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# C1250 Servo Drives

Installation Guide
(For the C1250-MI drives see IG 0185-1175-E_...)




***Important Notice:***
***Please note that we use machine translation to provide documents in your local language. It is possible that not all texts will be translated correctly. If you have any questions or discrepancies regarding the accuracy of the information in the translated version, please read the original English version (0185-1063-E).***

**Please visit http://www.linmot.com to check for the latest version of this document!**

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Note
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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 2006/42/EG (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 (2014/30/EU).
- 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, circuit breakers, 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 42 VDC.



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

## 2 System Overview

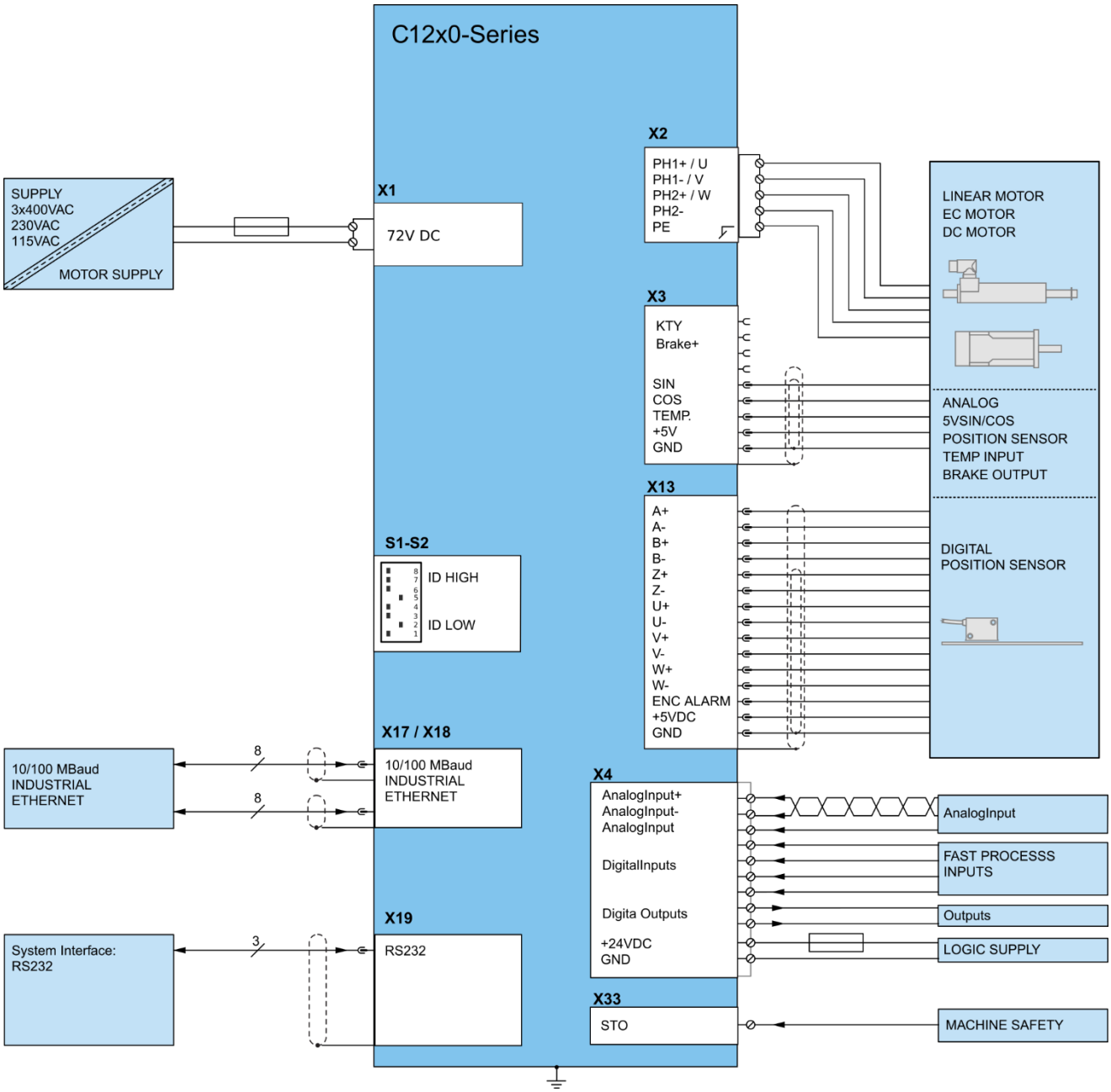



**Figure 1: Typical servo system C1250: Servo drive, motor and power supply**

## 3 Interfaces

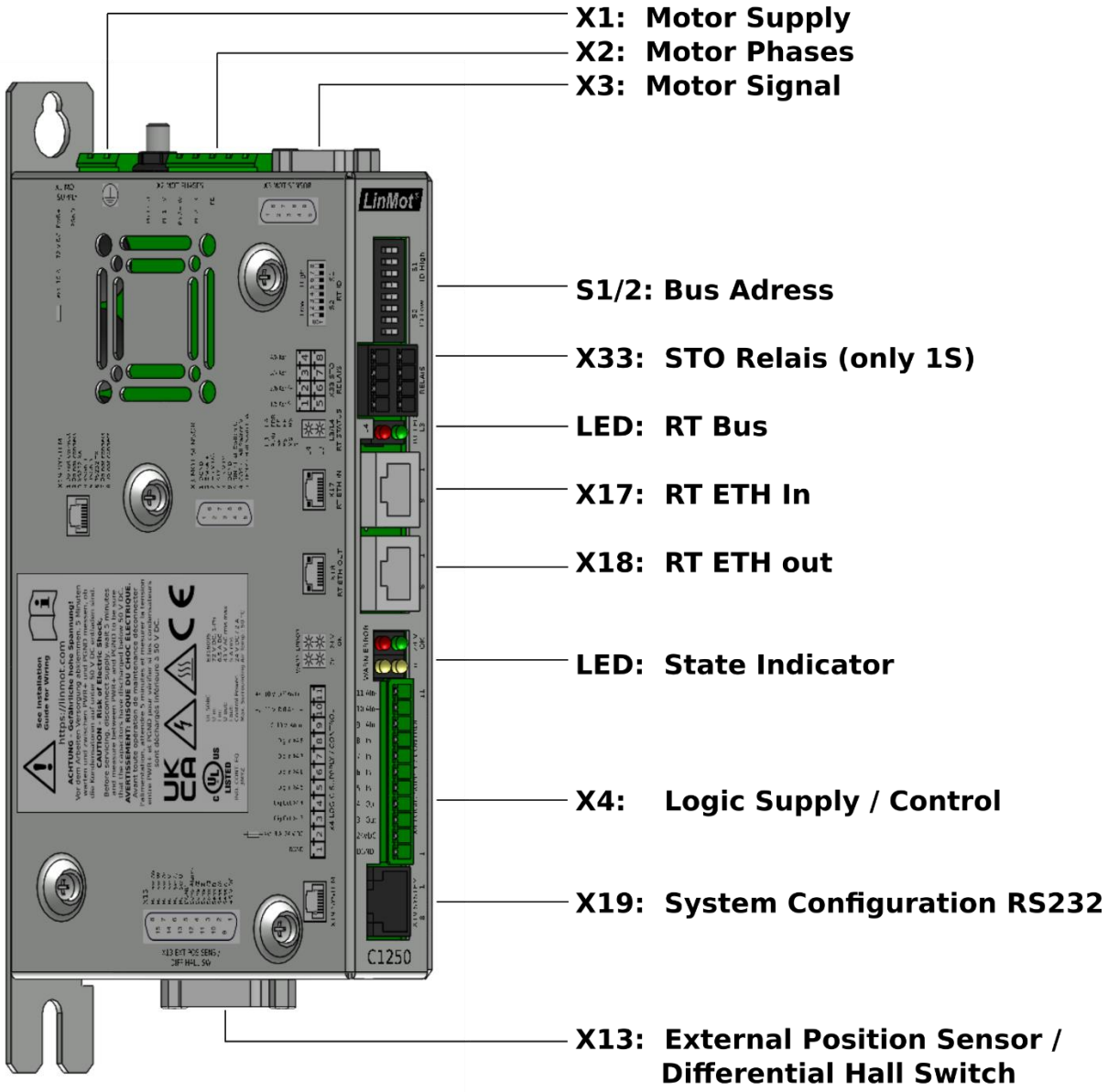
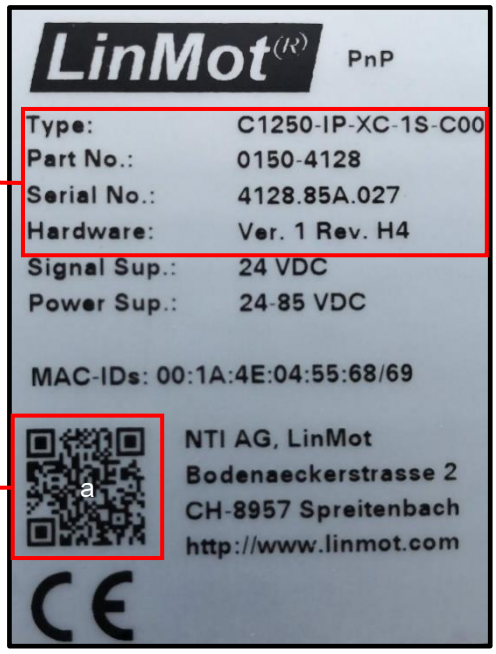



**Figure 2: C1250-xx-XC-xS-xxx**

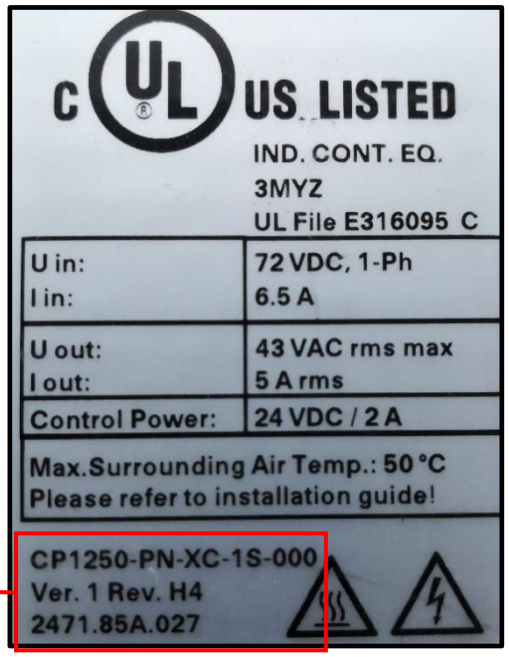
## 4 Labels on the drive

There are two labels on the side of the drive. On the “LinMot” label the drive type, part number and serial number can be found. On the “UL” label there is UL information and the production type. The production type is not relevant for the end user. It is only used during production.




LinMot Type, part- and serial number and HW version and revision

QR code, containing serial number, HW version and revision and the MAC-IDs.




“Production type”, not relevant and may differ from LinMot Type

## 5 Functionality

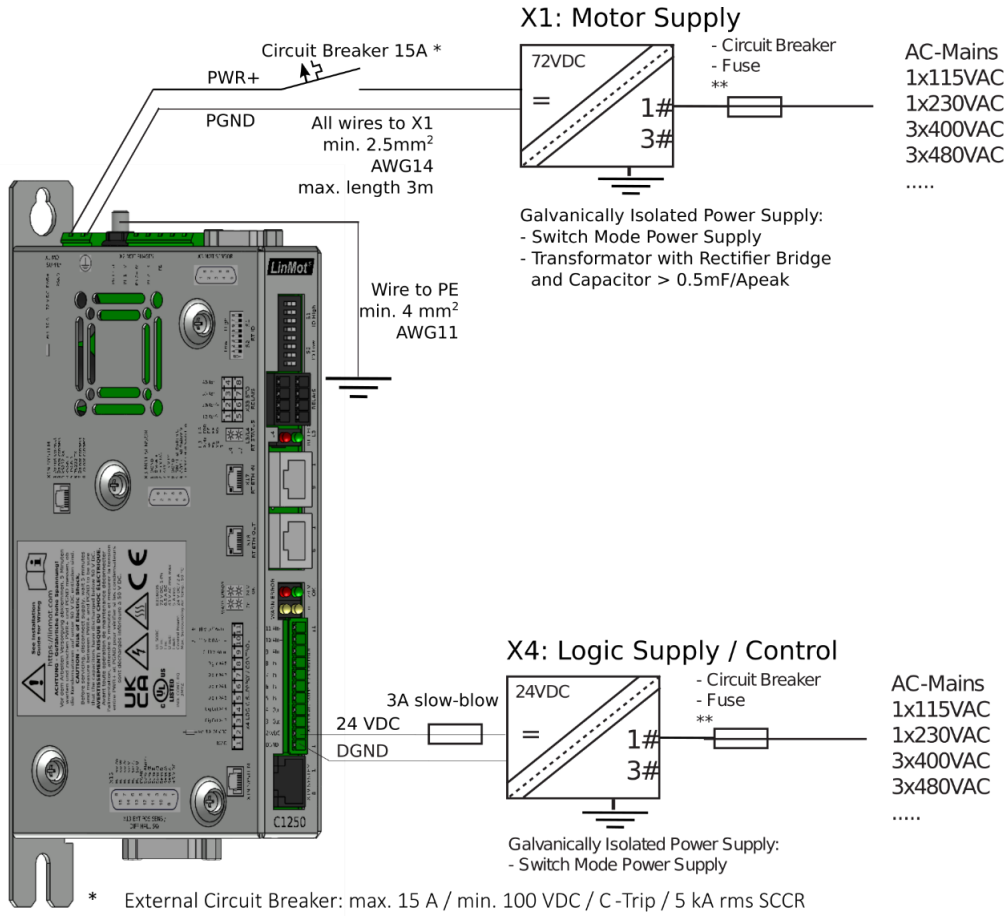
| | C1250-PL-XC-0S | C1250-PN-XC-0S | C1250-PD-XC-0S | C1250-SC-XC-0S | C1250-IP-XC-0S | C1250-LU-XC-0S | C1250-EC-XC-0S | C1250-DS-XC-0S | C1250-SE-XC-0S | C1250-CM-XC-0S | C1250-CC-XC-0S | C1250-PL-XC-1S | C1250-PN-XC-1S | C1250-PD-XC-1S | C1250-SC-XC-1S | C1250-IP-XC-1S | C1250-LU-XC-1S | C1250-EC-XC-1S | C1250-DS-XC-1S | C1250-SE-XC-1S | C1250-CM-XC-1S | C1250-CC-XC-1S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Supply Voltage** | | | | | | | | | | | | | | | | | | | | | | |
| Motor Supply 72 VDC (24..85 VDC) | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Logic Supply 24 VDC (22...26 VDC) | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| **Motor Phase Current** | | | | | | | | | | | | | | | | | | | | | | |
| 25 A peak (0-599 Hz) | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| **Controllable Motors** | | | | | | | | | | | | | | | | | | | | | | |
| LinMot P0x- and PR0x-Motors | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Selected motors (contact support) | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Plug and Play (PnP) Auto Configuration | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| **Command Interface** | | | | | | | | | | | | | | | | | | | | | | |
| POWERLINK | ● | | | | | | | | | | | ● | | | | | | | | | | |
| PROFINET | | ● | | | | | | | | | | | ● | | | | | | | | | |
| PROFINET PROFIdrive | | | ● | | | | | | | | | | | ● | | | | | | | | |
| Sercos III | | | | ● | | | | | | | | | | | ● | | | | | | | |
| EtherNet/IP | | | | | ● | | | | | | | | | | | ● | | | | | | |
| LinUDP | | | | | | ● | | | | | | | | | | | ● | | | | | |
| EtherCAT | | | | | | | ● | | | | | | | | | | | ● | | | | |
| EtherCAT CiA402 | | | | | | | | ● | | | | | | | | | | | ● | | | |
| EtherCAT SoE | | | | | | | | | ● | | | | | | | | | | | ● | | |
| EtherNet/IP CIP Sync | | | | | | | | | | ● | | | | | | | | | | | ● | |
| CC-Link | | | | | | | | | | | ● | | | | | | | | | | | ● |
| **Programmable Motion Profiles (Curves)** | | | | | | | | | | | | | | | | | | | | | | |
| Up to 100 Motion Profiles<br>Up to 16302 Curve Points | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| **Programmable Command Table** | | | | | | | | | | | | | | | | | | | | | | |
| Command Table with up to 255 entries | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| **External Position Sensor** | | | | | | | | | | | | | | | | | | | | | | |
| Incremental (RS422 up to 25 Mcounts/s) | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Absolute (SSI, BiSS-B*, BiSS-C*, EnDat2.1**, EnDat 2.2**) | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| **Configuration Interface** | | | | | | | | | | | | | | | | | | | | | | |
| RS232 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Ethernet (EoE, etc… depending on Interface) | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| **Integrated Safety Functions (-1S Option)** | | | | | | | | | | | | | | | | | | | | | | |
| STO (2 Safety Relays) | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| **Calibrated Measuring Functions (-Cxx Option)** | | | | | | | | | | | | | | | | | | | | | | |
| | ●*** | ●*** | ●*** | ●*** | ●*** | ●*** | ●*** | ●*** | ●*** | ●*** | ●*** | ●*** | ●*** | ●*** | ●*** | ●*** | ●*** | ●*** | ●*** | ●*** | ●*** | ●*** |

* since firmware version 6.6
** since firmware version 6.7
*** only with the C1250-xx-XC-xS-**C**xx type

## 6 Software

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

## 7 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[1] should be tied directly to the ground bus **(star pattern)**. Daisy chaining from component to component is forbidden. (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.

[11] Inside of the C1250 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.

# 8 Calibrated Measuring Amplifier (C1250-xx-XC-xS-Cxx)

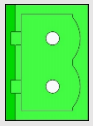
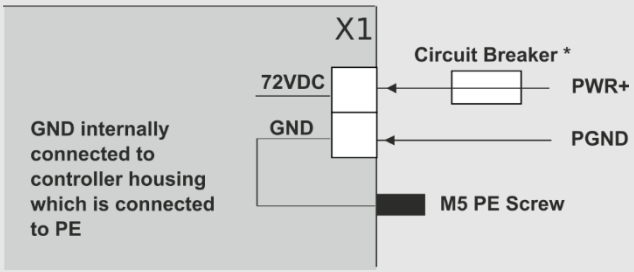
The drives with the ending -**C**xx are specially designed for measuring applications. They come with a factory calibration certificate for the analog inputs on X4. The analog inputs on X4 provide a measuring error of less than 1%.
These drives have at least hardware version 1 revision H4 (V1RH4) and therefore come as well with an UL listing.
The firmware must be at least version 6.9.
It is the user's responsibility to allow a reasonable period for recalibration. We recommend a calibration interval of 12 months.

# 9 Description of the connectors / Interfaces

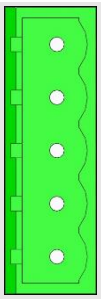
## 9.1 PE

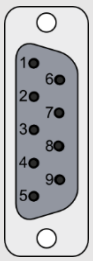
| PE | Protective Earth |
|---|---|
| PE | • Use min. 4 mm² (AWG11)<br>• Tightening torque: 2 Nm (18 lbin) |

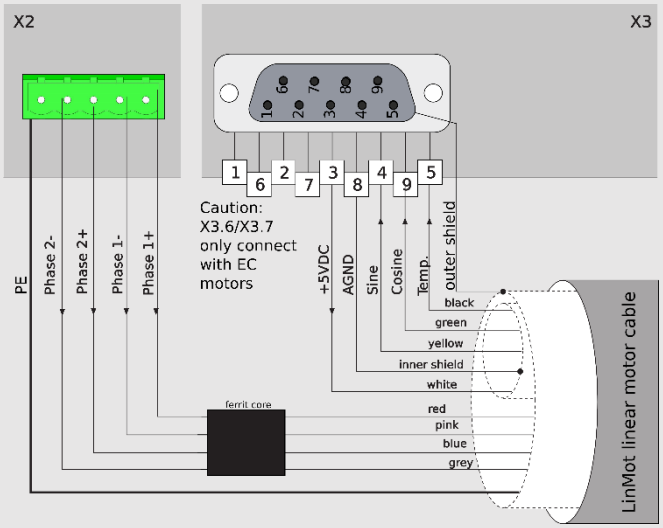
## 9.2 X1

| X1 | Motor Supply | |
|---|---|---|
|  | PWR+<br><br>PGND |  |
| Connector has to be ordered separately: see chapter 16) | Motor Supply: 72 VDC nominal (24...85 VDC)<br>Absolute max. Rating: 72 VDC +20%.<br>External Circuit Breaker: 15 A / min. 100 VDC / C-Trip / 5 kA rms SCCR<br><br>If motor supply voltage exceeds 90 VDC, the drive will go into error state.<br>• Use 60/75 °C copper conductors only<br>• Conductor Cross-Section 2.5 mm² (AWG14) max Length 3 m | |

## 9.3 X2/X3 Motor Connection

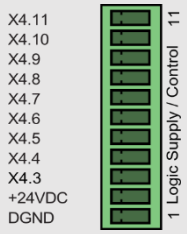
| X2 | Motor Phases | | | | |
|---|---|---|---|---|---|
|  | | **LinMot Motor:** | | **3-phase EC-Motor:** | |
| | PH1+ | Motor Phase 1+ | red | Motor Phase U | red |
| | PH1 | Motor Phase 1- | pink | Motor Phase V | pink |
| | PH2+ | Motor Phase 2+ | blue | Motor Phase W | blue |
| | PH2- | Motor Phase 2- | grey | Motor Phase X | grey |
| | PE/SCRN | PE | | PE | |
| Connector has to be ordered separately: see chapter 16) | • Use 60/75 °C copper conductors only<br>• Conductor cross-section: 0.5 – 2.5 mm² (depends on Motor current) / AWG 21 -14 | | | | |

| X3 | Motor Sensor / Brake | | |
|---|---|---|---|
|  | | **LinMot Motor:** | **EC Motor:** |
| | 1 | Do not connect | DGND, (Do not connect before Ver.1Rev.H4) |
| | 6 | Do not connect | Brake+ |
| | 2 | Do not connect | +5 VDC, (Do not connect before Ver.1Rev.H4) |
| | 7 | Do not connect | KTY |
| | 3 | +5 VDC | +5 VDC |
| | 8 | DGND | DGND |
| | 4 | Sensor Sine | Sensor Sine / Hall Switch U |
| | 9 | Sensor Cosine | Sensor Cosine / Hall Switch V |
| | 5 | Temp In | Hall Switch W |
| | case | Shield | Shield |
| DSUB-9 (f) | **Note:**<br>• Use +5 VDC (X3.3) and DGND (X3.8) only for motor internal hall sensor supply (max. 100 mA).<br>• Max. motor cable length: 50m for LinMot Px motors.<br>Please check restrictions of motor, encoder and cable as well.<br>• Brake+: 24 V / max. 500 mA, peak 1.4 A (will shut down if exceeded) the other terminal has to be wired to DGND (X3.1) (Since Ver.1Rev.H4)<br>**Caution:**<br>• Do NOT connect DGND (X3.8) to ground or earth!<br>**Temperature Sensor:**<br>• A resistive temperature sensor (PT1000, KTY) could be connected between +5 VDC (X3.2) and KTY (X3.7) | | |




**Important Notes:**
- Use Y-style motor cables only (for example K15-Y/C)! A W-style cable has a different shielding, so it cannot be modified to a Y-style cable!

## 9.4 X4

| X4 | Logic Supply / IO Connection | | | |
|---|---|---|---|---|
|  | 11 | AnIn- | X4.11 | Configurable differential analog Input (with X4.10) |
| | 10 | AnIn+ | X4.10 | Configurable differential analog Input (with X4.11) |
| | 9 | AnIn | X4.9 | Configurable single ended analog Input |
| | 8 | In | X4.8 | Configurable digital Input |
| | 7 | In | X4.7 | Configurable digital Input |
| | 6 | In | X4.6 | Configurable digital Input |
| | 5 | In | X4.5 | Configurable digital Input |
| | 4 | Out | X4.4 | Configurable digital Output |
| | 3 | Out | X4.3 | Configurable digital Output |
| | 2 | +24VDC | Supply | Logic Supply 22-26 VDC |
| | 1 | DGND | Supply | Ground |

Spring cage connector (has to be ordered separately: see chapter 16

**Digital inputs** (X4.5 ... X4.8): 24 VDC / 5 mA (Low Level: –0.5 to 5 VDC, High Level: 15 to 30 VDC)
**Digital outputs** (X4.3 & X4.4): 24 VDC / max. 500 mA, peak 1.4 A (will shut down if exceeded)
X4.3: Can be used as brake output for LinMot motors
Both outputs are high-side switching with integrated pull-down (1k7 to DGND)

**Analog inputs:** 12 bit A/D converted

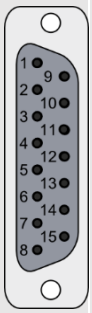
| | | |
|---|---|---|
| until V1RH3: | X4.9: | 0..10 V, input resistance: >90 kΩ to DGND |
| | X4.10/X4.11: | +/- 10 V, input resistance 20.0 kΩ, common mode range: -5..+5 V to DGND |
| since V1RH4: | X4.9: | 0..10 V, input resistance: >75 kΩ to DGND |
| | X4.10/X4.11: | +/- 10 V, input resistance 28.0 kΩ, common mode range: -5..+10 V to DGND, |

**Mating connector (Art. Nr. 0150-3447):**

- Use 60/75 °C copper conductors only
- Conductor cross-section max. 1.5 mm2
- Stripping length: 11.5 mm

**Important notes:**
The 24 VDC logic supply for the control circuit (X4.2) must be protected with an external fuse (3 A slow blow)

## 9.5 X13

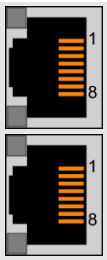
| X13 | External Position Sensor Differential Hall Switches | | | |
|---|---|---|---|---|
|  | | | ABZ with Hall Switches | SSI / BiSS-B* / BiSS-C* / EnDat2.1** / EnDat2.2** |
| | 1 | | +5V DC | +5V DC |
| | | 9 | A+ | A+ (optional) |
| | 2 | | A- | A- (optional) |
| | | 10 | B+ | B+ (optional) |
| | 3 | | B- | B- (optional) |
| | | 11 | Z+ | Data+ |
| | 4 | | Z- | Data- |
| | | 12 | Encoder Alarm (optional) | Encoder Alarm (optional) |
| | 5 | | DGND | DGND |
| | | 13 | U+ | nc |
| | 6 | | U- | nc |
| | | 14 | V+ | nc |
| | 7 | | V- | nc |
| | | 15 | W+ | Clk+ |
| | 8 | | W- | Clk- |
| | case | | Shield | Shield |

DSUB-15 (f)

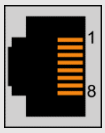
Position Encoder Inputs (RS422):
Max. counting frequency: 25 M counts/s with quadrature decoding.
A minimum of 40 ns edge separation must be guaranteed by the encoder under any circumstances!
The maximal frequency of each signal is 6.25 MHz.
Differential Hall Switch Inputs (RS422):
Input Frequency: < 1 kHz
Enc. Alarm In:
5 V / 1 mA
Sensor Supply:
5 VDC max. 100 mA (300 mA since firmware version 6.7)

* Since firmware version 6.6
** Since firmware version 6.7

## 9.6 X17 – X18

| X17 – X18 | RealTime Ethernet 10/100 Mbit/s | |
|---|---|---|
|  | X17 RT ETH In<br>X18 RT ETH Out | Specification depends on RT Bus. Please refer to corresponding documentation. |
| RJ-45 | | |

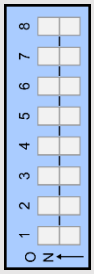
## 9.7 X19

| X19 | System | |
|---|---|---|
|  | 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 isolated USB-RS232 converter (Art.-No. 0150-2473) for configuration over RS232 | |

## 9.8 X33

| X33 | Safety Relays (only with the -1S option) | | |
|---|---|---|---|
| X33.4/8 Ksr+<br>X33.3/7 Ksr-<br>X33.2/6 Ksr f+<br>X33.1/5 Ksr f-<br> STO Relays | 4 / 8 | Ksr + | Safety Relay 1 / 2 Input positive |
| | 3 / 7 | Ksr - | Safety Relay 1 / 2 Input negative |
| | 2 / 6 | Ksr f+ | Safety Relay 1 / 2 feedback positive |
| | 1 / 5 | Ksr f- | Safety Relay 1 / 2 feedback negative |
| Spring cage connector (has to be ordered separately: see chapter 16) | - Use 60/75°C copper conductors only<br>- Conductor cross-section max. 1.5mm$^2$<br>- Stripping length: 10mm<br>- The state of the feedback contacts has to be checked after each change of the state of the control contacts!<br>- Max. current on the feedback contacts (Ksr+ and Ksr-) has to be limited below 1 A.<br>**- Never connect the safety relays to the logic supply of the drive!**<br>→ For detailed information see chapter 11 Safety Wiring. | | |

## 9.9 S1 – S2

| S1 – S2 | Address Selectors | |
|---|---|---|
|  | S1 (5..8) | Bus ID High (0 … F). Bit 5 is the LSB, bit 8 the MSB. |
| | S2 (1..4) | Bus ID Low (0 … F). Bit 1 is the LSB, bit 4 the MSB.<br>**Setting the ID high & low to 0xFF resets the drive to manufacturer settings!** |
| | The use of these switches depends on the type of fieldbus which is used. Please see the corresponding manual for further information. | |

## 9.10 S5

| S5 | Bootstrap | |
|---|---|---|
| | S5 | Bootstrap (Internal use only, set to off) |

## 9.11 LEDs

| LEDs | State Displays | | |
|---|---|---|---|
|  | **Signal:** | **Color:** | **Description:** |
| | 24VOK | Green | 24 VDC Logic Supply OK |
| | EN | Yellow | Motor Enabled / Error Code Low Nibble |
| | Warn | Yellow | Warning / Error Code High Nibble |
| | Error | Red | Error |

## 9.12 RT Bus LEDs

| RT Bus LEDs | RT Bus State Display | | |
|---|---|---|---|
|  | **Signal:** | **Color:** | **Description**: |
| | OK | Green | OK |
| | RT BUS ERROR | Red | Error |
| | The use of these LEDs depends on the type of fieldbus which is used. Please see the corresponding manual for further information | | |

## 10 LED Blink Codes

**LED Blink Codes**

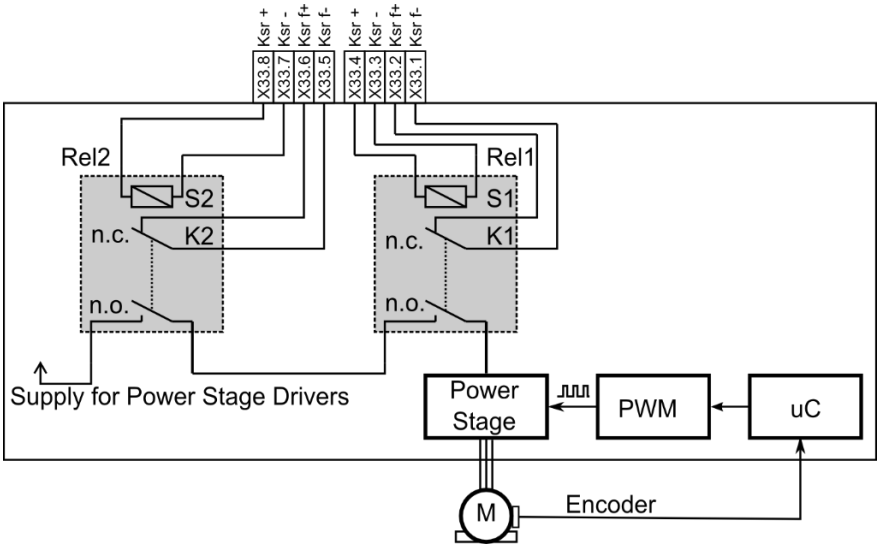



| Error | Warn | EN | Description |
|---|---|---|---|
| Off | Warning | Operation Enabled | **Normal Operation:**<br>Warnings and operation enabled are displayed. |
| On | ● ~2 Hz<br>0..15 x<br>Error Code<br>High Nibble | ● ~2 Hz<br>0..15 x<br>Error Code<br>Low Nibble | **Error:**<br>The error code is shown by a blink code with “WARN” and “EN”<br>The error byte is divided into low and high nibble (= 4 bit).<br>”WARN” and “EN” are blinking together.<br>The error can be acknowledged.<br>(e.g.: WARN blinks 3x, EN blinks 2x; Error Code = 32h) |
| ● ~2 Hz | ● ~2 Hz<br>0..15 x<br>Error Code<br>High Nibble | ● ~2 Hz<br>0..15 x<br>Error Code<br>Low Nibble | **Fatal Error:**<br>The error code is shown by a blink code with “WARN” and “EN”.<br>The error byte is divided into low and high nibble.<br>”WARN” and “EN” are blinking together.<br>Fatal errors can only be acknowledged by a reset or power cycle.<br>(e.g.: WARN blinks 3x, EN blinks 2x; Error Code = 32h) |
| ● ~4 Hz | ● ~2 Hz<br>0..15 x<br>Error Code<br>High Nibble | ● ~2 Hz<br>0..15 x<br>Error Code<br>Low Nibble | **System Error:**<br>Please reinstall firmware or contact support. |
| ● ~0.5 Hz | ● ~0.5 Hz | On | **Signal Supply 24V too low:**<br>The error and warn LEDs blink alternating if the signal supply +24 VDC (X4.2) is less than 18 VDC. |
| Off | ○●●● | ●○●● | **Plug&Play Communication Active:**<br>This sequence (Warn on, then En on, then both off, complete sequence of the 4 states ca. 1 s) signalizes the state when the plug and play parameters are being read from the motor. |
| ○●<br>~4 Hz | ●○<br>~4 Hz | Off | **Waiting for Defaulting Parameters:**<br>When ID (S1, S2) is set to 0xFF, the drive starts up in a special mode and the Error and Warn LED blink alternating ~4 Hz. When the ID ist set to 0x00, all parameters will be set to their default value. To leave this state, power down the drive and change the ID. Also see in the Usermanual_LinMot-Talk under chapter trouble shooting. |
| Off | ○ ●<br>~2 Hz | ○●<br>~2 Hz | **Defaulting Parameters Done:**<br>When the parameters have set to their default values (initiated via S1/S2 on power up) the Warn and En LEDs blink together at 2 Hz. To leave this state, power down the drive. Also see in the Usermanual_LinMot-Talk under chapter trouble shooting. |

The meaning of the error codes can be found in the *Usermanual_MotionCtrl_Software_SG5-SG7* 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.

## 11 Safety Wiring

The C1250 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 24 VDC (from safety)
- Connect X33.7 and X33.3 to GND (from safety)

**Never connect X33.8 and X33.4 to the logic supply of X4!**
**Never disconnect X33 when the STO is powered!**

**The overvoltage protection must be provided externally and sized according to the safety circuit of the machine (The voltage on any pin of X33 must be limited below 100V referenced to DGND)!**

**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 | ≤ 16.8 V |
| Drop-out voltage at 20°C | ≥ 2.4 V |
| Drop-out time (no protection circuit) | Typ. 3 ms |
| 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 |
| Maximum current on feedback contacts (Ksr f+ and Ksr-) | < 1 A |

| **Drive Classification according EN ISO 13849-1 (safety of machinery)** | |
|---|---|
| Category | cat = 3 |
| Performance Level | PL = d |
| Diagnostic Coverage | DC = high (99%) |
| Mean Time to hazardous failure of one channel | $MTTF_d$ = high (100 years typically, see calculation example below) |

**DC (Diagnostic Coverage) is high (99%) assuming that the state of the feedback contacts is checked after each change of the state of the control contacts.**

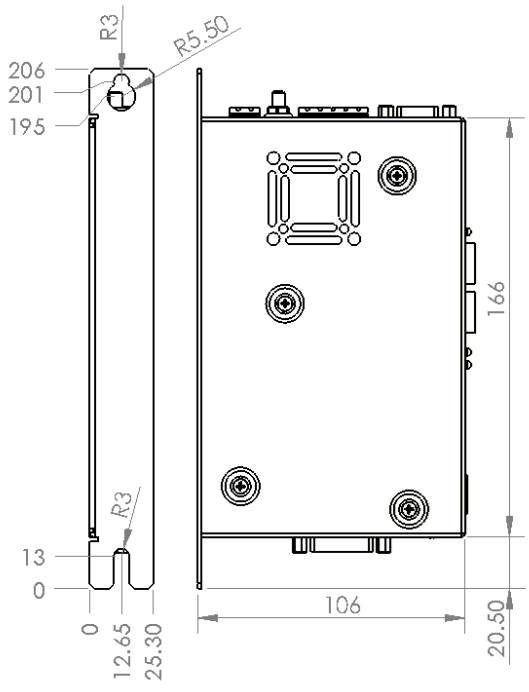
The $MTTF_d$ mainly depends on the number of operations of the safety relays.

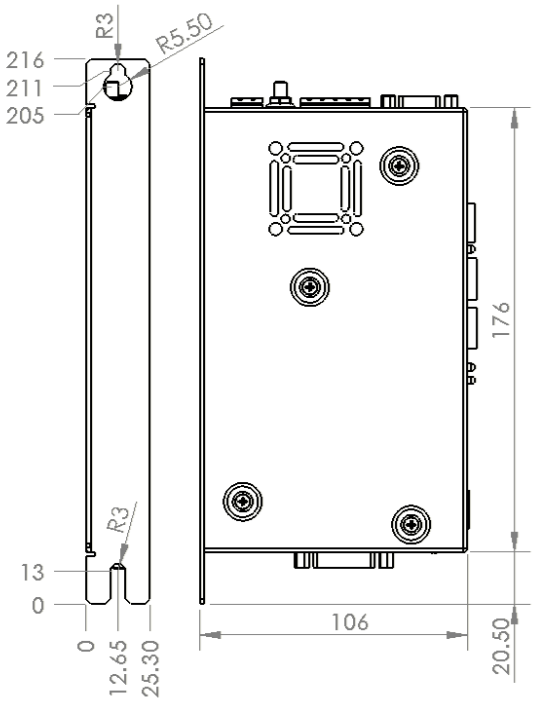
**Example calculation of $MTTF_d$:**

Assuming that the safety function is requested every 20 s on a machine running 24 h per day and 7 days per week.

| | | |
|---|---|---|
| $B_{10}$ | = | 10'000'000 |
| $B_{10d}$ | = | 20'000'000 (according EN ISO 13849-1:2008 table C.1) |
| $n_{op}$ | = | (24 h/day * 365.25 days/year * 3600 s/h) / 20 s = 1'577'880 operations per year |
| $MTTF_d$ | = | $B_{10d}$ / (0.1 * $n_{op}$) = 126.75 years<br>(This has to be limited to 100 years according the standard for further calculations) |
| | = | high (100 years) |

## 12 Physical Dimension




| C1250 Series single axis drive | | C1250-xx-XC-0S | C1250-xx-XC-1S |
|---|---|---|---|
| Width | mm (in) | 25.3 (1.0) | |
| Height | mm (in) | 166 (6.54) | 176 (6.93) |
| Height with fixings | mm (in) | 206 (8.11) | 216 (8.50) |
| Depth | mm (in) | 106 (4.2) | |
| Weight | g (lb) | 630 (1.4) | 700 (1.54) |
| Mounting Screws<br>Mounting Distance | <br>mm (in) | 2 x M5<br>188 (7.40) | 2 x M5<br>198 (7.80) |
| Case, Degree of Protection | 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 | |
| Shock resistance (16ms) | -1S option | | 3.5g |
| Vibration resistance (10-200Hz) | -1S option | | 1g |
| Max. Case Temperature | °C | 70 | |
| Max. Power Dissipation | W | 30 | |
| Mounting place | | In the control cabinet | |
| Mounting position | | Vertical | |
| Distance between Drives | mm (in) | Without Power Derating *:<br>20 (0.8) horizontal / 50 (2) vertical<br>With Power Derating *:<br>5 (0.2) horizontal / 20 (0.8) vertical | |

* The derating is depending on the situation in the cabinet. The temperature of the drive should be checked under full load (the temperature should be stable, which may take an hour or more). This allows to verify that enough margin is there if the cabinet goes to the maximum allowable temperature of 40° C. For example, if the drive temperature reaches 45° C and the cabinet temperature is 30° C, this would result in a drive temperature of about 55° C at a cabinet temperature of 40° C. The warning level of the drive is configured by default to 75° C and the error level to 80° C. In this example, everything is fine. If the drive temperature is long time above the warning level, this might result in a reduced lifetime of the drive.

# 13 Power Supply Requirements

## 13.1 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 72 VDC.
The possible range is from 24 to 85 VDC.

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 compatible power supplies can be used (see chapter 16 Ordering Information)**.

## 13.2 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 to be provided from the supply:

- min. 0.5 A (no load on the outputs)
- typ. 0.7 A (all 2 outputs “on” with 100 mA load and brake with no load)
- max. 2.0 A (all 2 outputs “on” with 500 mA peak load and brake with 500 mA peak load)

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

**The 24 VDC supply for the control circuit must be protected with an external fuse (3 A slow blow)**

# 14 Regeneration

If the power supply rises too high when breaking, connect an additional capacitor to the motor power supply.
It is recommended to use a capacitor **>= 10’000 µF** (install capacitor close to the drive supply!).

## 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!

- The transients have to be limited to max. 0.8 kV on the line side of the drive.

- The 24 VDC supply for the control circuit must be protected with an external UL Listed 3 A DC fuse.

- **A separate 24 VDC power supply protected with an external UL Listed 3 A fuse connected to the output of the power supply must be used to protect the secondary control circuit (safety relays on X33)**

- Integral solid state short circuit protection does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electrical Code and any additional local codes.

**Markings for cURus (available until Hardware Version 1, Revision H4):**

- Proposed ratings, to be evaluated in the end-use:
  - Input Voltage: 72 VDC
  - Input current: 15 A
  - Output Voltage: 61.5 V rms
  - Output Current: 17.7 A rms
  - Number of Phases: 2 by 1 Phase
  - Frequency range: 0-500 Hz
  - Duty cycle rating: 10%
  - Relays (only for -1S variant):
    - Rated Contacts: max. 24 VDC, 6 A
    - Coil: 24 VDC
    - Surrounding air temp: max. 85 °C
  - Control Power (X4.2): 24 VDC (Protected with an external UL Listed 3 A fuse)
  - Surrounding Air Temperature: max. 50 °C

**Markings for cULus (available from Hardware Version 1, Revision H2):**

- Ratings:
  - Input Voltage: 72 VDC
  - Input current: 6.5 A
  - Output Voltage: 43 V rms
  - Output Current: 5 A rms
  - Number of Phases: 2 by 1 Phase
  - Frequency range: 0-599 Hz
  - Duty cycle rating: 4 - 96%
  - Relays (only for -1S variant):
    - Rated Contacts: max. 24 VDC, 6 A
    - Coil: 24 VDC
    - Surrounding air temp: max. 85 °C
  - Control Power (X4.2): 24 VDC (Protected with an external UL Listed 3 A fuse)
  - Surrounding Air Temperature: max. 50 °C

- Suitable for use on a circuit capable of delivering not more than 5 kADC, 72 VDC maximum.
  (Branch circuit protection on X1: External Circuit Breaker: 15 A / min. 100 VDC / C-Trip / 5 kA rms SCCR)

## 16 Ordering Information

| Drives | Description | Art. No. |
|---|---|---|
| C1250-PN-XC-0S-000 | PROFINET Drive (72V/25A) | 0150-1888 |
| C1250-PD-XC-0S-000 | PROFINET Profidrive Drive (72V/25A) | 0150-2618 |
| C1250-IP-XC-0S-000 | ETHERNET IP Drive (72V/25A) | 0150-1886 |
| C1250-LU-XC-0S-000 | ETHERNET LinUDP Drive (72V/25A) | 0150-2491 |
| C1250-EC-XC-0S-000 | ETHERCAT Drive (72V/25A) | 0150-1884 |
| C1250-DS-XC-0S-000 | ETHERCAT CiA402 Drive (72V/25A) | 0150-2415 |
| C1250-SE-XC-0S-000 | ETHERCAT SoE Drive (72V/25A) | 0150-1897 |
| C1250-PL-XC-0S-000 | POWERLINK Drive (72V/25A) | 0150-1885 |
| C1250-SC-XC-0S-000 | SERCOS III Drive (72V/25A) | 0150-1887 |
| C1250-CM-XC-0S-000 | CIP Sync Drive (72V/25A) | 0150-2900 |
| C1250-CC-XC-0S-000 | CC Link Drive (72V/25A) | 0150-4023 |
| C1250-PN-XC-1S-000 | PROFINET Drive (72V/25A/STO) | 0150-2348 |
| C1250-PD-XC-1S-000 | PROFINET Profidrive Drive (72V/25A/STO) | 0150-2619 |
| C1250-IP-XC-1S-000 | ETHERNET IP Drive (72V/25A/STO) | 0150-2346 |
| C1250-LU-XC-1S-000 | ETHERNET LinUDP Drive (72V/25A/STO) | 0150-2492 |
| C1250-EC-XC-1S-000 | ETHERCAT Drive (72V/25A/STO) | 0150-2345 |
| C1250-DS-XC-1S-000 | ETHERCAT CiA402 Drive (72V/25A/STO) | 0150-2416 |
| C1250-SE-XC-1S-000 | ETHERCAT SoE Drive (72V/25A/STO) | 0150-2350 |
| C1250-PL-XC-1S-000 | POWERLINK Drive (72V/25A/STO) | 0150-2347 |
| C1250-SC-XC-1S-000 | SERCOS III Drive (72V/25A/STO) | 0150-2349 |
| C1250-CM-XC-1S-000 | CIP Sync Drive (72V/25A/STO) | 0150-2901 |
| C1250-CC-XC-1S-000 | CC Link Drive (72V/25A/STO) | 0150-4024 |
| **Calibrated Drives** | **Description** | **Art. No.** |
| C1250-PN-XC-0S-C00 | PROFINET Drive (72V/25A), Calibrated Measuring Amplifier | 0150-4140 |
| C1250-PD-XC-0S-C00 | PROFINET Profidrive Drive (72V/25A), Calibrated Measuring Amplifier | 0150-4136 |
| C1250-IP-XC-0S-C00 | ETHERNET IP Drive (72V/25A), Calibrated Measuring Amplifier | 0150-4127 |
| C1250-LU-XC-0S-C00 | ETHERNET LinUDP Drive (72V/25A), Calibrated Measuring Amplifier | 0150-4129 |
| C1250-EC-XC-0S-C00 | ETHERCAT Drive (72V/25A), Calibrated Measuring Amplifier | 0150-4125 |
| C1250-DS-XC-0S-C00 | ETHERCAT CiA402 Drive (72V/25A), Calibrated Measuring Amplifier | 0150-4123 |
| C1250-SE-XC-0S-C00 | ETHERCAT SoE Drive (72V/25A), Calibrated Measuring Amplifier | 0150-4144 |
| C1250-PL-XC-0S-C00 | POWERLINK Drive (72V/25A), Calibrated Measuring Amplifier | 0150-4138 |
| C1250-SC-XC-0S-C00 | SERCOS III Drive (72V/25A), Calibrated Measuring Amplifier | 0150-4142 |
| C1250-CM-XC-0S-C00 | CIP Sync Drive (72V/25A), Calibrated Measuring Amplifier | 0150-4121 |
| C1250-CC-XC-0S-C00 | CC Link Drive (72V/25A), Calibrated Measuring Amplifier | 0150-4146 |
| C1250-PN-XC-1S-C00 | PROFINET Drive (72V/25A/STO), Calibrated Measuring Amplifier | 0150-4141 |
| C1250-PD-XC-1S-C00 | PROFINET Profidrive Drive (72V/25A/STO), Calibrated Measuring Amplifier | 0150-4137 |
| C1250-IP-XC-1S-C00 | ETHERNET IP Drive (72V/25A/STO), Calibrated Measuring Amplifier | 0150-4128 |
| C1250-LU-XC-1S-C00 | ETHERNET LinUDP Drive (72V/25A/STO), Calibrated Measuring Amplifier | 0150-4135 |
| C1250-EC-XC-1S-C00 | ETHERCAT Drive (72V/25A/STO), Calibrated Measuring Amplifier | 0150-4126 |
| C1250-DS-XC-1S-C00 | ETHERCAT CiA402 Drive (72V/25A/STO), Calibrated Measuring Amplifier | 0150-4124 |
| C1250-SE-XC-1S-C00 | ETHERCAT SoE Drive (72V/25A/STO), Calibrated Measuring Amplifier | 0150-4145 |
| C1250-PL-XC-1S-C00 | POWERLINK Drive (72V/25A/STO), Calibrated Measuring Amplifier | 0150-4139 |
| C1250-SC-XC-1S-C00 | SERCOS III Drive (72V/25A/STO), Calibrated Measuring Amplifier | 0150-4143 |
| C1250-CM-XC-1S-C00 | CIP Sync Drive (72V/25A/STO), Calibrated Measuring Amplifier | 0150-4122 |
| C1250-CC-XC-1S-C00 | CC Link Drive (72V/25A/STO), Calibrated Measuring Amplifier | 0150-4147 |

| 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 72 VDC Input | 0150-3525 |
| DC01-C1X00/X2 | Drive Connector Motor Phases | 0150-3526 |
| DC01-Signal/X4 | Drive Connector 24 VDC & Logic | 0150-3447 |
| DC01-Safety/X33 | Drive Connector Safety | 0150-3451 |
| **Isolated USB-RS232 converter** | **Isolated USB RS232 converter with config. cable** | **0150-2473** |
| Isolated USB-serial converter | Isolated USB RS232/422/485 converter | 0150-3120 |
| Recalibration Service | Calibration Drive Series C1200<br>(Calibration of analog inputs on X4 of C1250-xx-XC-xS-**C**xx Drives) | 0150-4164 |
| **Compatible Power Supplies** | | **Art. No.** |
| S01-72/1000 | Power Supply 72 V/1000 W, 3x340-550 VAC | 0150-1872 |
| S02-72/1000 | Power Supply 72V/1000W, 3x400-480VAC | 0150-4535 |
| S01-72/500 | Power Supply 72 V/500 W, 1x120/230 VAC | 0150-1874 |
| S01-24/500 | Power Supply 24 V/500 W, 1x120/230 VAC | 0150-2480 |
| S01-48/300 | Power Supply 48 V/300 W, 1x120/230 VAC | 0150-1941 |
| S01-48/600 | Power Supply 48 V/600 W, 1x120/230 VAC | 0150-1946 |
| T01-72/420-Multi | T-Supply 72 V / 420 VA, 3x230/400/480 VAC | 0150-1869 |
| T01-72/900-Multi | T-Supply 900 VA, 3x230/400/480 VAC | 0150-1870 |
| T01-72/1500-Multi | T-Supply 1500 VA, 3x230/400/480 VAC | 0150-1871 |
| T01-72/420 -1ph | T-Supply 420 VA, 1x208/220/230/240 VAC | 0150-1859 |

Bold items are strongly recommended accessories!



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



Use isolated USB RS232 converter for configuration!

# 17 International Certifications

| Certifications | |
|---|---|
| Europe  | See chapter 18 EU Declaration of Conformity CE-Marking |
| UK  | See chapter 19 UK Declaration of Conformity UKCA-Marking |
| *IECEE CB SCHEME* | Ref. Certif. No. CH-7685 |
| 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.<br>File number E316095<br>UL 508C Power Conversion Equipment<br>CSA C22.2 Industrial Control Equipment<br><br>**Available until Hardware Version 1, Revision H4** |
| USA / Canada  | All products marked with this symbol are tested and listed 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.<br>File number E316095<br>UL 508C Power Conversion Equipment<br>CSA C22.2 Industrial Control Equipment<br><br>**Available from Hardware Version 1, Revision H2** |

IEC IECEE CB SCHEME

| Ref. Certif. No. |
| --- |
| CH-7685 |

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D'ESSAIS DES EQUIPMENTS ELECTRIQUES (IECEE) METHODE OC

## CB TEST CERTIFICATE / CERTIFICAT D'ESSAI OC

| | |
| --- | --- |
| Product<br>Produit | Servo drive unit |
| Name and address of the applicant<br>Nom et adresse du demandeur | NTI AG Linmot Haerdlistrasse 15 CH-8957 Spreitenbach Switzerland |
| Name and address of the manufacturer<br>Nom et adresse du fabricant | NTI AG Linmot Haerdlistrasse 15 CH-8957 Spreitenbach Switzerland |
| Name and address of the factory<br>Nom et adresse de l'usine<br>*Note: When more than one factory, please report on page 2*<br>*Note: Lorsque il y plus d'une usine, veuillez utiliser la 2ème page* | NTI AG Linmot Haerdlistrasse 15 CH-8957 Spreitenbach Switzerland<br>☐ Additional Information on page 2 |
| Ratings and principal characteristics<br>Valeurs nominales et caractéristiques principales | Motor supply: 72 VDC (24 – 85 VDC), 15 A<br>Logic supply: 24 VDC (22 – 26 VDC), 3 A<br>Class I |
| Trade mark (if any)<br>Marque de fabrique (si elle existe) | LinMot |
| Type of Manufacturer's Testing Laboratories used<br>Type de programme du laboratoire d'essais constructeur | --- |
| Model / Type Ref.<br>Ref. de type | C1250 Servo Drive / C1250-IP-XC-1S-000 |
| Additional information (if necessary may also be reported on page 2)<br>Les informations complémentaires (si nécessaire, peuvent être indiqués sur la 2ème page | ---<br>☐ Additional Information on page 2 |
| A sample of product was tested and found to be in conformity with IEC<br>Un échantillon de ce produit a été essayé et a été considéré conforme à la CEI | 61000-6-2(ed.2)<br>61000-6-4(ed.2);am1 |
| National differences / Comments<br>Les différences nationales / Commentaires | EU Group Differences;<br>EU Special National Conditions;<br>EU A-Deviations |
| As shown in the Test Report Ref. No. which forms part of this Certificate<br>Comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certificat | 14-IK-0141.E03 |

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

Electrosuisse
Luppmenstrasse 1,
CH-8320 Fehraltorf

Signed by: Martin Plüss
2014-12-03

electro suisse

page 1 of 2

IEC IECEE CB SCHEME

| Ref. Certif. No. |
|---|
| CH-7685 |

Additional information (if necessary)
Information complémentaire (si nécessaire)

Type list

| Type | Modelnumber | Ratings | |
|---|---|---|---|
| C1250-PN-XC-0S-000 | 0150-1888 | PROFINET Drive | (72 VDC/25 A) |
| C1250-PD-XC-0S-000 | 0150-2618 | PROFINET Profidrive Drive | (72 VDC/25 A) |
| C1250-IP-XC-0S-000 | 0150-1886 | ETHERNET IP Drive | (72 VDC/25 A) |
| C1250-EC-XC-0S-000 | 0150-1884 | ETHERCAT Drive | (72 VDC/25 A |
| C1250-DS-XC-0S-000 | 0150-2415 | ETHERCAT CiA402 Drive | (72 VDC/25 A) |
| C1250-SE-XC-0S-000 | 0150-1897 | ETHERCAT SoE Drive | (72 VDC/25 A) |
| C1250-PL-XC-0S-000 | 0150-1885 | POWERLINK Drive | (72 VDC/25 A) |
| C1250-SC-XC-0S-000 | 0150-1887 | SERCOS III Drive | (72 VDC/25 A) |
| C1250-PN-XC-1S-000 | 0150-2348 | PROFINET Drive | (72 VDC/25 A/STO) |
| C1250-PD-XC-1S-000 | 0150-2619 | PROFINET Profidrive Drive | (72 VDC/25 A/STO) |
| C1250-IP-XC-1S-000 | 0150-2346 | ETHERNET IP Drive | (72 VDC/25 A/STO) |
| C1250-EC-XC-1S-000 | 0150-2345 | ETHERCAT Drive | (72 VDC/25 A/STO) |
| C1250-DS-XC-1S-000 | 0150-2416 | ETHERCAT CiA402 Drive | (72 VDC/25 A/STO) |
| C1250-SE-XC-1S-000 | 0150-2350 | ETHERCAT SoE Drive | (72 VDC/25 A/STO) |
| C1250-PL-XC-1S-000 | 0150-2347 | POWERLINK Drive | (72 VDC/25 A/STO) |
| C1250-SC-XC-1S-000 | 0150-2349 | SERCOS III Drive | (72 VDC/25 A/STO) |

Nomenclature

| Code | Description |
|---|---|
| C1200- | Drive type (Equipment containing Ethernet has an xxx50) |
| GP- | Interface |
| LC- | Power output |
| 0S- | Functional safety option |
| 000 | Individual extension (e.g. customer related firmware option etc.) |

| Interfaces | | | Power output | |
|---|---|---|---|---|
| Code | Abbr. | Description | Code | Description |
| 0 | GP | General Purpose | LC | 8 A peak |
| 0 | CO | CANopen | HC | 15 A peak |
| 0 | DN | DeviceNet | XC | 25 A peak |
| 10 | VF | Velocity and Force | UC | 32 A peak |
| 30 | DP | PROFIBUS DP | | |
| 50 | EC | ETHERCAT | | |
| 50 | PN | ProfiNet | | |
| 50 | SE | SERCOS over ETHERCAT | | |
| 50 | PL | POWERLINK | | |
| 50 | PN | Profinet | | |
| 50 | PD | Profinet mit Profidrive | | |
| 50 | IP | ETHERNET IP | | |
| 50 | SC | SERCOS III | | |

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

Electrosuisse
Luppmenstrasse 1,
CH-8320 Fehraltorf

Signed by: Martin Plüss
2014-12-03

electro suisse

page 2 of 2

# CERTIFICATE OF COMPLIANCE

| | |
|---|---|
| **Certificate Number** | 20140317-E316095 |
| **Report Reference** | E316095-20140307 |
| **Issue Date** | 2014-March-17 |
| **Issued to:** | NTI AG<br>HAERDLISTRASSE 15,<br>8957 SPREITENBACH SWITZERLAND |
| **This is to certify that representative samples of** | COMPONENT - POWER CONVERSION EQUIPMENT<br>SEE ADDENDUM PAGE FOR MODELS |
| | Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate. |
| **Standard(s) for Safety:** | UL 508C - Power Conversion Equipment<br>CSA C22.2 NO. 14-13- INDUSTRIAL CONTROL EQUIPMENT. |
| **Additional Information:** | See the UL Online Certifications Directory at www.ul.com/database for additional information |

Only those products bearing the UL Recognized Component Marks for the U.S. and Canada should be considered as being covered by UL's Recognition and Follow-Up Service and meeting the appropriate U.S. and Canadian requirements.

The UL Recognized Component Mark for the U.S. generally consists of the manufacturer's identification and catalog number, model number or other product designation as specified under "Marking" for the particular Recognition as published in the appropriate UL Directory. As a supplementary means of identifying products that have been produced under UL's Component Recognition Program, UL's Recognized Component Mark: , may be used in conjunction with the required Recognized Marks. The Recognized Component Mark is required when specified in the UL Directory preceding the recognitions or under "Markings" for the individual recognitions. The UL Recognized Component Mark for Canada consists of the UL Recognized Mark for Canada: and the manufacturer's identification and catalog number, model number or other product designation as specified under "Marking" for the particular Recognition as published in the appropriate UL Directory.

Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for use as components of complete equipment submitted for investigation rather than for direct separate installation in the field. The final acceptance of the component is dependent upon its installation and use in complete equipment submitted to UL LLC.

Look for the UL Recognized Component Mark on the product.

William R. Carney

William R. Carney, Director, North American Certification Programs

UL LLC

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# CERTIFICATE OF COMPLIANCE

| | |
|---|---|
| **Certificate Number** | 20140317-E316095 |
| **Report Reference** | E316095-20140307 |
| **Issue Date** | 2014-March-17 |

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Open type Power Conversion Equipment Models:

- Model A, may be followed by P, followed by 11, followed by 00, 30 or 50, followed by -, followed by GP, PL, PN, SC, IP, EC, SE, PD, DP, VA, CO, CD, DN, DS, CM, or LU, followed by -, followed by LC, followed by -0S, may be followed by - and any characters.

- Model C, may be followed by P, followed by 11 or 12, followed by 00, 30 or 50, followed by -, followed by GP, PL, PN, SC, IP, EC, SE, PD, DP, VA, CO, CD, DN, DS, CM, or LU, followed by -, followed by XC, followed by -0S or -1S, may be followed by – and any characters.

William R. Carney

William R. Carney, Director, North American Certification Programs

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# CERTIFICATE OF COMPLIANCE

| | |
|---|---|
| **Certificate Number** | E316095 |
| **Report Reference** | E316095-20190630 |
| **Issue Date** | 2020-FEBRUARY-28 |
| **Issued to:** | NTI AG<br>Bodenaeckerstr 2<br>8957 SPREITENBACH SWITZERLAND |
| **This certificate confirms that representative samples of** | POWER CONVERSION EQUIPMENT<br>Open type Power Conversion Equipment, model C, may be followed by P, followed by 12, followed by 00, 30, 50 or 51, followed by -, followed by GP, PL, PN, SC, IP, EC, SE, PD, DP, VA, CO, CD, MI, DN, DS, CC, CM, or LU, followed by -, followed by XC, followed by -0S or -1S, may be followed by – and any characters which describe software non-critical features<br><br>Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate. |
| **Standard(s) for Safety:** | UL 508C Power Conversion Equipment<br>CAN/CSA C22.2 No. 274-17- Adjustable speed drives. |
| **Additional Information:** | See the UL Online Certifications Directory at https://iq.ulprospector.com for additional information. |

This *Certificate of Compliance* does not provide authorization to apply the UL Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

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ODVA
Networks Built on a Common Industrial Protocol

## Declaration of Conformity to the EtherNet/IP™ Specification

ODVA hereby issues this Declaration of Conformity to *The EtherNet/IP™ Specification* for the product(s) described below. The Vendor listed below (the "Vendor") holds a valid Terms of Usage Agreement, which is incorporated herein by reference, for the EtherNet/IP Technology from ODVA, thereby agreeing that it is the Vendor's ultimate responsibility to assure that its EtherNet/IP Compliant Products conform to *The EtherNet/IP Specification* and that *The EtherNet/IP Specification* is provided by ODVA to the Vendor on an AS IS basis without warranty. NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE BEING PROVIDED BY ODVA.

In recognition of the below EtherNet/IP Compliant Product(s) having been EtherNet/IP Conformance Tested at ODVA-authorized Test Service Provider and having received a passing result from ODVA at the Composite Test Revision Level specified below, this Declaration of Conformity authorizes the Vendor to use the EtherNet/IP Certification Marks in conjunction with the specific EtherNet/IP Compliant Product(s) described below, for so long as the Vendor's Terms of Usage Agreement for the EtherNet/IP Technology remains valid.

EtherNet/IP conformance tested

*Certification Logo Mark*

EtherNet/IP CONFORMANCE TESTED ™

*Certification Word Mark*

This Declaration of Conformity is issued on February 2, 2015 on behalf of ODVA by:

Katherine Voss

Executive Director

| **Vendor Information** | |
|---|---|
| Vendor Name | NTI Limited |

| **Test Information** | |
|---|---|
| Test Date | December 11, 2014 |
| Composite Test Revision | CT11 |
| ODVA File Number | 11332.01 |

| **Product Information** | **Network Category:** | **Node** |
|---|---|---|
| **Identity Object Instance** | | |
| Vendor ID (Attribute 1) | 589 | |
| Device Type (Attribute 2) | 0x2B | |
| Device Profile Name | Generic Device (keyable) | |

**Products Covered under this Declaration of Conformity (Identity Object Instance)**

| No. | Product Code (Attribute 3) | Product Name (Attribute 7) | Product Revision (Attribute 4) | SOC File Name |
|---|---|---|---|---|
| 1 | 1886 | C1250IPXC0S | 1.001 | C1250IPXC0S.stc |
| 2 | 2346 | C1250IPXC1S | 1.001 | C1250IPXC1S.stc |
| 3 | 1761 | E1250-IP-UC | 1.001 | Not Tested |
| 4 | 1782 | E1450IPQN0S | 1.001 | Not Tested |
| 5 | 2354 | E1450IPQN1S | 1.001 | Not Tested |
| 6 | 2610 | C1450IPQN0S | 1.001 | Not Tested |
| 7 | 2611 | C1450IPQN1S | 1.001 | Not Tested |
| 8 | 2612 | C1450IPQD0S | 1.001 | Not Tested |
| 9 | 2613 | D1450IPVR0S | 1.001 | Not Tested |
| 10 | 2614 | D1450IPQD0S | 1.001 | Not Tested |
| 11 | 2615 | D1250IPXC0S | 1.001 | Not Tested |

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## 18 EU Declaration of Conformity CE-Marking

NTI AG / LinMot ®
Bodenaeckerstrasse 2
8957 Spreitenbach
Switzerland
Tel.: +41 (0)56 419 91 91
Fax: +41 (0)56 419 91 92

declares under sole responsibility the compliance of the products:

- Drives of the Series **C1250-xx-XC-xS-xxx**

with the EMC Directive 2014/30/EU.

Applied harmonized standards:

- **EN 61000-6-2: 2005 (Immunity for industrial environments)**
- **EN 61000-6-4: 2007 + A1:2011 (Emission for industrial environments)**

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.

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, 11.04.2016



---
Dr. Ronald Rohner / CEO NTI AG

## 19 UK Declaration of Conformity UKCA-Marking

NTI AG / LinMot ®
Bodenaeckerstrasse 2
8957 Spreitenbach
Switzerland
Tel.: +41 (0)56 419 91 91
Fax: +41 (0)56 419 91 92

declares under sole responsibility the compliance of the products:

- Drives of the Series **C1250-xx-XC-xS-xxx**

with the EMC Regulation S.I. 2016 No. 1091.

Applied designated standards:

- **EN 61000-6-2: 2005 (Immunity for industrial environments)**
- **EN 61000-6-4: 2007 + A1:2011 (Emission for industrial environments)**

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

Compliance of the regulation 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.

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, 23.03.2022



---
Dr. Ronald Rohner / CEO NTI AG

## 20 Contact & Support


**SCHWEIZ**

**NTI AG**
Bodenaeckerstr. 2
CH-8957 Spreitenbach

| | |
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| Tech. Support: | +41-(0)56-544 71 00<br>support@linmot.com |
| | http://www.linmot.com/support |
| Tech. Support (Skype): | skype:support.linmot |
| Fax: | +41-(0)56-419 91 92 |
| Web: | http://www.linmot.com/ |

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**USA**

**LinMot USA Inc.**
N1922 State Road 120, Unit 1
Lake Geneva, WI 53147
USA

| | |
|---|---|
| Phone | 262-743-2555 |
| E-Mail: | usasales@linmot.com |
| Web: | http://www.linmot-usa.com/ |


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