

(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 elektrospeciālisti 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 odpowiednio poinstruowane w zakresie elektrotechniki.

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

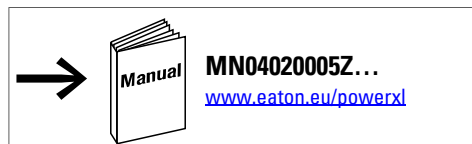
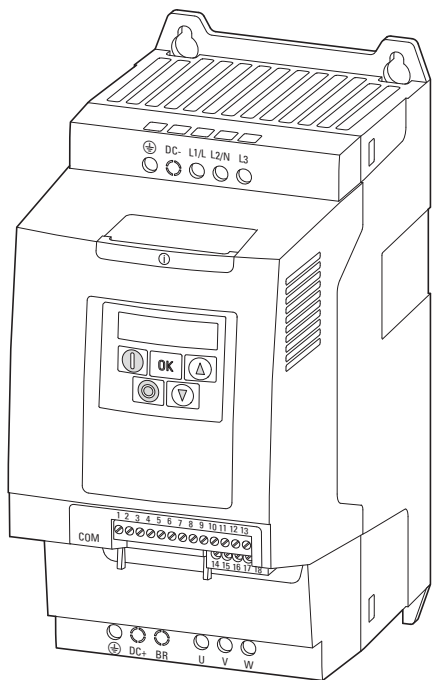
(sk) Nebezpečnosť ohrozenia života elektrickým prúdom!
Práce, ktoré sú nižšie opísané, smú vykonávať iba elektroodborníci a osoby s elektrotechnickým vzdelaním.

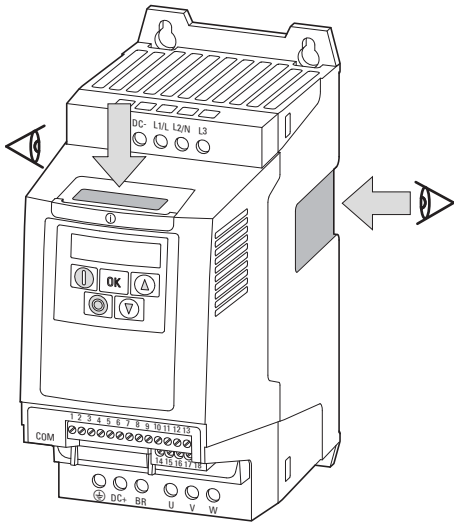
(bg) Опасност за живота от електрически ток!
Операциите, описани в следващите раздели, могат да се извършват само от специалисти-електротехници и инструктиран електротехнически персонал.

(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-...-A20...

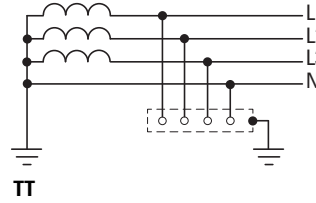
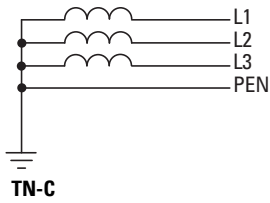
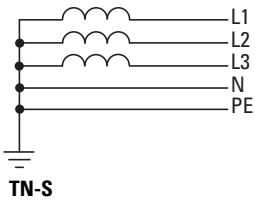




DA1-xy zzz FN - A20N

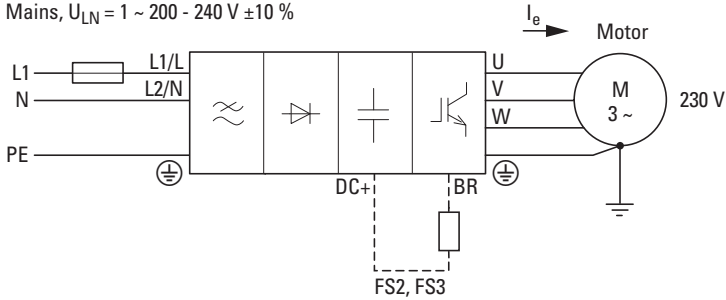
- 20 = IP20, NEMA 0
- B = Brake chopper (DC+, BR)
- N = No Brake chopper
- F = EMC Filter (RFI)
- N = No EMC Filter
- I_e
- 4D3 = 4.3 A
- 024 = 24 A
- U_{LN} (Mains), 50/60 Hz
- 2 = 230 V (200 - 240 V ± 10 %)
- 4 = 400 V (380 - 480 V ± 10 %)
- Mains \rightarrow Motor
- 1 = 1 AC \rightarrow 3 AC
- 3 = 3 AC \rightarrow 3 AC

Mains (TN, TT)



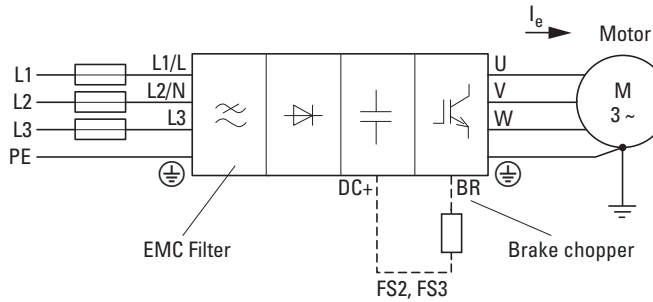
DA1-12...

Mains, $U_{LN} = 1 \sim 200 - 240 \text{ V} \pm 10 \%$



DA1-32...

Mains, $U_{LN} = 3 \sim 200 - 240 \text{ V} \pm 10 \%$



DA1-34...

Mains, $U_{LN} = 3 \sim 380 - 480 \text{ V} \pm 10 \%$

230 V ($U_{LN} = 3 \sim 230 \text{ V}$)
 400 V ($U_{LN} = 3 \sim 400 \text{ V}$)
 440 - 480 V ($U_{LN} = 3 \sim 480 \text{ V}$)

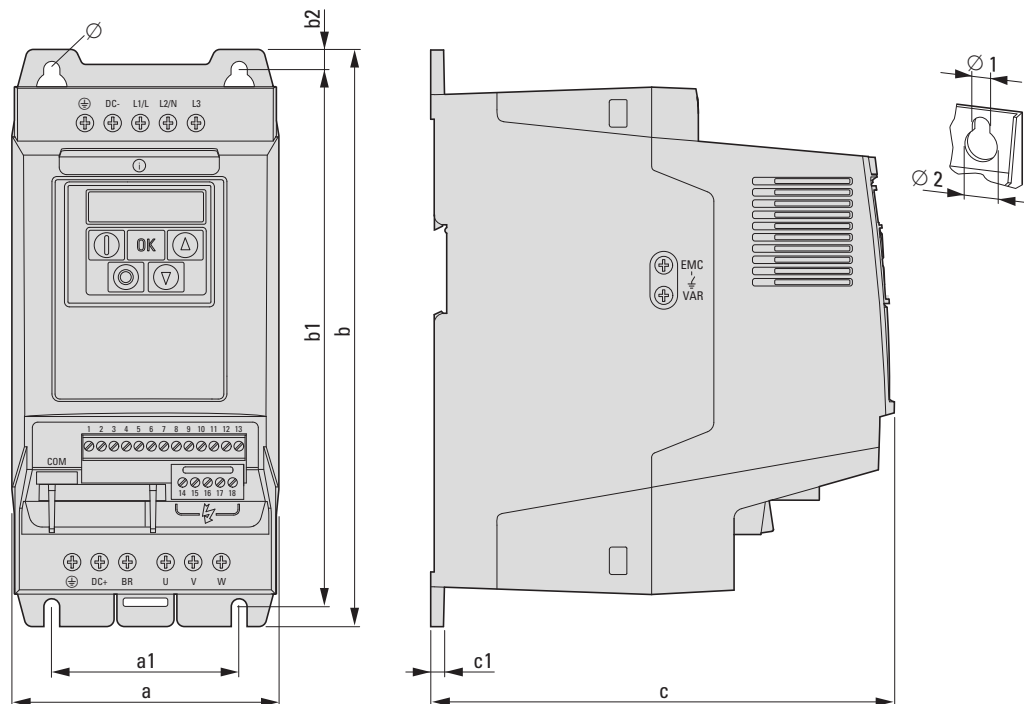
10/13 IL04020010Z

(en) Dimensions and weights
 (de) Abmessungen und Gewichte
 (fr) Encombremets 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 svārs
 (lt) Matmenys ir svoriai

(pl) Wymiary i masy
 (sl) Dimenzije in teže
 (sk) Rozmery a hmotnosti
 (bg) Размери и тегло
 (ro) Dimensiuni și greutateți
 (hr) Dimenzije i težina



[mm (in)]

FS		a	a1	b	b1	b2	c	c1	Ø 1	Ø 2	kg (lbs)
FS2	DA1-12...	107 (4.21)	75 (2.95)	231 (9.09)	215 (8.46)	8 (0.31)	186 (7.32)	5 (0.2)	6 (0.24)	12 (0.47)	1.8 (3.97)
	DA1-32...										
	DA1-34...										
FS3	DA1-32...	131 (5.16)	100 (3.94)	273 (10.75)	255 (10.04)	8.5 (0.33)	204 (8.03)	5 (0.2)	6 (0.24)	12 (0.47)	3.5 (7.72)
	DA1-34...										

10/13 IL04020010Z

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

(en) Mounting
 (de) Montage
 (fr) Montage
 (es) Montaje

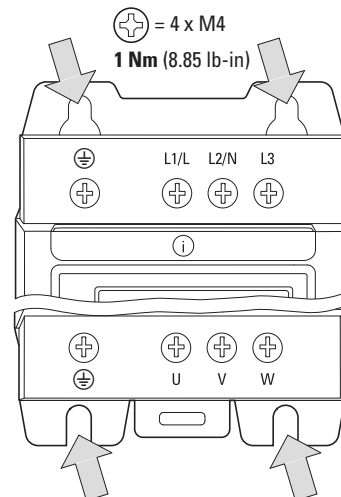
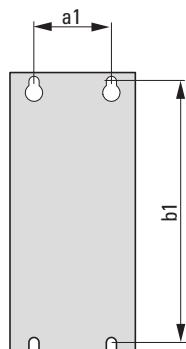
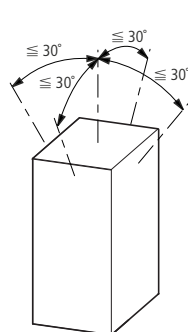
(it) Montaggio
 (zh) 安装
 (ru) Монтаж
 (nl) Montering

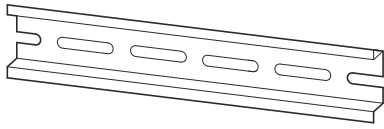
(da) Montering
 (el) Τοποθέτηση
 (pt) Montagem
 (sv) Montering

(fi) Asennus
 (cs) Montáž
 (et) Paigaldamine
 (hu) Felszerelés

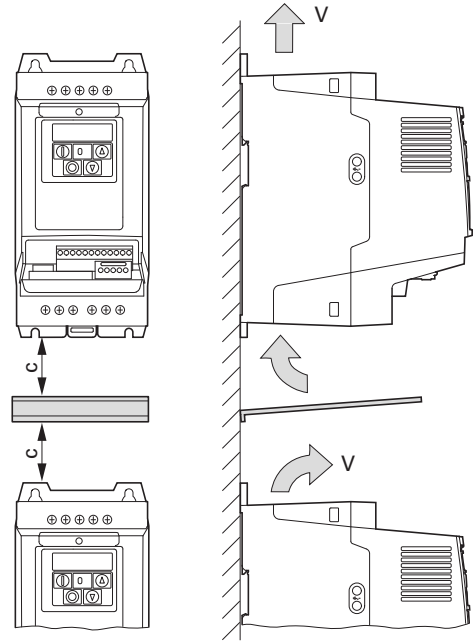
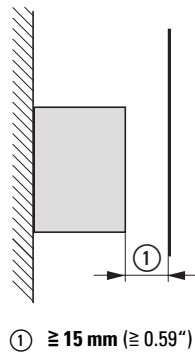
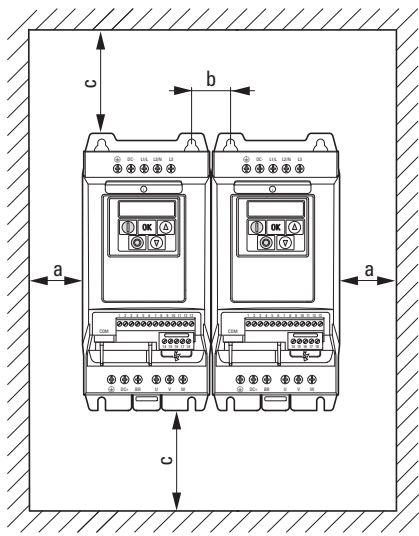
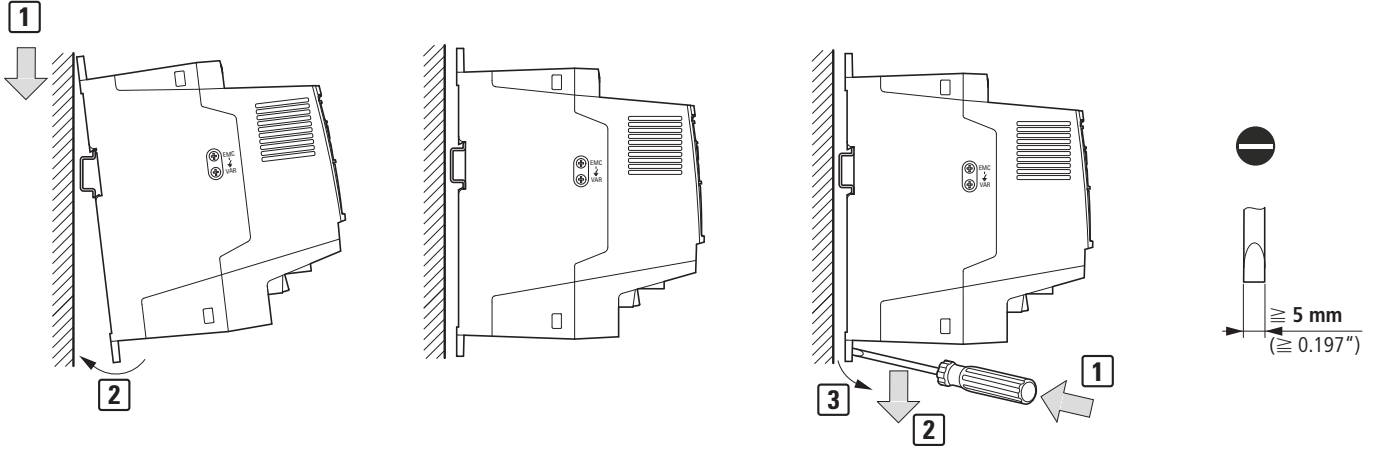
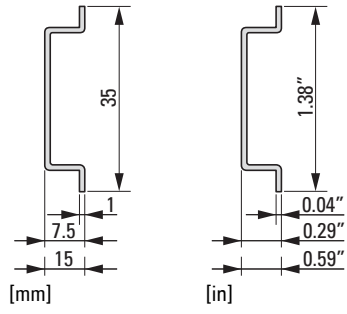
(lv) Montāža
 (lt) Montavimas
 (pl) Montaż
 (sl) Montaža

(sk) Montáž
 (bg) Монтаж
 (ro) Montarea
 (hr) Montaža



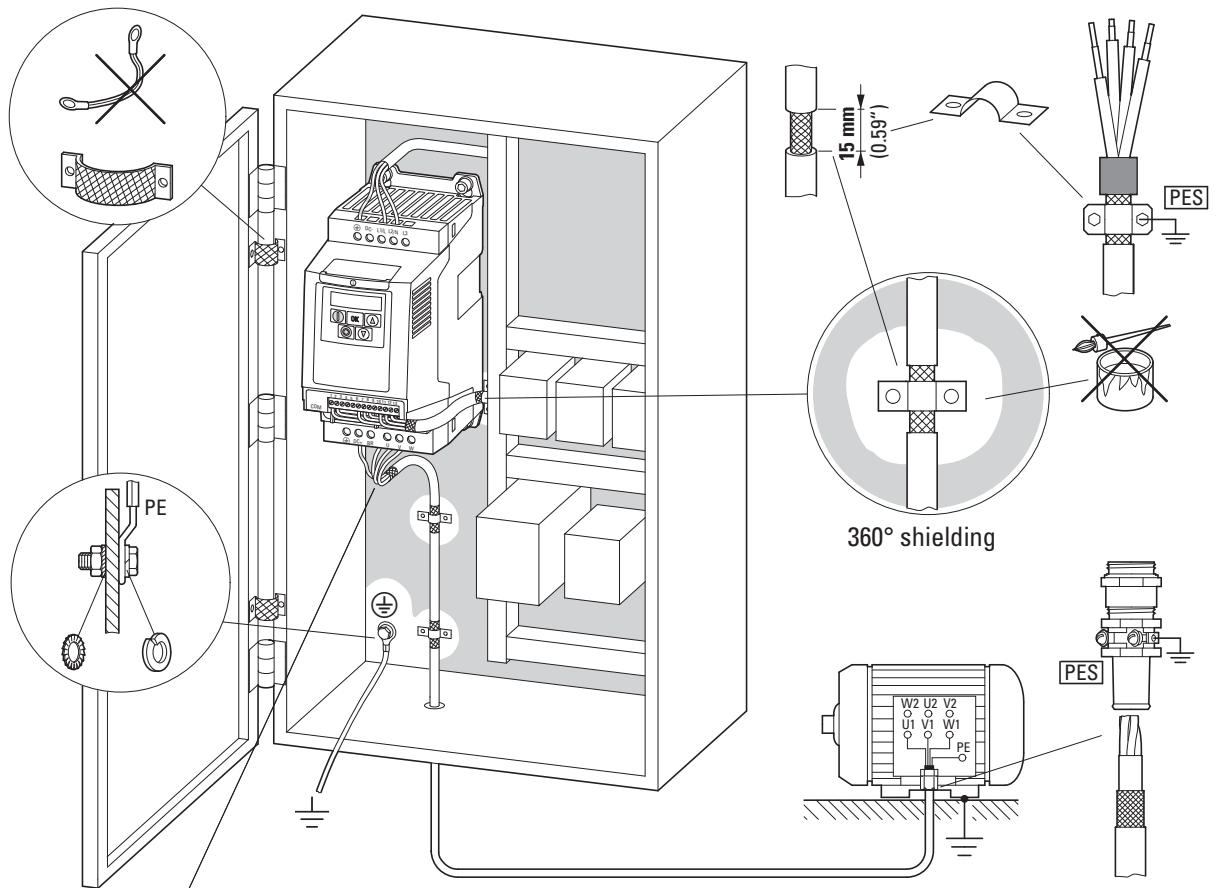


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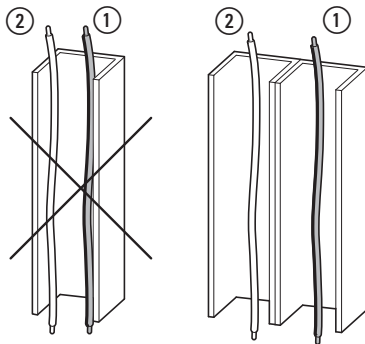
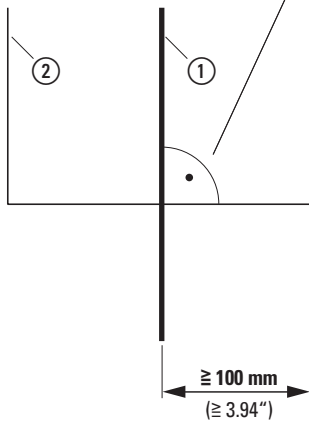


	a mm (in)	b mm (in)	c mm (in)	V m ³ /h (cfm)
FS2	50 (1.97)	32 (1.26)	75 (2.95)	18.69 (11)
FS3	50 (1.97)	31 (1.22)	100 (3.94)	44.17 (26)

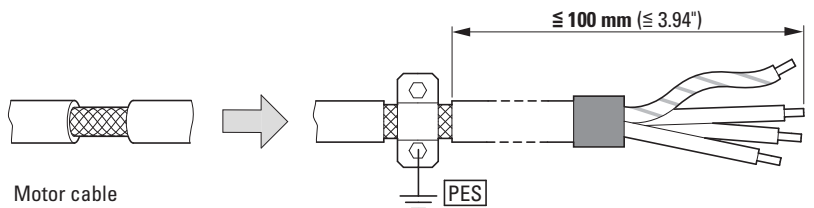
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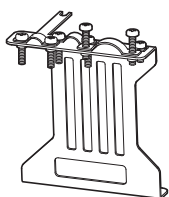


- ① Power: L1, L2, L3, N, PE, U, V, W, DC+, DC-, RB
- ② Control: 1, 2, ... 18, Modbus, CANopen



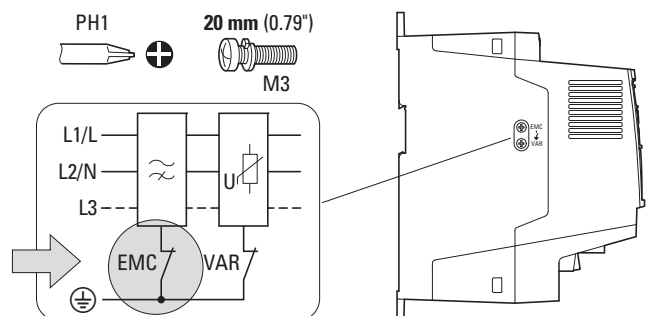
- | | | | | | |
|-------------|-------------|------------------|------------------------------|-------------------|---------|
| (en) Option | (de) Option | (fr) Option | (es) Opción | (it) Opzione | (zh) 选项 |
| (ru) Опция | (nl) Optie | (da) Option | (el) Προαιρετικός εξοπλισμός | | |
| (pt) Opção | (sv) Option | (fi) Lisävaruste | (cs) Volitelně | (et) Lisavarustus | |
| (hu) Opció | (lv) Opcija | (lt) Pasirinktis | (pl) Opcja | (sl) Opcija | |
| (sk) Voľba | (bg) опция | (ro) Opțiunea | (hr) Opcija | | |

DX-EMC-MNT-...



IL040010ZU

EMC Filter OFF



(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) AVVISIO
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) ΕΠΙΓΡΥΠΝΗΣΗ
Συνδέστε μόνο όταν δεν επικρατεί τάση!

(pt) ADVERTÊNCIA
Ligar apenas com a tensão desligada!

(sv) OBSERVERA
Får endast anslutas i späningsfritt 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
Podłączac zawsze po uprzednim odłączeniu od zasilania elektrycznego!

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

(sk) UPOZORNENIE
Napájat' len v stave bez napätia!

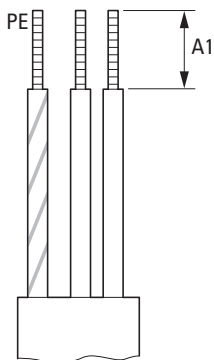
(bg) ПРЕДУПРЕЖДЕНИЕ
Свързвайте само, когато уреда не е под напрежение!

(ro) ATENTJE
Conectați doar când aparatul nu se află sub tensiune!

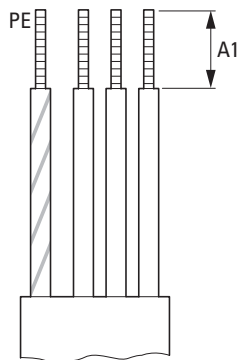
(hr) POZOR
Priključujte samo u beznaponskom stanju!

FS2, FS3: A1 = 10 mm (0.39")

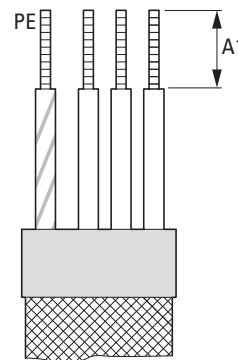
Mains 1 ~



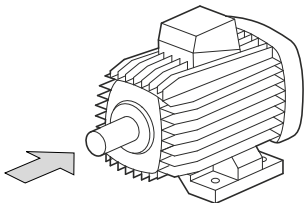
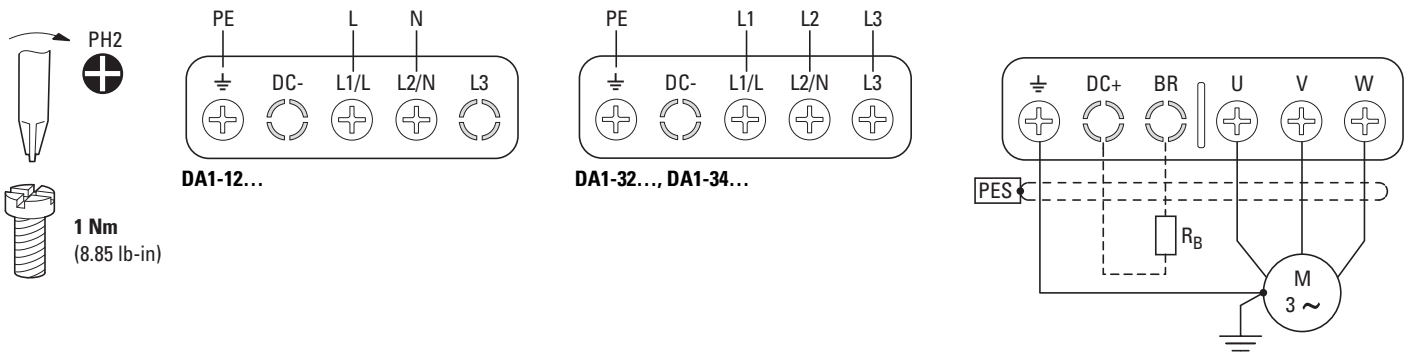
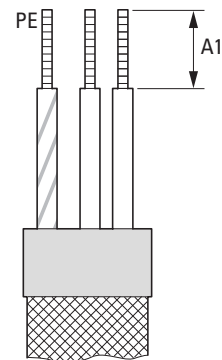
Mains 3 ~



Motor

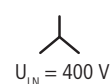
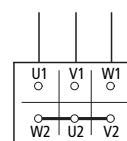
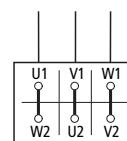
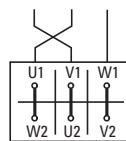
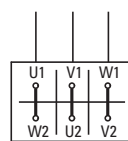


Brake Resistor



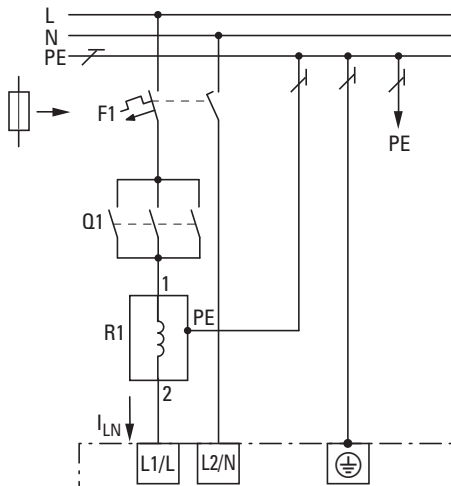
DA1	Motor
U	U1
V	V1
W	W1

230/400 V	3.2/1.9 A
0,75 KW	cosφ 0.79
1410 mi n ⁻¹	50 Hz



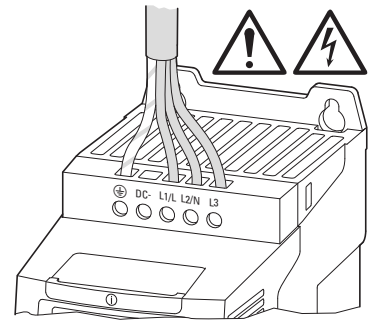
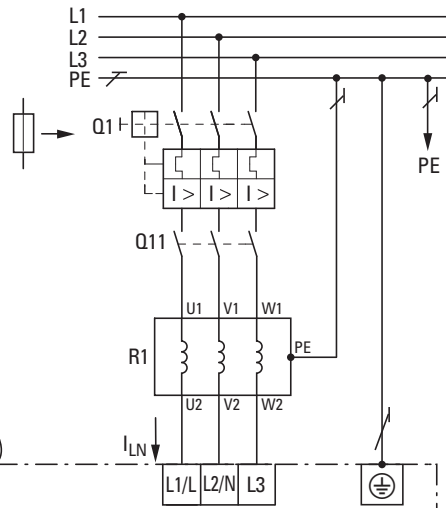
Mains

1 ~ 200 V - 240 V ±10 %, 50/60 Hz (DA1-12...)

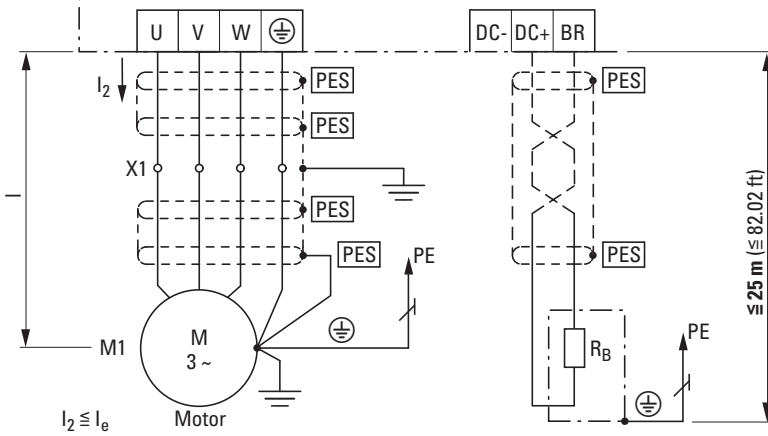


Mains

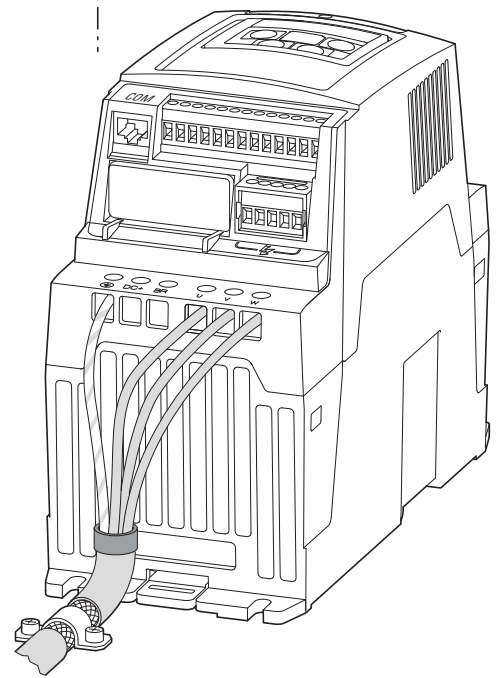
3 ~ 200 V - 240 V ±10 %, 50/60 Hz (DA1-32...)
 3 ~ 380 V - 480 V ±10 %, 50/60 Hz (DA1-43...)



T1

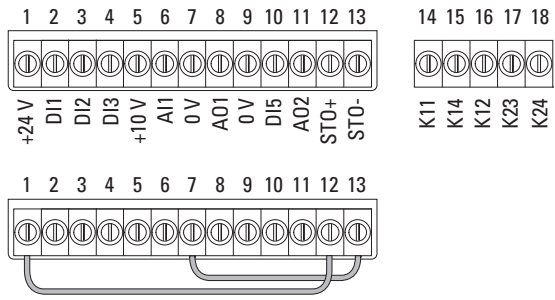
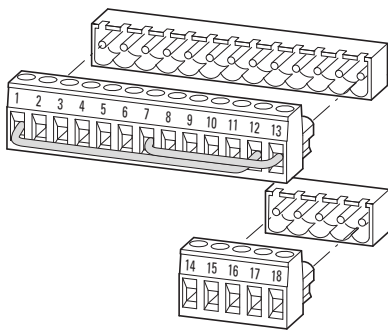


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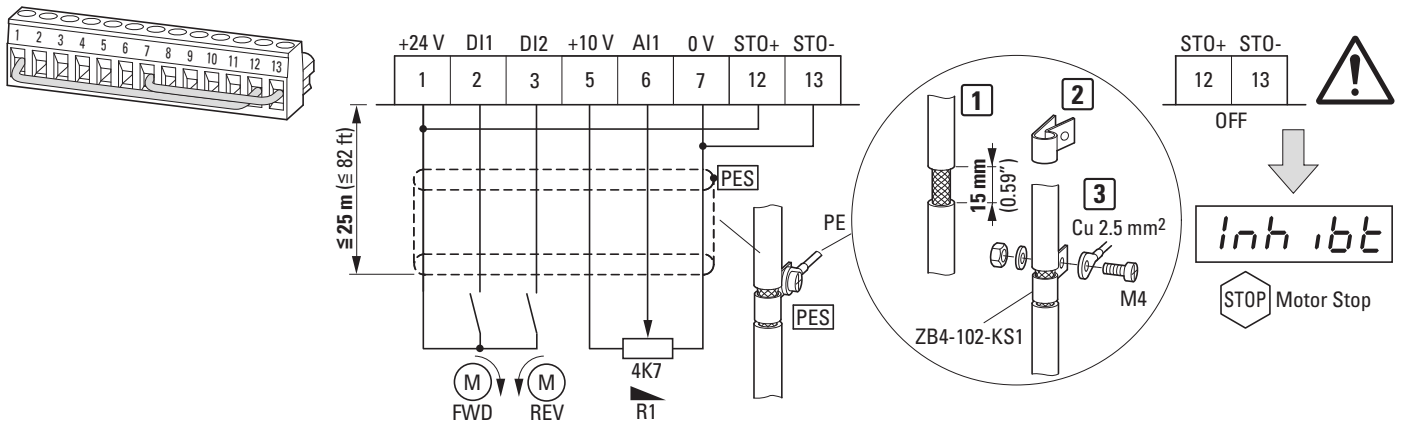
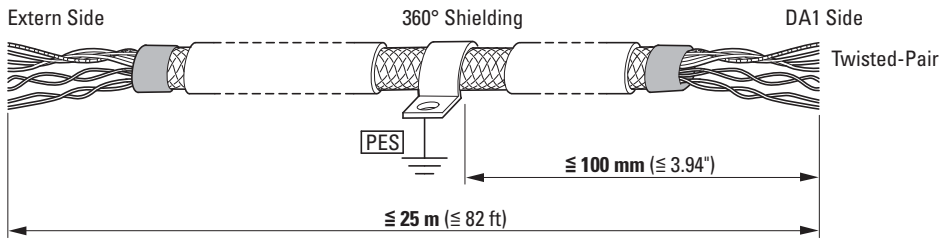


EMC	I	I	DA1
C1	≤ 1 m	≤ 3.28 ft	DA1-12...
C2	≤ 5 m	≤ 16.4 ft	DA1-12..., DA1-32..., DA1-34...
C3	≤ 25 m	≤ 82.02 ft	DA1-12..., DA1-32..., DA1-34...

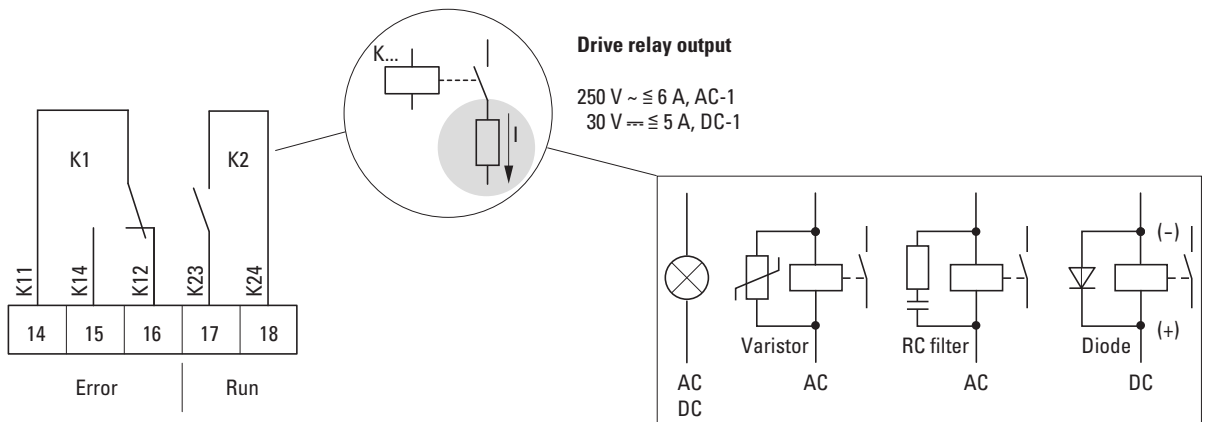
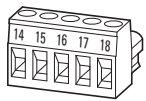
	Frame Size	I_{LN}	F1/Q1 MCB (type B)	Mains		I_e	Motor		P		R _B		
		A	A	mm ²	AWG	A	mm ²	AWG	kW	HP	Ω	mm ²	AWG
DA1-124D3...	FS2	8.5	16 (15)	2 x 2.5	2 x 12	4.3	3 x 1.5	3 x 14	0.75	1	100	1.5	14
DA1-127D0...	FS2	13.9	20	2 x 4	2 x 10	7	3 x 1.5	3 x 14	1.5	2	50	1.5	14
DA1-12011...	FS2	19.5	25	2 x 10	2 x 8	10.5	3 x 1.5	3 x 14	2.2	3	35	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	100	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	50	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	35	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	20	2.5	10
DA1-32024...	FS3	24.8	32 (30)	3 x 10	3 x 8	24	3 x 4	3 x 10	5.5	7.5	20	4	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	400	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	200	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	150	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	100	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	75	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	50	2.5	10
DA1-34024...	FS3	24.7	40 (35)	3 x 10	3 x 8	24	3 x 4	3 x 10	11	15	40	4	10



mm ²	mm ²	AWG	mm	in	M3 Nm	lb-in	mm
0.14 - 2.5	0.14 - 2.5	30 - 12	6	0.24	0.8	7.08	0.4 x 2.5



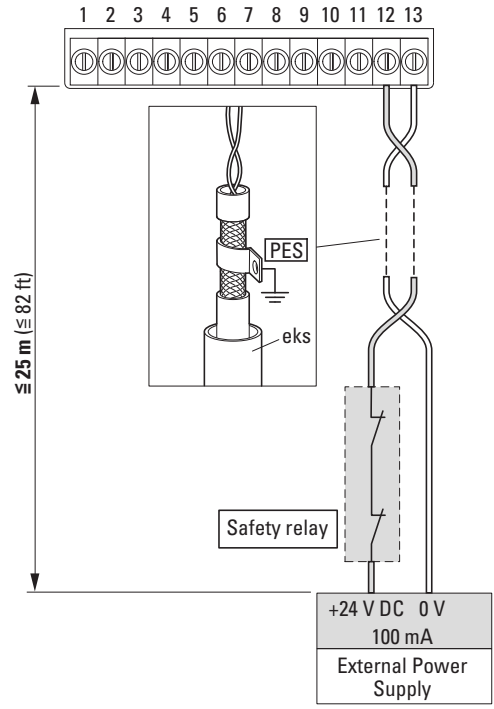
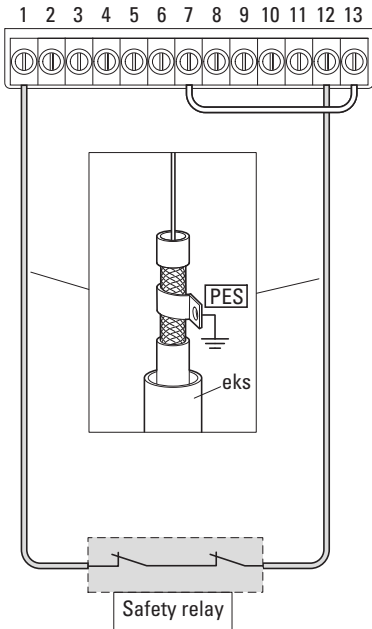
10/13 IL04020010Z



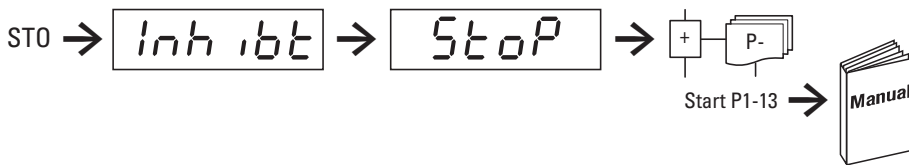
STO (Safe Torque Off)

- (en) Shielded cable [PES] routed in an inherently short-circuit-proof and ground-fault-proof manner
- (de) Abgeschirmtes Kabel [PES] erd- und kurzschlussicher verlegen (eks)
- (fr) Câble blindé [PES] à poser avec protection contre courts-circuits/défauts à la terre
- (es) Tender el cable [PES] apantallado con seguridad de puesta a tierra y cortocircuito.
- (it) Posare il cavo [PES] schermato collegato a terra e protetto contro il cortocircuito
- (zh) 铺设接地防短路屏蔽电缆 [PES]
- (ru) Экранированный кабель [PES] прокладывается с защитой от замыкания на землю и коротких замыканий.
- (nl) Afgeschermde kabel [PES] geaard en kortsluitveilig installeren
- (da) Læg det afskærmede kabel [PES] jord- og kortslutningssikkert.
- (el) Τοποθετήστε το θωρακισμέν[ΠΕΣ] ο καλώδιο κατά τρόπον ώστε να είναι ασφαλές από βραχυκύκλωμα γείωσης και βραχυκύκλωμα.
- (pt) Dispor o cabo [PES] blindado com ligação à terra e protegido contra curto-circuito
- (sv) Dra den skärmda kabeln [PES] jordfels- och kortslutningssäkert.

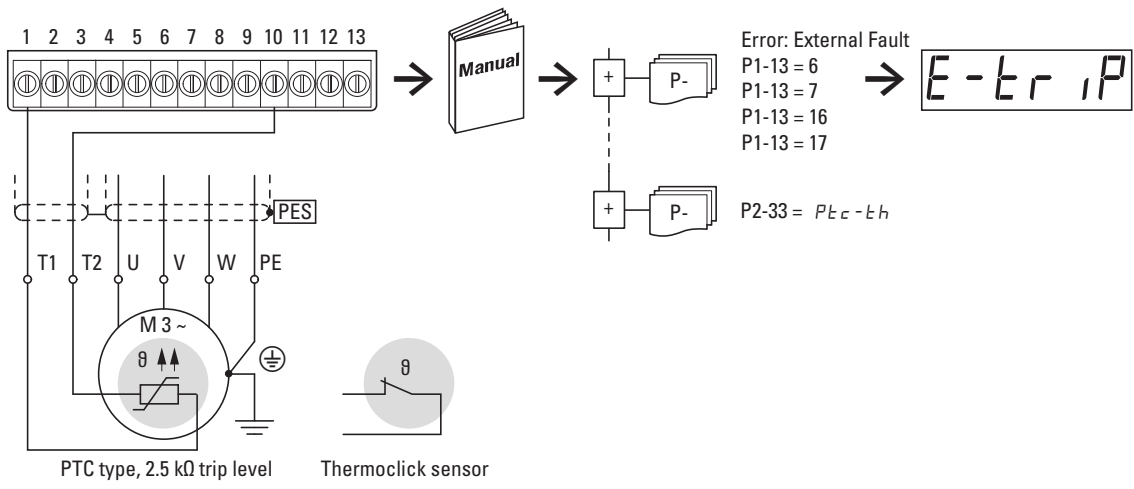
- (fi) Sijoita suojattu kaapeli [PES] maa- ja oikosulkusuojatusti (mos).
- (cs) Stíněný kabel [PES] položte tak, aby byl bezpečný proti uzemnění a zkratu (buz).
- (et) Paigaldage varjestatud kaabel [PES] maandus- ja lühiskaitstult (mlk).
- (hu) Árnyékolt kábelt [PES] földelvé és rövidzármntesen kell lefektetni.
- (lv) Izvilkot ekranētu kabeli [PES], kas ir aizsargāts pret zemslēgumiem un īsslēgumiem.
- (lt) Ekranuotą kabelį [PES] nutieskite apsaugotą nuo žemėjimo ir trumpojo jungimo.
- (pl) Kabel ekranowany [PES] ułożyć z zabezpieczeniem przed zwarciem i zwarciem doziemnym.
- (sl) Izoliran kabel [PES] speljite zavarovano pred zemeljskim in kratkim stikom.
- (sk) Uložte tienený kábel [PES], odolný voči skratu a náhodnému uzemneniu.
- (bg) Положете екраниран кабел [PES] и го заземете срещу късо съединение.
- (ro) Pozați cablul [PES] ecranat astfel încât să fie asigurată protecția la scurtcircuit și scurgeri la pământ.
- (hr) Zakrilijeni kabel [PES] postavite tako da bude zaštićen od uzemljenja i kratkog spoja.

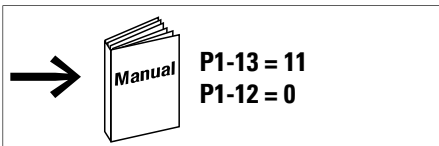


10/13 IL04020010Z

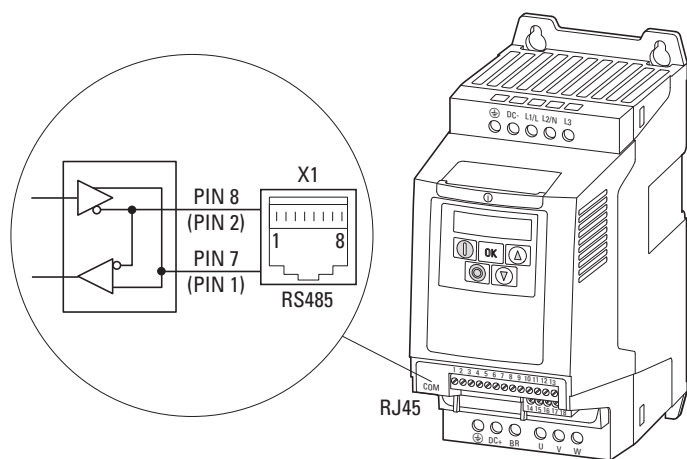
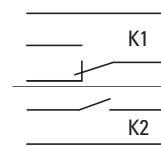


(en) Thermistor	(it) Termistore	(da) Thermistor	(fi) Termistori	(lv) Termistors	(sk) Termistor
(de) Thermistor	(zh) 热敏电阻	(el) Θερμίστορ	(cs) Termistor	(lt) Termistorius	(bg) Термистор
(fr) Thermistance	(ru) Термистор	(pt) Thermistance	(et) Termistor	(pl) Termistor	(ro) Termistor
(es) Termistor	(nl) Thermistor	(sv) Termistor	(hu) Termisztor	(sl) Termistor	(hr) Termistor

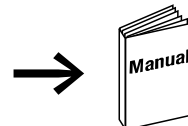




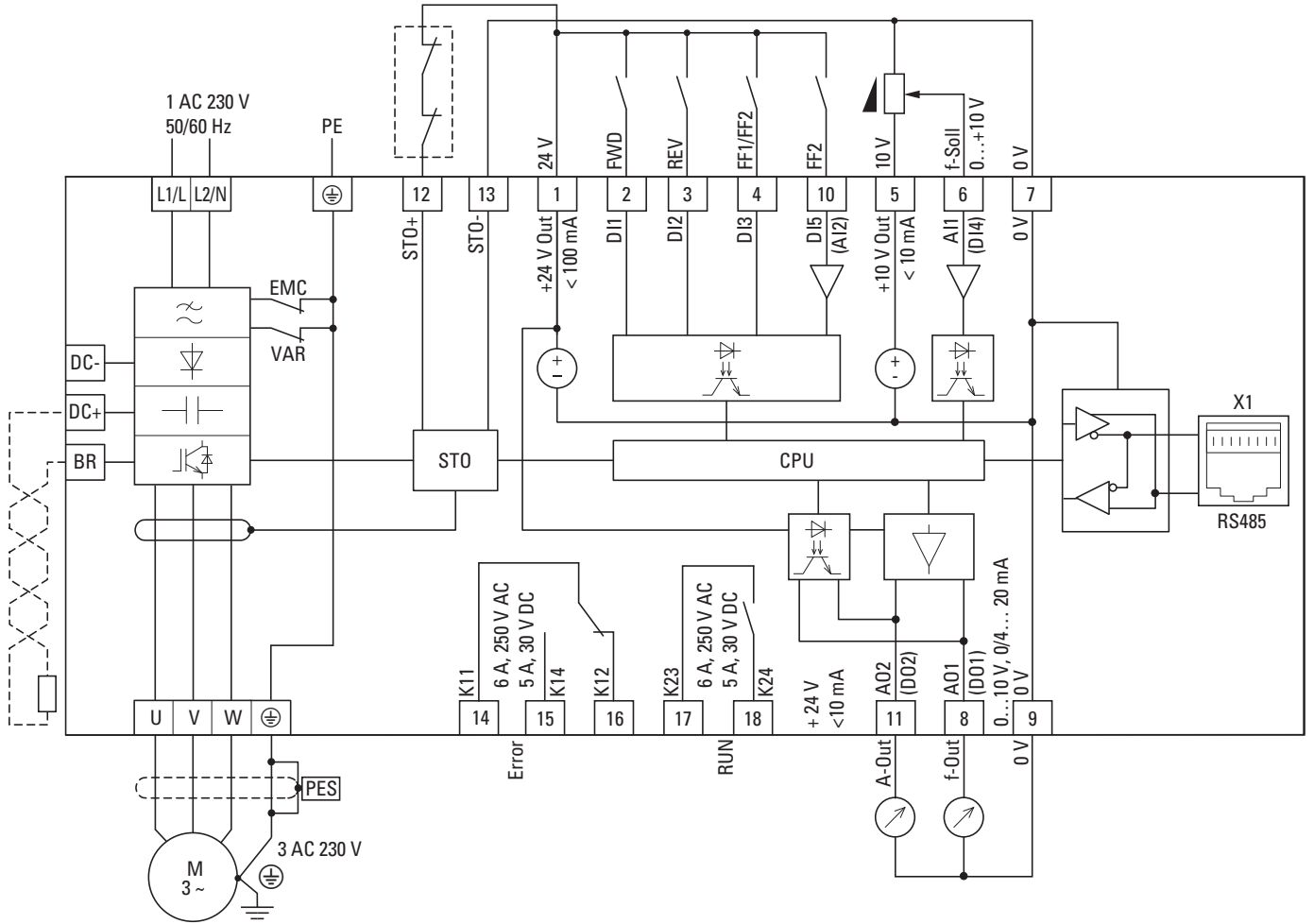
Input	L: 0 - 4 V DC	H: 8 - 30 V DC	Output
External Supply +24 V DC (100 mA)			1 +24 V DC, < 100 mA
Digital Input 1 (DI1)	Stop	Enable, Run Forward Rotation	2
Digital Input 2 (DI2)	Stop	Enable, Run Reverse Rotation	3
Digital Input 3 (DI3)	AI1	FF1/FF2	4
Analog Input 1 (AI1): 0 - 10 V DC, < 20 mA, Frequency Setpoint value [Digital Input 4 (DI4)] → P1-13			5 +10 V DC, < 10 mA
0 V			6
0 V			7 0 V
Digital Input 5 (DI5) [Analog Input 2 (AI2)] → P1-13	FF1, Fixed Frequency (P2-01 = 5 Hz)	FF2, Fixed Frequency (P2-02 = 10 Hz)	8 Analog Output 1 (AO1): 0 - 10 V DC, < 20 mA, Output Frequency [Digital Output 1 (DO1)] → P2-11, P2-12
Safe Tourqe Off	Stop	STO+ (18 - 30 V DC)	9 0 V
Safe Tourqe Off	Stop	STO- (0 V)	10
			11 Analog Output 2 (AO2): 0 - 10 V DC, < 20 mA, Output Current [Digital Output 2 (DO2)] → P2-13, P2-14
			12
			13
			14 Relay (K11 = COM)
			15 Relay (K14 = NO), Healthy
			16 Relay (K12 = NC), Error
			17 Relay (K23 = COM)
			18 Relay (K24 = NO), RUN



PIN 1	CANopen -
PIN 2	CANopen +
PIN 3	0V
PIN 4	OP-Bus -
PIN 5	OP-Bus +
PIN 6	+ 24 V
PIN 7	Modbus RTU -
PIN 8	Modbus RTU +

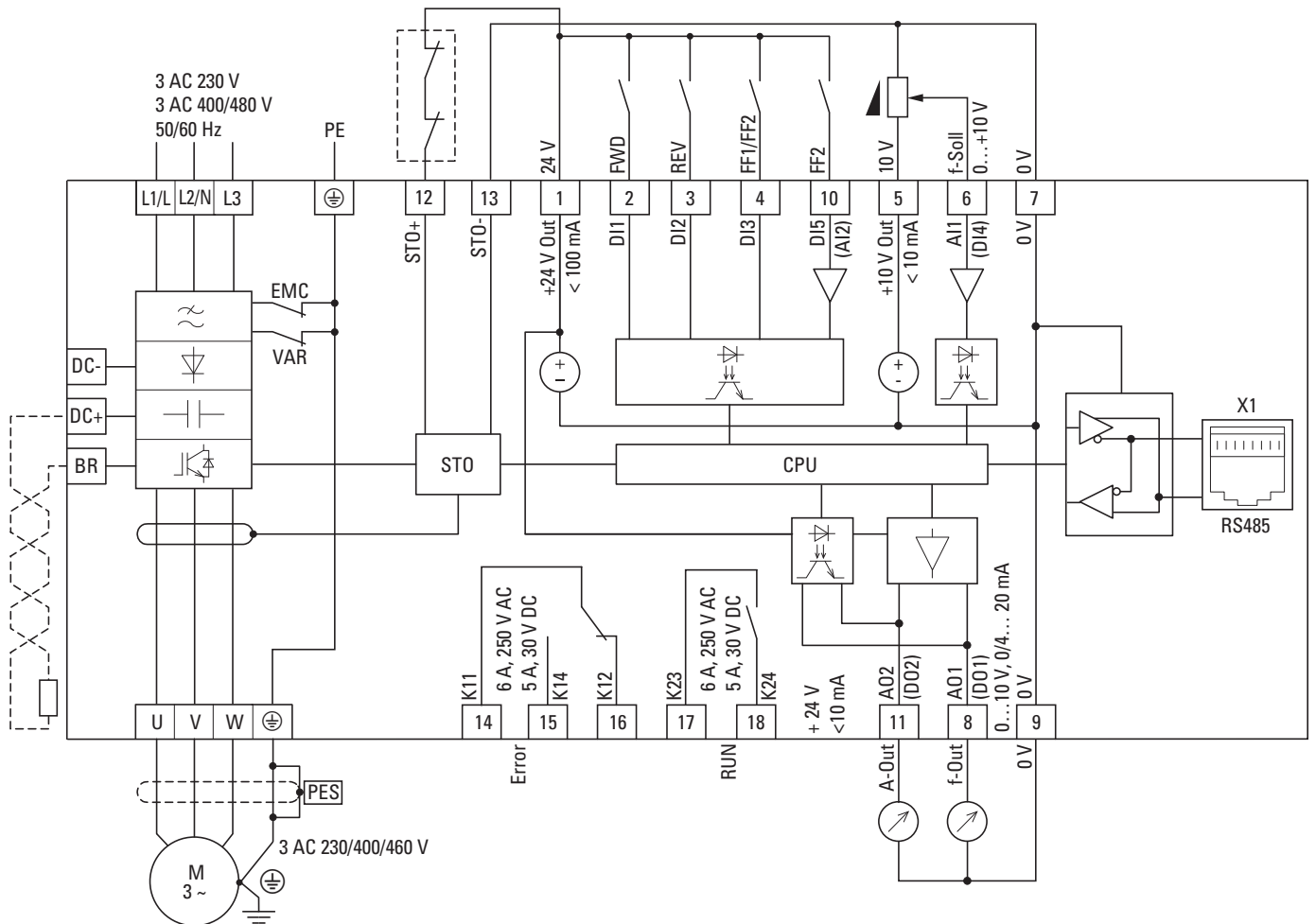


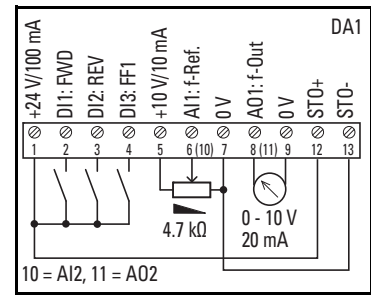
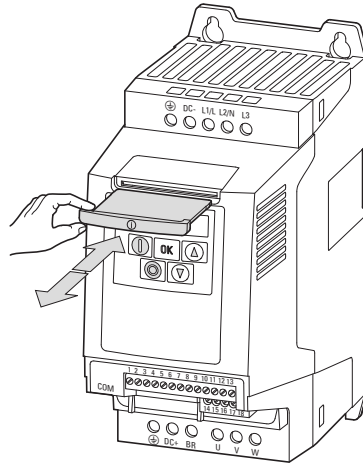
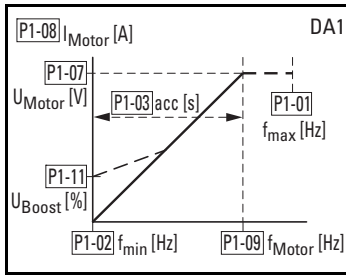
DA1-12...



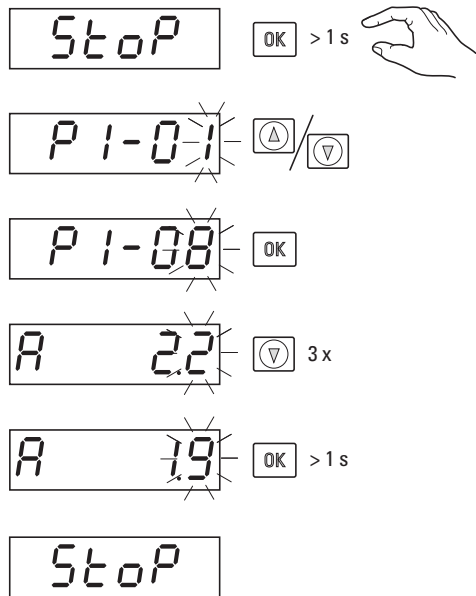
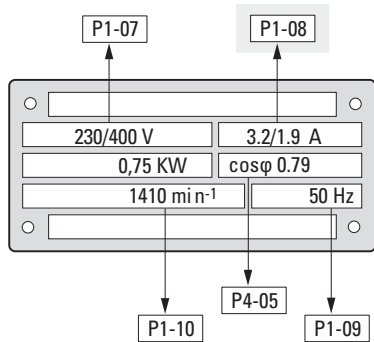
10/13 IL04020010Z

DA1-32...
DA1-34...

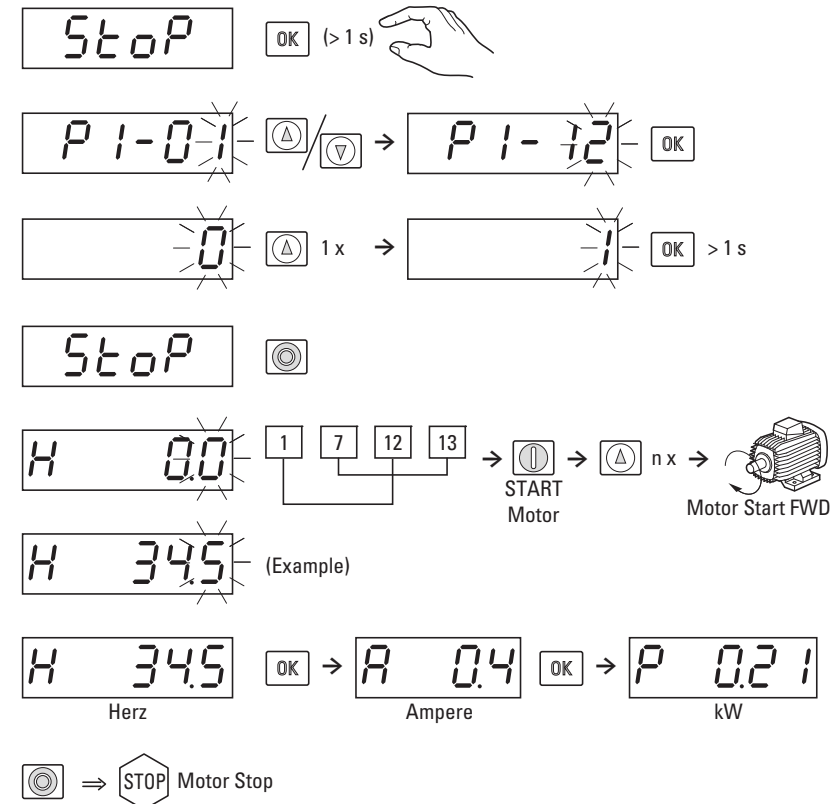
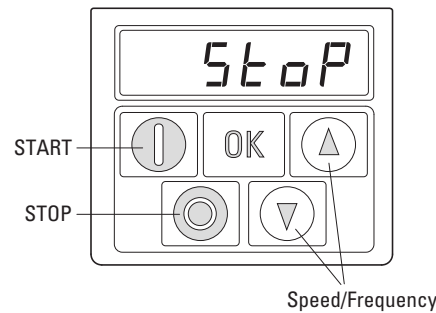




Motor protection



Hand modus (Keypad)



10/13 IL04020010Z

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.

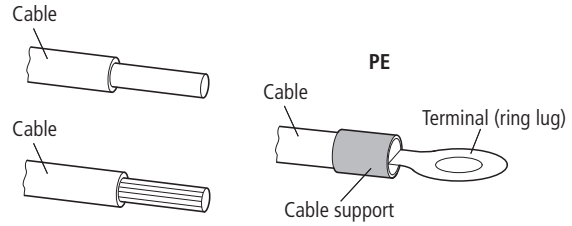
Terminal Tightening Torque and Wire Size

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

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.

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					
DA1-32024...		30	10	5.5	7.5	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					
DA1-34024...		35	8	11	15	8					

1) kW @ 230 V/400 V, 50 Hz, 1500 min⁻¹
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
mm² = square millimeters, a measure of wire cross-sectional area

10/13 IL04020010Z