



Emotron DSV35 AC drive

4 - 10 hp

Use in UL approved systems



Mounting and switch on instruction

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1 General information

Read first, then start

1 General information

1.1 Read first, then start



WARNING!

Read this documentation thoroughly before carrying out the installation and commissioning.

- ▶ Please observe the safety instructions!
-



Information and tools with regard to the Emotron products can be found on the Internet:

<http://www.emotron.com> à File-archive

1.2 Notations and conventions

1.2.1 Product code Emotron, examples:

DSV35-40-7P3-20

DSV35-40-016-20

| | | | | |
|--------|---------|----------|--------------------------|------|
| DSV | 35 | 40 | 7P3 | 20 |
| Series | 3-phase | 400V | Rated current 7.3A | IP20 |
| DSV | 35 | 40 | 016 | 20 |
| Series | 3-phase | 400-480V | Rated current 16A (400V) | IP20 |

2 Safety instructions

2.1 Basic safety measures

Disregarding the following basic safety measures may lead to severe personal injury and damage to material assets!

The product

- must only be used as directed.
- must never be commissioned if they display signs of damage.
- must never be technically modified.
- must never be commissioned if they are not fully mounted.
- must never be operated without required covers.

Connect/disconnect all pluggable terminals only in deenergised condition.

Only remove the product from the installation in the deenergised state.

Insulation resistance tests between 24V control potential and PE: According to EN 61800-5-1, the maximum test voltage must not exceed 110 VDC.

Observe all specifications of the corresponding documentation supplied. This is the precondition for safe and trouble-free operation and for obtaining the product features specified.

The procedural notes and circuit details described in this document are only proposals. It is up to the user to check whether they can be adapted to the particular applications. CG D&A does not take any responsibility for the suitability of the procedures and circuit proposals described.

The product must only be used by qualified personnel. IEC 60364 or CENELEC HD 384 define the skills of these persons:

- They are familiar with installing, mounting, commissioning, and operating the product.
- They have the corresponding qualifications for their work.
- They know and can apply all regulations for the prevention of accidents, directives, and laws applicable at the place of use.

Observe the specific notes in the other chapters!

2 Safety instructions

Residual hazards





2.2 Residual hazards

The user must take the residual hazards mentioned into consideration in the risk assessment for his/her machine/system.

If the above is disregarded, this can lead to severe injuries to persons and damage to material assets!

Product

Observe the warning labels on the product!

| Icon | Description |
|--|--|
|  | Electrostatic sensitive devices: Before working on the inverter, the staff must ensure to be free of electrostatic charge! |
|  | Dangerous electrical voltage Before working on the inverter, check whether all power connections are dead! After mains OFF, power connections X100 and X105 carry a dangerous electrical voltage for the time specified on the inverter! |
|  | High leakage current: Carry out fixed installation and PE connection in compliance with EN 61800-5-1 or EN 60204-1 ! |
|  | Hot surface: Use personal protective equipment or wait until devices have cooled down! |

Motor

If there is a short circuit of two power transistors, a residual movement of up to 180°/number of pole pairs can occur at the motor! (For 4-pole motor: residual movement max. $180^\circ/2 = 90^\circ$).

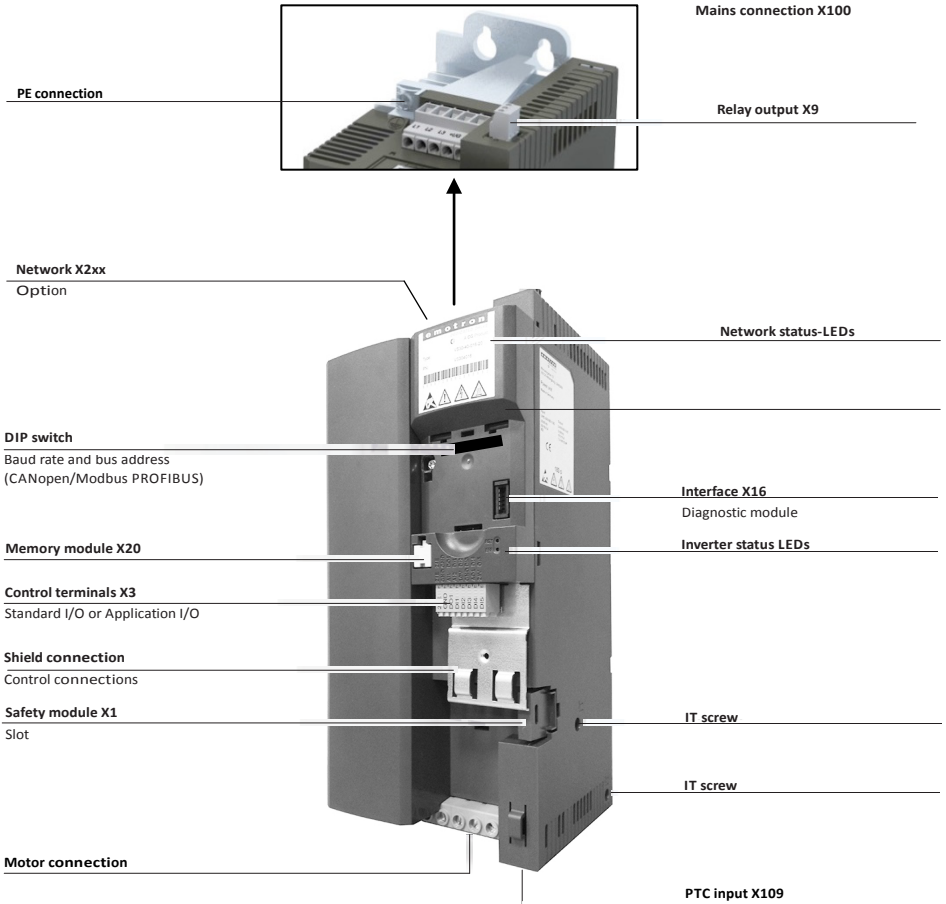
This residual movement must be taken into consideration by the user for his/her risk assessment.

2.3 Application as directed

- The product must only be operated under the operating conditions prescribed in this documentation.
- The product meets the protection requirements of 2014/35/EU: Low-Voltage Directive.
- The product is not a machine in terms of 2006/42/EC: Machinery Directive.
- Commissioning or starting the operation as directed of a machine with the product is not permitted until it has been ensured that the machine meets the regulations of the EC Directive 2006/42/EC: Machinery Directive; observe EN 60204-1.
- Commissioning or starting the operation as directed is only allowed when there is compliance with the EMC Directive 2014/30/EU.
- The harmonised standard EN 61800-5-1 is used for the inverters.
- The product is not a household appliance, but is only designed as component for commercial or professional use in terms of EN 61000-3-2.
- In accordance with EN 61800-3, the product can be used in drive systems that have to comply with the categories given in the technical data.

In residential areas, the product may cause EMC interferences. The operator is responsible for taking interference suppression measures.

3 Product description



4 Mounting

Important notes

4 Mounting

4.1 Important notes

DANGER!

Dangerous electrical voltage

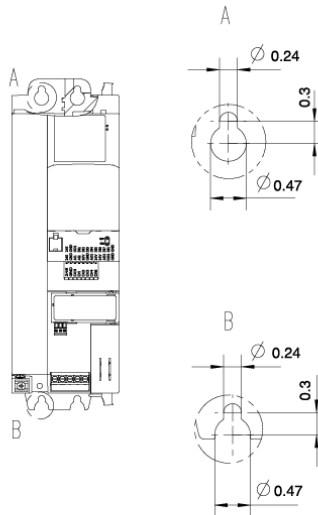
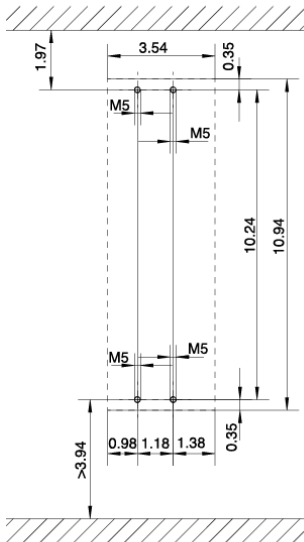
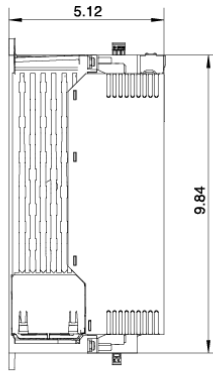
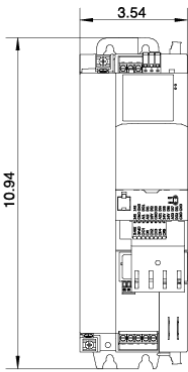
Possible consequence: death or severe injuries

- ▶ All works on the inverter must only be carried out in the deenergised state.
 - ▶ After switching off the mains voltage, wait for at least 3 minutes before you start working.
-

NOTICE!

- ▶ Modular construction - A complete drive consists of a power unit in combination with a control unit.
 - ▶ Conception modulaire – Le système d'entraînement complet comprend un module d'alimentation, impérativement associé à une unité de commande.
-

4.2 Mechanical installation
Dimensions 4 hp - 7.5 hp



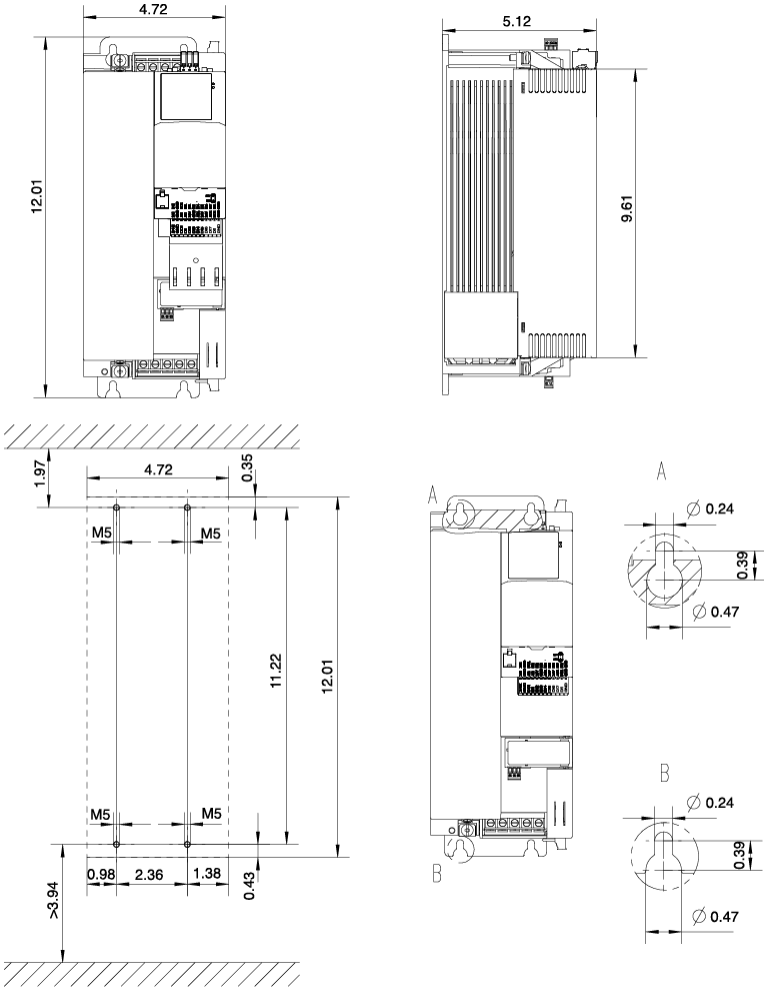
8800302

All Dimensions in inch

4 Mounting

Mechanical installation

Dimensions 10 hp



8800303

All Dimensions in inch

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4 **Mounting**
Electrical installation
Important notes

4.3 **Electrical installation**

4.3.1 **Important notes**

 **WARNING!**

- ▶ The integral solid state short circuit protection included in the inverter does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electrical Code and any additional local codes.
 - ▶ -----
 - ▶ La protection statique intégrée contre les courts-circuits n'offre pas la même protection que le dispositif de protection du circuit de dérivation. Un tel dispositif doit être fourni, conformément au National Electrical Code et aux autres dispositions applicables au niveau local.
-

 **WARNING!**

- ▶ The inverter (PE) terminals connections must be connected to system earth / ground.
 - ▶ Earth / ground impedance must conform to the requirements of national and local industrial safety regulations and all applicable electrical codes.
 - ▶ The integrity of all earth / ground connections should be periodically checked.
 - ▶ -----
 - ▶ Les raccordements (PE) des bornes du variateur doivent être reliés à la terre.
 - ▶ L'impédance de terre doit être conforme aux exigences des réglementations nationales et locales en vigueur en matière de sécurité industrielle, ainsi qu'aux dispositions applicables en matière d'électricité.
 - ▶ Il convient de vérifier l'intégrité de toutes les liaisons à la masse à intervalles réguliers.
-

 **WARNING!**

- ▶ Use 75°C copper wire only, except for control circuits.
 - ▶ -----
 - ▶ Utiliser exclusivement des conducteurs en cuivre 75 °C, sauf pour la partie commande.
-

 **NOTICE!**

- ▶ Internal overload protection rated for 125 % of the rated FLA.
 - ▶ -----
 - ▶ Protection contre les surcharges conçue pour se déclencher à 125 % de l'intensité assignée à pleine charge.
-

4.3.2 3-phase mains connection 480 V

 **WARNING!**

- ▶ Suitable for use on a circuit capable of delivering not more than 5,000 rms symmetrical amperes, 480/277 V maximum.
 - ▶ When protected by fuses rated as given in tables below.
 - ▶ -----
 - ▶ Convenient aux circuits non susceptibles de délivrer plus de 5.000 ampères symétriques eff., maximum 480/277 V.
 - ▶ Avec une protection par des fusibles du calibre indiqué dans les tableaux ci-dessous.
-

4 Mounting

Electrical installation

3-phase mains connection 480 V

The wiring diagram is valid for Emotron DSV35 inverters.

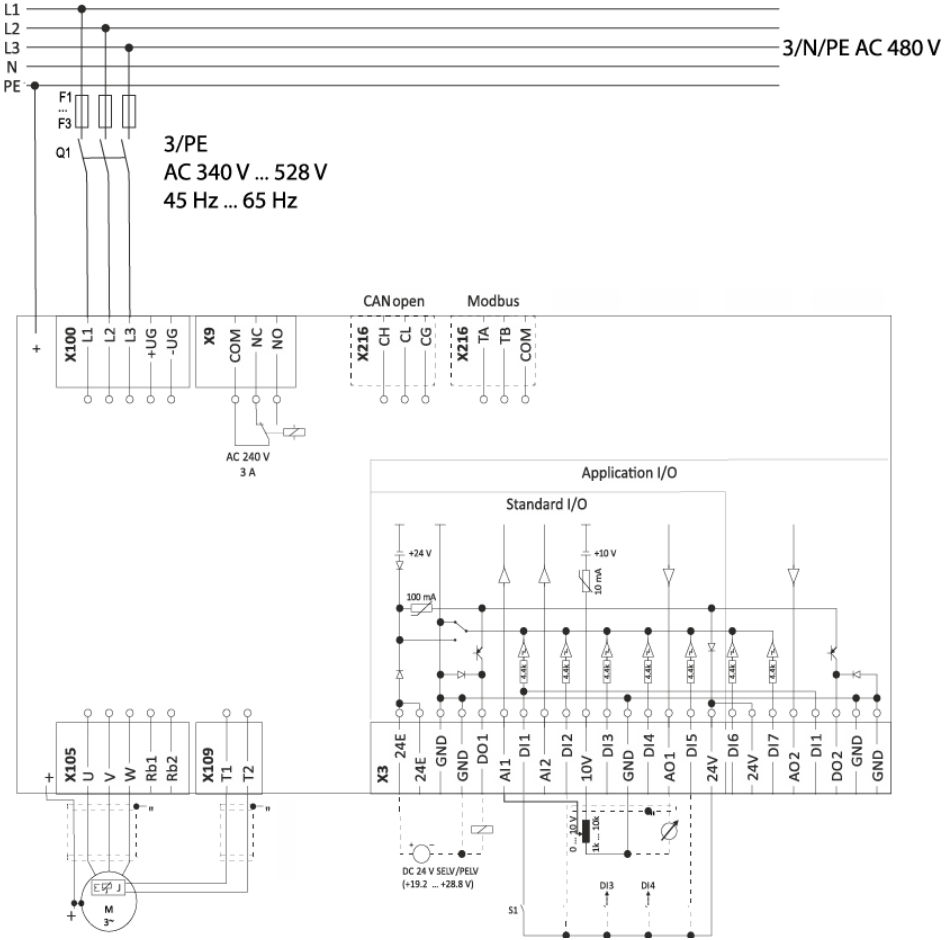


Fig. 1: Wiring example

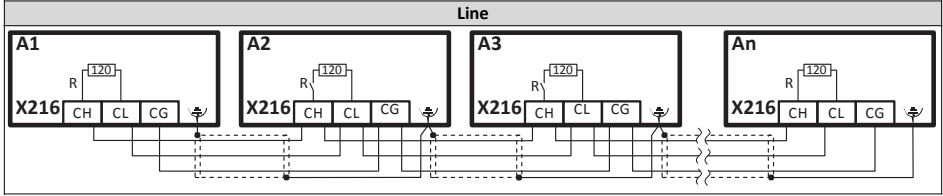
- S1 Run/Stop
- Fx Fuses

- Q1 Mains contactor
- Dashed line = options

4.3.2.1 Fusing and terminal data

| Inverter | | DSV35407P3 | DSV35409P5 | DSV3540013 | DSV3540016 |
|---------------------------------------|-------|-----------------------|------------|------------|----------------------------|
| Cable installation in compliance with | | UL | | | |
| Operation | | without mains choke | | | |
| Fuse | | | | | |
| Characteristic | | all acc. to UL 248/CC | | | all acc. to UL 248/I, T, R |
| Max. rated current | A | 25 | 25 | 25 | 35 |
| Circuit breaker | | | | | |
| Characteristic | | | | | |
| Max. rated current | A | 25 | 25 | 25 | 35 |
| Operation | | with mains choke | | | |
| Fuse | | | | | |
| Characteristic | | all acc. to UL 248/CC | | | all acc. to UL 248/I, T, R |
| Max. rated current | A | 25 | 25 | 25 | 35 |
| Circuit breaker | | | | | |
| Characteristic | | | | | |
| Max. rated current | A | 25 | | | 35 |
| Earth-leakage circuit breaker | | ≥ 300 mA, type B | | | |
| Mains connection | | | | | |
| Connection | | X100 | | | |
| Connection type | | Screw terminal | | | |
| Min. cable cross-section | AWG | 16 | | | |
| Max. cable cross-section | AWG | 10 | | | 6 |
| Stripping length | inch | 0.35 | | | 0.43 |
| Tightening torque | lb-in | 4.4 | | | 11 |
| Required tool | | 0.6 x 3.5 | | | 0.8 x 4.0 |
| Motor connection | | | | | |
| Connection | | X105 | | | |
| Connection type | | Screw terminal | | | |
| Min. cable cross-section | AWG | 16 | | | |
| Max. cable cross-section | AWG | 10 | | | 6 |
| Stripping length | inch | 0.35 | | | 0.43 |
| Tightening torque | lb-in | 4.4 | | | 11 |
| Required tool | | 0.6 x 3.5 | | | 0.8 x 4.0 |
| PE connection | | | | | |
| Connection | | PE | | | |
| Connection type | | PE screw | | | |
| Min. cable cross-section | AWG | 16 | | | |
| Max. cable cross-section | AWG | 10 | | | 6 |
| Stripping length | inch | 0.39 | | | 0.43 |
| Tightening torque | lb-in | 11 | | | 30 |
| Required tool | | 0.8 x 5.5 | | | P22 |

4.3.3 CANopen
Typical topologies



| Terminal description | | CANopen |
|--------------------------|-------|-----------------|
| Connection | | X216 |
| Connection type | | Spring terminal |
| Min. cable cross-section | AWG | 22 |
| Max. cable cross-section | AWG | 12 |
| Stripping length | inch | 0.39 |
| Tightening torque | lb-in | - |
| Required tool | | 0.4 x 2.5 |

Basic network settings

Use the DIP switch to set the node address and baud rate and to activate the integrated bus terminating resistor.

| Bus termination | | Baud rate | | | | CAN node address | | | | | | |
|-----------------|--|------------------------|------------|------------|------------|---|------------------------------------|------------|------------|------------|------------|------------|
| R | | d | c | b | a | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
| OFF | | OFF | ON | OFF | ON | 20 kbps | OFF | OFF | OFF | OFF | OFF | OFF |
| Inactive | | OFF | OFF | ON | ON | 50 kbps | Value from parameter | | | | | |
| ON | | OFF | OFF | ON | OFF | 125 kbps | Node address - example: | | | | | |
| Active | | OFF | OFF | OFF | ON | 250 kbps | OFF | OFF | ON | OFF | ON | ON |
| | | OFF | OFF | OFF | OFF | Value from parameter (500 kbps) | Node address = 16 + 4 + 2 + 1 = 23 | | | | | |
| | | OFF | ON | OFF | OFF | 1 Mbps | | | | | | |
| | | All other combinations | | | | Value from parameter (500 kbps) | | | | | | |

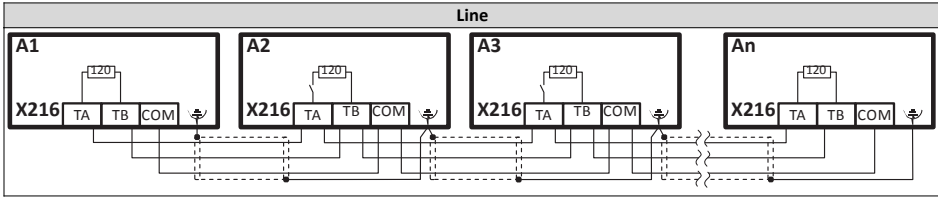
Printed in bold = Emotron setting



The network must be terminated with a 120 Ω resistor at the physically first and last node.
Set the "R" switch to ON at these nodes.

4.3.4 Modbus

Typical topologies



| Terminal description | | Modbus |
|--------------------------|-------|-----------------|
| Connection | | X216 |
| Connection type | | Spring terminal |
| Min. cable cross-section | AWG | 22 |
| Max. cable cross-section | AWG | 12 |
| Stripping length | inch | 0.39 |
| Tightening torque | lb-in | - |
| Required tool | | 0.4 x 2.5 |

Basic network settings

Use the DIP switch to set the node address and baud rate and to activate the integrated bus terminating resistor.

R c b a

Mode

128 64 32 16 8 4 2 1

Address

ON

↑

| Bus termination | Baud rate | Parity | Modbus node address | | | | | | | | | |
|-----------------|---------------------|----------------------|--|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | | | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | | |
| OFF | n.c. | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Inactive | Automatic detection | Automatic detection | Value from parameter | | | | | | | | | |
| ON | | ON | Node address - example: | | | | | | | | | |
| Active | | Value from parameter | Value from parameter | OFF | OFF | OFF | ON | OFF | ON | ON | ON | |
| | | | Node address = 16 + 4 + 2 + 1 = 23 | | | | | | | | | |
| | | | Node address > 247: value from parameter | | | | | | | | | |

Printed in bold = Emotron setting



The network must be terminated with a 120 Ω resistor at the physically first and last node.
Set the "R" switch to ON at these nodes.

Mounting

Electrical installation

Connection of the safety module

4.3.5 Connection of the safety module

4.3.5.1 Important notes

DANGER!

Improper installation of the safety engineering system can cause an uncontrolled starting action of the drives.

Possible consequences: Death or severe injuries

- ▶ Safety engineering systems may only be installed and commissioned by qualified and skilled personnel.
- ▶ All control components (switches, relays, PLC, ...) and the control cabinet must comply with the requirements of the EN ISO 13849-1 and the EN ISO 13849-2.
- ▶ Switches, relays with at least IP54 enclosure.
- ▶ Control cabinet with at least IP54 enclosure.
- ▶ It is essential to use insulated wire end ferrules for wiring.
- ▶ All safety relevant cables outside the control cabinet must be protected, e.g. by means of a cable duct
- ▶ Ensure that no short circuits can occur according to the specifications of the EN ISO 13849-2.
- ▶ All further requirements and measures can be obtained from the EN ISO 13849-1 and the EN ISO 13849-2.
- ▶ If an external force acts upon the drive axes, additional brakes are required. Please observe that hanging loads are subject to the force of gravity!
- ▶ The user has to ensure that the inverter will only be used in its intended application within the specified environmental conditions. This is the only way to comply with the declared safety-related characteristics.

DANGER!

With the "Safe torque off" (STO) function, no "emergency stop" in terms -EN 60204-1 can be executed without additional measures. There is no isolation between the motor and inverter, no service switch or maintenance switch!

Possible consequence: death or severe injuries

- ▶ "Emergency stop" requires electrical isolation, e.g. by a central mains contactor.

DANGER!

Automatic restart if the request of the safety function is deactivated.

Possible consequences: Death or severe injuries

- ▶ You must provide external measures according to EN ISO 13849-1 which ensure that the drive only restarts after a confirmation.

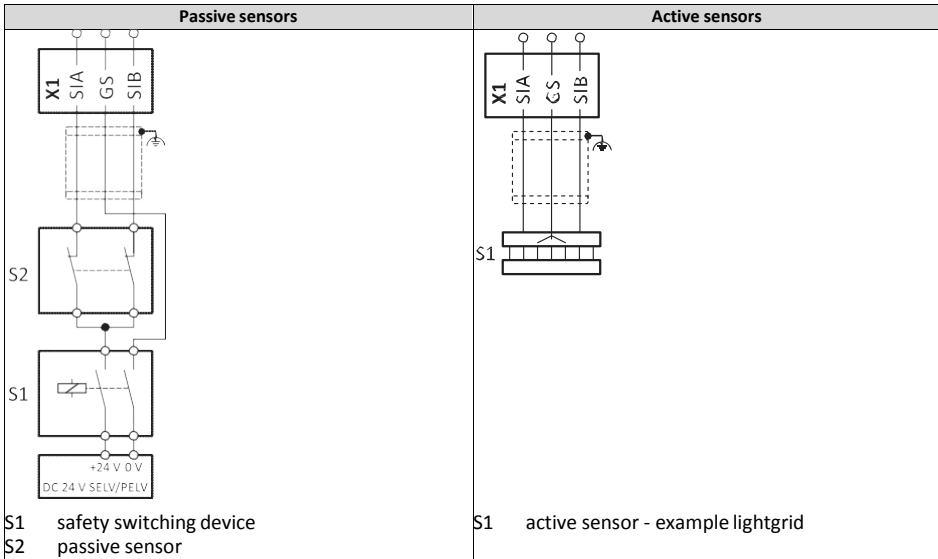
NOTICE!

Overvoltage

Destruction of the safety component

- ▶ The maximum voltage (maximum rated) at the safety inputs is 32 V DC. The user must make provisions to avoid that this voltage is exceeded.

4.3.5.2 Connection plan



4.3.5.3 Terminal data

| Terminal description | | Safety STO |
|--------------------------|-------|----------------|
| Connection | | X1 |
| Connection type | | Screw terminal |
| Min. cable cross-section | AWG | 22 |
| Max. cable cross-section | AWG | 16 |
| Stripping length | inch | 0.24 |
| Tightening torque | lb-in | 1.8 |
| Required tool | | 0.4 x 2.5 |

| X1 | Specification | Unit | min. | typ. | max. |
|----------|---|------|------|------|------|
| S/A, S/B | LOW signal | V | -3 | 0 | +5 |
| | HIGH signal | V | +15 | +24 | +30 |
| | Running time | ms | | 3 | |
| | Input current S/A | mA | | 10 | 14 |
| | Input current S/B | mA | | 7 | 12 |
| | Input peak current | mA | | 100 | |
| | Tolerated test pulse | ms | | | 1 |
| | Switch-off time | ms | | 50 | |
| | Permissible distance of the test pulses | ms | 10 | | |
| GS | Reference potential for S/A and S/B | | | | |

4 **Mounting**
Electrical installation
Connection of the safety module

5 **Commissioning**

5.1 **Important notes**

 **WARNING!**

Incorrect settings during commissioning may cause unexpected and dangerous motor and system movements.

Possible consequence: death, severe injuries or damage to property

- ▶ Clear hazardous area.
 - ▶ Observe safety instructions and safety clearances.
-

5.2 **Before initial switch-on**

Prevent injury to persons and damage to property. Check the following before switching on the mains voltage:

- Is the wiring complete and correct?
- Are there no short circuits and earth faults?
- Is the motor circuit configuration (star/delta) adapted to the output voltage of the inverter?
- Is the motor connected in-phase (direction of rotation)?
- Does the "emergency stop" function of the entire plant operate correctly?

5.3 Initial switch-on / functional test with terminal control

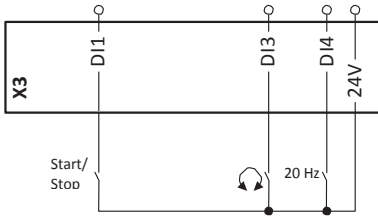
Target: achieve rotation of the motor connected to the inverter as quickly as possible.

Requirements:

- The connected motor matches the inverter in terms of power.
- The parameter settings comply with the delivery status (Emotron setting).

1. Preparation:

1. Wiring of power terminals. (Chapter 4.3 *Electrical installation*)
2. Wire digital inputs X3/DI1 (start/stop), X3/DI3 (reversal of rotation direction), and X3/DI4 (preset frequency setpoint 20 Hz).
3. Do not connect terminal X3/AI1 (analog setpoint selection) or connect it to GND.



2. Switch on mains and check readiness for operation:

1. Switch on mains voltage.
2. Observe LED status displays "RDY" and "ERR" on the front of the inverter:
 - a) If the blue "RDY" LED is blinking and the red "ERR" LED is off, the inverter is ready for operation. The controller is inhibited.

You can now start the drive.

- b) If the red "ERR" LED is lit permanently, a fault is pending.

Eliminate the fault before you carry on with the functional test.

LED status displays

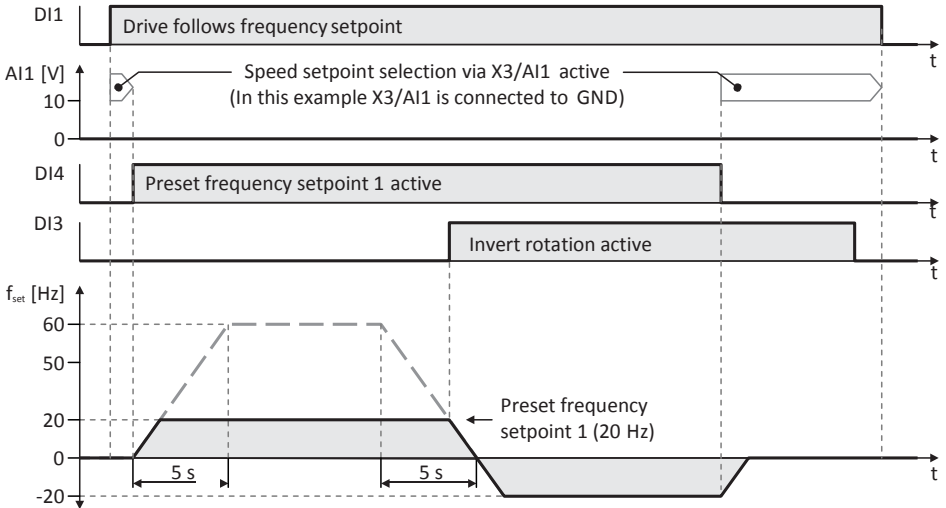
| "RDY" LED (blue) | "ERR" LED (red) | Status/meaning |
|------------------|----------------------------------|---|
| off | off | No supply voltage. |
| blinking (1 Hz) | off | Safe torque off (STO) active. |
| | blinking fast (4 Hz) | Safe torque off (STO) active. Warning active. |
| blinking (2 Hz) | off | Inverter inhibited. |
| | lit every 1.5 s for a short time | Inverter inhibited, no DC-bus voltage. |
| | blinking fast (4 Hz) | Inverter inhibited, warning active. |
| | on | Inverter inhibited, fault active. |
| on | off | Inverter enabled. |
| | blinking fast (4 Hz) | Inverter enabled, warning active. |
| | blinking (1 Hz) | Inverter enabled, quick stop as response to a fault active. |

Carrying out the functional test

1. Start drive:

1. Start inverter: X3/DI1 = HIGH.
 - a) If the inverter is equipped with an integrated safety system: X1/SIA = HIGH and X1/SIB = HIGH.
2. Activate preset frequency setpoint 1 (20 Hz) as speed setpoint: X3/DI4 = HIGH.
The drive rotates with 20 Hz.
3. Optional: activate the function for the reversal of rotation direction.
 - a) X3/DI3 = HIGH.
The drive rotates with 20 Hz in the opposite direction.
 - b) Deactivate the function for the reversal of rotation direction again: X3/DI3 = LOW.

Speed characteristic (example)



2. Stop drive:

1. Deactivate preset frequency setpoint 1 again: X3/DI4 = LOW.
2. Stop inverter again: X3/DI1 = LOW.

The functional test is completed.



The commissioning process of the drive solution is described in a separate commissioning instruction which can be found on the Internet in our download area:
<http://www.emotron.com> à File-archive

6 Technical data

6.1 Standards and operating conditions

| Conformities | | |
|--|----------------|---|
| CE | 2014/35/EU | Low-Voltage Directive |
| | 2014/30/EU | EMC Directive (reference: CE-typical drive system) |
| EAC | TR TC 004/2011 | Eurasian conformity: safety of low voltage equipment |
| | TP TC 020/2011 | Eurasian conformity: electromagnetic compatibility of technical means |
| RoHS 2 | 2011/65/EU | Restrictions for the use of specific hazardous materials in electric and electronic devices |
| Approvals | | |
| UL | UL 61800-5-1 | for USA and Canada (requirements of the CSA 22.2 No. 274) 0.25 kW ... 22 kW (30 kW ... 45 kW in preparation) |
| Energy efficiency | | |
| Class IE2 | EN 50598-2 | Reference: Emotron setting (switching frequency 8 kHz variable) |
| Degree of protection | | |
| IP20 | EN 60529 | |
| Type 1 | NEMA 250 | Protection against contact |
| Open type | | only in UL-approved systems |
| Insulation resistance | | |
| Overvoltage category III | EN 61800-5-1 | 0 ... 2000 m a.m.s.l. |
| Overvoltage category II | | above 2000 m a.m.s.l. |
| Control circuit isolation | | |
| Safe mains isolation by double/reinforced insulation | EN 61800-5-1 | |
| Protective measures against | | |
| Short circuit | | |
| Earth fault | | Earth fault strength depends on the operating status |
| Overvoltage | | |
| Motor stalling | | |
| Motor overtemperature | | PTC or thermal contact, I ² t monitoring |
| Leakage current | | |
| > 3.5 mA AC, > 10 mA DC | EN 61800-5-1 | Observe regulations and safety instructions! |
| Mains switching | | |
| 3-time mains switching in 1 min | | Cyclic, without any restrictions |
| Starting current | | |
| ≤ 3 x rated mains current | | |
| Mains systems | | |
| TT | | Voltage to earth/ground: max. 300V |
| TN | | |
| IT | | Apply the measures described for IT systems! |
| | | IT systems are not relevant for UL-approved systems |
| Operation on public supply systems | | |
| Implement measures to limit the radio interference to be expected: | | The machine or plant manufacturer is responsible for compliance with the requirements for the machine/plant! |
| < 1 kW: with mains choke | EN 61000-3-2 | |
| > 1 kW at mains current ≤ 16 A: without additional measures | | |

| | | |
|--|--------------------|---|
| Mains current > 16 A: with mains choke or mains filter, with dimensioning for rated power. Rscce ≥ 120 is to be met. | EN 61000-3-12 | RSCCE: short-circuit power ratio at the connection point of the machine/plant to the public network. |
| Requirements to the shielded motor cable | | |
| Capacitance per unit length | | |
| C-core-core/C-core-shield < 75/150 pF/m | | ≤ 2.5 mm ² / AWG 14 |
| C-core-core/C-core-shield < 150/300 pF/m | | ≥ 4 mm ² / AWG 12 |
| Electric strength | | |
| U ₀ /U = 0.6/1.0 kV | | U ₀ = r.m.s. value external conductor to PE |
| U ≥ 600 V | UL | U = r.m.s. value external conductor/external conductor |
| Climate | | |
| 1K3 (-25 ... +60 °C) | EN 60721-3-1 | Storage |
| 2K3 (-25 ... +70 °C) | EN 60721-3-2 | Transport |
| 3K3 (-10 ... +55 °C) | EN 60721-3-3 | Operation |
| | | Operation at a switching frequency of 2 or 4 kHz: above +45°C, reduce rated output current by 2.5%/°C |
| | | Operation at a switching frequency of 8 or 16 kHz: above +40°C, reduce rated output current by 2.5%/°C |
| Site altitude | | |
| 0 ... 1000 m a.m.s.l. | | |
| 1000 ... 4000 m a.m.s.l. | | Reduce rated output current by 5 %/1000 m |
| Pollution | | |
| Degree of pollution 2 | EN 61800-5-1 | |
| Vibration resistance | | |
| Transport | | |
| 2M2 (sine, shock) | EN 60721-3-2 | |
| Operation | | |
| Amplitude 1 mm | Germanischer Lloyd | 5 ... 13.2 Hz |
| Acceleration resistant up to 0.7 g | | 13.2 ... 100 Hz |
| Amplitude 0.075 mm | EN 61800-5-1 | 10 ... 57 Hz |
| Acceleration resistant up to 1 g | | 57 ... 150 Hz |
| Noise emission | | |
| Category C1 | EN 61800-3 | Type-dependent, for motor cable lengths see rated data |
| Category C2 | | |
| Noise immunity | | |
| Meets requirement in compliance with | EN 61800-3 | |

6.2 3-phase mains connection 480 V

The output currents apply to these operating conditions:

- At a switching frequency of 2 kHz or 4 kHz: Max. ambient temperature 113 °F.
- At a switching frequency of 8 kHz or 16 kHz: Max. ambient temperature 104 °F.

6.2.1 Rated data

| Inverter | | DSV35407P | DSV35409P5 | DSV3540013 | DSV3540016 |
|--|----|--|------------|------------|------------|
| Rated power | hp | 4 | 5.5 | 7.5 | 10 |
| Mains voltage range | | 3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz | | | |
| Rated mains current | | | | | |
| without mains choke | A | 8 | 10.5 | 14.3 | 16.6 |
| with mains choke | A | 5.8 | 7.5 | 10.3 | 13.1 |
| Output current | | | | | |
| 2 kHz | A | 6.3 | 8.2 | 11 | 14 |
| 4 kHz | A | 6.3 | 8.2 | 11 | 14 |
| 8 kHz | A | 6.3 | 8.2 | 11 | 14 |
| 16 kHz | A | 4.2 | 5.5 | 7.3 | 9.3 |
| Power loss | W | 109 | 140 | 189 | 238 |
| Overcurrent cycle 180 s | | | | | |
| Max. output current | A | 9.45 | 12.3 | 16.5 | 21 |
| Overload time | s | 60 | 60 | 60 | 60 |
| Recovery time | s | 120 | 120 | 120 | 120 |
| Max. output current during the recovery time | A | 4.73 | 6.15 | 8.25 | 10.5 |
| Overcurrent cycle 15 s | | | | | |
| Max. output current | A | 12.6 | 16.4 | 22 | 28 |
| Overload time | s | 3 | 3 | 3 | 3 |
| Recovery time | s | 12 | 12 | 12 | 12 |
| Max. output current during the recovery time | A | 4.73 | 6.15 | 8.25 | 10.5 |
| Motor cable length | | | | | |
| shielded, without EMC | ft | 164 | | | 328 |
| C2 residential area / industrial premises | ft | 65 | | | |
| Weight | lb | 5 | | | 8 |

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