

LinMot®



C1100 Servo Drive Installation Guide

*Eine Deutsche Version kann unter <http://www.linmot.com> bezogen werden!
Please visit <http://www.linmot.com> to check for the latest version of this document!*

This document applies to the following drives:

C1100-GP-XC-xS-yyy

C1150-EC-XC-xS-yyy

C1150-PN-XC-xS-yyy



ATTENTION: The connectors have to be ordered separately and are not included with the drive!



DC01-C1X00-0S/X1/X4
DC01-C1X00-1S/X1/X4/X33

Drive Connector Set for C1X00-0S
Drive Connector Set for C1X00-1S

0150-3527
0150-3528

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1 Important Safety Instructions



For your personal safety

Disregarding the following safety measures can lead to severe injury to persons and damage to material:

- Only use the product as directed.
- Never commission the product in the event of visible damage.
- Never commission the product before assembly has been completed.
- Do not carry out any technical changes on the product.
- Only use the accessories approved for the product.
- Only use original spare parts from LinMot.
- Observe all regulations for the prevention of accidents, directives and laws applicable on site.
- Transport, installation, commissioning and maintenance work must only be carried out by qualified personnel.
 - Observe IEC 364 and CENELEC HD 384 or DIN VDE 0100 and IEC report 664 or DIN VDE 0110 and all national regulations for the prevention of accidents.
 - According to the basic safety information, qualified, skilled personnel are persons who are familiar with the assembly, installation, commissioning, and operation of the product and who have the qualifications necessary for their occupation.
- Observe all specifications in this documentation.
 - This is the condition for safe and trouble-free operation and the achievement of the specified product features.
 - The procedural notes and circuit details described in this documentation are only proposals. It is up to the user to check whether they can be transferred to the particular applications. NTI AG / LinMot does not accept any liability for the suitability of the procedures and circuit proposals described.
- LinMot servo drives and the accessory components can include live and moving parts (depending on their type of protection) during operation. Surfaces can be hot.
 - Non-authorized removal of the required cover, inappropriate use, incorrect installation or operation create the risk of severe injury to persons or damage to material assets.
 - For more information, please see the documentation.
- High amounts of energy are produced in the drive. Therefore it is required to wear personal protective equipment (body protection, headgear, eye protection, hand guard).

Application as directed

- Drives are components which are designed for installation in electrical systems or machines. They are not to be used as domestic appliances, but only for industrial purposes according to EN 61000-3-2.
- When drives are installed into machines, commissioning (i.e. starting of the operation as directed) is prohibited until it is proven that the machine complies with the regulations of the EC Directive 98/37/EC (Machinery Directive); EN 60204 must be observed.
- Commissioning (i.e. starting of the operation as directed) is only allowed when there is compliance with the EMC Directive (2004/108/EC).
- The technical data and supply conditions can be obtained from the nameplate and the documentation. They must be strictly observed.

Transport, storage

- Please observe the notes on transport, storage, and appropriate handling.
- Observe the climatic conditions according to the technical data.

Installation

- The drives must be installed and cooled according to the instructions given in the corresponding documentation.
- The ambient air must not exceed degree of pollution 2 according to EN 61800-5-1.
- Ensure proper handling and avoid excessive mechanical stress. Do not bend any components and do not change any insulation distances during transport or handling. Do not touch any electronic components and contacts.
- Drives contain electrostatic sensitive devices which can easily be damaged by inappropriate handling. Do not damage or destroy any electrical components since this might endanger your health!

Electrical connection

- When working on live drives, observe the applicable national regulations for the prevention of accidents.
- The electrical installation must be carried out according to the appropriate regulations (e.g. cable cross-sections, fuses, PE connection). Additional information can be obtained from the documentation.



- This product can cause high-frequency interferences in non industrial environments which can require measures for interference suppression.

Operation

- If necessary, systems including drives must be equipped with additional monitoring and protection devices according to the valid safety regulations (e.g. law on technical equipment, regulations for the prevention of accidents). The drives can be adapted to your application. Please observe the corresponding information given in the documentation.
- After the drive has been disconnected from the supply voltage, all live components and power connections must not be touched immediately because capacitors can still be charged. Please observe the corresponding stickers on the drive. All protection covers and doors must be shut during operation.

Protection of persons

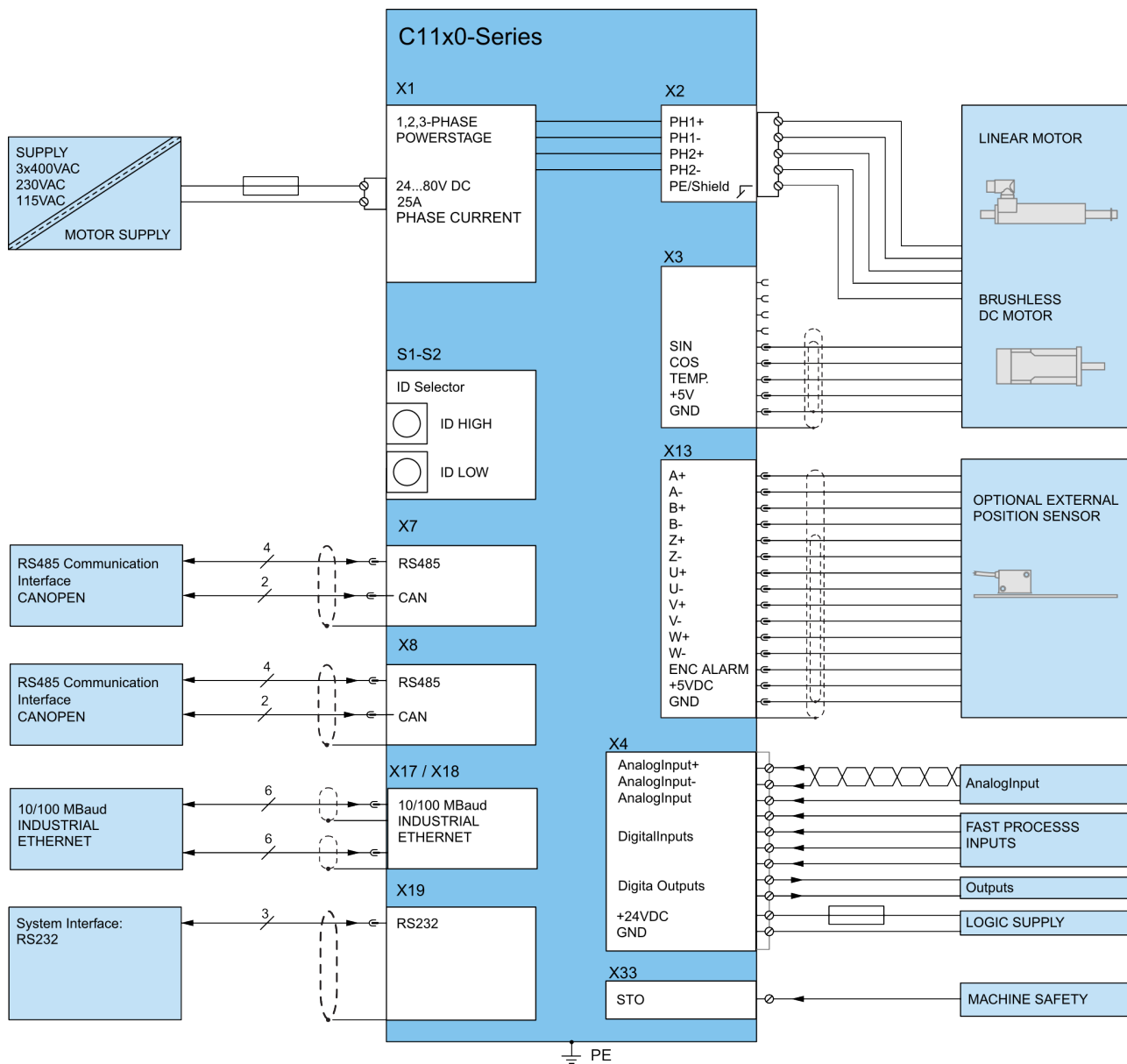


- The power terminals Ph1+, Ph1-, Ph2+, Ph2- and PWR+ remain live for at least 5 minutes after disconnecting from the power supplies.
- Before servicing, disconnect supply, wait 5 minutes and measure between PWR+ and PGND to be sure that the capacitors have discharged below 42VDC



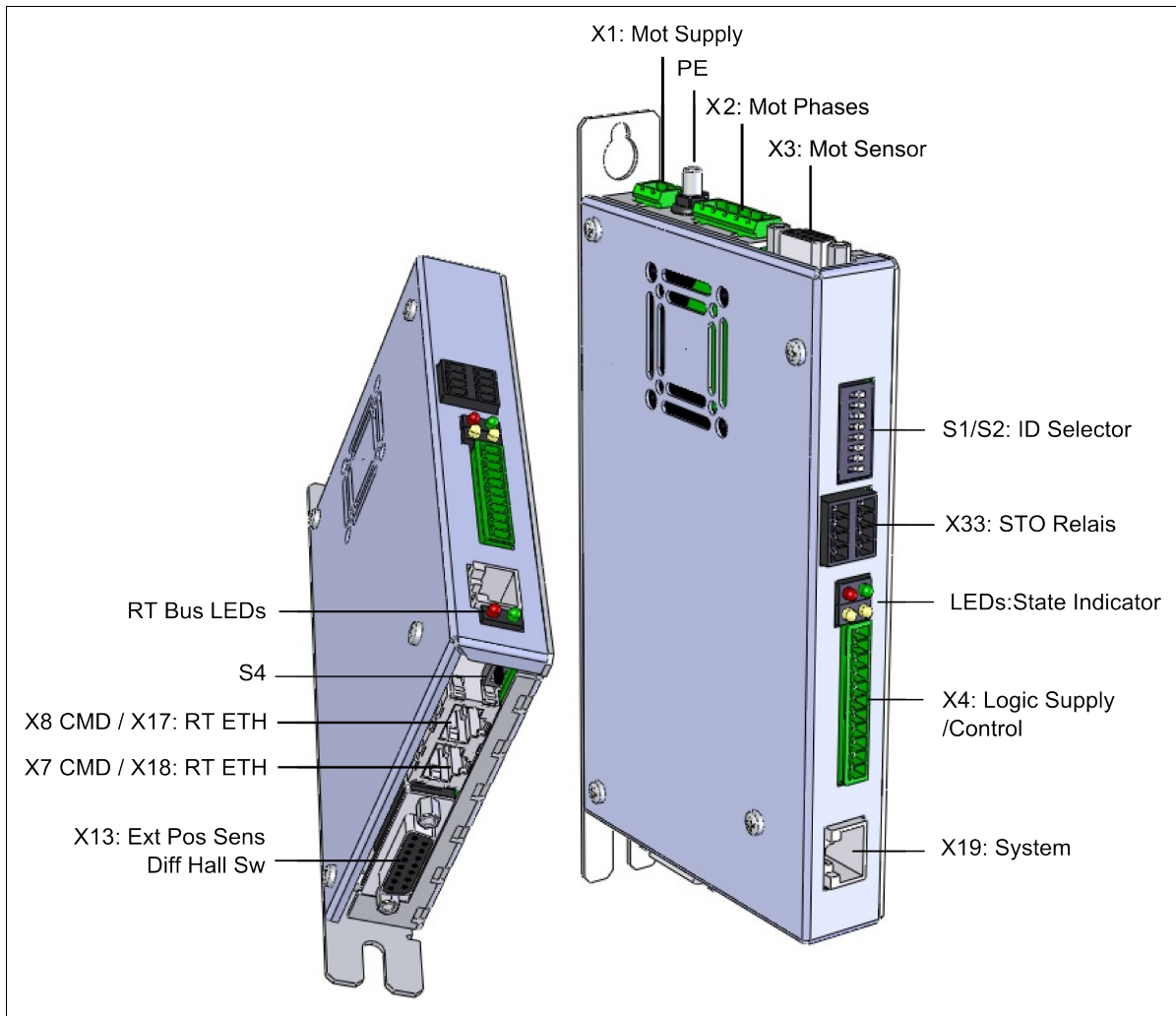
- The heat sink of the drive can have an operating temperature of > 80 °C: Contact with the heat sink results in burns.

2 System Overview



Typical servo system C11x0-XX: Servo drive, motor and power supply

3 Interfaces



C11x0-xx-XC-xS-xxx

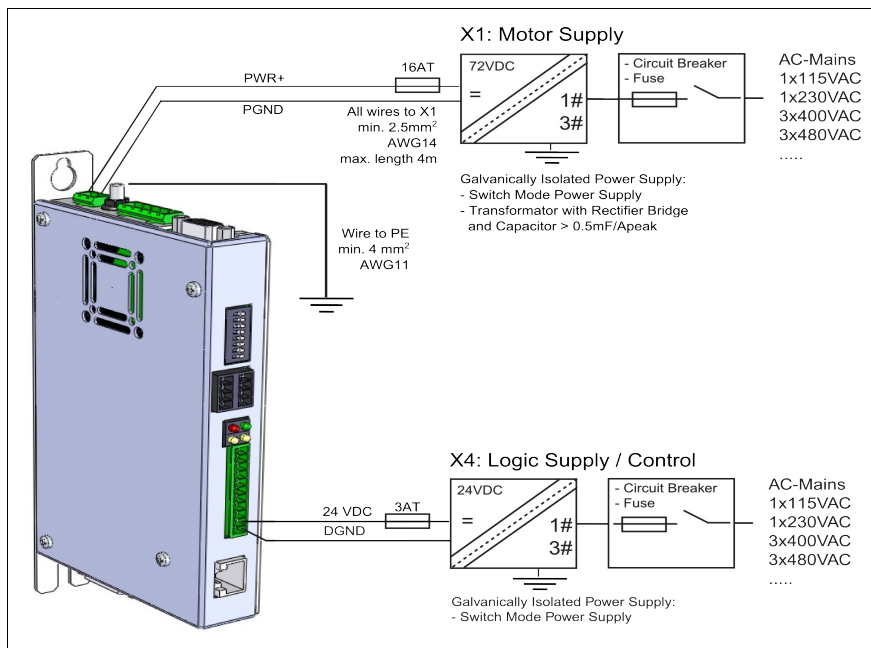
4 Functionality

| | C1100-GP-XC-0S | C1150-EC-XC-0S | C1150-PN-XC-0S | C1100-GP-XC-1S | C1150-EC-XC-1S | C1150-PN-XC-1S |
|---|----------------|----------------|----------------|----------------|----------------|----------------|
| Supply Voltage | | | | | | |
| Motor Supply 72VDC (24...85 VDC) | • | • | • | • | • | • |
| Logic Supply 24VDC (22...26 VDC) | • | • | • | • | • | • |
| Motor Phase Current | | | | | | |
| 25A _{peak} | • | • | • | • | • | • |
| Controllable Motors | | | | | | |
| LinMot P01...(Motor Link P) | • | • | • | • | • | • |
| Selected motors (contact support) | • | • | • | • | • | • |
| Plug and Play (PnP) Auto Configuration | • | • | • | • | • | • |
| Command Interface | | | | | | |
| RS485 up to 115.2 kBaud | • | | | • | | |
| CANOpen up to 1MBaud | • | | | • | | |
| EHTERCAT | | • | | | • | |
| PROFINET | | | • | | | • |
| Programmable Motion Profiles (Curves) | | | | | | |
| Up to 49 Motion Profiles, up to 8110 Curve Points | • | • | • | • | • | • |
| Programmable Command Table | | | | | | |
| Command Table with up to 255 entries | • | • | • | • | • | • |
| Configuration | | | | | | |
| RS232 Configuration | • | • | • | • | • | • |
| Integrated Safety Functions (-1S Option) | | | | | | |
| STO (2 Safety Relays) | | | | • | • | • |

5 Software

The configuration software LinMot-Talk is free of charge and can be downloaded from the LinMot homepage.

6 Power Supply and Grounding



In order to assure a safe and error free operation, and to avoid severe damage to system components, **all system components must be well grounded to protective earth PE**. This includes both LinMot and all other control system components on the same ground bus.



Each system component* should be tied directly to the ground bus (**star pattern**), rather than daisy chaining from component to component. (LinMot motors are properly grounded through their power cables when connected to LinMot drives.)



Power supply connectors must not be connected or disconnected while DC voltage is present. Do not disconnect system components until all LinMot drive LEDs have turned off. (Capacitors in the power supply may not fully discharge for several minutes after input voltage has been disconnected). Failure to observe these precautions may result in severe damage to electronic components in LinMot motors and/or drives.

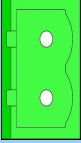
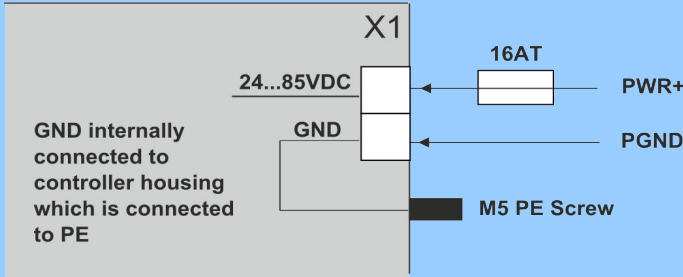


Do not switch Power Supply DC Voltage. All power supply switching and E-Stop breaks should be done to the AC supply voltage of the power supply. Failure to observe these precautions may result in severe damage to the drive.

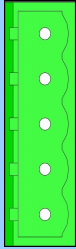
* Inside of the C1100 drive the *PWR motor GND* and *PWR signal GND* is connected together and to the GND of the drive housing. It is recommended that the *PWR motor GND* is NOT grounded at another place than inside of the drive to reduce circular currents.

7 Description of the connectors / Interfaces

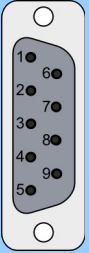
7.1 X1

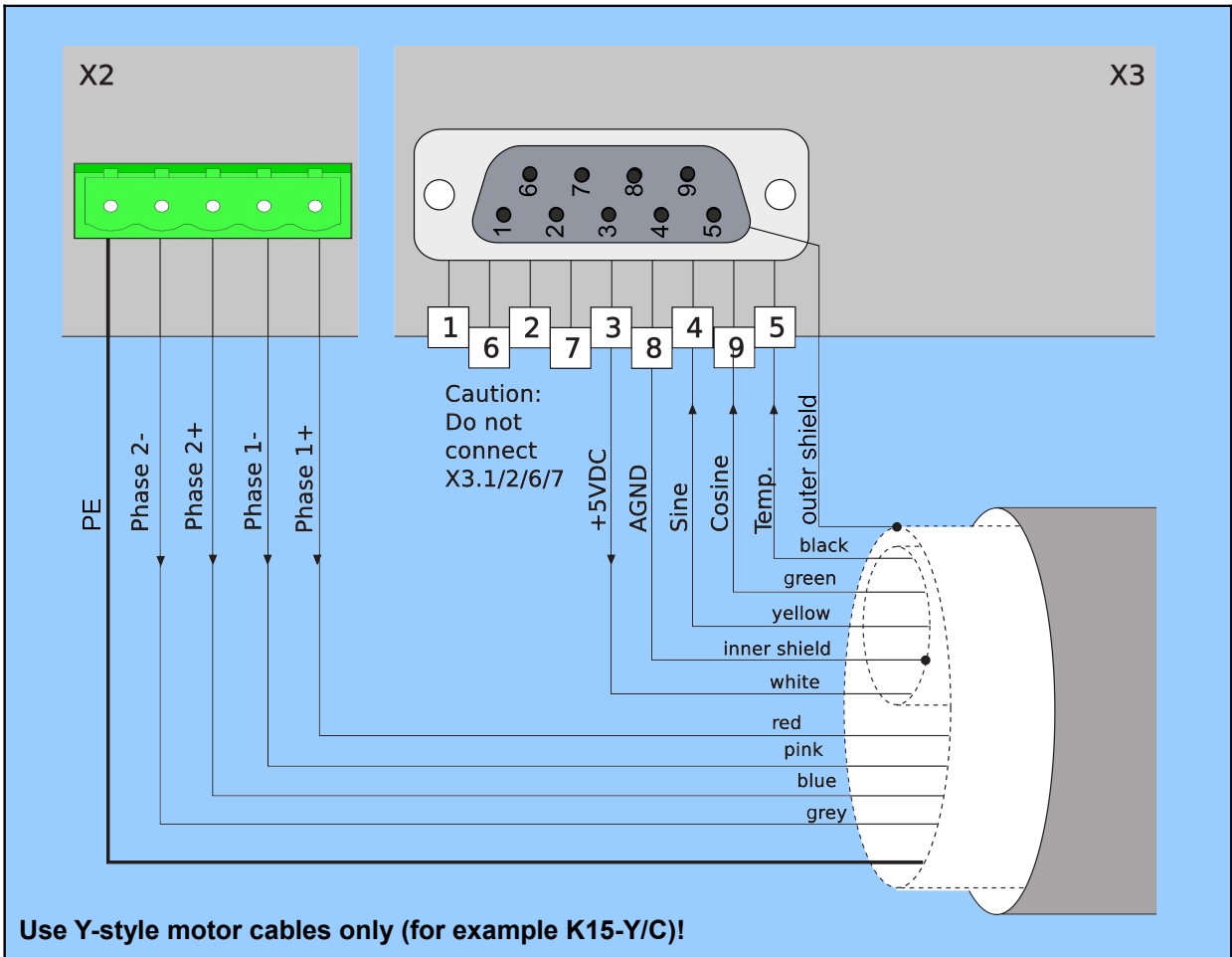
| X1 | | Motor Phases |
|---|---|--|
|  | PWR+ PGND |  |
| Connector has to be ordered separately: see chapter 13 | Motor Supply: 72VDC nominal, 24...85VDC Absolute max. Rating: 72VDC +20%. External Fuse: 16AT (16A slow blow) / min. 100VDC If motor supply voltage exceeds 90VDC, the drive will go into error state. <ul style="list-style-type: none"> - Use 60/75°C copper conductors only - Conductor Cross-Section 2.5mm² (AWG14) max Length 4m | |

7.2 X2

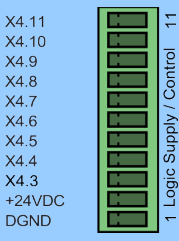
| X2 | | Motor Phases |
|---|---|---|
|  | PH1+ PH1- PH2+ PH2- PE/SCRN | LinMot Motor: Motor Phase 1+ red Motor Phase 1- pink Motor Phase 2+ blue Motor Phase 2- grey Shield |
| | | - Use 60/75°C copper conductors only - Conductor cross-section: 0.5 – 2.5mm ² (depends on Motor current) / AWG 21 -14 |

7.3 X3

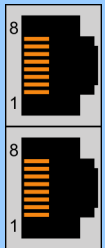
| X3 Motor Sensor | | | | | | | | | | | | | | | | | | | | | |
|---|--|---|----------------|---|----------------|---|-------|---|-------------|---|---------|---|----------------|---|----------------|---|------|---|---------------|------|--------|
|  | <p>LinMot Motor:</p> <table border="0"> <tr><td>1</td><td>Do not connect</td></tr> <tr><td>2</td><td>Do not connect</td></tr> <tr><td>3</td><td>+5VDC</td></tr> <tr><td>4</td><td>Sensor Sine</td></tr> <tr><td>5</td><td>Temp In</td></tr> <tr><td>6</td><td>Do not connect</td></tr> <tr><td>7</td><td>Do not connect</td></tr> <tr><td>8</td><td>AGND</td></tr> <tr><td>9</td><td>Sensor Cosine</td></tr> <tr><td>case</td><td>Shield</td></tr> </table> | 1 | Do not connect | 2 | Do not connect | 3 | +5VDC | 4 | Sensor Sine | 5 | Temp In | 6 | Do not connect | 7 | Do not connect | 8 | AGND | 9 | Sensor Cosine | case | Shield |
| 1 | Do not connect | | | | | | | | | | | | | | | | | | | | |
| 2 | Do not connect | | | | | | | | | | | | | | | | | | | | |
| 3 | +5VDC | | | | | | | | | | | | | | | | | | | | |
| 4 | Sensor Sine | | | | | | | | | | | | | | | | | | | | |
| 5 | Temp In | | | | | | | | | | | | | | | | | | | | |
| 6 | Do not connect | | | | | | | | | | | | | | | | | | | | |
| 7 | Do not connect | | | | | | | | | | | | | | | | | | | | |
| 8 | AGND | | | | | | | | | | | | | | | | | | | | |
| 9 | Sensor Cosine | | | | | | | | | | | | | | | | | | | | |
| case | Shield | | | | | | | | | | | | | | | | | | | | |
| DSUB-9 (f) | <p>Note: Use +5V (X3.3) and AGND (X3.8) only for motor internal hall sensor supply (max. 100mA). Cable length < 30m.</p> <p>Caution: Do NOT connect AGND (X3.8) to ground or earth!</p> | | | | | | | | | | | | | | | | | | | | |



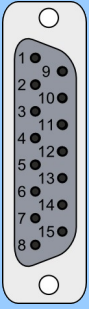
7.4 X4

| X4 | | Logic Supply / IO Connection | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|------------------------------|---|-------|---|----|-------|-------|---|---|------|------|--|---|----|------|--------------------|---|----|------|--------------------|---|----|------|--------------------|---|----|------|--------------------|---|-----|------|---------------------|---|-----|------|---------------------|---|--------|--------|------------------------|---|-----|--------|--------|--|--|--|
|  | <table border="1"> <tr><td>11</td><td>AnIn-</td><td>X4.11</td><td>Configurable Analog Input differential (with X4.10)</td></tr> <tr><td>10</td><td>AnIn+</td><td>X4.10</td><td>Configurable Analog Input differential (with X4.11)</td></tr> <tr><td>9</td><td>AnIn</td><td>X4.9</td><td>Configurable Analog Input single ended</td></tr> <tr><td>8</td><td>In</td><td>X4.8</td><td>Configurable Input</td></tr> <tr><td>7</td><td>In</td><td>X4.7</td><td>Configurable Input</td></tr> <tr><td>6</td><td>In</td><td>X4.6</td><td>Configurable Input</td></tr> <tr><td>5</td><td>In</td><td>X4.5</td><td>Configurable Input</td></tr> <tr><td>4</td><td>Out</td><td>X4.4</td><td>Configurable Output</td></tr> <tr><td>3</td><td>Out</td><td>X4.3</td><td>Configurable Output</td></tr> <tr><td>2</td><td>+24VDC</td><td>Supply</td><td>Logic Supply 22-26 VDC</td></tr> <tr><td>1</td><td>GND</td><td>Supply</td><td>Ground</td></tr> </table> | 11 | AnIn- | X4.11 | Configurable Analog Input differential (with X4.10) | 10 | AnIn+ | X4.10 | Configurable Analog Input differential (with X4.11) | 9 | AnIn | X4.9 | Configurable Analog Input single ended | 8 | In | X4.8 | Configurable Input | 7 | In | X4.7 | Configurable Input | 6 | In | X4.6 | Configurable Input | 5 | In | X4.5 | Configurable Input | 4 | Out | X4.4 | Configurable Output | 3 | Out | X4.3 | Configurable Output | 2 | +24VDC | Supply | Logic Supply 22-26 VDC | 1 | GND | Supply | Ground | | | |
| 11 | AnIn- | X4.11 | Configurable Analog Input differential (with X4.10) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | AnIn+ | X4.10 | Configurable Analog Input differential (with X4.11) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | AnIn | X4.9 | Configurable Analog Input single ended | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | In | X4.8 | Configurable Input | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | In | X4.7 | Configurable Input | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | In | X4.6 | Configurable Input | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | In | X4.5 | Configurable Input | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Out | X4.4 | Configurable Output | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Out | X4.3 | Configurable Output | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | +24VDC | Supply | Logic Supply 22-26 VDC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | GND | Supply | Ground | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Spring cage connector (has to be ordered separately: see chapter 13)</p> | <p>Inputs (X4.5 .. X4.8): 24V / 5mA (Low Level: -0.5 to 5VDC, High Level: 15 to 30VDC)</p> <p>Outputs (X4.3 & X4.4): 24V / max.100mA, Peak 370mA (will shut down if exceeded)</p> <p>Analog inputs: X4.9: Single ended analog input to GND, 0..10V X4.10/X4.11: Differential analog input, +/- 10V. Common mode range: +/- 5VDC to GND.</p> <p>Supply 24V / type. 500mA / max. 2.5A (if all outputs "on" with max. load.)</p> <ul style="list-style-type: none"> - Use 60/75°C copper conductors only - Conductor cross-section max. 1.5mm² - Stripping length: 10mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

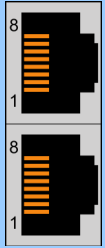
7.5 X7 - X8

| X7 - X8 | | RS485/CAN (on GP drives only) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|-------------------------------|-----------|---|---|-----------|---|---|-----------|---|---|-----|--|---|-----|--|---|-----------|---|---|-------|--|---|-------|--|------|--------|--|--|--|--|
|  | <table border="1"> <tr><td>1</td><td>RS485_Rx+</td><td>A</td></tr> <tr><td>2</td><td>RS485_Rx-</td><td>B</td></tr> <tr><td>3</td><td>RS485_Tx+</td><td>Y</td></tr> <tr><td>4</td><td>GND</td><td></td></tr> <tr><td>5</td><td>GND</td><td></td></tr> <tr><td>6</td><td>RS485_Tx-</td><td>Z</td></tr> <tr><td>7</td><td>CAN_H</td><td></td></tr> <tr><td>8</td><td>CAN_L</td><td></td></tr> <tr><td>case</td><td>Shield</td><td></td></tr> </table> | 1 | RS485_Rx+ | A | 2 | RS485_Rx- | B | 3 | RS485_Tx+ | Y | 4 | GND | | 5 | GND | | 6 | RS485_Tx- | Z | 7 | CAN_H | | 8 | CAN_L | | case | Shield | | | | |
| 1 | RS485_Rx+ | A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | RS485_Rx- | B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | RS485_Tx+ | Y | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | GND | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | GND | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | RS485_Tx- | Z | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | CAN_H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | CAN_L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| case | Shield | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RJ-45 | <p>Use twisted pair (1-2, 3-6, 4-5, 7-8) cable for wiring.</p> <p>The built in CAN and RS485 terminations can be activated by S5.2 and S5.3.</p> <p>X7 is internally connected to X8 (1:1 connection)</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

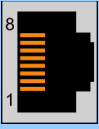
7.6 X13

| X13 | | External Position Sensor Differential Hall Switches | |
|---|---|---|---------------|
| | | ABZ with Hall Switches | |
|  | 1 | +5V DC | |
| | 9 | A+ | |
| | 2 | A- | B+ |
| | 10 | B- | Z+ |
| | 3 | | |
| | 11 | Z- | Encoder Alarm |
| | 4 | | |
| | 12 | GND | |
| | 5 | | |
| 13 | U+ | | |
| 6 | U- | V+ | |
| 7 | V- | W+ | |
| 8 | case | W- | Shield |
| DSUB-15 (f) | <p><u>Position Encoder Inputs (RS422):</u> Max. counting frequency: 10 Mcounts/s with quadrature decoding, 100ns edge separation</p> <p><u>Differential Hall Switch Inputs (RS422):</u> Input Frequency: <1kHz</p> <p><u>Enc. Alarm In:</u> 5V / 1mA</p> <p><u>Sensor Supply:</u> 5VDC max 100mA</p> | | |

7.7 X17 - X18

| X17 - X18 | | RealTime Ethernet 10/100 Mbit/s (on EC and PN drives only) | |
|---|----------------|--|--|
|  | X17 RT ETH In | Specification depends on RT-Bus Type. Please refer to according documentation. | |
| | X18 RT ETH Out | | |
| RJ-45 | | | |

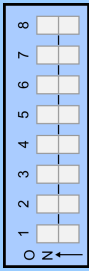
7.8 X19

| X19 System | | | | | | | | | | | | | | | | | | | |
|---|---|---|------------------|---|------------------|---|----------|---|-----|---|-----|---|----------|---|------------------|---|------------------|------|--------|
|  | <table border="0"> <tr><td>1</td><td>(Do not connect)</td></tr> <tr><td>2</td><td>(Do not connect)</td></tr> <tr><td>3</td><td>RS232 Rx</td></tr> <tr><td>4</td><td>GND</td></tr> <tr><td>5</td><td>GND</td></tr> <tr><td>6</td><td>RS232 Tx</td></tr> <tr><td>7</td><td>(Do not connect)</td></tr> <tr><td>8</td><td>(Do not connect)</td></tr> <tr><td>case</td><td>Shield</td></tr> </table> | 1 | (Do not connect) | 2 | (Do not connect) | 3 | RS232 Rx | 4 | GND | 5 | GND | 6 | RS232 Tx | 7 | (Do not connect) | 8 | (Do not connect) | case | Shield |
| 1 | (Do not connect) | | | | | | | | | | | | | | | | | | |
| 2 | (Do not connect) | | | | | | | | | | | | | | | | | | |
| 3 | RS232 Rx | | | | | | | | | | | | | | | | | | |
| 4 | GND | | | | | | | | | | | | | | | | | | |
| 5 | GND | | | | | | | | | | | | | | | | | | |
| 6 | RS232 Tx | | | | | | | | | | | | | | | | | | |
| 7 | (Do not connect) | | | | | | | | | | | | | | | | | | |
| 8 | (Do not connect) | | | | | | | | | | | | | | | | | | |
| case | Shield | | | | | | | | | | | | | | | | | | |
| RJ-45 | Use Adapter cable AC01-RJ45/Df-2.5-RS1 (Art.-No. 0150-2143) for Configuration over RS232. | | | | | | | | | | | | | | | | | | |

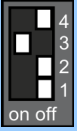
7.9 X33

| X33 Safety Relays (only with the -IS option) | | | | | | | | | | | | | | | | | | | | |
|---|---|-------|--------|--|--|--------------|--|-------|-------|----------------|--|-------|--------|----------------|--|-------|--------|------------|--|--|
| <table border="0"> <tr><td>X33.4/8 Ksr+</td><td></td><td>4 / 8</td><td>Ksr +</td><td rowspan="4">Safety Relay 1 / 2 Input positive Safety Relay 1 / 2 Input negative Safety Relay 1 / 2 feedback positive Safety Relay 1 / 2 feedback negative</td></tr> <tr><td>X33.3/7 Ksr-</td><td></td><td>3 / 7</td><td>Ksr -</td></tr> <tr><td>X33.2/6 Ksr f+</td><td></td><td>2 / 6</td><td>Ksr f+</td></tr> <tr><td>X33.1/5 Ksr f-</td><td></td><td>1 / 5</td><td>Ksr f-</td></tr> </table> | X33.4/8 Ksr+ | | 4 / 8 | Ksr + | Safety Relay 1 / 2 Input positive Safety Relay 1 / 2 Input negative Safety Relay 1 / 2 feedback positive Safety Relay 1 / 2 feedback negative | X33.3/7 Ksr- | | 3 / 7 | Ksr - | X33.2/6 Ksr f+ | | 2 / 6 | Ksr f+ | X33.1/5 Ksr f- | | 1 / 5 | Ksr f- | STO Relays | | |
| X33.4/8 Ksr+ | | 4 / 8 | Ksr + | Safety Relay 1 / 2 Input positive Safety Relay 1 / 2 Input negative Safety Relay 1 / 2 feedback positive Safety Relay 1 / 2 feedback negative | | | | | | | | | | | | | | | | |
| X33.3/7 Ksr- | | 3 / 7 | Ksr - | | | | | | | | | | | | | | | | | |
| X33.2/6 Ksr f+ | | 2 / 6 | Ksr f+ | | | | | | | | | | | | | | | | | |
| X33.1/5 Ksr f- | | 1 / 5 | Ksr f- | | | | | | | | | | | | | | | | | |
| Spring cage connector (has to be ordered separately: see chapter 13) | <ul style="list-style-type: none"> - Use 60/75°C copper conductors only - Conductor cross-section max. 1.5mm² - Stripping length: 10mm - Never connect the safety relays to the logic supply of the drive! | | | | | | | | | | | | | | | | | | | |

7.10 S1 - S2

| S1 - S2 Address Selectors (on GP drives only) | | |
|---|-----------------------------------|--|
|  | <p>S1 (5..8)</p> <p>S2 (1..4)</p> | <p>Bus ID High (0 ... F). Bit 5 is the LSB, bit 8 the MSB.</p> <p>Bus ID Low (0 ... F). Bit 1 is the LSB, bit 4 the MSB.</p> |
| The use of these switches depends on the type of fieldbus which is used. Please see the corresponding manual for further information. | | |





7.11 S4

| S4 Bus Termination (on GP drives only) | | |
|---|----|---|
|  | S4 | Switch 4: Bootstrap Switch 3: Termination CAN on/off Switch 2: Termination RS485 on/off Switch 1: RS232 (switch "off" / RS485 "on"). Selection for RS232 or RS485 Factory settings: Switch 3 "on", all other switches "off" |



7.12 S5

| S5 Bus Termination (on EC and PN drives only) | | |
|---|----|-----------|
| | S5 | Bootstrap |





7.13 LEDs

| LEDs | State Display | |
|--|----------------------------------|---|
| Error   24VOK Warn   EN | Green Yellow Yellow Red | 24V Logic Supply OK Motor Enabled / Error Code Low Nibble Warning / Error Code High Nibble Error |

7.14 RT BUS LEDs

| RT Bus LEDs | RT Bus State Display (only on EC or PN drives) | |
|---|--|-------------|
|   | Green Red | OK Error |
| The use of these LEDs depends on the type of fieldbus which is used. Please see the corresponding manual for further information. | | |

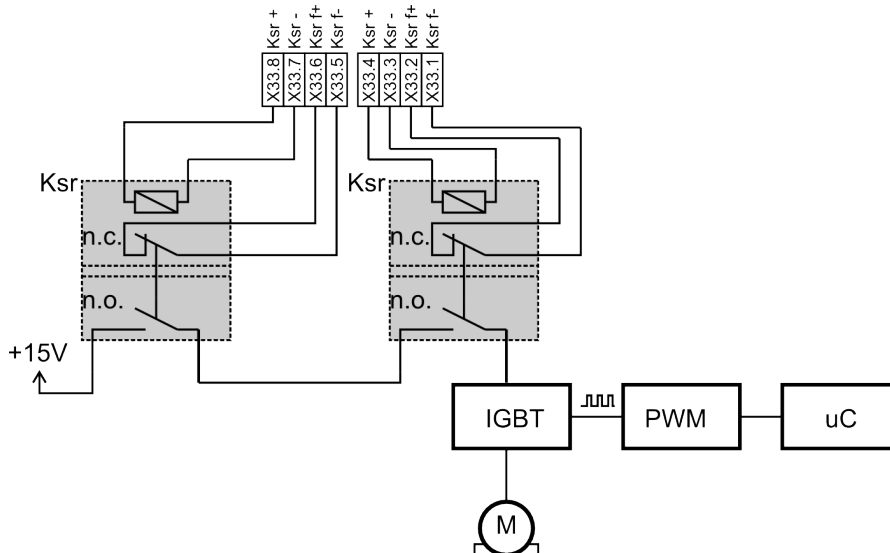
8 Error Codes

| Error Codes | | | |
|--|--|---|--|
| Error   24VOK Warn   EN | | | |
| Error | Warn | EN | Description |
| Off | Warning | Operation Enabled | Normal Operation: Warnings and operation enabled are displayed. |
| On | <ul style="list-style-type: none"> • ~2Hz 0..15 x Error Code High Nibble | <ul style="list-style-type: none"> • ~2Hz 0..15 x Error Code Low Nibble | Error: The error code is shown by a blink code with "WARN" and "EN". The error byte is divided into low and high nibble (= 4 bit). "WARN" and "EN" are blinking together. The error can be acknowledged. (e.g.: WARN blinks 3x, EN blinks 2x; Error Code = 32h) |
| <ul style="list-style-type: none"> • ~2Hz | <ul style="list-style-type: none"> • ~2Hz 0..15 x Error Code High Nibble | <ul style="list-style-type: none"> • ~2Hz 0..15 x Error Code Low Nibble | Fatal Error: The error code is shown by a blink code with "WARN" and "EN". The error byte is divided into low and high nibble. "WARN" and "EN" are blinking together. Fatal errors can only be acknowledged by a reset or power cycle. (e.g.: WARN blinks 3x, EN blinks 2x; Error Code = 32h) |
| <ul style="list-style-type: none"> • ~4Hz | <ul style="list-style-type: none"> • ~2Hz 0..15 x Error Code High Nibble | <ul style="list-style-type: none"> • ~2Hz 0..15 x Error Code Low Nibble | System Error: Please reinstall firmware or contact support. |
| <ul style="list-style-type: none"> • ~0.5Hz | <ul style="list-style-type: none"> • ~0.5Hz | On | Signal Supply 24V too low: The error and warn LEDs blink alternating if the signal supply +24V (X4.2) is less than 18VDC. |
| Off | *●●● | ●*●● | Plug&Play Communication Active This sequence (Warn on, then En on, then both off, complete sequence of the 4 states ca. 1Sec) signalizes the state when the plug and play parameters are being read from the motor. |

The meaning of the error codes can be found in the Usermanual_MotionCtrl_Software_SG5 and the user manual of the installed interface software. These documents are provided together with LinMot-Talk configuration software and can be downloaded from www.linmot.com.

9 Safety Wiring

The C1200 drives with the -1S option have internal safety functions: Two Safety relays Ksr in series, which support the supply voltage for the motor drivers. There are also two feedback contacts for each relay.



To enable the -1S drives both relays have to be switched on.

Minimal wiring:

- Connect X33.8 and X33.4 to 24VDC (from safety)
- Connect X33.7 and X33.3 to GND (from safety)



Attention: Never connect X33.8 and X33.4 to the logic supply of X4!

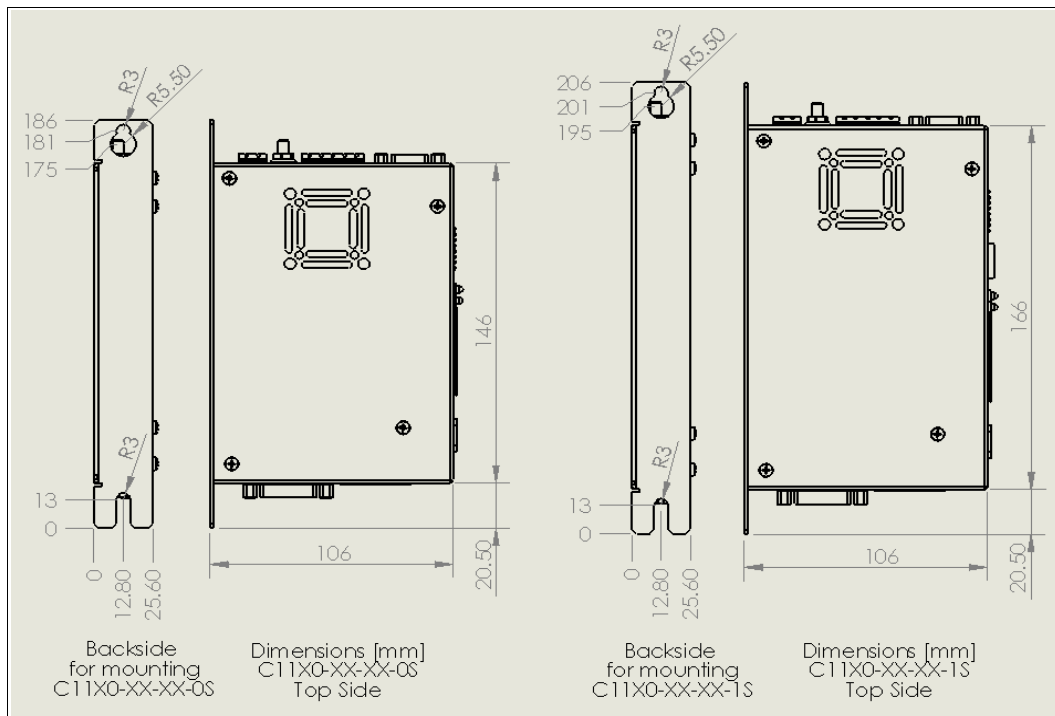
Overvoltage protection must be provided externally and sized according the safety circuit of the machine!

Attention: The drop out time of the relays is depending on the external circuitry!

| Safety Relay Ksr | |
|---------------------------------------|------------------------------|
| Nominal voltage | 24 VDC |
| Min. pick-up voltage at 20°C | ≤ 16.8V |
| Drop-out voltage at 20°C | ≥ 2.4 V |
| Drop-out time (no protection circuit) | Typ. 3ms |
| Coil resistance at 20°C | 2'100 Ω ± 10% |
| Type | EN 50205, type A |
| Contact lifetime | > 10'000'000 |
| Manufacturer and type | Elesta relays / SIS112 24VDC |

| Drive Classification according EN ISO 13849-1 (safety of machinery) (preliminary) | |
|---|--------------|
| Category | cat = 3 |
| Performance Level | PL = d |
| Diagnostic Coverage | DC = high |
| Mean Time to hazardous failure of one channel | MTTFd = high |

10 Physical Dimension



| C1100 Series single axis drive | | C11xx-xx-XC-0S | C11xx-xx-XC-1S |
|---------------------------------------|----------------|--|-----------------------|
| Width | mm (in) | 26.6 (1.05) | |
| Height | mm (in) | 146 (5.75) | 166 (6.54) |
| Height with fixings | mm (in) | 186 (7.3) | 206 (8.1) |
| Depth | mm (in) | 106 (4.2) | |
| Weight | g (lb) | | |
| Mounting Screws | | 2 x M5 | 2 x M5 |
| Mounting Distance | mm (in) | 168 (6.61) | 188 (7.4) |
| Case | IP | 20 | |
| Storage Temperature | °C | -25...40 | |
| Transport Temperature | °C | -25...70 | |
| Operating Temperature | °C | 0...40 at rated data 40...50 with power derating | |
| Relative humidity | | 95% (non-condensing) | |
| Pollution | IEC/EN 60664-1 | Pollution degree 2 | |
| Site altitude | m amsl | to be defined | |
| Shock resistance (16ms) | -1S option | | 3.5g |
| Vibration resistance (10-200Hz) | -1S option | | 1g |
| Max. Case Temperature | °C | 90 | |
| Max. Power Dissipation | W | ??? | |
| Mounting place | | In the control cabinet | |
| Mounting position | | vertical | |
| Distance between Drives | mm (in) | Without Power Derating: 20 (0.8) horizontal / 50 (2) vertical With Power Derating: 5 (0.2) horizontal / 20 (0.8) vertical | |

11 Power Supply Requirement

Motor Power Supply



The calculation of the needed power for the Motor supply is depending on the application and the used motor. The nominal supply voltage is 72VDC. The possible range is from 24 to 85VDC.

ATTENTION:

The motor supply can rise up to 95 VDC when braking. This means that everything connected to that power supply needs a voltage rating of 100 VDC. (Additional capacitors, etc...). Due to high braking voltage and sudden load variations of linear motor applications, **only specially designed power supplies can be used.**

Signal Power Supply

The logic supply needs a regulated power supply of a nominal voltage of 24 VDC. The voltage must be between 22 and 26 VDC.

Current consumption:

- min. 0.5A (no load on the outputs)
- typ. 1.5A (all 10 outputs "on" with 100mA load and /Break with no load)
- max. 2.5A (all 10 outputs "on" with 100mA load and /Break with 1A load)



**Do not connect the safety relays to the 24VDC Signal Supply!
Use a separate power supply for the safety circuit!**

12 Regeneration of Power

If the power supply rises too high when braking, connect an additional capacitor to the motor power supply. It is recommended to use a capacitor $\geq 10'000 \mu\text{F}$ (install capacitor close to the drive supply!)



13 Ordering Information

| Drive | Description | Art. No. |
|-----------------------------|--|-----------|
| C1100-GP-XC-0S-000 | General Purpose Drive 72VDC/25A _{peak} | 0150-2380 |
| C1150-EC-XC-0S-000 | ETHERCAT Drive 72VDC/25A _{peak} | 0150-2382 |
| C1150-PN-XC-0S-000 | PROFINET Drive 72VDC/25A _{peak} | 0150-2384 |
| C1100-GP-XC-1S-000 | General Purpose Drive 72VDC/25A _{peak} /STO | 0150-2381 |
| C1150-EC-XC-1S-000 | ETHERCAT Drive 72VDC/25A _{peak} /STO | 0150-2383 |
| C1150-PN-XC-1S-000 | PROFINET Drive 72VDC/25A _{peak} /STO | 0150-2385 |
| Accessories | Description | Art. No. |
| DC01-C1X00-0S/X1/X4 | Drive Connector Set for C1X00-0S | 0150-3527 |
| DC01-C1X00-1S/X1/X4/X33 | Drive Connector Set for C1X00-1S | 0150-3528 |
| DC01-C1X00/X1 | Drive Connector for PWR 72VDC Input | 0150-3525 |
| DC01-C1X00/X2 | Drive Connector Motor Phases | 0150-3526 |
| DC01-Signal/X4 | Drive Connector 24VDC & Logic | 0150-3447 |
| DC01-Safety/X33 | Drive Connector Safety | 0150-3451 |
| RS232 PC config. Cable 2.5m | For C1100/C1250/E1200/E1400/M8000 | 0150-2143 |



ATTENTION: The connectors have to be ordered separately and are not included with the drive!

14 International Certifications

| Certifications | |
|---|---|
| Europe  | See chapter "16 Declaration of Conformity CE-Marking" |
| USA / Canada  | All products marked with this symbol are tested and recognized by Underwriters Laboratories and the production facilities are checked quarterly by an UL inspector. This mark is valid for the USA and Canada and eases certification of your machines and systems in these areas. File number E316095 UL 508C Power Conversion Equipment CSA C22.2 Industrial Control Equipment |

15 Safety notes for the installation according UL

Markings:

- **Wiring terminal markings:**
See markings on the enclosure and the corresponding chapters in the installation guide!
- **Cautionary Marking:**
See markings on the enclosure and the corresponding chapters in the installation guide!
- **Motor overload protection must be provided externally in the end-use.** Motor Overload protection can alternatively be provided when the connected motor has a thermal sensor rated 5V DC, max. 100mA which is connected to the drive thermal sensor input (X3).
- The transients have to be limited to max. 0.8kV on the line side of the drive.
- The 24VDC supply for the control circuit must be protected with an external UL Listed 3A DC Fuse.
- **Proposed ratings, to be evaluated in the end-use:**
 - Input Voltage: 72VDC
 - Input current: 15A
 - Output Voltage: 61.5V rms
 - Output Current: 17.7A rms max.
 - Number of Phases: 2 by 1 Phase
 - Frequency range: 0-500Hz
 - Duty cycle rating: 10%
 - Relays (only for -1S variant):
 - rated Contacts: max. 24VDC 6A.
 - Coil: 24VDC
 - Surrounding air temp: max. 85°C
 - Control Power (X4-2): 24VDC
protected with an external UL Listed 3A DC Fuse
 - Surrounding Air Temperature: max. 50°C
- A separate 24VDC power supply protected with an external UL Listed 3A DC Fuse connected to the output of the power supply must be used to protect the secondary control circuit (safety relays on X33)

16 Declaration of Conformity CE-Marking

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Fax: +41 (0)56 419 91 92

declares under sole responsibility the compliance of the products:
- **Drives of the Series C11x0-xx-XC-xS-xxx**

with the **EMC Directive 2004/108/EC**.

Applied harmonized standards:

- **EN 61000-6-2: 2005 (Immunity for industrial environments)**
- **EN 61000-6-4: 2007 (Emission for industrial environments)**
- **EN 61326-3-1: 2008 (Functional safety)**

According to the EMC directive, the listed devices are not independently operable products.

Compliance of the directive requires the correct installation of the product, the observance of specific installation guides and product documentation. This was tested on specific system configurations.

The safety instructions of the manuals are to be considered.

These products are intended for installation in machines. Operation is prohibited until it has been determined that the machines in which these products are to be installed, conforms to the above mentioned EC directive.

The product must be mounted and used in strict accordance with the installation instructions contained within the installation guide, a copy of which may be obtained from NTI AG.

Company: NTI AG
Spreitenbach, March 13, 2014



Dr. Ronald Rohner / CEO NTI AG

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Please visit <http://www.linmot.com/> to find the distributor closest to you.

Smart solutions are...

