

**(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 проработанные 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! Elektrilöögiolt!**  
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!**

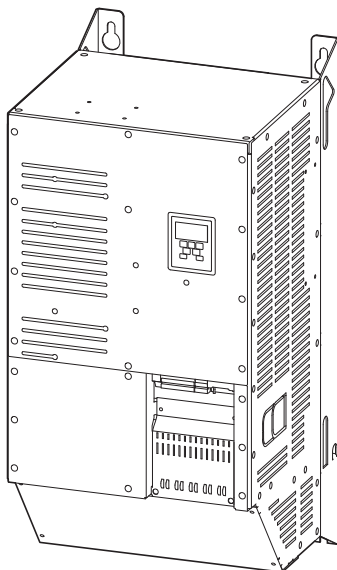
Práce, ktoré sú nižšie opísané, smú vykonávať iba elektroodborníci a osoby s elektrotechnickým vzdelaním.

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

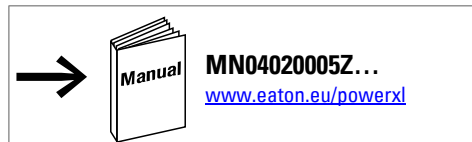
**(ro) Atenție! Pericol electric!**  
Toate lucrările descrise trebuie efectuate numai de personal de specialitate calificat și de persoane cu cunoștințe profunde în electrotehnică.

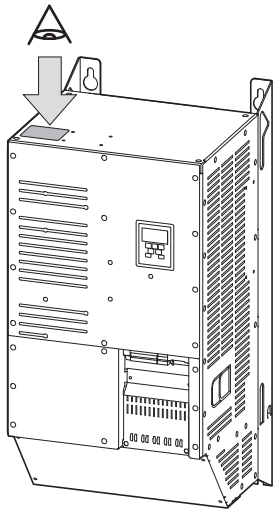
**(hr) Opasnost po život uslijed električne struje!**  
Radove opisane u nastavku smiju obavljati samo stručni električari i osobe koje su prošle elektrotehničku obuku.

**DA1-34370FB-B20C**  
**DA1-34450FB-B20C**



**FS8**  
**IP20, NEMA 0**

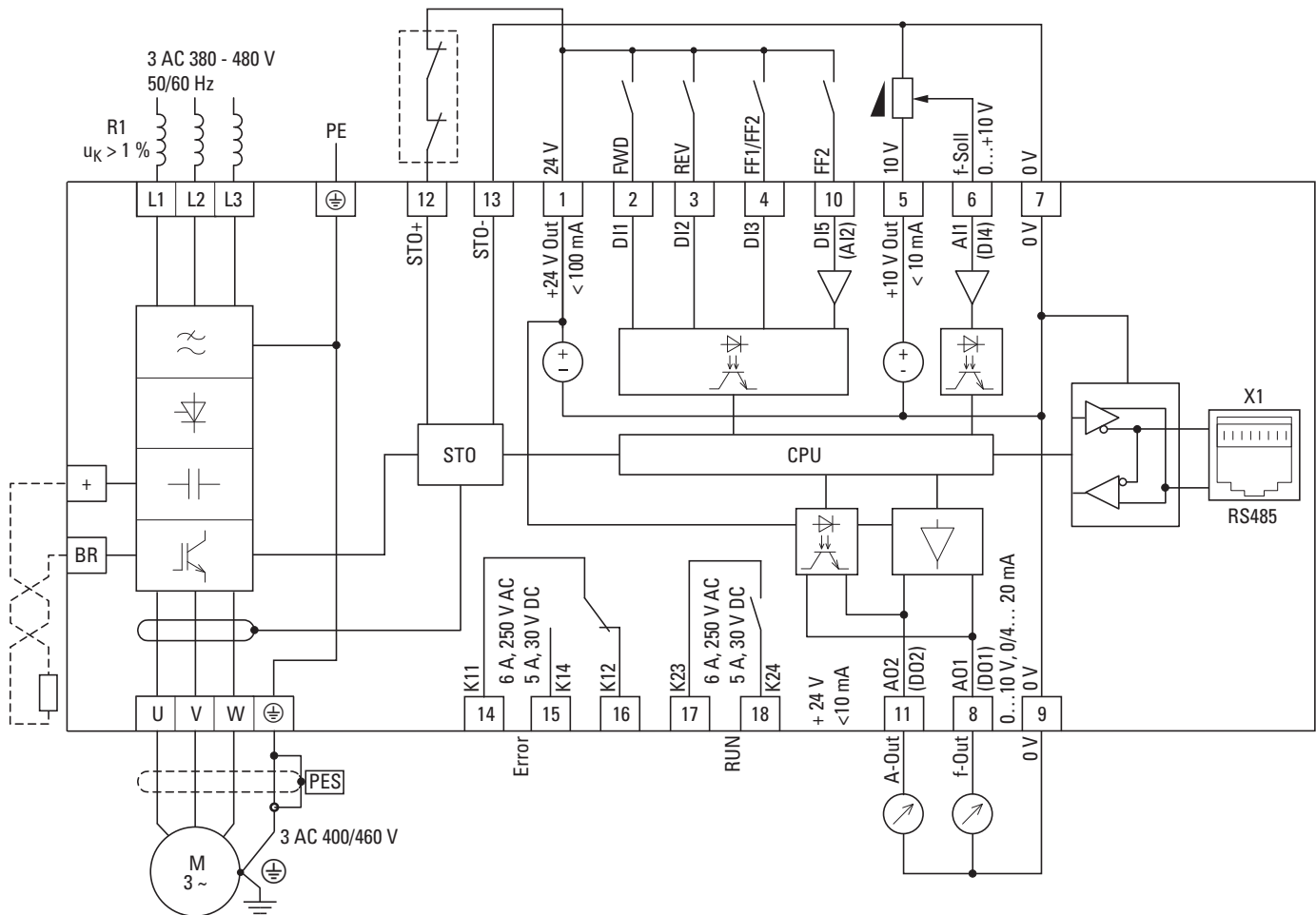
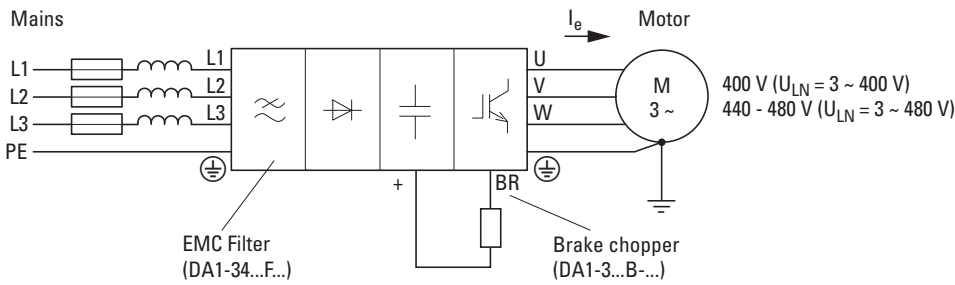




**DA1-3 4 zzz F B - B 20C**

- 20 = IP20, NEMA 0
- B = OLED Display
- B = Brake chopper (DC+, BR)
- F = EMC Filter (RFI)
- $I_e$   
370 = 370 A  
450 = 450 A
- $U_{LN}$  (Mains), 50/60 Hz  
4 = 400 V (380 - 480 V  $\pm 10\%$ )
- Mains  $\rightarrow$  Motor  
3 = 3 AC  $\rightarrow$  3 AC

DA1-34...:  $U_{LN} = 3 \sim 380 - 480 \text{ V} \pm 10\%$ , 50/60 Hz



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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 svars

lt Matmenys ir svoriai

pl Wymiary i masy

sl Dimenzije in teže

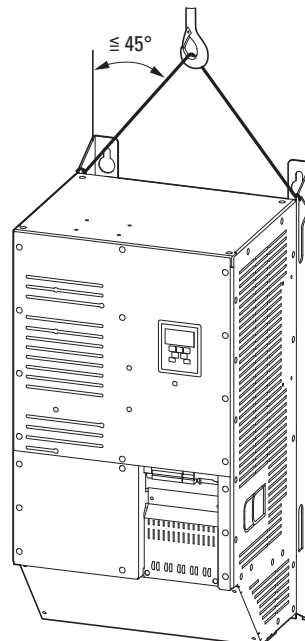
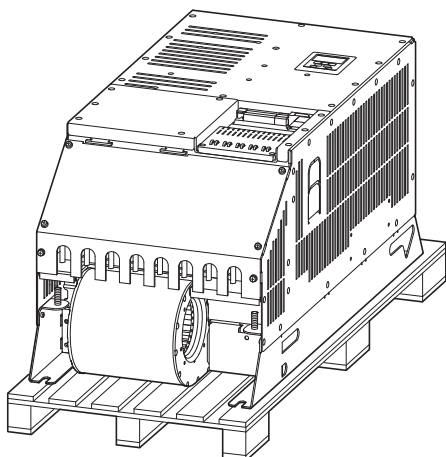
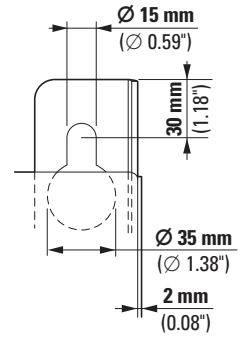
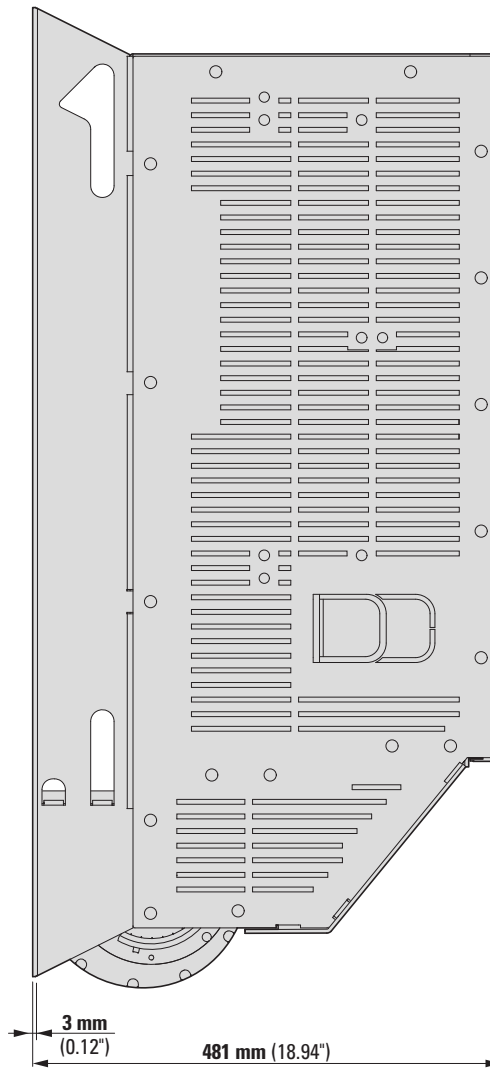
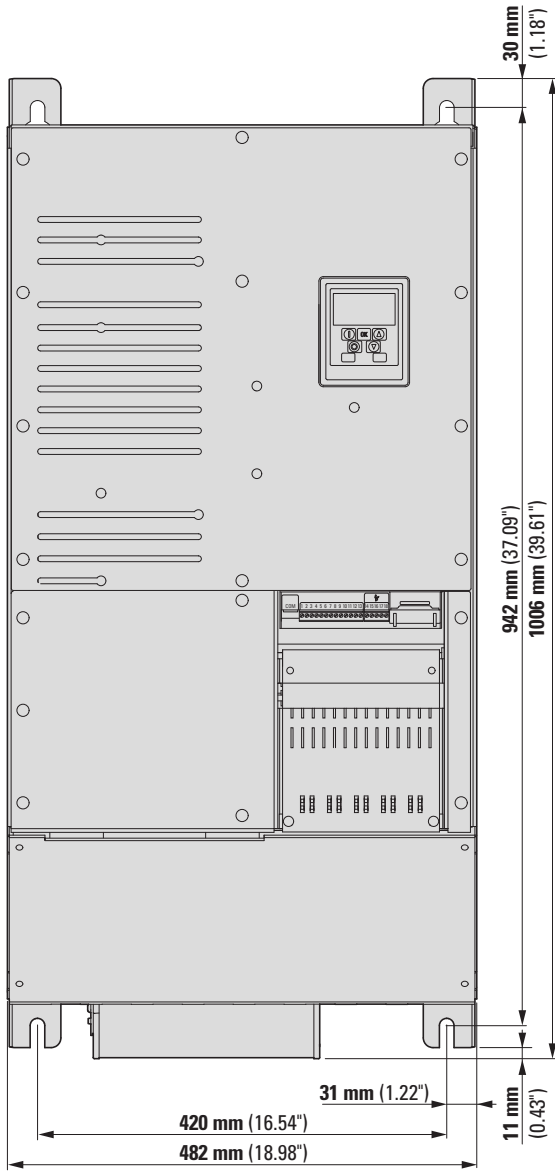
sk Rozmery a hmotnosti

bg Размери и тегло

ro Dimensiuni și greutateți

hr Dimenzije i težina

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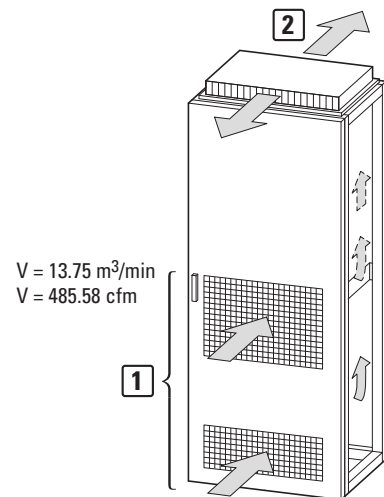
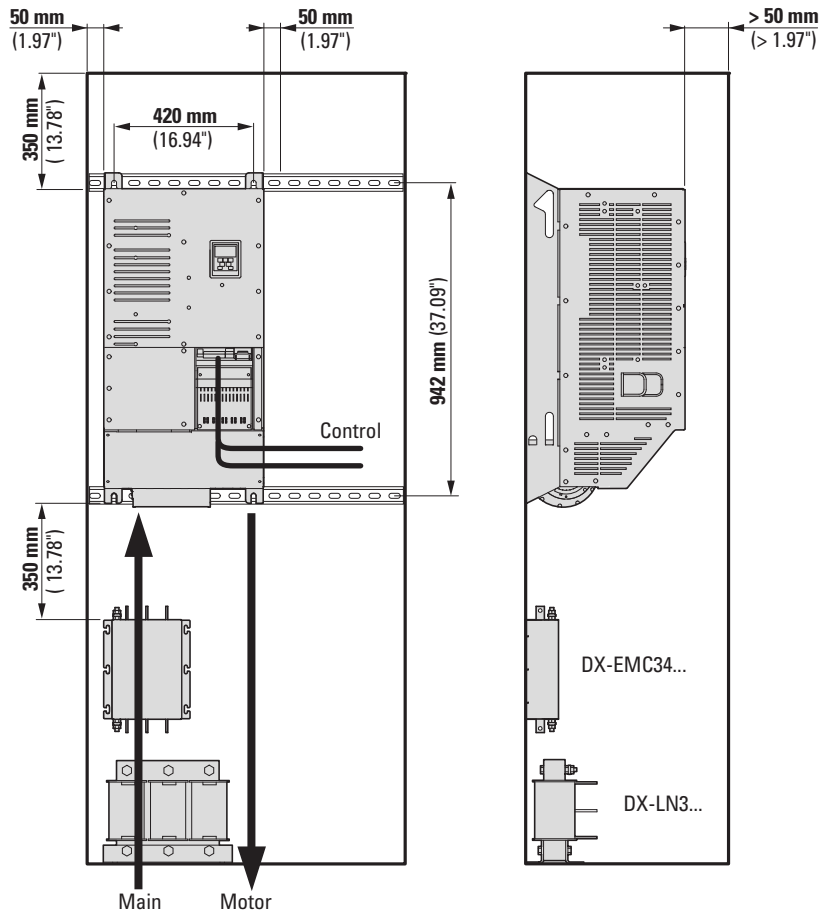
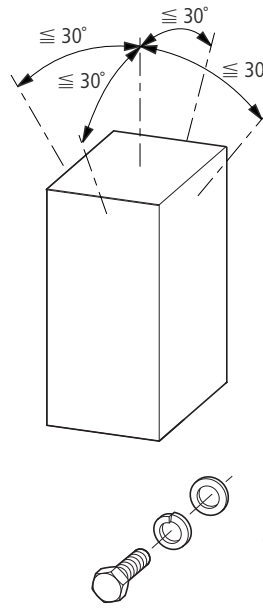
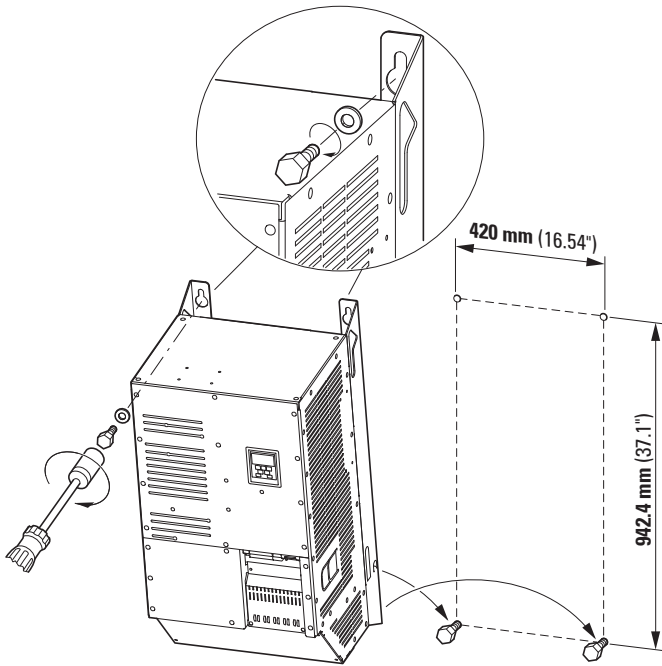
→ 1 inch = 25.4 mm  
1 mm = 0.0394 inch  
1 inch = 1"

(en) Mounting in control panel  
 (de) Montage im Schaltschrank  
 (fr) Montage dans l'armoire  
 (es) Montaje en el armario de distribución  
 (it) Montaggio nel quadro elettrico  
 (zh) 开关柜内的安装

(ru) Монтаж в распределительном шкафу  
 (nl) Montage in de schakelkast  
 (da) Installeres i relæskabet  
 (el) Εγκατάσταση στον πίνακα ελέγχου  
 (pt) Montagem no armário de distribuição  
 (sv) Montering i kopplingsskåpet

(fi) Asennus kytkentäkaapissa  
 (cs) Montáž ve skříňovém rozvaděči  
 (et) Montaaž lülituskilbis  
 (hu) Szerelés kapcsolószekrénybe  
 (lv) Montāža elektrosadales skapī  
 (lt) Montavimas skirstomojoje spintoje

(pl) Montaż w szafie rozdzielczej  
 (sl) Montaža v stikalno omarico  
 (sk) Montáž do rozvádzača  
 (bg) Монтаж в комутационния шкаф  
 (ro) Montare în dulapul de comandă  
 (hr) Montaža u rasklopni ormar



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(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

必须在断电状态下进行连接!

(ru) ВНИМАНИЕ

Подключать только в обесточенном состоянии!

(nl) OPGELET

Alleen in spanningsloze toestand aansluiten!

(da) VIGTIGT

Må kun tilsluttes i spændingsfri tilstand!

(el) ΠΡΟΣΟΧΗ

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

Podłączac zawsze po uprzednim odłączeniu od zasilania elektrycznego!

(sl) POZOR

Napravo priključite le, ko ni pod napetostjo!

(sk) UPOZORNENIE

Napájať len v stave bez napätia!

(bg) ПРЕДУПРЕЖДЕНИЕ

Свързвайте само, когато уреда не е под напрежение!

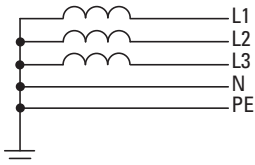
(ro) ATENȚIE

Conectați doar când aparatul nu se află sub tensiune!

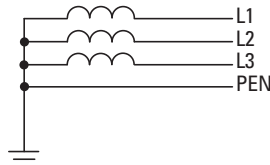
(hr) POZOR

Priključujte samo u beznaponskom stanju!

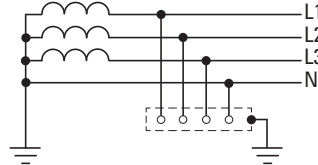
### Mains (TN, TT)



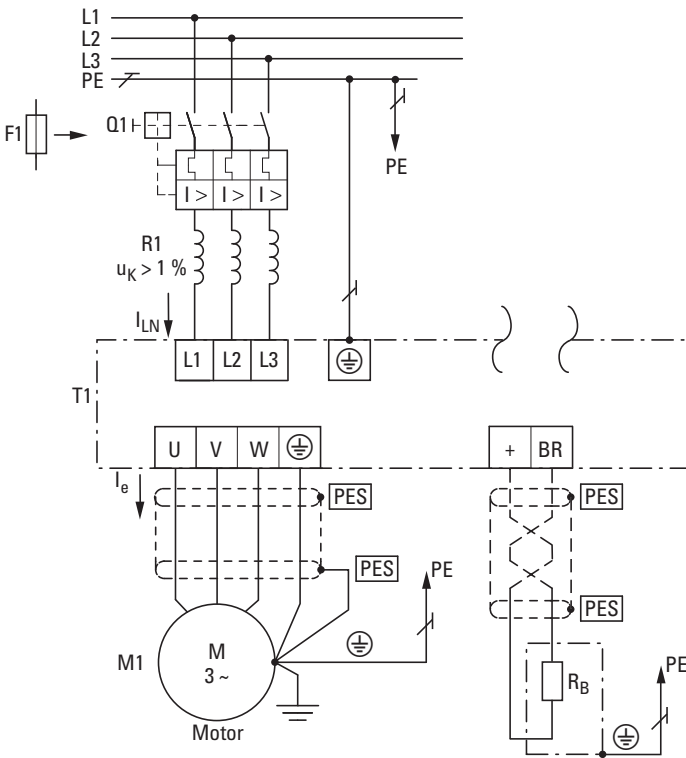
TN-S



TN-C



TT



### Mains

3 ~ 380 V - 480 V ±10 %, 50/60 Hz

### Mains choke (R1)

DX-LN3-370 → DA1-34370...  
DX-LN3-450 → DA1-34450...

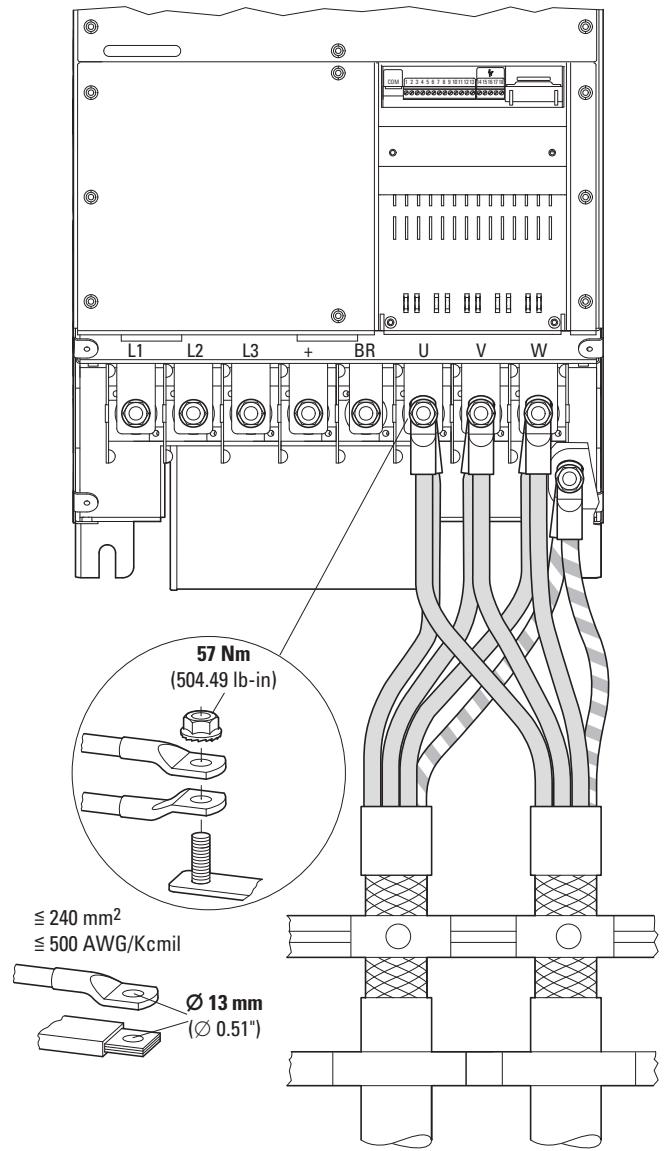
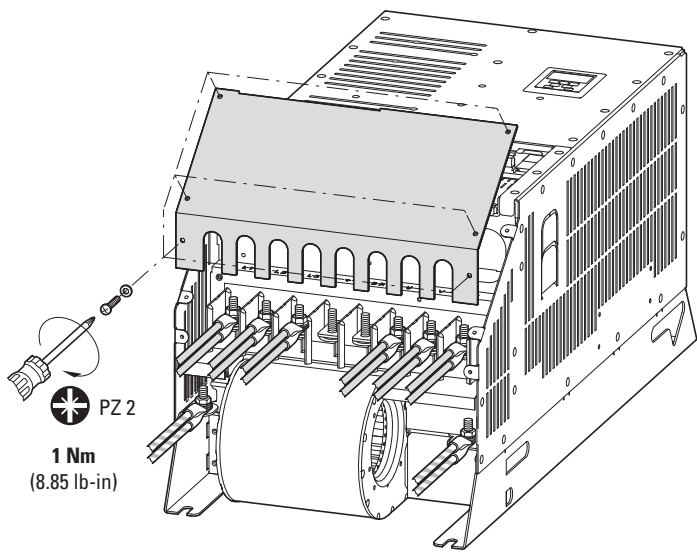
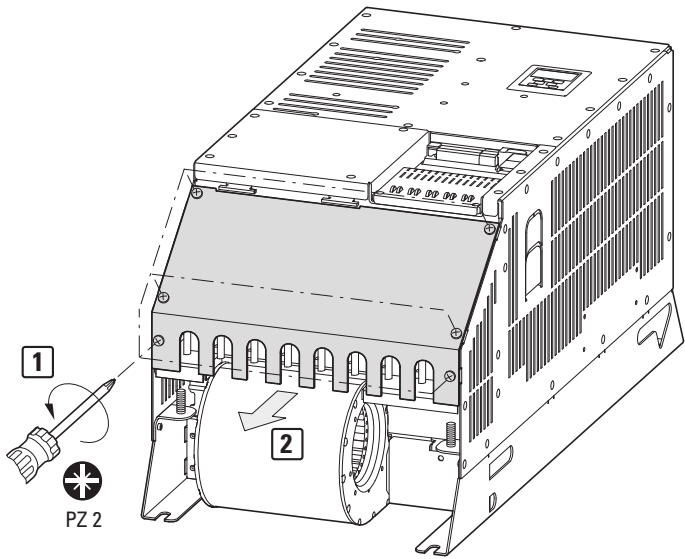
DX-LN... → IL IL00906003Z

### Motor (M1)

kW (400 V, 50 Hz), 1500 min<sup>-1</sup>  
HP (440 - 480 V, 60 Hz), 1800 rpm

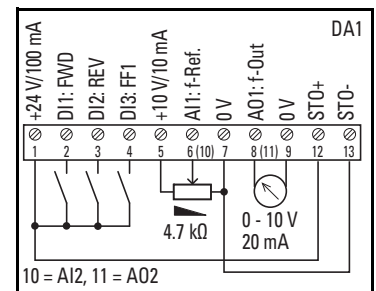
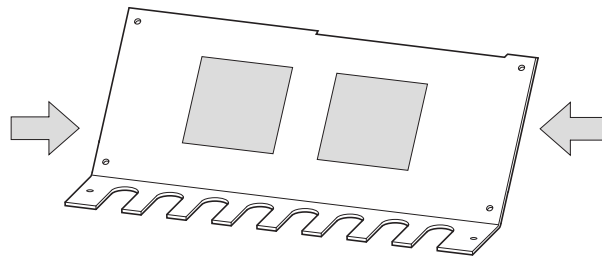
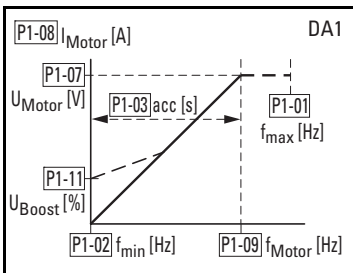
→ AWG = American Wire Gauge.  
Smaller numbers represent increasing wire thickness.  
kcmil = 1,000 circular mils, a measure of wire cross-sectional area

Type	Mains				Rated Output Current		Motor			Brake Resistor (min.)		Screw Torque Power unit	
	I <sub>LN</sub> A	F1/Q1 Fuse or MCB (Type B) IEC UL	A mm <sup>2</sup>	AWG kcmil	I <sub>e</sub> A	P kW	HP	A mm <sup>2</sup>	AWG kcmil	R <sub>B</sub> Ω	Frame Size	Nm	lb-in
DA1-34370...	359	500 A	240	500	370	200	400 V, 50 Hz	240	500	3	FS8	57	504.49
DA1-34450...	437	600 A	240	500	450	250		240	500	3			
							440 - 480 V, 60 Hz						

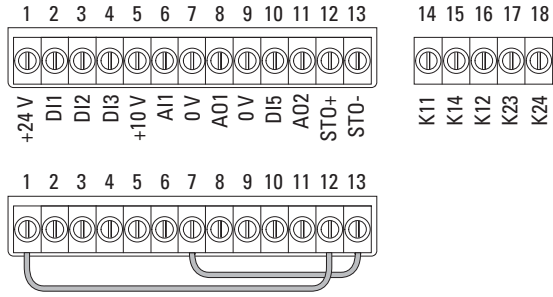
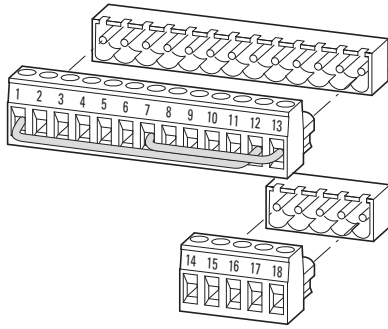


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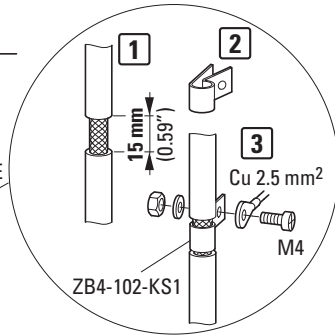
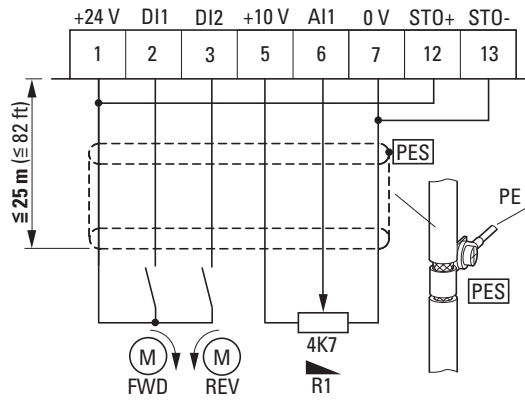
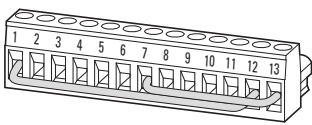
## Help Card



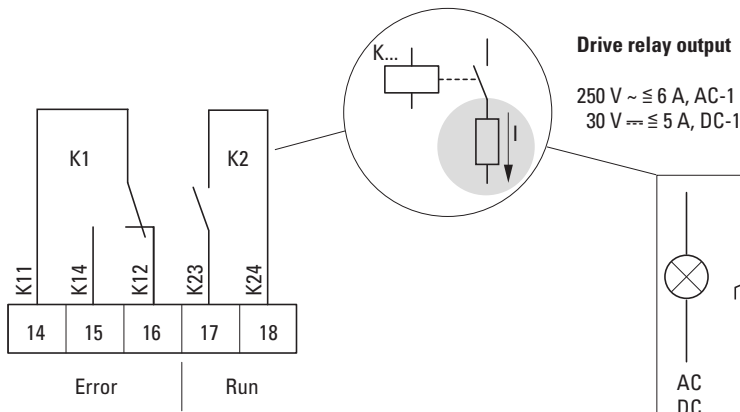
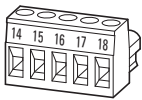
## Control terminal



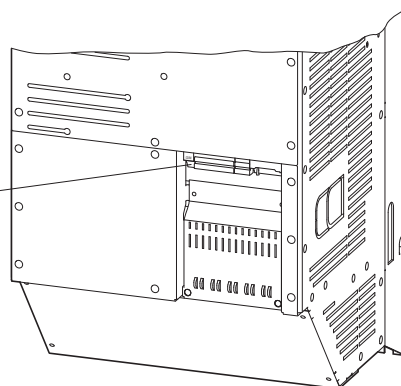
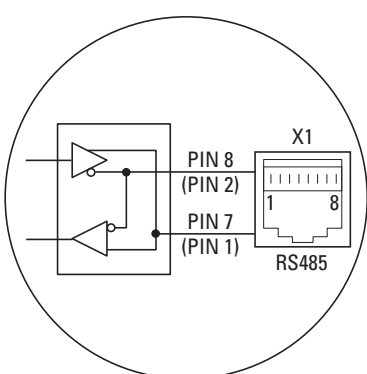
mm <sup>2</sup>	mm <sup>2</sup>	AWG	mm	in	M3	lb-in	mm
0.14 - 2.5	0.14 - 2.5	30 - 12	6	0.24	0.8	7	0.4 x 2.5



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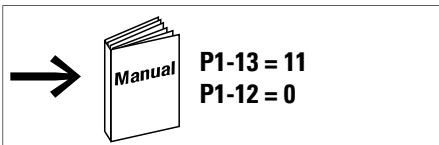


## COM

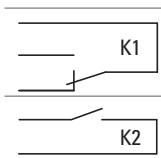


PIN 1	CANopen -
PIN 2	CANopen +
PIN 3	0 V
PIN 4	OP-Bus -
PIN 5	OP-Bus +
PIN 6	+24 V
PIN 7	Modbus RTU (A), RS485 -
PIN 8	Modbus RTU (B), RS485 +

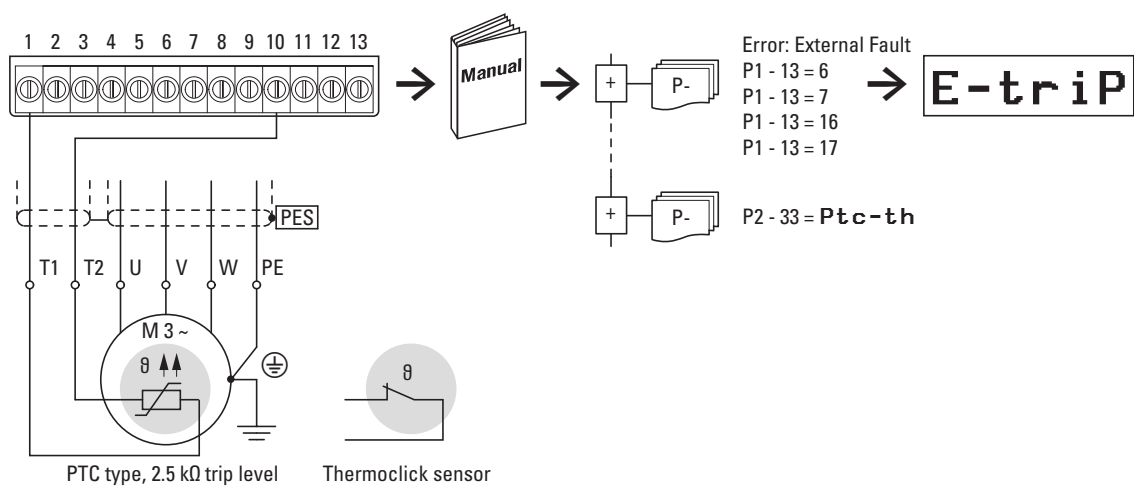




Input	L: 0 - 4 V DC	H: 8 - 30 V DC	Output
External Supply +24 V DC (100 mA)			<b>1</b> +24 V DC, < 100 mA
Digital Input 1 (DI1)	Stop	Enable, Run Forward Rotation	<b>2</b>
Digital Input 2 (DI2)	Stop	Enable, Run Reverse Rotation	<b>3</b>
Digital Input 3 (DI3)	AI1	FF1/FF2	<b>4</b>
			<b>5</b> +10 V DC,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



- (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



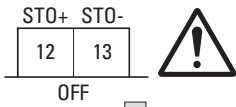
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## STO (Safe Torque Off)

- (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[ε]ν [PES] 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 skärmede kabeln [PES] jordfels- och kortslutningssäkert.

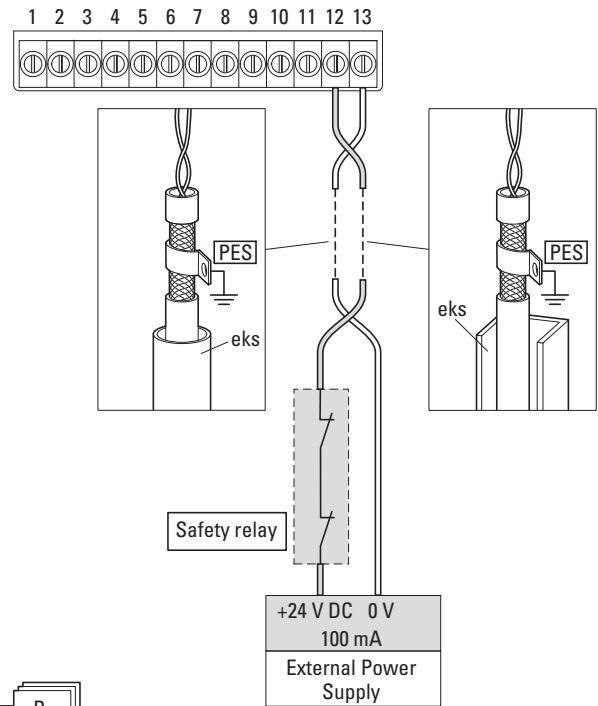
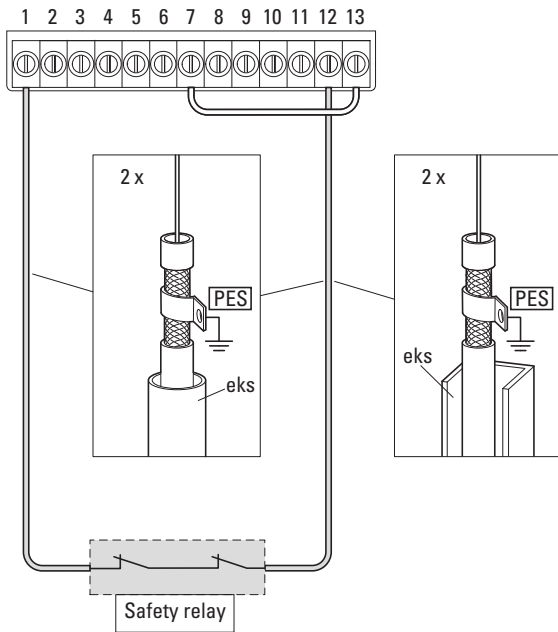
- (fi) Sijoita suojattu kaapeli [PES] maa- ja oikosulkusuojatusti (mos).
- (cs) Stíněný kabel [PES] položte tak, aby byl bezpečný proti uzemnění a zkratu (buz).
- (et) Paigaldage varjestatud kaabel [PES] maandus- ja lühiskaitstult (mlk).
- (hu) Árnyékolt kábelt [PES] földelvé és rövidzármntesen kell lefektetni.
- (lv) Izvilkt ekranētu kabeli [PES], kas ir aizsargāts pret zemesslēgumiem 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.



**Inh ibt**

**STOP** Motor Stop

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### Safety Relay Specification

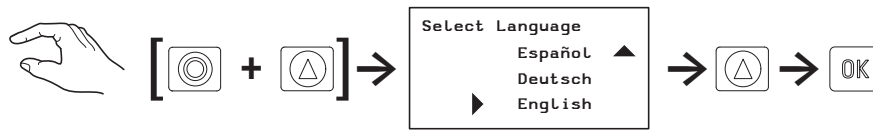
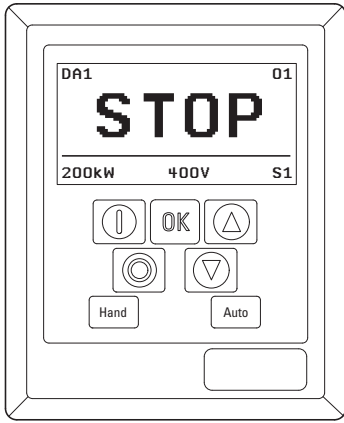
The safety relay should be chosen so that at minimum it meets the safety standards in which the drive meets.

Standard Requirements	SIL2 or PLd SC3 or better (With Forcibly guided Contacts)
Number of Output Contacts	2 independent
Switching Voltage Rating	30 V DC
Switching Current	100 mA

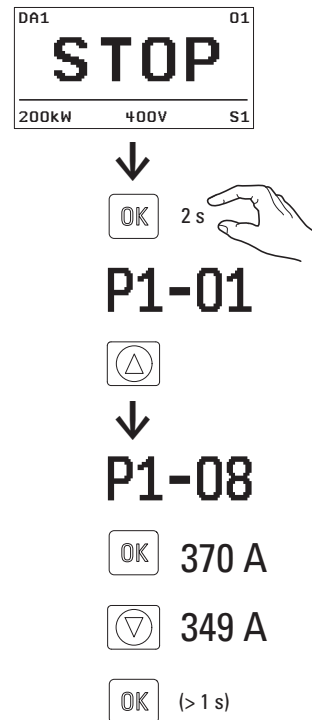
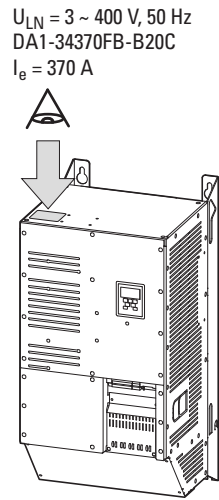
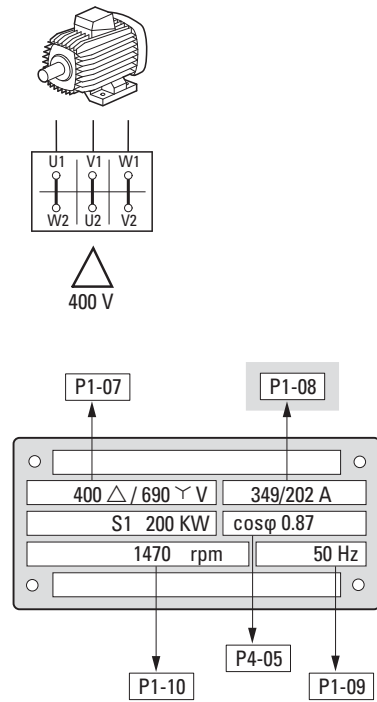
### External Power supply Specification

Voltage Rating (Nominal)	24 V DC
STO Logic High	18 - 30 V DC (Safe torque off in standby)
Current Consumption (Maximum)	100 mA

## Select Language

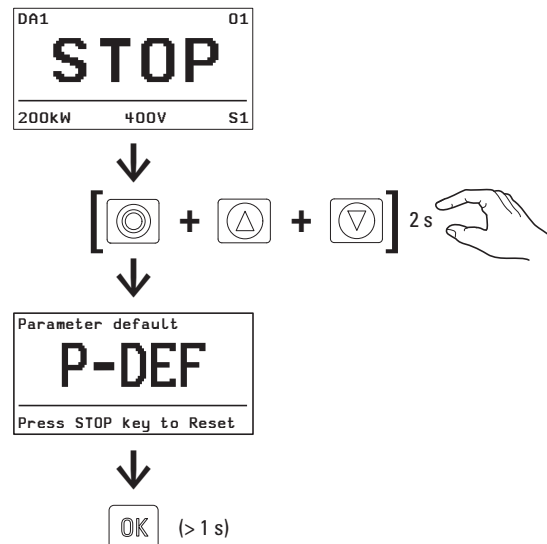


## Motor Protection



## Reset

- (en) Resetting the parameters to their default settings
- (de) Rücksetzen der Parameter in die Werkseinstellung
- (fr) Réinitialisation des paramètres sur réglage usine
- (es) Restauración de los parámetros al ajuste de fábrica
- (it) Ripristino delle impostazioni di fabbrica
- (zh) 复位机器设置参数
- (ru) Сброс параметров на заводские установки
- (nl) Resetten van de parameters naar de fabrieksinstelling
- (da) Tilbagestilling af parametrene til fabriksindstillingen
- (el) Επαναφορά των παραμέτρων στις εργοστασιακές ρυθμίσεις
- (pt) Redefinição dos parâmetros na regulagem de fábrica
- (sv) Återställa parametrernas fabriksinställning
- (fi) Parametriin palauttaminen tehdasasetukseen
- (cs) Navrácení parametrů na nastavení z výroby
- (et) Parameetrite lähtestamine algseadistusele
- (hu) Paraméterek visszaállítására gyári beállításokra
- (lv) Rūpnīcas parametru atiestatīšana
- (lt) Parametrų gamyklinių nuostatų atstatą
- (pl) Resetowanie ustawień do parametrów fabrycznych
- (sl) Povrnitev parametrov na tovarniško nastavitve
- (sk) Obnovenie parametra do továrenského nastavenia
- (bg) Нулиране на параметър в заводска настройка
- (ro) Resetarea parametrilor la setarea din fabrică
- (hr) Vraćanje parametara na tvorničke postavke



# Additional Information for UL<sup>®</sup> Approved Installations

## → Refer to Manual MN04020005Z-EN

DA1 is designed to meet the UL requirements. In order to ensure full compliance, the following must be fully observed.

### Input Power Supply Requirements

<b>Supply Voltage</b>	DA1-34...	380 - 480 Volts for 400 Volt rated units, ±10 % variation allowed, Maximum 500 Volts RMS		
<b>Imbalance</b>	Maximum 3 % voltage variation between phase – phase voltages allowed			
All DA1 units have phase imbalance monitoring. A phase imbalance of > 3 % will result in the drive tripping. For input supplies which have supply imbalance greater than 3 % Eaton Drives recommends the installation of input line reactors.				
<b>Frequency</b>	50 - 60 Hz ±5 % Variation			
<b>Short Circuit Capacity</b>	<b>Voltage Rating</b>	<b>Min. kW (HP)</b>	<b>Max. kW (HP)</b>	<b>Maximum supply short-circuit current</b>
	All	All	All	100 kA rms (AC)
All the drives in the above table are suitable for use on a circuit capable of delivering not more than the above specified maximum short-circuit Amperes symmetrical with the specified maximum supply voltage.				

### Incoming power supply connection

- For 3 phase supplies, power should be connected to L1, L2, and L3. Phase sequence is not important.
- For compliance with CE and C Tick EMC requirements, a symmetrical shielded cable is recommended.
- For compliance with CSA requirements, transient surge suppression shall be installed on the line side of this equipment and shall be rated 600 V (phase to ground), 600 V (phase to phase), suitable for overvoltage category III, and shall provide protection for a rated impulse withstand voltage peak of 4 kV or equivalent.
- A fixed installation is required according to IEC61800-5-1 with a suitable disconnecting device installed between the DA1 and the AC Power Source.  
The disconnecting device must conform to the local safety code/regulations (e. g. within Europe, EN60204-1, Safety of machinery).
- The cables should be dimensioned according to any local codes or regulations. Guideline dimensions are given on page 5/12.
- Suitable fuses to provide wiring protection of the input power cable should be installed in the incoming supply line, according to the data on page 5/12.  
The fuses must comply with any local codes or regulations in place. In general, type gG (IEC 60269) or UL type T fuses are suitable; however in some cases type aR fuses may be required. The operating time of the fuses must be below 0.5 seconds.
- Where allowed by local regulations, suitably dimensioned type B MCB circuit breakers of equivalent rating may be utilised in place of fuses, providing that the clearing capacity is sufficient for the installation.
- When the power supply is removed from the drive, a minimum of 30 seconds should be allowed before re-applying the power.  
A minimum of 5 minutes should be allowed before removing the terminal covers or connection.
- The maximum permissible short circuit current at the DA1 Power terminals as defined in IEC60439-1 is 100 kA.
- An optional Input Choke is recommended to be installed in the supply line for drives where any of the following conditions occur:
  - The incoming supply impedance is low or the fault level/short circuit current is high
  - The supply is prone to dips or brown outs
  - An imbalance exists on the supply (3 phase drives)
  - The power supply to the drive is via a busbar and brush gear system (typically overhead Cranes).
- In all other installations, an input choke is recommended to ensure protection of the drive against power supply faults.

### All DA1 units are intended for indoor installation within controlled environments which meet the condition limits.

<b>Ambient temperature range</b>	<b>Operational</b>	-10 °C to 40 °C	IP20 Units (UL Approved)
		-10 °C to 50 °C	IP20 Units (Non UL Approved with derating)
	<b>Storage and Transportation</b>	-40 °C to 60 °C	

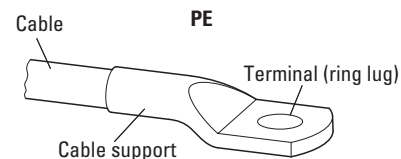
**Max. altitude for rated operation** 1000 m (Refer to Manual for Derating for Altitude Information). Installation above 2000 m is not UL approved.

**Relative Humidity** < 95 % (non condensing). Drive must be Frost and moisture free at all times.

Branch circuit protection must be installed according to the relevant national codes. Fuse ratings and types are shown on page 5/12.

Suitable Power and motor cables should be selected according to the data.

Power cable connections and tightening torques are shown on page 5/12.



### Motor Overload Protection

DA1 provides motor overload protection in accordance with the National Electrical Code (US).

- Where a motor thermistor is not fitted, or not utilised, Thermal Overload Memory Retention must be enabled by setting P4-12 = 1  
Set the parameters P1-08 „Current Limit“ on motor current.
- Where a motor thermistor is fitted and connected to the drive, connection must be carried out according to the information shown on page 8/12.

- 
- Ratings shown above apply to 40 °C Ambient temperature. For derating information, refer to Manual MN04020005Z-EN.
  - The maximum motor cable length stated applies to using a shielded motor cable. When using an unshielded cable, the maximum cable length limit may be increased by 50 %. When using the Eaton Drives recommended output choke, the maximum cable length may be increased by 100 %
  - The PWM output switching from any inverter when used with a long motor cable length can cause an increase in the voltage at the motor terminals, depending on the motor cable length and inductance. The rise time and peak voltage can affect the service life of the motor.  
Eaton Drives recommend using an output choke for motor cable lengths of 50 m or more to ensure good motor service life
  - For UL compliant installation, use Copper wire with a minimum insulation temperature rating of 70 °C, UL Class CC or Class J Fuses

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