

# ACS850

## Quick Installation Guide ACS850-04 Drive Modules (0.37 to 45 kW)



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# ACS850 drive manuals

## DRIVE HARDWARE MANUALS\*

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ACS850-04 Drive Modules (0.37 to 45 kW) Hardware Manual – 3AUA0000045496 (English)

## DRIVE FIRMWARE MANUALS

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ACS850 Standard Control Program Firmware Manual\*\* – 3AUA0000045497 (English)

## OPTION MANUALS

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ACS-CP-U Control Panel IP54 Mounting Platform Kit (+J410) Installation Guide – 3AUA0000049072 (English)

Manuals for I/O Extension Modules, Fieldbus Adapters etc.

## APPLICATION GUIDES

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Application programming for ACS850 drives – 3AUA0000078664 (English)

ATEX certified safe disconnection function for ACS850 drives – 3AUA0000074343 (English)

Safe torque off function for ACSM1, ACS850 and ACQ810 drives – 3AFE68929814 (English)

\*The delivery includes a multilingual quick installation guide.

\*\*The delivery includes a multilingual quick start-up guide.

## Quick installation guide - ACS850-04

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### About this guide

This guide contains the very basic information about the mechanical and electrical installation of the ACS850-04 drive module (0.37 to 45 kW). For complete documentation, see *ACS850-04 Drive Modules (0.37 to 45 kW) Hardware Manual* (code: 3AUA0000045496 [English]).

### Safety instructions

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**WARNING!** All electrical installation and maintenance work on the drive should be carried out by qualified electricians only.

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Never work on the drive, the braking chopper circuit, the motor cable or the motor when input power is applied to the drive. Always ensure by measuring that no voltage is actually present.

A rotating permanent magnet motor can generate a dangerous voltage. Lock the motor shaft mechanically before connecting a permanent magnet motor to the drive, and before doing any work on a drive system connected to a permanent magnet motor.

### Mechanical installation

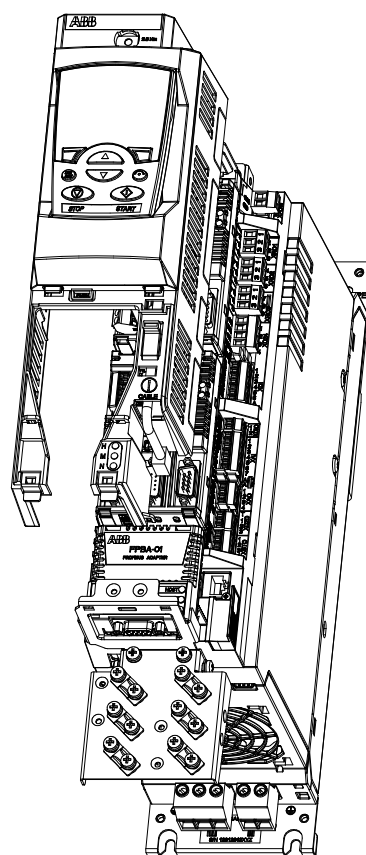
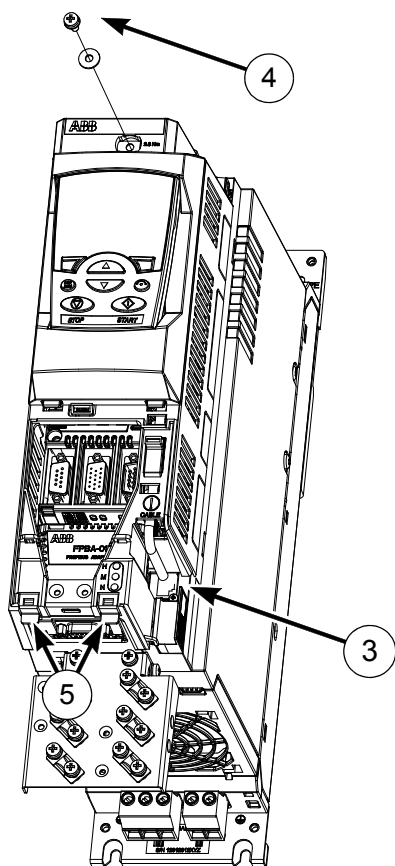
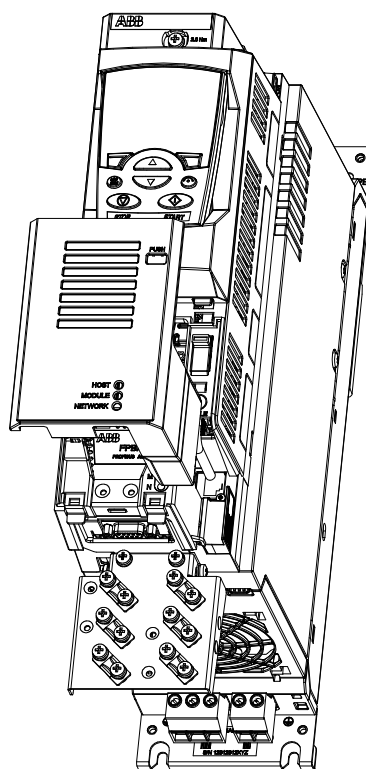
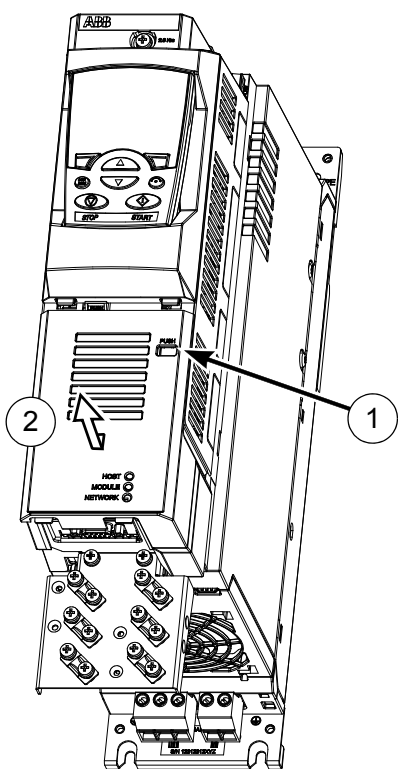
Fasten the drive module to the mounting base using screws through the four mounting holes. Frame A and B can be mounted onto a DIN rail; it is however highly recommended to fasten these modules to the mounting base also by two screws through the lower mounting holes.

### Removing the cover assembly

The cover assembly needs to be removed before the installation of optional modules and the connection of control cabling. Follow this procedure to remove the cover assembly. The numbers refer to the illustrations below.

- Press the tab (1) slightly with a screwdriver.
- Slide the lower cover plate slightly downwards and pull it out (2).
- Disconnect the panel cable (3) if present.
- Remove the screw (4) at the top of the cover assembly.
- Carefully pull the lower part of the base outwards by the two tabs (5).

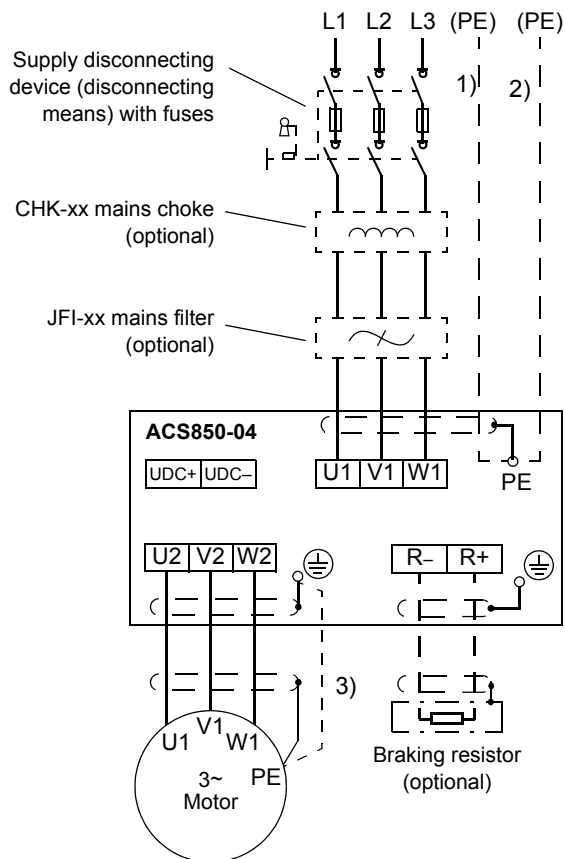
Refit the cover in reverse order to the above procedure.





## Installing the power cables

### Connection diagram



#### Notes:

- If shielded supply (input) cable is used, and the conductivity of the shield is not sufficient (see the table below), use a cable with a ground conductor (1) or a separate PE cable (2).
- For motor cabling, use a separate ground cable (3) if the conductivity of the cable shield is not sufficient (see the table below) and the cable has no symmetrical ground conductors.

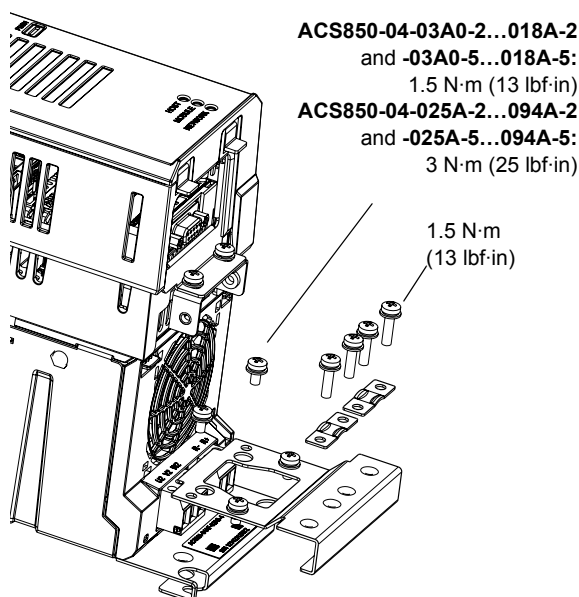
| Cross-sectional area of one phase conductor (S) | Minimum cross-sectional area of protective conductor (S <sub>p</sub> ) |
|---|--|
| $S \leq 16 \text{ mm}^2$                        | S  |
| $16 \text{ mm}^2 < S \leq 35 \text{ mm}^2$      | 16 mm <sup>2</sup>   |
| $35 \text{ mm}^2 < S$                           | S/2  |

## Connection procedure

Cabling examples are presented on page 7. Tightening torques are presented on page 7 and at appropriate points in the text.

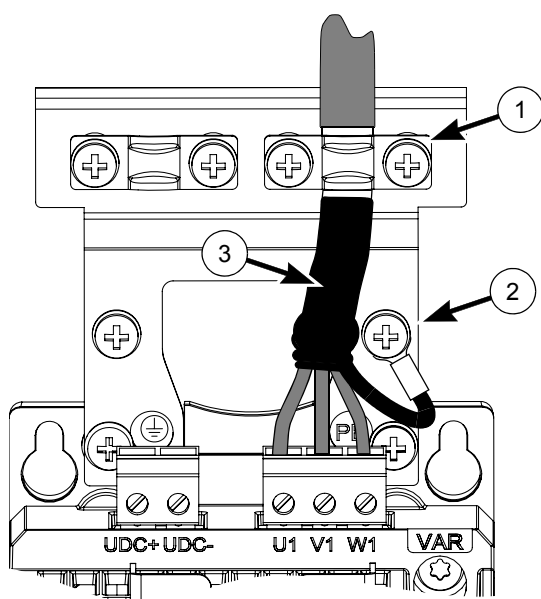
- Attach the terminal blocks included to the drive.
- ACS850-04-**025A-2...094A-2** and **-025A-5...094A-5** only: Remove the two plastic connector covers at the top and bottom of the drive. Each cover is held by two screws.
- On IT (ungrounded) systems and corner-grounded TN systems, remove the following screws:  
VAR (ACS850-04-**03A0-2...018A-2** and **-03A0-5...018A-5**);  
EMC, VAR1 and VAR2 (ACS850-04-**025A-2...094A-2** and **-025A-5...094A-5**).
- Fasten the two cable clamp plates included to the drive, one at the top, one at the bottom. The clamp plates are identical.

- Strip the power cables so that the shields are bare at the cable clamps.
- Connect the supply, resistor (if present) and motor cables to the appropriate terminals of the drive.
- Tighten the cable clamps onto the bare cable shields. Connect the ends of the cable shields to the ground terminals using cable lugs. Cover visible bare shield with insulating tape.
- ACS850-04-**025A-2...094A-2** and **-025A-5...094A-5** only: Cut suitable slots on the edges of the connector covers to accommodate the cables. Refit the covers.
- Ground the motor cable shield at the motor end.



## Cabling examples

ACS850-04-03A0-5...018A-5



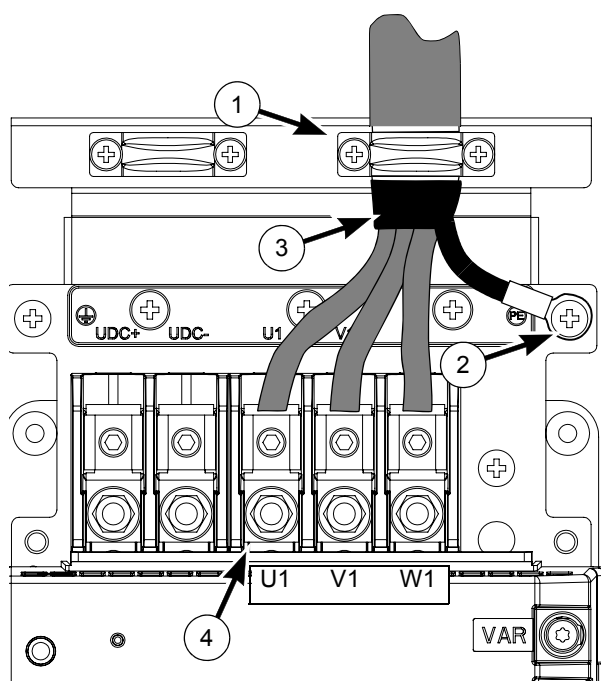
- 1 Cable clamp on bare shield.
- 2 PE/Ground connection.
- 3 Between cable clamp and terminals, cover bare shield with insulating tape.
- 4 Screw lug detail:



## Wire sizes accepted by power terminals

| Drive type ACS850-04...               | Wire size                  |
|---------------------------------------|----------------------------|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0.25 ... 4 mm <sup>2</sup> |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 0.5 ... 6 mm <sup>2</sup>  |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 6 ... 70 mm <sup>2</sup>   |

ACS850-04-025A-5...094A-5



## Tightening torques

| Drive type<br>ACS850-04...            | Power terminals (supply,<br>motor, and braking resistor<br>cables) | Screw lug<br>(Allen screw) |
|---------------------------------------|--|----------------------------|
|                                       | N·m (lbf·in)   |                            |
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0.5 ... 0.6 (4.4 ... 5.3)  | N/A                        |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1.2 ... 1.5 (10.6 ... 13.3)  | N/A                        |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 3 (25)   | 15 (11)                    |

| Drive type<br>ACS850-04...            | PE/Ground<br>terminals | Power cable<br>clamps | Power<br>connector<br>covers |
|---------------------------------------|------------------------|-----------------------|------------------------------|
|                                       | N·m (lbf·in)           | N·m (lbf·in)          | N·m (lbf·in)                 |
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 1.5 (13)               | 1.5 (13)              | N/A                          |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1.5 (13)               | 1.5 (13)              | N/A                          |
| -025A-2...050A-2,<br>-025A-5...050A-5 | 3 (25)                 | 1.5 (13)              | 3 (25)                       |
| -061A-2...094A-2,<br>-061A-5...094A-5 | 18 (160)               | 1.5 (13)              | 3 (25)                       |

# Installing the control cables

## Default I/O connection diagram

**Notes:**

[Default setting with ACS850 standard control program (Factory macro). See *Firmware Manual* for other macros.]

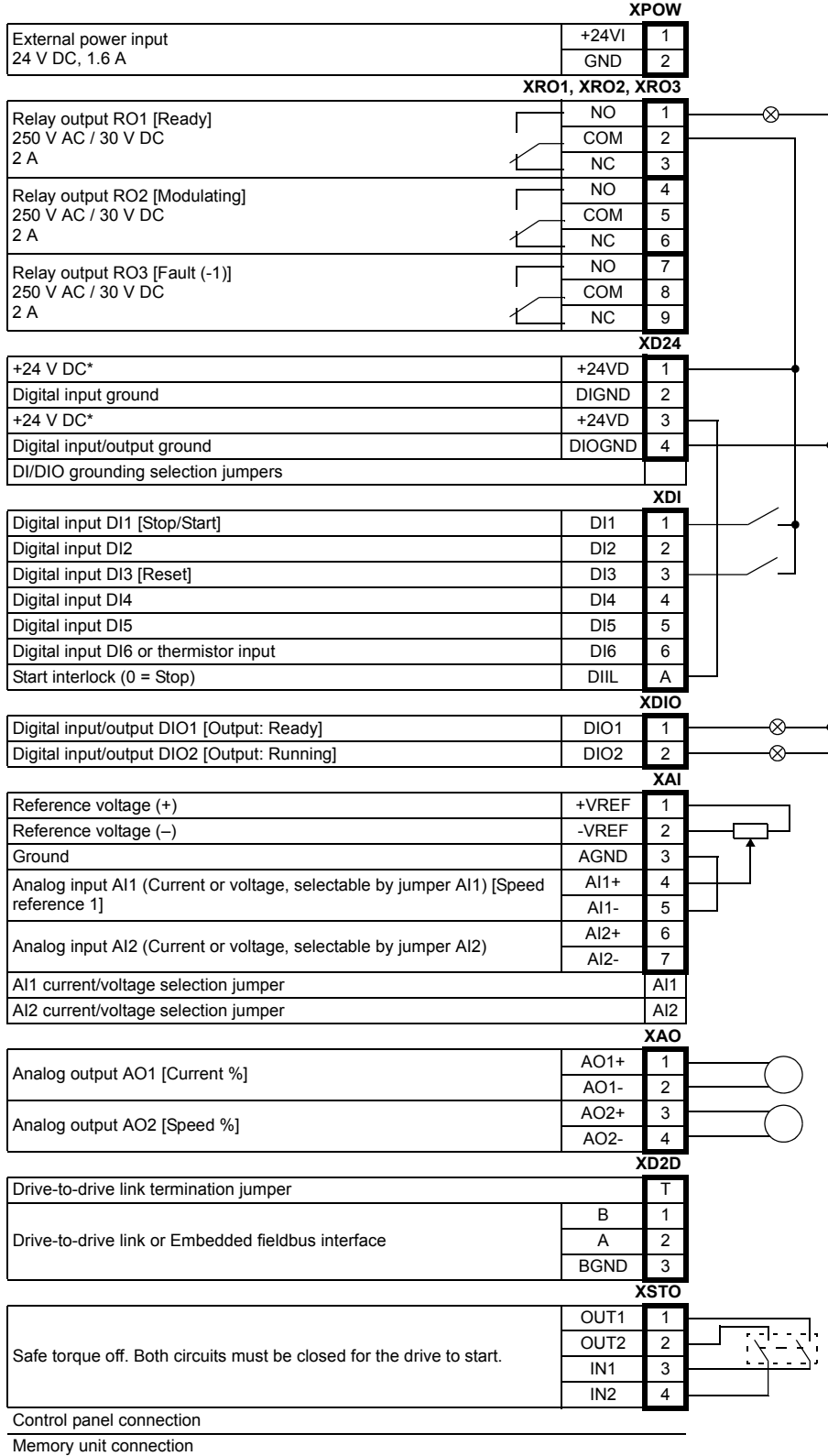
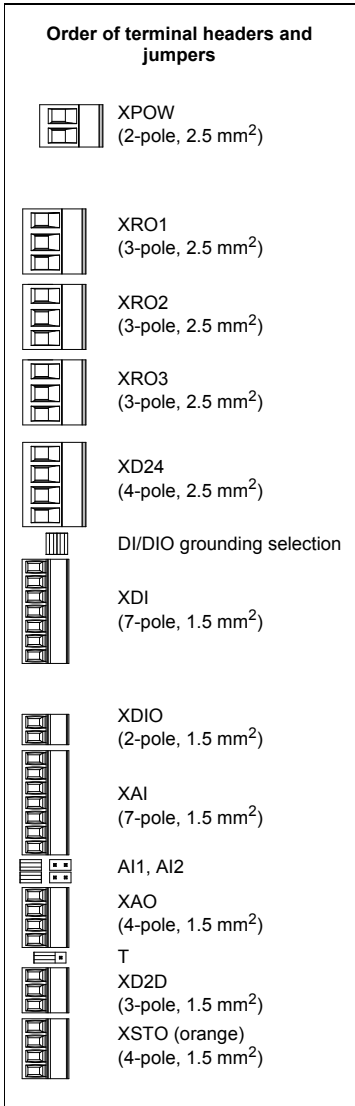
\*Total maximum current: 200 mA

The wiring shown is for demonstrative purposes only. For jumper settings, see text.

**Wire sizes and tightening torques:**

**XPOW, XRO1, XRO2, XRO3, XD24:**  
0.5 ... 2.5 mm<sup>2</sup> (24...12 AWG). Torque: 0.5 N·m (5 lbf·in)

**XDI, XDIO, XAI, XAO, XD2D, XSTO:**  
0.5 ... 1.5 mm<sup>2</sup> (28...14 AWG). Torque: 0.3 N·m (3 lbf·in)

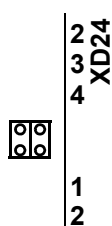
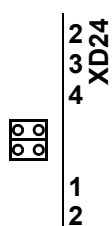


- Set the jumpers on the control unit to the appropriate position:

**DI/DIO grounding selection** – Located between XD24 and XDI. Determines whether the DIGND (ground for DI1...DI5) floats, or if it is connected to DIOGND (ground for DI6, DIO1 and DIO2). If DIGND floats, the common of DI1...DI5 (either GND or  $V_{CC}$ ) should be connected to XD24:2.

DIGND floats

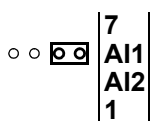
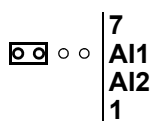
DIGND tied to DIOGND



**AI1** – Determines whether Analog input AI1 is used as a current or voltage input.

Current

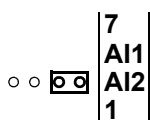
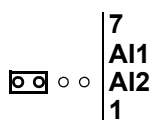
Voltage



**AI2** – Determines whether Analog input AI2 is used as a current or voltage input.

Current

Voltage



**T** – Drive-to-drive link termination. Set to ON if the drive is the last unit on the link.

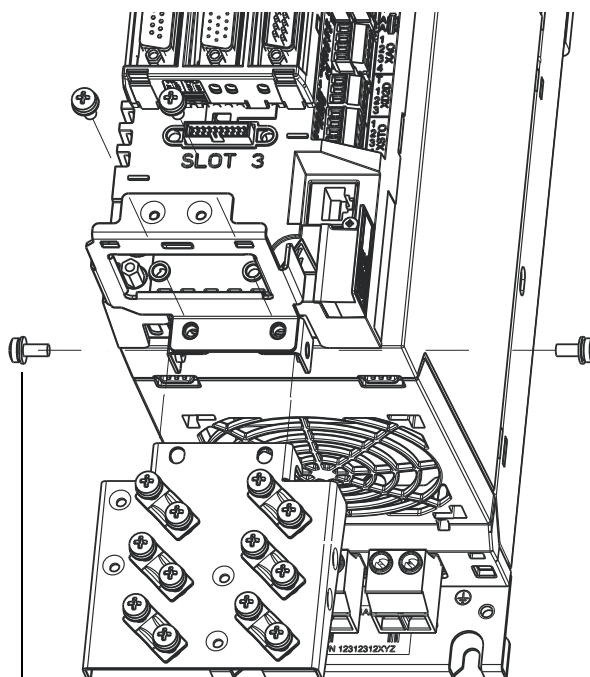
ON

OFF

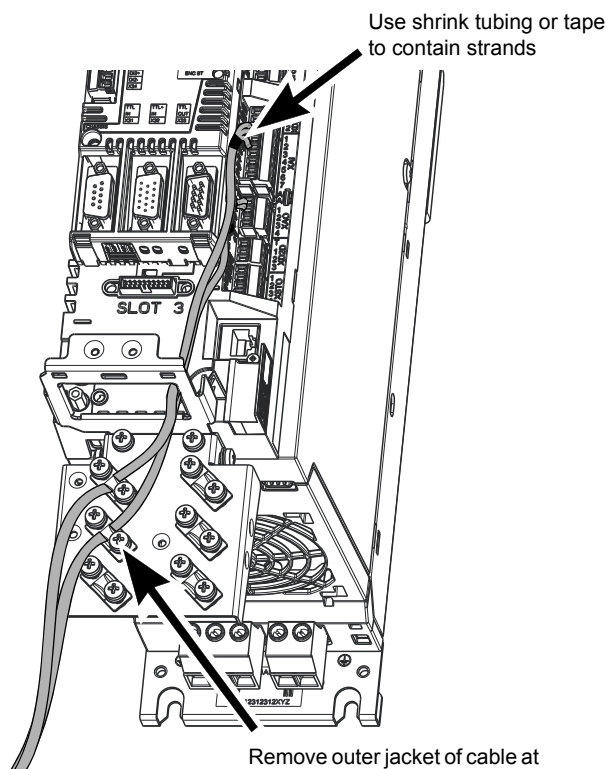


### Mounting the clamp plate

The clamp plate can be fastened at the top or the bottom of the JCU Control Unit.



0.7 N·m (6.2 lbf·in)



Remove outer jacket of cable at clamp to expose cable screen  
1.5 N·m (13 lbf·in)

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Continue with drive start-up according to the instructions in the appropriate *Quick Start-up Guide*.

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- The drive provides overload protection in accordance with the National Electrical Code (NEC). See the appropriate *Firmware Manual* for overload protection settings.

## Technical data

### UL checklist

- The ACS850-04 is an IP20 (UL open type) drive to be used in a heated, indoor controlled environment. The drive must be installed in clean air according to enclosure classification. Cooling air must be clean, free from corrosive materials and electrically conductive dust. See the *Hardware Manual* for detailed specifications.
- The maximum ambient air temperature is 40 °C (104 °F) at rated current. The current is derated for 40 to 55 °C (104 to 131 °F).
- The drive is suitable for use in a circuit capable of delivering not more than 100,000 rms symmetrical amperes, 500 V maximum.
- The cables located within the motor circuit must be rated for at least 75 °C (167 °F) in UL-compliant installations.
- The input cable must be protected with fuses or circuit breakers. Suitable IEC (class gG) and UL (class T) fuses are listed in the *Technical data* section of the *Hardware Manual*. For suitable circuit breakers, contact your local ABB representative.
- For installation in the United States, branch circuit protection must be provided in accordance with the National Electrical Code (NEC) and any applicable local codes. To fulfill this requirement, use the UL classified fuses.
- For installation in Canada, branch circuit protection must be provided in accordance with Canadian Electrical Code and any applicable provincial codes. To fulfill this requirement, use the UL classified fuses.

# Hurtig installationsvejledning - ACS850-04

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## Om denne vejledning

Denne vejledning indeholder grundlæggende oplysninger om mekanisk og elektrisk installation af ACS850-04-drevmodulet (0,37 til 45 kW). Du finder den komplette dokumentation i *ACS850-04 Drive Modules (0.37 to 45 kW) Hardware Manual* (kode: 3AUA0000045496 [på engelsk]).

## Sikkerhedsinstruktioner

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**ADVARSEL!** Al elektrisk installation og alt vedligeholdelsesarbejde på drevet må kun udføres af en autoriseret installatør.

Arbejd aldrig på drevet, bremsechopperkredsen, motorkablet eller motoren, når netspændingen er tilsluttet drevet. Sørg altid for at sikre dette ved at måle, at der ikke er nogen spænding til stede.

En roterende permanent magnet motor kan generere en farlig spænding. Lås motorakslen mekanisk, før du tilslutter en permanent magnet motor til drevet, og før du udfører arbejde på et drevsystem, der er tilsluttet en permanent magnet motor.

## Mekanisk installation

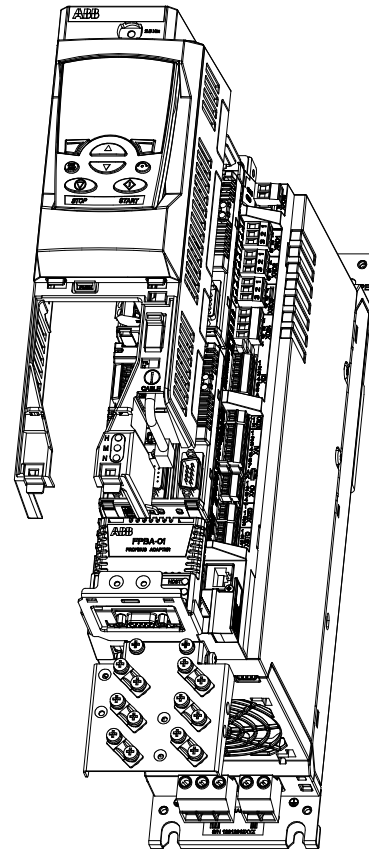
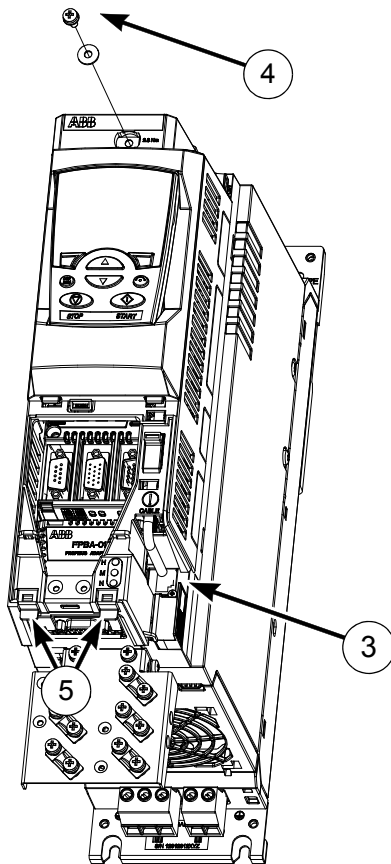
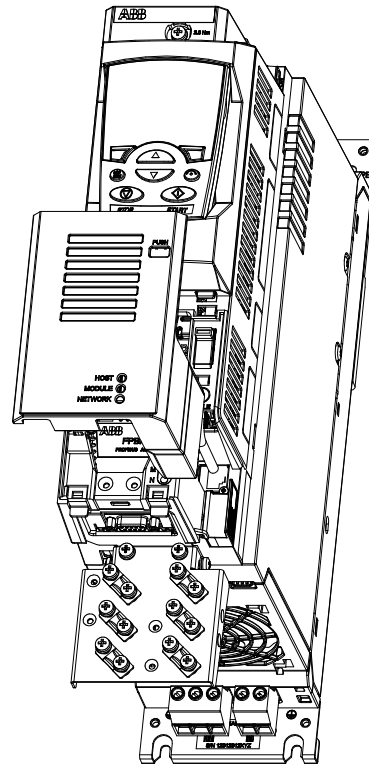
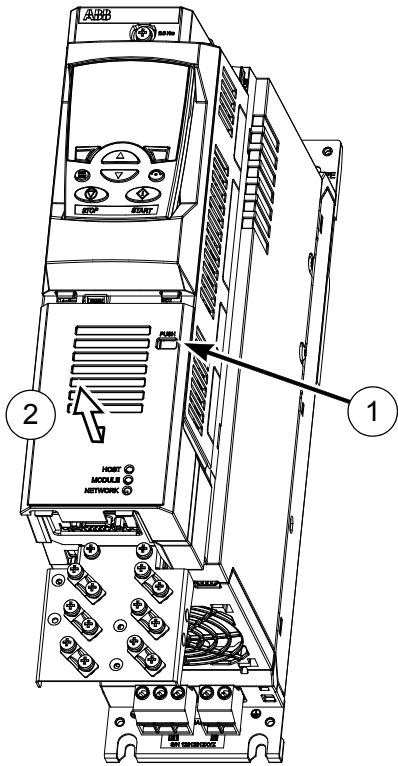
Fastgør drevmodulet til monteringspladen ved at skrue skrue i de fire monteringshuller. Modulstørrelse A og B kan monteres på en DIN-skinne, men det anbefales kraftigt også at fastgøre disse moduler til monteringspladen ved at skrue to skrue i de nederste monteringshuller.

## Aftagning af kapslingen

Kapslingen skal tages af, før der installeres moduler (ekstraudstyr) og tilkobles styrekabler. Følg denne procedure for at tage kapslingen af. Tallene henviser til illustrationerne herunder.

- Tryk forsigtigt på tappen (1) med en skrueetrækker.
- Skub den nederste dækselplade en smule nedad, og træk i den (2).
- Frakobl panelkablet (3), hvis det findes.
- Fjern skruen (4) i toppen af kapslingen.
- Træk forsigtigt i den nederste del af bundstykket udad ved hjælp af de to tapper (5).

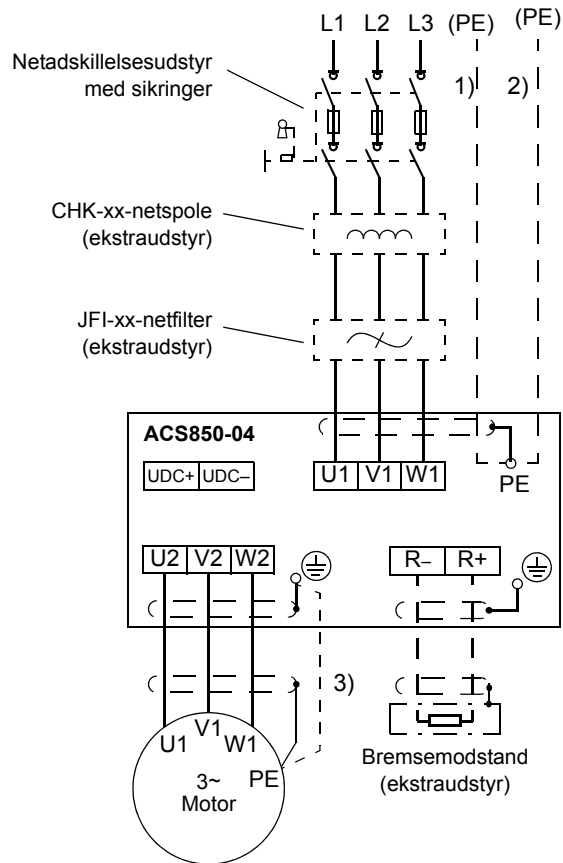
Sæt dækslet tilbage i omvendt rækkefølge af ovenstående procedure.





## Tilslutning af effektkabler

### Tilslutningsdiagram



#### Noter:

- Hvis der bruges et skærmet netkabel (indgangs-), og skærmens ledeevne ikke er tilstrækkelig (se tabellen herunder), skal der bruges et kabel med en jordleder (1) eller et separat PE-kabel (2).

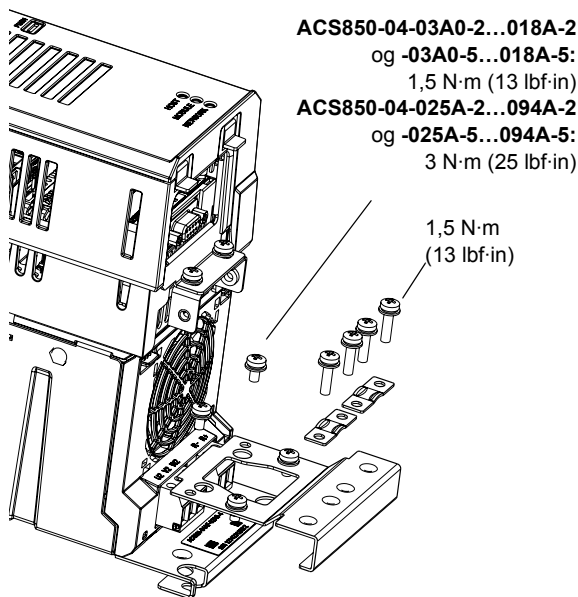
- Når det gælder motorkabling, skal der bruges et separat jordkabel (3), hvis kablets ledeevne ikke er tilstrækkelig (se tabellen herunder), og kablet ikke har nogen symmetriske jordledere.

| Tværsnit af en faseleder (S)               | Minimumtværsnit af beskyttelsesleder (S <sub>p</sub> ) |
|--|--|
| $S \leq 16 \text{ mm}^2$                   | S  |
| $16 \text{ mm}^2 < S \leq 35 \text{ mm}^2$ | 16 mm <sup>2</sup>                                     |
| $35 \text{ mm}^2 < S$                      | S/2  |

## Tilslutningsprocedure

Der er vist eksempler på tilslutning på side 15. Tilspændingsmomenter er vist på side 15 og på relevante steder i teksten.

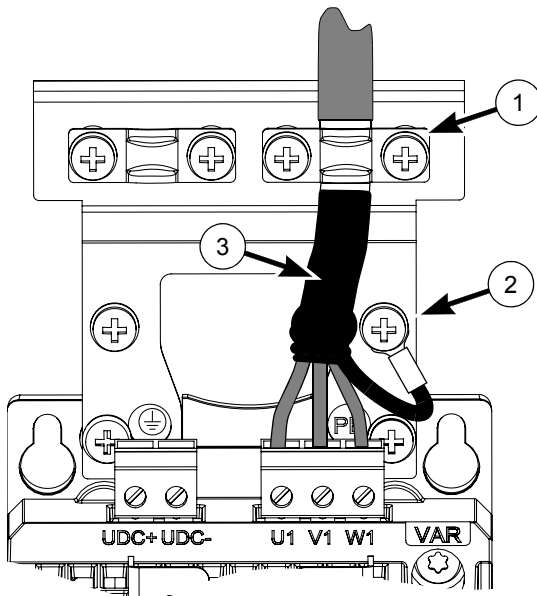
- Tilslut de medfølgende klemrækker til drevet.
- Kun ACS850-04-**025A-2...094A-2** og **-025A-5...094A-5** : Fjern de to dæksler af plastik øverst og nederst på drevet. Hvert dæksel er fastgjort med to skruer.
- På IT-systemer (ujordede) og hjørnejordede TN-systemer fjernes følgende skruer: VAR (ACS850-04-**03A0-2...018A-2** og **-03A0-5...018A-5**); EMC, VAR1 og VAR2 (ACS850-04-**025A-2...094A-2** og **-025A-5...094A-5**).
- Fastgør de to medfølgende kabelbøjler til drevet - en i toppen og en i bunden. Kabelbøjlerne er ens.



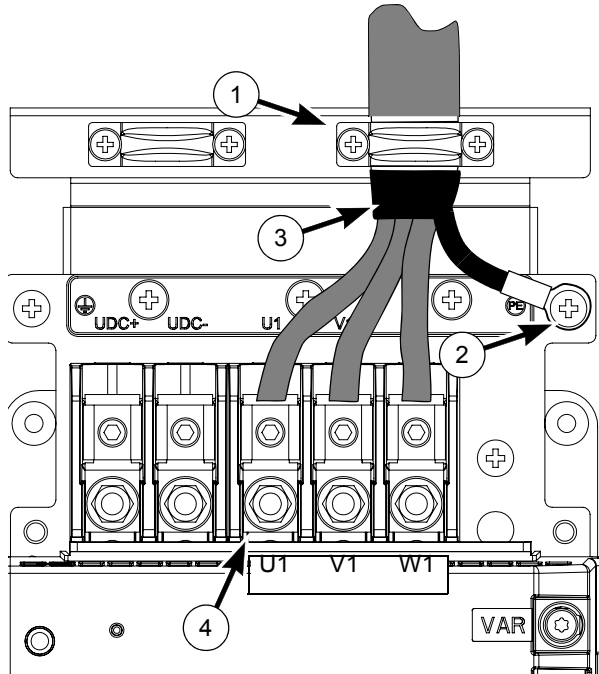
- Afisolér effektkablerne, så afskærmningen er afisoleret ved kabelbøjlerne.
- Tilslut forsynings-, modstands- (hvis det findes) og motorkablet til de korrekte klemmer på drevet.
- Stram kabelbøjler på de afisolerede kabelskærme. Tilslut kabelskærmenes ender til jordterminalerne ved hjælp af kabelsko. Dæk synlige dele af den afisolerede skærm med isoleringstape.
- Kun ACS850-04-**025A-2...094A-2** og **-025A-5...094A-5** : Skær åbninger i kanten af stikdækslerne, som passer til kablerne. Sæt dækslerne på igen.
- Tilslut motorkabelskærmen i motorenden.

## Eksempler på tilslutning

ACS850-04-03A0-5...018A-5



ACS850-04-025A-5...094A-5



- 1 Kabelbøjle på afisoleret skærm.
- 2 PE-/jordforbindelse.
- 3 Dæk afisoleret skærm mellem kabelbøjlerne og terminaler med isoleringstape.
- 4 Kabelsko:



## Ledningsstørrelser, der accepteres af effekterminals

| Drevtype ACS850-04...                 | Ledningsstørrelse          |
|---------------------------------------|----------------------------|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0,25 ... 4 mm <sup>2</sup> |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 0,5 ... 6 mm <sup>2</sup>  |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 6 ... 70 mm <sup>2</sup>   |

## Tilspændingsmomenter

| Drevtype ACS850-04...                 | Effekterminals<br>(forsynings-, motor- og<br>bremsemodstandskabler)<br>N·m (lbf·in) | Kabelsko<br>(sekskant-<br>skrue)<br>N·m (lbf·ft) |
|---------------------------------------|---|--|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0,5 ... 0,6 (4,4 ... 5,3)   | N/A  |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1,2 ... 1,5 (10,6 ... 13,3)   | N/A  |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 3 (25)  | 15 (11)  |

| Drevtype ACS850-04...                 | PE-/jord-<br>terminaler<br>N·m (lbf·in) | Effekt-kabel-<br>klemmer<br>N·m (lbf·in) | Strøm-<br>forsynings-<br>dæksler<br>N·m (lbf·in) |
|---------------------------------------|---|--|--|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 1,5 (13)                                | 1,5 (13)                                 | N/A  |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1,5 (13)                                | 1,5 (13)                                 | N/A  |
| -025A-2...050A-2,<br>-025A-5...050A-5 | 3 (25)                                  | 1,5 (13)                                 | 3 (25)   |
| -061A-2...094A-2,<br>-061A-5...094A-5 | 18 (160)                                | 1,5 (13)                                 | 3 (25)   |

## Installation af styrekabler

### Diagram over default I/O-tilslutninger

#### Noter:

[Default-indstilling med ACS850-standardstyreprogram (fabriksmakro). Se *firmwaremanual* til andre makroer].

\*Total maks. strøm: 200 mA

Den viste fortrådning tjener udelukkende til illustration. Se oplysninger om jumperindstillinger i teksten.

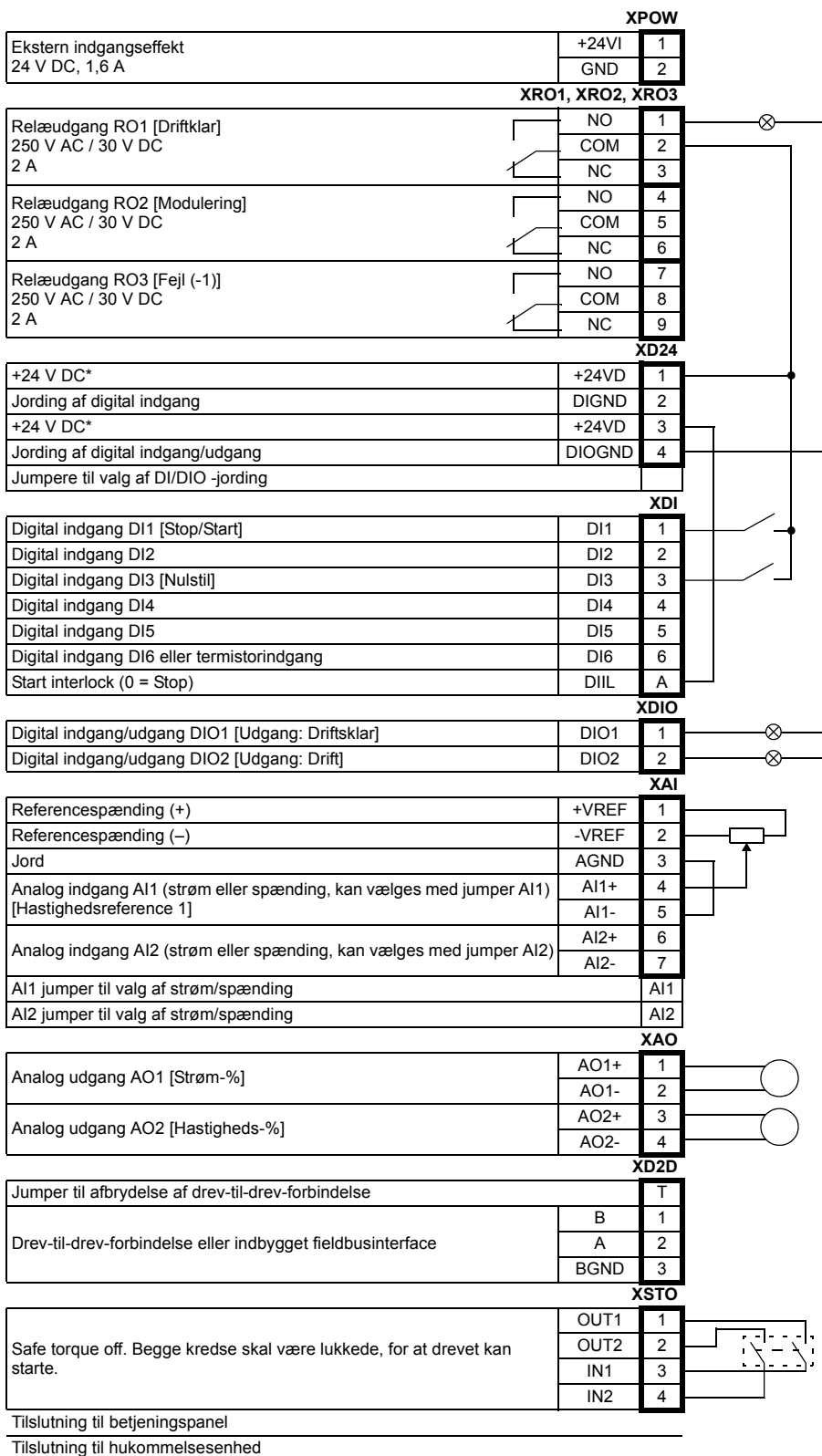
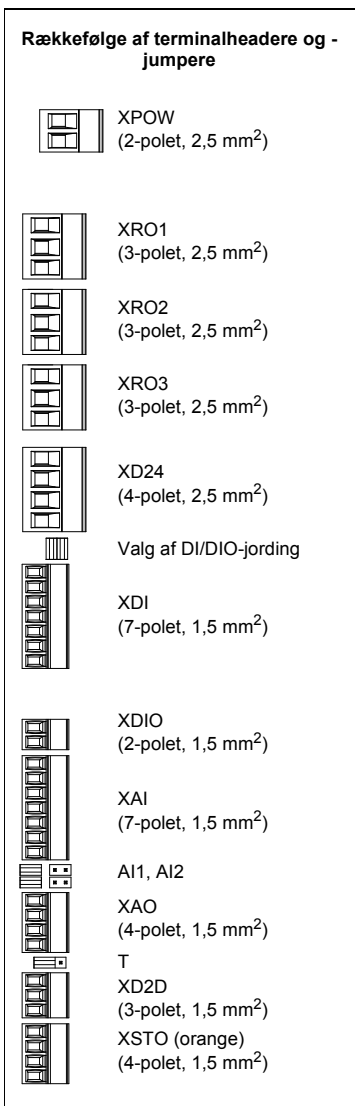
#### Ledningsstørrelser og fastspændingsmomenter:

XPOW, XRO1, XRO2, XRO3, XD24:

0,5 ... 2,5 mm<sup>2</sup> (24...12 AWG). Moment: 0,5 N-m (5 lbf-in)

XDI, XDIO, XAI, XAO, XD2D, XSTO:

0,5 ... 1,5 mm<sup>2</sup> (28...14 AWG). Moment: 0,3 N-m (3 lbf-in)

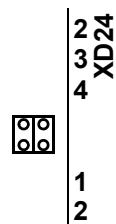
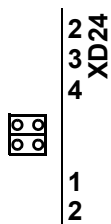


- Indstil jumperne på styreenheden til den korrekte position:

**Valg af DI/DIO jording** – placeret mellem XD24 og XDI. Bestemmer, om DIGND (jording til DI1...DI5) flyder, eller om den er forbundet til DIOGND (jord for DI6, DIO1 og DIO2). Hvis DIGND er flydende, skal common-enheden af DI1...DI5 (enten GND eller  $V_{cc}$ ) være tilsluttet til XD24:2.

DIGND er flydende

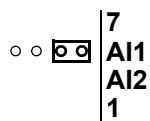
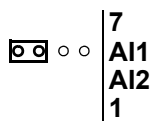
DIGND er bundet til DIOGND



**AI1** – Afgør, om analogindgang AI1 bruges som en strøm- eller spændingsindgang.

Strøm

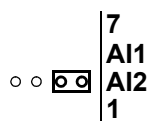
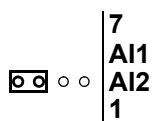
Spænding



**AI2** – Afgør, om analog indgang AI2 bruges som en strøm- eller spændingsindgang.

Strøm

Spænding



**T** – Afbrydelse af drev til drev-forbindelse. Sæt til ON, hvis drevet er den sidste enhed i forbindelsen.

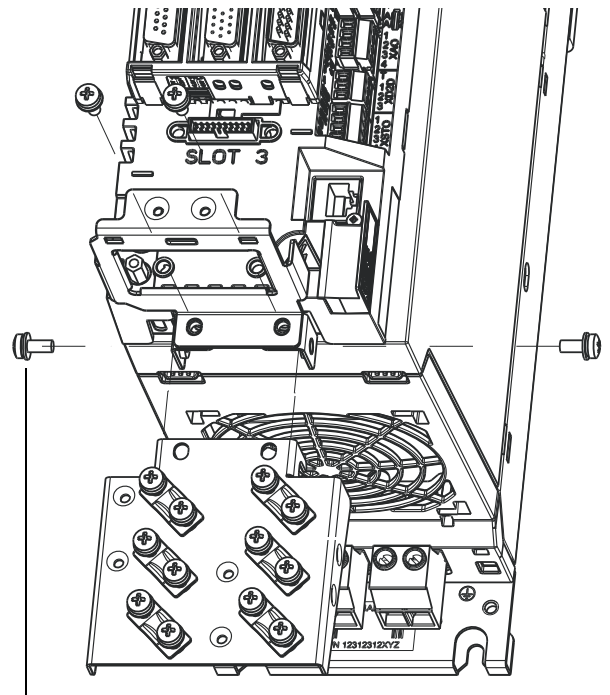
ON

OFF

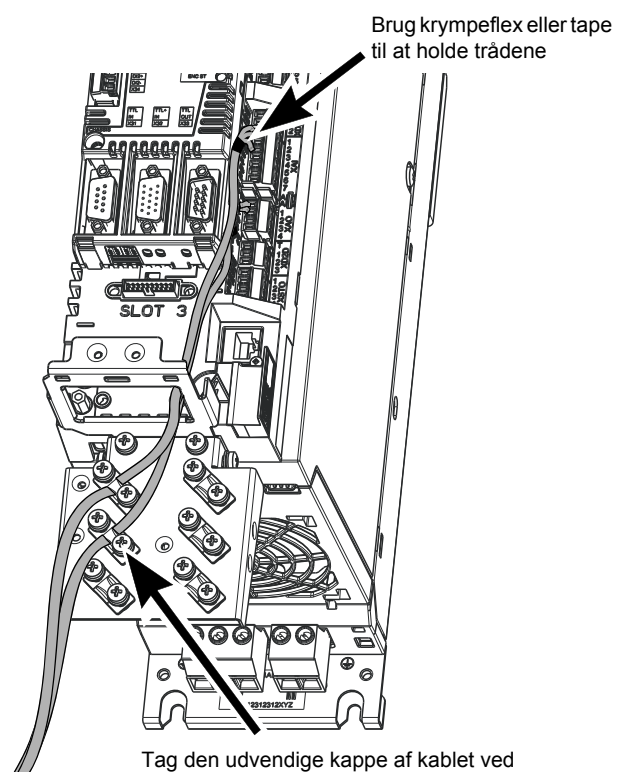


## Montering af aflastningspladen

Aflastningspladen kan fastgøres i toppen eller bunden af JCU-styreenheden.



0,7 N·m (6,2 lbf-in)



Tag den yvendige kappe af kablet ved klemmen for at blottægge kabelskærmen  
1,5 N·m (13 lbf-in)

---

Fortsæt med opstart af drevet i henhold til instruktionerne i den relevante *Quick Start-up Guide*.

---

- Drevet har overbelastningsbeskyttelse iht. National Electrical Code (NEC). Du kan finde oplysninger om indstillinger for overbelastningsbeskyttelse i den relevante *firmwaremanual*.

## Tekniske data

### UL-checkliste

- ACS850-04 er et IP20-drev (UL åben type), der er beregnet til brug i et opvarmet, indendørs kontrolleret miljø. Drevet skal monteres i ren luft i overensstemmelse med kapslingsklasse. Køleluften skal være ren og fri for korroderende materialer og elektrisk ledende støv. Detaljerede specifikationer findes i *hardwaremanualen*.
- Den maksimale omgivelsestemperatur er 40 °C (104 °F) ved nominel strøm. Strømmen er reduceret for 40 til 55 °C (104 til 131 °F).
- Drevet er egnet til anvendelse i netværk, som ikke leverer mere end 100.000 rms symmetriske ampere, 500 V maximum).
- Kablerne i motorkredsløbet skal være dimensioneret til mindst 75 °C (167 °F) i installationer med UL-overensstemmelse.
- Netkablet skal beskyttes med sikringer eller maksimalafbrydere. Passende IEC- (klasse gG) og UL-sikringer (klasse T) er vist i afsnittet om *tekniske data* i *hardwaremanualen*. Kontakt din lokale ABB-repræsentant for at få oplysninger om passende maksimalafbrydere.
- Ved installation i USA skal netkredsløbsbeskyttelse udføres i henhold til the National Electrical Code (NEC) samt enhver lokalt gældende kode. Brug UL-klassificerede sikringer for at overholde dette krav.
- Ved installation i Canada skal netkredsløbsbeskyttelse udføres i henhold til Canadian Electrical Code samt enhver lokalt gældende kode. Brug UL-klassificerede sikringer for at overholde dette krav.

## Kurzanleitung für die Installation - ACS850-04

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### Informationen über diese Kurzanleitung

Diese Anleitung enthält grundlegende Informationen zur mechanischen und elektrischen Installation des Frequenzumrichtermoduls ACS850-04 (0,37 bis 45 kW). Die vollständige Dokumentation finden Sie im *Hardware-Handbuch ACS850-04 Frequenzumrichtermodul (0,37 bis 45 kW)* (3AUA0000048245 [deutsch]).

### Sicherheitsvorschriften

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**WARNUNG!** Alle elektrischen Installations- und Wartungsarbeiten an dem Frequenzumrichter dürfen nur von qualifiziertem Fachpersonal durchgeführt werden.

Arbeiten Sie niemals bei eingeschalteter Spannung an dem Frequenzumrichter, dem Brems-Chopper, dem Motorkabel oder dem Motor. Stellen Sie durch eine Messung immer sicher, dass keine Spannung anliegt.

Ein drehender Permanentmagnet-Motor kann gefährliche Spannung erzeugen. Blockieren Sie die Motorwelle mechanisch, bevor Sie einen Permanentmagnet-Motor an den Frequenzumrichter anschließen und bevor Sie Arbeiten an einem Antriebssystem vornehmen, an das ein Permanentmagnet-Motor angeschlossen ist.

### Mechanische Installation

Befestigen Sie das Frequenzumrichtermodul mit vier Schrauben durch die vier Montagebohrungen am Grundrahmen. Module der Baugrößen A and B können auf einer DIN-Schiene montiert werden; es wird jedoch empfohlen,

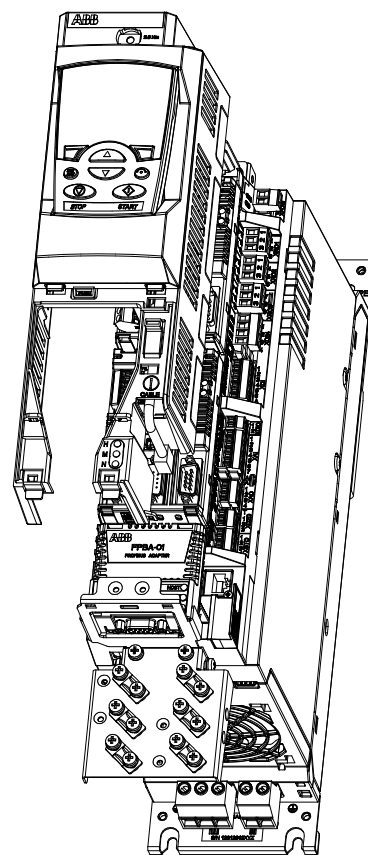
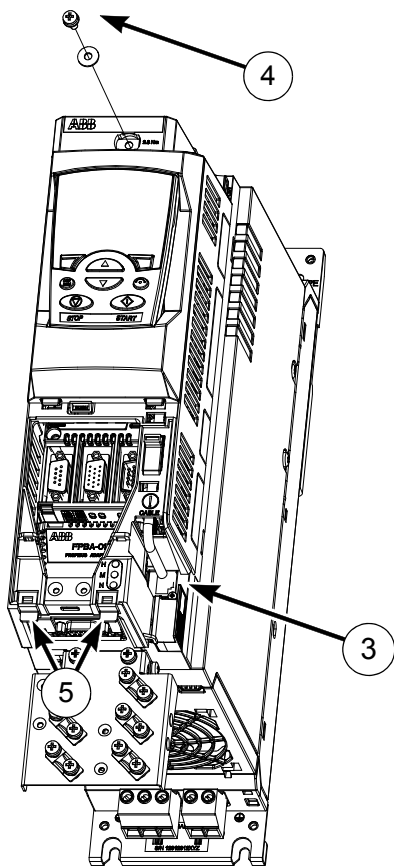
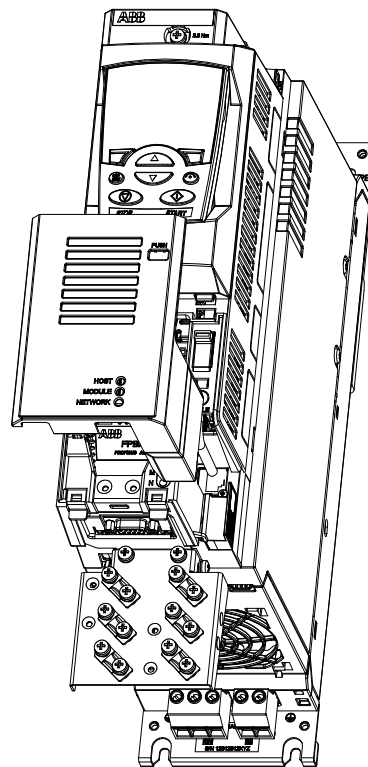
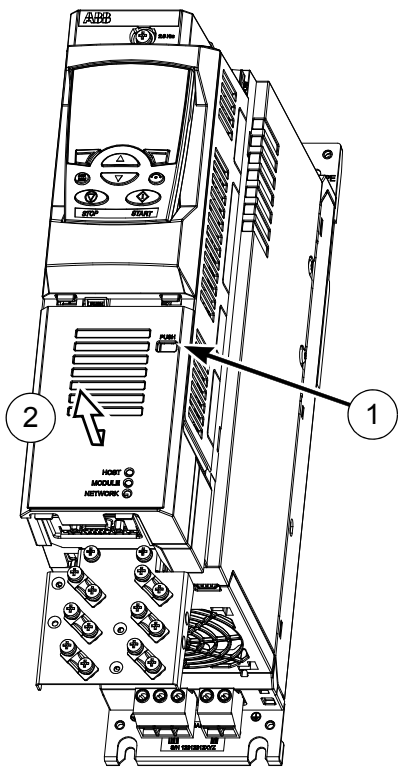
auch diese Module auf der Montagegrundfläche mit zwei Schrauben an den unteren Montagebohrungen zusätzlich zu befestigen.

### Demontage der vorderen Abdeckung

Die vordere Abdeckung muss demontiert werden, bevor die Installation der optionalen Module und der Anschluss der Steuerkabel erfolgen kann. Gehen Sie bei der Demontage der vorderen Abdeckung in der Reihenfolge der unten aufgeführten Punkte vor. Die Ziffern beziehen sich auf die Abbildung auf der folgenden Seite.

- Die Halterung (1) vorsichtig mit einem Schraubenzieher eindrücken.
- Die untere Abdeckung vorsichtig nach unten schieben und herausziehen (2).
- Das Kabel des Bedienpanels (3) abziehen, falls vorhanden.
- Die Schraube (4), mit der die Abdeckung befestigt ist, herausdrehen.
- Vorsichtig den unteren Teil mit den zwei Halterasten (5) aus der Basis herausziehen.

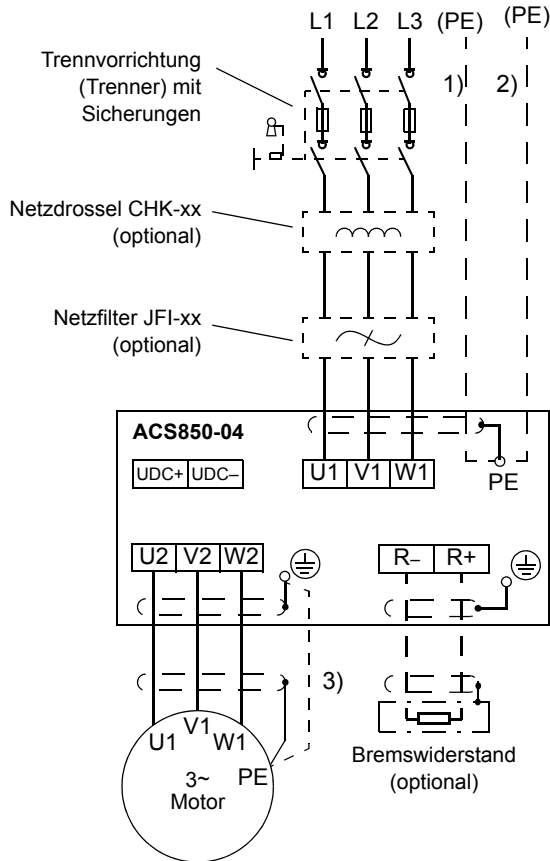
Die vordere Abdeckung in umgekehrter Reihenfolge wie oben wieder montieren.





## Installation der Leistungskabel

### Anschlussplan



#### Hinweise:

- Bei Verwendung von geschirmten Einspeisekabeln und einer nicht ausreichenden Leitfähigkeit des Schirms (siehe Tabelle unten) muss ein Kabel mit einem Erdleiter (1) oder ein separates PE-Kabel (2) verwendet werden.
- Verwenden Sie für den Motorkabelanschluss ein separates Erdungskabel (3), wenn die Leitfähigkeit der Kabelabschirmung nicht ausreicht (siehe Tabelle unten) und wenn das Kabel keine symmetrischen Erdungsleiter hat.

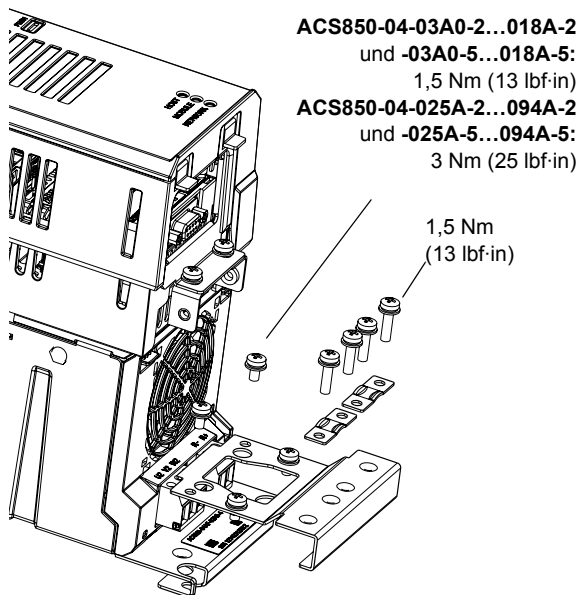
| Querschnitt eines Phasenleiters (S)        | Mindestquerschnitt des Schutzleiters (S <sub>p</sub> ) |
|--|--|
| $S \leq 16 \text{ mm}^2$                   | S  |
| $16 \text{ mm}^2 < S \leq 35 \text{ mm}^2$ | 16 mm <sup>2</sup>                                     |
| $35 \text{ mm}^2 < S$                      | S/2  |

## Vorgehensweise bei Anschlussarbeiten

Kabelanschluss-Beispiele siehe Seite 23.  
Anzugsmomente sind auf Seite 23 und zu den jeweiligen Punkten im Text angegeben.

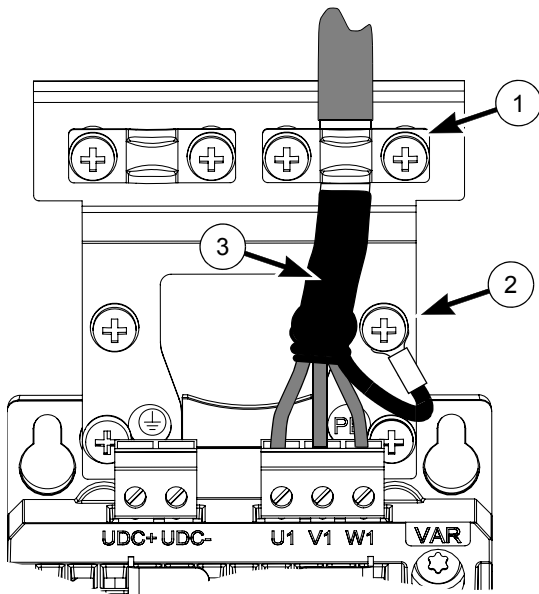
- Die mitgelieferten Klemmenleisten am Frequenzumrichter montieren.
- Nur ACS850-04-**025A-2...094A-2** und **-025A-5...094A-5** : Die beiden Kunststoff-Klemmenabdeckungen am Frequenzumrichtermodul oben und unten entfernen. Jede Abdeckung wird von zwei Schrauben gehalten.
- Bei Anschluss an IT- (ungeerdete) und asymmetrisch geerdete TN-Netze müssen die folgenden Schrauben entfernt werden: VAR (bei ACS850-04-**03A0-2...018A-2** und **-03A0-5...018A-5**); EMC, VAR1 und VAR2 (bei ACS850-04-**025A-2...094A-2** und **-025A-5...094A-5**).
- Die zwei mitgelieferten Kabelabfangbleche am Frequenzumrichtermodul montieren, eines oben und das andere unten. Die Kabelabfangbleche sind identisch.

- Die Leistungskabel soweit abisolieren, dass die Kabelschirme im Bereich der Kabelschellen blank liegen.
- Die Einspeise-, Bremswiderstands- (falls vorhanden) und Motorkabel an die jeweiligen Klemmen des Frequenzumrichtermoduls anschließen.
- Die Kabelschellen über den blanken Kabelschirmen verschrauben. Die Enden der Kabelschirme mit Kabelschuhen an die Erdungsklemmen anschließen. Sichtbare Kabelschirme mit Isolierband abkleben.
- Nur ACS850-04-**025A-2...094A-2** und **-025A-5...094A-5**: Schneiden Sie passende Schlitz in den Rand der Plastik-Klemmenabdeckung, um die Leistungskabel aufzunehmen. Die Abdeckungen wieder montieren.
- Die Motorkabelschirme motorseitig an Erde/ PE anschließen.



### Kabelanschluss-Beispiele

ACS850-04-03A0-5...018A-5



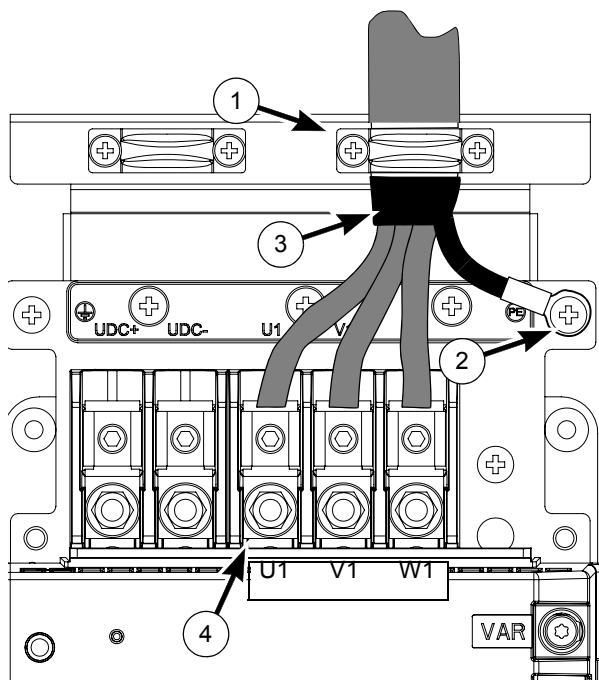
- ① Kabelschelle über dem blanken Kabelschirm.
- ② PE/Erdungsanschluss.
- ③ Den Kabelschirm zwischen Kabelschellen und Anschlussklemmen mit Isolierband abkleben.
- ④ Kabelschuh-Verschraubung:



### Kabelgrößen der Leistungsklemmen

| Frequenzumrichter-Typ<br>ACS850-04... | Leitergröße                |
|---------------------------------------|----------------------------|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0,25 ... 4 mm <sup>2</sup> |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 0,5 ... 6 mm <sup>2</sup>  |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 6 ... 70 mm <sup>2</sup>   |

ACS850-04-025A-5...094A-5



### Anzugsmomente

| Frequenzumrichter-Typ<br>ACS850-04... | Leistungsanschlüsse<br>(Einspeise-, Motor- und<br>Bremswiderstandskabel)<br>Nm (lbf-in) | Kabelschuh<br>(Inbus-<br>schraube)<br>Nm (lbf-ft) |
|---------------------------------------|---|---|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0,5 ... 0,6 (4,4 ... 5,3)   | nicht<br>zutreffend                               |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1,2 ... 1,5 (10,6 ... 13,3)   | nicht<br>zutreffend                               |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 3 (25)  | 15 (11)   |

| Frequenzumrichter-Typ<br>ACS850-04... | PE/<br>Erdungs-<br>anschluss<br>Nm (lbf-in) | Leistungs-<br>kabel-<br>Klemmen<br>Nm (lbf-in) | Abdeckungen<br>Leistungs-<br>anschlüsse<br>Nm (lbf-in) |
|---------------------------------------|---|--|--|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 1,5 (13)                                    | 1,5 (13)                                       | nicht zutreffend                                       |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1,5 (13)                                    | 1,5 (13)                                       | nicht zutreffend                                       |
| -025A-2...050A-2,<br>-025A-5...050A-5 | 3 (25)                                      | 1,5 (13)                                       | 3 (25)   |
| -061A-2...094A-2,<br>-061A-5...094A-5 | 18 (160)                                    | 1,5 (13)                                       | 3 (25)   |

# Anschlüsse der Steuerkabel

## Standard-E/A-Anschlussplan

**Hinweise:**

[Standardeinstellung beim ACS850 Standard-Regelungsprogramm (Makro Werkseinstellung). Siehe *Firmware-Handbuch* zu anderen Makros.]

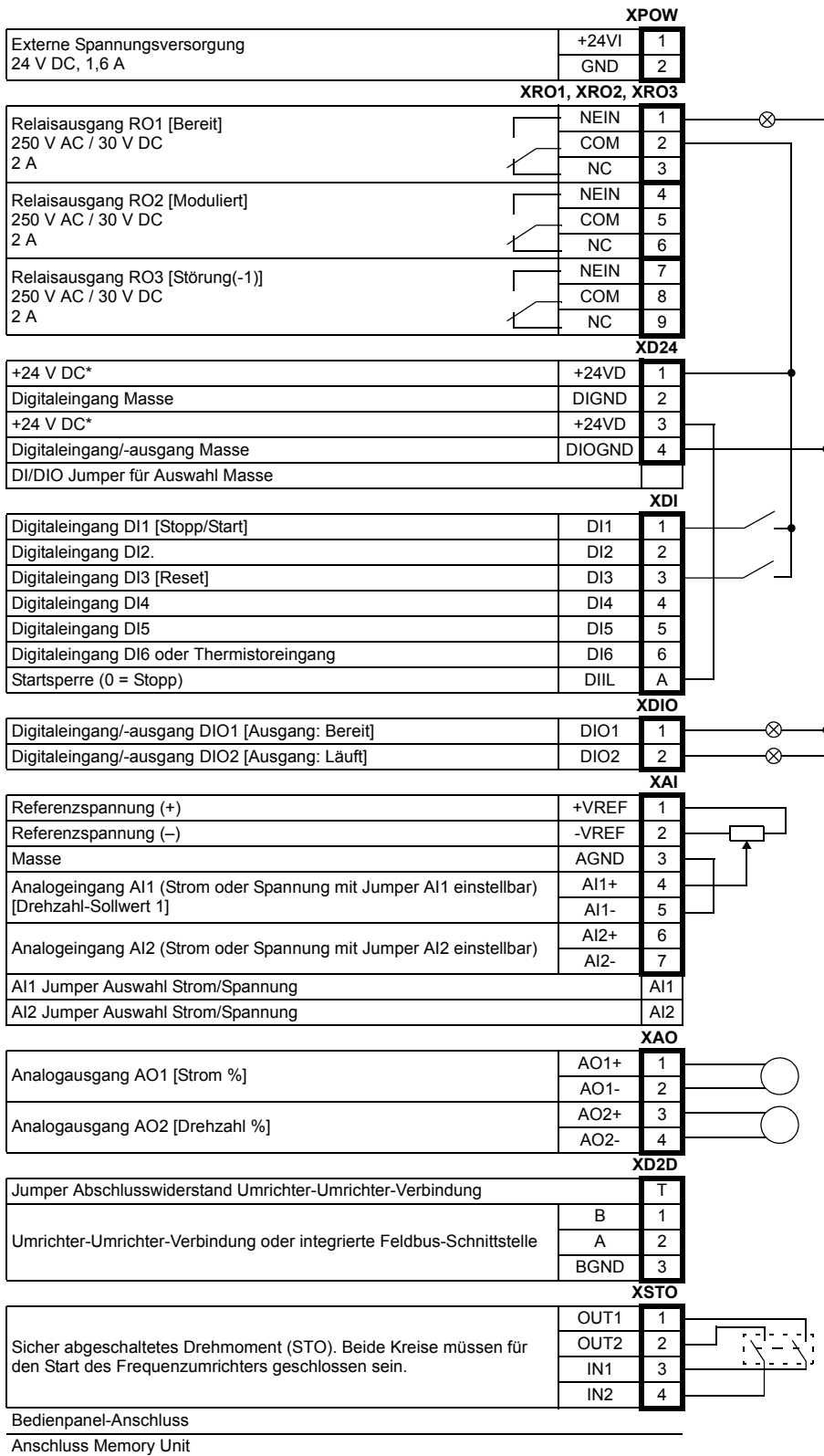
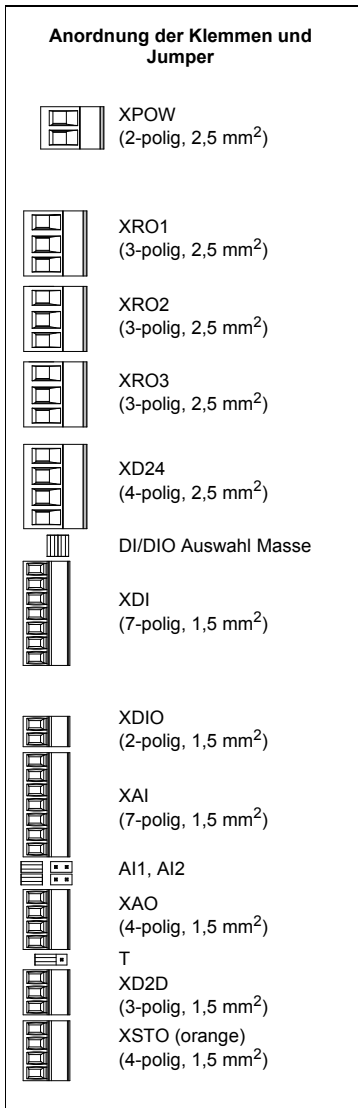
\*Gesamter maximaler Strom: 200 mA

Gezeigte Anschlüsse dienen nur als Beispiel. Weitere Informationen zu den Anschlüssen und Jumpern enthält der folgende Text.

**Kabelquerschnitte und Anzugsmomente:**

**XPOW, XRO1, XRO2, XRO3, XD24:**  
0,5 ... 2,5 mm<sup>2</sup> (24...12 AWG).  
Anzugsmoment: 0,5 Nm (5 lbf-in)

**XDI, XDIO, XAI, XAO, XD2D, XSTO:**  
0,5 ... 1,5 mm<sup>2</sup> (28...14 AWG).  
Anzugsmoment: 0,3 Nm (3 lbf-in)

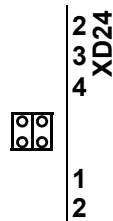
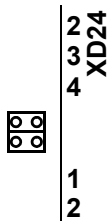


- Die Jumper der Regelungseinheit in die richtige Position stellen:

**DI/DIO Auswahl Masse** – zwischen XD24 und XDI. Einstellung, ob DIGND (Masse für DI1...DI5) massiefrei sind, oder an DIOGND (Masse für DIO1 und DIO2) angeschlossen sind. Wenn DIGND massiefrei ist, sollte die Masse der Digitaleingänge DI1...DI5 (kann GND oder  $V_{cc}$  sein) an XD24:2 gelegt werden.

DIGND massiefrei

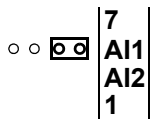
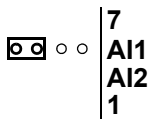
DIGND verbunden mit DIOGND



**AI1** – Einstellung von Analogeingang AI1 auf ein Strom- oder ein Spannungssignal.

Strom

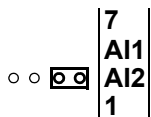
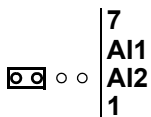
Spannung



**AI2** – Einstellung von Analogeingang AI2 auf ein Strom- oder ein Spannungssignal.

Strom

Spannung



**T** – Abschluss der Umrichter-Umrichter-Verbindung. Muss auf EIN gesetzt werden, wenn der Frequenzumrichter das letzte Gerät der Verbindung ist.

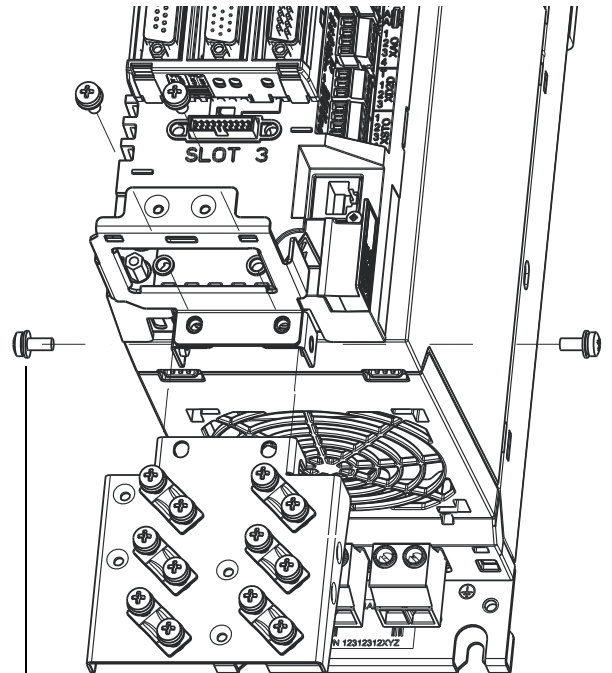
EIN

AUS



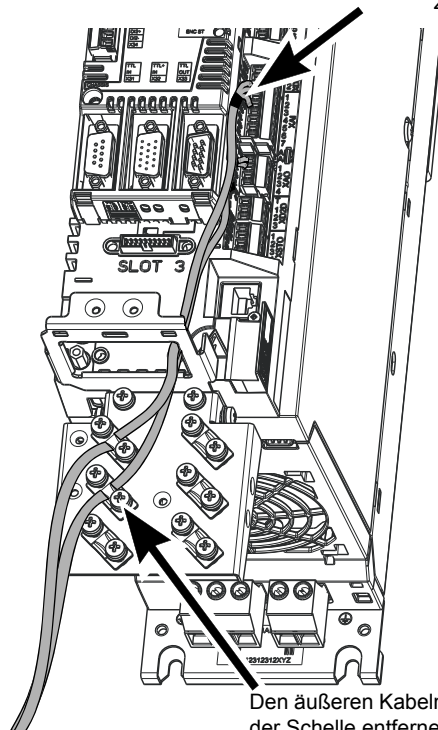
### Montage des Kabelklemmenblechs

Das Kabelklemmen-/abfangeblech kann oben oder unten an der Regelungseinheit JCU befestigt werden.



0,7 N-m (6.2 lbf-in)

Vorstehende Drähte mit Schrumpfschlauch oder Isolierband zusammenhalten.



Den äußeren Kabelmantel im Bereich der Schelle entfernen, um den Kabelschirm freizulegen. 1,5 Nm (13 lbf-in)

---

Setzen Sie die Inbetriebnahme des Frequenzumrichters gemäß den Anweisungen in der jeweiligen *Kurzanleitung für die Inbetriebnahme* fort.

---

## Technische Daten

### UL-Checkliste

- Der ACS850-04 ist ein Frequenzumrichter mit Schutzart IP20 (UL-Typ offen) zur Verwendung in beheizten Innenräumen. Der Frequenzumrichter muss in sauberer Luft gemäß Gehäuseklassifizierung installiert werden. Die Kühlluft muss sauber, frei von korrosiven Materialien und elektrisch leitfähigem Staub sein. Ausführliche Spezifikationen finden Sie im *Hardwarehandbuch*.
- Die maximal zulässige Temperatur der Umgebungsluft bei Nennstrom beträgt 40 °C (104 °F). Der Strom muss bei 40 bis 55 °C (104 bis 131 °F) reduziert werden.
- Der Frequenzumrichter eignet sich für die Verwendung in einem Netz mit einem Kurzschlusswert von nicht mehr als eff. 100.000 A symm. Kurzschlussstrom, maximal 500 V.
- Die Kabel innerhalb des Motorschaltkreises müssen für mindestens 75 °C (167 °F) in UL-konformen Installationen ausgelegt sein.
- Das Eingangskabel muss durch geeignete Sicherungen oder Leistungsschalter geschützt sein. Geeignete IEC- (Klasse gG) und UL- (Klasse T) Sicherungen werden in den *Technischen Daten* im *Hardware-Handbuch* angegeben. Informationen zu geeigneten Leistungsschaltern bzw. Schutzschaltern erhalten Sie von Ihrer ABB-Vertretung.
- Zur Installation in den Vereinigten Staaten muss der Zweigstromkreis-Schutz dem National Electrical Code (NEC) und allen anwendbaren lokalen Vorschriften genügen. Verwenden Sie UL-klassifizierte Sicherungen, um diese Anforderung zu erfüllen.
- Zur Installation in Kanada muss der Zweigstromkreis-Schutz dem Canadian Electrical Code und allen anwendbaren Vorschriften der Provinzen genügen. Verwenden Sie UL-klassifizierte Sicherungen, um diese Anforderung zu erfüllen.
- Der Frequenzumrichter bietet einen Überlastungsschutz gemäß dem National Electrical Code (NEC). Das jeweilige *Firmware-Handbuch* enthält die Einstellungen zum Überlastschutz.

# Guía de instalación rápida - ACS850-04

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## Acerca de esta guía

Esta guía contiene información muy básica acerca de la instalación mecánica y eléctrica del módulo de convertidor de frecuencia ACS850-04 (de 0,37 a 45 kW). Para obtener la documentación completa, consulte *ACS850-04 Drive Modules (0.37 to 45 kW) Hardware Manual* (código: 3AUA0000045496 [inglés]).

## Instrucciones de seguridad

---



**ADVERTENCIA:** Todos los trabajos de instalación eléctrica y mantenimiento realizados en el convertidor deben ser ejecutados únicamente por electricistas cualificados.

Nunca trabaje en el convertidor, el circuito del chopper de frenado, el cable de motor o el motor con la alimentación del convertidor conectada. Realice siempre una medición para verificar que no existe tensión.

Un motor de imanes permanentes en rotación puede generar una tensión peligrosa. Bloquee mecánicamente el eje del motor antes de conectar un motor de imanes permanentes al convertidor, así como antes de comenzar a trabajar en un sistema de convertidor de frecuencia conectado a un motor de imanes permanentes.

## Instalación mecánica

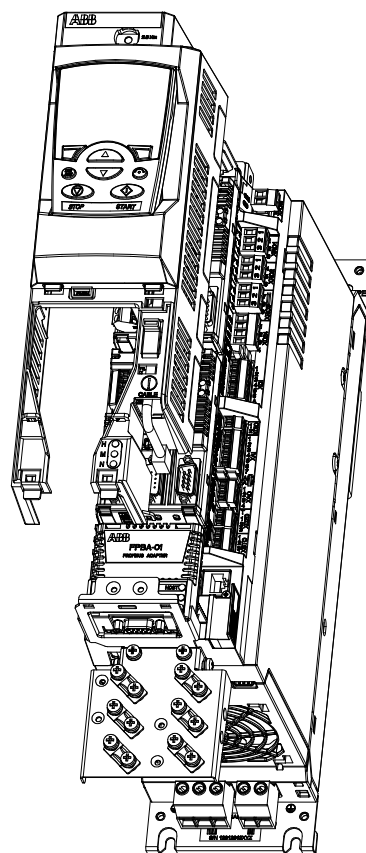
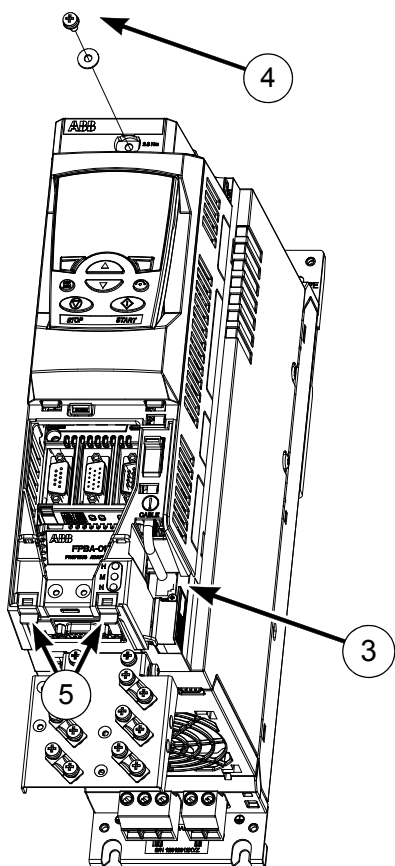
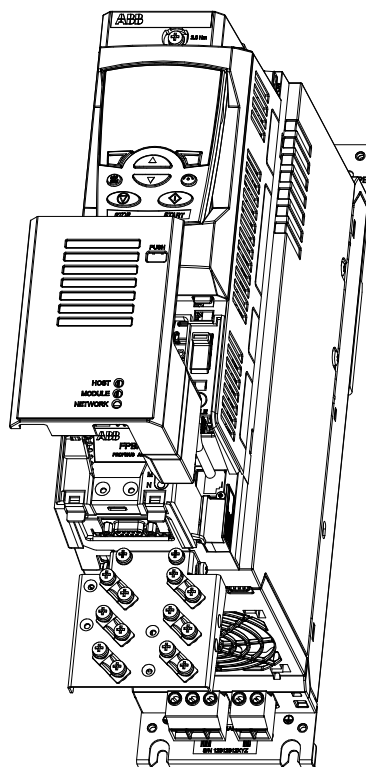
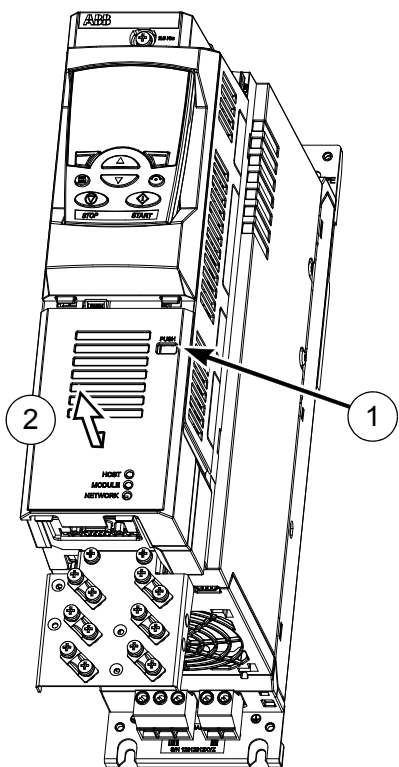
Sujete el módulo de convertidor a la base de montaje con tornillos a través de los orificios de montaje. Los bastidores A y B pueden montarse sobre una guía DIN; no obstante, se recomienda encarecidamente fijar adicionalmente estos módulos a la base mediante dos tornillos a través de los agujeros inferiores de montaje.

## Retirada de la cubierta

Es necesario retirar la cubierta antes de instalar los módulos opcionales y de conectar el cableado de control. Siga este procedimiento para retirar la cubierta. Los números hacen referencia a las ilustraciones que se muestran a continuación.

- Presione sobre la pestaña (1) ligeramente con un destornillador.
- Deslice la placa de la cubierta inferior con suavidad hacia abajo y tire de ella (2).
- Desconecte el cable del panel (3) si lo hubiere.
- Retire el tornillo (4) de la parte superior de la cubierta.
- Tire con cuidado de la parte inferior de la base con ayuda de las dos pestañas (5).

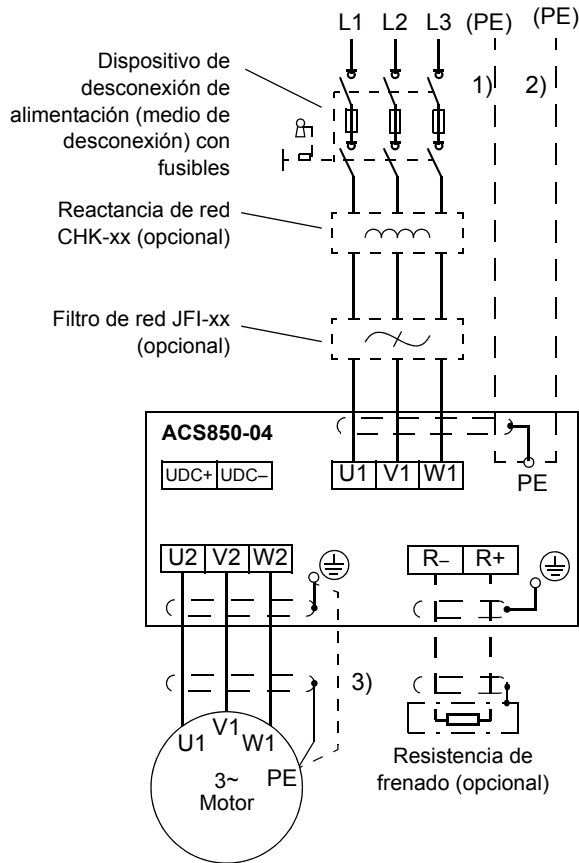
Vuelva a colocar la cubierta procediendo en el orden inverso.





## Instalación de los cables de alimentación

### Diagrama de conexiones



### Notas:

- Si se utiliza cable de alimentación (entrada) apantallado y la conductividad de la pantalla no es suficiente (véase la tabla siguiente), utilice un cable con un conductor de tierra (1) o un cable de tierra de protección separado (2).

- En el caso de los cables de motor, utilice un cable de conexión a tierra separado (3) si la conductividad de la pantalla no es suficiente (véase la tabla siguiente) ni el cable tiene conductores de tierra simétricos.

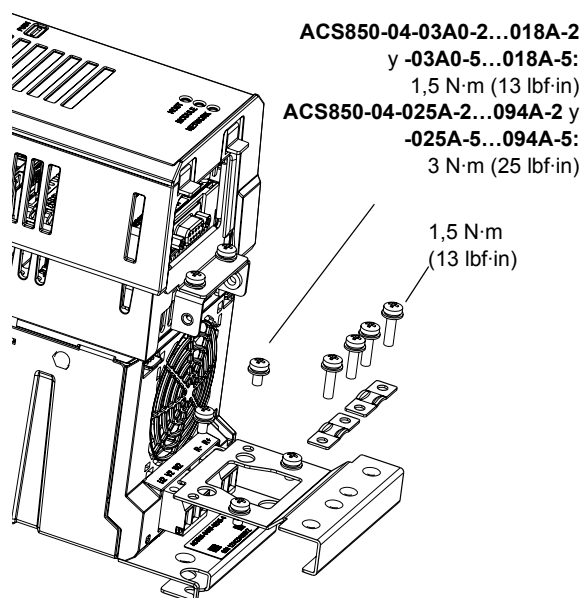
| Sección transversal de un conductor de fase (S) | Sección transversal mínima del conductor protector (S <sub>p</sub> ) |
|---|--|
| $S \leq 16 \text{ mm}^2$                        | S  |
| $16 \text{ mm}^2 < S \leq 35 \text{ mm}^2$      | 16 mm <sup>2</sup>   |
| $35 \text{ mm}^2 < S$                           | S/2  |

## Procedimiento de conexión

Se muestran ejemplos de cableado en la página 31. Los pares de apriete se muestran en la página 31 y en los puntos del texto que así lo requieran.

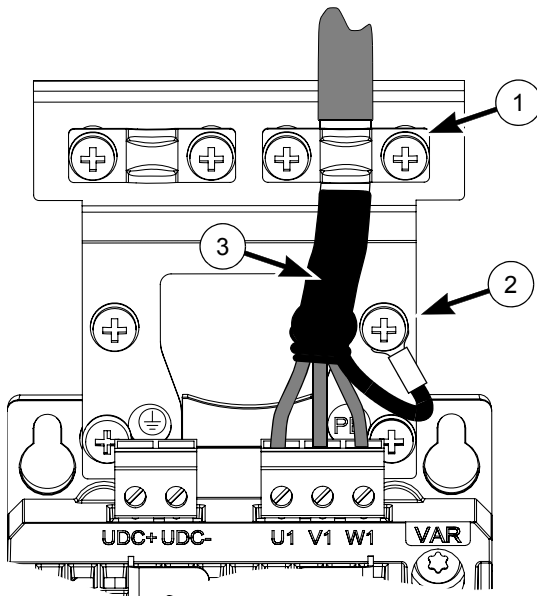
- Fije los bloques de terminales incluidos al convertidor.
- Sólo ACS850-04-**025A-2...094A-2** y **-025A-5...094A-5**: Retire las dos cubiertas de plástico de los conectores situados en la parte superior e inferior del convertidor. Cada cubierta se encuentra sujeta mediante dos tornillos.
- En redes IT (sin conexión a tierra) y redes TN con conexión a tierra en un vértice, retire los siguientes tornillos:  
VAR (ACS850-04-**03A0-2...018A-2** y **-03A0-5...018A-5**);  
EMC, VAR1 y VAR2 (ACS850-04-**025A-2...094A-2** y **-025A-5...094A-5**).
- Apriete las dos placas de sujeción de cables incluidas en el convertidor, una en la parte superior y la otra en la inferior. Ambas placas de sujeción son idénticas.

- Pele los cables de alimentación para que el apantallamiento quede en contacto directo con las abrazaderas de cable.
- Conecte los cables de alimentación, de resistencia (si están presentes) y del motor a los terminales correspondientes del convertidor de frecuencia.
- Apriete las abrazaderas de cable directamente sobre el apantallamiento de los cables. Conecte los extremos del apantallamiento de los cables a los terminales de tierra usando orejetas de cable. Cubra la parte visible del apantallamiento con cinta aislante.
- Sólo ACS850-04-**025A-2...094A-2** y **-025A-5...094A-5**: Practique las ranuras necesarias en los bordes de las cubiertas de conectores para alojar los cables. Vuelva a instalar las cubiertas.
- Conecte a tierra el apantallamiento del cable de motor en el extremo del motor.



## Ejemplos de cableado

ACS850-04-03A0-5...018A-5



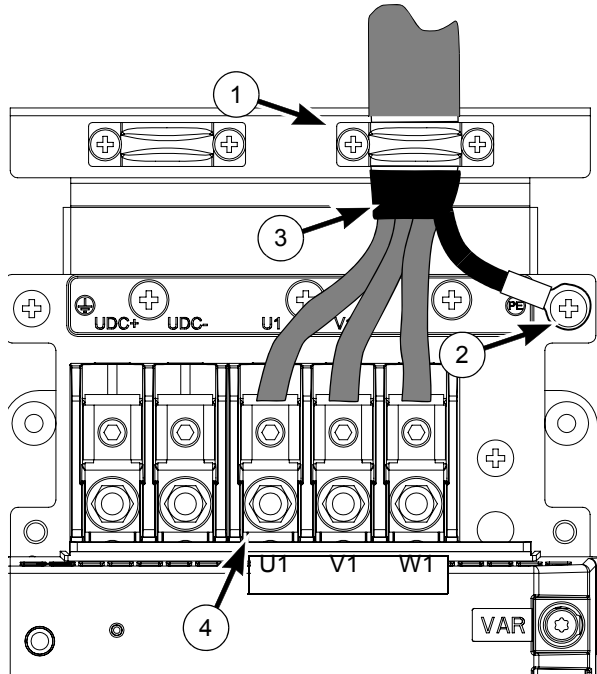
- 1 Abrazadera de cable directamente sobre el apantallamiento.
- 2 PE/conexión a tierra.
- 3 Entre la abrazadera de cable y los terminales, envuelva el apantallamiento descubierto con cinta aislante.
- 4 Detalle de orejeta roscada:



## Tamaños de cable adecuados para terminales de alimentación

| Tipo de convertidor ACS850-04...      | Tamaño del hilo            |
|---------------------------------------|----------------------------|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0,25 ... 4 mm <sup>2</sup> |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 0,5 ... 6 mm <sup>2</sup>  |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 6 ... 70 mm <sup>2</sup>   |

ACS850-04-025A-5...094A-5



## Pares de apriete

| Tipo de convertidor ACS850-04...      | Terminales de alimentación (cables de alimentación, motor y resistencia de freno)<br>N·m (lbf·in) | Orejeta roscada (tornillo Allen)<br>N·m (lbf·ft) |
|---------------------------------------|---|--|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0,5 ... 0,6 (4,4 ... 5,3)   | N/D  |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1,2 ... 1,5 (10,6 ... 13,3)   | N/D  |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 3 (25)  | 15 (11)  |

| Tipo de convertidor ACS850-04...      | PE/terminales de conexión a tierra<br>N·m (lbf·in) | Abrazaderas del cable de alimentación<br>N·m (lbf·in) | Cubiertas del conector de alimentación<br>N·m (lbf·in) |
|---------------------------------------|--|---|--|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 1,5 (13)   | 1,5 (13)  | N/D  |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1,5 (13)   | 1,5 (13)  | N/D  |
| -025A-2...050A-2,<br>-025A-5...050A-5 | 3 (25)   | 1,5 (13)  | 3 (25)   |
| -061A-2...094A-2,<br>-061A-5...094A-5 | 18 (160)   | 1,5 (13)  | 3 (25)   |

# Instalación de los cables de control

## Diagrama de conexiones de E/S por defecto

**Notas:**

[Ajuste predeterminado con el programa de control estándar del ACS850 (macro Fábrica). Véase el *Manual de firmware* para obtener información sobre otras macros].

\*Intensidad máxima total: 200 mA

Las conexiones representadas en la figura son sólo a título demostrativo. Consulte el texto para conocer los ajustes de los puentes.

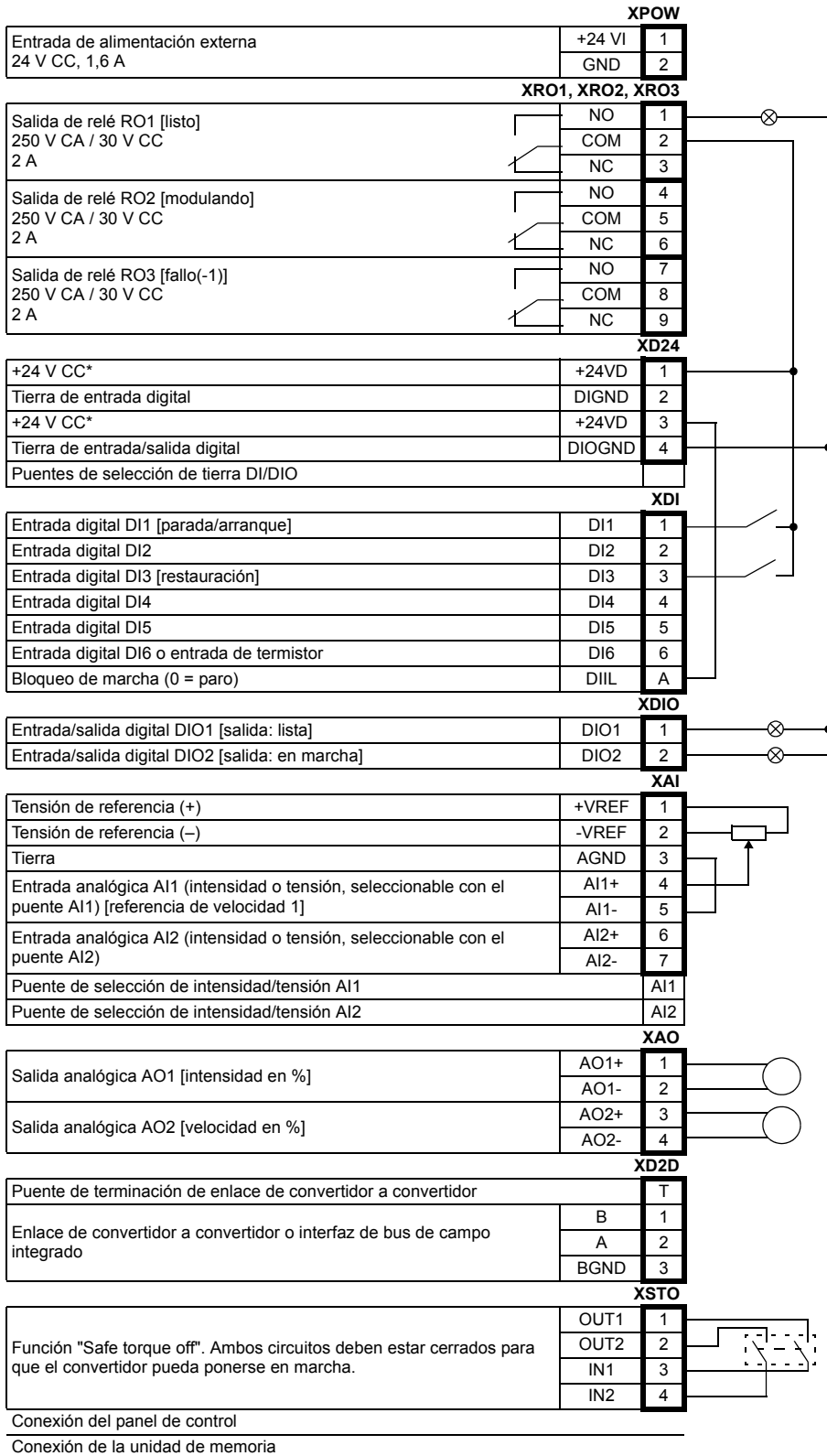
**Tamaños de cable y pares de apriete:**

**XPOW, XRO1, XRO2, XRO3, XD24:**  
0,5 ... 2,5 mm<sup>2</sup> (24...12 AWG). Par: 0,5 N·m (5 lbf·in)

**XDI, XDIO, XAI, XAO, XD2D, XSTO:**  
0,5 ... 1,5 mm<sup>2</sup> (28...14 AWG). Par: 0,3 N·m (3 lbf·in)

**Orden de los conectores y puentes de los terminales**

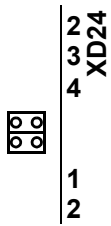
- XPOW (bipolar, 2,5 mm<sup>2</sup>)
- XRO1 (tripolar, 2,5 mm<sup>2</sup>)
- XRO2 (tripolar, 2,5 mm<sup>2</sup>)
- XRO3 (tripolar, 2,5 mm<sup>2</sup>)
- XD24 (tetrapolar, 2,5 mm<sup>2</sup>)
- Selección de tierra DI/DIO
- XDI (7 polos 1,5 mm<sup>2</sup>)
- XDIO (bipolar 1,5 mm<sup>2</sup>)
- XAI (7 polos 1,5 mm<sup>2</sup>)
- AI1, AI2
- XAO (tetrapolar, 1,5 mm<sup>2</sup>)
- T
- XD2D (tripolar 1,5 mm<sup>2</sup>)
- XSTO (naranja) (tetrapolar, 1,5 mm<sup>2</sup>)



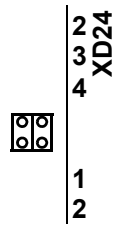
- Coloque los puentes de la unidad de control en la posición adecuada:

**selección de tierra DI/DIO** – situada entre XD24 y XDI. Determina si DIGND (tierra para DI1...DI5) es flotante o si está conectada a DIOGND (tierra para DI6, DIO1 y DIO2). Si DIGND es flotante, el modo común de DI1...DI5 (GND o V<sub>cc</sub>) debe conectarse a XD24:2.

DIGND flotante

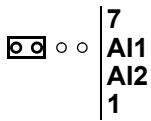


DIGND enlazado con DIOGND

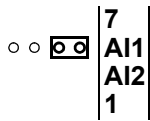


**AI1** – Determina si la entrada analógica AI1 se utiliza como entrada de intensidad o de tensión.

Intensidad

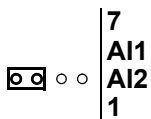


Tensión

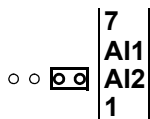


**AI2** – Determina si la entrada analógica AI2 se utiliza como entrada de intensidad o de tensión.

Intensidad



Tensión



**T** – Terminación de enlace de convertidor a convertidor. Ajústelo a ON si el convertidor es la última unidad del enlace.

ON

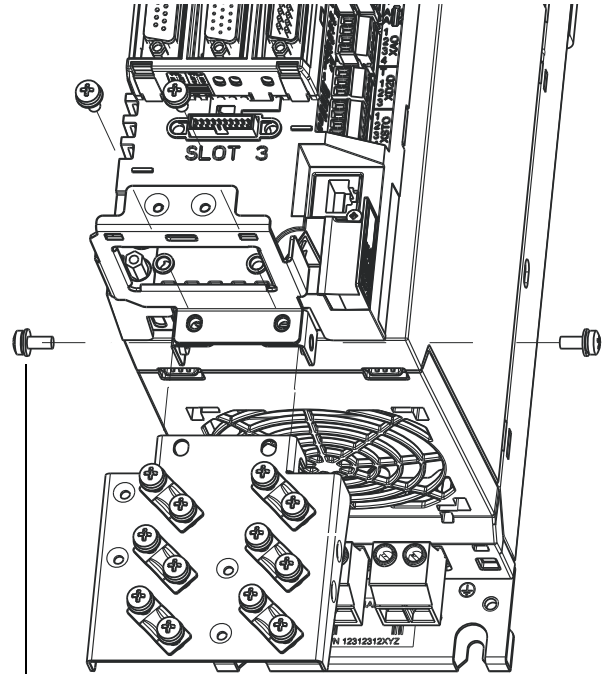


OFF

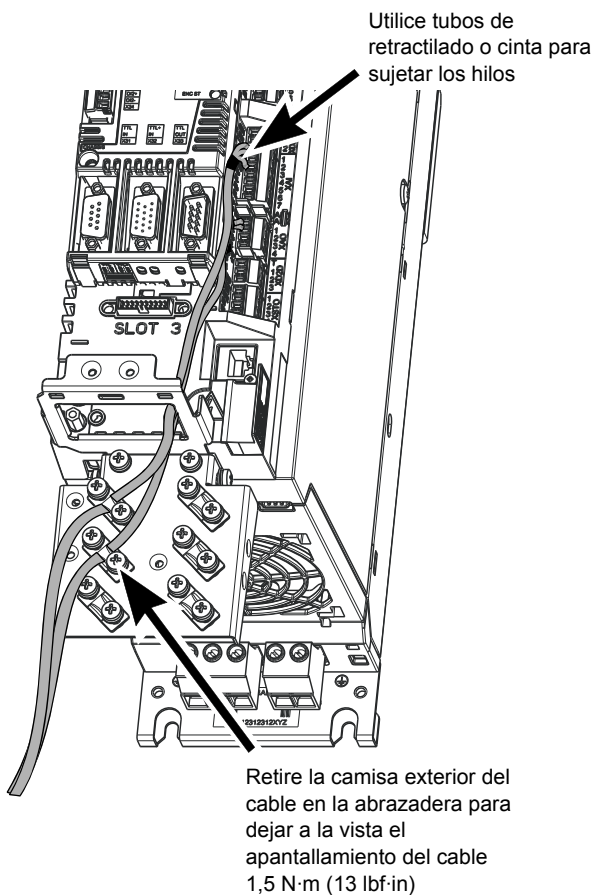


## Montaje de la placa de fijación

La placa de fijación puede sujetarse a la parte superior o inferior de la unidad de control JCU.



0,7 N·m (6,2 lbf-in)



- La temperatura ambiente máxima es de 40 °C (104 °F) a intensidad nominal. Se produce derrateo a temperaturas de entre 40 y 55 °C (de 104 a 131 °F).
- El convertidor es apto para ser usado en circuitos que no proporcionen más de 100 000 amperios eficaces simétricos, 500 V como máximo.
- Los cables situados en el circuito del motor deben tener una especificación mínima de 75 °C (167 °F) en instalaciones realizadas conforme a la norma UL.
- El cable de entrada debe estar protegido mediante fusibles o interruptores automáticos. Se incluye una lista de fusibles IEC (clase gG) y UL (clase T) adecuados en la sección *Datos técnicos* del *Manual de hardware*. Póngase en contacto con su representante local de ABB para informarse sobre los interruptores automáticos adecuados.
- Para instalación en los Estados Unidos, se deberá proporcionar la protección de circuitos derivados, de conformidad con el Código Eléctrico Nacional de EE. UU. (NEC) y con cualquier normativa local aplicable. Para cumplir este requisito, utilice fusibles con clasificación UL.
- Para instalaciones en Canadá, se deberá proporcionar la protección de circuitos derivados, de conformidad con el Código Eléctrico de Canadá y con cualquier normativa local aplicable. Para cumplir este requisito, utilice fusibles con clasificación UL.
- El convertidor proporciona protección contra la sobrecarga de acuerdo con el Código Eléctrico Nacional de EE. UU. (NEC). Consulte el *Manual de firmware* correspondiente para conocer los ajustes de la función de protección contra sobrecarga.

Continúe con la puesta en marcha del convertidor conforme a las instrucciones de la *Guía rápida de puesta en marcha* correspondiente.

## Datos técnicos

### Listado de comprobación UL

- El ACS850-04 es un convertidor de frecuencia con protección IP 20 (UL tipo abierto) que deberá emplearse en interiores con ambiente controlado. El convertidor deberá ser instalado en una atmósfera limpia de conformidad con la clasificación del armario. El aire de refrigeración deberá estar limpio y libre de materiales corrosivos y de polvo conductor de electricidad. Consulte las especificaciones detalladas en el *Manual de hardware*.

## Guide d'installation rapide - ACS850-04

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### Introduction

Ce guide reprend l'essentiel des consignes de montage et de raccordement du module variateur ACS850-04 (0,37 à 45 kW). Pour une description complète, cf. document anglais *ACS850-04 Drive Modules (0.37 to 45 kW) Hardware Manual* (code : 3AUA0000045496).

### Consignes de sécurité

---



**ATTENTION !** Seuls des électriciens qualifiés sont autorisés à procéder à l'installation et à la maintenance du variateur.

N'intervenez jamais sur le variateur, le circuit du hacheur de freinage, le câble moteur ou le moteur lorsque le variateur est sous tension. Vous devez toujours vérifier l'absence effective de tension par une mesure.

Un moteur à aimants permanents en rotation peut générer une tension dangereuse. Bloquez mécaniquement l'arbre du moteur avant de le raccorder au variateur et avant toute intervention sur un variateur connecté à un moteur à aimants permanents.

### Montage

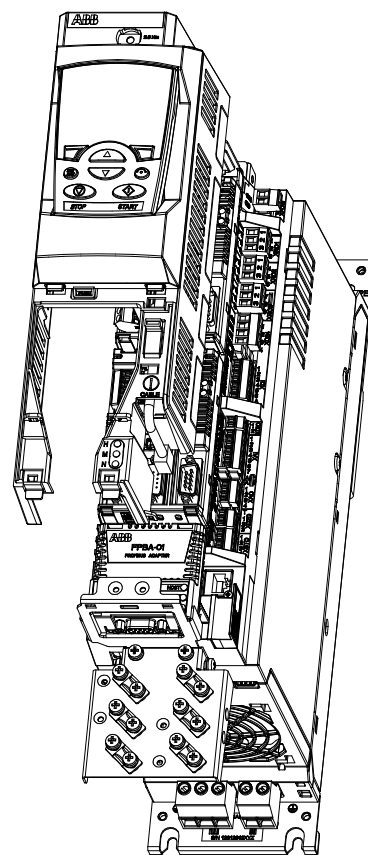
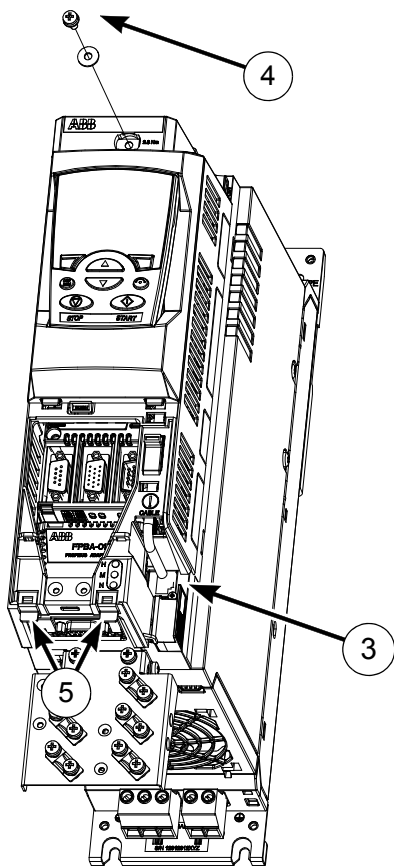
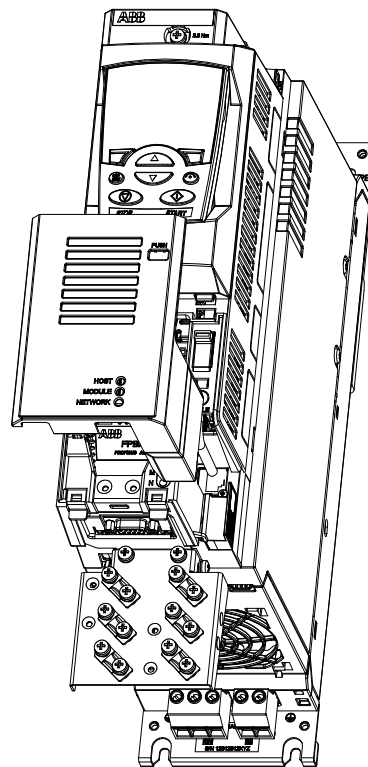
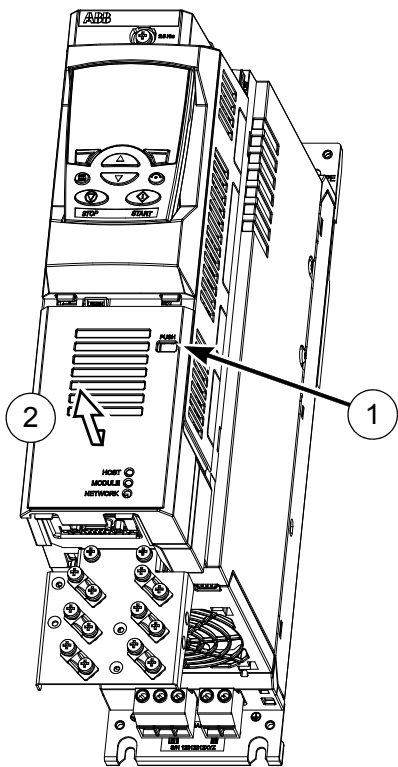
Fixez le module variateur au socle de montage en insérant des vis dans les quatre trous de fixation. Les modules de taille A et B peuvent être montés sur rail DIN, mais il est fortement recommandé de les fixer également au socle de montage à l'aide de deux vis dans les trous de fixation du bas.

### Dépose du capot en deux parties

Avant d'installer les modules optionnels et de raccorder les câbles de commande, vous devez démonter les deux parties constituant le capot selon la procédure suivante. Les chiffres renvoient aux illustrations ci-après.

- Enfoncez légèrement l'ergot (1) avec un tournevis.
- Faites glisser légèrement le capot inférieur vers le bas et retirez-le (2).
- Débranchez le câble de la micro-console (3) si installé.
- Retirez la vis (4) située en haut du capot supérieur.
- Tirez délicatement la partie inférieure de la base vers l'extérieur à l'aide des deux languettes (5).

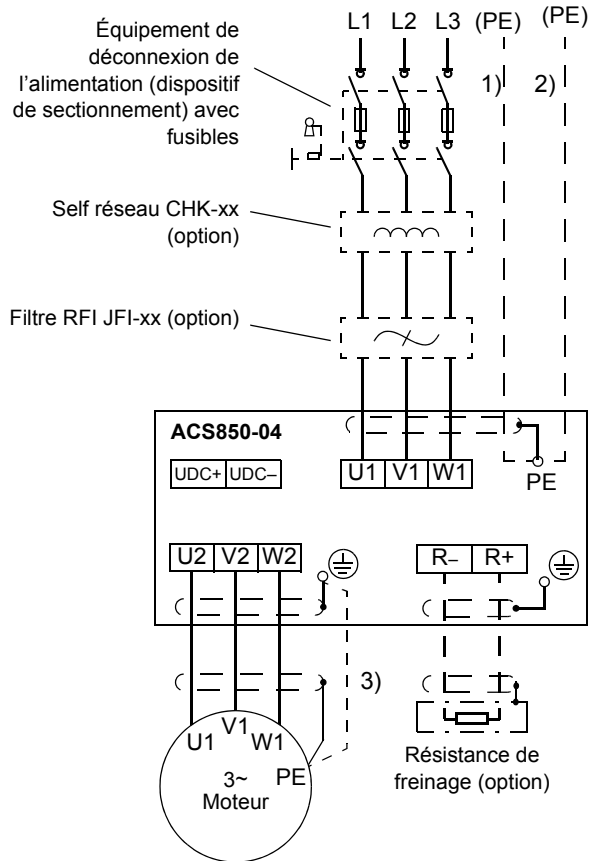
Remontez les capots dans l'ordre inverse.





## Câbles de puissance

### Schéma de raccordement



#### N.B. :

- Si un câble d'alimentation (entrée) blindé est utilisé et que la conductivité du blindage est insuffisante (cf. tableau ci-dessous), utilisez un câble avec conducteur de terre (1) ou un câble PE séparé (2).

- Pour le câblage du moteur, utilisez un câble de terre séparé (3) si la conductivité du blindage de câble est insuffisante (cf. tableau ci-dessous) et que le câble ne possède pas de conducteurs de terre symétriques.

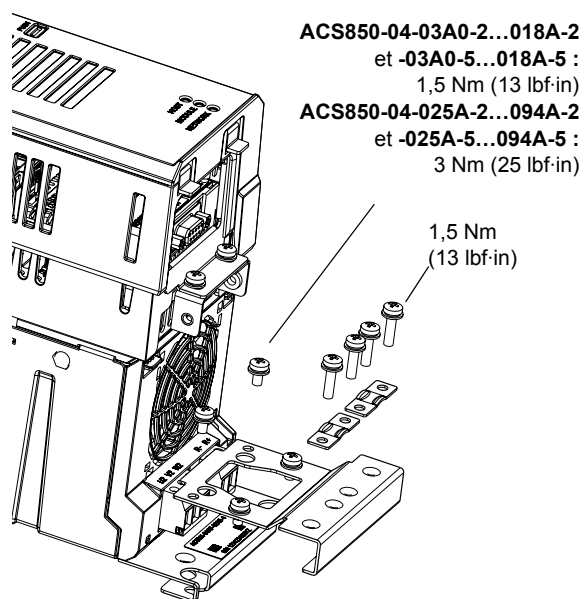
| Section des conducteurs de phase (S)       | Section mini des conducteurs de protection (S <sub>p</sub> ) |
|--|--|
| $S \leq 16 \text{ mm}^2$                   | S  |
| $16 \text{ mm}^2 < S \leq 35 \text{ mm}^2$ | 16 mm <sup>2</sup>   |
| $35 \text{ mm}^2 < S$                      | S/2  |

## Procédure de raccordement

Des exemples de raccordement sont présentés en page 39. Les couples de serrage sont indiqués page 39 et aux passages pertinents du texte.

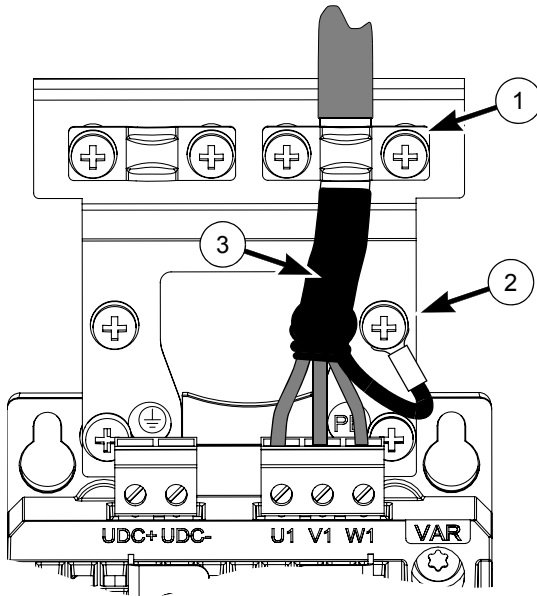
- Fixez le bornier fourni sur le variateur.
- ACS850-04-**025A-2...094A-2** et **-025A-5...094A-5** uniquement : retirez les deux cache-bornes en plastique du haut et du bas du variateur. Chaque cache-borne est fixé par deux vis.
- Pour les réseaux en schéma IT (neutre isolé ou impédant) ou TN (mise à la terre asymétrique), vous devez retirer les vis suivantes :  
VAR (ACS850-04-**03A0-2...018A-2** et **-03A0-5...018A-5**);  
EMC, VAR1 et VAR2 (ACS850-04-**025A-2...094A-2** et **-025A-5...094A-5**).
- Fixez une plaque serre-câbles en haut du variateur et l'autre en bas. Les deux plaques sont identiques.

- Dénudez les câbles de puissance ; le blindage doit être à nu au niveau des serre-câbles.
- Raccordez les câbles réseau, moteur et de la résistance (si montée) aux bornes appropriées du variateur.
- Fixez les serre-câbles sur les blindages nus des câbles. À l'aide des cosses de câble, raccordez les extrémités des blindages sur la borne de terre. Recouvrez tout blindage nu avec de la bande isolante.
- ACS850-04-**025A-2...094A-2** et **-025A-5...094A-5** uniquement : découpez des fentes adéquates au sommet du capot de protection des bornes afin de faciliter le passage des câbles. Remplacez les cache-bornes.
- Mettez à la terre le blindage du câble moteur du côté moteur.



## Exemples de raccordement

ACS850-04-03A0-5...018A-5



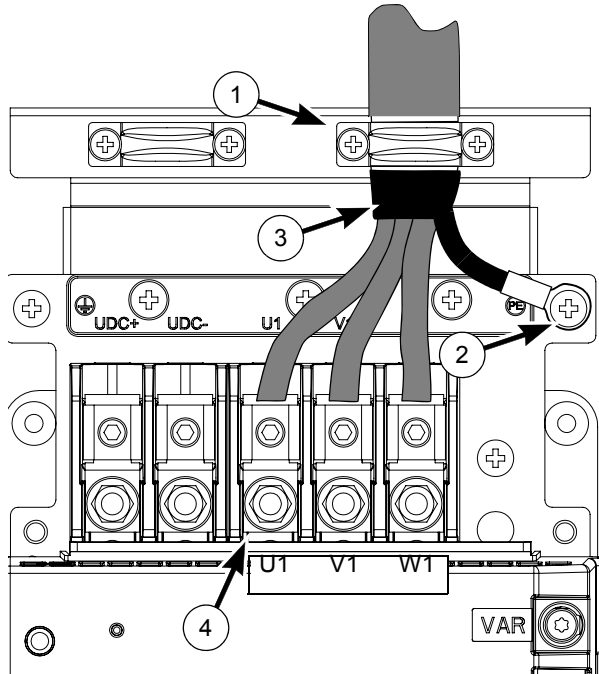
- ① Serre-câble sur le blindage dénudé
- ② Raccordement PE/terre
- ③ Recouvrez le blindage de bande isolante entre le serre-câble et les bornes.
- ④ Détail des cosse à visser :



## Sections des fils pour les bornes de puissance

| Type d'ACS850-04...                   | Section des conducteurs    |
|---------------------------------------|----------------------------|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0,25 ... 4 mm <sup>2</sup> |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 0,5 ... 6 mm <sup>2</sup>  |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 6 ... 70 mm <sup>2</sup>   |

ACS850-04-025A-5...094A-5



## Couples de serrage

| Type d'ACS850-04...                   | Bornes de puissance<br>(câbles moteur, réseau et de la résistance de freinage)<br>Nm (lbf-in) | Cosse à visser (vis Allen)<br>Nm (lbf-ft) |
|---------------------------------------|---|---|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0,5 ... 0,6 (4,4 ... 5,3)   | N/D                                       |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1,2 ... 1,5 (10,6 ... 13,3)   | N/D                                       |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 3 (25)  | 15 (11)                                   |

| Type d'ACS850-04...                   | Bornes PE/terre<br>Nm (lbf-in) | Serre-câbles pour câbles de puissance<br>Nm (lbf-in) | Capots de protection des bornes<br>Nm (lbf-in) |
|---------------------------------------|--------------------------------|--|--|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 1,5 (13)                       | 1,5 (13)   | N/D  |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1,5 (13)                       | 1,5 (13)   | N/D  |
| -025A-2...050A-2,<br>-025A-5...050A-5 | 3 (25)                         | 1,5 (13)   | 3 (25)   |
| -061A-2...094A-2,<br>-061A-5...094A-5 | 18 (160)                       | 1,5 (13)   | 3 (25)   |

## Câbles de commande

## Schéma de raccordement des signaux d'E/S (préréglages)

### N.B. :

[Préréglages du programme de commande Standard ACS850 (macroprogramme Usine). Cf. *Manuel d'exploitation* pour les autres macroprogrammes.]

\*Courant maxi total : 200 mA


Schéma de câblage illustré uniquement à titre d'exemple. Pour le réglage des cavaliers, cf. texte.


### Section des fils et couples de serrage :


**XPOW, XRO1, XRO2, XRO3, XD24 :**  
0,5 ... 2,5 mm<sup>2</sup> (24...12 AWG). Couple : 0,5 Nm (5 lbf-in)


**XDI, XDIO, XAI, XAO, XD2D, XSTO :**  
0,5 ... 1,5 mm<sup>2</sup> (28...14 AWG). Couple : 0,3 Nm (3 lbf-in)


### Repérage des bornes et cavaliers


 XPOW  
(2 pôles, 2,5 mm<sup>2</sup>)


 XRO1  
(3 pôles, 2,5 mm<sup>2</sup>)


 XRO2  
(3 pôles, 2,5 mm<sup>2</sup>)


 XRO3  
(3 pôles, 2,5 mm<sup>2</sup>)


 XD24  
(4 pôles, 2,5 mm<sup>2</sup>)


 ?Mise à la masse E / E/SL

 XDI  
(7 pôles, 1,5 mm<sup>2</sup>)


 XDIO  
(2 pôles, 1,5 mm<sup>2</sup>)


 XAI  
(7 pôles, 1,5 mm<sup>2</sup>)

 AI1, AI2

 XAO  
(4 pôles, 1,5 mm<sup>2</sup>)

 T

 XD2D  
(3 pôles, 1,5 mm<sup>2</sup>)

 XSTO (orange)  
(4 pôles, 1,5 mm<sup>2</sup>)

| XPOW   |         |
|--|---------|
| Entrée alimentation externe<br>24 Vc.c., 1,6 A | +24VI 1 |
|  | GND 2   |

| XRO1, XRO2, XRO3  |       |
|---|-------|
| Sortie relais 1 [Prêt]<br>250 Vc.a. / 30 Vc.c.<br>2 A               | NO 1  |
|   | COM 2 |
|   | NC 3  |
| Sortie relais 2 RO2 [Fonctionnement]<br>250 Vc.a. / 30 Vc.c.<br>2 A | NO 4  |
|   | COM 5 |
|   | NC 6  |
| Sortie relais 3 RO3 [Défaut(-1)]<br>250 Vc.a. / 30 Vc.c.<br>2 A     | NO 7  |
|   | COM 8 |
|   | NC 9  |

| XD24                                   |          |
|--|----------|
| +24 Vc.c.*                             | +24VD 1  |
| Masse entrées logiques                 | DIGND 2  |
| +24 Vc.c.*                             | +24VD 3  |
| Masse entrées/sorties logiques         | DIOGND 4 |
| Mise à la masse E / E/SL par cavaliers |          |

| XDI                                     |        |
|---|--------|
| Entrée logique 1 [Démarrage/Arrêt]      | DI1 1  |
| Entrée logique 2                        | DI2 2  |
| Entrée logique 3 [Réarmement]           | DI3 3  |
| Entrée logique 4                        | DI4 4  |
| Entrée logique 5                        | DI5 5  |
| Entrée logique 6 ou entrée thermistance | DI6 6  |
| Verrouillage démarrage (0 = arrêt)      | DIIL A |

| XDIO   |        |
|--|--------|
| Entrée/sortie logique 1 [Sortie : Prêt]      | DIO1 1 |
| Entrée/sortie logique 2 [Sortie : En marche] | DIO2 2 |

| XAI  |         |
|--|---------|
| Tension de référence (+)   | +VREF 1 |
| Tension de référence (-)   | -VREF 2 |
| Masse  | AGND 3  |
| Entrée analogique 1 (Courant ou tension, sélection par cavalier AI1)<br>[Référence de vitesse 1] | AI1+ 4  |
|  | AI1- 5  |
| Entrée analogique 2 (Courant ou tension, sélection par cavalier AI2)                             | AI2+ 6  |
|  | AI2- 7  |
| Sélection courant/tension AI1 par cavalier   | AI1     |
| Sélection courant/tension AI2 par cavalier   | AI2     |

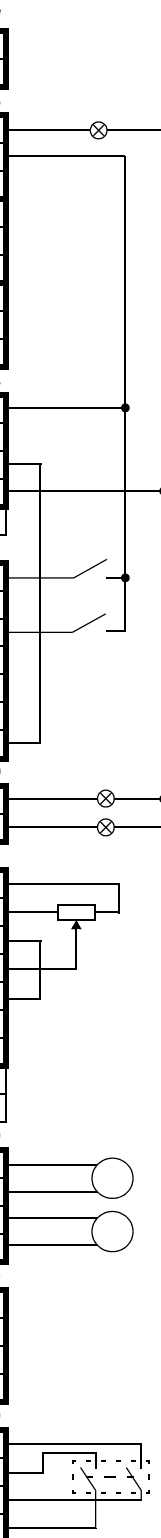
| XAO                             |        |
|---------------------------------|--------|
| Sortie analogique 1 [% courant] | AO1+ 1 |
|                                 | AO1- 2 |
| Sortie analogique 2 [% vitesse] | AO2+ 3 |
|                                 | AO2- 4 |

| XD2D  |        |
|---|--------|
| Cavalier de terminaison de la liaison multivariateurs                     | T      |
| Liaison multivariateurs (D2D) ou protocole intégré de communication (EFB) | B 1    |
|   | A 2    |
|   | BGND 3 |

| XSTO   |        |
|--|--------|
| Arrêt sécurisé STO ( <i>Safe torque off</i> ). Les deux circuits doivent être fermés pour le démarrage du variateur. | OUT1 1 |
|  | OUT2 2 |
|  | IN1 3  |
|  | IN2 4  |

Raccordement micro-console

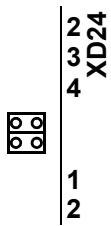
Raccordement unité mémoire



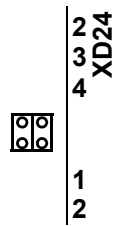
- Positionnez les cavaliers sur l'unité de commande dans la position appropriée :

**Sélection mise à la masse E / E/SL** - Située entre XD24 et XDI. Sélection du raccordement de l'entrée DIGND (masse DI1...DI5) : flottante ou raccordée sur DIOGND (masse DI6, DIO1 et DIO2). Si DIGND est flottante, raccordez le commun de DI1... DI5 (GND ou  $V_{cc}$ ) sur XD24:2.

DIGND flottante

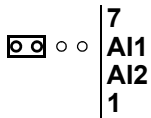


DIGND raccordée sur DIOGND

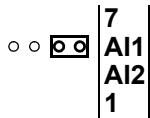


**AI1** – Sélection du signal sur l'entrée analogique AI1 : courant ou tension.

Courant

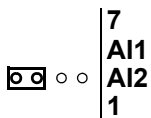


Tension

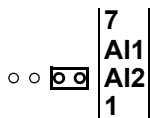


**AI2** – Sélection du signal sur l'entrée analogique AI2 : courant ou tension.

Courant



Tension



**T** – Terminaison de liaison multivariateurs. Réglez sur ON si le variateur est le dernier de la liaison.

ON

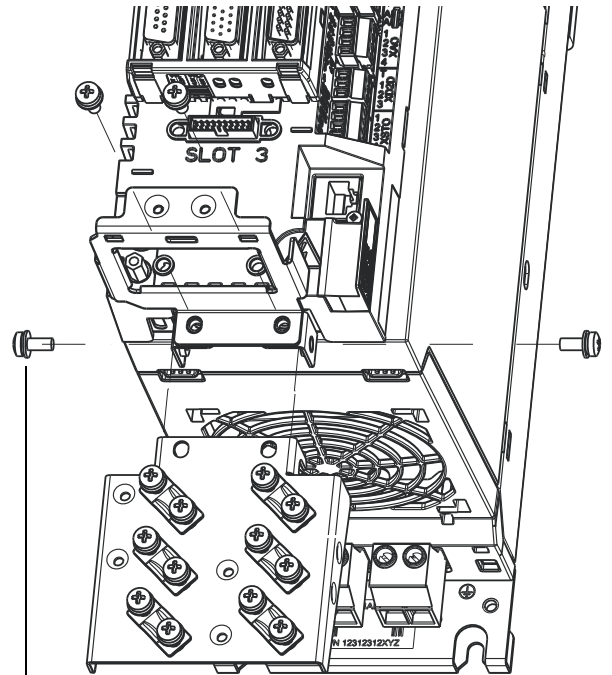


OFF

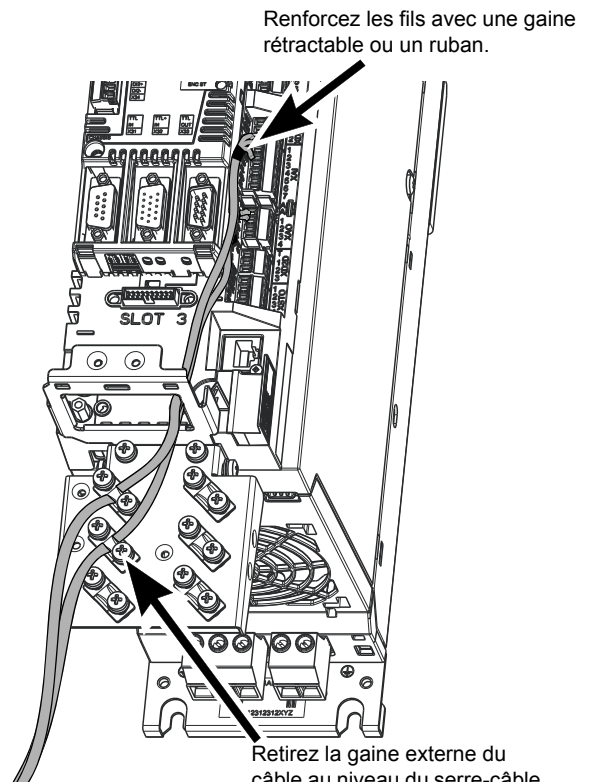


### Montage de la plaque serre-câbles

La plaque serre-câbles peut être fixée sur le haut ou le bas de l'unité de commande JCU.



0,7 Nm (6.2 lbf-in)



Retirez la gaine externe du câble au niveau du serre-câble pour mettre à nu le blindage.  
1,5 Nm (13 lbf-in)

---

Procédez à la mise en route du variateur conformément aux instructions du document anglais *Quick Start-up Guide* correspondant.

---

- Le variateur assure une protection contre les surcharges conforme NEC (*National Electrical Code*). Cf. *Manuel d'exploitation* correspondant pour le réglage des protections contre les surcharges.

## Caractéristiques techniques

### Éléments du marquage UL

- Le variateur ACS850-04 est protégé IP20 (UL type ouvert). Il doit être installé dans un local chauffé, fermé et à environnement contrôlé conforme au degré de protection. L'air de refroidissement doit être propre, exempt d'agents corrosifs et de poussières conductrices. Cf. *Manuel d'installation* pour les spécifications détaillées.
- La température maximale de l'air ambiant est 40 °C (104 °F) à courant nominal. Il y a déclassement du courant entre 40 et 55 °C (104 et 131 °F).
- Le variateur peut être utilisé sur un réseau capable de fournir pas plus de 100 kA efficaces symétriques et 500 V.
- Les câbles situés dans le circuit moteur doivent résister au moins à 75 °C (167 °F) dans des installations conformes UL.
- Le câble réseau doit être protégé par des fusibles ou des disjoncteurs. Pour le calibre des fusibles CEI (classe gG) et UL (classe T), cf. chapitre *Caractéristiques techniques Manuel d'installation*. Pour le calibre des disjoncteurs, contactez votre correspondant ABB.
- Installation aux États-Unis : une protection de dérivation conforme NEC (*National Electrical Code*) et autres réglementations en vigueur doit être prévue. Pour la conformité, utilisez des fusibles homologués UL.
- Installation au Canada : une protection de dérivation conforme CEC (Code électrique canadien) et autres réglementations provinciales en vigueur doit être prévue. Pour la conformité, utilisez des fusibles homologués UL.

## Guida rapida all'installazione – ACS850-04

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### Informazioni sulla guida

Questa guida contiene le informazioni di base per l'installazione meccanica ed elettrica del modulo convertitore ACS850-04 (da 0.37 a 45 kW). Per la documentazione completa, vedere il *Manuale hardware dei moduli convertitore ACS850-04 (da 0.37 a 45 kW)* (cod. 3AUA0000048247).

### Norme di sicurezza

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**AVVERTENZA!** L'installazione elettrica e gli interventi di manutenzione sul convertitore di frequenza devono essere eseguiti solo da elettricisti qualificati.

Non intervenire mai sul convertitore, sul circuito del chopper di frenatura, sul cavo motore o sul motore quando il convertitore è sotto tensione. Verificare sempre che non sia presente tensione.

Un motore a magneti permanenti in rotazione può generare una tensione pericolosa. Bloccare meccanicamente l'albero del motore prima di collegare un motore a magneti permanenti al convertitore di frequenza e prima di effettuare qualsiasi intervento su un azionamento collegato a un motore a magneti permanenti.

### Installazione meccanica

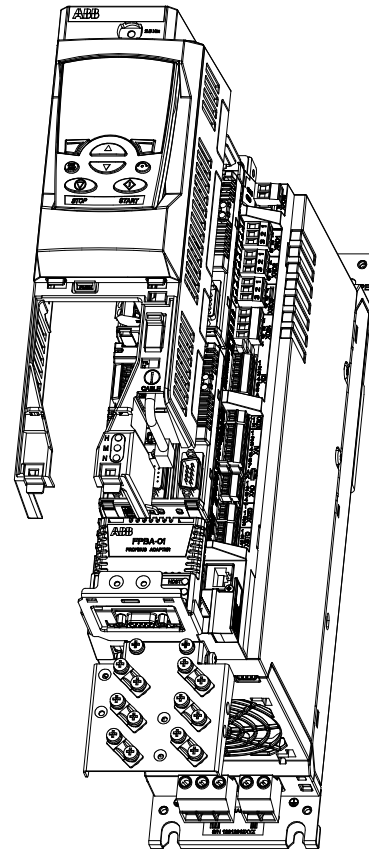
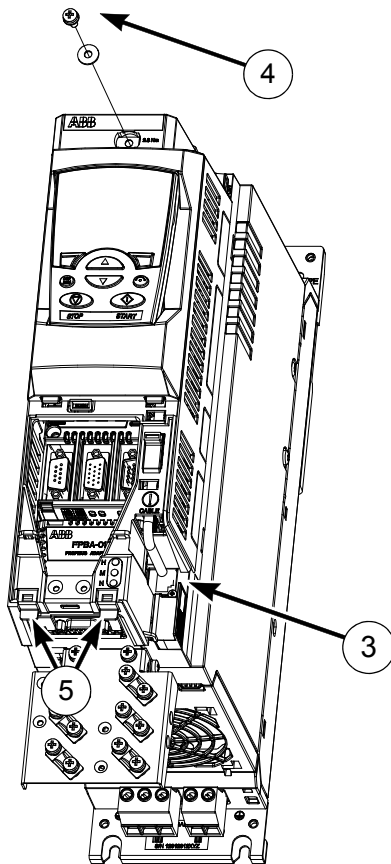
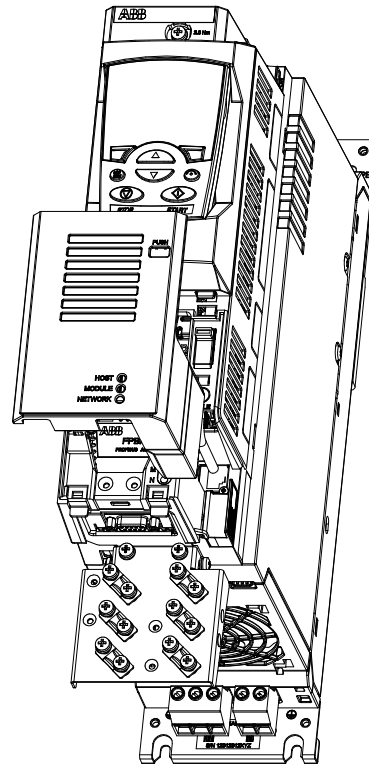
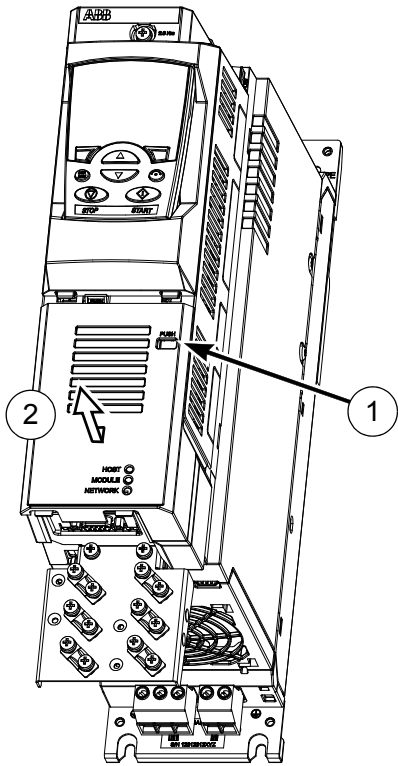
Fissare il convertitore di frequenza alla base di montaggio inserendo delle viti nei quattro fori di montaggio. I telai A e B possono essere montati su guida DIN; tuttavia, si raccomanda fortemente di fissare questi moduli anche alla base di montaggio inserendo due viti nei fori inferiori.

### Rimozione del coperchio

Prima di installare i moduli opzionali e di collegare il cablaggio di controllo, è necessario rimuovere il coperchio. Per rimuovere il coperchio, seguire questa procedura. I numeri fanno riferimento alle illustrazioni.

- Premere delicatamente la linguetta (1) con un cacciavite.
- Far scorrere la parte inferiore del coperchio verso il basso e toglierla (2).
- Scollegare il cavo del pannello (3) se presente.
- Rimuovere la vite (4) in alto sul coperchio.
- Estrarre con cautela la parte inferiore della base mediante le due linguette (5).

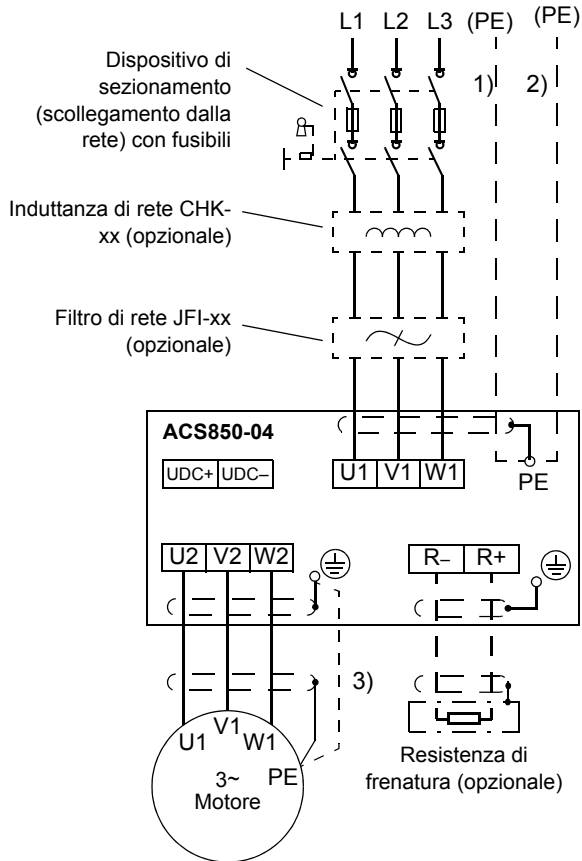
Per reinstallare il coperchio, seguire la procedura in ordine inverso.





## Installazione dei cavi di potenza

### Schema di collegamento



#### Note:

- Se il cavo di alimentazione (ingresso) è schermato e la conduttività della schermatura non è sufficiente (vedere la tabella sottostante), utilizzare un cavo con un conduttore di terra (1) o un cavo PE separato (2).

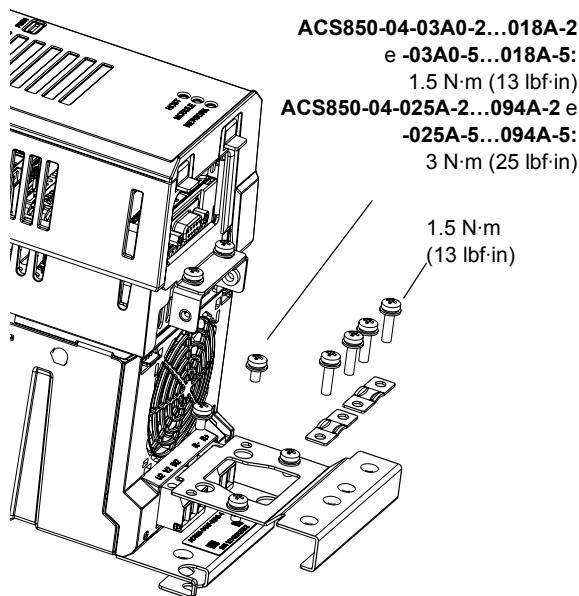
- Per il cablaggio del motore, utilizzare un cavo di terra separato (3) se la conduttività della schermatura del cavo non è sufficiente (vedere la tabella sottostante) e il cavo non ha conduttori di terra simmetrici.

| Sezione di un conduttore di fase (S)       | Sezione minima del conduttore di protezione ( $S_p$ ) |
|--|---|
| $S \leq 16 \text{ mm}^2$                   | S   |
| $16 \text{ mm}^2 < S \leq 35 \text{ mm}^2$ | $16 \text{ mm}^2$                                     |
| $35 \text{ mm}^2 < S$                      | $S/2$   |

## Procedura di collegamento

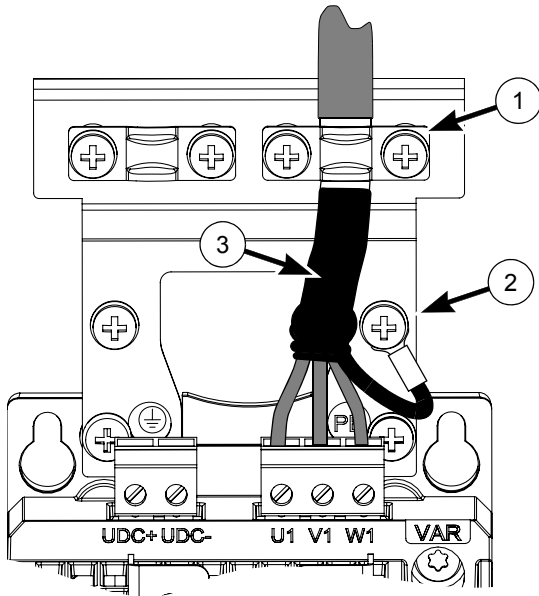
Esempi di cablaggio sono riportati a pag. 47. Le coppie di serraggio sono indicate a pag. 47 e in vari punti all'interno del testo.

- Collegare le morsettiere incluse al convertitore di frequenza.
- Solo ACS850-04-**025A-2...094A-2** e **-025A-5...094A-5**: rimuovere i due coperchi in plastica dei connettori in alto e in basso sul convertitore di frequenza. Ogni coperchio è fissato da due viti.
- In sistemi IT (senza messa a terra) e sistemi TN con una fase a terra, rimuovere le seguenti viti:  
VAR (ACS850-04-**03A0-2...018A-2** e **-03A0-5...018A-5**);  
EMC, VAR1 e VAR2 (ACS850-04-**025A-2...094A-2** e **-025A-5...094A-5**).
- Serrare al convertitore le due piastre fissacavi incluse, una alla sommità e una in basso. Le piastre sono identiche.
- Spellare i cavi di potenza in modo da esporre le schermature in corrispondenza dei fissacavi.
- Collegare i cavi di alimentazione, i cavi della resistenza (se presente) e il cavo motore ai relativi morsetti sul convertitore di frequenza.
- Serrare i fissacavi sulle schermature nude dei cavi. Collegare le estremità delle schermature dei cavi ai morsetti di terra utilizzando dei capicorda. Coprire la parte visibile della schermatura nuda con nastro isolante.
- Solo ACS850-04-**025A-2...094A-2** e **-025A-5...094A-5**: praticare degli intagli sui bordi dei coperchi dei connettori per il passaggio dei cavi. Reinstallare i coperchi.
- Mettere a terra la schermatura del cavo del motore sul lato motore.



Esempi di cablaggio

ACS850-04-03A0-5...018A-5



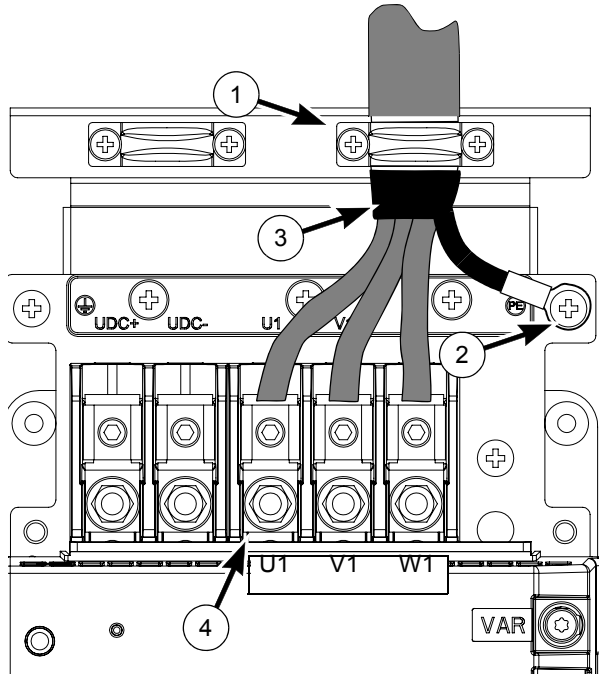
- 1 Fissacavo su schermatura nuda.
- 2 Collegamento PE/terra.
- 3 Tra il fissacavo e i morsetti, coprire la schermatura nuda con nastro isolante.
- 4 Dettaglio del connettore a vite:



Dimensioni dei fili compatibili con i morsetti di potenza

| Convertitore ACS850-04...             | Dimensioni fili            |
|---------------------------------------|----------------------------|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0.25 ... 4 mm <sup>2</sup> |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 0.5 ... 6 mm <sup>2</sup>  |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 6 ... 70 mm <sup>2</sup>   |

ACS850-04-025A-5...094A-5



Copie di serraggio

| Convertitore ACS850-04...             | Morsetti di potenza (cavi alimentazione, motore e resistenza di frenatura)<br>N·m (lbf·in) | Connettore a vite (vite Allen)<br>N·m (lbf·ft) |
|---------------------------------------|--|--|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0.5 ... 0.6 (4.4 ... 5.3)  | //   |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1.2 ... 1.5 (10.6 ... 13.3)  | //   |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 3 (25)   | 15 (11)  |

| Convertitore ACS850-04...             | Morsetti PE/terra<br>N·m (lbf·in) | Fissacavi di potenza<br>N·m (lbf·in) | Coperchi connettori aliment.<br>N·m (lbf·in) |
|---------------------------------------|-----------------------------------|--------------------------------------|--|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 1.5 (13)                          | 1.5 (13)                             | //   |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1.5 (13)                          | 1.5 (13)                             | //   |
| -025A-2...050A-2,<br>-025A-5...050A-5 | 3 (25)                            | 1.5 (13)                             | 3 (25)                                       |
| -061A-2...094A-2,<br>-061A-5...094A-5 | 18 (160)                          | 1.5 (13)                             | 3 (25)                                       |

# Installazione dei cavi di controllo

## Schema di collegamento degli I/O di default

**Note:**

[Impostazione di default con il Programma di controllo standard dell'ACS850 (macro Fabbrica). Vedere il *Manuale firmware* per le altre macro.]

\*Corrente totale massima: 200 mA

Il cablaggio illustrato ha esclusivo scopo dimostrativo. Per le impostazioni dei ponticelli, vedere il testo.

**Dimensioni fili e coppie di serraggio:**


**XPOW, XRO1, XRO2, XRO3, XD24:**


0.5 ... 2.5 mm<sup>2</sup> (24...12 AWG). Coppia: 0.5 N-m (5 lbf-in)


**XDI, XDIO, XAI, XAO, XD2D, XSTO:**


0.5 ... 1.5 mm<sup>2</sup> (28...14 AWG). Coppia: 0.3 N-m (3 lbf-in)


**Ordine di testate morsetti e ponticelli**

 XPOW  
(2 poli, 2.5 mm<sup>2</sup>)


 XRO1  
(3 poli, 2.5 mm<sup>2</sup>)

 XRO2  
(3 poli, 2.5 mm<sup>2</sup>)


 XRO3  
(3 poli, 2.5 mm<sup>2</sup>)


 XD24  
(4 poli, 2.5 mm<sup>2</sup>)


Selez. messa a terra DI/DIO


 XDI  
(7 poli, 1.5 mm<sup>2</sup>)


 XDIO  
(2 poli, 1.5 mm<sup>2</sup>)


 XAI  
(7 poli, 1.5 mm<sup>2</sup>)

 AI1, AI2

 XAO  
(4 poli, 1.5 mm<sup>2</sup>)

 T

 XD2D  
(3 poli, 1.5 mm<sup>2</sup>)

 XSTO (arancione)  
(4 poli, 1.5 mm<sup>2</sup>)

|  |       |   |
|--|-------|---|
| Alimentazione esterna<br>24 Vcc, 1.6 A | +24VI | 1 |
|  | GND   | 2 |

|  |     |   |
|--|-----|---|
| Uscita relè RO1 [Pronto]<br>250 Vca / 30 Vcc<br>2 A      | NO  | 1 |
|  | COM | 2 |
|  | NC  | 3 |
| Uscita relè RO2 [Modulazione]<br>250 Vca / 30 Vcc<br>2 A | NO  | 4 |
|  | COM | 5 |
|  | NC  | 6 |
| Uscita relè RO3 [Guasto(-1)]<br>250 Vca / 30 Vcc<br>2 A  | NO  | 7 |
|  | COM | 8 |
|  | NC  | 9 |

|  |        |   |
|--|--------|---|
| +24 Vcc*                                     | +24VD  | 1 |
| Terra ingressi digitali                      | DIGND  | 2 |
| +24 Vcc*                                     | +24VD  | 3 |
| Terra ingressi/uscite digitali               | DIOGND | 4 |
| Ponticelli di selezione messa a terra DI/DIO |        |   |

|   |      |   |
|---|------|---|
| Ingresso digitale DI1 [Arresto/Marcia]      | DI1  | 1 |
| Ingresso digitale DI2                       | DI2  | 2 |
| Ingresso digitale DI3 [Reset]               | DI3  | 3 |
| Ingresso digitale DI4                       | DI4  | 4 |
| Ingresso digitale DI5                       | DI5  | 5 |
| Ingresso digitale DI6 o ingresso termistore | DI6  | 6 |
| Interblocco marcia (0 = arresto)            | DIIL | A |

|   |      |   |
|---|------|---|
| Ingresso/uscita digitale DIO1 [Uscita: pronto]    | DIO1 | 1 |
| Ingresso/uscita digitale DIO2 [Uscita: in marcia] | DIO2 | 2 |

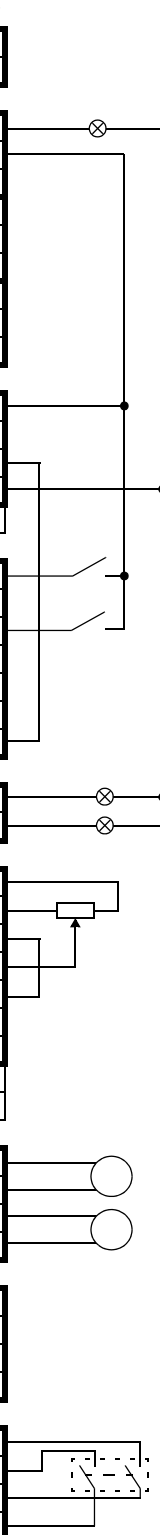
|   |       |   |
|---|-------|---|
| Tensione di riferimento (+)   | +VREF | 1 |
| Tensione di riferimento (-)   | -VREF | 2 |
| Terra   | AGND  | 3 |
| Ingresso analogico AI1 (corrente o tensione, selezionabile con ponticello AI1) [Riferimento velocità 1] | AI1+  | 4 |
|   | AI1-  | 5 |
| Ingresso analogico AI2 (corrente o tensione, selezionabile con ponticello AI2)                          | AI2+  | 6 |
|   | AI2-  | 7 |
| Ponticello di selezione corrente/tensione AI1   |       |   |
| Ponticello di selezione corrente/tensione AI2   |       |   |

|                                   |      |   |
|-----------------------------------|------|---|
| Uscita analogica AO1 [Corrente %] | AO1+ | 1 |
|                                   | AO1- | 2 |
| Uscita analogica AO2 [Velocità %] | AO2+ | 3 |
|                                   | AO2- | 4 |

|  |      |   |
|--|------|---|
| Ponticello terminazione collegamento drive-to-drive              | T    |   |
| Collegamento drive-to-drive o interfaccia bus di campo integrato | B    | 1 |
|  | A    | 2 |
|  | BGND | 3 |

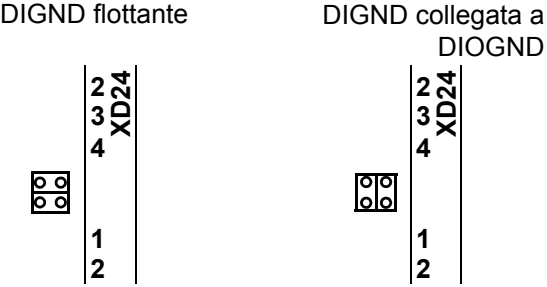
|  |      |   |
|--|------|---|
| Safe Torque Off. Per avviare il convertitore entrambi i circuiti devono essere chiusi. | OUT1 | 1 |
|  | OUT2 | 2 |
|  | IN1  | 3 |
|  | IN2  | 4 |

Collegamento pannello di controllo  
Collegamento unità di memoria

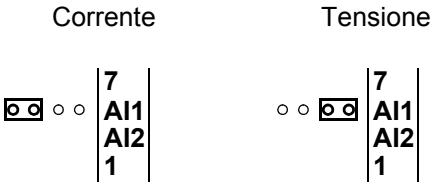


- Impostare i ponticelli sull'unità di controllo nella posizione corretta:

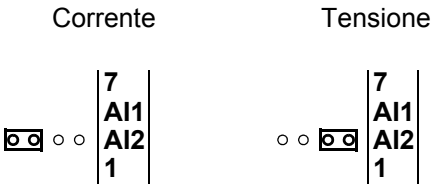
**Selezione messa a terra DI/DIO** – Situato tra XD24 e XDI. Determina se DIGND (terra per DI1...DI5) è flottante, o se è collegata a DIOGND (terra per DI6, DIO1 e DIO2). Se DIGND è flottante, il comune di DI1...DI5 (GND o  $V_{CC}$ ) deve essere collegato a XD24:2.



**AI1** – Determina se l'ingresso analogico AI1 viene utilizzato come ingresso di corrente o di tensione.



**AI2** – Determina se l'ingresso analogico AI2 viene utilizzato come ingresso di corrente o di tensione.

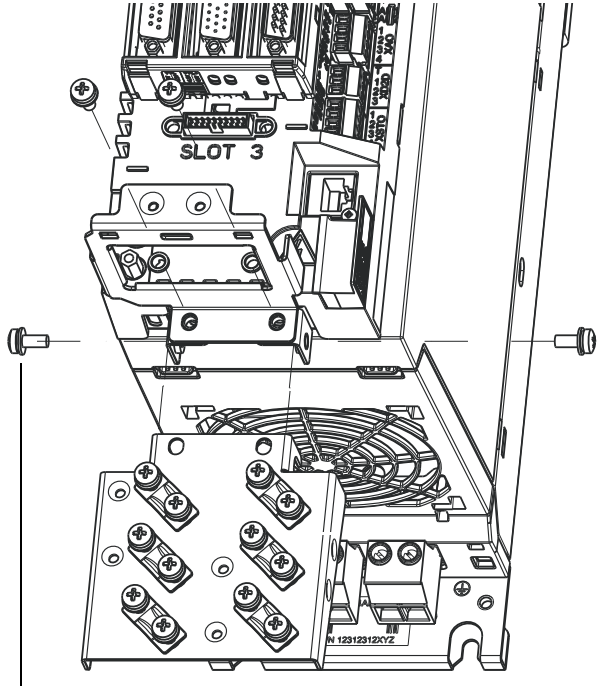


**T** – Terminazione collegamento drive-to-drive. Impostare su ON se il convertitore è l'ultima unità del collegamento.



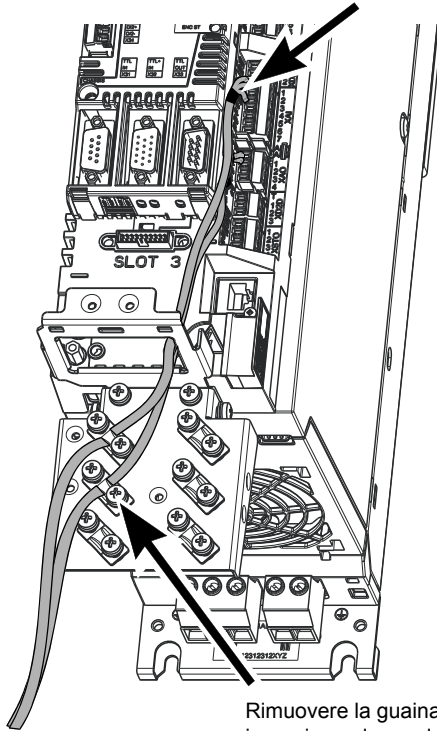
**Montaggio della piastra fissacavi**

La piastra fissacavi può essere fissata alla parte superiore o inferiore dell'unità di controllo JCU.



0.7 N·m (6.2 lbf·in)

Avvolgere i filamenti di cavo con guaina termorestringente o nastro isolante



Rimuovere la guaina esterna del cavo in corrispondenza del fissacavo per esporre la schermatura  
1.5 N·m (13 lbf·in)

---

Continuare l'avviamento del convertitore seguendo le istruzioni contenute nella relativa *Guida rapida all'avviamento*.

---

## Dati tecnici

### Checklist UL

- L'ACS850-04 è un convertitore di frequenza IP20 (UL tipo aperto) che va utilizzato in ambienti chiusi, riscaldati e controllati. Il convertitore deve essere installato in un luogo con aria pulita secondo la classificazione dell'armadio. L'aria di raffreddamento deve essere pulita, priva di materiali corrosivi e di polveri elettricamente conduttive. Per le specifiche dettagliate, vedere il *Manuale hardware*.
- La temperatura massima dell'aria ambiente è di 40 °C (104 °F) alla corrente nominale. La corrente viene declassata per temperature comprese tra 40 e 55 °C (104-131 °F).
- Il convertitore è idoneo per essere utilizzato su circuiti in grado di produrre non oltre 100.000 ampere simmetrici rms, massimo 500 V.
- I cavi situati all'interno del circuito del motore devono essere approvati almeno per 75 °C (167 °F) in installazioni conformi a UL.
- Il cavo di ingresso deve essere protetto con fusibili o interruttori automatici. I fusibili idonei IEC (classe gG) e UL (classe T) sono elencati nella sezione *Dati tecnici* del *Manuale hardware*. Per gli interruttori automatici idonei, contattare il rappresentante ABB locale.
- Per l'installazione negli Stati Uniti, la protezione dei circuiti di derivazione deve essere conforme al National Electrical Code (NEC) e alle normative locali applicabili. Per soddisfare questo requisito, utilizzare fusibili classificati UL.
- Per l'installazione in Canada, la protezione dei circuiti di derivazione deve essere conforme al Canadian Electrical Code e alle

normative locali applicabili. Per soddisfare questo requisito, utilizzare fusibili classificati UL.

- Il convertitore di frequenza fornisce la protezione da sovraccarico in conformità al National Electrical Code (NEC). Per le impostazioni della protezione da sovraccarico, vedere il *Manuale firmware*.

## Beknopte installatiegids - ACS850-04

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### Inleiding

Deze gids bevat de basis-informatie over de mechanische en elektrische installatie van de omvormermodule ACS850-04 (0,37 tot 45 kW). Zie voor de volledige documentatie *ACS850-04 Drive Modules (0.37 to 45 kW) Hardware Manual* (code: 3AUA0000045496 [Engels]).

### Veiligheidsvoorschriften

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**WAARSCHUWING!** Alle werkzaamheden wat betreft elektrische installatie en onderhoud van de omvormer mogen alleen door gekwalificeerde elektriciens uitgevoerd worden.

Voer nooit werkzaamheden uit aan de omvormer, het remchoppercircuit, de motorkabel of de motor wanneer de omvormer onder spanning staat. Verzekert u er altijd van dat er geen spanning aanwezig is door meting.

Een draaiende permanentmagneetmotor kan een gevaarlijke spanning genereren. Vergrendel de motoras mechanisch alvorens een permanentmagneetmotor op de omvormer aan te sluiten, en alvorens werkzaamheden uit te voeren aan een omvormersysteem waarop een permanentmagneetmotor aangesloten is.

### Mechanische installatie

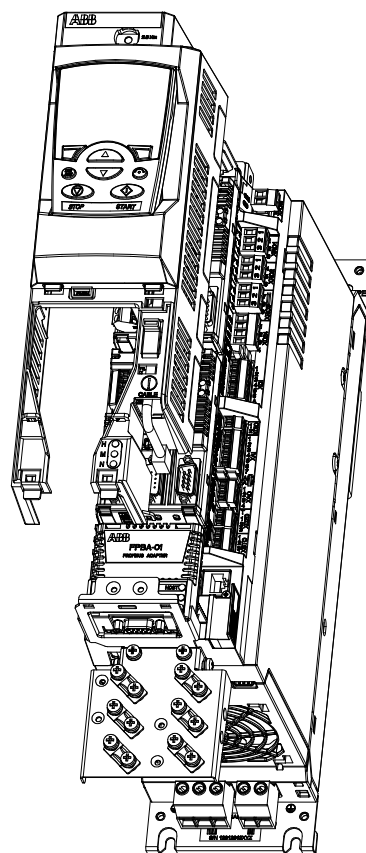
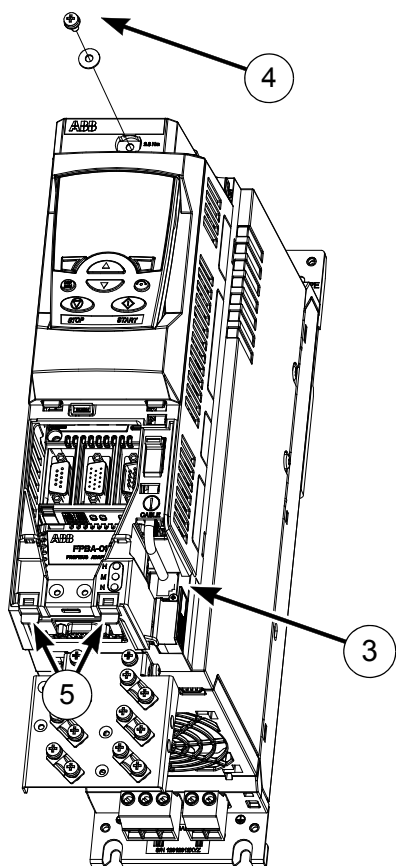
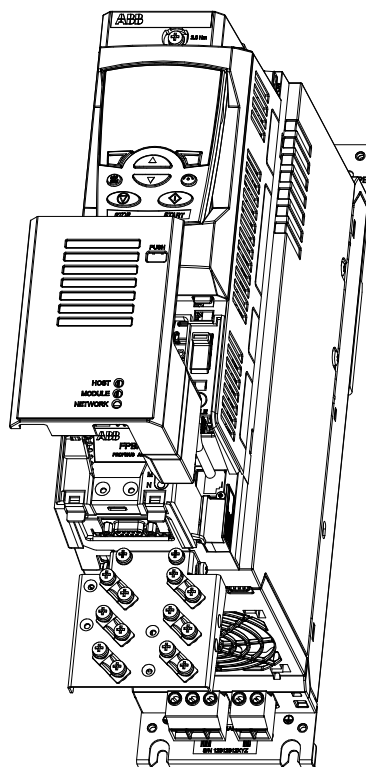
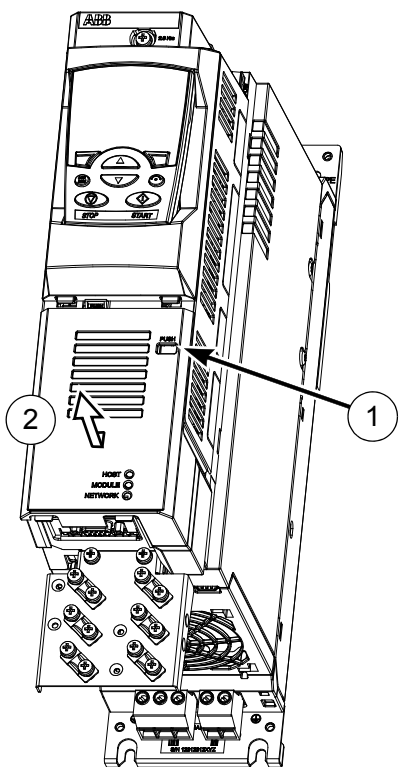
Bevestig de omvormermodule aan het montagevlak met schroeven via de vier montage gaten. Frame A en B kunnen op een DIN rail gemonteerd worden; het is echter zeer aanbevolen om deze modules ook met twee schroeven via de onderste montagegaten aan het montagevlak te bevestigen.

### Verwijderen van het kappenstelsel

De kappen dienen verwijderd te worden voordat de optionele modules geïnstalleerd worden en de besturingskabels aangesloten worden. Volg deze procedure om de kappen te verwijderen. De cijfers verwijzen naar onderstaande illustraties.

- Druk lichtjes met een schroevendraaier op het lipje (1).
- Schuif het onderste deel van de kap iets naar beneden en neem deze af (2).
- Ontkoppel de kabel van het bedieningspaneel (3) indien aanwezig.
- Verwijder de schroef (4) aan de bovenkant van het kappenstelsel.
- Trek voorzichtig het onderste deel van de basisconstructie naar buiten met de twee trekclipjes (5).

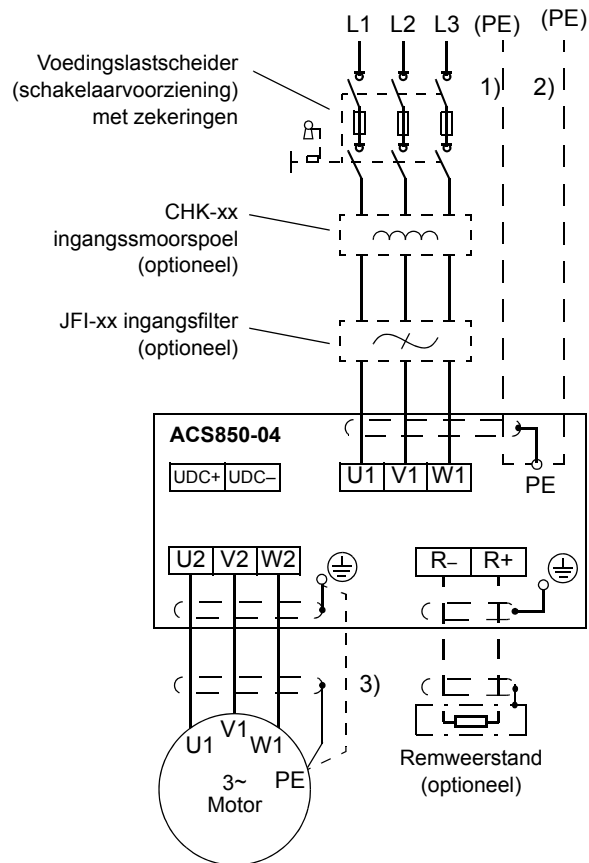
Plaats de kap weer terug in de omgekeerde volgorde van bovenstaande procedure.





# Installeren van de vermogenskabels

## Aansluitschema



### Opmerkingen:

- Als afgeschermd voedingskabel gebruikt wordt, en de conductiviteit van de afscherming niet voldoende is (zie onderstaande tabel), gebruik dan een kabel met een aardgeleider (1) of een aparte PE-kabel (2).
- Gebruik voor de motorkabels een aparte aardkabel (3) als de conductiviteit van de kabelafscherming niet voldoende is (zie onderstaande tabel) en de kabel geen symmetrische aardgeleiders heeft.

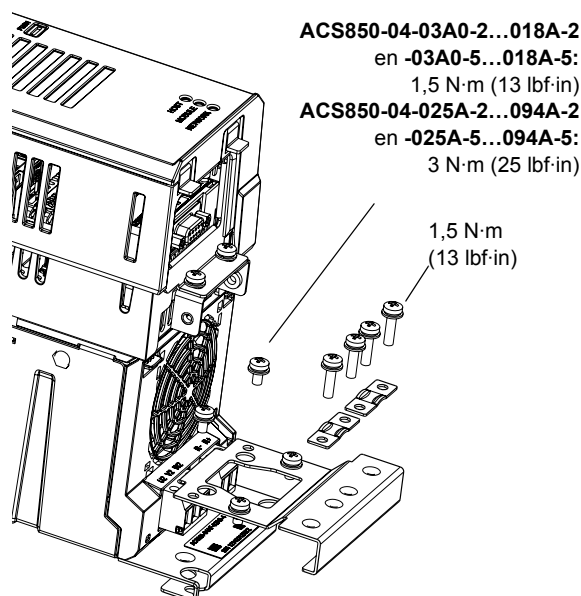
| Doorsnede van één fasegeleider (S)         | Minimum doorsnede van veiligheidsgeleider (S <sub>p</sub> ) |
|--|---|
| $S \leq 16 \text{ mm}^2$                   | Z   |
| $16 \text{ mm}^2 < S \leq 35 \text{ mm}^2$ | 16 mm <sup>2</sup>  |
| $35 \text{ mm}^2 < S$                      | S/2   |

## Aansluitprocedure

Voorbeelden van bekabeling zijn te vinden op pagina 55. Aandraaimomenten zijn te vinden op pagina 55 en op de betreffende punten in de tekst.

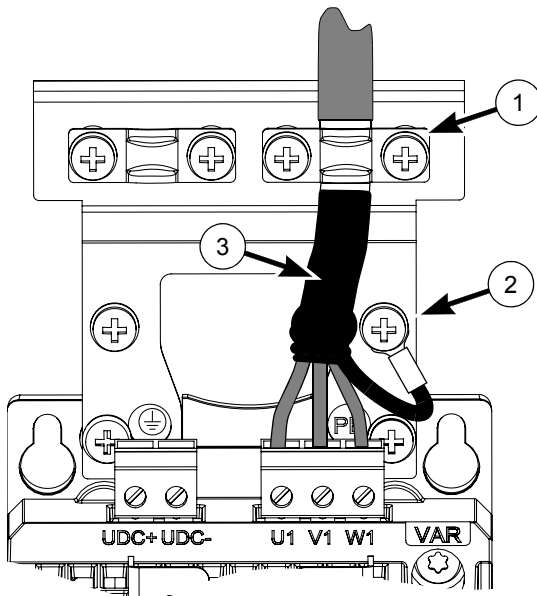
- Bevestig de meegeleverde aansluitklemmen op de omvormer.
- Alleen voor ACS850-04-**025A-2...094A-2** en **-025A-5...094A-5** : Verwijder de twee plastic connector-afschermkapjes aan de bovenzijde en onderzijde van de omvormer. Elk afschermkapje is met twee schroeven bevestigd.
- Verwijder bij IT- (ongeaarde) systemen en hoekgeaarde TN systemen, de volgende schroeven:  
VAR (ACS850-04-**03A0-2...018A-2** en **-03A0-5...018A-5**);  
EMC, VAR1 en VAR2 (ACS850-04-**025A-2...094A-2** en **-025A-5...094A-5**).
- Bevestig de twee meegeleverde kabelafmontageplaten op de omvormer, eentje boven, de ander onder. De klemplaten zijn identiek.

- Strip de mantel van de vermogenskabels zodat de afschermingen bij de kabelklemmen blootliggen.
- Sluit de voedings-, weerstands- (indien aanwezig) en motorkabels aan op de betreffende aansluitklemmen van de omvormer.
- Maak de kabelklemmen vast op de ontblote kabelafschermingen. Sluit de einden van de kabelafschermingen met kabelschoenen aan op de aardklemmen. Bedek zichtbaar ontblote afscherming met isolatietape.
- Alleen voor ACS850-04-**025A-2...094A-2** en **-025A-5...094A-5**: Snijd voldoende ruimte weg in de uitsparingen van de afschermkapjes zodat er ruimte is voor de kabels. Plaats de kapjes terug.
- Aard de motorkabelafscherming aan de motorzijde.



## Voorbeelden van bekabeling

ACS850-04-03A0-5...018A-5



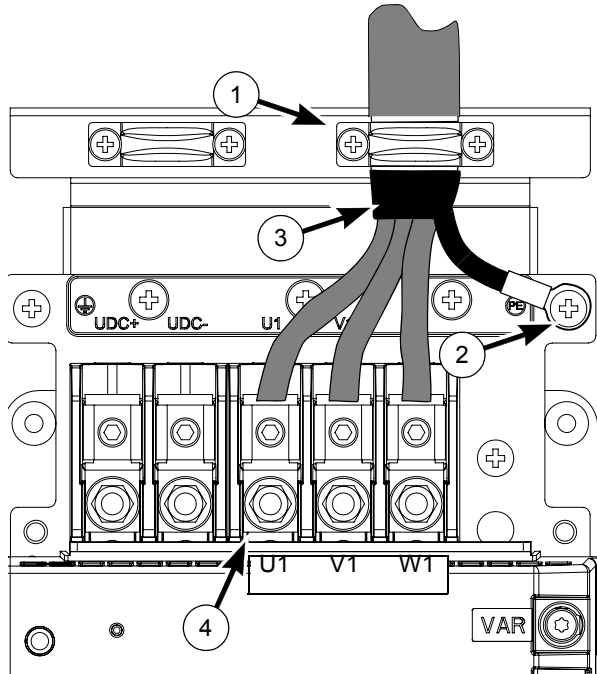
- 1 Kabelklem op ontblote afscherming.
- 2 PE/Aardaansluiting.
- 3 Voorzie ontblote afscherming tussen kabelklem en aansluitklemmen van isolatietape.
- 4 Detail schroefschoen:



## Geleider-afmetingen van vermogensklemmen

| Omvormertype ACS850-04...             | Aderdiameter               |
|---------------------------------------|----------------------------|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0,25 ... 4 mm <sup>2</sup> |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 0,5 ... 6 mm <sup>2</sup>  |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 6 ... 70 mm <sup>2</sup>   |

ACS850-04-025A-5...094A-5



## Aanhaalmomenten

| Omvormertype ACS850-04...             | Vermogensklemmen<br>(voedings-, motor-, en<br>remweerstandskabels)<br>N·m (lbf·in) | Schroef-<br>schoen<br>(inbusschroef)<br>N·m (lbf·ft) |
|---------------------------------------|--|--|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0,5 ... 0,6 (4,4 ... 5,3)  | n,v,t  |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1,2 ... 1,5 (10,6 ... 13,3)  | n,v,t  |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 3 (25)   | 15 (11)  |

| Omvormertype ACS850-04...             | PE/Aard-<br>klemmen<br>N·m (lbf·in) | Vermogens-<br>kabel-<br>klemmen<br>N·m (lbf·in) | Vermogens-<br>connector-<br>afscherm-<br>kapjes<br>N·m (lbf·in) |
|---------------------------------------|-------------------------------------|---|---|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 1,5 (13)                            | 1,5 (13)  | n,v,t   |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1,5 (13)                            | 1,5 (13)  | n,v,t   |
| -025A-2...050A-2,<br>-025A-5...050A-5 | 3 (25)                              | 1,5 (13)  | 3 (25)  |
| -061A-2...094A-2,<br>-061A-5...094A-5 | 18 (160)                            | 1,5 (13)  | 3 (25)  |

# Installeren van de besturingskabels

## Standaard I/O-aansluitschema

**Opmerkingen:**

[Standaard instelling bij ACS850  
Standaard Besturingsprogramma  
(fabrieksmacro). Zie  
*Firmwarehandleiding* voor overige  
macro's.]

\*Totale maximumstroom: 200 mA

De getoonde bedrading is alleen ter  
illustratie. Voor de jumper-instellingen:  
zie tekst.

**Geleiderafmetingen en  
andraaimomenten:**

**XPOW, XRO1, XRO2, XRO3, XD24:**  
0.5 ... 2.5 mm<sup>2</sup> (24...12 AWG). Moment:  
0.5 N·m (5 lbf·in)

**XDI, XDIO, XAI, XAO, XD2D, XSTO:**  
0.5 ... 1.5 mm<sup>2</sup> (28...14 AWG). Moment:  
0.3 N·m (3 lbf·in)

**Volgorde van klemaanduidingen en  
jumpers**

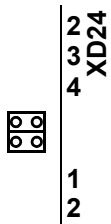
- XPOW  
(2-polig, 2.5 mm<sup>2</sup>)
- XRO1  
(3-polig, 2.5 mm<sup>2</sup>)
- XRO2  
(3-polig, 2.5 mm<sup>2</sup>)
- XRO3  
(3-polig, 2.5 mm<sup>2</sup>)
- XD24  
(4-polig, 2.5 mm<sup>2</sup>)
- Kiezen van DI/DIO aarding
- XDI  
(7-polig, 1.5 mm<sup>2</sup>)
- XDIO  
(2-polig, 1.5 mm<sup>2</sup>)
- XAI  
(7-polig, 1.5 mm<sup>2</sup>)
- AI1, AI2
- XAO  
(4-polig, 1.5 mm<sup>2</sup>)
- T
- XD2D  
(3-polig, 1.5 mm<sup>2</sup>)
- XSTO (oranje)  
(4-polig, 1.5 mm<sup>2</sup>)

|   |        |             |  |
|---|--------|-------------|--|
|   |        | <b>XPOW</b> |  |
| Externe hulpspanningsingang<br>24 V DC, 1,6 A   | +24VI  | 1           |  |
|   | GND    | 2           |  |
| <b>XRO1, XRO2, XRO3</b>   |        |             |  |
| Relaisuitgang RO1 [Gereed]<br>250 V AC / 30 V DC<br>2 A                                       | NO     | 1           |  |
|   | COM    | 2           |  |
|   | NC     | 3           |  |
| Relaisuitgang RO2 [Modulerend]<br>250 V AC / 30 V DC<br>2 A                                   | NO     | 4           |  |
|   | COM    | 5           |  |
|   | NC     | 6           |  |
| Relaisuitgang RO3 [Fout (-1)]<br>250 V AC / 30 V DC<br>2 A                                    | NO     | 7           |  |
|   | COM    | 8           |  |
|   | NC     | 9           |  |
| <b>XD24</b>   |        |             |  |
| +24 V DC*   | +24VD  | 1           |  |
| Aarde digitale ingang   | DIGND  | 2           |  |
| +24 V DC*   | +24VD  | 3           |  |
| Aarde digitale ingang/uitgang   | DIOGND | 4           |  |
| DI/DIO aarding selectie jumpers   |        |             |  |
| <b>XDI</b>  |        |             |  |
| Digitale ingang DI1 [Stop/Start]  | DI1    | 1           |  |
| Digitale ingang DI2   | DI2    | 2           |  |
| Digitale ingang DI3 [Reset]   | DI3    | 3           |  |
| Digitale ingang DI4   | DI4    | 4           |  |
| Digitale ingang DI5   | DI5    | 5           |  |
| Digitale ingang DI6 of thermistor-ingang  | DI6    | 6           |  |
| Start-blokking (0 = Stop)   | DIIL   | A           |  |
| <b>XDIO</b>   |        |             |  |
| Digitale ingang/uitgang DIO1 [Uitgang: Gereed]  | DIO1   | 1           |  |
| Digitale ingang/uitgang DIO2 [Uitgang: In bedrijf]  | DIO2   | 2           |  |
| <b>XAI</b>  |        |             |  |
| Referentiespanning (+)  | +VREF  | 1           |  |
| Referentiespanning (-)  | -VREF  | 2           |  |
| Aarde   | AGND   | 3           |  |
| Analoge ingang AI1 (Stroom of spanning, te kiezen door jumper AI1)<br>[Toerentalreferentie 1] | AI1+   | 4           |  |
|   | AI1-   | 5           |  |
| Analoge ingang AI2 (Stroom of spanning, te kiezen door jumper AI2)                            | AI2+   | 6           |  |
|   | AI2-   | 7           |  |
| AI1 stroom/spanning selectiejumper  | AI1    |             |  |
| AI2 stroom/spanning selectiejumper  | AI2    |             |  |
| <b>XAO</b>  |        |             |  |
| Analoge uitgang AO1 [Stroom %]  | AO1+   | 1           |  |
|   | AO1-   | 2           |  |
| Analoge uitgang AO2 [Toerental %]   | AO2+   | 3           |  |
|   | AO2-   | 4           |  |
| <b>XD2D</b>   |        |             |  |
| Afsluitingjumper drive-to-drive link  | T      |             |  |
| Drive-to-drive link of Interne veldbus interface  | B      | 1           |  |
|   | A      | 2           |  |
|   | BGND   | 3           |  |
| <b>XSTO</b>   |        |             |  |
| Safe torque off. Beide circuits moeten gesloten zijn voordat de<br>omvormer kan starten.      | OUT1   | 1           |  |
|   | OUT2   | 2           |  |
|   | IN1    | 3           |  |
|   | IN2    | 4           |  |
| Aansluiting bedieningspaneel  |        |             |  |
| Aansluiting geheugenunit  |        |             |  |

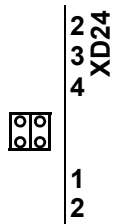
- Zet de jumpers op de besturingsunit in de juiste positie:

**Keuze DI/DIO aarding** – Bevindt zich tussen XD24 en XDI. Bepaalt of DIGND (aarde voor DI1...DI5) zweeft, of dat deze aangesloten is op DIOGND (aarde voor DI6, DIO1 en DIO2). Als DIGND zweeft, dient de gemeenschappelijke aarde van DI1...DI5 (ofwel GND of V<sub>CC</sub>) aangesloten te worden op XD24:2.

DIGND zweeft

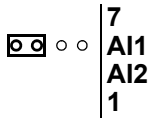


DIGND verbonden met DIOGND

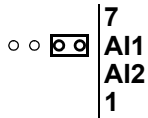


**AI1** – Bepaalt of Analoge ingang AI1 wordt gebruikt als een stroom- of spanningsingang.

Stroom

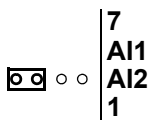


Spanning

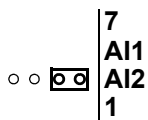


**AI2** – Bepaalt of Analoge ingang AI2 wordt gebruikt als een stroom- of spanningsingang.

Stroom



Spanning



**T** – Afsluiting drive-to-drive verbinding. Stel in op AAN als de omvormer de laatste unit is van de verbinding.

AAN

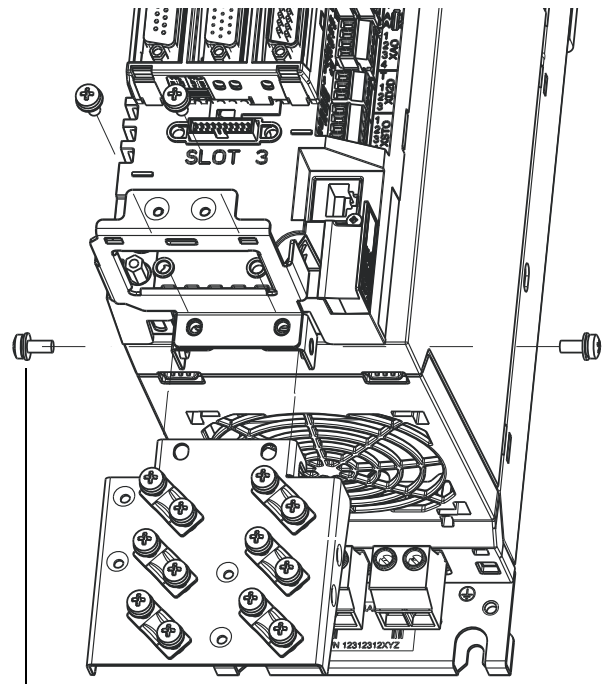


UIT

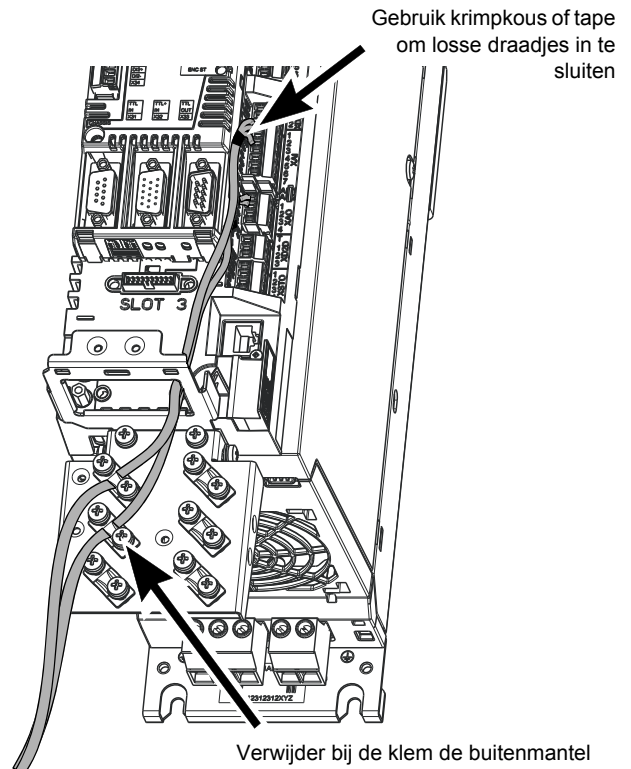


### Monteren van de klemplaat

De klemplaat voor besturingskabels kan bevestigd worden aan de bovenkant of de onderkant van de JCU besturingsunit.



0,7 N·m (6,2 lbf-in)



Verwijder bij de klem de buitenmantel van de kabel om de kabelafscherming te ontbloten  
1,5 N·m (13 lbf-in)

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Ga verder met het opstarten van de omvormer volgens de instructies in de betreffende *Beknopte Opstartgids*.

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## Technische gegevens

### UL controlelijst

- De ACS850-04 is een IP20 (UL open type) omvormer voor gebruik in een verwarmde, gecontroleerde binnenomgeving. De omvormer moet in schone omgevingslucht worden geïnstalleerd conform de behuizingsclassificatie. De koellucht moet schoon, vrij van corrosieve materialen en van elektrisch geleidend stof zijn. Zie de *Hardware handleiding* voor verdere specificaties.
- De maximum omgevingsluchttemperatuur is 40 °C (104 °F) bij nominale stroom. De stroom dient gereduceerd te worden voor bedrijf bij 40 tot 55 °C (104 tot 131 °F).
- De omvormer is geschikt voor gebruik in een voedingscircuit dat niet meer kan leveren dan 100.000 rms symmetrische ampère, 500 V maximum.
- De kabels binnen het motorcircuit moeten bestand zijn tegen tenminste 75 °C (167 °F) in UL-goedgekeurde installaties.
- De ingangskabel moet beveiligd zijn met zekeringen of automaten. Geschikte IEC (klasse gG) en UL (klasse T) zekeringen zijn terug te vinden in de sectie *Technische gegevens* van de *Hardware handleiding*. Neem voor geschikte automaten contact op met uw plaatselijke ABB-vertegenwoordiger.
- Voor installatie in de Verenigde Staten moet worden voorzien in stroomkringbeveiliging volgens de National Electrical Code (NEC) en alle van toepassing zijnde plaatselijke voorschriften. Gebruik de UL-geclassificeerde zekeringen om aan deze eis te voldoen.
- Voor installatie in Canada, moet worden voorzien in stroomkringbeveiliging volgens

de Canadian Electrical Code en eventueel van toepassing zijnde provinciale codes. Gebruik de UL-geclassificeerde zekeringen om aan deze eis te voldoen.

- De omvormer voorziet in overbelastingsbeveiliging volgens de National Electrical Code (NEC). Zie de betreffende *Firmware handleiding* voor de instellingen van de overbelastingsbeveiliging.

## Guia de instalação rápida - ACS850-04

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### Sobre este guia

Este guia contém informações básicas sobre a instalação mecânica e elétrica do módulo de inversor ACS850-04 (0,37 a 45 kW). Para ver a documentação completa, consulte o *Manual de Hardware dos Módulos de Inversor ACS850-04 (0,37 a 45 kW)* (código: 3AUA0000045496 [Inglês]).

### Instruções de segurança

---



**ADVERTÊNCIA!** Todo o trabalho de instalação e manutenção elétrica na inversor deve ser realizado apenas por eletricitistas qualificados.

Nunca trabalhe no inversor, no circuito do chopper de frenagem, no cabo do motor ou no motor quando a energia de entrada estiver ligada no inversor. Sempre faça medições para confirmar que não há tensão.

Um motor ímã permanente em rotação pode gerar tensão perigosa. Bloqueie o eixo do motor mecanicamente antes de conectar um motor ímã permanente ao inversor e antes de realizar qualquer trabalho em um sistema de inversor conectado a um motor ímã permanente.

### Instalação mecânica

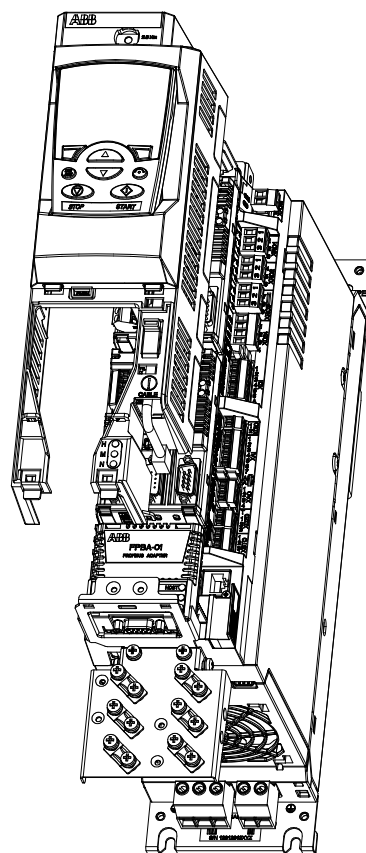
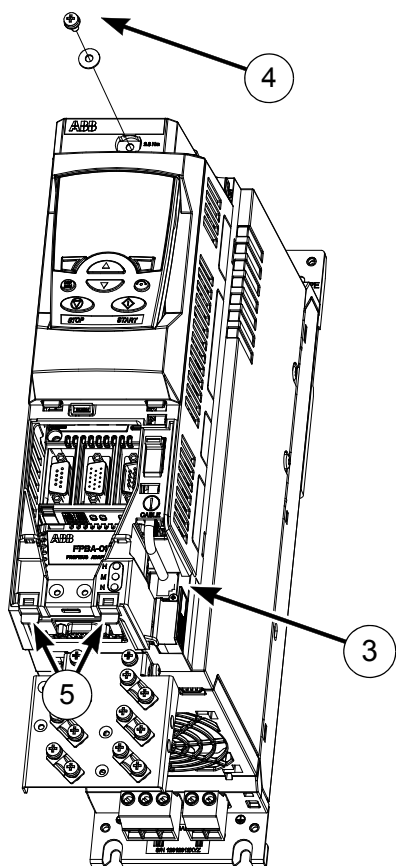
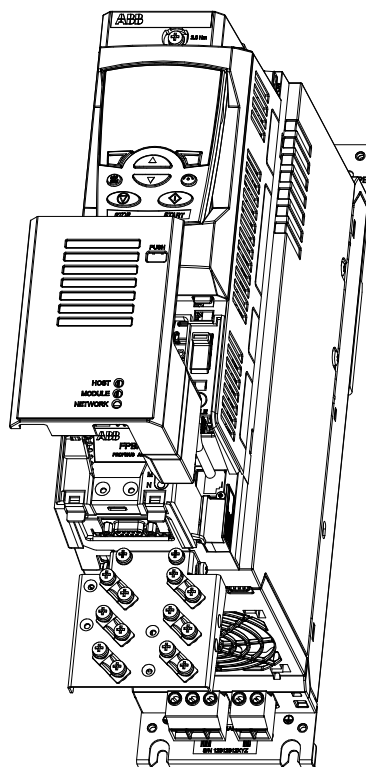
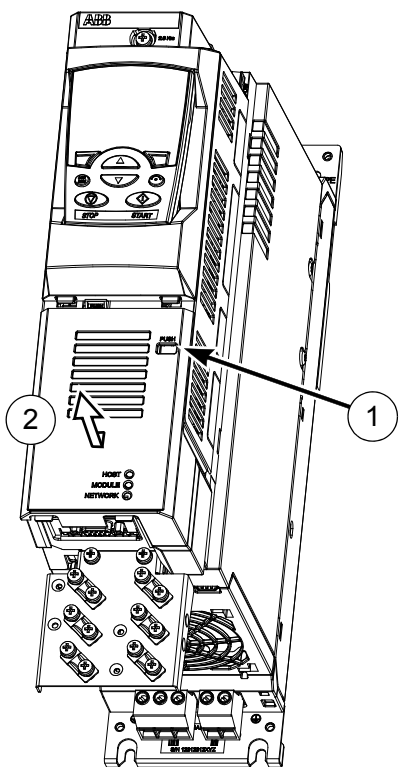
Prenda o módulo do inversor à base de montagem usando parafusos através dos quatro furos de montagem. As carcaças A e B podem ser montadas em trilho DIN; contudo, é altamente recomendável prender também esses módulos à base de montagem com dois parafusos através dos furos de montagem inferiores.

### Remoção do conjunto da tampa

O conjunto da tampa deve ser removido antes da instalação dos módulos opcionais e a conexão do cabeamento de controle. Siga este procedimento para remover o conjunto da tampa. Os números se referem às ilustrações abaixo.

- Pressione a aba (1) levemente com uma chave de fenda.
- Deslize a placa da tampa inferior levemente para baixo e puxe para fora (2).
- Desconecte o cabo do painel (3) se estiver presente.
- Remova o parafuso (4) no alto do conjunto da tampa.
- Cuidadosamente puxe a parte inferior da base para fora utilizando as duas abas (5).

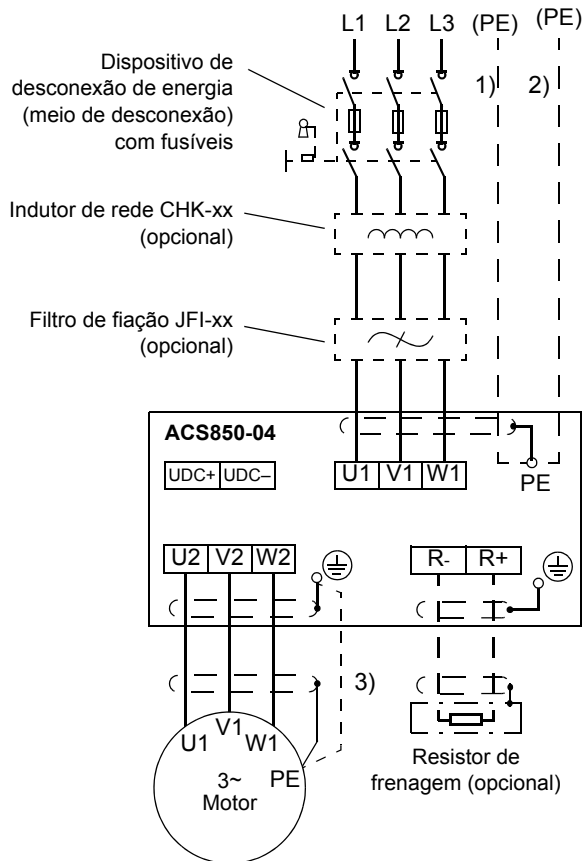
Encaixe novamente a tampa seguindo o procedimento contrário ao descrito acima.





## Instalação dos cabos de alimentação

### Diagrama de conexão



#### Notas:

- Se for usado cabo de alimentação (entrada) blindado e a condutividade da blindagem for insuficiente (ver tabela abaixo), use um cabo com um condutor terra (1) ou um cabo PE separado (2).

- Para o cabeamento do motor, use um cabo terra (3) separado se a condutividade da blindagem do cabo for insuficiente (ver tabela abaixo) e se o cabo não possuir condutores terra simétricos.

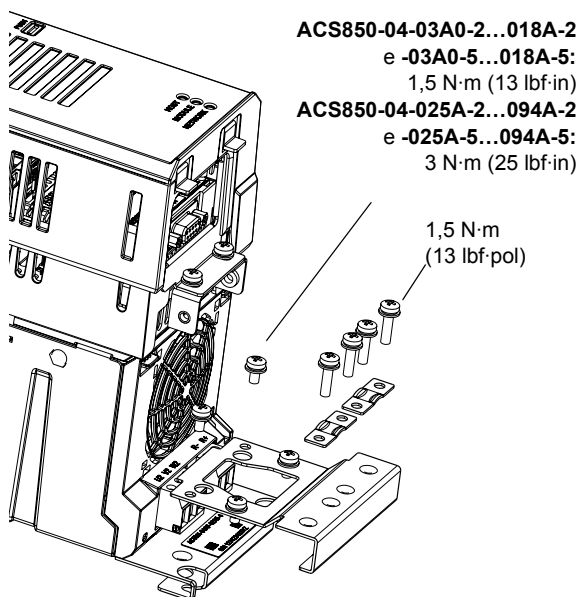
| Área transversal de condutor de uma fase (S) | Área transversal mínima de condutor de proteção (S <sub>p</sub> ) |
|--|---|
| $S \leq 16 \text{ mm}^2$                     | S   |
| $16 \text{ mm}^2 < S \leq 35 \text{ mm}^2$   | 16 mm <sup>2</sup>  |
| $35 \text{ mm}^2 < S$                        | S/2   |

## Procedimento de conexão

Exemplos de cabeamento são apresentados na página 63. Os torques de aperto são apresentados na página 63 e nos momentos apropriados no texto.

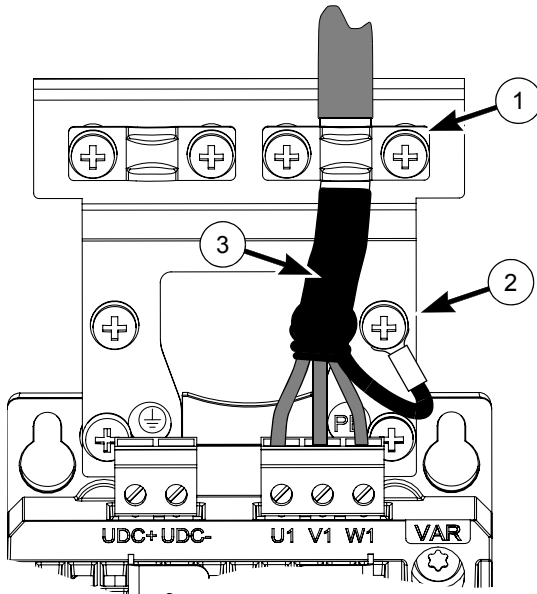
- Conecte ao inversor os blocos terminais incluídos.
- ACS850-04-**025A-2...094A-2** e **-025A-5...094A-5** apenas: Remova as duas tampas plásticas dos conectores na parte superior e inferior do inversor. Cada tampa é fixada por dois parafusos.
- Em sistemas de IT (sem aterramento) e TN (aterramento de uma fase), remova os seguintes parafusos:  
VAR (ACS850-04-**03A0-2...018A-2** e **-03A0-5...018A-5**);  
EMC, VAR1 e VAR2 (ACS850-04-**025A-2...094A-2** e **-025A-5...094A-5**).
- Prenda as duas chapas de aperto de cabos incluídas no inversor, uma no alto e outra embaixo. As chapas de aperto são idênticas.

- Descasque os cabos de alimentação para expor as blindagens nos grampos dos cabos.
- Conecte os cabos de alimentação, do resistor (se houver) e do motor aos terminais apropriados do inversor.
- Aperte os grampos dos cabos sobre a blindagem exposta do cabo. Conecte as extremidades das blindagens dos cabos aos terminais de aterramento utilizando olhais de cabos. Cubra a blindagem exposta visível com fita isolante.
- ACS850-04-**025A-2...094A-2** e **-025A-5...094A-5** apenas: Corte os orifícios adequados nas bordas das tampas do conector para acomodar os cabos. Reencaixe as tampas.
- Aterre a blindagem do cabo do motor na extremidade do motor.

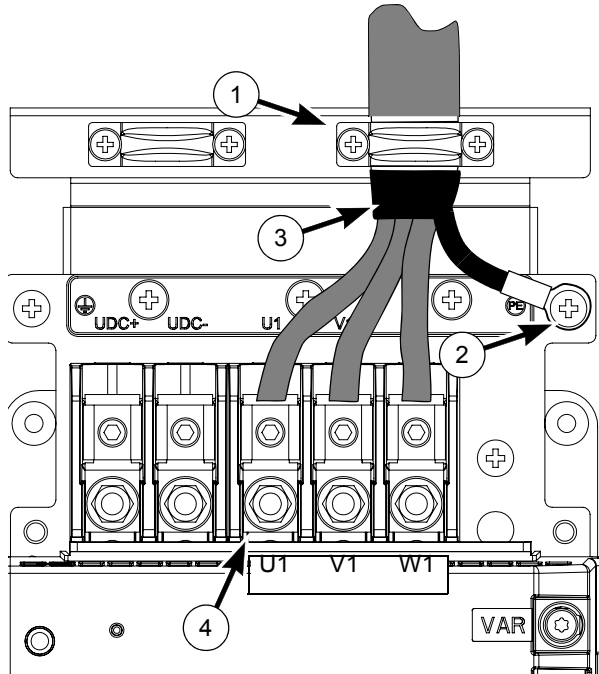


## Exemplos de cabeamento

ACS850-04-03A0-5...018A-5



ACS850-04-025A-5...094A-5



- 1 Grampo do cabo na blindagem exposta.
- 2 PE/Conexão de aterramento.
- 3 Entre o grampo do cabo e os terminais, cubra a blindagem exposta com fita isolante.
- 4 Detalhe do parafuso com olhal:



## Tamanhos de cabo aceitos pelos terminais de alimentação

| Tipo de inversor ACS850-04...         | Tamanho do cabo            |
|---------------------------------------|----------------------------|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0,25 ... 4 mm <sup>2</sup> |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 0,5 ... 6 mm <sup>2</sup>  |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 6 ... 70 mm <sup>2</sup>   |

## Torques de aperto

| Tipo de inversor ACS850-04...         | Terminais de alimentação<br>(cabos da alimentação,<br>motor e resistor de<br>frenagem)<br>N·m (lbf·pol) | Parafuso<br>com olhal<br>(parafuso<br>Allen)<br>N·m (lbf·pé) |
|---------------------------------------|---|--|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0,5 ... 0,6 (4,4 ... 5,3)   | N/A  |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1,2 ... 1,5 (10,6 ... 13,3)   | N/A  |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 3 (25)  | 15 (11)  |

| Tipo de inversor ACS850-04...         | PE/<br>Terminais<br>de<br>aterramento<br>N·m (lbf·pol) | Grampos<br>dos cabos<br>de<br>alimentação<br>N·m (lbf·pol) | Tampas de<br>conectores<br>de<br>alimentação<br>N·m (lbf·pol) |
|---------------------------------------|--|--|---|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 1,5 (13)   | 1,5 (13)   | N/A   |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1,5 (13)   | 1,5 (13)   | N/A   |
| -025A-2...050A-2,<br>-025A-5...050A-5 | 3 (25)   | 1,5 (13)   | 3 (25)  |
| -061A-2...094A-2,<br>-061A-5...094A-5 | 18 (160)   | 1,5 (13)   | 3 (25)  |

# Instalação dos cabos de controle

## Diagrama padrão da conexão de E/S

**Notas:**

[Configuração padrão com o programa de controle padrão do ACS850 (macro de fábrica). Consulte o *Manual de Firmware* para ver outros macros.]

\*Corrente máxima total: 200 mA

A fiação mostrada é para fins demonstrativos apenas. Para saber as configurações dos jumpers, consulte o texto.

**Dimensões do fio e torques de aperto:**

**XPOW, XRO1, XRO2, XRO3, XD24:**  
0,5 ... 2,5 mm<sup>2</sup> (24...12 AWG). Torque: 0,5 N·m (5 lbf·pol)

**XDI, XDIO, XAI, XAO, XD2D, XSTO:**  
0,5 ... 1,5 mm<sup>2</sup> (28...14 AWG). Torque: 0,3 N·m (3 lbf·pol)

**Ordem da nomenclatura dos terminais e jumpers**

- XPOW** (2 polos, 2,5 mm<sup>2</sup>)
- XRO1** (3 polos, 2,5 mm<sup>2</sup>)
- XRO2** (3 polos, 2,5 mm<sup>2</sup>)
- XRO3** (3 polos, 2,5 mm<sup>2</sup>)
- XD24** (4 polos, 2,5 mm<sup>2</sup>)
- Seleção de aterramento DI/DIO
- XDI** (7 polos, 1,5 mm<sup>2</sup>)
- XDIO** (2 polos, 1,5 mm<sup>2</sup>)
- XAI** (7 polos, 1,5 mm<sup>2</sup>)
- AI1, AI2**
- XAO** (4 polos, 1,5 mm<sup>2</sup>)
- T**
- XD2D** (3 polos, 1,5 mm<sup>2</sup>)
- XSTO (laranja)** (4 polos, 1,5 mm<sup>2</sup>)

| XPOW   |       |   |
|--|-------|---|
| Entrada de alimentação externa<br>24 V CC, 1,6 A | +24VI | 1 |
|  | GND   | 2 |

| XRO1, XRO2, XRO3  |     |   |
|---|-----|---|
| Saída de relé RO1 [Pronto]<br>250 V CA / 30 V CC<br>2 A     | NO  | 1 |
|   | COM | 2 |
|   | NC  | 3 |
| Saída de relé RO2 [Modulando]<br>250 V CA / 30 V CC<br>2 A  | NO  | 4 |
|   | COM | 5 |
|   | NC  | 6 |
| Saída de relé RO3 [Falha (-1)]<br>250 V CA / 30 V CC<br>2 A | NO  | 7 |
|   | COM | 8 |
|   | NC  | 9 |

| XD24                                     |        |   |
|--|--------|---|
| +24 VCC*                                 | +24VD  | 1 |
| Aterramento de entrada digital           | DIGND  | 2 |
| +24 VCC*                                 | +24VD  | 3 |
| Aterramento de entrada/saída digital     | DIOGND | 4 |
| Jumpers de seleção de aterramento DI/DIO |        |   |

| XDI   |      |   |
|---|------|---|
| Entrada digital DI1 [Parada/Partida]        | DI1  | 1 |
| Entrada digital DI2                         | DI2  | 2 |
| Entrada digital DI3 [Restaurar]             | DI3  | 3 |
| Entrada digital DI4                         | DI4  | 4 |
| Entrada digital DI5                         | DI5  | 5 |
| Entrada digital DI6 ou entrada do termistor | DI6  | 6 |
| Trava de partida (0 = Parada)               | DIIL | A |

| XDIO  |      |   |
|---|------|---|
| Entrada/Saída digital DIO1 [Saída: Pronta]        | DIO1 | 1 |
| Entrada/Saída digital DIO2 [Saída: Funcionamento] | DIO2 | 2 |

| XAI  |       |   |
|--|-------|---|
| Tensão de referência (+)   | +VREF | 1 |
| Tensão de referência (-)   | -VREF | 2 |
| Terra  | AGND  | 3 |
| Entrada analógica AI1 (corrente ou tensão, selecionável pelo jumper AI1)<br>[Referência de velocidade 1] | AI1+  | 4 |
|  | AI1-  | 5 |
| Entrada analógica AI2 (corrente ou tensão, selecionável pelo jumper AI2)                                 | AI2+  | 6 |
|  | AI2-  | 7 |
| Jumper de seleção de corrente/tensão AI1   | AI1   |   |
| Jumper de seleção de corrente/tensão AI2   | AI2   |   |

| XAO                                |      |   |
|------------------------------------|------|---|
| Saída analógica AO1 [corrente %]   | AO1+ | 1 |
|                                    | AO1- | 2 |
| Saída analógica AO2 [velocidade %] | AO2+ | 3 |
|                                    | AO2- | 4 |

| XD2D  |      |   |
|---|------|---|
| Terminação da ligação de inversor para inversor                   | T    |   |
| Ligação de inversor para inversor ou interface fieldbus integrada | B    | 1 |
|   | A    | 2 |
|   | BGND | 3 |

| XSTO   |      |   |
|--|------|---|
| Desativar torque por segurança. Ambos os circuitos devem ser fechados para o inversor iniciar. | OUT1 | 1 |
|  | OUT2 | 2 |
|  | IN1  | 3 |
|  | IN2  | 4 |

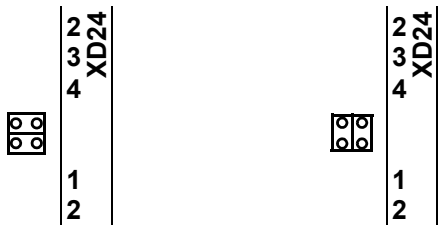
Conexão do painel de controle

Conexão do inversor de memória

- Configure os jumpers da placa de controle com a posição apropriada:

**Seleção de aterramento DI/DIO** – Localizada entre XD24 e XD1. Determina se o DIGND (aterramento para DI1...DI5) flutua ou se está conectado ao DIOGND (aterramento para DI6, DIO1 e DIO2). Caso DIGND flutue, a opção comum de DI1...DI5 (GND ou V<sub>CC</sub>) deve ser conectada a XD24:2.

DIGND flutua      DIGND vinculado a DIOGND



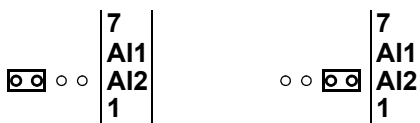
**AI1** – Determina se a entrada analógica AI1 é usada como uma entrada de corrente ou de tensão.

Corrente      Tensão



**AI2** – Determina se a entrada analógica AI2 é usada como uma entrada de corrente ou de tensão.

Corrente      Tensão



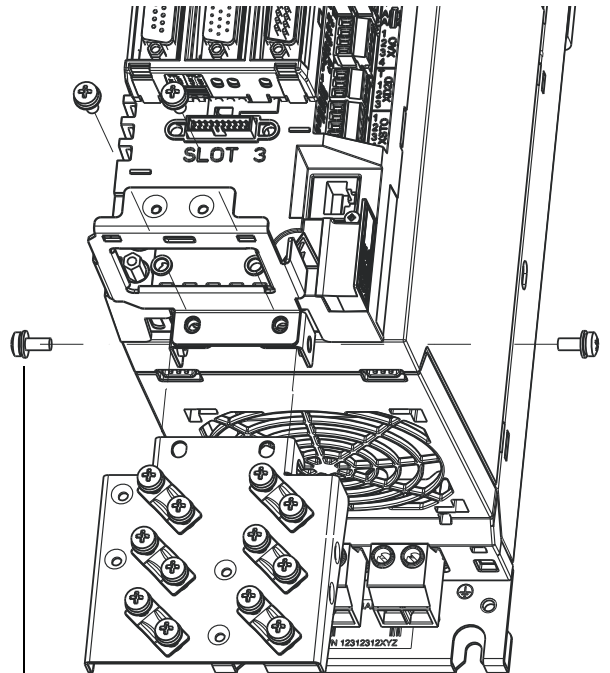
**T** – Terminação de ligação de inversor para inversor. Configure como LIGADO se o inversor for o último da ligação.

LIGADO      DESLIGADO

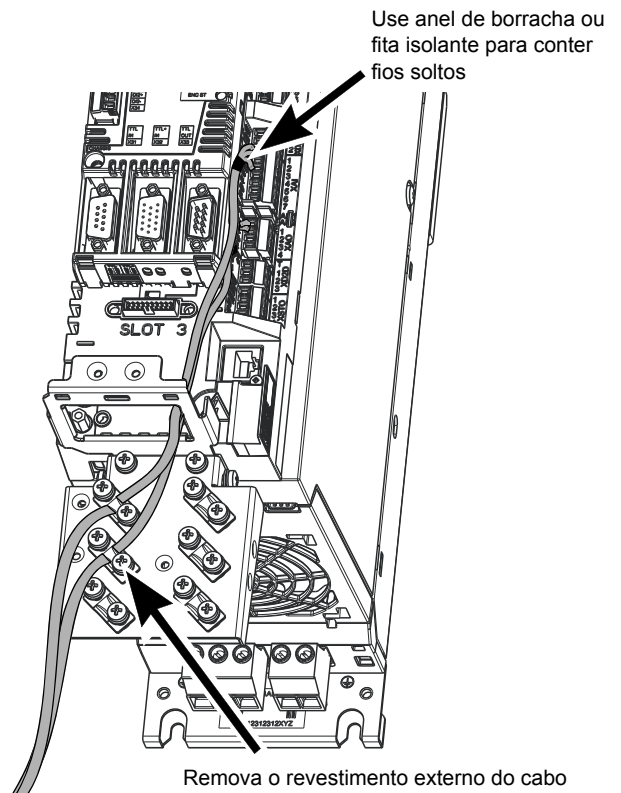


### Montagem da chapa de aperto

A chapa de aperto pode ser presa na parte superior ou inferior da Placa de Controle JCU.



0,7 N·m (6,2 lbf·pol)



Remova o revestimento externo do cabo no grampo para expor a tela do cabo  
1,5 N·m (13 lbf·pol.)

---

Continue com a inicialização do inversor de acordo com as instruções no *Guia de Início Rápido* apropriado.

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## Dados técnicos

### Lista de verificação de UL

- O ACS850-04 é um inversor IP20 (UL tipo aberto) que deve ser utilizado em ambiente aquecido, interno e controlado. O inversor deve estar instalado em ar puro de acordo com a classificação do alojamento. O ar de resfriamento deve ser limpo, livre de material corrosivo e poeira eletricamente condutora. Consulte o *Manual de Hardware* para obter especificações detalhadas.
- A temperatura ambiente máxima do ar é de 40 °C (104 °F) na corrente nominal. A corrente cai para 40 a 55 °C (104 a 131 °F).
- O inversor é adequado para uso em um circuito capaz de fornecer no máximo 100.000 rms ampères simétricos, 500 V no máximo.
- Os cabos localizados no interior do circuito do motor devem ser classificados para pelo menos 75 °C (167 °F) em instalações em conformidade com UL.
- O cabo de entrada deve ser protegido com fusíveis ou disjuntores. Os fusíveis IEC (classe gG) e UL (classe T) adequados estão relacionados na seção *Dados técnicos* do *Manual de Hardware*. Para saber quais são os disjuntores adequados, entre em contato com seu representante ABB local.
- Para instalação nos Estados Unidos, deve ser providenciada proteção de circuito derivado de acordo com o NEC (National Electrical Code - Código Elétrico Nacional) e quaisquer códigos municipais aplicáveis. Para cumprir esse requisito, use fusíveis com classificação UL.
- Para instalação no Canadá, deve ser providenciada proteção de circuito derivado de acordo com o Código Elétrico Canadense (Canadian Electrical Code) e quaisquer códigos provinciais aplicáveis. Para cumprir esse requisito, use fusíveis com classificação UL.
- O inversor fornece proteção contra sobrecarga de acordo com o Código Elétrico Nacional (NEC), dos EUA. Consulte o *Manual de Firmware* apropriado para saber quais são as configurações de proteção contra sobrecarga.

## Asennuksen pikaopas – ACS850-04

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### Johdanto

Tässä oppaassa on perustiedot ACS850-04-taajuusmuuttajamoduulin (0,37–45 kW) mekaanisesta asennuksesta ja sähköliitännöistä. Kattavat tiedot ovat *ACS850-04 Taajuusmuuttajamoduulit (0,37–45 kW)*, *Laiteopas* -oppaassa (koodi: 3AUA0000048248).

### Turvaohjeet

---



**VAROITUS!** Taajuusmuuttajan sähköliitännät ja huoltotyöt saa suorittaa vain pätevä sähköalan ammattilainen.

Mitään taajuusmuuttajan, jarrukatkojan, moottorikaapelin tai moottorin asennustöitä ei saa tehdä, kun taajuusmuuttajaan on kytketty jännite. Taajuusmuuttajan jännitteettömyys tulee aina varmistaa mittaamalla.

Pyörivä kestopagneettimoottori voi synnyttää vaarallisen jännitteen. Moottorin akseli tulee lukita mekaanisesti, ennen kuin kestopagneettimoottori kytketään taajuusmuuttajaan ja ennen kuin kestopagneettimoottoriin kytketyn taajuusmuuttajan asennus- tai huoltotyö aloitetaan.

### Mekaaninen asennus

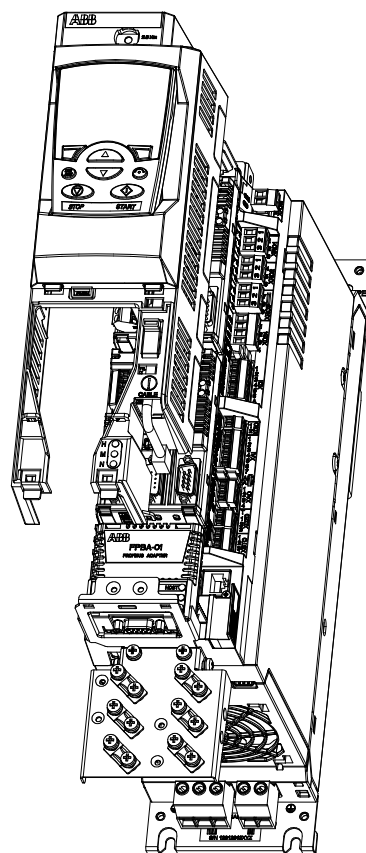
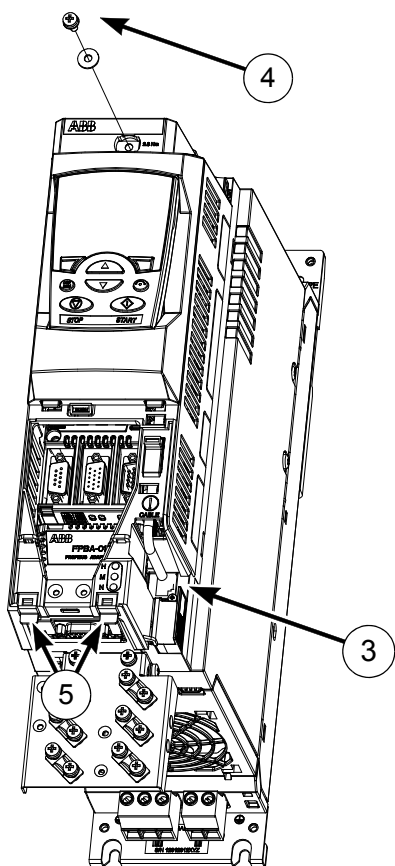
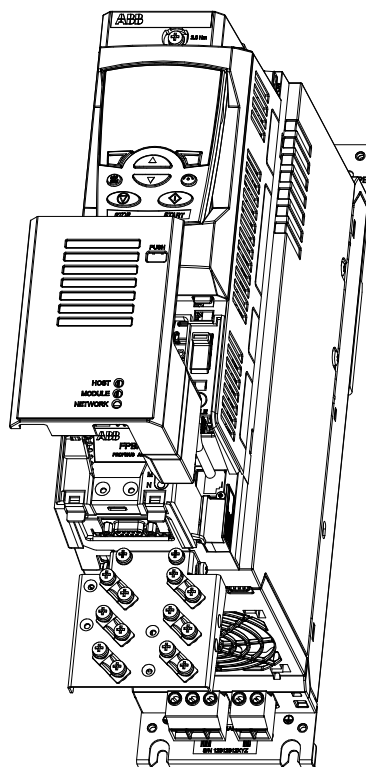
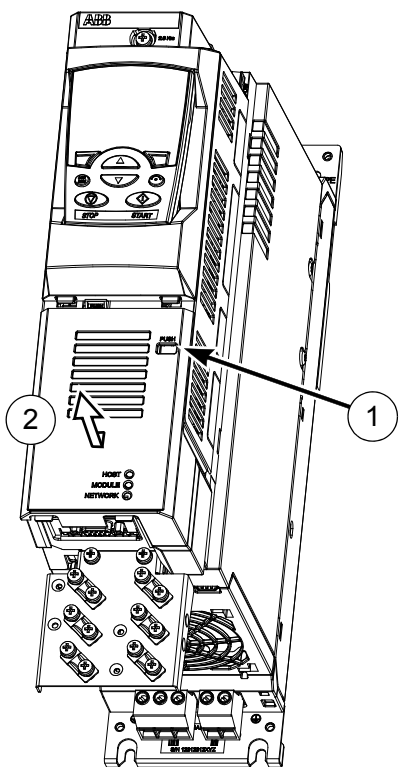
Taajuusmuuttajamoduuli kiinnitetään asennuspohjaan neljällä ruuvilla, jotka ruuvataan kiinnitysreikien läpi. Runko A ja B voidaan kiinnittää DIN-kiskoon. On kuitenkin suositeltavaa kiinnittää moduulit myös kiinnitysalustaan kahdella ruuvilla alempien kiinnitysreikien läpi.

### Kannen irrottaminen

Kansi täytyy irrottaa ennen lisävarustemoduulien asentamista ja ohjauskaapeloinnin kytkemistä. Irrota kansi seuraavien ohjeiden mukaisesti. Numerot viittaavat alla oleviin kuviin.

- Paina salpaa (1) kevyesti ruuvitaltalla.
- Vedä alemmaa kansilevyä hieman alaspäin ja nosta se pois paikaltaan (2).
- Irrota ohjauspaneelin kaapeli (3), jos se on asennettu.
- Irrota kannen yläreunan ruuvi (4).
- Vedä alustan alaosassa olevia salpoja varovasti ulospäin (5).

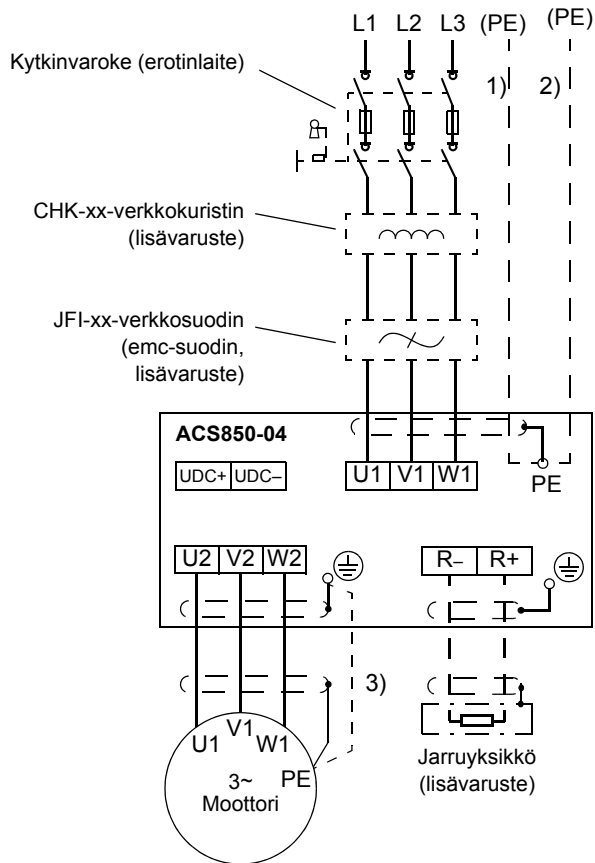
Asenna kansi päinvastaisessa järjestyksessä kuin edellä on kuvattu.





## Tehokaapeliliitännät

### Kytchentäkaavio



#### Huomaa:

- Jos käytössä on suojattu syöttökaapeli (tulo) ja suojavaipan johtokyky ei ole riittävä (lisätietoja on seuraavassa taulukossa), käytä maadoitusjohtimella varustettua kaapelia (1) tai erillistä PE-kaapelia (2).

- Moottorikaapelointiin tulee käyttää erillistä maadoituskaapelia, jos kaapelin suojavaipan johtokyky ei ole riittävä (lisätietoja on seuraavassa taulukossa) eikä kaapelissa ole symmetrisiä maadoitusjohtimia.

| Yhden vaihejohtimen poikkipinta-ala (S)    | Suojajohtimen minimipoikkipinta-ala (S <sub>p</sub> ) |
|--|---|
| $S \leq 16 \text{ mm}^2$                   | S   |
| $16 \text{ mm}^2 < S \leq 35 \text{ mm}^2$ | 16 mm <sup>2</sup>                                    |
| $35 \text{ mm}^2 < S$                      | S/2   |

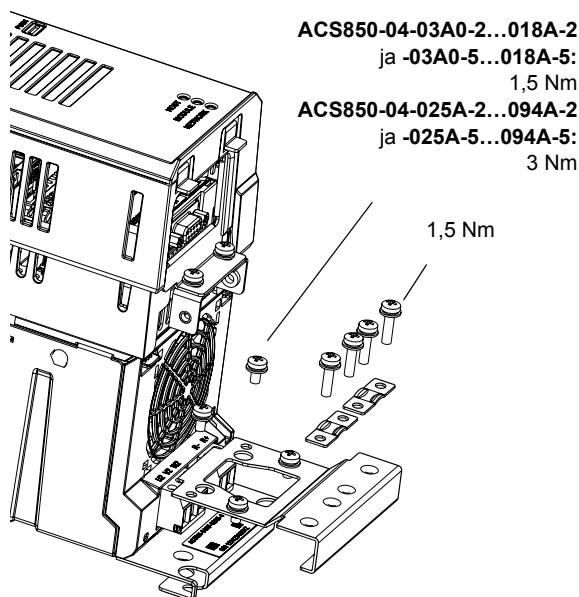
## Liitännän vaiheet

Kaapelointiesimerkit on esitetty sivulla 71.

Kiristysmomentit on esitetty sivulla 71 ja asiaankuuluissa tekstikohdissa.

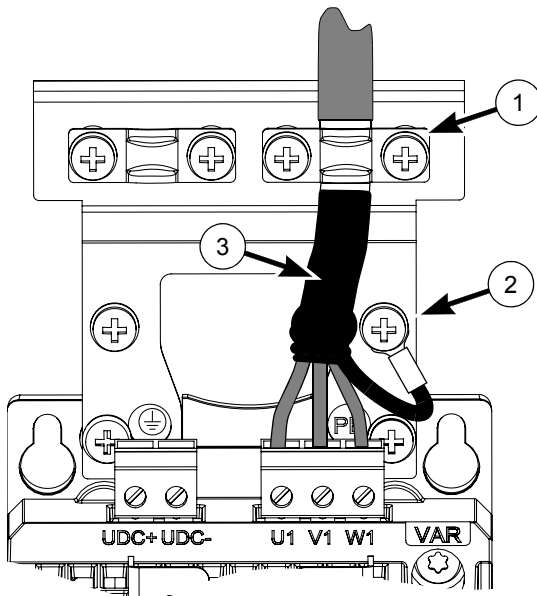
- Kiinnitä laitteen mukana toimitetut riviliittimet taajuusmuuttajaan.
- Vain ACS850-04-**025A-2...094A-2** ja **-025A-5...094A-5** : Irrota muoviset liitinsuojat (2 kpl) taajuusmuuttajan päältä ja alta. Molemmat suojat on kiinnitetty kahdella ruuvilla.
- Jos kyseessä on IT-verkko (maadoittamaton) tai epäsymmetrisesti maadoitettu TN-verkko, poista seuraavat ruuvit:  
VAR (ACS850-04-**03A0-2...018A-2** ja **-03A0-5...018A-5**);  
EMC, VAR1 ja VAR2 (ACS850-04-**025A-2...094A-2** ja **-025A-5...094A-5**).
- Kiinnitä kaksi taajuusmuuttajan mukana toimitettua kaapelien kiinnityslevyä, toinen taajuusmuuttajan päälle, toinen alle. Kiinnikelevyt ovat identtiset.

- Kuori virtajohdot, niin että vaipat ovat paljaana kaapelikiinnikkeiden kohdalta.
- Kytke syöttö-, vastus- (jos käytössä) ja moottorikaapelit oikeisiin taajuusmuuttajan liittimiin.
- Kiristä kaapelikiinnikkeet paljaiden kaapelin suojavaippojen kohdalle. Kytke kaapelien suojavaippojen päät maadoitusliittimiin kaapelikenkien avulla. Peitä näkyvät paljaat suojavaipat eristysteipillä.
- Vain ACS850-04-**025A-2...094A-2** ja **-025A-5...094A-5**: Leikkaa liitinsuojien reunoihin virtajohdoille sopivat lovet. Aseta liitinsuojat takaisin paikoilleen.
- Maadoita moottorikaapelin suojavaippa moottorin päästä.

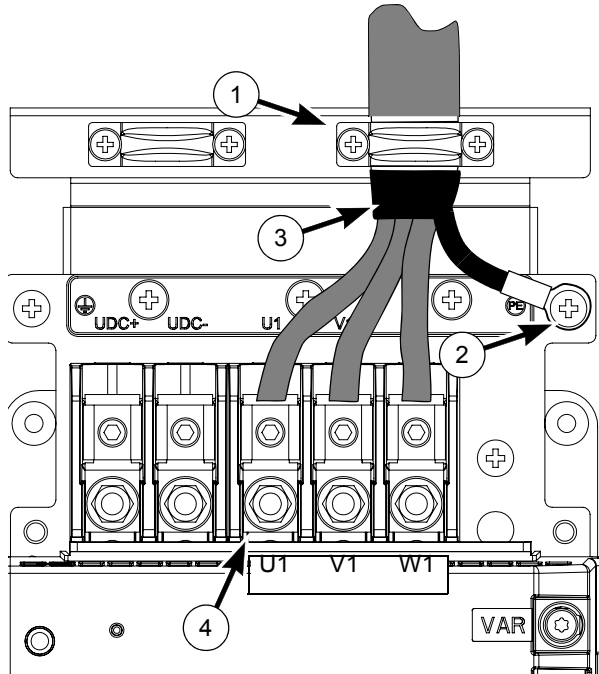


## Kaapelointiesimerkkejä

ACS850-04-03A0-5...018A-5



ACS850-04-025A-5...094A-5



- 1 Kaapelin kiinnityslevy paljaan suojavaipan päällä.
- 2 PE-/maadoitusliitäntä.
- 3 Peitä kaapelin kiinnityslevyn ja riviliittimen välillä oleva paljas suojavaippa eristysteipillä.
- 4 Ruuvikaapelikengän kuva:



## Teholiittimien hyväksytyt johdinkoot

| Taajuusmuuttajatyppi<br>ACS850-04...  | Johtimen koko              |
|---------------------------------------|----------------------------|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0,25 ... 4 mm <sup>2</sup> |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 0,5 ... 6 mm <sup>2</sup>  |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 6 ... 70 mm <sup>2</sup>   |

## Kiristysmomentit

| Taajuusmuuttajan<br>tyyppi<br>ACS850-04... | Teholiittimet (syöttö-,<br>moottori- ja<br>jarruvastuskaapelit)<br>Nm | Ruvi-<br>kaapelikengä<br>(kuusiokolo-<br>ruuvi)<br>Nm |
|--|---|---|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5      | 0,5 ... 0,6 (4,4 ... 5,3)   | Ei käytössä   |
| -010A-2...018A-2,<br>-010A-5...018A-5      | 1,2 ... 1,5 (10,6 ... 13,3)   | Ei käytössä   |
| -025A-2...094A-2,<br>-025A-5...094A-5      | 3 (25)  | 15 (11)   |

| Taajuusmuuttajan<br>tyyppi<br>ACS850-04... | PE-/<br>maadoitus-<br>liittimet<br>Nm | Teho-<br>kaapelien<br>kiinnikkeet<br>Nm | Teho-<br>kaapelien<br>suojakannet<br>Nm |
|--|---------------------------------------|---|---|
| -03A0-2...08A0-2, -<br>03A0-5...08A0-5     | 1,5 (13)                              | 1,5 (13)                                | Ei käytössä                             |
| -010A-2...018A-2, -<br>010A-5...018A-5     | 1,5 (13)                              | 1,5 (13)                                | Ei käytössä                             |
| -025A-2...050A-2, -<br>025A-5...050A-5     | 3 (25)                                | 1,5 (13)                                | 3 (25)                                  |
| -061A-2...094A-2, -<br>061A-5...094A-5     | 18 (160)                              | 1,5 (13)                                | 3 (25)                                  |

# Ohjauskaapeleiden asennus

## Oletusarvoiset I/O-ohjauskytkennät

### Huomaa:

ACS850-vakio-ohjausohjelmiston oletusasetus (tehdasmakro). Lisätietoja muista makroista on *ohjelmointioppaassa*.

\*Suurin sallittu kokonaisvirta: 200 mA

Oheinen kytkentäkaavio on vain esimerkki. Lisätietoja siirtoliittimien asennoista on oppaan tekstissä.

### Johdinkoot ja kiristysmomentit:

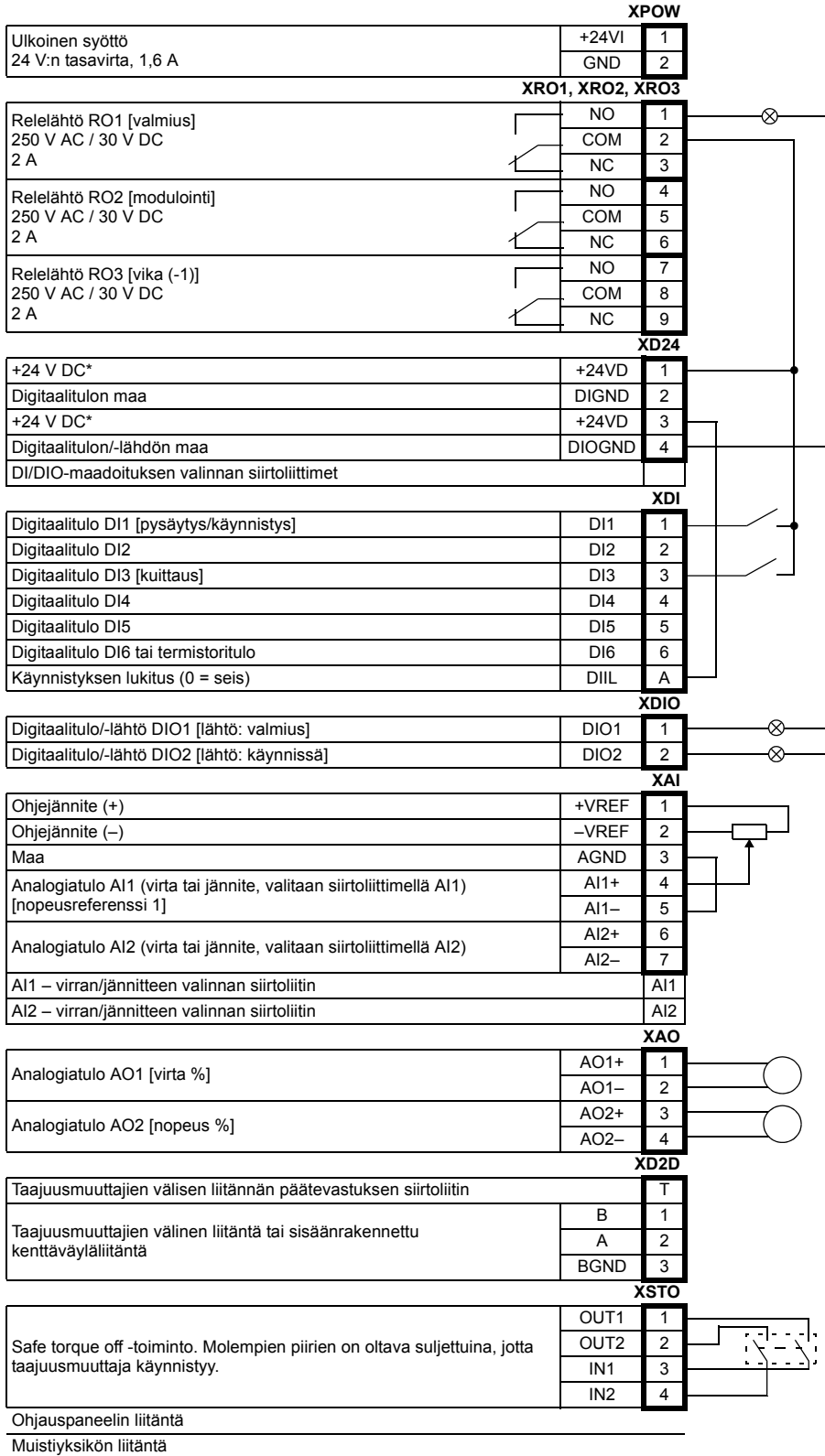
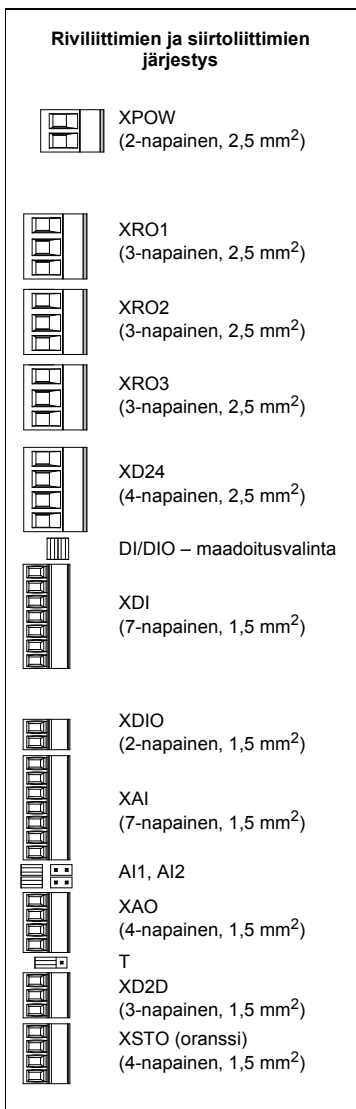
**XPOW, XRO1, XRO2, XRO3, XD24:**

0,5 ... 2,5 mm<sup>2</sup> (24... 2 AWG). Momentti: 0,5 Nm

**XDI, XDIO, XAI, XAO, XD2D, XSTO:**

0,5 ... 1,5 mm<sup>2</sup> (28... 14 AWG).

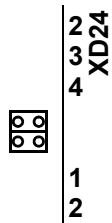
Momentti: 0,3 Nm



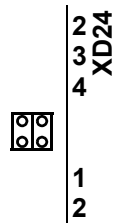
- Aseta ohjausyksikön siirtoliittimet sopivaan asentoon:

**DI/DIO-maadoitusvalinta** – XD24:n ja XDI:n välissä. Määrittää, onko DIGND (digitaalitulojen DI1–DI5 maadoitus) kelluva vai onko se kytketty DIOGND-liittimeen (maadoitus DI6-, DIO1- ja DIO2-liitäntöille). Jos DIGND on kelluva, digitaalitulojen DI1–DI5 yhteisen paluusignaalin (joko GND tai  $V_{CC}$ ) tulee olla kytketty liitäntään XD24:2.

Kelluva DIGND

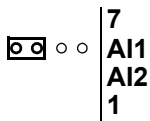


DIGND kytketty DIOGND:hen

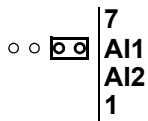


**AI1** – Määrittää analogiatulon AI1 virta- tai jännitetuloksi.

Virta

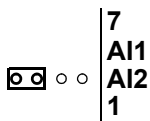


Jännite

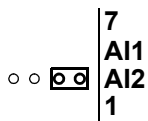


**AI2** – Määrittää analogiatulon AI2 virta- tai jännitetuloksi.

Virta



Jännite



**T** – Taajuusmuuttajien välisen liitännän päätevastus. Aseta asennoksi ON, jos taajuusmuuttaja on liitännän viimeinen yksikkö.

ON

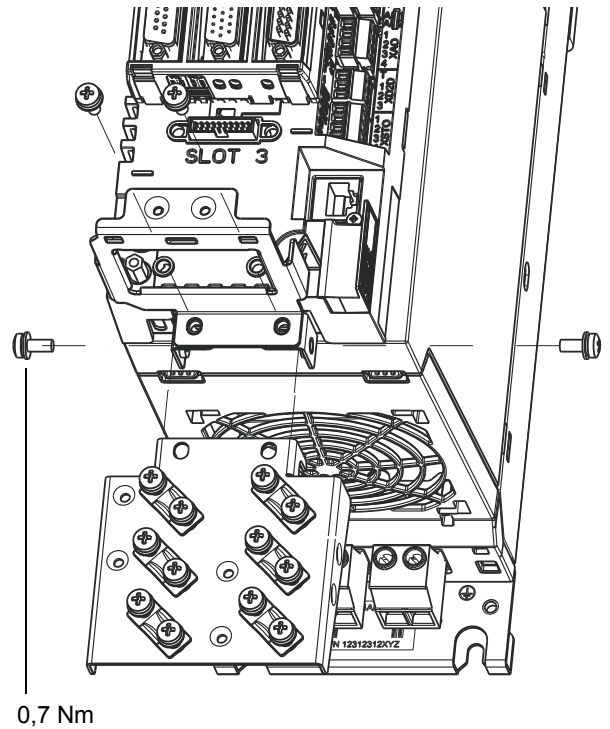


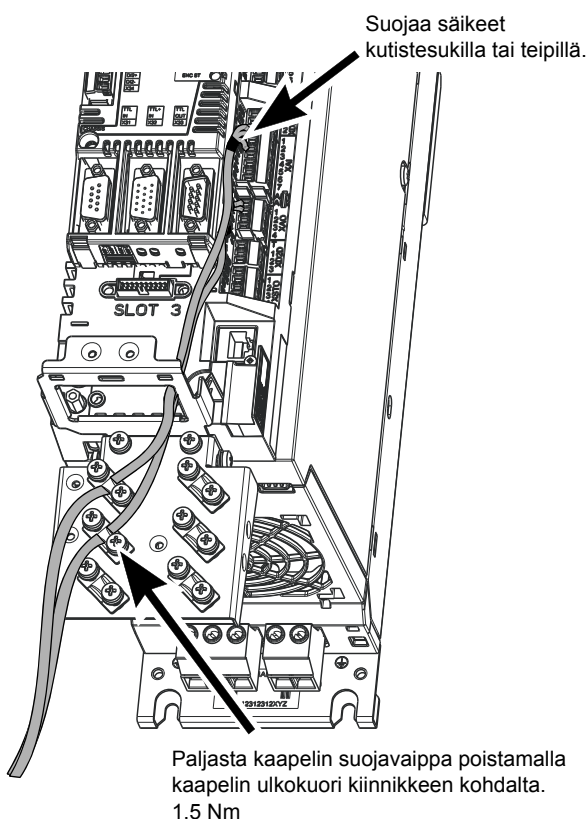
OFF



## Kiinnityslevyn kiinnittäminen

Kiinnityslevy, joka voidaan kiinnittää JCU-ohjausyksikön ylä- tai alaosaan.





- Taajuusmuuttaja sopii käytettäväksi piireissä, joissa kulkee enintään 100 000 ampeerin symmetrinen virta (rms), jonka jännite on enintään 500 V.
- Moottorikaapelit on mitoitettava vähintään 75 °C:n lämpötilaa varten UL-yhteensopivissa asennuksissa.
- Syöttökaapeli on suojattava sulakkeilla tai katkaisijoilla. Sopivat IEC-sulakkeet (luokka gG) ja UL-sulakkeet (luokka T) on lueteltu *laiteoppaan* kohdassa *Tekniset tiedot*. Tietoa sopivista katkaisijoista saa ABB:n paikallisilta edustajilta.
- Jos laite asennetaan Yhdysvalloissa, suojaus on tehtävä National Electrical Coden (NEC) ja muiden paikallisten säännösten mukaan. Tämä vaatimus täyttyy UL-hyväksytyjä sulakkeita käytettäessä.
- Jos laite asennetaan Kanadassa, haaroituskytkennän suojaus on tehtävä Canadian Electrical Coden ja muiden paikallisten säännösten mukaan. Tämä vaatimus täyttyy UL-hyväksytyjä sulakkeita käytettäessä.
- Taajuusmuuttajassa on National Electrical Coden (NEC) mukainen ylikuormitussuojaus. Lisätietoja ylikuormitussuojauksen asetuksista on asianomaisessa *ohjelmointioppaassa*.

Jatka taajuusmuuttajan käyttöönottoa asianomaisen *pika-aloitusoppaan* ohjeiden mukaan.

## Tekniset tiedot

### UL-tarkistuslista

- ACS850-04 on suojausluokan IP20 (UL avoin) taajuusmuuttaja, joka on suunniteltu käytettäväksi lämmitetyissä sisätiloissa valvotuissa olosuhteissa. Taajuusmuuttajan koteloituusluokka määrittelee asennuspaikan ilman puhtauden. Jäähdytysilman on oltava puhdasta, eikä siinä saa esiintyä syövyttäviä aineita tai sähköä johtavaa pölyä. Lisätietoja on *laiteoppaassa*.
- Käyttöympäristön ilman maksimilämpötila on 40 °C nimellisvirralla. Laitteen kuormitettavuus pienenee 40–55 °C:ssa.

## Snabbguide för installation - ACSM850-04

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### Om denna guide

Denna guide innehåller den mest grundläggande informationen om mekanisk och elektrisk installation av frekvensomriktarmodul ACSM850-04 (0,37 till 45 kW). För komplett dokumentation se *ACSM850-04 Drive Modules (0,37 to 45 kW) Hardware Manual* (kod: 3AUA0000045496 [engelska]).

### Säkerhetsanvisningar

---



**WARNING!** Allt elektriskt installations- och underhållsarbete på frekvensomriktaren skall utföras av behörig elektriker.

Arbeta aldrig med frekvensomriktaren, bromschopperkretsen, motorkabeln eller motorn när systemet är spänningssatt. Kontrollera alltid genom mätning att ingen spänning finns.

En roterande permanentmagnetmotor kan generera farlig spänning. Lås motoraxeln mekaniskt före anslutning av en permanentmagnetmotor till frekvensomriktaren och före varje ingrepp i en frekvensomriktare som är ansluten till en permanentmagnetmotor.

### Mekanisk installation

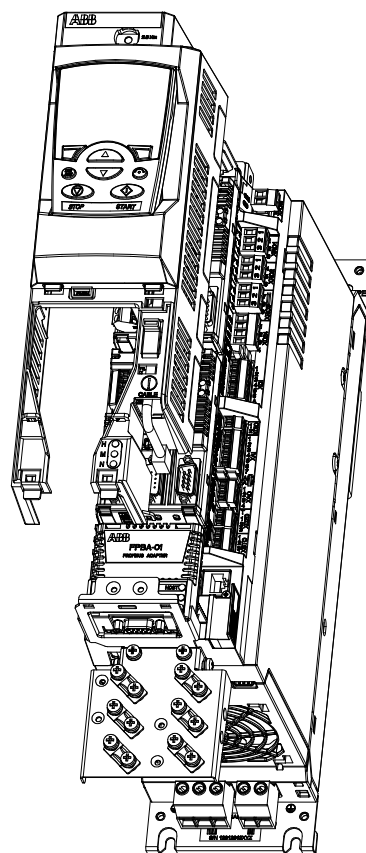
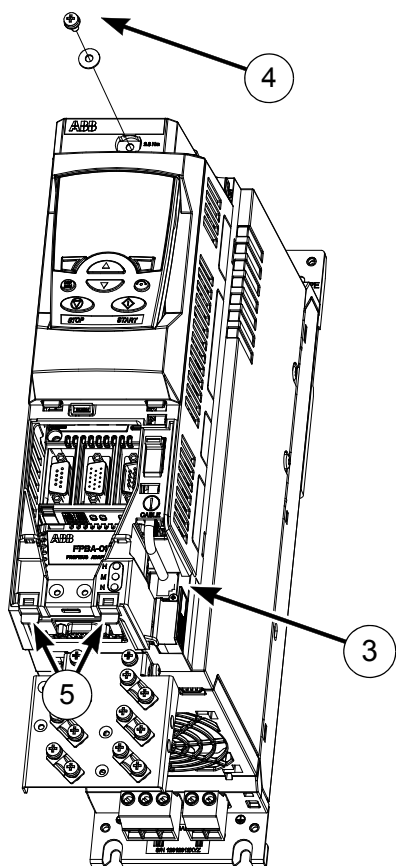
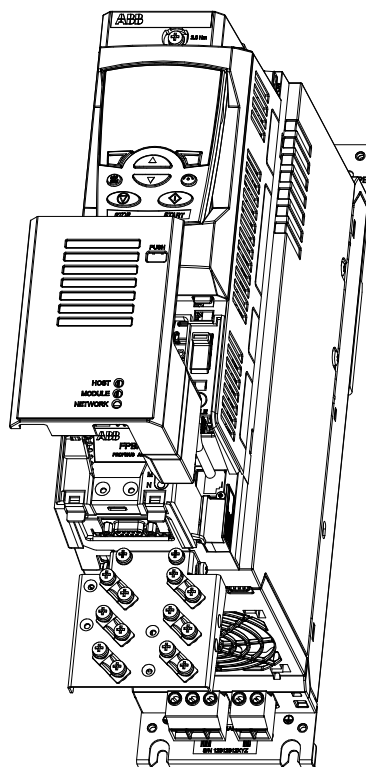
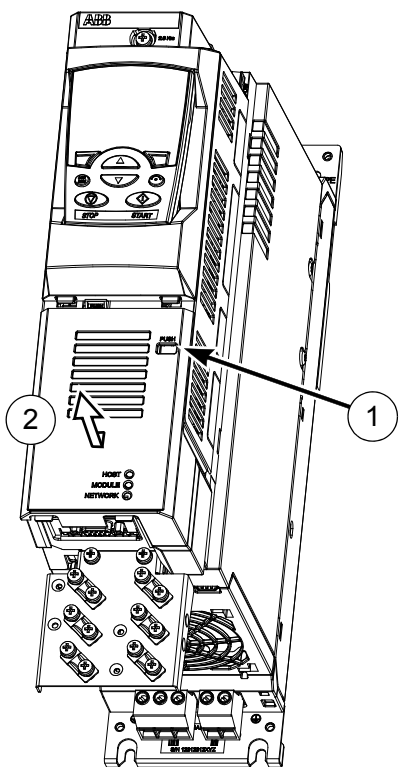
Fixera frekvensomriktarmodulen på sitt stativ med skruvar genom de fyra monteringshålén. Byggstorlekarna A och B kan monteras på en DIN-skena. Vi rekommenderar dock att även dessa moduler monteras på stativet med två skruvar genom de nedre monteringshålén.

### Avtagning av kåpa

Kåpan måste tas av för att tillåta installation av tillvalsmoduler och anslutning av styrkablar. Ta av kåpan på följande sätt. Siffrorna hänvisar till bilderna nedan.

- Tryck in tungan (1) något med skruvmejsel.
- Skjut den nedre plattan något nedåt och dra ut den (2).
- Koppla loss eventuell panelkabel (3).
- Ta bort skruven (4) från kåpans överdel.
- Dra försiktigt ut den nedre delen av basen med hjälp av de båda tungorna (5).

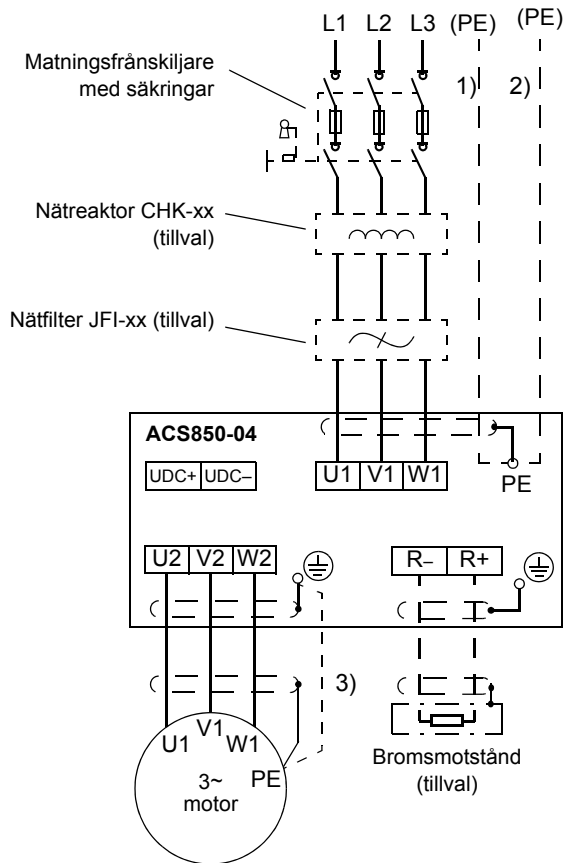
Sätt tillbaka kåpan i omvänd ordning .





## Installation av kraftkablar

### Kretsschema



### Noter:

- Om skärmade nätkablar (matningskablar) används, och konduktiviteten hos skärmen inte är tillräcklig (se tabellen nedan), använd en kabel med jordledare (1) eller en separat PE-kabel (2).

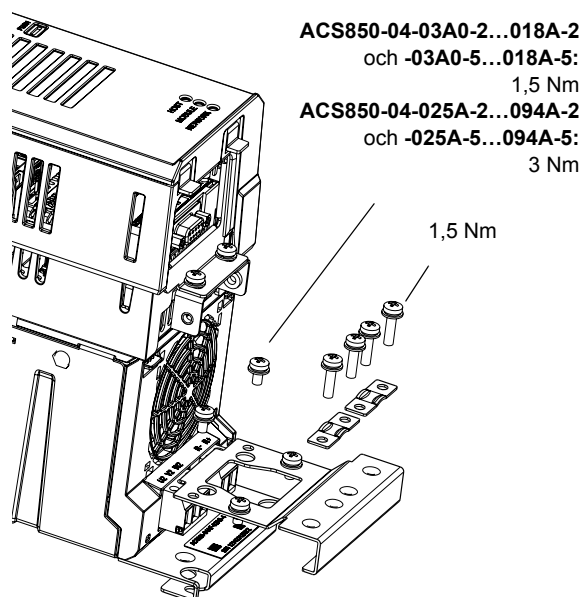
- För motoranslutningen, använd en separat jordkabel (3) om konduktiviteten hos motorkabelskärmen inte är tillräcklig (se tabellen nedan) och kabeln saknar symmetriska jordledare.

| En fasledares tvärsnittsarea (S)           | Minsta tillåtna tvärsnittsarea för skyddsledare (S <sub>p</sub> ) |
|--|---|
| $S \leq 16 \text{ mm}^2$                   | S   |
| $16 \text{ mm}^2 < S \leq 35 \text{ mm}^2$ | 16 mm <sup>2</sup>  |
| $35 \text{ mm}^2 < S$                      | S/2   |

## Anslutningsprocedur

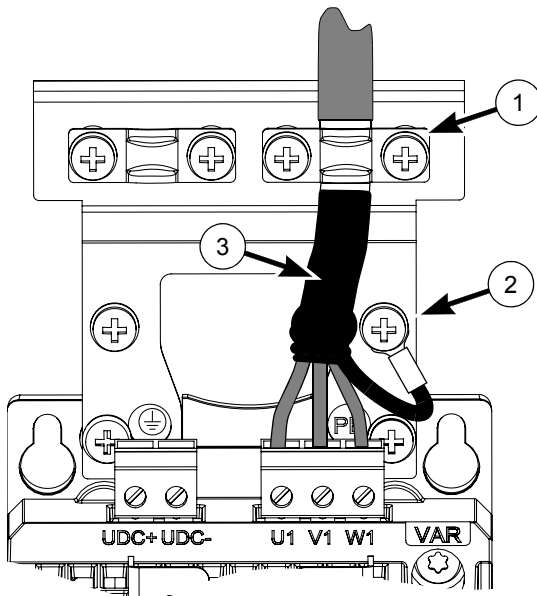
Exempel på anslutningar illustreras på sid 79. Åtdragningsmoment anges på sid 79 och i den löpande texten.

- Montera de medföljande plintblocken på frekvensomriktaren.
- Endast ACS850-04-**025A-2...094A-2** och **-025A-5...094A-5**: Ta bort de båda skyddskåporna av plast på frekvensomriktarens över- och nederdel. Varje kåpa hålls fast av två skruvar.
- På IT-system (icke direktjordade system) och impedansjordade TN-system, ta bort följande skruvar:  
VAR (ACS850-04-**03A0-2...018A-2** och **-03A0-5...018A-5**);  
EMC, VAR1 och VAR2 (ACS850-04-**025A-2...094A-2** och **-025A-5...094A-5**).
- Fixera de båda medföljande överfallsplåtarna, en på överdelen, en på nederdelen. Överfallsplåtarna är likadana.

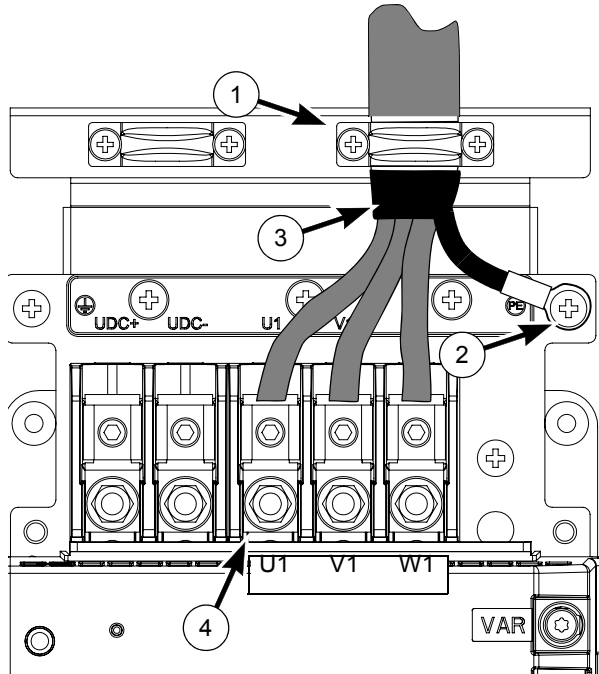


### Kabelanslutningsexempel:

ACS850-04-03A0-5...018A-5



ACS850-04-025A-5...094A-5



- 1 Kabelklämmor över exponerad skärm.
- 2 PE/Skyddsjordanslutning
- 3 Mellan kabelklämma och plint skall exponerad skärm täckas med isoleringstejp.
- 4 Detalj av kabelsko:



### Ledarareor som passar i kraftplintarna

| Omriktartyp ACS850-04...              | Ledararea                  |
|---------------------------------------|----------------------------|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0,25 ... 4 mm <sup>2</sup> |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 0,5 ... 6 mm <sup>2</sup>  |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 6 ... 70 mm <sup>2</sup>   |

### Åtdragningsmoment

| Omriktartyp ACS850-04...              | Kraftplintar (matnings-, motor- och bromsmotståndskablar)<br>Nm | Kabelsko (insexskruv)<br>Nm |
|---------------------------------------|---|-----------------------------|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0,5 ... 0,6 (4,4 ... 5,3)                                       | EJ ANVÄND                   |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1,2 ... 1,5 (10,6 ... 13,3)                                     | EJ ANVÄND                   |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 3 (25)  | 15 (11)                     |

| Omriktartyp ACS850-04...              | PE/skyddsjordplintar<br>Nm | Kraftkabelplintar<br>Nm | Kraftplintkåpor<br>Nm |
|---------------------------------------|----------------------------|-------------------------|-----------------------|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 1,5 (13)                   | 1,5 (13)                | EJ ANVÄND             |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1,5 (13)                   | 1,5 (13)                | EJ ANVÄND             |
| -025A-2...050A-2,<br>-025A-5...050A-5 | 3 (25)                     | 1,5 (13)                | 3 (25)                |
| -061A-2...094A-2,<br>-061A-5...094A-5 | 18 (160)                   | 1,5 (13)                | 3 (25)                |

# Installation av styrkablar

## Grundläggande I/O-kretsschema

### Noter:

Grundläggande inställning med ACS850 Standardmjukvara (tillämpningsmakrot Fabrik). Se *Beskrivning av mjukvara* för övriga makron.]

\*Total maximal ström: 200 mA

Visade anslutningar är endast exempel. För bygling, se text.

### Ledarareor och åtdragningsmoment:

**XPOW, XRO1, XRO2, XRO3, XD24:**

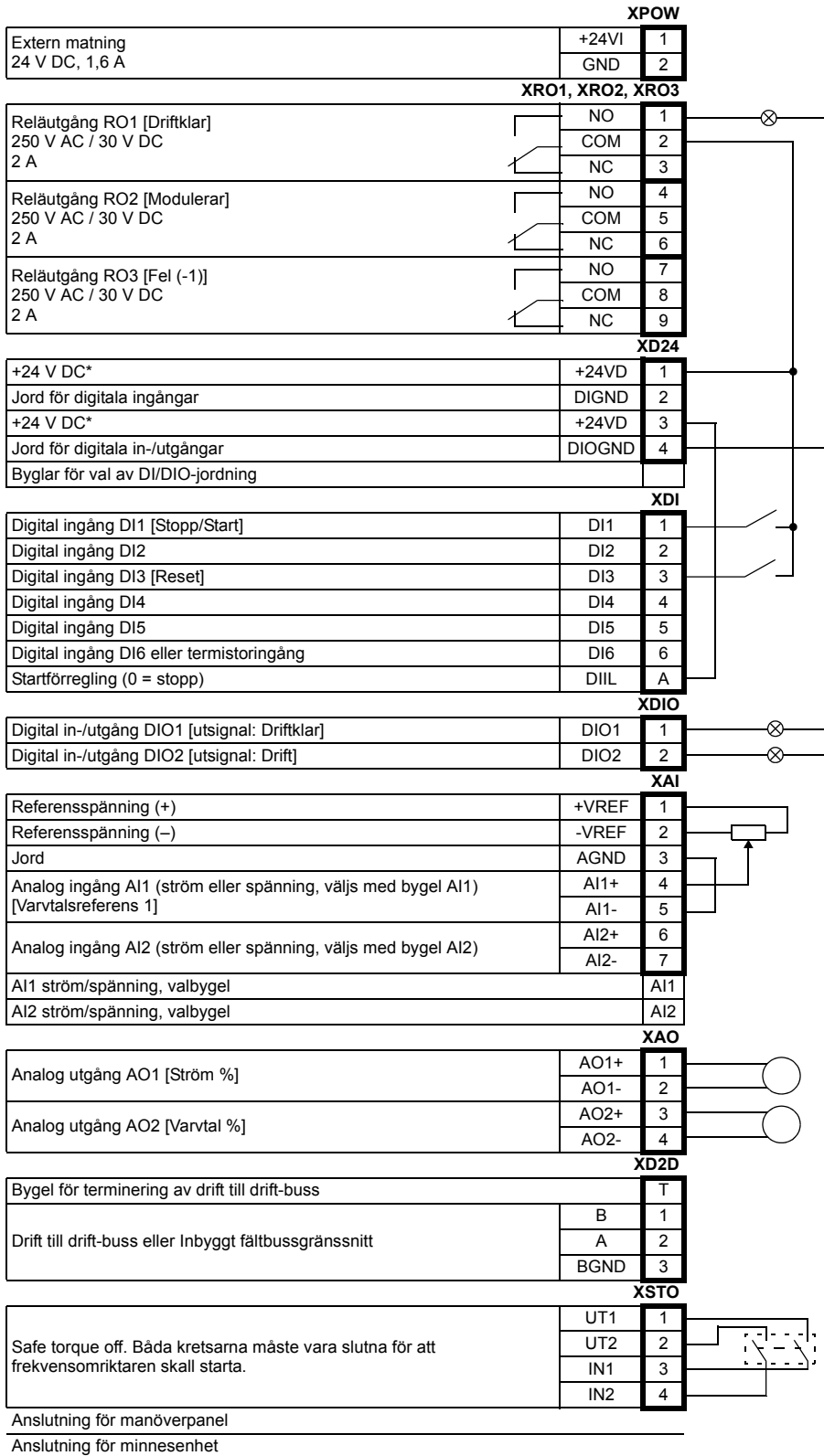
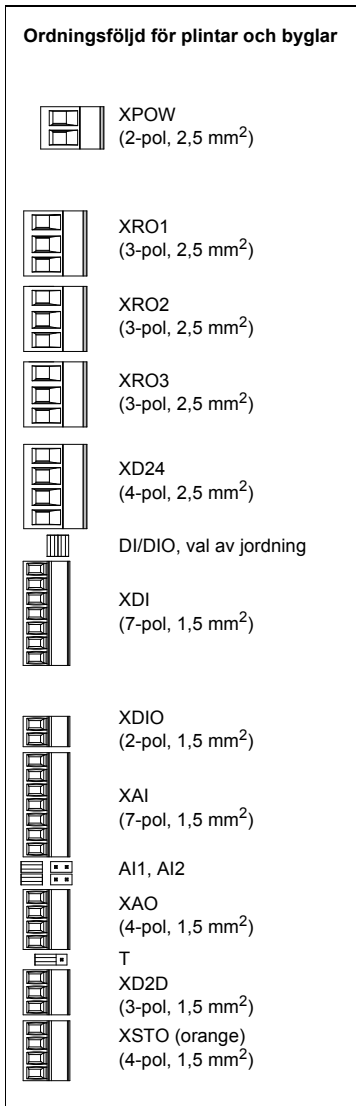
0,5 ... 2,5 mm<sup>2</sup> (24...12 AWG).

Vridmoment: 0,5 Nm

**XDI, XDIO, XAI, XAO, XD2D, XSTO:**

0,5 ... 1,5 mm<sup>2</sup> (28...14 AWG).

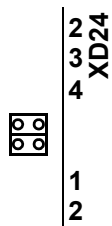
Vridmoment: 0,3 Nm



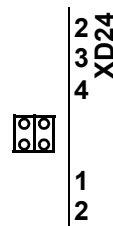
- Bygla styrenheten korrekt:

**DI/DIO, val av jordning** – Sitter mellan XD24 och XDI. Avgör om DIGND (jord för DI1...DI5) är flytande eller kopplad till DIOGND (jord för DI6, DIO1 och DIO2). Om DIGND flyter skall den gemensamma nollan för DI1...DI5 (antingen GND eller  $V_{CC}$ ) anslutas till XD24:2.

DIGND flyter

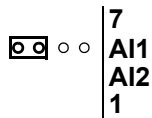


DIGND kopplad till DIOGND

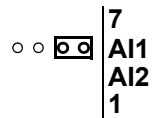


**AI1** – Avgör om analog ingång AI1 utgör ström- eller spänningsingång.

Ström

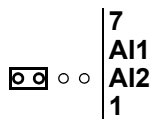


Spänning

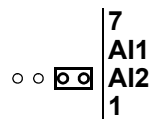


**AI2** – Avgör om analog ingång AI2 används som ström- eller spänningsingång.

Ström



Spänning



**T** - Terminering av drift till drift-buss. ON om frekvensomriktaren är den sista enheten på bussen.

ON

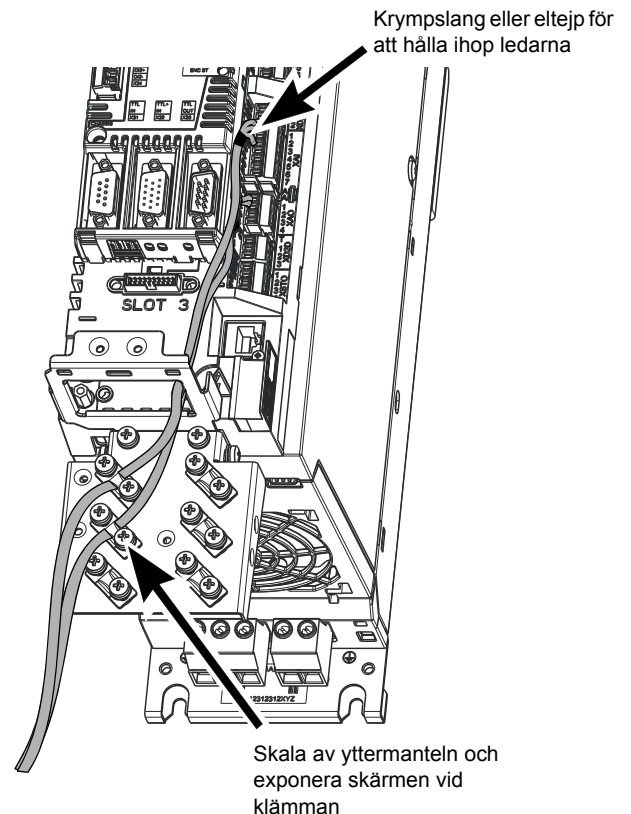
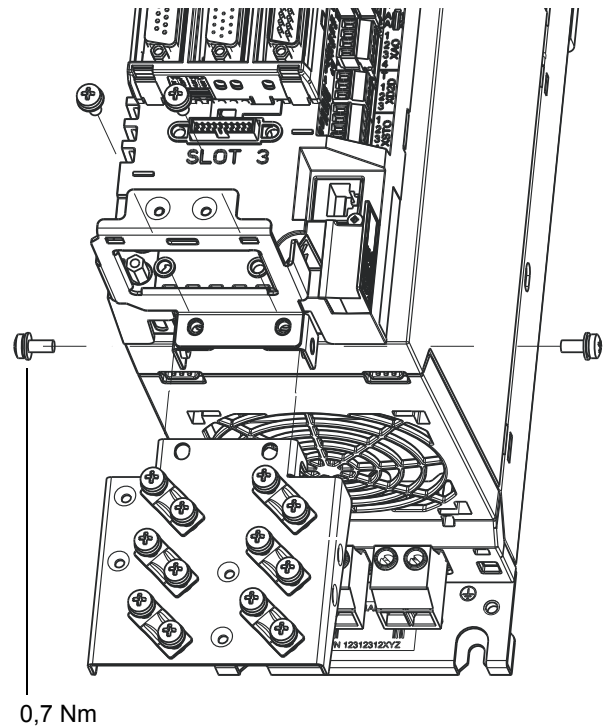


OFF



## Montering av kabelöverfallsplåt

Kabelöverfallsplåten kan monteras på över- eller underdelen av styrenheten JCU.



---

Fortsätt med idrifttagningen enligt instruktionerna i aktuell *Snabbguide*.

---

*Beskrivning av systemprogramvara för information om inställning av överbelastningsskydd.*

## Tekniska data

### UL-checklista

- ACSM850-04 är en frekvensomriktare med kapslingsklass IP20 (UL, öppen typ) för användning i kontrollerat inomhusklimat med uppvärmning. Frekvensomriktaren skall installeras i miljö med ren luft i enlighet med sin kapslingsklass. Kylluften skall vara ren, utan frätande eller ledande partiklar. Se *Hårdvaruhandledning* för detaljerad specifikation.
- Max tillåten omgivningstemperatur är 40°C vid märkström. Strömmen stämplas ner inom temperaturområdet 40 till 55°C.
- Frekvensomriktaren lämpar sig för användning i kretsar med matningskapacitet upp till 100 000 A rms symmetriskt, 500 V max.
- Kablarna i motorkretsen måste vara klassade för minst 75°C i UL-normerade installationer.
- Nätkabeln måste skyddas med säkringar eller brytare. Lämpliga IEC- (klass gG) och UL- (klass T) säkringar listas i *Tekniska data* i *Hårdvaruhandledningen*. För val av lämpliga brytare, kontakta ABB.
- Vid installation i USA måste grenledningsskydd tillhandahållas i enlighet med National Electrical Code (NEC) och eventuella lokala föreskrifter. För att uppfylla detta krav, använd UL-klassificerade säkringar.
- Vid installation i Kanada måste det finnas grenledningsskydd i enlighet med Canadian Electrical Code och eventuella lokala föreskrifter. För att uppfylla detta krav, använd UL-klassificerade säkringar.
- Frekvensomriktaren erbjuder överbelastningsskydd i enlighet med National Electrical Code (NEC). Se aktuell

## Hızlı kurulum kılavuzu - ACS850-04

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### Kılavuz hakkında

Bu kılavuz, ACS850-04 sürücü modülünün (0,37 - 45 kW) mekanik ve elektrik donanımı hakkında temel bilgiler içermektedir. Belgelerin tamamı için bkz. *ACS850-04 Sürücü Modülleri (0,37 - 45 kW) Donanım Kılavuzu* (kod: 3AUA0000045496 [İngilizce]).

### Güvenlik talimatları

---



**UYARI!** Sürücünün elektrik tesisatı kurulumu ve bakım işleri yalnızca yetkili elektrikçiler tarafından yapılmalıdır.

Sürücü, fren kıyıcı devresi, motor kablosu ve motor üzerinde sürücüde elektrik varken kesinlikle çalışmayın. Mutlaka ölçüm yaparak gerilim bulunmadığından emin olun.

Döner sabit mıknatıslı motor tehlikeli seviyede gerilim üretebilir. Sürücüye sabit mıknatıslı motor bağlamadan ve sabit mıknatıslı motora bağlı sürücü sistemi üzerinde işlem gerçekleştirirmeden önce motor şaftını mutlaka mekanik olarak kilitleyin.

### Mekanik kurulum

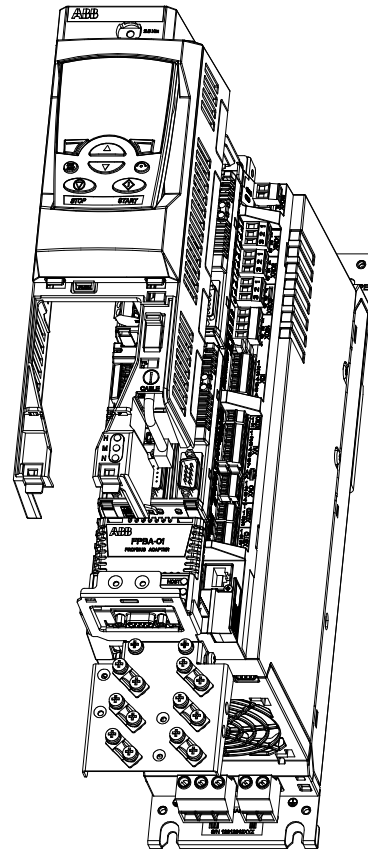
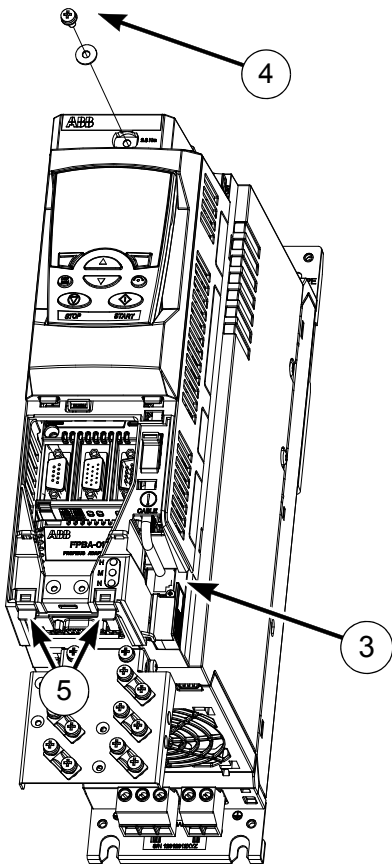
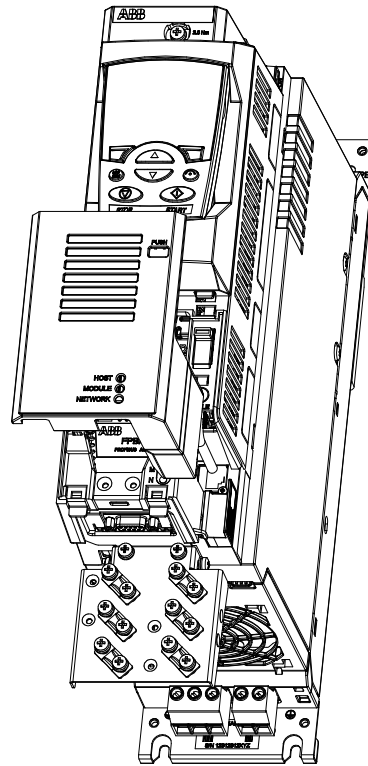
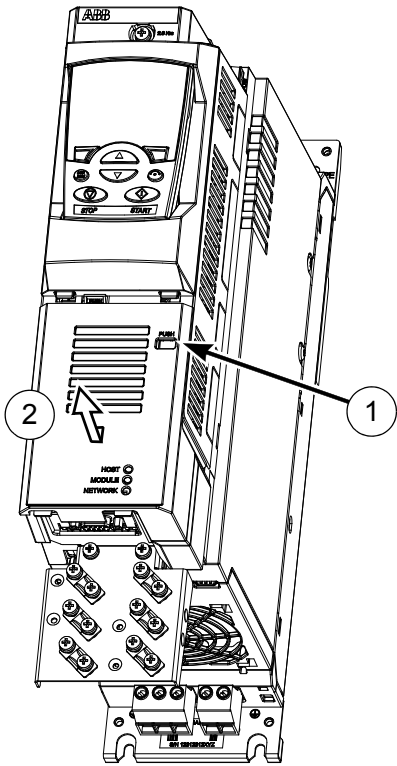
Dört montaj deliği ve vidaları kullanarak sürücü modülünü montaj kaidesine bağlayın. A ve B kasa tipleri DIN rayına monte edilebilir; ancak modüllerin alt montaj delikleri ve vidalar kullanılarak montaj kaidesine de bağlanması önerilir.

### Kapak tertibatının çıkarılması

Kapak tertibatı, opsiyonel modüllerin kurulması ve kontrol kablolarının bağlanması öncesinde çıkarılmalıdır. Kapak tertibatını çıkarmak için bu prosedürü izleyin. Sayılar, aşağıdaki çizimleri gösterir.

- Bir tornavidayla hafifçe çıkıntıya (1) bastırın.
- Alt kapak plakasını yavaşça aşağıya kaydırın ve çekerek çıkarın (2).
- Varsa, panel kablosu (3) bağlantısını kesin.
- Kapak tertibatının üst kısmında bulunan vidayı (4) çıkarın.
- İki çıkıntı (5) yardımıyla, kaidenin alt kısmını dikkatle dışarı doğru çekin.

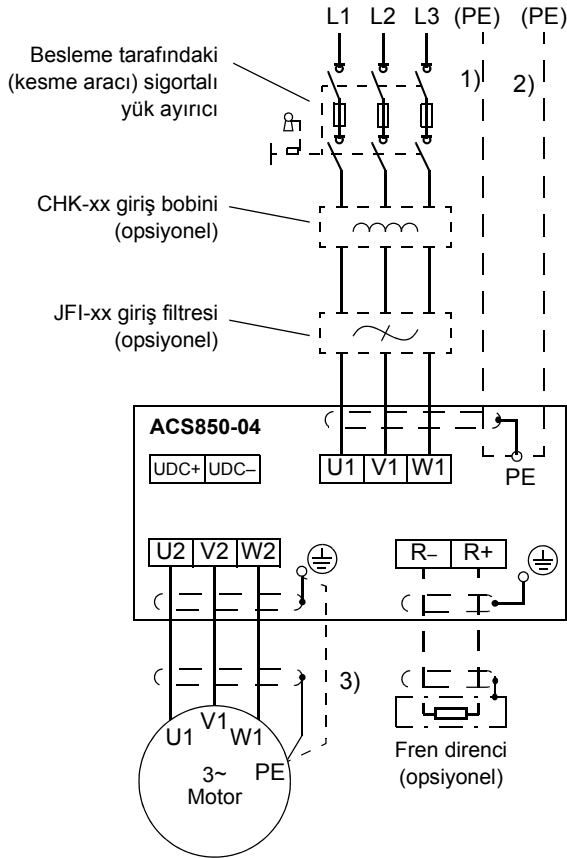
Yukarıdaki prosedürü tersten uygulayarak kapağı geri takın.





## Güç kablolarının bağlanması

### Bağlantı şeması



### Notlar:

Blendajlı besleme (giriş) kablosu kullanılıyorsa ve blendajın iletkenliği yeterli değilse (aşağıdaki tabloya bakın), toprak iletkenli bir kablo (1) veya ayrı bir PE kablosu (2) kullanın.

- Motor kablo bağlantıları için, kablo blendajının iletkenliği yeterli değilse (aşağıdaki tabloya bakın) ve kablunun simetrik toprak iletkenleri yoksa, ayrı bir toprak kablosu (3) kullanın.

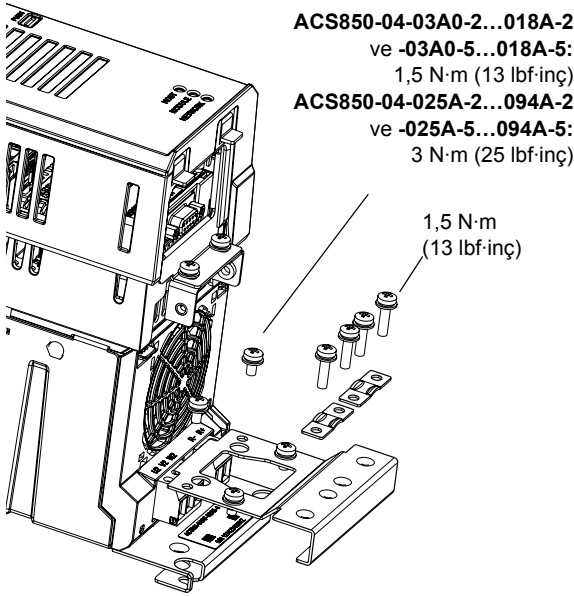
| Tek fazlı iletkenin kablo kesit alanı (S)  | Koruyucu iletkenin minimum kablo kesit alanı (S <sub>p</sub> ) |
|--|--|
| $S \leq 16 \text{ mm}^2$                   | S  |
| $16 \text{ mm}^2 < S \leq 35 \text{ mm}^2$ | 16 mm <sup>2</sup>   |
| $35 \text{ mm}^2 < S$                      | S/2  |

## Bağlantı prosedürü

Kablo bağlantı örnekleri 87. sayfada bulunmaktadır. Sıkma momentleri 87. sayfada ve metnin uygun kısımlarında verilmiştir.

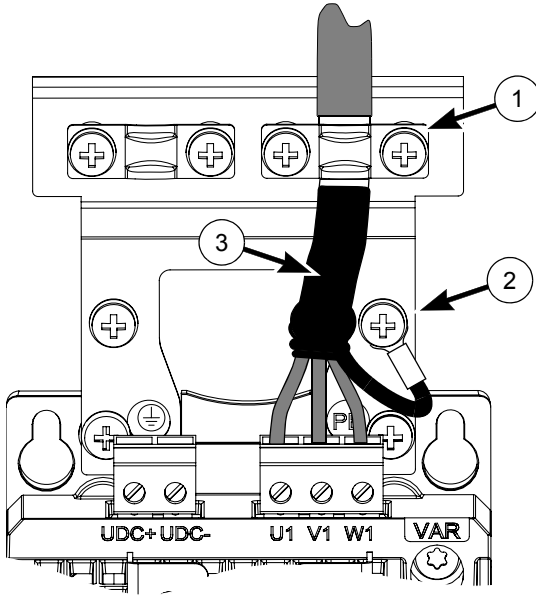
- Birlikte verilen terminal bloklarını sürücüye takın.
- Yalnızca ACS850-04-025A-2...094A-2 ve -025A-5...094A-5 : Sürücünün üst ve alt kısmındaki iki plastik konektörü çıkarın. Her kapak iki adet vida ile tutulur.
- IT (topraklanmamış) ve köşede topraklamalı TN sistemlerinde aşağıdaki vidaları çıkarın: VAR (ACS850-04-03A0-2...018A-2 ve -03A0-5...018A-5); EMC, VAR1 ve VAR2 (ACS850-04-025A-2...094A-2 ve -025A-5...094A-5).
- Sürücü ile birlikte verilen iki kablo kelepçe plakasını yukarıya ve aşağıya bağlayın. Kablo plakaları aynıdır.

- Güç kablolarını, kablo kelepçelerinde blendajın çıplak olacağı şekilde soyun.
- Beslemeyi, direnci (eğer varsa) ve motor kablolarını sürücünün uygun terminallerine bağlayın.
- Kablo kelepçelerini çıplak kablo blendajlarına sıkın. Kablo pabuçlarını kullanarak kablo blendaj uçlarını toprak terminallerine bağlayın. Görülen çıplak blendajı yalıtım bandıyla kapatın.
- Yalnızca ACS850-04-025A-2...094A-2 ve -025A-5...094A-5: Kablolar için konektör kapaklarının kenarlarında uygun yuvalar kesin. Kapakları yerine takın.
- Motor kablo blendajını motor tarafında topraklayın.



## Kablo bağlantı örnekleri

ACS850-04-03A0-5...018A-5



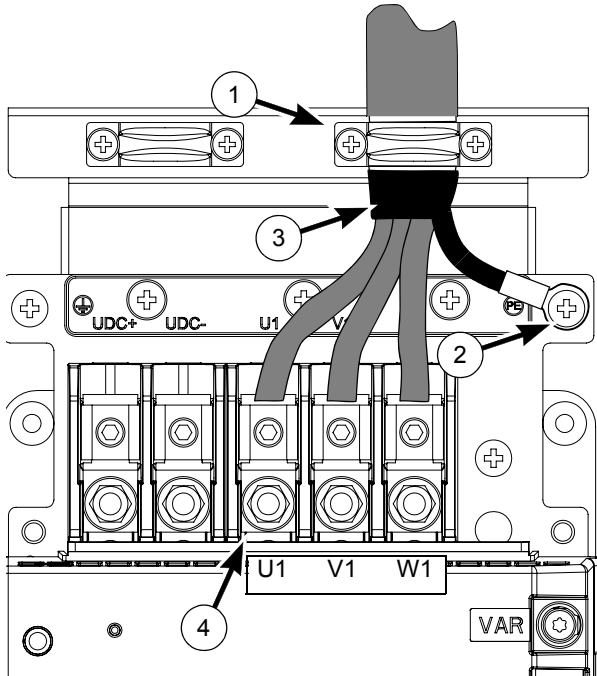
- 1 Çıplak blendaj üzerinde kablo kelepçesi.
- 2 PE/Toprak bağlantısı.
- 3 Kablo kelepçesi ile terminaller arasında çıplak blendajı yalıtım bandı ile kapatın.
- 4 Vida pabucu ayrıntıları:



## Güç terminallerine uygun kablo boyutları

| Sürücü tipi ACS850-04...              | Kablo boyutu               |
|---------------------------------------|----------------------------|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0,25 ... 4 mm <sup>2</sup> |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 0,5 ... 6 mm <sup>2</sup>  |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 6 ... 70 mm <sup>2</sup>   |

ACS850-04-025A-5...094A-5



## Sıkma momentleri

| Sürücü tipi<br>ACS850-04...           | Güç terminalleri (besleme,<br>motor ve fren direnci<br>kabloları) | Vida pabucu<br>(Allen vida) |
|---------------------------------------|---|-----------------------------|
|                                       | N-m (lbf-inç)   | N-m (lbf-ft)                |
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0,5 ... 0,6 (4,4 ... 5,3)   | N/A                         |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1,2 ... 1,5 (10,6 ... 13,3)                                       | N/A                         |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 3 (25)  | 15 (11)                     |

| Sürücü tipi<br>ACS850-04...           | PE/Toprak<br>terminalleri | Güç kablosu<br>kelepçeleri | Güç<br>konektörü<br>kapakları |
|---------------------------------------|---------------------------|----------------------------|-------------------------------|
|                                       | N-m (lbf-inç)             | N-m (lbf-inç)              | N-m (lbf-inç)                 |
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 1,5 (13)                  | 1,5 (13)                   | N/A                           |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1,5 (13)                  | 1,5 (13)                   | N/A                           |
| -025A-2...050A-2,<br>-025A-5...050A-5 | 3 (25)                    | 1,5 (13)                   | 3 (25)                        |
| -061A-2...094A-2,<br>-061A-5...094A-5 | 18 (160)                  | 1,5 (13)                   | 3 (25)                        |

## Kontrol kablolarının bağlanması

### Varsayılan I/O bağlantı şeması

#### Notlar:

[ACS850 standart kontrol programı (Fabrika makrosu) ile varsayılan ayar. Diğer makrolar için bkz. *Yazılım Kılavuzu*.]

\*Toplam maksimum akım: 200 mA

Gösterilen kablolar yalnızca demonstrasyon amaçlıdır. Jumper ayarları için metne bakın.

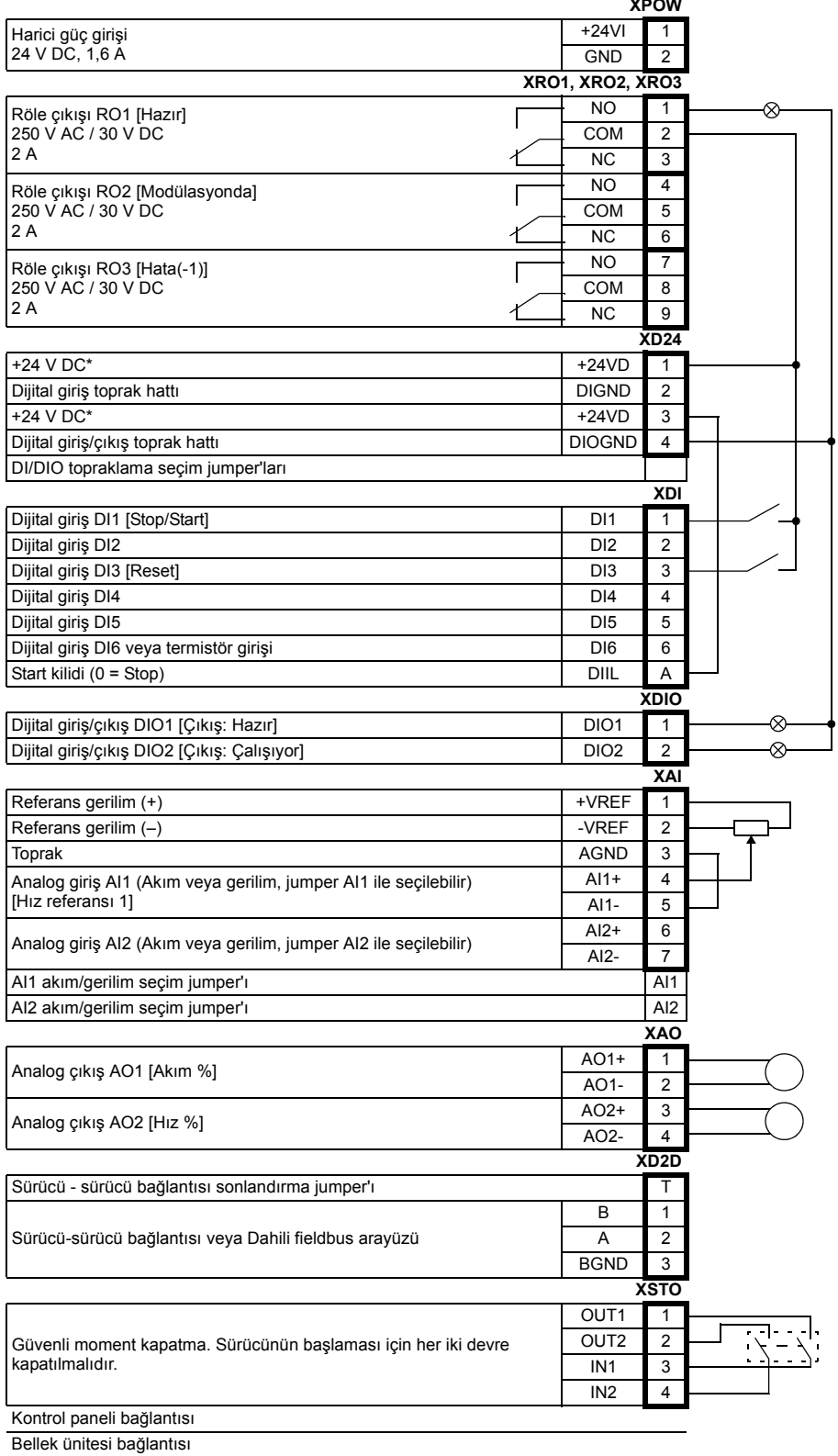
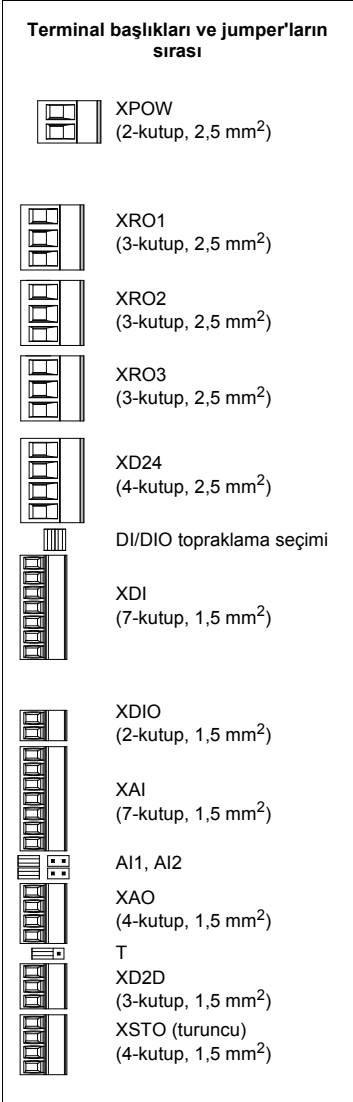
#### Kablo boyutları ve sıkma momentleri:

XPOW, XRO1, XRO2, XRO3, XD24:

0,5 ... 2,5 mm<sup>2</sup> (24...12 AWG). Moment: 0,5 N·m (5 lbf·inç)

XDI, XDIO, XAI, XAO, XD2D, XSTO:

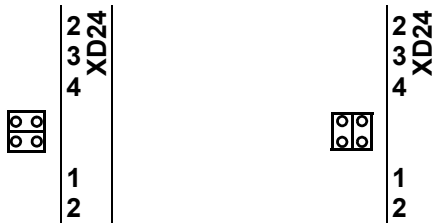
0,5 ... 1,5 mm<sup>2</sup> (28...14 AWG). Moment: 0,3 N·m (3 lbf·inç)



- Kumanda ünitesi üzerindeki jumper'ları uygun konuma ayarlayın:

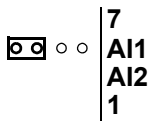
**DI/DIO topraklama seçimi** – XD24 ve XDI arasında bulunur. DIGND'nin (DI1...DI5 toprak hattı) dalgalanıp dalgalanmadığını veya DIOGND'ye (DI6, DIO1 ve DIO2 toprak hattı) bağlanıp bağlanmayacağını belirler. DIGND dalgalanırsa, DI1...DI5 ortak hattının (GND ya da  $V_{cc}$ ) XD24:2'ye bağlanması gerekir.

DIGND dalgalanması DIOGND'ye bağlı DIGND

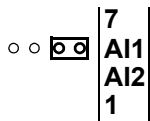


**AI1** – Analog giriş AI1'in akım veya gerilim girişi olarak kullanımını belirler.

Akım

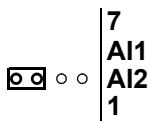


Gerilim

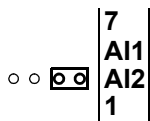


**AI2** – Analog giriş AI2'nin akım veya gerilim girişi olarak kullanımını belirler.

Akım



Gerilim



**T** – Sürücü - sürücü bağlantı sonlandırma. Eğer sürücü bağlantıdaki son ünite ise ON olarak ayarlayın.

ON

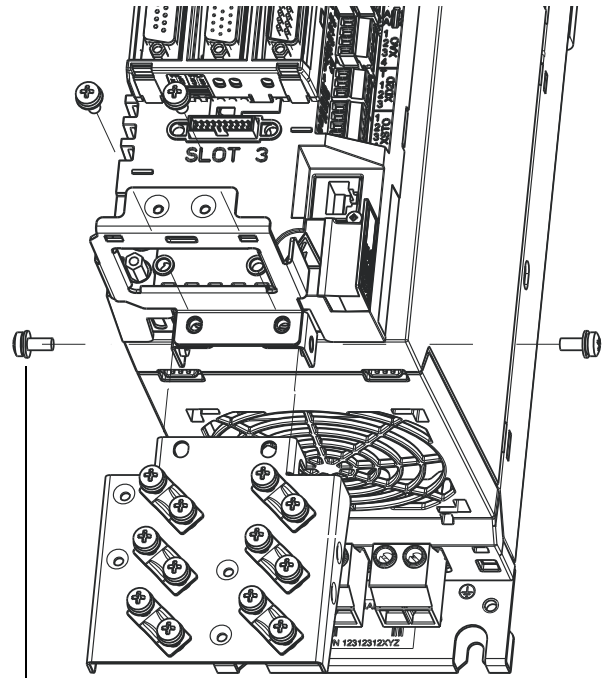


OFF



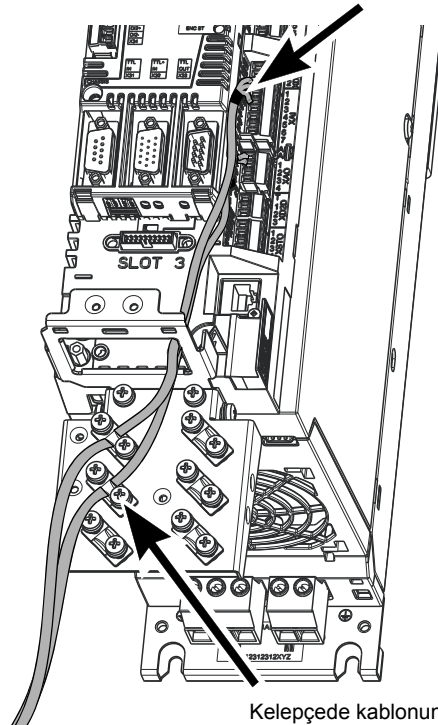
## Kelepçe plakasının monte edilmesi

Kelepçe plakası JCU Kumanda Ünitesinin üzerine veya altına bağlanabilir.



0,7 N·m (6,2 lbf-inç)

Boştaki teller için ısı koruması veya yalıtım bandı kullanın



Kelepçede kablunun dış korumasını çıkarın ve kablo blendajına ulaşın  
1,5 N·m (13 lbf-inç)

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Uygun Hızlı Kurulum Kılavuzundaki talimatlara göre sürücü devreye alma ile devam edin.

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## Teknik veriler

### UL kontrol listesi

- ACS850-04; ısıtılmalı, kapalı, kontrollü alanlarda kullanılan bir IP20 (UL açık tip) sürücüdür. Sürücü muhafaza sınıfına uygun temiz hava koşullarında kurulmalıdır. Soğutma havasının temiz, korozif materyallerden ve elektrik açısından iletken tozlardan arınmış olması gerekir. Ayrıntılı özellikler için bkz. *Donanım Kılavuzu*.
- Nominal akımda maksimum ortam hava sıcaklığı 40 °C'dir (104 °F). Akım 40'tan 55 °C'ye düşer (104'ten 131 °F'ye).
- Sürücü, maksimum 500 V'luk 100.000 rms simetrik amperden fazla sağlama kapasitesi olmayan devrede kullanım için uygundur.
- Motor devresinde bulunan kablolar UL uyumlu tesisatlarda en az 75 °C (167 °F) için uygun olmalıdır.
- Giriş kablosu sigortalarla ya da devre kesicilerle korunmalıdır. Uygun IEC (sınıf gG) ve UL (sınıf T) sigortaların listesi, *Donanım Kılavuzu*'nun *Teknik veriler* bölümünde verilmiştir. Uygun devre kesiciler için yerel ABB temsilciniz ile iletişim kurun.
- ABD'de kurulum için, dal devresi koruması, Ulusal Elektrik Yasası (NEC) ve tüm yürürlükteki yerel yasalarla uygun olarak sağlanmalıdır. Bu gereksinimi karşılamak için UL sınıfı sigortalar kullanın.
- Kanada'da gerçekleştirilecek kurulumlar için dal devresi koruması Kanada Elektrik Yasalarına ve yürürlükteki tüm yerel yasalara uygun olarak sağlanmalıdır. Bu gereksinimi karşılamak için UL sınıfı sigortalar kullanın.
- Sürücü, Ulusal Elektrik Yasasına (NEC) uygun aşırı yük koruması sağlamaktadır. Aşırı yük koruması ayarları için uygun *Yazılım Kılavuzuna* bakın.

## Краткое руководство по монтажу – ACS850-04

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### Об этом руководстве

В этом руководстве содержится самая общая информация о механическом и электрическом монтаже привода ACS850-04 (0,37 – 45 кВт). Полное описание приведено в документе *Руководство по монтажу и эксплуатации модуля ACS850-04 (0,37 - 45 кВт)* (код: 3AUA0000045496 [англ. версия]).

### Указания по технике безопасности

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**ПРЕДУПРЕЖДЕНИЕ!** Все работы по электрическому монтажу и техническому обслуживанию привода должны проводиться только квалифицированными электриками.

Запрещается выполнять работы на приводе, цепи тормозного прерывателя, кабеле двигателя и двигателе при включенном входном питании привода. Перед тем как приступить к работе, следует измерить напряжение, чтобы убедиться в его отсутствии.

Вращающийся двигатель с постоянными магнитами генерирует опасное напряжение. Перед подключением двигателя с постоянными магнитами к приводу или перед выполнением любых работ на подключенной к такому двигателю системе привода необходимо физически заблокировать вал двигателя.

### Механический монтаж

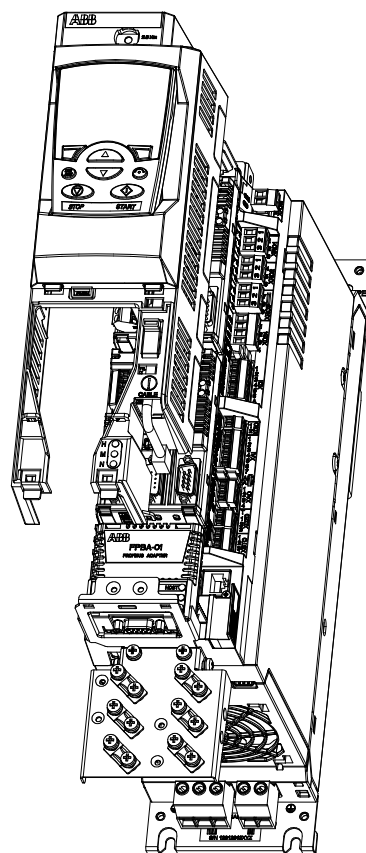
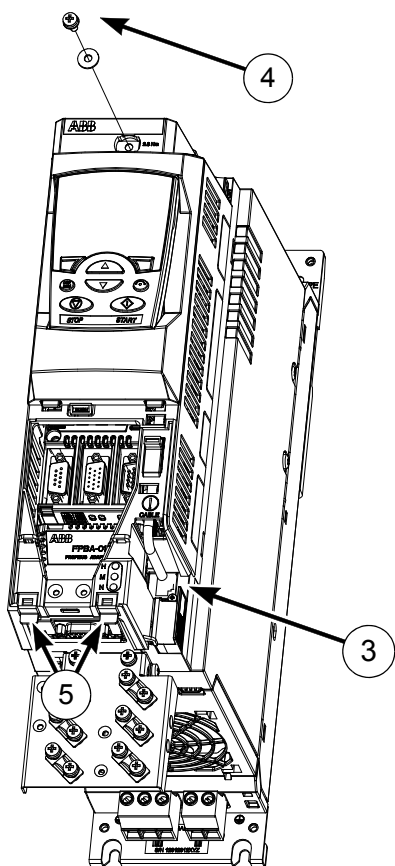
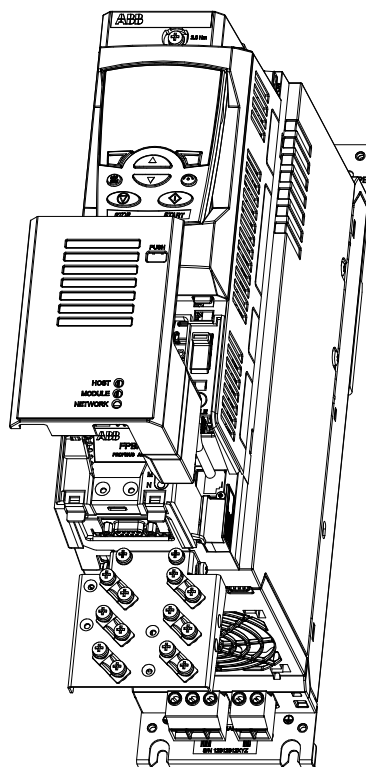
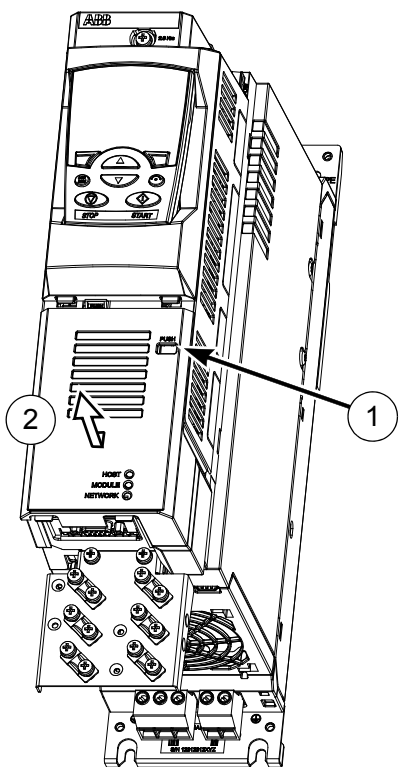
Прикрепите приводной модуль к монтажной панели винтами, используя для этого четыре отверстия. Модули типоразмеров А и В могут быть установлены на DIN-рейке; однако настоятельно рекомендуется закрепить эти модули на монтажной панели двумя винтами (нижние монтажные отверстия).

### Демонтаж крышки

Прежде чем устанавливать дополнительные модули и подключать кабели управления, необходимо снять крышку. Крышка снимается описанным далее способом. Цифры соответствуют таковым на приведенном ниже рисунке.

- Слегка нажмите отверткой на фиксатор (1).
- Немного сдвиньте плоскую крышку вниз и вытяните ее (2).
- Отсоедините кабель панели (3), если он имеется.
- Удалите винт (4) наверху крышки.
- Осторожно потяните основание наружу за две лапки (5).

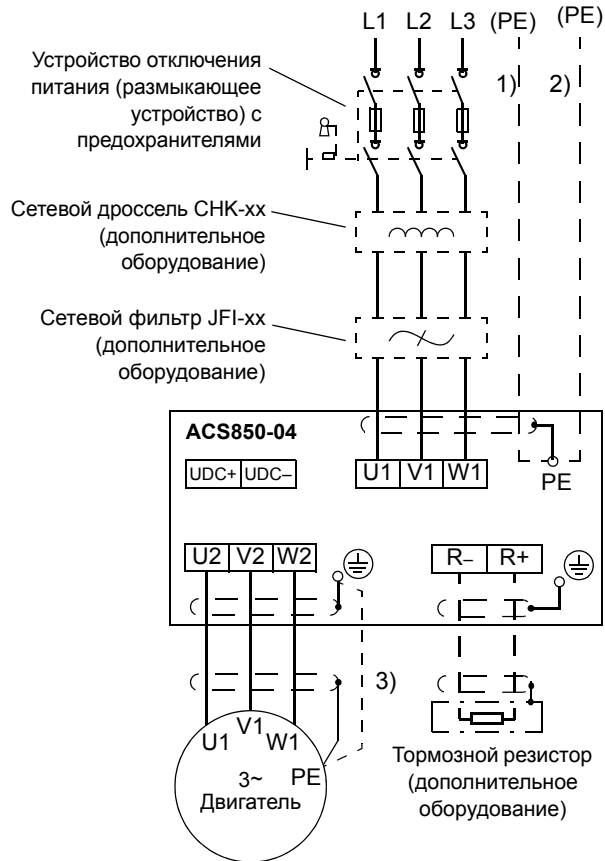
Установка крышки производится в обратном порядке.





## Монтаж силовых кабелей

### Схема подключения



### Примечания.

- Если используется экранированный кабель питания (входной) и проводимость экрана недостаточна (см. таблицу ниже), необходим кабель с заземляющим проводом (1) или отдельный кабель защитного заземления PE (2).

- Если проводимость экрана кабеля подключения двигателя недостаточна (см. таблицу ниже) и кабель не имеет симметричных проводов заземления, для подключения двигателя используйте отдельный кабель заземления (3).

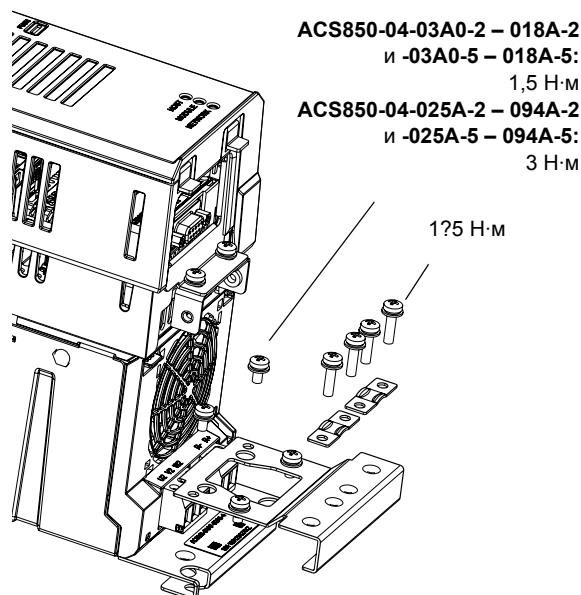
| Сечение одного фазного проводника (S)      | Минимальное сечение защитного проводника (S <sub>p</sub> ) |
|--|--|
| $S \leq 16 \text{ мм}^2$                   | S  |
| $16 \text{ мм}^2 < S \leq 35 \text{ мм}^2$ | 16 мм <sup>2</sup>   |
| $35 \text{ мм}^2 < S$                      | S/2  |

## Порядок подключения

Примеры подключения кабелей представлены на стр. 95. Моменты затяжки приведены на стр. 95 и в соответствующих разделах документа.

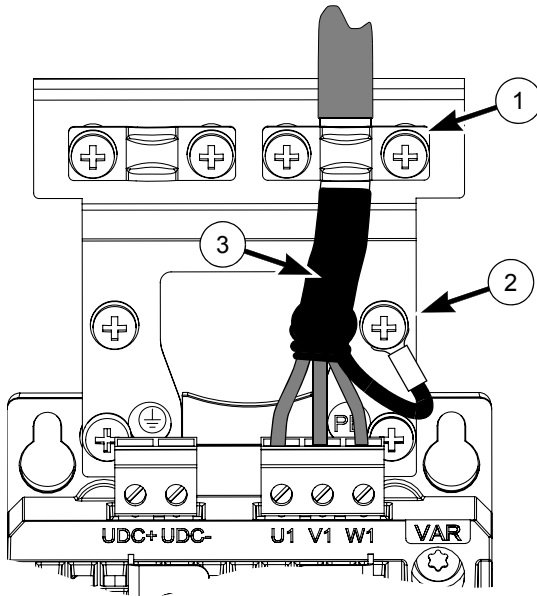
- Вставьте клеммные колодки, входящие в комплект привода.
- Только для приводов ACS850-04-**025A-2 – 094A-2** и **-025A-5 – 094A-5**: снимите две пластмассовые крышки с клеммных колодок, расположенных в верхней и нижней частях привода. Каждая крышка закреплена двумя винтами.
- В системах питания IT (незаземленных) и TN (с заземленной вершиной треугольника) удалите следующие винты: VAR (ACS850-04-**03A0-2 – 018A-2** и **-03A0-5 – 018A-5**); EMC, VAR1 и VAR2 (ACS850-04-**025A-2 – 094A-2** и **-025A-5 – 094A-5**).
- Закрепите две прижимные планки кабеля (входят в комплект), одну сверху и одну снизу. Прижимные планки идентичны.

- Зачистите кабели питания таким образом, чтобы оголить экран под кабельными зажимами.
- Подключите провода питания, резистора (если есть) и двигателя к соответствующим клеммам привода.
- Зажмите участки кабелей с зачищенным экраном кабельными зажимами. Присоедините концы экранов кабеля к клеммам заземления с помощью кабельных наконечников. Обмотайте открытую часть зачищенного экрана изолянтной лентой.
- Только для приводов ACS850-04-**025A-2 – 094A-2** и **-025A-5 – 094A-5**: вырежьте соответствующие пазы на краях крышек разъемов для прокладки кабелей. Установите крышки на место.
- Заземлите экран кабеля двигателя на стороне двигателя.



## Примеры подключения кабелей

ACS850-04-03A0-5 – 018A-5



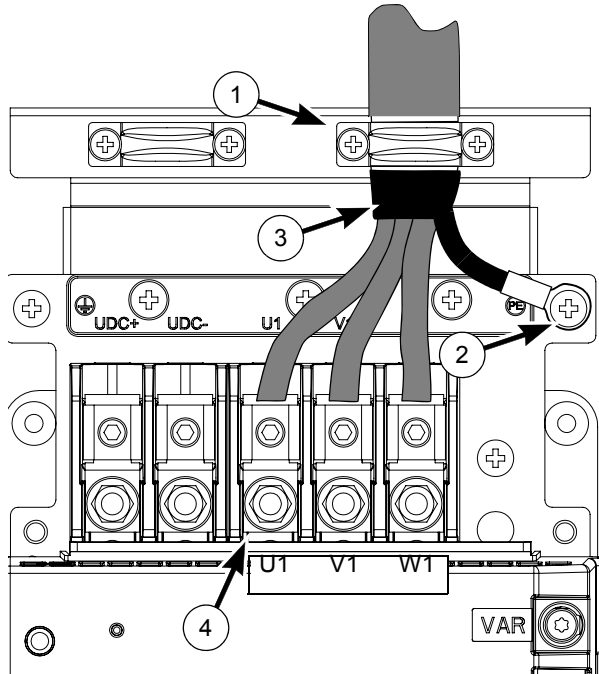
- 1 Кабельный зажим на зачищенном экране.
- 2 Подключение защитного заземления (PE).
- 3 Между кабельным зажимом и клеммами обмотайте зачищенный экран изолянтной.
- 4 Детальное изображение винтового кабельного наконечника:



## Сечения проводов, которые могут быть подключены к силовым клеммам

| Тип привода ACS850-04...              | Сечение провода          |
|---------------------------------------|--------------------------|
| -03A0-2 – 08A0-2,<br>-03A0-5 – 08A0-5 | 0,25 – 4 мм <sup>2</sup> |
| -010A-2 – 018A-2,<br>-010A-5 – 018A-5 | 0,5 – 6 мм <sup>2</sup>  |
| -025A-2 – 094A-2,<br>-025A-5 – 094A-5 | 6 – 70 мм <sup>2</sup>   |

ACS850-04-025A-5 – 094A-5



## Моменты затяжки

| Тип привода ACS850-04...              | Силовые клеммы<br>(кабели питания,<br>двигателя и<br>тормозного<br>резистора)<br>Н·м (фунт-дюймы) | Винтовой<br>кабельный<br>наконечник<br>(винт с внутренним<br>шестигранником)<br>Н·м (фунт-футы) |
|---------------------------------------|---|---|
| -03A0-2 – 08A0-2,<br>-03A0-5 – 08A0-5 | 0,5 – 0,6 (4,4 – 5,3)   | –   |
| -010A-2 – 018A-2,<br>-010A-5 – 018A-5 | 1,2 – 1,5 (10,6 –<br>13,3)  | –   |
| -025A-2 – 094A-2,<br>-025A-5 – 094A-5 | 3 (25)  | 15 (11)   |

| Тип привода ACS850-04...              | Выводы<br>защитного<br>заземления<br>(PE).<br>Н·м (фунт-<br>дюймы) | Силовые<br>кабельные<br>зажимы<br>Н·м (фунт-<br>дюймы) | Крышки<br>силовых<br>клемм<br>Н·м (фунт-<br>дюймы) |
|---------------------------------------|--|--|--|
| -03A0-2 – 08A0-2,<br>-03A0-5 – 08A0-5 | 1,5 (13)   | 1,5 (13)   | –  |
| -010A-2 – 018A-2,<br>-010A-5 – 018A-5 | 1,5 (13)   | 1,5 (13)   | –  |
| -025A-2 – 050A-2,<br>-025A-5 – 050A-5 | 3 (25)   | 1,5 (13)   | 3 (25)   |
| -061A-2 – 094A-2,<br>-061A-5 – 094A-5 | 18 (160)   | 1,5 (13)   | 3 (25)   |

# Монтаж кабелей управления

## Стандартная схема подключения входов/выходов

**Примечания.**

[Установка по умолчанию при использовании стандартной программы управления ACS850 (заводской макрос). Относительно других макросов см. *Руководство по микропрограммному обеспечению.*]

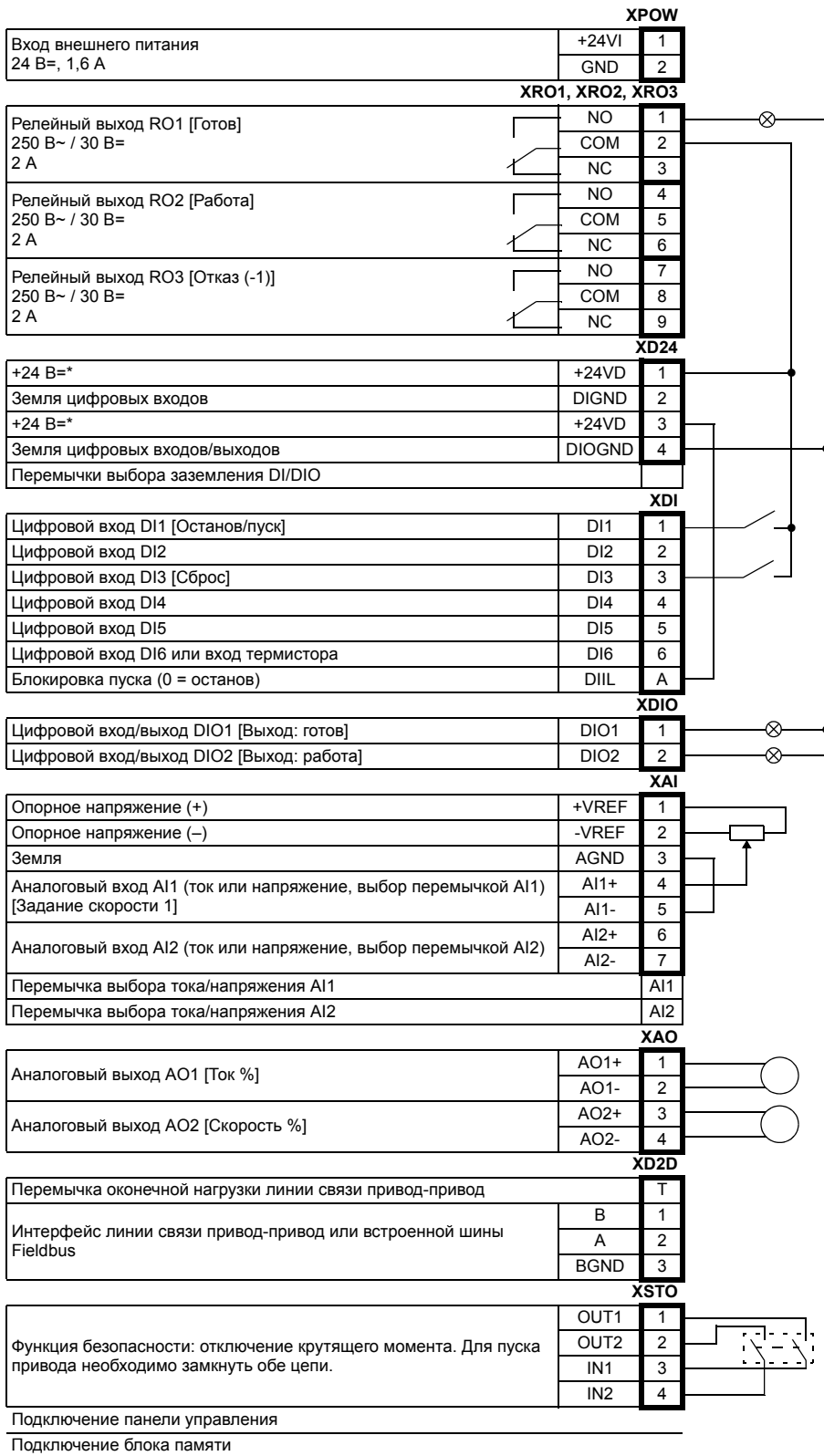
\*Максимальный суммарный ток: 200 мА

Схема соединений показана только с целью демонстрации. Относительно расположения переключателей см. текст.

**Сечения проводов и моменты затяжки:**

**XPOW, XRO1, XRO2, XRO3, XD24:**  
0,5 ... 2,5 мм<sup>2</sup>. Момент затяжки: 0,5 Н·м

**XDI, XDIO, XAI, XAO, XD2D, XSTO:**  
0,5 ... 1,5 мм<sup>2</sup>. Момент затяжки: 0,3 Н·м

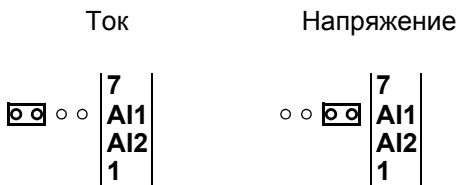


- Установите переключки блока управления в соответствующие положения:

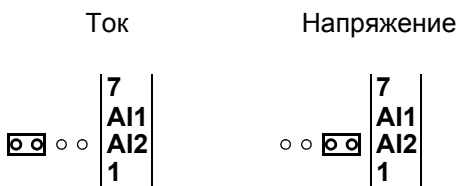
**Переключка выбора заземления DI/DIO** – находится между XD24 и XD1. Определяет, является ли точка DIGND плавающей (земля для DI1 – DI5) или она подключена к DIOGND (земля для DI6, DIO1 и DIO2). Если точка DIGND является плавающей, общая точка входов DI1 – DI5 (либо GND, либо  $V_{CC}$ ) должна быть подключена к XD24:2.



**AI1** – определяет, используется ли аналоговый вход AI1 в качестве входа тока или напряжения.



**AI2** – определяет, используется ли аналоговый вход AI2 в качестве входа тока или напряжения.

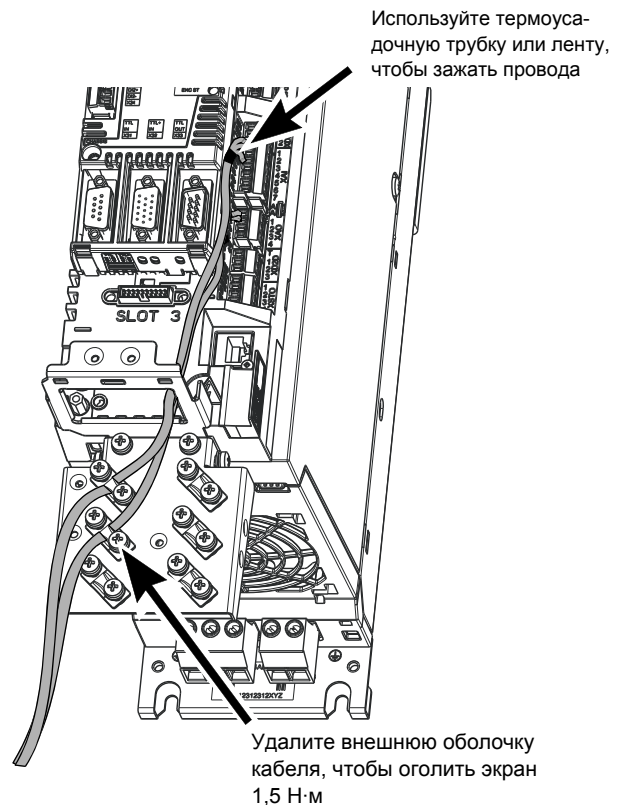
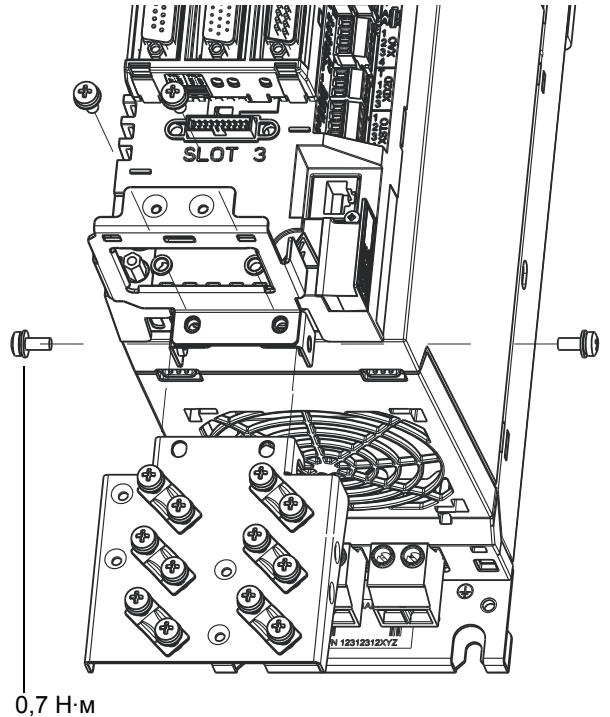


**T** – оконечная нагрузка линии связи привод-привод. Установите в положение ON (ВКЛ), если привод является последним на линии.



### Крепление монтажной пластины

Монтажная пластина с кабельными зажимами может быть установлена в верхней или нижней части блока управления JCU



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Продолжите процедуру ввода привода в эксплуатацию в соответствии с указаниями *Краткого руководства по вводу в эксплуатацию*.

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## Технические характеристики

### Контрольный перечень UL

- Привод ACS850-04 имеет класс защиты IP20 (открытого типа по стандарту UL) и предназначен для использования в отапливаемых закрытых помещениях с контролируруемыми условиями. Привод должен быть установлен в помещении с чистым сухим воздухом в соответствии с классом защиты. Охлаждающий воздух должен быть чистым и не должен содержать агрессивные вещества и электропроводящую пыль. Подробное описание см. в *Руководстве по монтажу и эксплуатации*.
- Максимальная температура окружающего воздуха: 40 °С при номинальном токе. Ток должен быть снижен при температурах от 40 до 55 °С.
- Привод предназначен для использования в сетях с максимальными среднеквадратичными значениями симметричного тока не более 100 000 А при напряжении не более 500 В.
- Кабели, служащие для подключения двигателя, должны выдерживать температуру не менее 75 °С в установках, соответствующих стандарту UL.
- Входной кабель должен быть защищен плавкими предохранителями или автоматическими выключателями. Соответствующие стандартам IEC (класс gG) и UL (класс T) плавкие предохранители перечислены в разделе *Технические характеристики Руководства по монтажу и эксплуатации*. Информацию о соответствующих требованиях к автоматическим выключателям можно получить в местном представительстве ABB.

- Для монтажа в США должна быть обеспечена защита цепей в соответствии с Национальным сводом законов и технических стандартов США по электротехнике (NEC) и всеми действующими местными нормами и правилами. Для выполнения этих требований используйте плавкие предохранители с сертификацией UL.
- Для монтажа в Канаде должна быть обеспечена защита цепей в соответствии с Канадским электротехническим кодексом и всеми действующими нормами и правилами провинций. Для выполнения этих требований используйте плавкие предохранители с сертификацией UL.
- Привод обеспечивает защиту от перегрузки в соответствии с Национальным сводом законов и технических стандартов США по электротехнике (NEC). Информацию о защите от перегрузки см. в соответствующем документе – *Руководстве по микропрограммному обеспечению*.

## 快速安装指南 - ACS850-04

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### 简介

本指南介绍了 ACS850-04 (0.37 至 45 kW) 传动模块机械和电气安装。完整的文件请参见 *ACS850-04 (0.37 至 45 kW) 传动模块硬件手册* (编号: 3AUA0000045496[英文])。

### 安全须知

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**警告!** 只有具备资质的电气工程师才可以对传动进行安装和维护。

不能对带电的传动、制动斩波电路、电机电缆或电机进行任何操作。开始工作前，要确认传动没有危险电压。

旋转的永磁电机可以产生危险电压。在永磁电机与传动连接之前，以及在传动系统连接到永磁电机并对其进行操作之前，将电机轴机械锁死。

### 机械安装

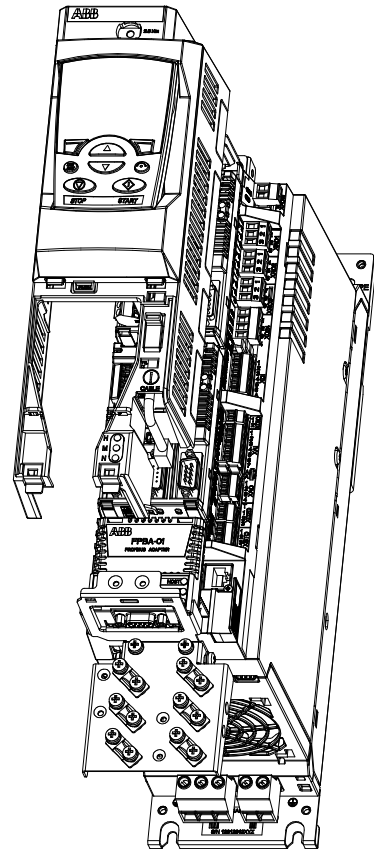
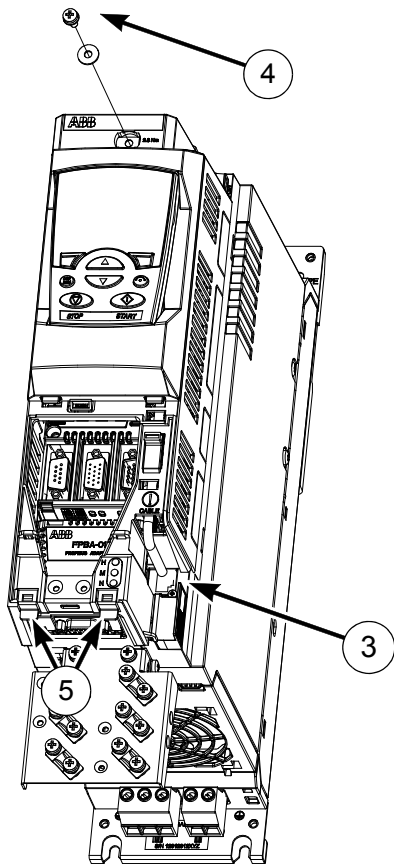
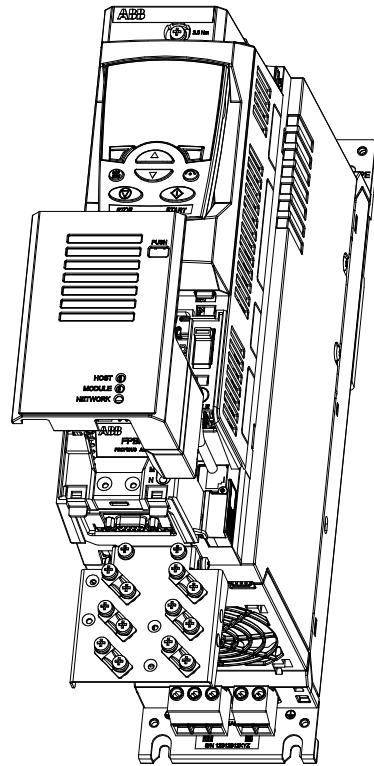
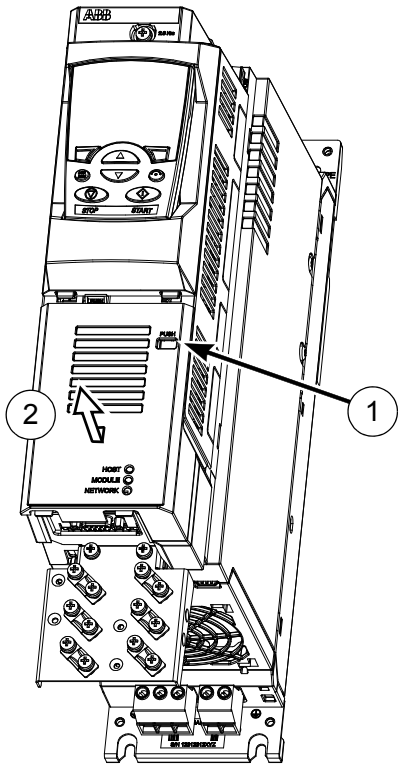
用安装螺丝通过四个安装点将传动模块固定到安装座上。外形尺寸 **A** 和 **B** 可以安装到 DIN 导轨上；**ABB** 推荐通过下部的两个安装点用安装螺丝将模块固定到安装座上。

### 拆掉盖板

在安装可选模块以及连接控制电缆之前需要先拆掉盖板。请按照以下步骤拆卸。编号与下面的插图相对应。

- 用螺丝刀轻按耳片 (1)。
- 向下轻轻滑动下部盖板，然后将其拉出 (2)。
- 断开控制盘电缆 (3) (如果有)。
- 卸掉盖板顶部的螺丝 (4)。
- 通过两个耳片 (5)，小心向外拉出底座的下面部分。

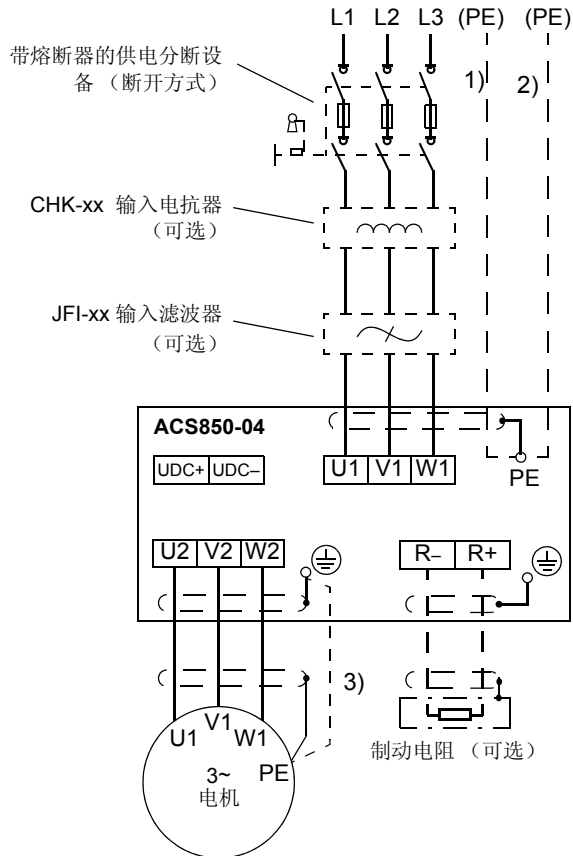
按照上述相反步骤重新安装盖板。





## 电力电缆安装

### 接线图



#### 注意:

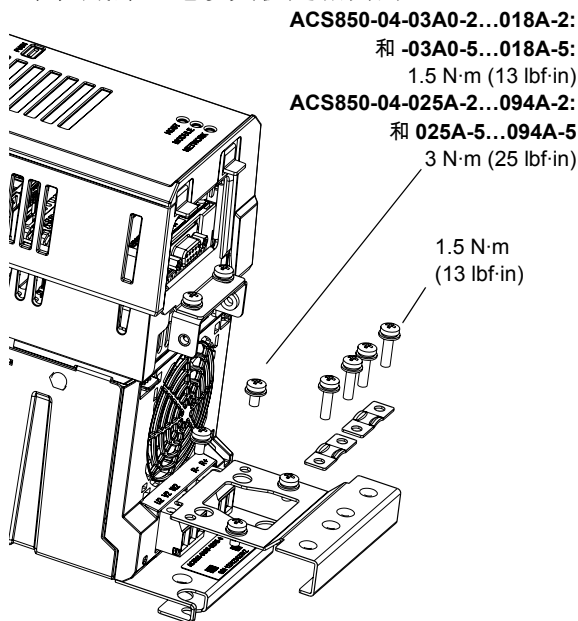
- 如果使用了带屏蔽层的电力电缆，且其屏蔽层的导电率低于相导体导电率不足 (参见下表)，那么必须使用带接地导体的电缆 (1) 或使用独立接地电缆 (2)。
- 对于电机电缆，如果电缆屏蔽层的导电率不足 (参见下表) 并且没有对称的接地导体，那么必须使用单独的地线电缆 (3)。

| 一根相线的截面积 (S)                               | 保护性导线的最小截面积 (S <sub>p</sub> ) |
|--|-------------------------------|
| $S \leq 16 \text{ mm}^2$                   | S                             |
| $16 \text{ mm}^2 < S \leq 35 \text{ mm}^2$ | 16 mm <sup>2</sup>            |
| $35 \text{ mm}^2 < S$                      | S/2                           |

## 连接步骤

请参见 103 页的接线图。紧固力矩和相关数据在 103 页给出。

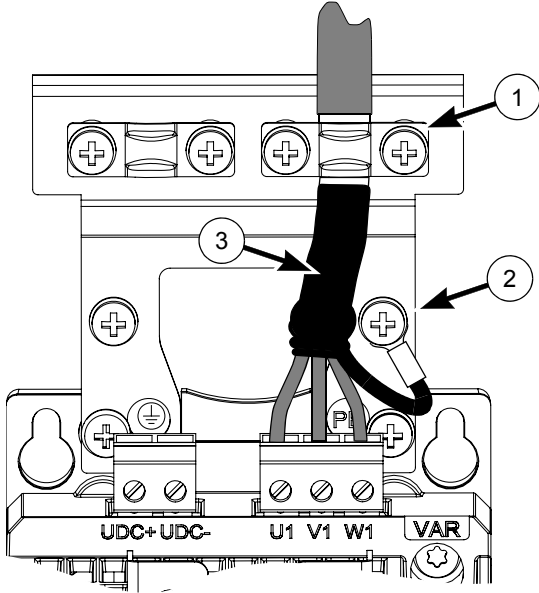
- 把端子排安装到传动单元上。
- 仅对于 ACS850-04-025A-2...094A-2 和 -025A-5...094A-5: 取下传动顶部和底部的两个塑料连接器盖板。每个盖板用两个螺丝固定。
- 在 IT (浮地) 电网系统和角接地 TN 系统中, 拆下位于传动的电源端子旁边标有 VAR 字样的螺丝。对于 ACS850-04-03A0-2...018A-2 和 -03A0-5...018A-5 ; ACS850-04-025A-2...094A-2 和 -025A-5...094A-5 型号的传动, 如果有标有 EMC1 和 EMC2 的螺钉, 也要拆下。
- 固定好传动的两个电缆固定夹, 一个在顶部, 一个在底部。电缆夹板是相同的。



- 剥开动力电缆, 使其屏蔽层裸露在电缆固定夹上。
- 将电源电缆、电阻电缆 (如有) 和电机电缆连接到传动相应的端子上。
- 将电缆固定夹和电缆屏蔽层紧固到一起。用电缆固定夹将电缆屏蔽层的末端连接。对于可见的屏蔽层用绝缘胶带进行处理。
- 仅对于 ACS850-04-025A-2...094A-2 和 -025A-5...094A-5: 对连接器盖板进行裁剪使其满足电源和电机电缆的安装要求。
- 在电机端将电机电缆屏蔽层接地。

接线图

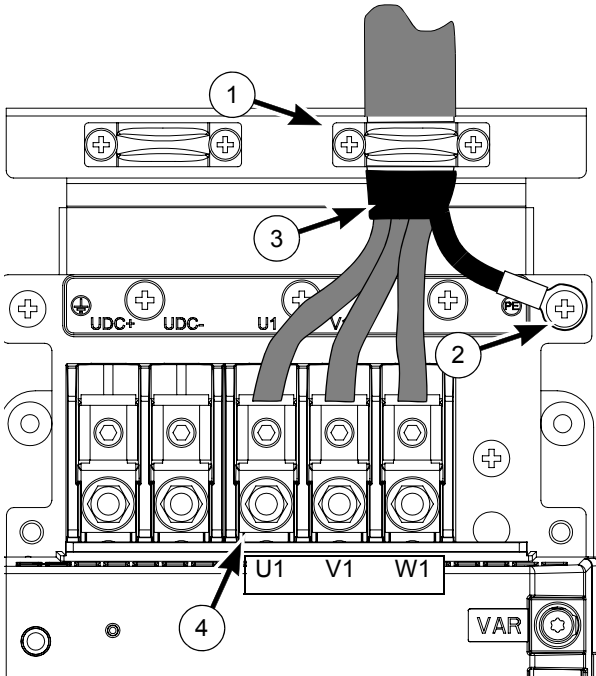
ACS850-04-03A0-5...018A-5



- ① 在裸露屏蔽层上的电缆固定夹。
- ② PE/ 接地连接。
- ③ 电缆固定夹下面，用绝缘套管将裸露的屏蔽层包住。
- ④ 螺丝接线柱放大图：



ACS850-04-025A-5...094A-5



动力端子适用的电缆规格

| 传动型号 ACS850-04...                     | 电缆规格                       |
|---------------------------------------|----------------------------|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0.25 ... 4 mm <sup>2</sup> |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 0.5 ... 6 mm <sup>2</sup>  |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 6 ... 70 mm <sup>2</sup>   |

紧固力矩

| 传动型号 ACS850-04...                     | 动力端子 ( 电源电缆, 电机<br>电缆, 制动电阻电缆 )<br>N·m (lbf·in) | 螺丝接线柱<br>( 艾伦螺丝 )<br>N·m (lbf·ft) |
|---------------------------------------|---|-----------------------------------|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 0.5 ... 0.6 (4.4 ... 5.3)                       | N/A                               |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1.2 ... 1.5 (10.6 ... 13.3)                     | N/A                               |
| -025A-2...094A-2,<br>-025A-5...094A-5 | 3 (25)  | 15 (11)                           |

| 传动型号 ACS850-04...                     | PE/ 接地端子<br>N·m (lbf·in) | 电缆固定夹<br>N·m (lbf·in) | 连接器盖板<br>N·m (lbf·in) |
|---------------------------------------|--------------------------|-----------------------|-----------------------|
| -03A0-2...08A0-2,<br>-03A0-5...08A0-5 | 1.5 (13)                 | 1.5 (13)              | N/A                   |
| -010A-2...018A-2,<br>-010A-5...018A-5 | 1.5 (13)                 | 1.5 (13)              | N/A                   |
| -025A-2...050A-2,<br>-025A-5...050A-5 | 3 (25)                   | 1.5 (13)              | 3 (25)                |
| -061A-2...094A-2,<br>-061A-5...094A-5 | 18 (160)                 | 1.5 (13)              | 3 (25)                |

# 控制电缆连接

## 默认 I/O 连接图

**注意：**

[ACS850 标准控制程序的默认设置 (工厂宏)。关于其它宏请参见 固件手册。]

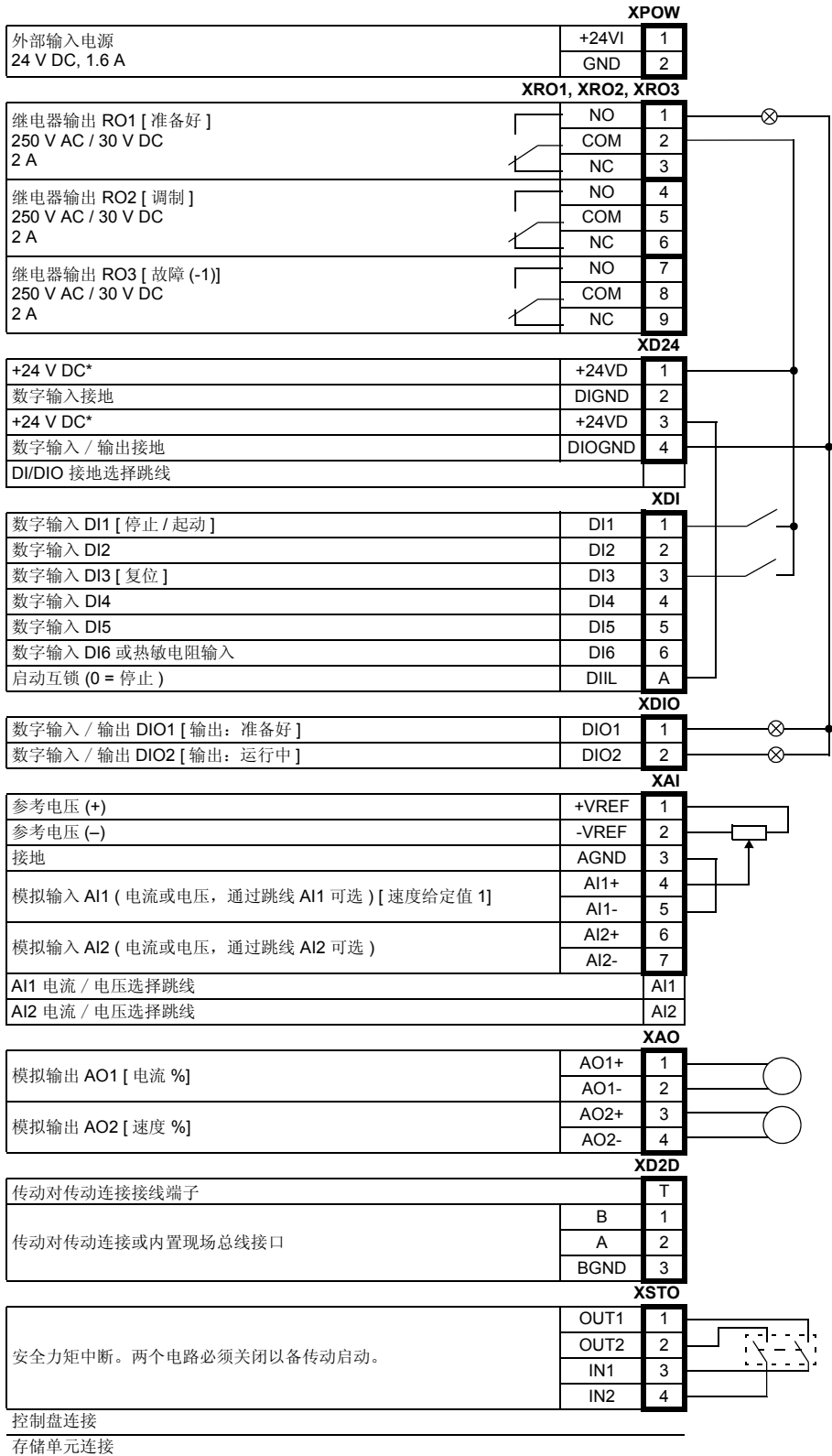
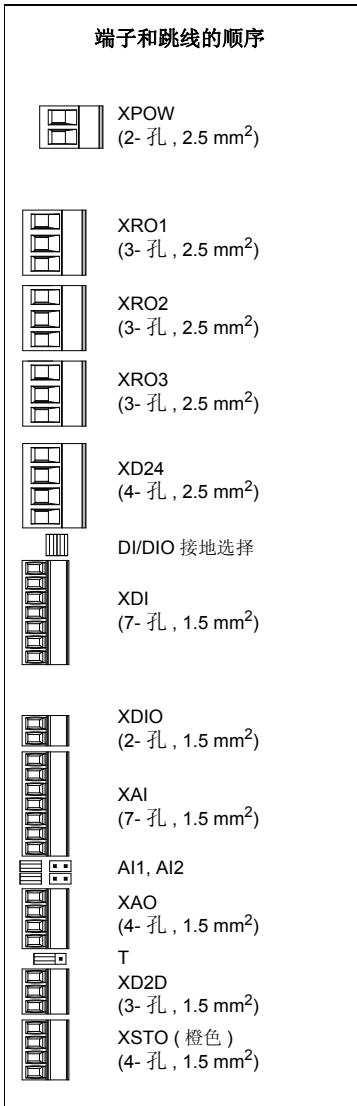
\* 总电流最大值：200 mA

连线图紧供演示说明。关于跳线设置，请参见下文。

**电缆尺寸和紧固力矩：**

**XPOW, XRO1, XRO2, XRO3, XD24:**  
0.5 ... 2.5 mm<sup>2</sup> (24...12 AWG). 力矩：  
0.5 N·m (5 lbf·in)

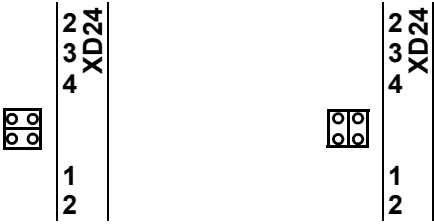
**XDI, XDIO, XAI, XAO, XD2D, XSTO:**  
0.5 ... 1.5 mm<sup>2</sup> (28...14 AWG). 力矩：  
0.3 N·m (3 lbf·in)



- 把控制单元的跳线设置到适当位置:

**DI/DIO 接地选择** – 在 XD24 和 XDI 之间。测定是否 DIGND (DI1...DI5 的接地端) 浮动, 或者是否已连接到 DIOGND (DI6, DIO1 和 DIO2 的接地端)。如果 DIGND 浮动, DI1...DI5 的公共端 (GND 或 V<sub>cc</sub> 中任意一个) 应该连接到 XD24:2。

DIGND 浮动                      DIGND 连到 DIOGND



**AI1** – 用来选择模拟输入 AI1 的输入信号是电流信号还是电压信号。

电流                                  电压



**AI2** – 用来选择模拟输入 AI2 的输入信号是电流信号还是电压信号。

电流                                  电压



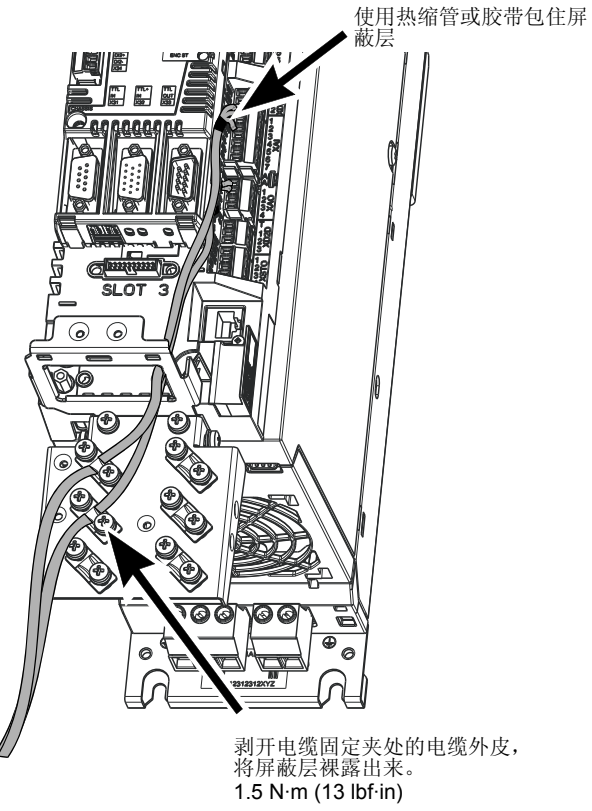
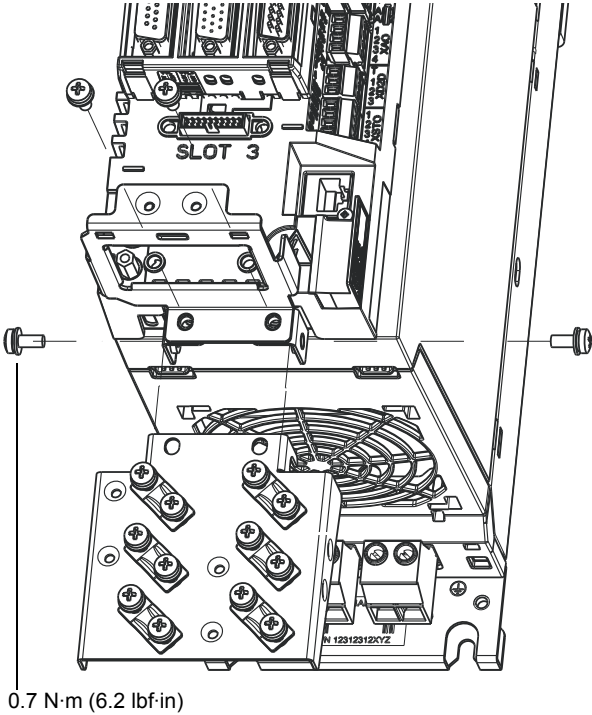
**T** – 传动对传动连接的链路终端。当传动是最后一个单元时, 必须设置到 ON 位置。

ON                                      OFF



**安装电缆固定夹**

电缆固定夹可以安装在 JCU 控制单元的顶部或底部。



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关于传动的启动请参考快速启动指南中的相关介绍。

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关于负载保护设置请参见相关固件手册。(NEC)。

## 技术数据

### UL 清单

- ACS850-04 是 IP20 (UL 开路类型) 防护等级的传动，用于室内温度可控的环境中。传动必须安装在符合要求的清洁环境中。冷却空气必须干净，并且没有腐蚀性气体和导电灰尘。详细说明请参见 *硬件手册*。
- 在额定电流下，最高环境空气温度为 40 °C (104 °F)。在 40 至 55 °C (104 至 131 °F) 温度下，电流需要降容。
- 传动单元适用于电流有效值不超过 100,000 A，最大电压 500 V 的电路容量。
- 遵照 UL 认证的安全要求，位于电机内部的电缆至少允许 75 °C (167 °F) 时降容。
- 输入电缆必须有熔断器或断路器保护。符合 IEC (gG) 和 UL (T) 的熔断器在 *硬件手册* 技术数据一章中列出。关于符合标准的断路器，请联系当地 ABB 代表处。
- 对于美国用户，按照国家电气法规 (NEC) 和任何适用的当地法规，必须提供支路保护设备。为了满足这一要求，请使用 UL 认证的熔断器。
- 对于加拿大用户，按照加拿大电气法规和各省法规的要求，必须提供支路保护设备。为了满足这一要求，请使用 UL 认证的熔断器。
- 传动提供符合美国国家电气法规 (NEC) 的过载保护功能。关于过载保护设置请参见相关 *固件手册*。

## Further information

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### Product and service inquiries

Address any inquiries about the product to your local ABB representative, quoting the type designation and serial number of the unit in question. A listing of ABB sales, support and service contacts can be found by navigating to [www.abb.com/drives](http://www.abb.com/drives) and selecting *Sales, Support and Service network*.

### Product training

For information on ABB product training, navigate to [www.abb.com/drives](http://www.abb.com/drives) and select *Training courses*.

### Providing feedback on ABB Drives manuals

Your comments on our manuals are welcome. Go to [www.abb.com/drives](http://www.abb.com/drives) and select *Document Library – Manuals feedback form (LV AC drives)*.

### Document library

You can find manuals and other product documents in PDF format on the Internet. Go to [www.abb.com/drives](http://www.abb.com/drives) and select *Document Library*. You can browse the library or enter selection criteria, for example a document code, in the search field.



ABB Oy  
Drives  
P.O. Box 184  
FI-00381 HELSINKI  
FINLAND  
Telephone +358 10 22 11  
Fax +358 10 22 22681  
[www.abb.com/drives](http://www.abb.com/drives)

**ABB Inc.**  
Automation Technologies  
Drives & Motors  
16250 West Glendale Drive  
New Berlin, WI 53151  
USA  
Telephone 262 785-3200  
1-800-HELP-365  
Fax 262 780-5135  
[www.abb.com/drives](http://www.abb.com/drives)

**ABB Beijing Drive Systems Co. Ltd.**  
No. 1, Block D, A-10 Jiuxianqiao Beilu  
Chaoyang District  
Beijing, P.R. China, 100015  
Telephone +86 10 5821 7788  
Fax +86 10 5821 7618  
[www.abb.com/drives](http://www.abb.com/drives)

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