7.6	6.7	9.1	30	15	10	15	2.5	2.5	0.2-6	1.5-6.0
	FR2	DM1-347D6…	7.6	12	9.1	14.4	30	20	16	20	4	4	0.5-16	4.0-10
		DM1-34012…	12	16	14.4	19.2	40	25	25	30	6	6	0.5-16	4.0-10
		DM1-34016…	16	23	19.2	27.6	60	32	32	40	10	10	0.5-16	4.0-10
	FR3	DM1-34023..	23	31	26.5	35.7	70	\	40	50	10	10	0.5-16	6.0-10
	FR4	DM1-34031…	31	38	35.7	43.7	70	\	50	70	16	16	0.5-35	10-16
		DM1-34038…	38	46	43.7	52.9	80	\	58	80	25	16	0.5-35	10-16
525 Vac to 600 Vac 50/60 Hz 3 phase	FR2	DM1-351D7…	1.7	2.7										
		DM1-352D7…	2.7	4.5										
		DM1-354D5…	4.5	7.5										
		DM1-357D5…	7.5	10										
		DM1-35010…	10	13.5										
	FR3	DM1-35013…	13.5	18										
	FR4	DM1-35018…	18	22										
		DM1-35022…	22	27										

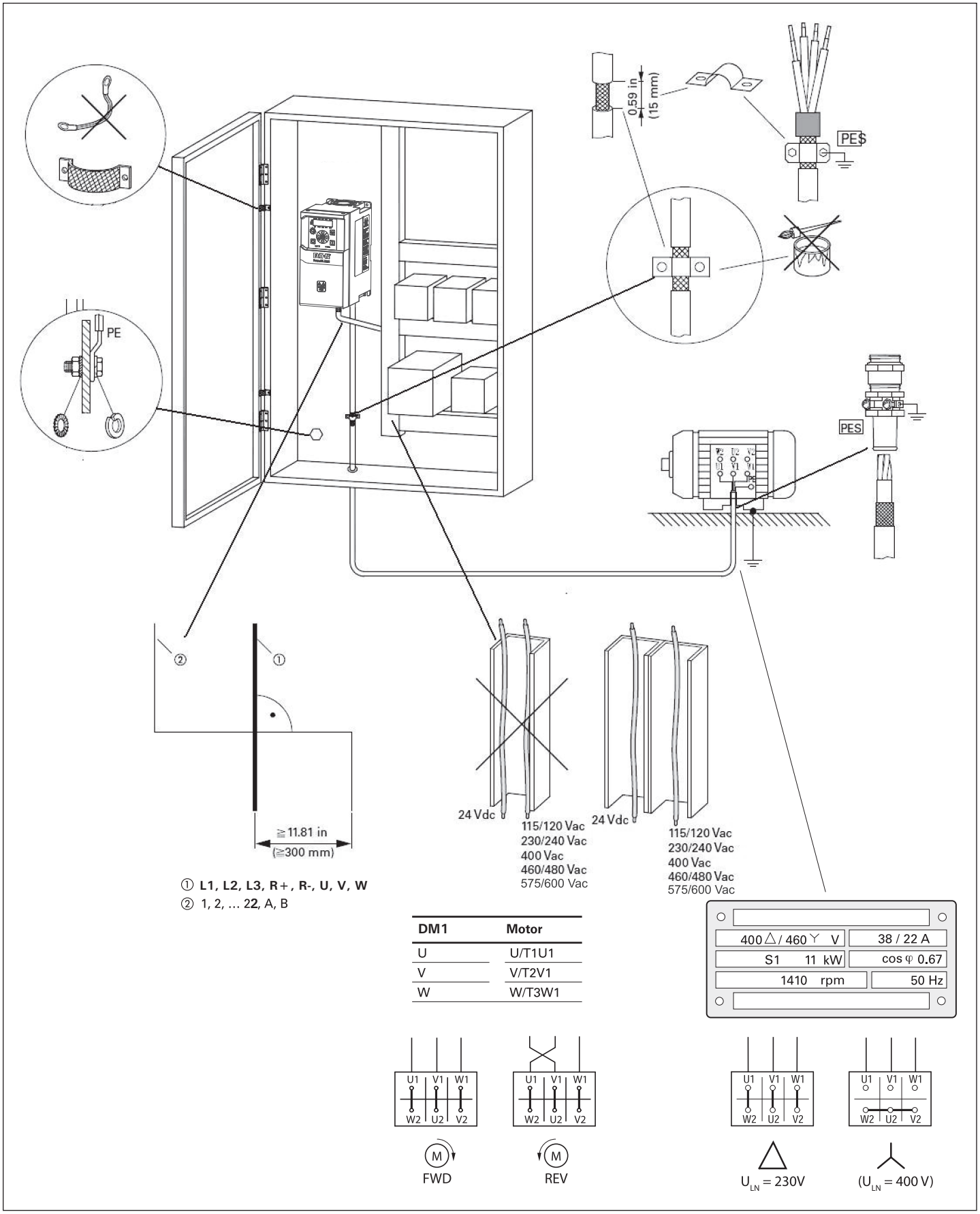
Notes:

① Line and motor cable size is selected according to IEC 60364-5-52:2009 Table B.52.4 for copper conductor with PVC insulation with a wiring condition of ambient temperature 30°C in air and an installation method of "B2" (cables in conduit and cable trunking systems). For other wiring conditions, please refer to the standard of IEC 60364-5-52:2009 for suitable cable sizes.

② Earthing conductor size is determined by the cross-sectional area of phase conductors according to IEC/EN 61800-5-1:2007 Table 5. So if phase conductor size is changed, earthing conductor size should also be changed accordingly.

③ If power cubes or bypass are used, a Class gG/gL fuse is recommended.

Installation overview for DM1



① **L1, L2, L3, R+, R-, U, V, W**
② 1, 2, ... 2**2**, A, B

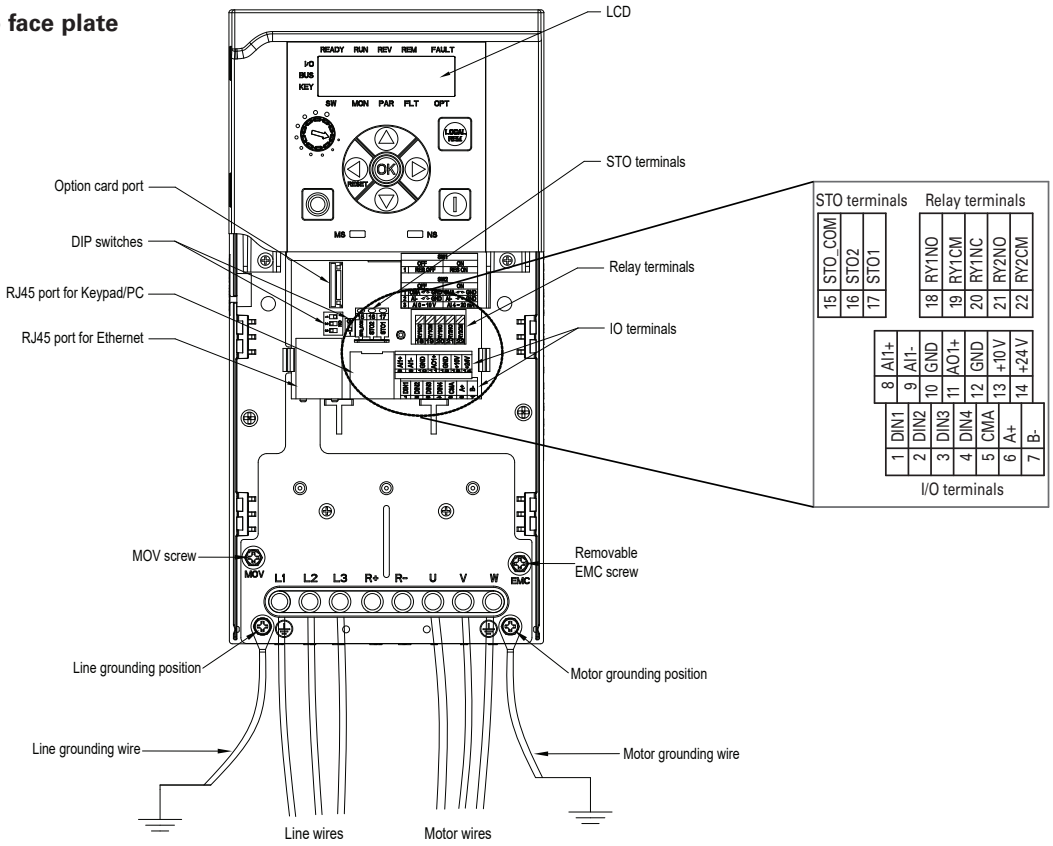
DM1	Motor
U	U/T1U1
V	V/T2V1
W	W/T3W1

U_{LN} = 230V

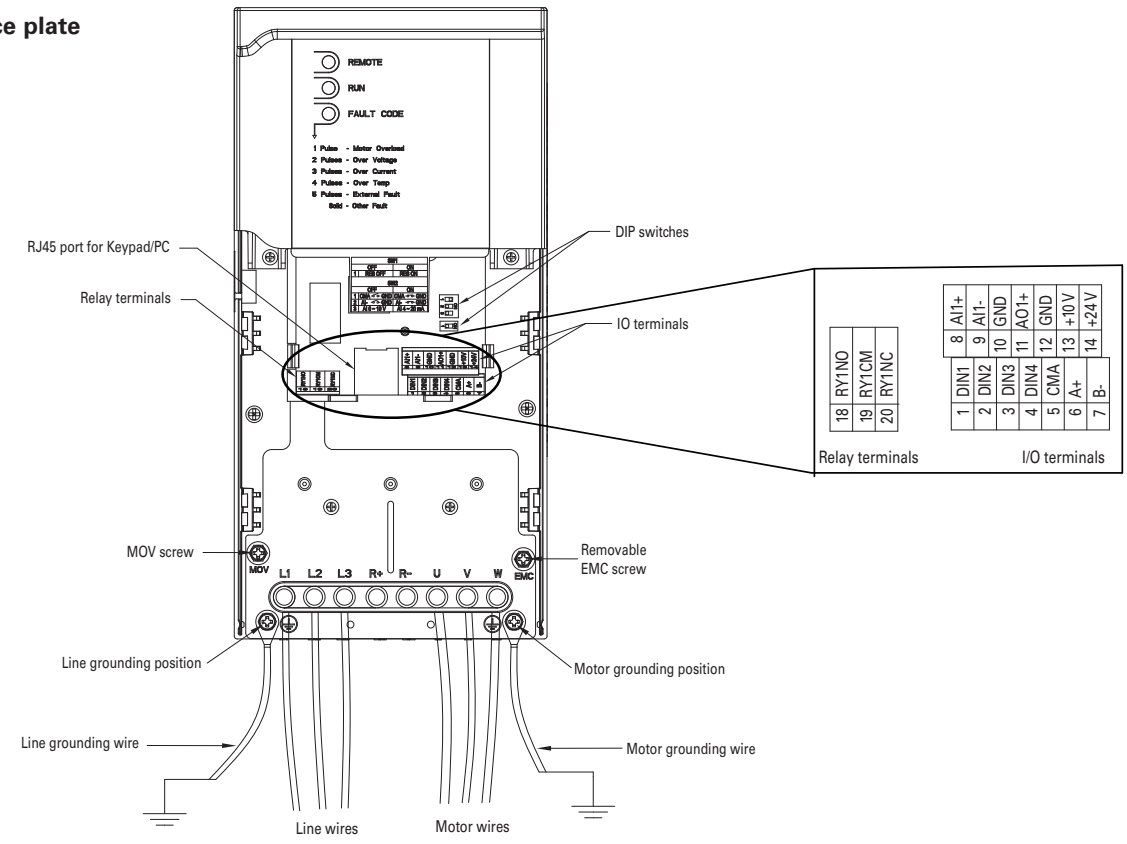
(U_{LN} = 400 V)

Control board layout

DM1 Pro face plate

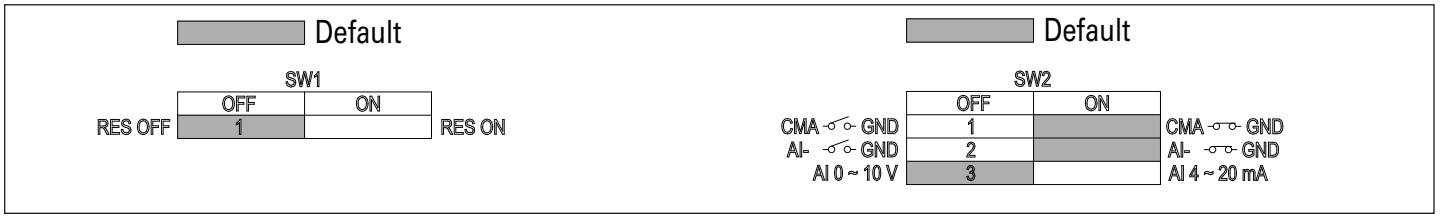


DM1 face plate



Factory-set control terminal functions

Table 7. I/O connection.



External wiring	Terminal	Short name	Name	Default setting	Description
	1	DI1	Digital input 1	Run forward	Starts the motor in the forward direction.
	2	DI2	Digital input 2	Run reverse	Start the motor in the reverse direction.
	3	DI3	Digital input 3	External fault	Triggers a fault in the drive.
	4	DI4	Digital input 4	Fault reset	Resets active faults in the drive.
	5	CMA	DI1 to DI4 common	Grounded	Allows for sourced input.
	6	A	RS-485 signal A	—	Fieldbus communication (Modbus RTU, BACNet).
	7	B	RS-485 signal B	—	Fieldbus communication (Modbus RTU, BACNet).
Res	8	AI1+ ①	Analog input 1	0 - 10 V	Voltage speed reference (programmable to 4 mA to 20 mA).
	9	AI1-	Analog input 1 ground	—	Analog input 1 common (ground).
	10	GND	I/O signal ground	—	I/O ground for reference and control.
	11	AO1+	Analog output 1	Output frequency	Shows output frequency to motor 0 - 60 Hz (4 mA to 20 mA).
	12	GND	I/O signal ground	—	I/O ground for reference and control.
	13	10 V	10 Vdc reference output	10.3 Vdc +/- 3%	10 Vdc reference voltage.
	14	24 V	24 Vdc control output	24 Vdc In/Out	Control voltage input/output (100 mA max.).
	15	STO_com	Safe torque common	—	Safe torque Off common.
	16	STO2	Safe torque Off 2	—	Safe torque Off 2 input.
	17	STO1	Safe torque Off 1	—	Safe torque Off 1 input.
	18	R1NO	Relay 1 normally open	Run	Changes state when the drive is in the run state.
	19	R1CM	Relay 1 common		
	20	R1NC	Relay 1 normally closed		
	21	R2NO	Relay 2 normally open	Fault	Changes state when the drive is in the fault state.
	22	R2CM	Relay 2 common		

Notes:
The above wiring demonstrates a SINK configuration. It is important that CMA is wired to ground (as shown by dashed line).
If a SOURCE configuration is desired, wire 24 V to CMA and close the inputs to ground. When using the +10 V for AI1, it is important to wire AI1- to ground (as shown by dashed line).

① AI1+ support 10 K potentiometer.

(en) **Caution!**
In the territory of the EU Directive, the frequency-controlled devices and their accessories must be taken into operation only when the machine has been determined to fulfill the protection requirements of Machinery Safety Directive 89/392/EEC.

Ensure EMC-compliant installation. Lay control and communication cables spatially separated from the motor cable.
Ensure a large contact area connection between p cable screen and PE.

(es) **¡Atención!**
En el campo de aplicación de la normativa CE, los dispositivos controlados por frecuencia y sus correspondientes accesorios sólo deberán ponerse en marcha cuando se asegure que la máquina cumple con las exigencias de seguridad de la normativa de máquinas 89/392/CEE.

El montaje debe cumplir CEM. Los cables de mando y de conexión a red se deben instalar independientemente del cable de conexión al motor. El cable apantallado p se debe conectar a masa utilizando una amplia superficie de contacto.

(fr) **Attention !**
En application des directives européennes, les convertisseurs de fréquence et leurs accessoires ne doivent être mis en service que s'il a été vérifié que la machine répond aux exigences de la directive machines 89/392/CEE.

Montage conforme aux règles de la CEM. Eloigner les câbles de commande et de réseau des câbles puissance. Relier le blindage au PE en assurant de grandes surfaces de contact.

(de) **Vorsicht!**
Im Geltungsbereich der EG-Richtlinien dürfen die frequenzgesteuerten Geräte und deren Zubehör nur dann in Betrieb genommen werden, wenn festgestellt wird, dass die Maschine die Schutzanforderungen der Maschinenrichtlinie 89/392/EWG erfüllt.

EMV-gerechter Aufbau. Steuer- und Netzleitungen räumlich getrennt von der Motorleitung verlegen. p Leitungsschirm großflächig mit PE verbinden.

(it) **Attenzione!**
Nel campo di validità delle direttive CE, gli apparecchi a controllo di frequenza e i loro accessori possono essere messi in esercizio soltanto se si verifica che la macchina soddisfa i requisiti di sicurezza della direttiva macchine 89/392/CEE

Montaggio secondo CEM. Disporre i cavi comandi e di alimentazione separati dal cavo del motore. Collegare lo schermo del cavo p con PE con un'ampia superficie.

(nl) **Voorzichtig!**
Binnen het geldigheidsgebied van de EC-richtlijnen mogen de frequentiegeregelde apparaten en de toebehoren daarvan alleen in bedrijf worden genomen, wanneer wordt vastgesteld, dat de machine aan de veiligheidseisen van de machinerichtlijn 89/392/EWG voldoet.

EMC-conforme constructie. Besturings- en netkabels ruimtelijk gescheiden van de motorkabel leggen. p Kabelafscherming over groot oppervlak met PE verbinden.

(da) **Forsigtig!**
I det område, hvor EF-direktiverne er gældende, må det frekvensstyrede udstyr og dets tilbehør kun tages i anvendelse, hvis det konstateres, at maskinen opfylder beskyttelseskravene i maskindirektivet 89/392/EØF.

EMC-korrekt installation. Træk styre- og netledninger rumligt adskilt fra motorledningen. p Sørg for en stor kontaktflade mellem PES ledningsafskærmning og PE.

(el) **Προσοχή!**
Στο πεδίο εφαρμογής των οδηγιών της ΕΚ, οι ελεγχόμενες μέσω συχνότητας συσκευές και τα παρελκόμενά τους επιτρέπεται να τίθενται σε λειτουργία μόνο εφόσον διαπιστωθεί ότι το μηχάνημα πληροί τις απαιτήσεις προστασίας της οδηγίας της ΕΚ για τα μηχανήματα 89/392/ΕΟΚ.

Κατασκευή σύμφωνα με τις απαιτήσεις ΗΜΣ. Εγκαθιστάτε τους αγωγούς ελέγχου και δικτύου ανεξάρτητα από τον αγωγό του κινητήρα. p Συνδέετε τη θωράκιση των αγωγών σε μεγάλη επιφάνεια με τη γείωση.

(pt) **Cuidado!**
No âmbito das directivas da CE, os aparelhos comandados por frequência e os respectivos acessórios só podem ser postos em operação se for comprovado que a máquina atende às exigências de protecção da directiva de máquinas 89/392/CE.

Estrutura com compatibilidade electromagnética. Dispor os fios de comando e de rede separados do fio do motor. p Ligar uma área grande da blindagem do cabo (PES) com o PE.

(sv) **Se upp!**
I giltighetsområdet för EG-direktiven får de frekvensstyrda apparaterna och deras tillbehör endast tagas i drift när man fastställt att maskinen uppfyller skyddskraven i maskindirektiv 89/392/EEC.

EMC-anpassad uppbyggnad. Styr- och nätledningar dras avskilda från motorledningarna. p Förbind ledningsskärm över ett brett område med PE.

(fi) **Varo!**
EU-direktiivien voimassaoloalueella taajuusohjatut laitteet ja niiden varusteet saa ottaa käyttöön vain silloin, kun todetaan, että kone täyttää konedirektiivin 89/392/ETY suojausvaatimukset.

EMC-mukainen rakenne. Ohjaus- ja verkkojohdot on asennettava tilaulotteisesti erotettuina. Johdonsuoja on liitettävä laajasti maadoitukseen p.

(cs) **Pozor!**
V rozsahu platnosti směrnic ES smí být frekvenčně řízené přístroje a jejich příslušenství uvedeny do provozu jedině tehdy, pokud je zjištěno, že stroj splňuje požadavky ochrany stanovené směrnicí 89/392/EHS o strojních zařízeních.

Nástavba odpovídající směrnici EMC. Řídicí a síťová vedení pokládejte prostorově oddělená od vedení motoru. p Stínění vedení spojte velkoplošně s PE.

(et) **Ettevaatust!**
EÜ-direktiivi kehtivuspiirkonnas võib sagedusjuhitavaid seadmeid ja nende lisaseadmeid kasutusele võtta ainult siis, kui on kindlaks tehtud, et masin vastab masinadirektiivi 89/392/EMÜ kaitsenõuetele.

Elektomagnetilisele ühilduvusele vastav ehitus. Juhtimis- ja võrgukaablid paigaldada mootori toitekaablist ruumiliselt eraldatuna. p Kaabli kaitseekraan ühendada ulatuslikult talitlusmaandusega.

(hu) **Vigyázat!**
Az EK irányelvek hatályossági területén a frekvenciavezérelt készülékeket és azok tartozékait csak akkor szabad üzembe helyezni, ha megállapítást nyert, hogy a gép megfelel a gépek biztonságáról szóló, 89/392/EGK számú irányelv biztonsági követelményeinek.

Elektromágnesesen összeférhető kivitelt biztosítson. A motorvezetékektől térben elkülönítve vezesse vezérlő és hálózati vezetékeket. p Nagy felületen csatlakoztassa a védőföldeléshez a vezetékárnyékolást.

(lv) **Ievērot piesardzību!**
Valstīs, kurās ir spēkā EK direktīvas, ierīču ar frekvenčvadību un to piederumu ekspluatāciju drīkst sākt tikai tad, ja ir konstatēta iekārtas atbilstība Mašīnu direktīvā 89/392/EEK ietvertajām aizsardzības prasībām.

EMS atbilstoša uzbūve. Vadības un tīkla kabeļus izvietot atsevišķi no motora kabeļa p Vada ekrānu plašā virsmā savienot ar PE.

(lt) **Atsargiai!**

EB direktyvų taikymo srityje dažniniu būdu valdomus įrenginius ir jų priedus leidžiama pradėti naudoti tik tada, kai nustatoma, kad įrenginys atitinka Mašinų direktyvos 89/392/EEB keliamus apsaugos reikalavimus.

Montažas turi atitikti EMS reikalavimus. Valdymo ir duomenų tinklo kabelius išdėstyti atokiai nuo variklio kabelio. p Kabelio ekraną dideliu paviršiumi sujungti su įžeminimu.

(pl) **Ostrożnie!**

Na obszarze obowiązywania dyrektyw WE urządzenia sterowane częstotliwościowo wolno wprowadzać do eksploatacji tylko wtedy, gdy zostanie stwierdzone, że maszyna spełnia wymagania ochronne dyrektywy maszynowej 89/392/EWG.

Konstrukcja zgodna z dyrektywą w sprawie kompatybilności elektromagnetycznej (EMC). Przewody sterowania i zasilania elektrycznego należy układać oddzielnie od przewodu silnika.
p Ekranowanie połączyć z przewodem uziemiającym na większej powierzchni.

(sl) **Pozor!**

Na območju veljavnosti direktiv ES je zagon frekvenčno krmiljenih naprav in njihovega pribora dovoljen le tedaj, ko je bilo ugotovljeno, da stroj ustreza varnostnim zagtevam Direktive o strojih 89/392/EGS.

Montaža v skladu z EMZ. Krmilne in omrežne vodnike napeljite ločeno od vodnikov motorja p Oklep vodnika na veliki površini povežite z zaščitnim vodnikom.

(sk) **Pozor!**

V krajinách, ktoré spadajú pod pôsobnosť smerníc ES smú byť rádiovo ovládané zariadenia a ich príslušenstvo uvedené do prevádzky len ak je zabezpečené, že stroj spĺňa ochranné ustanovenia smernice č. 89/392/EHS o strojových zariadeniach.

Montáž v súlade s požiadavkami elektromagnetickej kompatibility. Ovládacie a siet´ové vedenia uložte v priestore oddelene od vedenia motora. p Zabezpečte veľkú kontaktnú plochu medzi káblovým tienením a PE.

(bg) **Внимание!**

В сферата на действие на изискванията на ЕС устройствата с честотно управление и техните допълнителни устройства могат да бъдат приведени в употреба, само ако се установи, че оборудването съответства на изискванията за безопасност на машинно оборудване спрямо 89/392/EWG.

Монтаж с електромагнитна съвместимост. Полагане на контролните и мрежови проводници пространствено отделно от проводника на двигателя. p Осигурете по-голяма конкактна площ между силовия екран и PE.

(ro) **Precauţie!**

În cadrul sferei de aplicare a directivelor UE dispozitivele controlate prin frecvenţă şi accesoriile acestora au voie să fie puse în funcţiune doar dacă se stabileşte că aparatul îndeplineşte cerinţele Directivei 89/392/CEE privind maşinile.

Montajul trebuie să fie compatibil EMC. Poziţionaţi cablurile de control şi de reţea la distanţă de cablul motorului. p Asiguraţi o suprafaţă de contact mare între izolaţia cablului şi PE.

(ru) **Осторожно!**

В сфере действия директив ЕС устройства с частотным управлением и их оснащение должны вводиться в эксплуатацию только в том случае, если установлено, что данное оборудование соответствует требованиям по защите Директивы о машинном оборудовании 89/392/EWG.

Сборка соответственно электромагнитной совместимости. Линии управления и электросети прокладывать в пространственном отношении отдельно от линии двигателя. p силовой экран соединять с PE по большой площади.

(zh) **注意！**

根据欧盟设备一致性规范，安装频率控制设备及其配件时，应确保设备满足机器规范 89/392/EWG 中关于设备保护的要求。

p 按照电磁兼容规范正确安装。应将控制电缆和电源电缆与电机电缆分开。大面积采用 PE 包裹电缆。

UL cautions, warnings, and instructions

Wiring warnings for electrical practices and wire sizes

The Cautions, Warnings, and Instructions in this section summarize the procedures necessary to ensure an inverter installation complies with Underwriters Laboratories® guidelines.

en

Warning!

Use 60/75°C Cu wire only or equivalent.

en

Warning!

Open type equipment.

en

Warning!

Suitable for use on a circuit capable of delivering not more than 5,000 rms symmetrical amperes:

- **240 V maximum for DM1-32 models**
- **500 V maximum for DM1-34 models**
- **600 V maximum for DM1-35 models**

Circuit breaker and fuse sizes

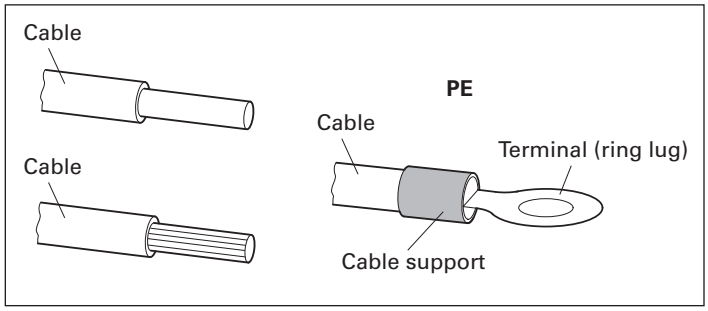
The adjustable frequency drive's connections to input power must include UL listed inverse time circuit breakers with 600 V rating, or UL listed fuses.

Wire connectors

en

Warning!

Field wiring connections must be made by a UL listed and CSA certified ring lug terminal connector sized for the wire gauge being used. The connector must be fixed using the crimping tool specified by the connector manufacturer.



Motor overload protection

DM1 adjustable frequency drives provide solid-state motor overload protection, which depends on the proper setting of the following parameter: P5.1.2 "current limit."

"The setting range is (0.2 * rated current) to (2 * rated current).

en

Warning!

When two or more motors are connected to the inverter, they cannot be protected by the electronic overload protection. Install an external thermal relay on each motor.

Technical support contact information

	Americas	EMEA	APAC
Website	www.eaton.com/drives	www.eaton.eu/electrical	www.eaton.com.cn/electrical
Email	VFDaftermarketEG@eaton.com	AfterSalesEGBonn@eaton.com	CustomerServicePDCNA@eaton.com
Phone	1-877-386-2273 (8:00 a.m. to 6:00 p.m. Eastern Time U. S. [UTC–5]) 800-543-7038 (6:00 p.m. to 8:00 a.m. Eastern Time U.S. [UTC–5]) TRCDrivesTechSupport@eaton.com	+49 (0) 180 5 223822	800 9881203

China ROHS 2 and WEEE Discard Statements

产品中有害物质的名称及含量

部件名称	有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
电池类	×	○	○	○	○	○
印刷电路组件	×	○	○	○	○	○
电源线插座端子	×	○	○	○	○	○
箱体五金类	×	○	○	○	○	○
开关 / 断路器类	○	○	×	○	○	○

本表格依据 SJ/T 11364 的规定编制。

○：表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下。

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Eaton.com/recycling

The crossed-out wheeled bin symbol indicates that waste electrical and electronic equipment should not be discarded together with un-separated household waste, but must be collected separately. The product should be handed in for recycling in accordance with the local environmental regulations for waste disposal.

By separating waste electrical and electronic equipment , you will help reduce the volume of waste sent for incineration or land-fills and minimize any potential negative impact on human health and environment.

Notes:

Notes:

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