



**(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!**

Uitsluitend deskundigen in elektriciteit en elektrotechnisch geïnstrueerde personen is het toegestaan, de navolgend beschreven werkzaamheden uit te voeren.

**(da) Livsfare på grund af elektrisk strøm!**

Kun uddannede el-installatører og personer der er 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.

**(cs) Nebezpečí úrazu elektrickým proudem!**

Níže uvedené práce smějí provádět pouze osoby s elektrotechnickým vzděláním.

**(et) Eluohhtlik! Elektrilöögiht!**

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 tikai elektro speciālisti un darbam ar elektrotehnikām iekārtām 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 odpowiedzialnie poinstruowane w zakresie elektrotechniki.

**(sl) Življenjska nevarnost zaradi električnega toka!**

Spodaj opisana dela smejo izvajati samo elektro strokovnjaki in elektrotehnično poučene osebe.

**(sk) Nebezpečnosť 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 само от специалисти-електротехници и инструктиран електротехнически персонал.

**(ro) Atenție! Pericol electric!**

Toate lucrările descrise trebuie efectuate numai de personal de specialitate calificat și de persoane cu cunoștințe profunde în electrotehnică.

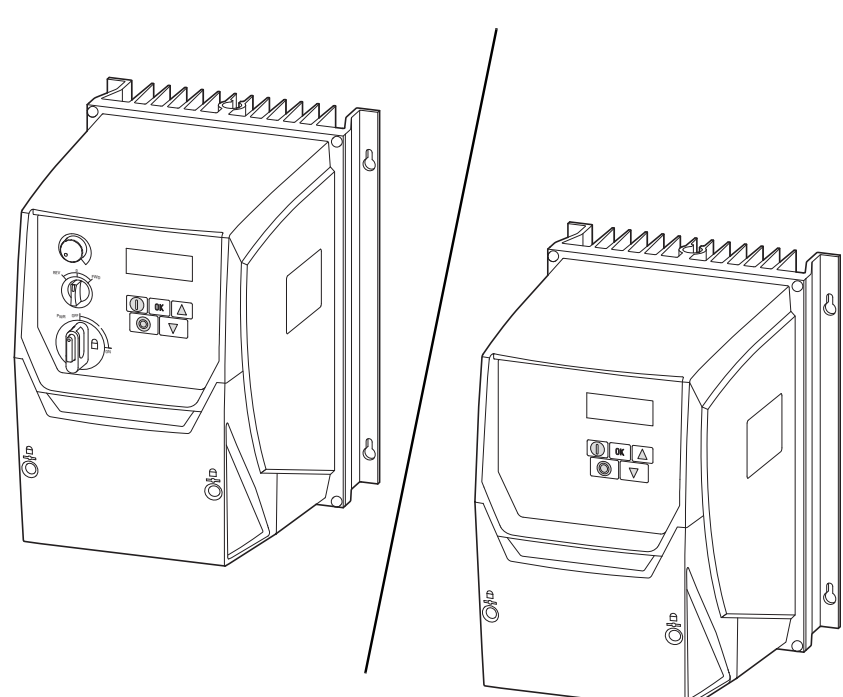
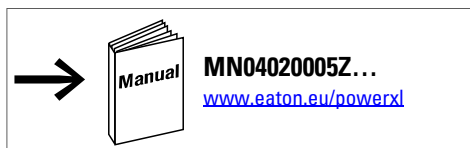
**(hr) Opasnost po život uslijed električne struje!**

Radove opisane u nastavku smiju obavljati samo stručni električari i osobe koje su prošle elektrotehničku obuku.

DA1-12...-A6xx

DA1-32...-A6xx

DA1-34...-A6xx



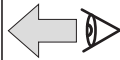
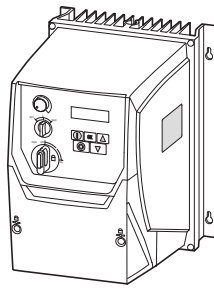
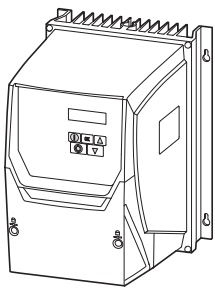
DA1-...-A66x

DA1-...-A6Sx

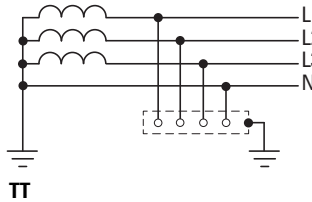
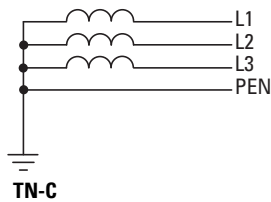
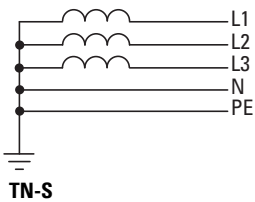
DA1- x y zzz FN - A 66 N

66 = IP66

6S = IP66, switched



Mains (TN, TT)



- N = Basic device
- C = Coated printed circuit board
- 66 = IP66, NEMA 4x
- 6S = IP66, NEMA 4x switched
- A = LED Display
- B = Brake chopper (DC+, BR)
- N = No Brake chopper
- F = EMC Filter (RFI)
- N = No EMC Filter

I<sub>e</sub>  
2D2 = 2.2 A  
024 = 24 A

U<sub>LN</sub> (Mains), 50/60 Hz  
2 = 230 V (200 - 240 V ±10 %)  
4 = 400 V (380 - 480 V ±10 %)

Mains → Motor  
1 = 1 AC → 3 AC  
3 = 3 AC → 3 AC

**en** Dimensions and weights

**de** Abmessungen und Gewichte

**fr** Encombrements et poids

**es** Dimensiones y pesos

**it** Dimensioni e pesi

**zh** 尺寸和重量

**ru** Размеры и вес

**nl** Afmetingen en gewichten

**da** Mål og vægt

**el** Διαστάσεις και βάρη

**pt** Medições e pesos

**sv** Dimensioner och vikter

**fi** Mitat ja painot

**cs** Rozměry a hmotnosti

**et** Mõõtmed ja kaalud

**hu** Méretek és Súly

**lv** Izmēri un svars

**lt** Matmenys ir svoriai

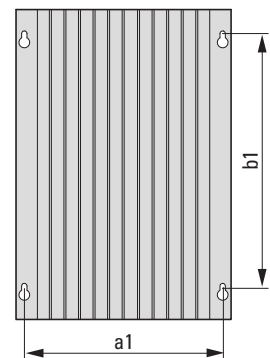
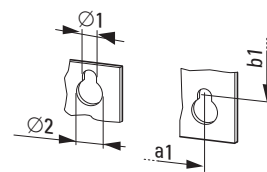
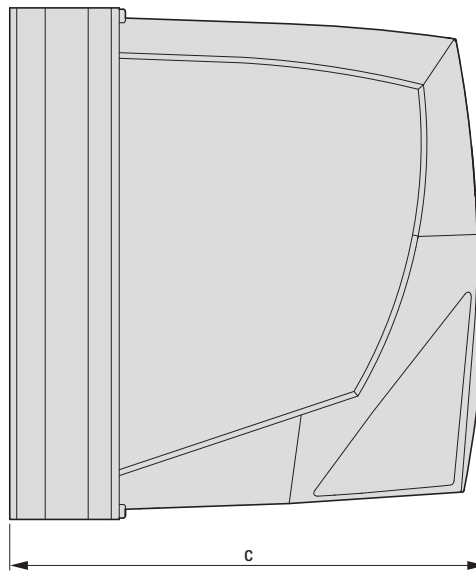
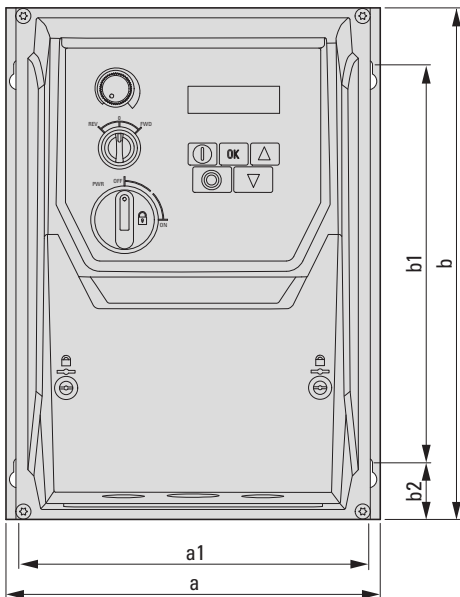
**pl** Wymiary i masy

**sl** Dimenzije in teže


**sk** Rozměry a hmotnosti

**bg** Размери и тегло

**ro** Dimensiuni și greutateți



[mm (in)]

FS		a	a1	b	b1	b2	c	c1	Ø1	Ø2	 kg (lbs)
FS2	DA1-12... DA1-32... DA1-34...	188 (7.4)	176 (6.93)	257 (10.12)	200 (7.87)	20 (0.79)	239 (9.42)	3.5 (0.14)	4.2 (0.16)	8.5 (0.33)	4.8 (10.6)
FS3	DA1-12... DA1-32... DA1-34...	211 (8.29)	198 (7.78)	310 (12.2)	252 (9.9)	25 (0.98)	266 (10.48)	3.5 (0.14)	4.2 (0.16)	8.5 (0.33)	7.3 (16.1)

→ 1 inch = 25.4 mm  
1 mm = 0.0394 inch  
1 inch = 1"

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en Mounting  
de Montage  
fr Montage  
es Montaje

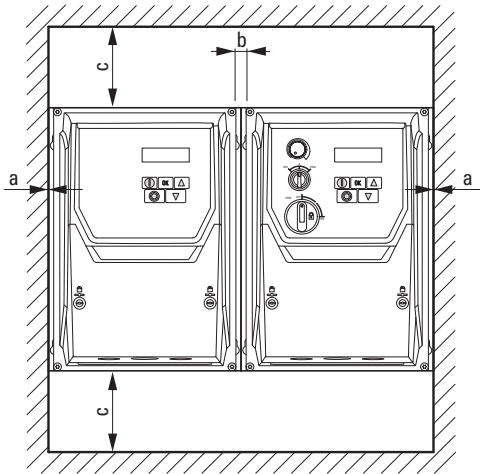
it Montaggio  
zh 安装  
ru Монтаж  
nl Montering

da Montering  
el Τοποθέτηση  
pt Montagem  
sv Montering

fi Asennus  
cs Montáž  
et Paigaldamine  
hu Felszerelés

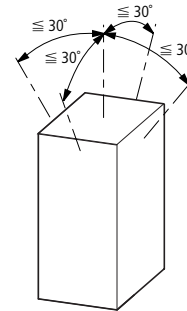
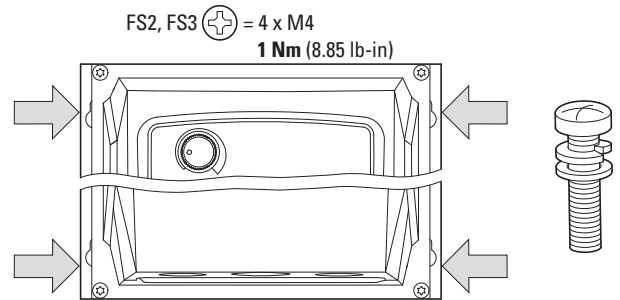
lv Montāža  
lt Montavimas  
pl Montaż  
sl Montaža

sk Montáž  
bg Монтаж  
ro Montarea



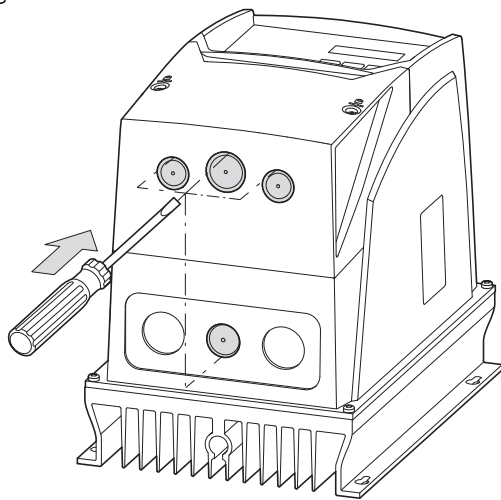
[mm (in)]

	a	b	c
FS2	0	12.0 (0.47)	150 (5.91)
FS3	0	13.0 (0.51)	150 (5.91)

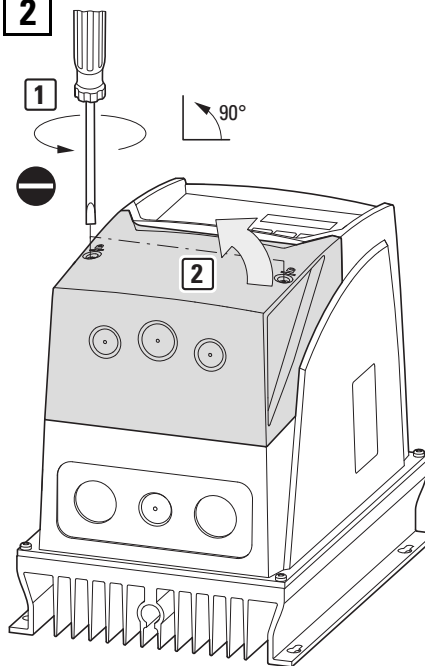


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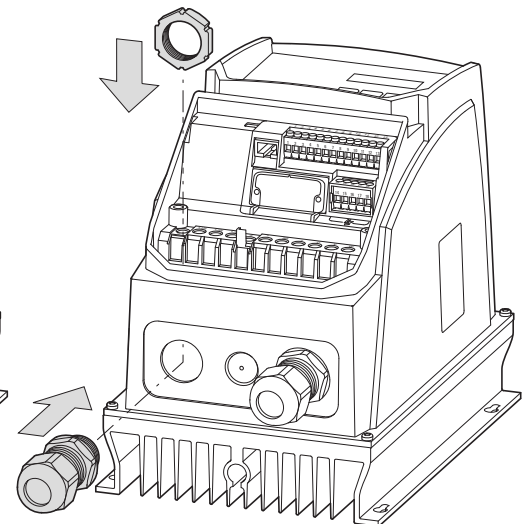
1



2

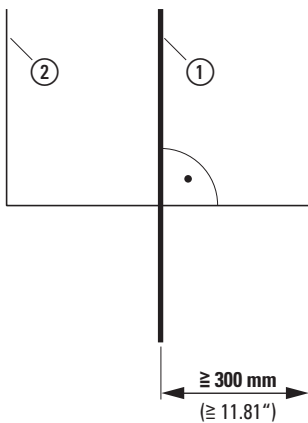
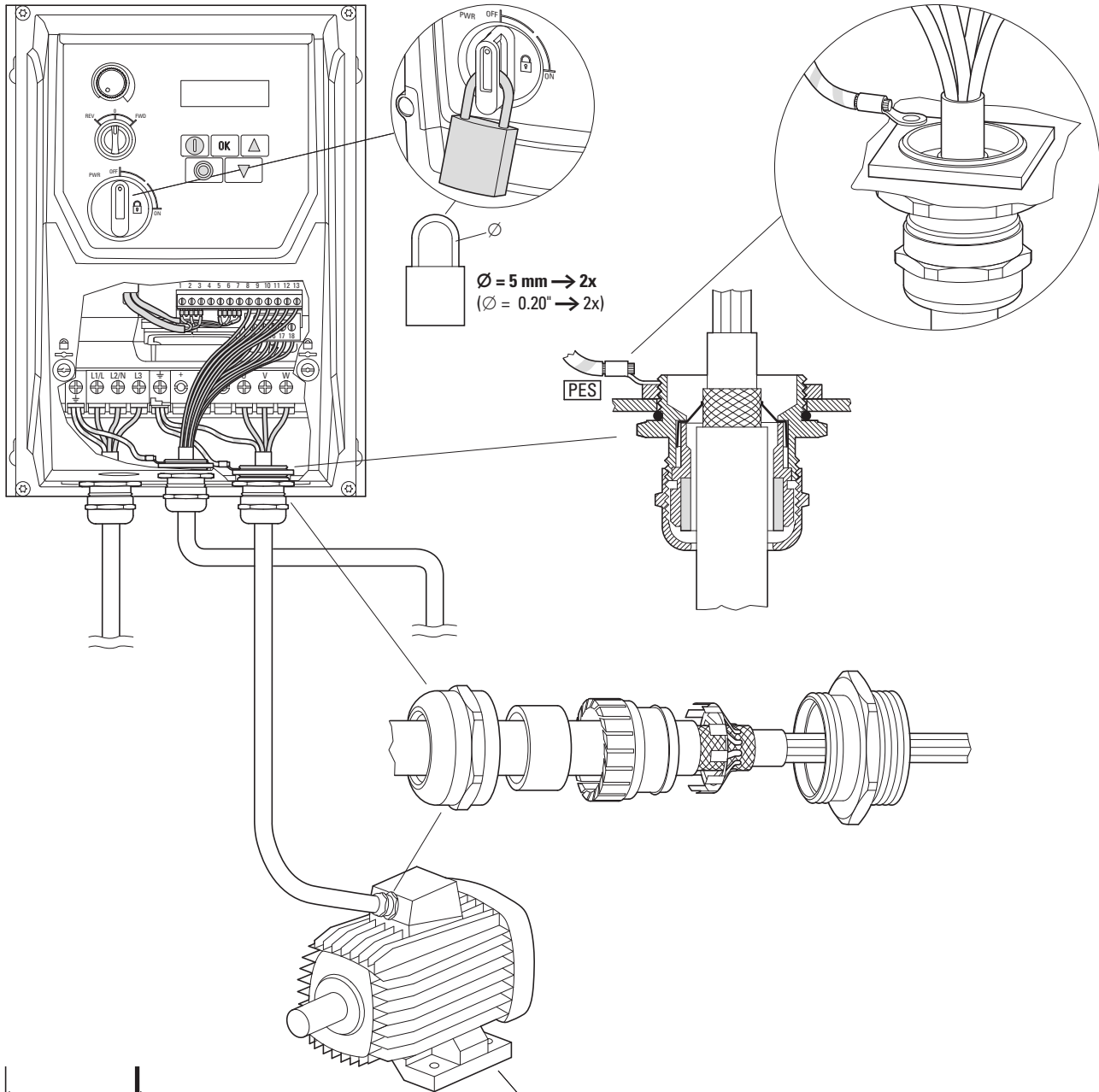


3



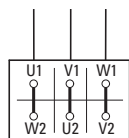
	FS	Ø mm (in)	PG	M	Plastic <sup>1)</sup>	Metal/EMC <sup>1)</sup>
Control	FS2 FS3	1 x 25 (0.98)	1 x PG 16	2 x M25	M20: GHG9601955R0003 + GHG9601941R0033	M20: CAP189202 (6 - 13 mm) + DKA12E CAP189552 (4.5 - 10 mm) + DKA12E
Main	FS2 FS3	1 x 22 (0.87) 2 x 25 (0.98)	1 x PG 13.5 2 x PG 16	1 x M20 2 x M25	M25: GHG9601955R0004 + GHG9601941R0034	M25: CAP189252 (10 - 18 mm) + DKA13E CAP189562 (6 - 13 mm) + DKA13E

<sup>1)</sup> Cooper Crouse-Hinds GmbH

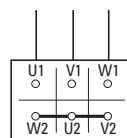


- ① Power: L1, L2, L3, N, PE, U, V, W, DC+, BR
- ② Control: 1, 2, ... 11, Modbus, CANopen

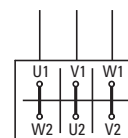
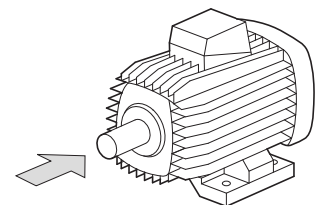
230/400 V	3.2/1.9 A
0,75 KW	cosφ 0.79
1410 mi n <sup>-1</sup>	50 Hz



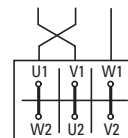
$U_{LN} = 230\text{ V}$



$U_{LN} = 400\text{ V}$



**(M)**  
FWD



**(M)**  
REV



(en) **NOTICE**

Connect only in voltage-free state!

(de) **ACHTUNG**

Nur im spannungsfreien Zustand anschließen!

(fr) **ATTENTION**

Raccordez l'appareil uniquement hors tension !

(es) **CUIDADO**

¡Conectar únicamente en estado sin tensión!

(it) **AVVISO**

Collegare solo in assenza di tensione!

(zh) **注意**

必須在斷電狀態下進行連接！

(ru) **ВНИМАНИЕ**

Подключать только в обесточенном состоянии!

(nl) **OPGELET**

Alleen in spanningsloze toestand aansluiten!

(da) **VIGTIGT**

Må kun tilsluttes i spændingsfri tilstand!

(el) **ΕΠΑΓΡΥΠΝΗΣΗ**

Συνδέστε μόνο όταν δεν επικρατεί τάση!

(pt) **ADVERTÊNCIA**

Ligar apenas com a tensão desligada!

(sv) **OBSERVERA**

Får endast anslutas i spänningsfritt tillstånd!

(fi) **ILMOITUS**

Kytke vain jännitteettömässä tilassa!

(cs) **UPOZORNĚNÍ**

Připojujte jen při zcela odpojeném napájení!

(et) **TÄHELEPANU**

Ühendada ainult pingevabas olekus!

(hu) **FIGYELEM**

Csak feszültségmentes állapotban csatlakoztassa!

(lv) **UZMANĪBU**

Pieslēgt tikai tad, kad nenotiek sprieguma padeve!

(lt) **DĖMESIO**

Prijungti tik tada, kai išjungta įtampa!

(pl) **UWAGA**

Podłączać zawsze po uprzednim odłączeniu od zasilania elektrycznego!

(sl) **POZOR**

Napravo priključite le, ko ni pod napetostjo!

(sk) **UPOZORNENIE**

Napájat' len v stave bez napätia!

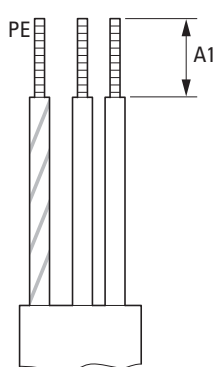
(bg) **ПРЕДУПРЕЖДЕНИЕ**

Свързвайте само, когато уреда не е под напрежение!

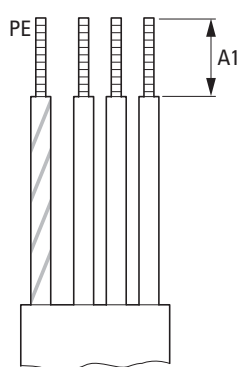
(ro) **ATENȚIE**

Conectați doar când aparatul nu se află sub tensiune!

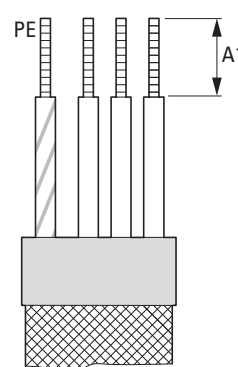
**Mains 1 ~**



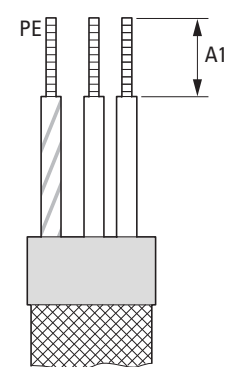
**Mains 3 ~**



**Motor**

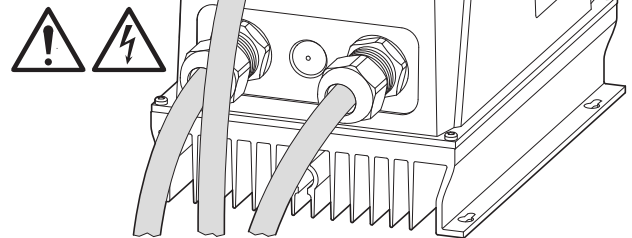
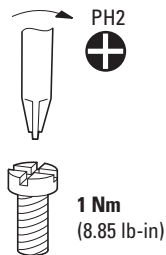
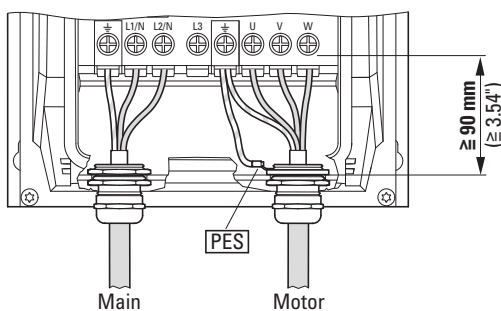


**Brake Resistor**



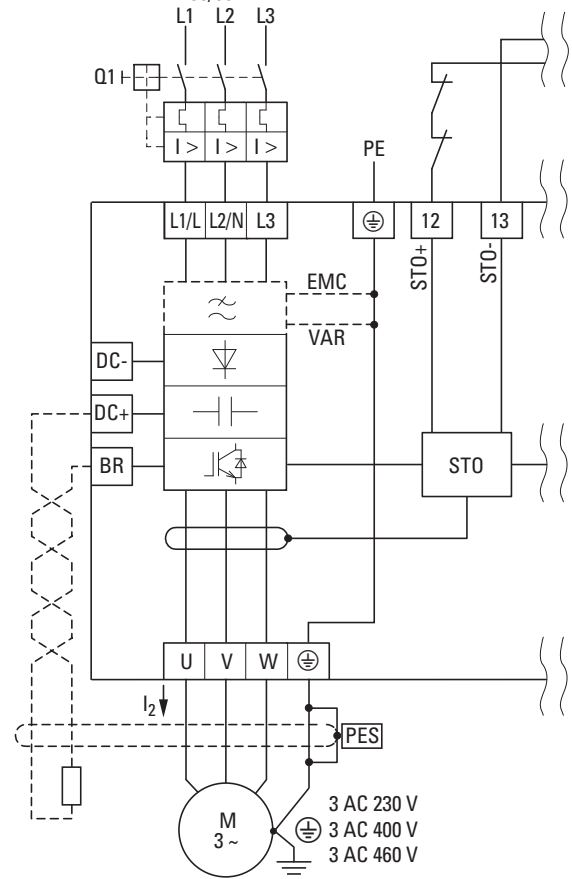
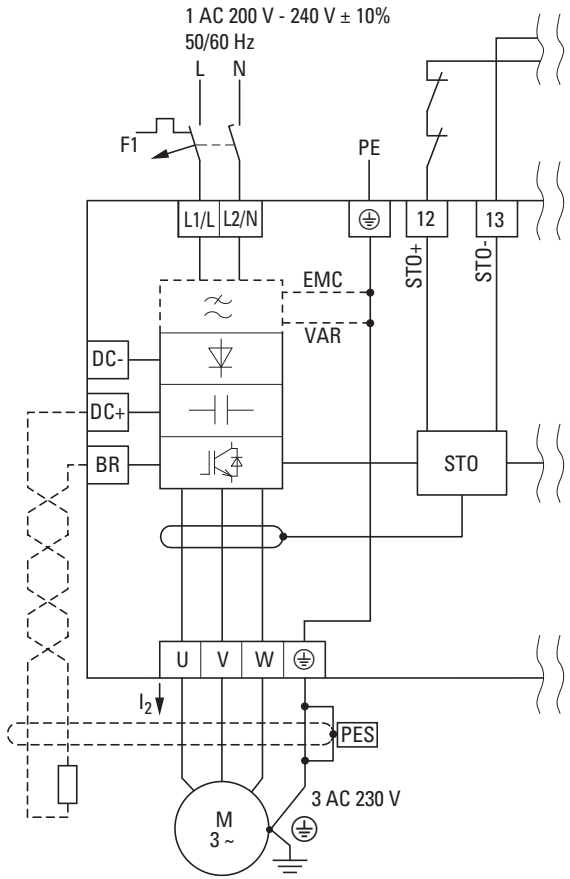
**FS2, FS3**

A1 = 10 mm (0.39")

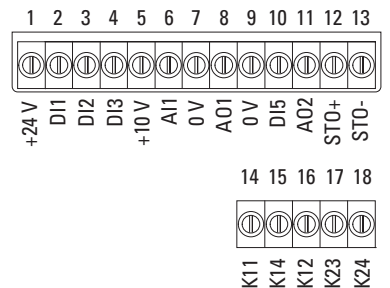
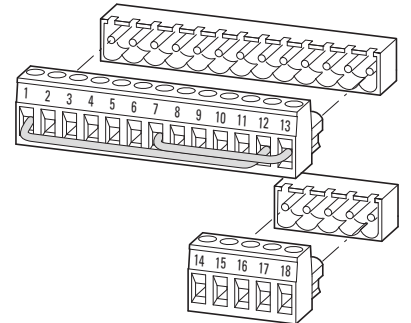
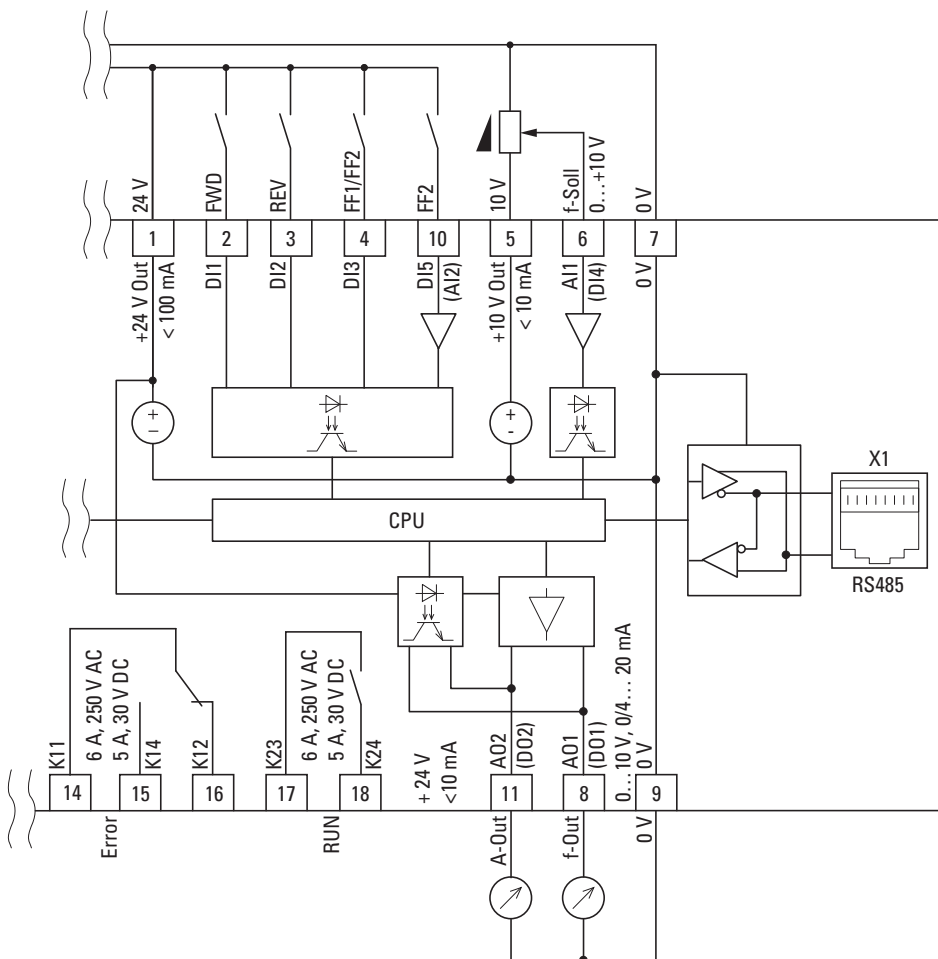


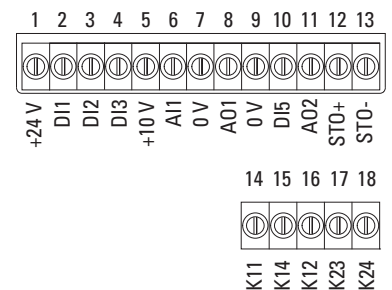
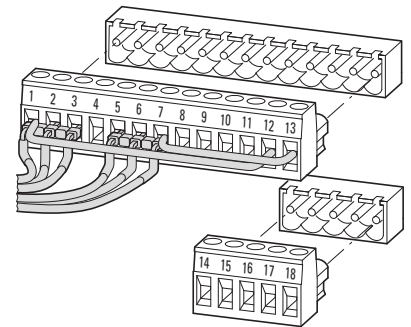
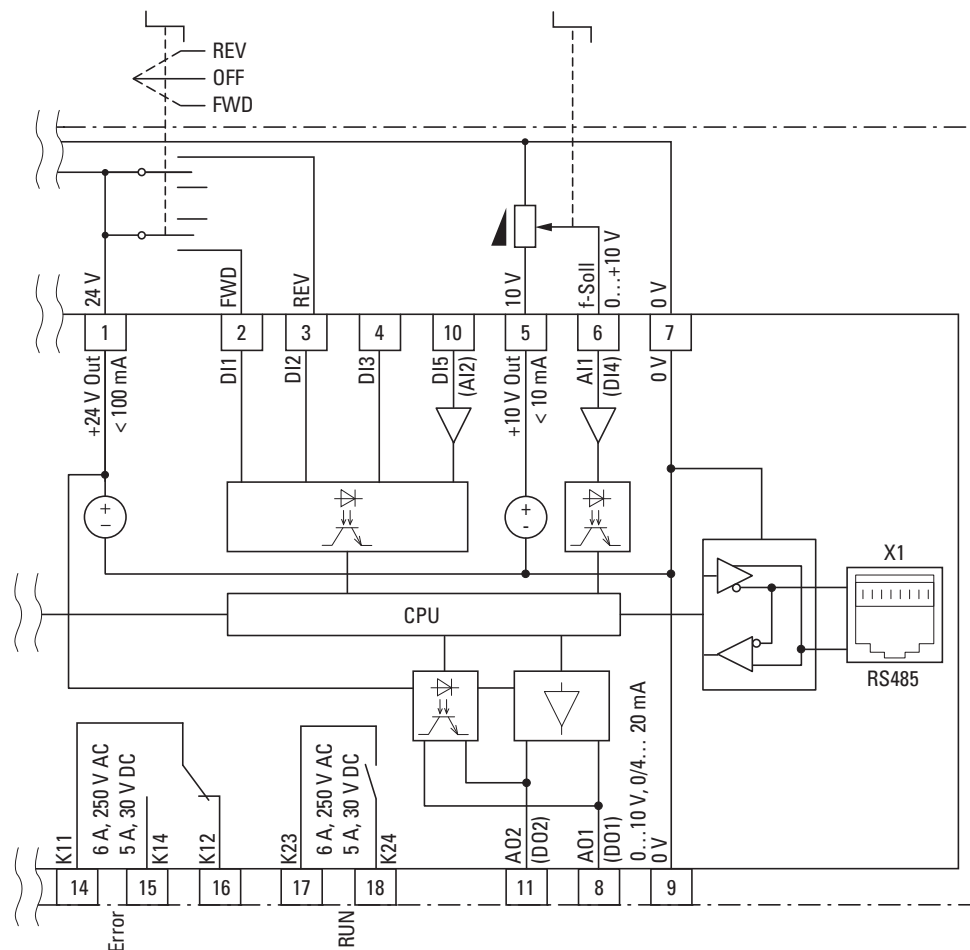
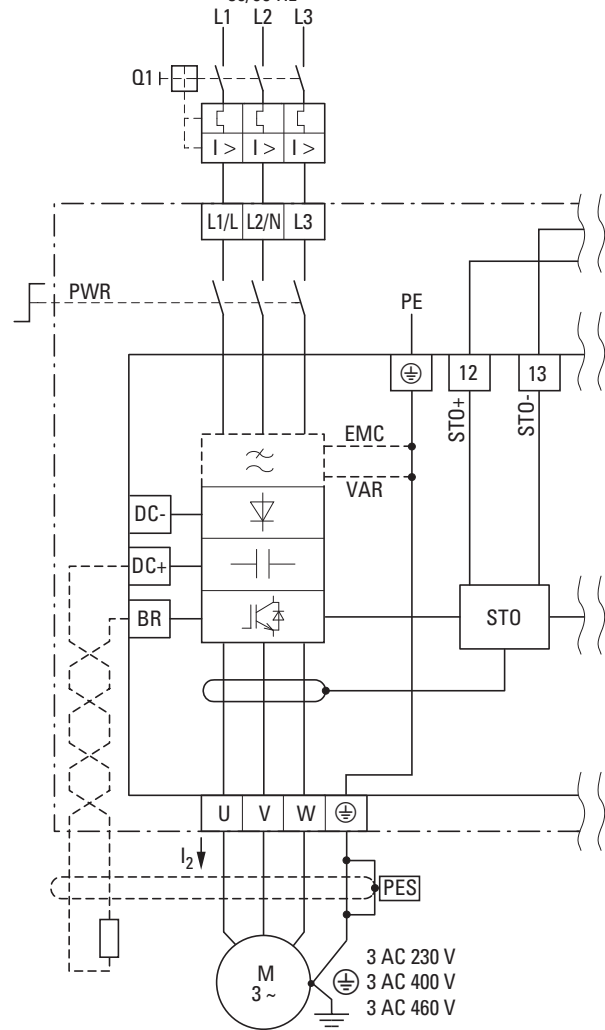
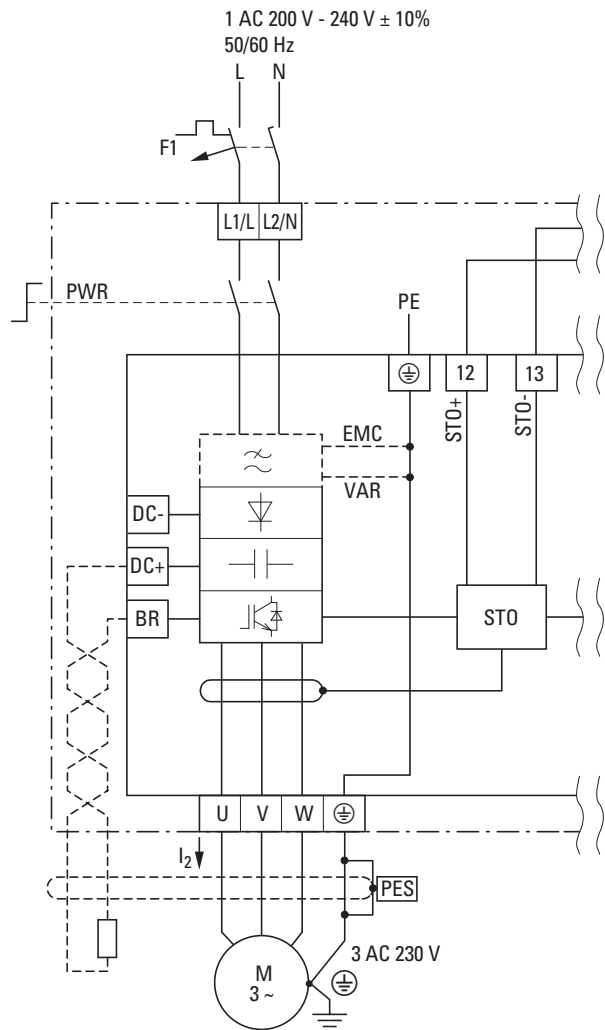
08/13 IL04020015Z

3 AC 200 V - 240 V ± 10%  
3 AC 380 V - 480 V ± 10%  
50/60 Hz



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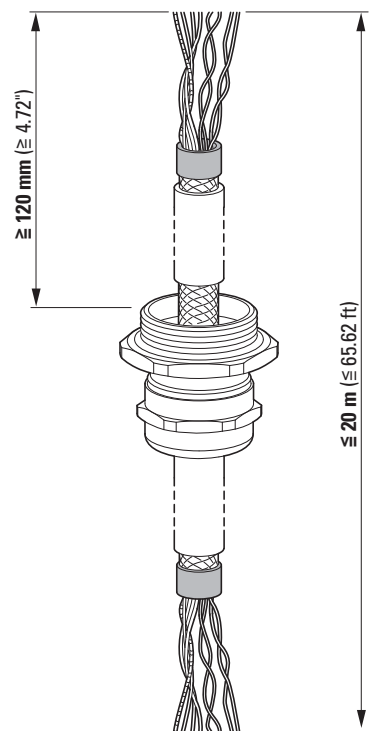




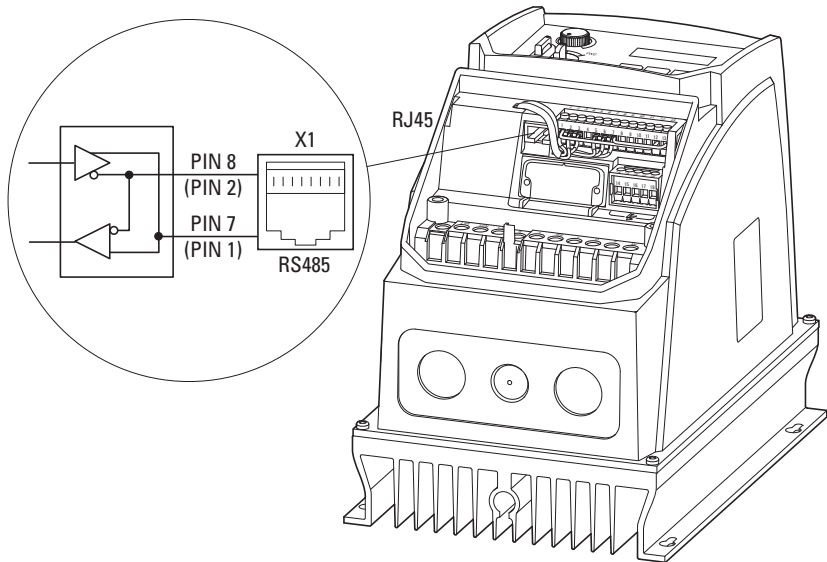
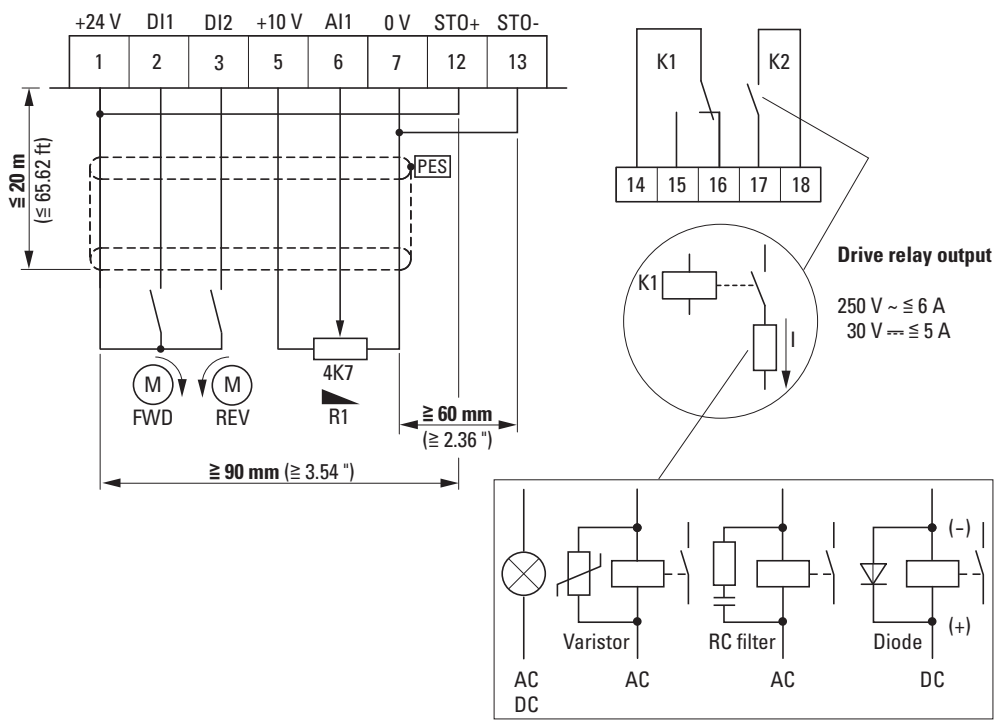


	Frame Size	$I_{LN}$	F1/Q1	Mains		$I_e$	Motor		P	$R_B$			
		A	MCB (type B)	mm <sup>2</sup>	AWG	A	mm <sup>2</sup>	AWG	kW	HP	$\Omega$	mm <sup>2</sup>	AWG
DA1-124D3...	FS2	8.5	16 (15)	2 x 2.5	2 x 12	4.3	3 x 1.5	3 x 14	0.75	1	33	1.5	14
DA1-127D0...	FS2	13.9	20	2 x 4	2 x 10	7	3 x 1.5	3 x 14	1.5	2	33	1.5	14
DA1-12011...	FS2	19.5	25	2 x 10	2 x 8	10.5	3 x 1.5	3 x 14	2.2	3	22	1.5	14
DA1-324D3...	FS2	4.5	10	3 x 1.5	3 x 14	4.3	3 x 1.5	3 x 14	0.75	1	33	1.5	14
DA1-327D0...	FS2	7.3	10	3 x 2.5	3 x 14	7	3 x 1.5	3 x 14	1.5	2	33	1.5	14
DA1-32011...	FS2	11	16 (15)	3 x 4	3 x 12	10.5	3 x 1.5	3 x 14	2.2	3	22	1.5	14
DA1-32018...	FS3	18.8	20	3 x 4	3 x 10	18	3 x 2.5	3 x 10	4	5	15	2.5	10
DA1-342D2...	FS2	2.4	10 (6)	3 x 1.5	3 x 14	2.2	3 x 1.5	3 x 14	0.75	1	47	1.5	14
DA1-344D1...	FS2	4.3	10 (6)	3 x 1.5	3 x 14	4.1	3 x 1.5	3 x 14	1.5	2	47	1.5	14
DA1-345D8...	FS2	6.1	10 (6)	3 x 1.5	3 x 14	5.8	3 x 1.5	3 x 14	2.2	3	47	1.5	14
DA1-349D5...	FS3	9.8	16 (15)	3 x 2.5	3 x 12	9.5	3 x 1.5	3 x 14	4	5	33	1.5	14
DA1-34014...	FS3	14.6	20	3 x 4	3 x 12	14	3 x 1.5	3 x 12	5.5	7.5	22	1.5	12
DA1-34018...	FS3	18.1	25	3 x 4	3 x 8	18	3 x 2.5	3 x 10	7.5	10	22	2.5	10

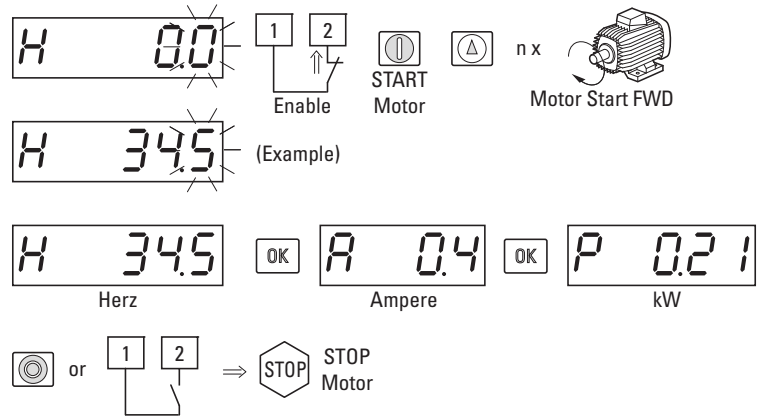
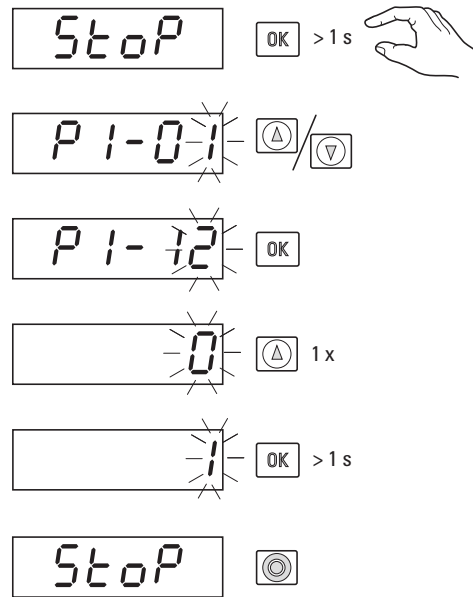
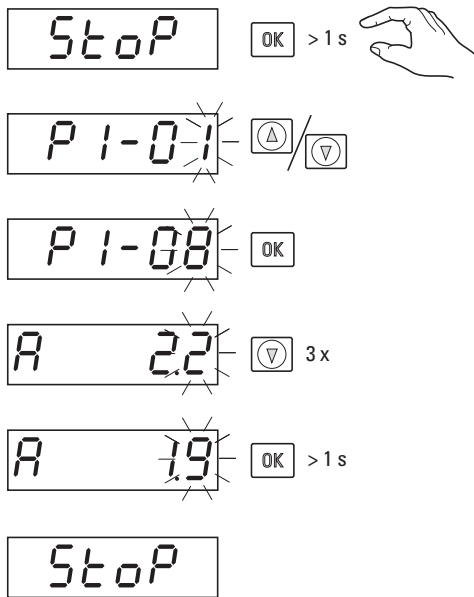
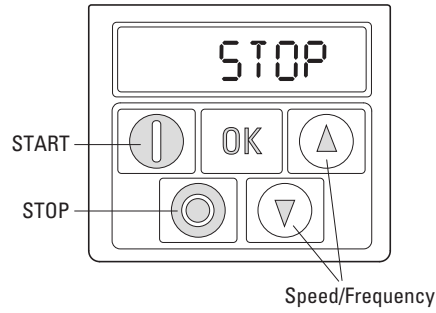
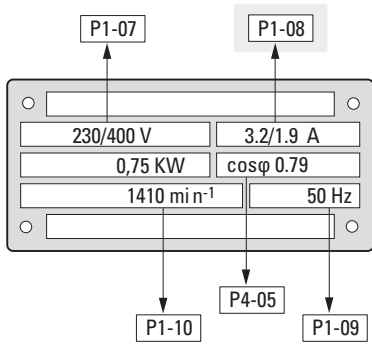
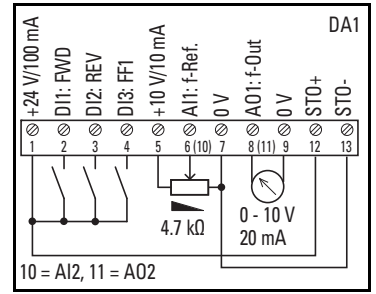
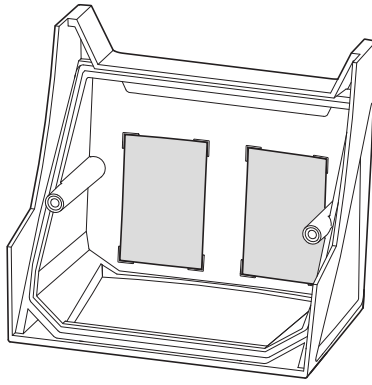
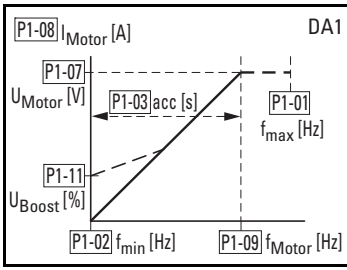
mm <sup>2</sup>	mm <sup>2</sup>	AWG	mm	in	M2.5 Nm	ft-Lbs	mm
0.2 - 2.5	0.2 - 1.5	24 - 12	5	0.2	0.4	0.3	0.4 x 2.5



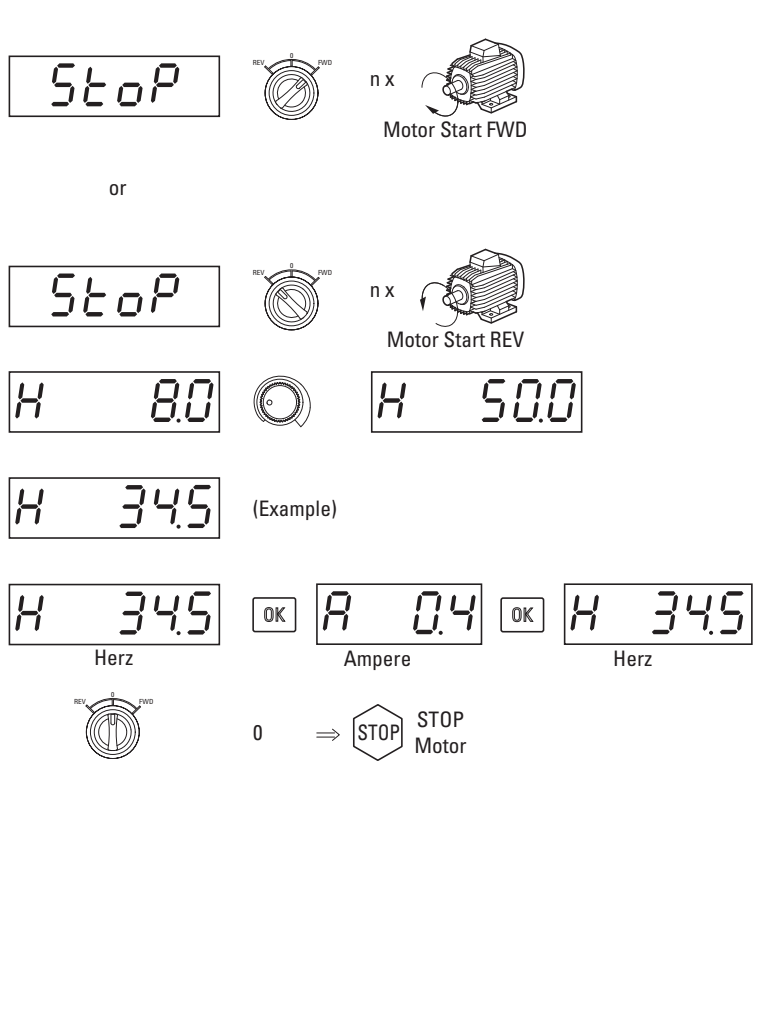
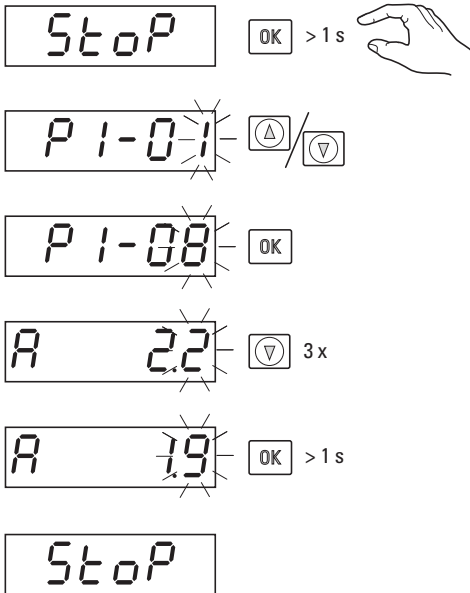
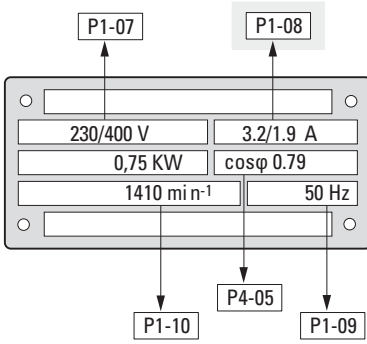
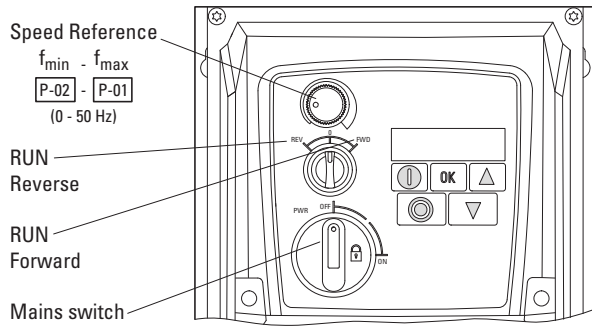
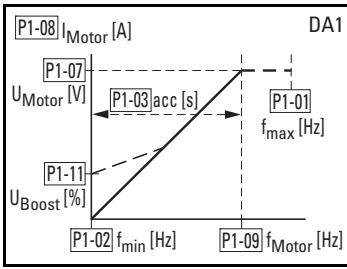
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PIN 1	CANopen -
PIN 2	CANopen +
PIN 7	Modbus RTU -
PIN 8	Modbus RTU +



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# 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.

**NOTICE**

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

**NOTICE**

Open Type Equipment.

**NOTICE**

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

- 240 V maximum for DA1-12 and DA1-32 models
- 480 V maximum for DA1-34 models

### Circuit Breaker and Fuse Sizes

The variable frequency drives' connections to input power must include UL Listed inverse time circuit breakers with 600 V rating, or UL Listed fuses as shown in the table below.

### Terminal Tightening Torque and Wire Size

The wire size range and tightening torque for field wiring terminals are presented in the table below.

Inverter Model	Mains Input Voltage	Fuse/Braker (UL-rated, class J, 600 V) A	Wiring Size range AWG	Motor Power		Wiring Size Range AWG	Screw Torque Power unit	
				kW	HP		lb-in	Nm
DA1-124D3...	220-240 V Single Phase	15	12	0.75	1	14	9	1
DA1-127D0...		20	10	1.5	2	14		
DA1-12011...		25	8	2.2	3	14		
DA1-324D3...	220-240 V Three Phase	6	14	0.75	1	14		
DA1-327D0...		10	14	1.5	2	14		
DA1-32011...		10	14	2.2	3	14		
DA1-32018...		25	10	4	5	10		
DA1-342D2...	440-480 V Three Phase	6	14	0.75	1	14		
DA1-344D1...		10	14	1.5	2	14		
DA1-345D8...		10	14	2.2	3	14		
DA1-349D5...		15	14	4	5	14		
DA1-34014...		20	12	5.5	7.5	12		
DA1-34018...		25	10	7.5	10	10		

1) kW @ 230 V/400 V, 50 Hz, 1500 min<sup>-1</sup>  
HP @ 230 V/460 V 60 Hz, 1800 rpm

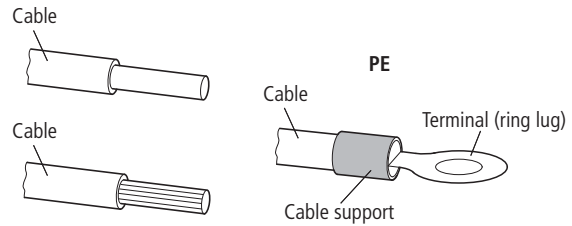


AWG = American Wire Gauge. Smaller numbers represent increasing wire thickness.  
MCM/kcmil = 1,000 circular mils, a measure of wire cross-sectional area  
mm<sup>2</sup> = square millimeters, a measure of wire cross-sectional area

## Wire Connectors

**NOTICE**

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

DA1 variable frequency drives provide solid-state motor overload protection, which depends on the proper setting of the following parameter: P1-08 "current limit".

Set the rated current [Amperes] of the motor(s) with the above parameters. The setting range is 25 % rated current to 100 % rated current, → manual MN04020005Z...

**NOTICE**

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.

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