

# LinMot®



## E14x0 V1 Rev. D Servo Drives 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:

E1400-GP-QN	E1430-DP-QN
E1450-PL-QN	E1450-EC-QN
E1450-SE-QN	E1450-PN-QN
E1450-IP-QN	E1450-SC-QN

© 2013 NTI AG

This work is protected by copyright.

Under the copyright laws, this publication may not be reproduced or transmitted in any form, electronic or mechanical, including photocopying, recording, microfilm, storing in an information retrieval system, not even for didactical use, or translating, in whole or in part, without the prior written consent of NTI AG.

LinMot® is a registered trademark of NTI AG.

The information in this documentation reflects the stage of development at the time of press and is therefore without obligation. NTI AG reserves itself the right to make changes at any time and without notice to reflect further technical advance or product improvement.

Document version 5.0.2 / FM, December 2013

## Table of Content

<b>1 Important Safety Instructions</b> .....	<b>4</b>
<b>2 System Overview</b> .....	<b>6</b>
<b>3 Functionality and Interfaces</b> .....	<b>7</b>
<b>4 IP Address Selection</b> .....	<b>7</b>
<b>5 Power Supply and Grounding</b> .....	<b>8</b>
<b>6 Description of the connectors / Interfaces</b> .....	<b>9</b>
6.1 X1-V1 Rev. D.....	9
6.2 X30-V1 Rev. D.....	9
6.3 X2-V1 Rev. D.....	9
6.4 X31-X32.....	10
6.5 X3-V2.....	10
6.6 X4.....	11
6.7 X7 - X8.....	12
6.8 X9.....	12
6.9 X10 - X11.....	13
6.10 X13.....	13
6.11 X15 - X16.....	14
6.12 X17 - X18.....	14
6.13 X19.....	14
6.14 X20.....	15
6.15 X29.....	15
6.16 S5.....	15
6.17 LEDs.....	16
6.18 RT BUS LEDs.....	16
6.19 S1 - S2.....	16
<b>7 Error Codes</b> .....	<b>17</b>
<b>8 Safety Wiring</b> .....	<b>18</b>
<b>9 Physical Dimensions</b> .....	<b>19</b>
<b>10 Power Supply Requirements</b> .....	<b>20</b>
<b>11 Regeneration of Power / Regeneration Resistor</b> .....	<b>20</b>
<b>12 Ordering Information</b> .....	<b>21</b>
<b>13 International Certifications</b> .....	<b>21</b>
<b>14 Declaration of Conformity CE-Marking</b> .....	<b>22</b>
<b>15 Contact Addresses</b> .....	<b>24</b>

# 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

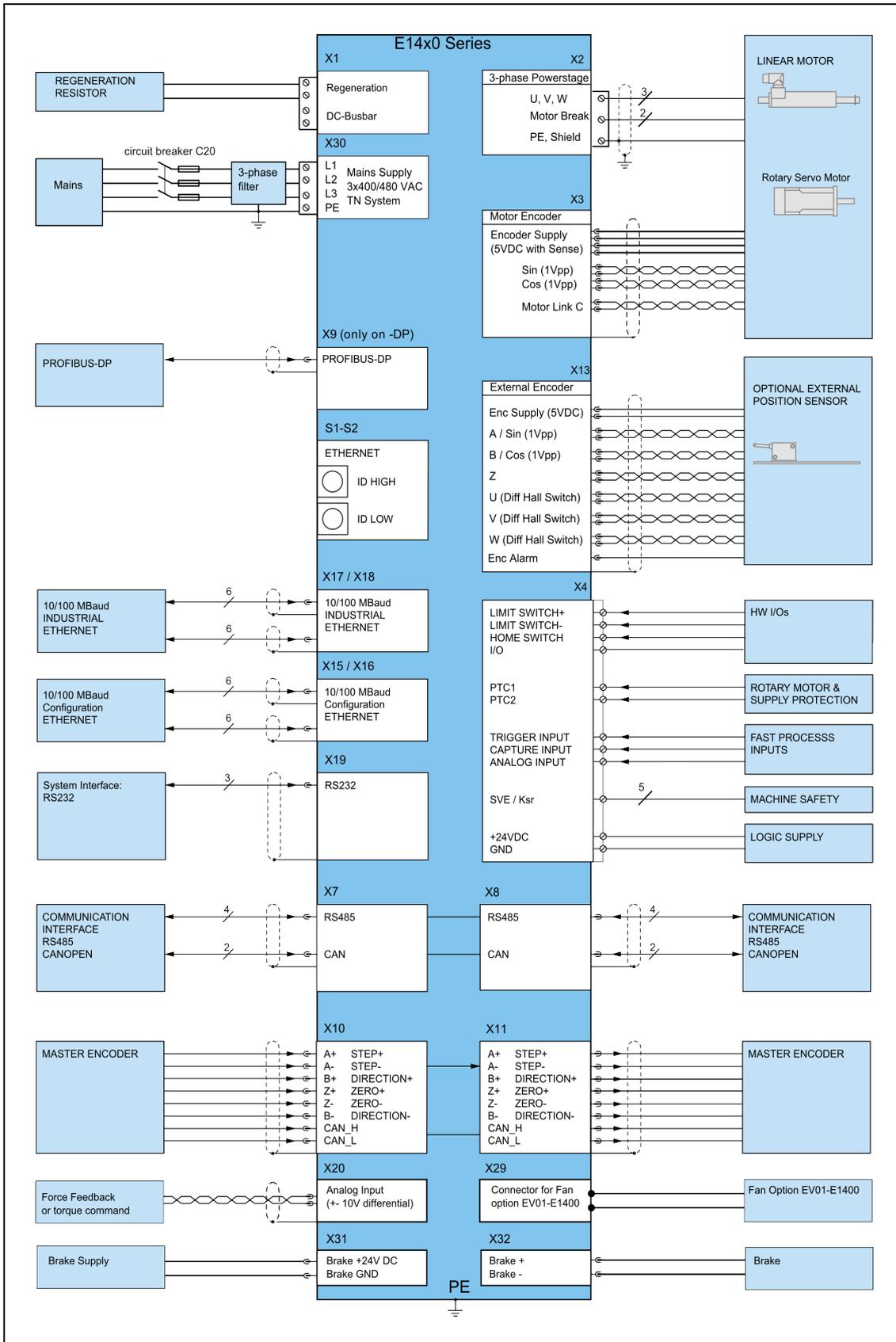


- Before working on the drive, check that no voltage is applied to the power terminals:
  - The power terminals U, V, W, DC+, DC-, RR+, and RR- remain live for at least 5 minutes after disconnecting from mains.
  - The power terminals L1, L2, L3; U, V, W, DC+, DC-, RR+ and RR- remain live when the motor is stopped.
- The leakage current to earth (PE) is >3.5 mA. According to EN 50178 a fixed installation is required and a double PE connection is required.



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

## 2 System Overview



Typical Servo System E14x0-XX: Servo Drive, Motor and Power Supply.

### 3 Functionality and Interfaces

	E1450-PL-QN	E1450-PN-QN	E1450-SC-QN	E1450-IP-QN	E1450-EC-QN	E1450-SE-QN	E1430-DP-QN	E1400-GP-QN
<b>Supply Voltage</b>								
Motor Supply 3x400 VAC / 3x480 VAC	•	•	•	•	•	•	•	•
Logic Supply 24VDC (22...26VDC)	•	•	•	•	•	•	•	•
<b>Motor Phase Current (preliminary)</b>								
28A <sub>rms peak</sub>	•	•	•	•	•	•	•	•
4 A <sub>rms continuous</sub> (without forced cooling)	•	•	•	•	•	•	•	•
12 A <sub>rms continuous</sub> (with fan EV01-E1400)	•	•	•	•	•	•	•	•
18 A <sub>rms continuous</sub> (cold plate 20°C)	•	•	•	•	•	•	•	•
<b>Controllable Motors</b>								
LinMot P10-70x...(Motor Link C)	•	•	•	•	•	•	•	•
Selected motors (contact support)	•	•	•	•	•	•	•	•
<b>Command Interface</b>								
CANopen	•	•	•	•	•	•	•	•
LinRS	•	•	•	•	•	•	•	•
POWERLINK	•							
PROFINET		•						
SERCOS III			•					
ETHERNET IP				•				
ETHERCAT					•	•		
SERCOS over ETHERCAT					•	•		
PROFIBUS-DP							•	
<b>Programmable Motion Profiles (Curves)</b>								
Up to 100 Motion Profiles	•	•	•	•	•	•	•	•
<b>Programmable Command Table</b>								
Command Table with up to 255 entries	•	•	•	•	•	•	•	•
<b>External Position Sensor</b>								
Incremental (RS422 up to 25 M counts/s)	•	•	•	•	•	•	•	•
SinCos (1Vpp differential)	•	•	•	•	•	•	•	•
Absolute (BiSS)	•	•	•	•	•	•	•	•
<b>Synchronisation</b>								
Master Encoder In/Out (RS422 up to 25 M counts/s)	•	•	•	•	•	•	•	•
<b>Configuration Interface</b>								
RS232	•	•	•	•	•	•	•	•
Ethernet 10/100 Mbit/s (2-Port Switch integrated)	•	•	•	•	•	•	•	•

### 4 IP Address Selection

The default mode for acquiring an IP address is via DHCP. If no servers respond on the connected network, the drive switches to the IPv4 Link-Local addressing scheme (also known as APIPA on Windows systems). This way the drive automatically assigns itself an address within the range of 169.254.0.1 through 169.254.255.254 (Subnet Mask 255.255.0.0).

Please note that this process can take up to a minute until a valid address is assigned to the drive.

## 5 Power Supply and Grounding



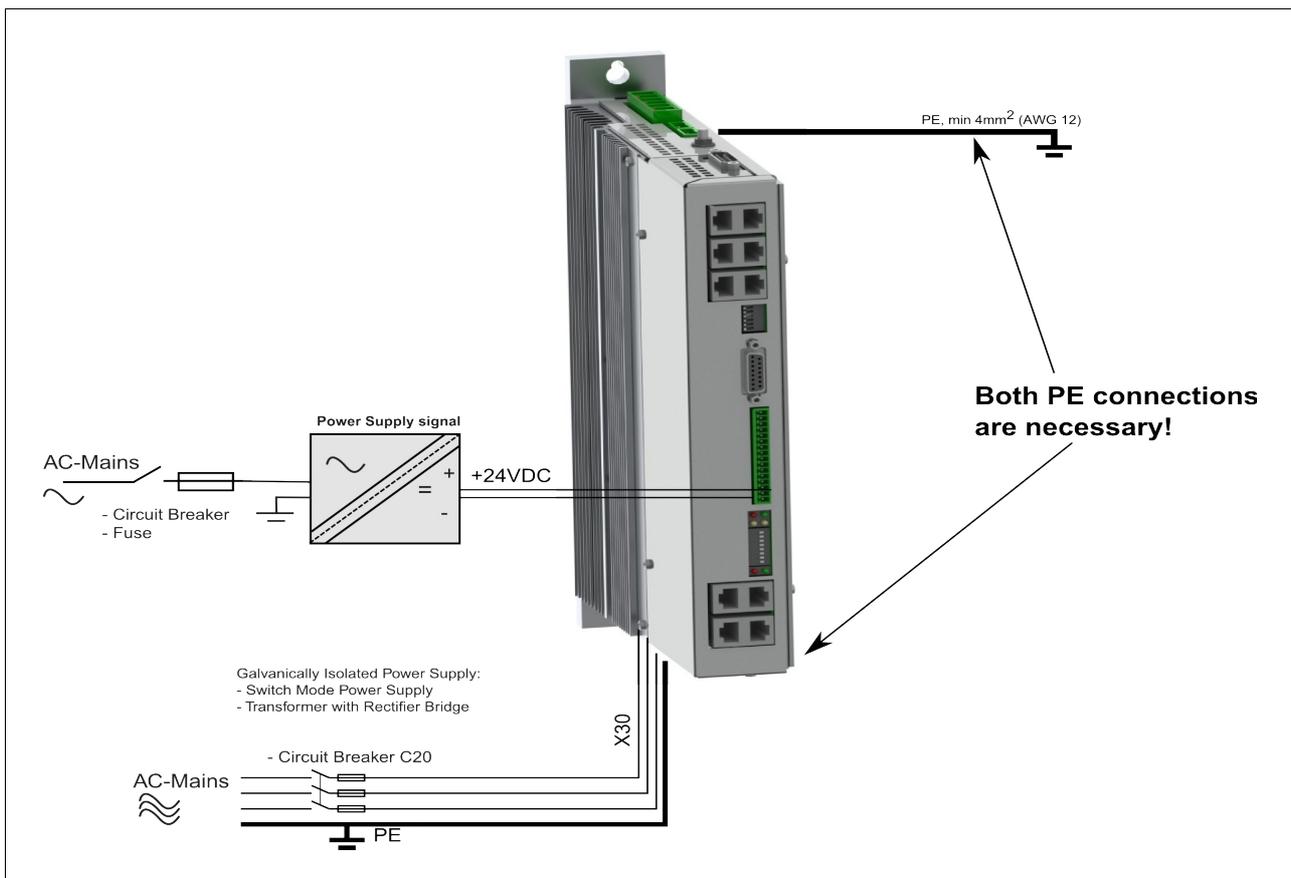
In order to assure a safe and error free operation, and to avoid severe damage to system components, **all system components must be well grounded to protective earth PE**. This includes both LinMot and all other control system components on the same ground bus.



The leakage current to earth (PE) is >3.5 mA. According to EN 50178 a fixed installation is required and **a double PE connection is required**. One PE connection is on X30, the second one is an M5 bolt on top of the housing.

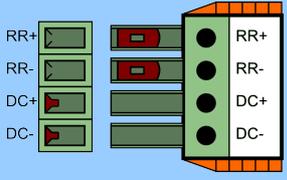


Each system component should be tied directly to the ground bus (**star pattern**), rather than daisy chaining from component to component. (LinMot motors are properly grounded through their power cables when connected to LinMot drives.)

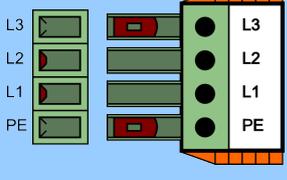


## 6 Description of the connectors / Interfaces

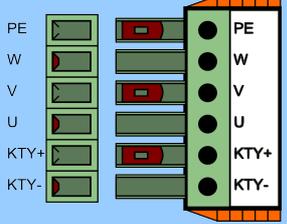
### 6.1 X1-V1 Rev. D

X1	DC Busbar/ Regeneration Resistor
	<p>DC+: DC busbar +            DC-: DC busbar -            RR+: Positive connection for Regeneration Resistor            RR-: Negative connection for Regeneration Resistor</p> <p>Screw Terminals:</p> <ul style="list-style-type: none"> <li>- Tightening torque: 0.7 - 0.8 Nm</li> <li>- Use a cross-head screw driver (PH1)</li> <li>- Use 60/75°C copper conductors only</li> <li>- Conductor cross-section: 0.25 – 4 mm<sup>2</sup> (depends on Motor current) / AWG 24 -12</li> <li>- Stripping length 10mm</li> </ul>

### 6.2 X30-V1 Rev. D

X30	Motor Supply Mains
	<p>L1 – L3: 3x400 / 3x480VAC 50/60 Hz            PE: PE, Protective Earth</p> <p>Screw Terminals:</p> <ul style="list-style-type: none"> <li>- Tightening torque: 0.7 - 0.8 Nm</li> <li>- Use a cross-head screw driver (PH1)</li> <li>- Use 60/75°C copper conductors only</li> <li>- Conductor cross-section: 2.5 – 4 mm<sup>2</sup> (depends on Motor current) / AWG 24 -12</li> <li>- Stripping length 10mm</li> </ul>

### 6.3 X2-V1 Rev. D

X2	Motor Phases
	<p>PE: Protective Earth and Cable Shield            W: Motor Phase W            V: Motor Phase V            U: Motor Phase U            KTY+: Temperature Sensor KTY+            KTY-: Temperature Sensor KTY-</p> <p>Screw Terminals:</p> <ul style="list-style-type: none"> <li>- Tightening torque: 0.7 - 0.8 Nm</li> <li>- Use a cross-head screw driver (PH1)</li> <li>- Use 60/75°C copper conductors only</li> <li>- Conductor cross-section: 0.25 – 4 mm<sup>2</sup> (depends on Motor current) / AWG 24 -12</li> <li>- Stripping length 10mm</li> </ul> <p><b>Attention:</b>            The type of connector and pin assignment on V1 Rev. D and V2 drives is different from V1 (Rev. A-C) drives (different coding)!</p>

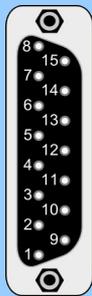
## 6.4 X31-X32

### X31-X32 Motor Brake and Motor Brake Supply

Brake- Brake+		X32: Brake- Brake+
Brake GND Brake +24VDC		X31: Brake Supply GND Brake Supply +24VDC

## 6.5 X3-V2

### X3 Motor Encoder (Motor Link C / BISS)



8	Motor Link C -
15	Motor Link C +
7	Clock -
14	Clock +
6	Data -
13	Data +
5	GND
12	Temp
4	GND Sense
11	+5V Sense
3	Cos-
10	Cos+
2	Sin-
9	Sin+
1	+5V
case	shield

DSUB-15 (m)

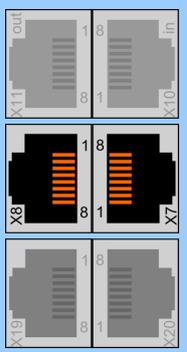
Motor Link C is a high speed serial communication protocol to the motor encoder.

6.6 X4

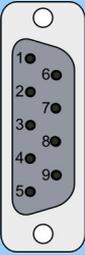
X4 Logic Supply / IO Connection

	<table border="1"> <tr><td>16</td><td>Ksr +</td><td>Safety Relay Input positive</td></tr> <tr><td>15</td><td>Ksr -</td><td>Safety Relay Input negative</td></tr> <tr><td>14</td><td>Ksr f+</td><td>Safety Relay feedback positive</td></tr> <tr><td>13</td><td>Ksr f-</td><td>Safety Relay feedback negative</td></tr> <tr><td>12</td><td>Input SVE</td><td>Power Stage Enable (HW Enable)</td></tr> <tr><td>11</td><td>Input Quickstop</td><td>Quickstop, PTC2 Input</td></tr> <tr><td>10</td><td>I/O X4.10</td><td>Configurable IO, PTC1 Input</td></tr> <tr><td>9</td><td>I/O X4.9</td><td>Configurable IO</td></tr> <tr><td>8</td><td>I/O X4.8</td><td>Configurable IO</td></tr> <tr><td>7</td><td>I/O X4.7</td><td>Configurable IO</td></tr> <tr><td>6</td><td>I/O X4.6</td><td>Configurable IO, Trigger Input</td></tr> <tr><td>5</td><td>I/O X4.5</td><td>Configurable IO</td></tr> <tr><td>4</td><td>I/O X4.4</td><td>Configurable IO, Analog Input (configurable as high imp. Input)</td></tr> <tr><td>3</td><td>I/O X4.3</td><td>Configurable IO</td></tr> <tr><td>2</td><td>+24VDC Supply</td><td>Logic Supply 22-26 VDC</td></tr> <tr><td>1</td><td>GND Supply</td><td>Ground</td></tr> </table>	16	Ksr +	Safety Relay Input positive	15	Ksr -	Safety Relay Input negative	14	Ksr f+	Safety Relay feedback positive	13	Ksr f-	Safety Relay feedback negative	12	Input SVE	Power Stage Enable (HW Enable)	11	Input Quickstop	Quickstop, PTC2 Input	10	I/O X4.10	Configurable IO, PTC1 Input	9	I/O X4.9	Configurable IO	8	I/O X4.8	Configurable IO	7	I/O X4.7	Configurable IO	6	I/O X4.6	Configurable IO, Trigger Input	5	I/O X4.5	Configurable IO	4	I/O X4.4	Configurable IO, Analog Input (configurable as high imp. Input)	3	I/O X4.3	Configurable IO	2	+24VDC Supply	Logic Supply 22-26 VDC	1	GND Supply	Ground
16	Ksr +	Safety Relay Input positive																																															
15	Ksr -	Safety Relay Input negative																																															
14	Ksr f+	Safety Relay feedback positive																																															
13	Ksr f-	Safety Relay feedback negative																																															
12	Input SVE	Power Stage Enable (HW Enable)																																															
11	Input Quickstop	Quickstop, PTC2 Input																																															
10	I/O X4.10	Configurable IO, PTC1 Input																																															
9	I/O X4.9	Configurable IO																																															
8	I/O X4.8	Configurable IO																																															
7	I/O X4.7	Configurable IO																																															
6	I/O X4.6	Configurable IO, Trigger Input																																															
5	I/O X4.5	Configurable IO																																															
4	I/O X4.4	Configurable IO, Analog Input (configurable as high imp. Input)																																															
3	I/O X4.3	Configurable IO																																															
2	+24VDC Supply	Logic Supply 22-26 VDC																																															
1	GND Supply	Ground																																															
<p>Screw terminals</p>	<p>Inputs (X4.3 .. X4.12): 24V / 5mA (Low Level: -0.5 to 5VDC, High Level: 15 to 30VDC)                  Outputs (X4.4 .. X4.10): 24V / max.100mA, Peak 370mA (will shut down if exceeded)                  Output (X4.3): 24V / max.1.0A</p> <p>To enable the power stage the input SVE (X4.12) and the integrated safety relay Ksr (X4.13 – X4.16) must be correctly wired. Please refer to chapter 8 Safety Wiring.</p> <p>Input X4.12: SVE (Safety Voltage Enable) must be high for enabling the power stage. If it goes low for more than 0.5ms the PWM generation of the power stage is disabled by hardware.</p> <p>To disable the internal safety features, connect X4.16 and X4.12 to +24VDC and X4.15 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"> <li>- Tightening torque: min 0.22Nm</li> <li>- Screw thread: M2</li> <li>- Use 60/75°C copper conductors only</li> <li>- Conductor cross-section max. 1.5mm<sup>2</sup></li> <li>- Internal Fuse (F2): 3AT (slow blow, Schurter OMT125, 3404.0118.xx, UL File Number: E41599)</li> </ul> <p>CAUTION: For continued protection against risk of fire, replace only with same type and rating of fuse.</p>																																																

## 6.7 X7 - X8

X7 - X8		CMD (RS485/CAN)	
	1	RS485_Rx+	A
	2	RS485_Rx-	B
	X3	RS485_Tx+	Y
	4	GND	
	5	GND	
	6	RS485_Tx-	Z
	7	CAN_H	
	8	CAN_L	
	case	Shield	
RJ-45	Use twisted pair (1-2, 3-6, 4-5, 7-8) cable for wiring. The built in RS485 and CAN terminations can be activated by S5.2 and S5.3. X7 is internally connected to X8 (1:1 connection)		

## 6.8 X9

X9		PROFIBUS DP (only available on E1430-DP-QN)	
	1	Not connected	
	6	+5V	(isolated)
	2	Not connected	
	7	Not connected	
	3	RxD/TxD-P	
	8	RxD/TxD-N	
4	CNTR-P		
9	Not connected		
5	GND	(isolated)	
case	Shield		
DSUB-9 (f)	Max. Baud rate: 12Mbaud		

## 6.9 X10 - X11

X10 - X11		Master Encoder IN (X10) / Master Encoder OUT (X11)																																				
		Incremental:	Step/Direction:	EIA/TIA 568A colors:																																		
	<table border="0"> <tr><td>1</td><td>A+</td><td>Step+</td><td>Green/White</td></tr> <tr><td>2</td><td>A-</td><td>Step-</td><td>Green</td></tr> <tr><td>3</td><td>B+</td><td>Direction+</td><td>Orange/White</td></tr> <tr><td>4</td><td>Z+</td><td>Zero+</td><td>Blue</td></tr> <tr><td>5</td><td>Z-</td><td>Zero-</td><td>Blue/White</td></tr> <tr><td>6</td><td>B-</td><td>Direction-</td><td>Orange</td></tr> <tr><td>7</td><td>CAN_H</td><td>CAN_H</td><td>Brown/White</td></tr> <tr><td>8</td><td>CAN_L</td><td>CAN_L</td><td>Brown</td></tr> <tr><td>case</td><td>Shield</td><td>Shield</td><td></td></tr> </table>	1	A+	Step+	Green/White	2	A-	Step-	Green	3	B+	Direction+	Orange/White	4	Z+	Zero+	Blue	5	Z-	Zero-	Blue/White	6	B-	Direction-	Orange	7	CAN_H	CAN_H	Brown/White	8	CAN_L	CAN_L	Brown	case	Shield	Shield		
1	A+	Step+	Green/White																																			
2	A-	Step-	Green																																			
3	B+	Direction+	Orange/White																																			
4	Z+	Zero+	Blue																																			
5	Z-	Zero-	Blue/White																																			
6	B-	Direction-	Orange																																			
7	CAN_H	CAN_H	Brown/White																																			
8	CAN_L	CAN_L	Brown																																			
case	Shield	Shield																																				
RJ-45	<p>Use twisted pair (1-2, 3-6, 4-5, 7-8) cable for wiring.</p> <p><u>Master Encoder Inputs:</u> Differential RS422, max. 25 M counts/s, 40ns edge separation</p> <p><u>Master Encoder Outputs:</u> Amplified RS422 differential signals from Master Encoder IN (X10)</p> <p>The CAN bus can be terminated with S5.4.</p> <p>All devices, which are connected to X10/X11 must be referenced to the same ground.</p>																																					

## 6.10 X13

X13		External Position Sensor Differential Hall Switches																																				
	<table border="0"> <tr><td>1</td><td>+5V DC</td><td></td><td></td></tr> <tr><td>2</td><td>9</td><td>A+</td><td></td></tr> <tr><td>3</td><td>10</td><td>B+</td><td></td></tr> <tr><td>4</td><td>11</td><td>Z+</td><td></td></tr> <tr><td>5</td><td>12</td><td>Encoder Alarm</td><td></td></tr> <tr><td>6</td><td>13</td><td>U+</td><td></td></tr> <tr><td>7</td><td>14</td><td>V+</td><td></td></tr> <tr><td>8</td><td>15</td><td>W+</td><td></td></tr> <tr><td>case</td><td>Shield</td><td></td><td></td></tr> </table>	1	+5V DC			2	9	A+		3	10	B+		4	11	Z+		5	12	Encoder Alarm		6	13	U+		7	14	V+		8	15	W+		case	Shield			
1	+5V DC																																					
2	9	A+																																				
3	10	B+																																				
4	11	Z+																																				
5	12	Encoder Alarm																																				
6	13	U+																																				
7	14	V+																																				
8	15	W+																																				
case	Shield																																					
DSUB-15 (f)	<p><u>Position Encoder Inputs (RS422):</u> Max Input Frequency: 25 M counts/s with quadrature decoding, 40ns edge separation</p> <p><u>Encoder Simulation Outputs (RS422):</u> Max Output Frequency: 25 M counts/s with quadrature decoding, 40ns edge separation</p> <p><u>Differential Hall Switch Inputs (RS422):</u> Input Frequency: &lt;1kHz</p> <p><u>Enc. Alarm In:</u> 5V / 1mA</p> <p><u>Sensor Supply:</u> 5VDC max. 100mA / 9VDC 100mA (SW selectable)</p>																																					

## 6.11 X15 - X16

X15 - X16		Config Ethernet 10/100 Mbit/s	
	X15	Internal 2-Port 10BASE-T and 100BASE-TX Ethernet Switch with Auto MDIX.	
	X16	LEDs on the lower side of the device indicate "Link/Activity" per port, the upper ones are not used.	
RJ-45			

## 6.12 X17 - X18

X17 - X18		RealTime Ethernet 10/100 Mbit/s	
	X17 RT ETH In	Specification depends on RT-Bus Type. Please refer to according documentation.	
	X18 RT ETH Out		
RJ-45			

## 6.13 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 adapter cable <b>AC01-RJ45/Df-2.5-RS1 (Art.-No. 0150-2143)</b> for configuration over RS232.	

**6.14 X20**

**X20 Analog In (+-10V Differential Analog Input)**

		<p>1 Do not connect                  2 Do not connect                  3 Analog In -                  4 GND                  5 GND                  6 Analog In +                  7 Do not connect                  8 Do not connect                  case Shield</p>
RJ-45		

**6.15 X29**

**X29 Connector for Fan Option**

	<p>Connector for the external fan option (Art. Nr. 0150-xxxx).                  Output: 24 VDC / 0.4 A (Short circuit protected, current monitored)                  Stripping length: 8mm                  Conductor cross section: 0.2 – 1.5 mm<sup>2</sup> (AWG 24 - 16)</p>
--	---

**6.16 S5**

**S5 Bus Termination / Analn2 Pull Down**

	<p>S5</p> <p>Switch 6: Override Configuration Ethernet to DHCP                  Switch 5: Bootstrap: Must be off for normal operation                  Switch 4: CAN termination on ME (120R between pin 7 and 8 on X10/X11) on/off                  Switch 3: CAN termination on CMD (120R between pin 7 and 8 on X7/X8) on/off                  Switch 2: Termination resistor for RS485 on CMD (120R between pin 1 and 2 on X7/X8) on/off                  Switch 1: AnIn2 pull down (4k7 Pull down on X4.4). Set to ON, if X4.4 is used as digital output.</p> <p>Factory setting: all switches “on” except S5.5 (Bootstrap) and S5.6 (Override to DHCP)</p>
--	--



## 7 Error Codes

Error Codes			
Error   24VOK Warn   EN			
Error	Warn	EN	Description
Off	Warning	Operation Enabled	<b>Normal Operation:</b> Warnings and operation enabled are displayed.
On	<ul style="list-style-type: none"> <li>• ~2Hz</li> <li>0..15 x Error Code High Nibble</li> </ul>	<ul style="list-style-type: none"> <li>• ~2Hz</li> <li>0..15 x Error Code Low Nibble</li> </ul>	<b>Error:</b> 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"> <li>• ~2Hz</li> </ul>	<ul style="list-style-type: none"> <li>• ~2Hz</li> <li>0..15 x Error Code High Nibble</li> </ul>	<ul style="list-style-type: none"> <li>• ~2Hz</li> <li>0..15 x Error Code Low Nibble</li> </ul>	<b>Fatal Error:</b> 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"> <li>• ~4Hz</li> </ul>	<ul style="list-style-type: none"> <li>• ~2Hz</li> <li>0..15 x Error Code High Nibble</li> </ul>	<ul style="list-style-type: none"> <li>• ~2Hz</li> <li>0..15 x Error Code Low Nibble</li> </ul>	<b>System Error:</b> Please reinstall firmware or contact support.
<ul style="list-style-type: none"> <li>• ~0.5Hz</li> </ul>	<ul style="list-style-type: none"> <li>• ~0.5Hz</li> </ul>	On	<b>Signal Supply 24V too low:</b> The error and warn LEDs blink alternating if the signal supply +24V (X4.2) is less than 18VDC.

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](http://www.linmot.com).



## 9 Physical Dimensions

<b>E1400 Series</b> <i>single axis drive</i>		
Width	mm (in)	50 (2)
Height	mm (in)	300 (11.8)
Height with fixings	mm (in)	345 (13.6)
Depth	mm (in)	221.5 (8.8)
Weight	kg (lb)	4.3 (9.5)
Mounting		2 x M5
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
Max. Case Temperature	°C	90
Max. Power Dissipation	W	100
Mounting place		In the control cabinet
Mounting position		vertical
Distance between drives (passive convection cooling)	mm (in)	≥ 35 (1.4) left (heat sink side) ≥ 5 (0.2) right ≥ 200 (8) top / bottom
Distance between drives (with fan option EV01-E1400)	mm (in)	≥ 40 (1.6) left (heat sink side) ≥ 5 (0.2) right ≥ 200 (8) top / bottom
Distance between drives (cold plate cooling)	mm (in)	≥ 0 (0) left/right ≥ 200 (8) top / bottom



## 12 Ordering Information

Item	Description	Art. Nr.
E1450-PL-QN	POWERLINK Drive (3x400/28A)	0150-1791
E1450-PN-QN	PROFINET Drive (3x400/28A)	0150-1783
E1450-EC-QN	ETHERCAT Drive (3x400/28A)	0150-1784
E1450-SC-QN	SERCOS III Drive (3x400/28A)	0150-1785
E1450-IP-QN	ETHERNET IP Drive (3x400/28A)	0150-1782
E1430-DP-QN	PROFIBUS-DP Drive (3x400/28A)	0150-1786
E1400-GP-QN	GENERAL PURPOSE Drive (3x400/28A)	0150-1779
E1450-SE-QN	SERCOS over ETHERCAT Drive (3x400/28A)	0150-1899
RS232 PC config. Cable 2.5m	For E1200 / E1400	0150-2143
RR01-68/100	Regeneration resistor (68R, 100W, 1000V)	0150-3373
EV01-E1400	Fan Option for E1400	0150-5055
NF01-FN258-16-07	3-phase line filter for E1400	0150-2359

## 13 International Certifications

Certifications	
Europe 	See chapter "14 Declaration of Conformity CE-Marking"
UL	UL508C pending

## 14 Declaration of Conformity CE-Marking

Manufacturer: NTI AG / LinMot®  
 Haerdlistrasse 15  
 8957 Spreitenbach  
 Switzerland  
 Tel.: +41 (0)56 419 91 91  
 Fax: +41 (0)56 419 91 92

Products: LinMot® drives

Type	Art.-No.	Type	Art.-No.	Type	Art.-No.
E1450-PL-QN	0150-1791	E1450-IP-QN	0150-1782	E1450-EC-QN	0150-1784
E1450-PN-QN	0150-1783	E1430-DP-QN	0150-1786	E1450-SC-QN	0150-1785
E1400-GP-QN	0150-1779	E1450-SE-QN	0150-1899		

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 Ltd.

I declare that as the authorized representative, the above information in relation to the supply/manufacture of this product is in conformity with the stated standards and other related documents in compliance with the protection requirements of the Electromagnetic Compatibility (EMC) Directive 2004/108/EC and Safety tests according to the 2006/95/EC harmonized standard EN 50371: 2002.

Standards Complied with:

EN 61000-6-2: 2005		Immunity for industrial environments	
EN 61000-4-2	Class B and FS	Electrostatic discharge immunity (ESD)	
EN 61000-4-3	Class A and FS	Radiated electromagnetic field immunity	
EN 61000-4-4	Class B and FS	Fast transients / burst immunity (EFT)	
EN 61000-4-5	Class B and FS	Slow transients immunity (Surge)	
EN 61000-4-6	Class A and FS	Conducted radio frequency immunity	
EN 61000-4-8	Class A and FS	Power frequency magnetic field immunity	
EN 61326-3-1	FS	EMC immunity (functional safety)	
EN 61000-6-4: 2007		Emission for industrial environments	
EN 55022	Class A	Stationary interference voltage AC mains	
EN55022	Class A	Stat. Asym. Interference current on Telco lines	
EN 55022	Class A	Radiated Emission	
EN 61326-3-1:2008		Functional Safety	
EN 50371		Human exposure to electromagnetic fields	
EN 5022		Radio disturbance (IT equipment)	
EN 5011		Radio disturbance (ISM)	
CISPR 22: 2005		Radio disturbance (IT equipmment)	

Company: NTI Ltd.  
 Spreitenbach, May 02, 2012



-----  
 R. Rohner / CEO NTI AG



## 15 Contact Addresses

---

**SWITZERLAND**

**NTI AG**  
Haerdlistr. 15  
CH-8957 Spreitenbach

**Sales and Administration:** +41-(0)56-419 91 91  
office@linmot.com

**Tech. Support:** +41-(0)56-544 71 00  
support@linmot.com

**Tech. Support (Skype) :** skype:support.linmot

**Fax:** +41-(0)56-419 91 92  
**Web:** <http://www.linmot.com/>

---

**USA**

**LinMot, Inc.**  
204 E Morrissey Dr.  
Elkhorn, WI 53121

**Sales and Administration:** 877-546-3270  
262-743-2555

**Tech. Support:** 877-804-0718  
262-743-1284

**Fax:** 800-463-8708  
262-723-6688

**E-Mail:** [us-sales@linmot.com](mailto:us-sales@linmot.com)  
**Web:** <http://www.linmot-usa.com/>

---

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

Smart solutions are...

