SERVO DRIVES
SERIES A1100
Servo Drive A1100

Series A1100 drives are compact servo drives with 32-bit position resolution and integrated-power stage, for linear motors.

The drives are suitable for simplest and standard positioning tasks with point to point motions, across the entire range of the LinMot product range.

Connection to Machine Control

The Series A1100 Servo Drives can be actuated by machine controls from any manufacturer or brand, via digital inputs, outputs; serial interface; or by CANopen interfaces.

Process and sensor interfaces

Fast process interfaces for direct processing of sensor signals are available as freely programmable analog and digital inputs and fast trigger inputs.

Logic and Power Supply

The Servo Drives need two separate power supplies for the logic and power elements.

In an E-stop and safe stop of the drive, only the motor power supply is cut off from the drive. The logic supply and the drive continue to run.

This has the advantage that the drive and linear motor do not need to be reinitialized when the machine is restarted, since all process data, including the position of the linear motor are still up to date (as long as the logic supply is not turned off).
Position Streaming

With a cyclical target value, or “position streaming,” the overarching NC or CNC drive communicates with the Servo Drive through CanOpen.

The position and velocity calculated in the overarching drive is transmitted to the Servo Drive cyclically. The P, PV, or PVT mode is available for this transmission.

Motor Interfaces

The series A1100 Servo Drives allow control of LinMot linear motors.

A1100 Servo Drives provide all necessary interfaces to operate linear motors with optional external peripherals, such as end position and reference switches.

Configuration

Parameterization and configuration of the Servo Drive is done via RS232.

LinMot Talk user-friendly PC software is available for configuration. In addition to online documentation, LinMot Talk provides extensive debugging tools, such as an oscilloscope and an error inspector, for simple and rapid start-up of the axes.

System Integration

Series A1100 Servo Drives have analog inputs and digital inputs and outputs, serial interfaces, and Bus connections. The user is therefore not dependent on the selection of the higher level controller.

Additionally, the drives can be equipped with optional peripherals, such as reference and end stop switches.

With flexibility and a compact form factor, LinMot Series A1100 Servo Drives provide a complete solution for a flexible drive concept in single and multiple axis applications, with linear motors.
Connection to Machine Drive

For direct position targets, using absolute or relative positioning, the desired position is reached using acceleration and velocity-limited motion profiles or jerk optimized profiles (jerk limited and Bestehorn). Positioning commands can be invoked via the serial interface, CANopen or a trigger input.

Time Curves

Up to 50 different time curves can be stored Series A1100 drives, with up to 8,000 individual waypoints. The motor can thus travel along time curves of any complexity, such as those generated by CAD programs and stored in the drive (Excel CSV format). The time curves can be invoked via the serial interface, fieldbusses or the trigger input.

Profiled Moves

For travel to an absolute position, or shifting by a relative position, any desired motion rules can be stored besides the VA interpolator. They are stored in the drive as motion profiles (Excel CSV format). The positions can be approached, for example, with a sinusoidal motion to optimize power loss, or special reverse optimized motion profiles.

Setpoint Streaming

Overlaid NC drives with fieldbus or Ethernet interfaces communicate with the servo drives via “Position Streaming”. The position and velocity calculated in the overlaid control is transmitted to the Servo Drive cyclically. The P, PV, or PVT mode is available for this transmission.
**Command Table**

Entire motion sequences with up to 255 individual motion commands can be stored in the Command Table. This is primarily advantageous if complete motion sequences need to be executed very quickly, without dead time from the overlaid drive. In the Command Table, the programmer has access to all motion commands, internal parameters, and digital inputs and outputs.

- **Commands:** max. 255
- **Cycle time:** 250µsec

---

**Analog Position**

For an analog position target, the linear motor travels to a position proportional to the input voltage. The position is either scanned continuously, or only after a rising edge of the trigger signal. In order to prevent uncontrolled jumps in position, the motor travels to the positions with a programmable maximum acceleration and velocity (VA interpolator).

- **Inputs:** Analog Input X44
- **Voltagyte range:** 0-10VDC or
- **Resolution:** 10 Bit
- **Scanning rate:** 250µsec
**System Overview**

**A1100-GP**

- Absolute & Relative Positioning
- Time based motion profiles
- Internally stored Motion Sequences
- Position Streaming
- Analog Position Target
- Customer-Specific Functions

---

**CANopen**

The LinMot A1100-GP drives support the CiA DS301 communications protocol. The following resources are available:

- 4 T_PDO, 4 R_PDO, 1 T_SDO, 1 R_SDO

The following protocols are supported by the CO drives:

- NMT Error Control (Nodeguarding Protocol or HeartBeat Protocol)
- PDO (Transmission type 1 to 254)
- SDO Upload and Download
- NMT (Start, Stop, Enter PreOp, Reset Node, Reset Communication, Boot-Up Message)

---

**Replacing Pneumatics**

Due to their simple controls via digital inputs and outputs, A1100 drive make excellent substitutes for pneumatic cylinders.

Using digital inputs or CAN bus, the linear motor can move to programmable positions. As soon as the linear motor has reached the set position, the In-Position output is actuated.

The linear motor can thus be controlled like a programmable pneumatic cylinder with end position switches.
System Overview

A1100-Series

X40 / X41
PWR+
P2ND
(24...85 VDC)
+24VDC
DGGND

X2
PH1+
PH1-
PH2+
PH2-
PE/Shield

X3
SIN
COS
TEMP
+5VDC
DGGND

X42 / X43
ISOLATED CAN
C DIG IN 1...3
C DIG OUT 1

X44
+24VDC
DGGND
MP DIG IN 1
MP DIG IN 2
MP DIG IN 3
MP DIG OUT 1
AN IN (0...10V)
ISO. CAN L
ISO. CAN H
ISO. CAN GND

LINEMOTOR

LOGIC SUPPLY IN
MACHINE CONTROLLER, PLC, IPC

SYSTEM/CONFIG
RS232

SUPPLY
3x400VAC
230VAC
115VAC
MOTOR SUPPLY

LOGIC SUPPLY OUT
LINEAR MOTOR
ANALOG 5SVIN/COS
POSITION SENSOR
TEMP INPUT
LOGIC SUPPLY OUT
DIGITAL INPUTS
ANALOG INPUT
CANopen
Interfaces

X2  Motor Phases

<table>
<thead>
<tr>
<th>Nr</th>
<th>Designation</th>
<th>LinMot Linear Motor</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PH1+ /U</td>
<td>Motor Phase 1+</td>
<td>red</td>
</tr>
<tr>
<td>2</td>
<td>PH1- /V</td>
<td>Motor Phase 1-</td>
<td>pink</td>
</tr>
<tr>
<td>3</td>
<td>PH2+ /W</td>
<td>Motor Phase 2+</td>
<td>blue</td>
</tr>
<tr>
<td>4</td>
<td>PH2- /X</td>
<td>Motor Phase 2-</td>
<td>grey</td>
</tr>
<tr>
<td>5</td>
<td>SCRN</td>
<td>Shield</td>
<td></td>
</tr>
</tbody>
</table>

- Use 60/75°C copper conductors only
- Cable length <30m
- 13 A max. current per circuit when header is mated to a receptacle loaded with a 45750 Mini-Fit® Plus HCS Crimp Terminal crimped to a 16 AWG wire

X3  Motor Sensor

<table>
<thead>
<tr>
<th>Nr</th>
<th>LinMot Motor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DGND</td>
</tr>
<tr>
<td>2</td>
<td>Temp</td>
</tr>
<tr>
<td>3</td>
<td>Sensor Sine</td>
</tr>
<tr>
<td>4</td>
<td>+5VDC</td>
</tr>
<tr>
<td>5</td>
<td>(Do not connect)</td>
</tr>
<tr>
<td>6</td>
<td>Sensor Cosine</td>
</tr>
</tbody>
</table>

- Use +5V (X3.4) and DGND (X3.1) only for motor internal hall sensor supply (max. 100mA)
- Cable length < 30m
- Caution: Do NOT connect DGND (X3.1) to ground or earth!

Motor  Linear Motor wiring with LinMot Motor cable (K-, KS- and KR-types)

- For the connection between the linear motor and servo drive, only the specially shielded LinMot cables of type K, KS or KR should be used.
- The length of the cable can be up to 30 m between the linear motor and the servo drive.
- Motor cables fabricated by the customer are to be tested with a test voltage of 1500 VDC.
- An improperly fabricated motor cable can damage both the linear motor and the servo drive.
- The minimum bend radius is to be observed for stationary cables as well as for moving motor cables.
- The motor cable must not be plugged in or unplugged while voltage is still applied.
- The outer shield of the motor cable has to be clamped to PE as close as possible to the drive.
- A ferrite core (5mm, 144 Ohm @ 100 MHz, e.g. Würth Elektronik, Art.Nr.: 7427114) has to be mounted around the motor phases as close to the drive as possible.
Interfaces

X40 / X41  Supply IN / OUT

Motor Supply: 72VDC nominal, 24...85VDC
- Absolute max. Rating: 72VDC +20%
- External Fuse: Motor Supply = 10AT (10A slow blow) / min. 100VDC
  Logic Supply = 3AT (3A slow blow) / min. 100VDC
- If motor supply voltage exceeds 90VDC, the drive will go into error state
- Use 60/75°C copper conductors only
- 13A max. current per circuit when header is mated to a receptacle loaded with a
  45750 Mini-Fit® Plus HCS Crimp Terminal crimped to a 16 AWG wire

Interfaces

X42 / X43  Control IN / OUT

Nr
1 C Dig IN 1 Input high voltage: Vin > 16VDC, Input low voltage: Vin < 8VDC
2 C Dig IN 2 Input high voltage: Vin > 16VDC, Input low voltage: Vin < 8VDC
3 C Dig IN 3 Input high voltage: Vin > 16VDC, Input low voltage: Vin < 8VDC
4 CAN GND
5 CAN GND
6 C Dig OUT 1 Open Collector Output, 100k Pull-Up to +24VDC
7 Isolated CAN H
8 Isolated CAN L
case Shield

- Use twisted pair (1-2, 3-6, 4-5, 7-8) cable for wiring
- X42 is internally connected to X43 (1:1 connection)
- Cable length < 30m.
- Galvanically isolated CAN transceiver meets the specifications of the ISO11898-2 standard
- Note: A termination resistor of 120 Ohm can be connected drive internally with the switch S5.1.

Interfaces

X44  Motor Peripheral I/O

Nr
1 DGND
2 MP Dig IN 1 Input high voltage: Vin > 16VDC, Input low voltage: Vin < 8VDC
3 MP Dig IN 2 Input high voltage: Vin > 16VDC, Input low voltage: Vin < 8VDC
4 CAN GND Use a separate shielded twisted pair cable for the CAN connection
5 Isolated CAN H Use a separate shielded twisted pair cable for the CAN connection
6 +24VDC OUT Max. Current: 2.5A
7 MP Dig OUT 1 Open Collector Output, No Pull-Up, Max. Current: 1.4A
8 MP Dig IN 3 Input high voltage: Vin > 16VDC, Input low voltage: Vin < 8VDC
9 AN IN (0...10V) Analog Input 0V..10V
10 Isolated CAN L Use a separate shielded twisted pair cable for the CAN connection

- Galvanically isolated CAN transceiver meets the specifications of the ISO11898-2 standard
- The CAN bus on X44 is the same one as on X42/43
- Note: A termination resistor of 120 Ohm can be connected drive internally with the switch S5.1.
- Use a separate shielded cable with a twisted pair for CAN L and CAN H when connecting the CAN bus to X44. Clamp the shielding of the cable as close as possible to the drive to PE.
- Cable length < 30m
**Interfaces**

**X19 System**

<table>
<thead>
<tr>
<th>Nr</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RS232 Tx</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
</tr>
<tr>
<td>4</td>
<td>RS232 Rx</td>
</tr>
<tr>
<td>5</td>
<td>(Do not connect)</td>
</tr>
<tr>
<td>6</td>
<td>(Do not connect)</td>
</tr>
</tbody>
</table>

**BUS LEDs**

**Bus State Display**

- Green: OK
- Red: Error

The use of these LEDs depends on the type of fieldbus which is used. Please see the corresponding manual for further information.

**S5**

| S5.1 | CAN Termination (Default = on) |
| S5.2 | Parameter Default (Default = off) |
| S5.3 | Bootstrap (Default = off) |

**LEDs**

**State Display**

- Green: 24V Logic Supply OK
- Yellow: Motor Enabled / Error Code Low Nibble
- Yellow: Warning / Error Code High Nibble
- Red: Error
### A1100 Single axis drive

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width mm (in)</td>
<td>25.5 (1.0)</td>
<td></td>
</tr>
<tr>
<td>Height mm (in)</td>
<td>124 (4.9)</td>
<td></td>
</tr>
<tr>
<td>Depth mm (in)</td>
<td>84.5 (3.3)</td>
<td></td>
</tr>
<tr>
<td>Weight g (lb)</td>
<td>340 (0.75)</td>
<td></td>
</tr>
<tr>
<td>Storage temperature °C</td>
<td>-25...40</td>
<td></td>
</tr>
<tr>
<td>Transport temperature °C</td>
<td>-25...70</td>
<td></td>
</tr>
<tr>
<td>Operating temperature °C</td>
<td>0...40 at rated data (UL) 40...50 with power derating</td>
<td></td>
</tr>
<tr>
<td>Relative humidity %</td>
<td>95 (non-condensing)</td>
<td></td>
</tr>
<tr>
<td>Pollution IEC/EN 60664-1</td>
<td>Pollution degree 2</td>
<td></td>
</tr>
<tr>
<td>Max. case temperature °C</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Max. power dissipation W</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Min. distance between drives mm (in)</td>
<td>20 (0.8) horizontal 50 (2) vertical</td>
<td></td>
</tr>
</tbody>
</table>
## Accessories

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC01-X44-4m</td>
<td>Cable IO’s for A1100/X44, 4m flying leads</td>
<td>0150-3553</td>
</tr>
<tr>
<td>DC01-X40-4m</td>
<td>Cable Supply A1100/X40, 4m flying leads</td>
<td>0150-3545</td>
</tr>
<tr>
<td>DC01-X40/41-0.15m</td>
<td>Cable IO for A1100/X40-X41, 0.15m daisy chain</td>
<td>0150-3552</td>
</tr>
</tbody>
</table>
DRIVES SERIES C1100

PROFIdrive®, EtherCAT®, RS 232, RS 485, CANopen
Servo Drive C1100

Series C1100 servo drives are axis controllers, with 32-bit position resolution and an integrated power stage, for linear motors and rotary drives.

The controllers are suitable for simplest and standard positioning tasks with point to point motions.

Connection to Machine Control

The C1100 servo drives can be actuated by machine controls from any manufacturer or brand, via digital inputs and outputs over Industrial Ethernet.

Bus-Interfaces:
- Profinet
- EtherCat
- CANopen

Serial-Interfaces:
- RS232
- RS485

Process and Safety Interfaces

Fast process interfaces for direct processing of sensor signals are available as freely programmable analog and digital inputs, a fast trigger input, and a capture input.

The safety IO’s on Servo Drives with the -1S option with CAN or industrial ETHERNET allows safe torque off (STO) of the drives via control signals, without interrupting the power supply.

Drives with -0S option comes without safety IO’s and is easier to wire in applications without safety needs.

Logic and Power Supply

The servo drives have two separate inputs for the logic and motor elements.

This has the advantage that the drive and linear motor do not need to be reinitialized when the machine is restarted, since all process data, including the actual position of the linear motor, is still up to date.
Series C1100

System Integration
Flexible hardware enables control of any 1/2/3-phase motors. Thus, low-power rotary servomotors, such as brushless DC motors, can be integrated in the same control concept.

Additionally, the drives can be equipped with optional peripherals, such as reference and end stop switches, high-precision external position sensors, or a mechanical holding brake.

Series C1100 servo drives have analog and digital inputs and outputs, serial interfaces, fieldbusses, and Ethernet. The user therefore is not dependent on the selection of the overlaid controller. An appropriate interface is available, with associated protocols, for any PLC or IPC solution.

With flexibility and a compact form factor, LinMot Series C1100 servo drives provide a complete solution for a flexible drive concept in single and multiple axis applications, with linear motors and other actuators.

Technology Functions
Technology functions are functional blocks that provide a complete solution for standard applications and frequently encountered, customer-specific problems.
Connection to Machine Drive

For direct position targets, using absolute or relative positioning, the desired position is reached using acceleration and velocity-limited motion profiles or jerk optimized profiles (jerk limited and Bestehorn). Positioning commands can be invoked via the serial interfaces, CANopen, DeviceNet, Profibus, Ethernet or a trigger input.

<table>
<thead>
<tr>
<th>Stroke [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goto</td>
</tr>
<tr>
<td>$v_{max} = 2.5 \text{m/s}$</td>
</tr>
<tr>
<td>$a_{max} = 3.0 \text{m/s}^2$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time [ms]</th>
</tr>
</thead>
<tbody>
<tr>
<td>---</td>
</tr>
</tbody>
</table>

| Stroke range: ±100m |
| Position Resolution: 0.1µm (32Bit) |
| Velocity Resolution: 1.0µm/s (32Bit) |
| Velocity Resolution: 10.0µm/s (32Bit) |

Time Curves

Up to 100 different time curves can be stored Series C1100 drives, with up to 16,000 individual waypoints. The motor can thus travel along time curves of any complexity, such as those generated by CAD programs and stored in the drive (Excel CSV format). The time curves can be invoked via the serial interface, fieldbusses, Ethernet, or the trigger input.

<table>
<thead>
<tr>
<th>Stroke [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Curve 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time [ms]</th>
</tr>
</thead>
<tbody>
<tr>
<td>---</td>
</tr>
</tbody>
</table>

| Stroke range: ±100m |
| Position Resolution: 0.1µm (32Bit) |
| Motion profiles: Max. 99 Time Curves |
| Curve points: Max. 15'000 points |

Profiled Moves

For travel to an absolute position, or shifting by a relative position, any desired motion rules can be stored besides the VA interpolator. They are stored in the drive as motion profiles (Excel CSV format). The positions can be approached, for example, with a sinusoidal motion to optimize power loss, or special reverse optimized motion profiles.

<table>
<thead>
<tr>
<th>Stroke [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goto Pos 125mm with Profil 1</td>
</tr>
</tbody>
</table>

| Curve 1 |

<table>
<thead>
<tr>
<th>Time [ms]</th>
</tr>
</thead>
<tbody>
<tr>
<td>---</td>
</tr>
</tbody>
</table>

| Stroke range: ±100m |
| Position Resolution: 0.1µm (32Bit) |
| Motion profiles: Max. 99 Time Curves |
| Curve points: Max. 15'000 points |

Setpoint Streaming

Overlaid NC drives with fieldbus or Ethernet interfaces communicate with the servo drives via “Position Streaming”. The position and velocity calculated in the overlaid control is transmitted to the Servo Drive cyclically. The P, PV, or PVT mode is available for this transmission.

<table>
<thead>
<tr>
<th>Stroke [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time [ms]</th>
</tr>
</thead>
<tbody>
<tr>
<td>---</td>
</tr>
</tbody>
</table>

| Position Resolution: 32 Bit |
| Velocity Resolution: 32 Bit |
| Interpolator: 8 kHz |
| Cycle times: 0.5 - 5ms |
**Series C1100**

**Easy Steps**

With the Easy Steps function, up to 4 positions or independent travel commands can be stored on the drive, and addressed via 4 digital inputs or fieldbus interfaces/Ethernet.

<table>
<thead>
<tr>
<th>Input</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pos 125mm</td>
</tr>
<tr>
<td>2</td>
<td>Pos 250mm</td>
</tr>
<tr>
<td>3</td>
<td>Curve 1</td>
</tr>
<tr>
<td>4</td>
<td>Pos -30mm</td>
</tr>
</tbody>
</table>

Digital inputs: 4  
Interface: X4  
Scanning rate: 250µsec

**Command Table**

Entire motion sequences with up to 255 individual motion commands can be stored in the Command Table. This is primarily advantageous if complete motion sequences need to be executed very quickly, without dead time from the overlaid drive. In the Command Table, the programmer has access to all motion commands, internal parameters, and digital inputs and outputs.

| Commands: | max. 254  |
| Cycle time: | 125µsec |

**Analog Position**

For an analog position target, the linear motor travels to a position proportional to the input voltage. The position is either scanned continuously, or only after a rising edge of the trigger signal. In order to prevent uncontrolled jumps in position, the motor travels to the positions with a programmable maximum acceleration and velocity (VA interpolator).

| Voltage range: | 0-10VDC or ±10V |
|Resolution: | 12 Bit |
|Scanning rate: | >=125µsec (adjustable) |

**Easy Steps Parameter Scale**

Easy Steps provide the ability to parameterize internal parameters using two analog inputs. If, for example, the maximum motor current is read at an analog input, then the maximum motor force can be provided as analog for freely programmable joining processes.

Inputs: 2 x Analog  
Voltage range: 0-10VDC  
Resolution: 12 Bit  
Resolution: 250µsec
Closed Loop Force Control

Using the force control technology function, precise joining processes can be implemented reliably and reproducibly with high-precision force control. For force control, the current motor force is measured with a load cell and controlled in the drive. Joining process or quality checks with high requirements for applied force can be implemented.

<table>
<thead>
<tr>
<th>Analog Input</th>
<th>0-10V or ±10V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>12 Bit</td>
</tr>
<tr>
<td>Min. Force Resolution</td>
<td>0.1N</td>
</tr>
</tbody>
</table>
Interfaces

<table>
<thead>
<tr>
<th>Interfaces</th>
<th>C1100-GP-XC</th>
<th>C1150-EC-XC</th>
<th>C1150-PN-XC</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS485</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CANOpen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EtherCAT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROFINET</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Config RS232</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
C1100-GP-XC-0S
C1100-GP-XC-1S

- Absolute & Relative Positioning
- Time based motion profiles
- Internally stored Motion Sequences
- Position Streaming
- Analog Position Target
- Analog Parameter Scaling
- Force Control Technology Function
- Customer-Specific Functions

**Industrial Ethernet**

Series C1100 drives allow integration of LinMot linear motors in controls concepts with industrial Ethernet interfaces. The user can integrate Series C1100 drives regardless of the provider of the overlaid control.

LinMot drives are available with common industrial Ethernet protocols. Since all Ethernet drives have the same motion command interface, and the control and status word are identical, software blocks that have been implemented once can be transferred to other drives without a problem.

C1100-GP servo drives support the following industrial Ethernet protocol:
- CANopen
- RS485

**Minimal cycle times**

- Bus cycle: 500µs
- IO update: 500µs
- Trigger Input: 250µs
- Position control loop: 250µs
- Current control loop: 125µs
General Purpose

C1100-GP

1,2,3-PHASE POWERSTAGE
24...85V DC
25A PHASE CURRENT

S1-S2
ID HIGH (S1)
ID LOW (S2)

X7
RS485 CAN

X8
RS485 CAN

X17 / X18
10/100 MBit/s INDUSTRIAL ETHERNET

X19
RS232

X2
PH1+
PH2+
PH2-
PE

X3
SIN
COS
TEMP.
+5V
GND

X10
A+
A-
B+
B-
Z+
Z-
U+
U-
V+
V-
W+
W-
ENC ALARM
+5VDC
GND

X13
OPTIONAL EXTERNAL POSITION SENSOR

X33
MACHINE SAFETY

SUPPLY
3 x 400VAC
230VAC
115VAC

MOTOR SUPPLY

LINEMOTOR

LINEAR MOTOR

BRUSHLESS DC MOTOR

COMMUNICATION INTERFACE
RS485 CANOPEN

COMMUNICATION INTERFACE
RS485 CANOPEN

10/100 MBit/s INDUSTRIAL ETHERNET

SYSTEM INTERFACE
RS232

ANALOG INPUT+/ANALOG INPUT-
ANALOG INPUT

DIGITAL INPUTS

DIGITAL OUTPUTS

+24VDC GND

LOGIC SUPPLY

OUTPUTS

FAST PROCESS INPUTS

ANALOG INPUT

www.LinMot.com
C1100-EC

C1150-EC-XC-0S
C1150-EC-XC-1S

Absolute & Relative Positioning
Time based motion profiles
Internally stored Motion Sequences
Position Streaming
Analog Position Target
Analog Parameter Scaling
Force Control Technology Function
Customer-Specific Functions

Industrial Ethernet
Series C1150-EC drives allow integration of LinMot linear motors in controls concepts with EtherCAT. The user can integrate Series C1100 drives regardless of the provider of the overlay control.

LinMot drives are available with common industrial Ethernet protocols. Since all Ethernet drives have the same motion command interface, and the control and status word are identical, software blocks that have been implemented once can be transferred to other drives without a problem.

Technical Data
Type: Realtime Ethernet
Switch/Hub: Integrated 2-Port Hub/Switch
Transfer rate: 10/100MBit/sec

Minimal cycle times
Bus cycle: 500µs
I/O update: 500µs
Trigger Input: 250µs
Position control loop: 250µs
Current control loop: 125µs

Risk of Electric Shock!
Before servicing, disconnect supply, wait 5 minutes and measure between PWR+ and PGND to be sure that the capacitors have discharged below 42 VDC.

Attention haute tension!
Avant tout operation de maintenance deconnecter l'alimentation, attendre 5 minutes et mesurer la tension entre PWR+ et PGND pour verifier si les condensateurs sont decharges inferieure a 42 VDC.
C1150-PN-XC-0S  
C1150-PN-XC-1S

- Absolute & Relative Positioning
- Time based motion profiles
- Internally stored Motion Sequences
- Position Streaming
- Analog Position Target
- Analog Parameter Scaling
- Force Control Technology Function
- Customer-Specific Functions

Industrial Ethernet
Series C1150-PN drives allow integration of LinMot linear motors in controls concepts with Profinet. The user can integrate Series C1100 drives regardless of the provider of the overlaid control.

LinMot drives are available with common industrial Ethernet protocols. Since all Ethernet drives have the same motion command interface, and the control and status word are identical, software blocks that have been implemented once can be transferred to other drives without a problem.

Technical Data
Type: Realtime Ethernet  
Switch/Hub: Integrated 2-Port Hub/Switch  
Transfer rate: 10/100MBit/sec

Minimal cycle times
Bus cycle: 500µs  
IO update: 500µs  
Trigger Input: 250µs  
Position control loop: 250µs  
Current control loop: 125µs
Interfaces

X1  Motor Phases

Motor Supply:

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.
– Use 60/75°C copper conductors only
– Conductor Cross-Section 2.5mm² (AWG14) max Length 4m

X2  Motor Phases

Conductor Cross-Section
max.2.5mm² (AWG21 - 14)

- Use 60/75°C copper conductors only
- Conductor cross-section: 0.5 – 2.5mm² (depends on Motor current) / AWG 21 -14

X3  Motor

- Use +5V (X3.3) and AGND (X3.8) only for motor internal Hall Sensor supply (max. 100mA)
- Do NOT connect AGND (X3.8) to ground or earth!
Series C1100

Motor Linear Motor wiring

Use Y-style motor cables only (for example K15-Y/C)!

X4 Logic Supply / IO Connection

Nr | AnIn- | X4.11 | Configurable Analog Input differential (with X4.10)
11

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

Inputs: (X4.5...X4.8) 24V / 5mA (Low Level: –0.5 to 5VDC, High Level: 15 to 30VDC)

Outputs: (X4.3 & 4.4) 24V / max. 100mA, Peak 370mA (will shut down if exceeded)

Analog inputs: 12 bit A/D converted.

X4.9: Single ended analog input to GND, 0..10V

X4.10/X4.11: Differential analog input, +/- 10V. Common mode range: +/- 5VDC to GND.

Supply 24V: typically 500mA / max. 2.5A (if all outputs “on” with max. load.)

- Use 60/75°C copper conductors only
- Conductor cross-section max. 1.5mm²
- Stripping length: 10mm

X7 - X8 RS485 / CAN (on GP drives only)

Nr | RS485_Rx+ | A
1

2 RS485_Rx- | B

3 RS485_Tx+ | Y

4 GND

5 GND

6 RS485_Tx- | Z

7 CAN_H

8 CAN_L

RJ-45

Use twisted pair (1-2, 3-6, 4-5, 7-8) cable for wiring.
The built in CAN and RS485 terminations can be activated by S5.2 and S5.3.
X7 is internally connected to X8 (1:1 connection)
The use of these switches depends on the type of fieldbus which is used. Please see the corresponding manual for further information.

RT BUS LEDs

- Green: OK
- Red: Error

The use of these switches depends on the type of fieldbus which is used. Please see the corresponding manual for further information.

S4 Bus Termination (on GP drives only)

- Switch 4: Bootstrap
- Switch 3: Termination CAN on/off
- Switch 2: Termination RS485 on/off
- Switch 2: RS232 (switch "off" / RS485 "on"). Selection for RS232 or RS485

Factory settings: Switch 3 "on", all other switches "off"

S5 Bus Termination (on EC and PN drives only)

- S5: Bootstrap, set to position OFF (Default)

X13 External Position Sensor Commutation Differential Hall Switches

<table>
<thead>
<tr>
<th>Nr</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+5V DC</td>
</tr>
<tr>
<td>2</td>
<td>A+ Encoder</td>
</tr>
<tr>
<td>3</td>
<td>B+ Encoder</td>
</tr>
<tr>
<td>4</td>
<td>Z+ Encoder</td>
</tr>
<tr>
<td>5</td>
<td>Encoder Alarm</td>
</tr>
<tr>
<td>6</td>
<td>GND</td>
</tr>
<tr>
<td>7</td>
<td>V+ Commutation (Hall Switch)</td>
</tr>
<tr>
<td>8</td>
<td>W- Commutation (Hall Switch)</td>
</tr>
<tr>
<td>9</td>
<td>A- Encoder</td>
</tr>
<tr>
<td>10</td>
<td>B- Encoder</td>
</tr>
<tr>
<td>11</td>
<td>Z- Encoder</td>
</tr>
<tr>
<td>12</td>
<td>Encoder Alarm</td>
</tr>
<tr>
<td>13</td>
<td>U+ Commutation (Hall Switch)</td>
</tr>
<tr>
<td>14</td>
<td>V- Commutation (Hall Switch)</td>
</tr>
<tr>
<td>15</td>
<td>W+ Commutation (Hall Switch)</td>
</tr>
<tr>
<td>16</td>
<td>Shield</td>
</tr>
</tbody>
</table>

Position Encoder Inputs (RS422): Max. counting frequency: 10 Mcounts/s with quadrature decoding, 100ns edge separation
Differential Hall Switch Inputs (RS422): Input Frequency: <1kHz
Enc. Alarm In: 5V / 1mA
Sensor Supply: 5VDC, max 100mA
### X33  Safety Relays (only for -1S)

<table>
<thead>
<tr>
<th>Nr</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 / 8</td>
<td>Ksr +  Safety Relay 1 / 2 Input positive</td>
</tr>
<tr>
<td>3 / 7</td>
<td>Ksr -  Safety Relay 1 / 2 Input negative</td>
</tr>
<tr>
<td>2 / 6</td>
<td>Ksr f+  Safety Relay 1 / 2 feedback positive</td>
</tr>
<tr>
<td>1 / 5</td>
<td>Ksr f-  Safety Relay 1 / 2 feedback negative</td>
</tr>
</tbody>
</table>

- 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!

### X17 - X18  RealTime Ethernet 10/100 Mbit/s (on EC and PN drives only)

<table>
<thead>
<tr>
<th>Nr</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X17</td>
<td>RT ETH In</td>
</tr>
<tr>
<td>X18</td>
<td>RT ETH Out</td>
</tr>
</tbody>
</table>

Specification depends on RT-Bus Type. Please refer to according documentation.

### LEDs  State Display

- **Green**: 24V Logic Supply OK
- **Yellow**: Motor Enabled / Error Code Low Nibble
- **Yellow**: Warning / Error Code High Nibble
- **Red**: Error

### X19  System

<table>
<thead>
<tr>
<th>Nr</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reserved, do not connect</td>
</tr>
<tr>
<td>2</td>
<td>Reserved, 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>Reserved, do not connect</td>
</tr>
<tr>
<td>8</td>
<td>Reserved, do not connect</td>
</tr>
<tr>
<td>case</td>
<td>Shield</td>
</tr>
</tbody>
</table>

Use Adapter cable AC01-RJ45/Df-2.5-RS1 (Art.-No. 0150-2143) for Configuration over RS232.
### Dimensions

**servo drives Serie**

<table>
<thead>
<tr>
<th></th>
<th>C11x0-...-0S</th>
<th>C11x0-...-1S</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Width</strong> mm (in)</td>
<td>26.6 (1.05)</td>
<td>166 (6.5)</td>
</tr>
<tr>
<td><strong>Height</strong> mm (in)</td>
<td>146 (5.8)</td>
<td>186 (7.3)</td>
</tr>
<tr>
<td><strong>Height without fixings</strong> mm (in)</td>
<td>186 (7.3)</td>
<td>206 (8.1)</td>
</tr>
<tr>
<td><strong>Depth</strong> mm (in)</td>
<td>106 (4.2)</td>
<td>166 (6.5)</td>
</tr>
<tr>
<td><strong>Weight</strong> kg (lb)</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td><strong>IP Protection class</strong></td>
<td>IP</td>
<td>IP</td>
</tr>
<tr>
<td><strong>Storage temperature</strong> °C</td>
<td>-25...40</td>
<td>-25...40</td>
</tr>
<tr>
<td><strong>Transport temperature</strong> °C</td>
<td>-25...70</td>
<td>-25...70</td>
</tr>
<tr>
<td><strong>Operating temperature</strong> °C</td>
<td>0...40 at rated date</td>
<td>40...50 with power derating</td>
</tr>
<tr>
<td><strong>Max. case temperature</strong> °C</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td><strong>Shock resistance (16ms)</strong></td>
<td>-0S Option - 3.5g</td>
<td>-1S Option - 1g</td>
</tr>
<tr>
<td><strong>Max. power dissipation</strong> W</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td><strong>Min. distance between drives</strong> mm (in)</td>
<td>20 (0.8) left/right / 50 (2) top/bottom</td>
<td>5 (0.2) left/right / 20 (0.8) top/bottom</td>
</tr>
</tbody>
</table>

**Central Points 168**

**Dimensions**

Dimensions in mm

Mounting points for M5 screws
### Ordering Information

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1100-GP-XC-OS-000</td>
<td>General Purpose Drive (72VDC/25)</td>
<td>0150-2380</td>
</tr>
<tr>
<td>C1150-PN-XC-OS-000</td>
<td>ProfiNet Drive (72V/25A)</td>
<td>0150-2384</td>
</tr>
<tr>
<td>C1150-EC-XC-OS-000</td>
<td>EtherCAT Drive (72VDC/25A)</td>
<td>0150-2382</td>
</tr>
<tr>
<td>C1150-DS-XC-OS-000</td>
<td>EtherCAT CoE Drive (72VDC/25A)</td>
<td>0150-2417</td>
</tr>
<tr>
<td>C1150-SE-XC-OS-000</td>
<td>EtherCAT SoE Drive (72VDC/25A)</td>
<td>0150-2625</td>
</tr>
<tr>
<td>C1100-GP-XC-1S-000</td>
<td>General Purpose Drive (72VDC/25), STO</td>
<td>0150-2381</td>
</tr>
<tr>
<td>C1150-PN-XC-1S-000</td>
<td>ProfiNet Drive (72V/25A), STO</td>
<td>0150-2385</td>
</tr>
<tr>
<td>C1150-EC-XC-1S-000</td>
<td>EtherCAT Drive (72VDC/25A), STO</td>
<td>0150-2383</td>
</tr>
<tr>
<td>C1150-DS-XC-1S-000</td>
<td>EtherCAT CoE Drive (72VDC/25A), STO</td>
<td>0150-2418</td>
</tr>
<tr>
<td>C1150-SE-XC-1S-000</td>
<td>EtherCAT SoE Drive (72VDC/25A), STO</td>
<td>0150-2626</td>
</tr>
<tr>
<td>DC01-C1X00-0S/X1/X4</td>
<td>Drive Connector Set for C1X00-0S</td>
<td>0150-3527</td>
</tr>
<tr>
<td>DC01-C1X00-1S/X1/X4/X33</td>
<td>Drive Connector Set for C1X00-1S</td>
<td>0150-3528</td>
</tr>
<tr>
<td>DC01-C1X00/X1</td>
<td>Drive Connector for PWR 72VDC Input</td>
<td>0150-3525</td>
</tr>
<tr>
<td>DC01-C1X00/X2</td>
<td>Drive Connector Motor Phases</td>
<td>0150-3526</td>
</tr>
<tr>
<td>DC01-Signal/X4</td>
<td>Drive Connector 24VDC &amp; Logic</td>
<td>0150-3447</td>
</tr>
<tr>
<td>DC01-Safety/X33</td>
<td>Drive Connector Safety</td>
<td>0150-3451</td>
</tr>
<tr>
<td>RS232 PC config. Cable 2.5m</td>
<td>for C1100/C1250/E1200/E1400/M8000</td>
<td>0150-2143</td>
</tr>
</tbody>
</table>

### Accessories

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SWITCHED MODE POWER SUPPLIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S01-72/500</td>
<td>Power Supply 72V/500W, 1x120/230VAC</td>
<td>0150-1874</td>
</tr>
<tr>
<td>S01-72/1000</td>
<td>Power Supply 72V/1000W, 3x340-550VAC</td>
<td>0150-1872</td>
</tr>
<tr>
<td><strong>TRANSFORMATOR SUPPLIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T01-72/420-Multi</td>
<td>T-Supply 420VA, 3x230/400/480VAC</td>
<td>0150-1869</td>
</tr>
<tr>
<td>T01-72/900-Multi</td>
<td>T-Supply 900VA, 3x230/400/480 VAC</td>
<td>0150-1870</td>
</tr>
<tr>
<td>T01-72/1500-Multi</td>
<td>T-Supply 1500VA, 3x230/400/480 VAC</td>
<td>0150-1871</td>
</tr>
<tr>
<td>T01-72/420-1ph</td>
<td>T-Supply 420VA, 1x208/220/230/240VAC</td>
<td>0150-1859</td>
</tr>
<tr>
<td><strong>ACCESSORIES FOR SERVO DRIVES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RS232 PC config. cable 2.5m</td>
<td>for C1100/C1200/E1200/E1400</td>
<td>0150-2143</td>
</tr>
<tr>
<td>USB-Serial Converter (isolated)</td>
<td>For C1100, C1200</td>
<td>0150-2473</td>
</tr>
<tr>
<td>B01-C1x00 24VDC</td>
<td>control box for C1x00 (incl. cables)</td>
<td>0150-2130</td>
</tr>
<tr>
<td><strong>OPTION: EXTERNAL POSITION SENSOR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS01-1/D</td>
<td>Linear Encoder 1um, A/B(for incremental strip)</td>
<td>0150-1840</td>
</tr>
<tr>
<td>MB01-1000</td>
<td>Magnetic incremental strip, 1mm pitch, per cm</td>
<td>0150-1963</td>
</tr>
<tr>
<td>MS01-1/D-SSI</td>
<td>Linear Encoder 1um, SSI absolute (for absolute strip)</td>
<td>0150-2095</td>
</tr>
<tr>
<td>MB01-1000-ABS</td>
<td>Magnetic absolute strip, 1mm pitch, per cm</td>
<td>0150-2096</td>
</tr>
</tbody>
</table>

**Edition 2015/16V4 subject to change**
## Motor cables

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Nummber</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MOTOR CABLE FOR LINEAR MOTORS R-CONNECTOR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K05-Y/R-2</td>
<td>motor cable Y/R, 2 m</td>
<td>0150-2421</td>
</tr>
<tr>
<td>K05-Y/R-4</td>
<td>motor cable Y/R, 4 m</td>
<td>0150-2422</td>
</tr>
<tr>
<td>K05-Y/R-6</td>
<td>motor cable Y/R, 6 m</td>
<td>0150-2423</td>
</tr>
<tr>
<td>K05-Y/R-8</td>
<td>motor cable Y/R, 8 m</td>
<td>0150-2424</td>
</tr>
<tr>
<td>K05-Y/R-...</td>
<td>motor cable Y/R, custom length</td>
<td>0150-3501</td>
</tr>
<tr>
<td>KS05-Y/R-4</td>
<td>trailing chain cable Y/R, 4 m</td>
<td>0150-2433</td>
</tr>
<tr>
<td>KS05-Y/R-6</td>
<td>trailing chain cable Y/R, 6 m</td>
<td>0150-2434</td>
</tr>
<tr>
<td>KS05-Y/R-8</td>
<td>trailing chain cable Y/R, 8 m</td>
<td>0150-2435</td>
</tr>
<tr>
<td>KS05-Y/R-...</td>
<td>trailing chain cable Y/R, custom legth</td>
<td>0150-3507</td>
</tr>
<tr>
<td>KR05-Y/R-...</td>
<td>robotic cable Y/R, custom legth</td>
<td>0150-3512</td>
</tr>
<tr>
<td><strong>MOTOR CABLE FOR LINEAR MOTORS WITH C-CONNECTOR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K05-Y/C-2</td>
<td>motor cable Y/C, 2 m</td>
<td>0150-2425</td>
</tr>
<tr>
<td>K05-Y/C-4</td>
<td>motor cable Y/C, 4 m</td>
<td>0150-2426</td>
</tr>
<tr>
<td>K05-Y/C-6</td>
<td>motor cable Y/C, 6 m</td>
<td>0150-2427</td>
</tr>
<tr>
<td>K05-Y/C-8</td>
<td>motor cable Y/C, 8 m</td>
<td>0150-2428</td>
</tr>
<tr>
<td>K05-Y/C-...</td>
<td>motor cable Y/C, custom length</td>
<td>0150-3502</td>
</tr>
<tr>
<td>K15-Y/C-2</td>
<td>motor cable Y/C, 2 m</td>
<td>0150-2429</td>
</tr>
<tr>
<td>K15-Y/C-4</td>
<td>motor cable Y/C, 4 m</td>
<td>0150-2430</td>
</tr>
<tr>
<td>K15-Y/C-6</td>
<td>motor cable Y/C, 6 m</td>
<td>0150-2431</td>
</tr>
<tr>
<td>K15-Y/C-8</td>
<td>motor cable Y/C, 8 m</td>
<td>0150-2432</td>
</tr>
<tr>
<td>K15-Y/C-...</td>
<td>motor cable Y/C, custom length</td>
<td>0150-3506</td>
</tr>
<tr>
<td>KS05-Y/C-4</td>
<td>trailing chain cable Y/C, 4 m</td>
<td>0150-2436</td>
</tr>
<tr>
<td>KS05-Y/C-6</td>
<td>trailing chain cable Y/C, 6 m</td>
<td>0150-2437</td>
</tr>
<tr>
<td>KS05-Y/C-8</td>
<td>trailing chain cable Y/C, 8 m</td>
<td>0150-2438</td>
</tr>
<tr>
<td>KS05-Y/C-...</td>
<td>trailing chain cable Y/C, custom length</td>
<td>0150-3508</td>
</tr>
<tr>
<td>KS10-Y/C-4</td>
<td>trailing chain cable Y/C, 4 m</td>
<td>0150-2439</td>
</tr>
<tr>
<td>KS10-Y/C-6</td>
<td>trailing chain cable Y/C, 6 m</td>
<td>0150-2440</td>
</tr>
<tr>
<td>KS10-Y/C-8</td>
<td>trailing chain cable Y/C, 8 m</td>
<td>0150-2441</td>
</tr>
<tr>
<td>KS10-Y/C-...</td>
<td>trailing chain cable Y/C, custom length</td>
<td>0150-3511</td>
</tr>
<tr>
<td>KR05-Y/C-...</td>
<td>robotic cable Y/C, custom legth</td>
<td>0150-3513</td>
</tr>
<tr>
<td>KR10-Y/C-...</td>
<td>robotic cable Y/C, custom legth</td>
<td>0150-3515</td>
</tr>
<tr>
<td><strong>MOTOR CABLE FOR SHORT MOTOR P02-23Sx80F-HP-K</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KS03-Y-Fe/K-2</td>
<td>trailing chain cable Y-Fe/K, 2 m</td>
<td>0150-2446</td>
</tr>
<tr>
<td>KS03-Y-Fe/K-4</td>
<td>trailing chain cable Y-Fe/K, 4 m</td>
<td>0150-2447</td>
</tr>
<tr>
<td>KS03-Y-Fe/K-6</td>
<td>trailing chain cable Y-Fe/K, 6 m</td>
<td>0150-2448</td>
</tr>
<tr>
<td>KS03-Y-Fe/K-...</td>
<td>trailing chain cable Y-Fe/K, custom length</td>
<td>0150-3516</td>
</tr>
<tr>
<td><strong>MOTOR CABLE FOR SHORT MOTORS P01-37Sx...-HP-N</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KS05-Y/N-2</td>
<td>trailing chain cable Y/N, 2 m</td>
<td>0150-2442</td>
</tr>
<tr>
<td>KS05-Y/N-4</td>
<td>trailing chain cable Y/N, 4 m</td>
<td>0150-2443</td>
</tr>
<tr>
<td>KS05-Y/N-6</td>
<td>trailing chain cable Y/N, 6 m</td>
<td>0150-2444</td>
</tr>
<tr>
<td>KS05-Y/N-8</td>
<td>trailing chain cable Y/N, 8 m</td>
<td>0150-2445</td>
</tr>
<tr>
<td>KS05-Y/N-...</td>
<td>trailing chain cable Y/N, custom length</td>
<td>0150-3509</td>
</tr>
<tr>
<td>KR05-Y/N-...</td>
<td>robotic cable Y/C, custom legth</td>
<td>0150-3514</td>
</tr>
</tbody>
</table>
Servo Drive B1100

Series B1100-PP  288

Series B1100-VF  290

Series B1100-GP  292
Servo Drives B1100

Series B1100 Servo Drives are compact axis drives, with 32-bit position resolution and an integrated power element, for linear motors and rotary drives.

The drives are suitable for simplest and standard positioning tasks, across the entire force range of the LinMot product range.

<table>
<thead>
<tr>
<th>Connection to Machine Drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Series B1100 Servo Drives can be actuated by machine controls from any manufacturer or brand, via digital inputs and outputs; by RS232 or RS485 serial interface; or by CanBus CANopen and DeviceNet interfaces. For complex motion sequences that run in an overarching positioning drive, the motor can be controlled by means of analog speed or force targets. The position signal from the measurement system integrated in the linear motor can be accessed at the encoder output to control position.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Process and sensor interfaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast process interfaces for direct processing of sensor signals are available as freely programmable analog and digital inputs and fast trigger inputs. For high-accuracy applications, a freely configurable encoder interface is available. It analyzes the commutation signals from brushless, rotary servomotors as well.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Logic and power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Servo Drives have two separate power supplies for the logic and power elements. In an E-stop and safe stop of the drive, only the power element supply is cut off from the drive. The logic supply and the drive continue to run. This has the advantage that the drive and linear motor do not need to be reinitialized when the machine is restarted, since all process data, including the current position of the linear motor, are still up to date.</td>
</tr>
</tbody>
</table>
### System Integration
Flexible hardware enables control of any 1/2/3-phase motors. Thus, low-power rotary servomotors, such as brushless DC motors, can be integrated in the same controls concept.

Additionally, the drives can be equipped with optional peripherals, such as reference and end stop switches, high-precision external position sensors, or a mechanical holding brake.

Series B1100 Servo Drives have analog inputs and digital inputs and outputs, serial interfaces, and fieldbus connections. The user is therefore not dependent on the selection of the overarching drive.

With flexibility and a compact form factor, LinMot Series B1100 Servo Drives provide a complete solution for a flexible drive concept in single and multiple axis applications, with linear motors and other actuators.

### Position Streaming

With a cyclical target value, or "position streaming," the overarching NC or CNC drive communicates with the Servo Drive through CanOpen or DeviceNet.

The position and velocity calculated in the overarching drive is transmitted to the Servo Drive cyclically. The P, PV, or PVT mode is available for this transmission.

Using the cyclical target value, complex motions and interpolating multi-axis applications can be implemented.

### Motor Interfaces

The series B1100 Servo Drives allow control of 1, 2, or 3 phase linear motors and brushless rotary servomotors.

B1100 Servo Drives provide all necessary interfaces to operate linear or rotary motors with optional external peripherals, such as end position and reference switches, a mechanical brake, or a high-resolution external position sensor.

### Configuration

Parameterization and configuration of the Servo Drive is done via the RS232 interface on the front side, or CANBus for simultaneous configuration of several drives.

LinMot Talk user-friendly PC software is available for configuration. In addition to online documentation, LinMot Talk provides extensive debugging tools, such as an oscilloscope and an error inspector, for simple and rapid start-up of the axes.

Fieldbus and Ethernet drives can also be configured directly by the overarching drive.

---

### Fieldbusses and Interfaces to the Overlaid Control

<table>
<thead>
<tr>
<th>Digital I/O’s</th>
<th>RS232</th>
<th>CANopen</th>
<th>DeviceNet</th>
<th>±10V</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Logic Supply</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Motor Supply</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Trigger Inputs</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Capture</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Analog Inputs</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Config.</th>
</tr>
</thead>
</table>

- **LinMot Servo Drive Series B1100**
  - 32 Bit Position Value
  - Resolution 0.1µm

Run Modes:
- VA Interpolated Moves
- Analog Position
- Two Point Trigger Moves
- Streaming P, PV
- Step, Direction, Zero

- **Optional Limit and Home Switches**
- **Optional Brake**
- **Optional external Position Sensor**

- **LinMot Linear Motor or other 1/2/3 phase motor (Brushless DC, Voice Coil,...)**

- **External Position Sensor**

- **Config.**

- **RS232**
- **CAN**
Operating Modes

Position Indexing

In position indexing, the linear motor is controlled like a stepper motor, using Step/Dir/Zero, or A/B signals. The step distance is freely programmable from $1.5 \times 10^6 \mu m$ to 3.275mm/step. The input signal can be used directly as the target position, or it can be filtered by the VA interpolator.

Operating Modes: Step/Dir/Zero, A/B
Inputs: differential RS422 (X13/14)
Step distance: $1.5 \times 10^6 \mu m$....3.275mm, 32 Bit
Max Input Frequency: 2 MHz

+/− 10V Analog Force / Velocity Control

Series B1100 drives allow analog force (torque) or velocity targets to be set, via the +/− 10V interface, by an overlaid position drive. The current actual position is output via the encoder interface, as positioning feedback. In high-precision applications with high-resolution external position sensors, the sensor signals can be passed through in the drive.

Analog Input: -10...+10V, differential
Resolution: Max. 12 Bit
Scanning rate: Max. 10 kHz
Encoder Simulation: 1,2,5,10,20µm Resolution

Setpoint Streaming

Overlaid NC drives with CANopen or DeviceNet interfaces communicate with the Servo Drives via "Position Streaming". The position and velocity calculated in the overlaid control is transmitted to the Servo Drive cyclically. The P, PV, or PVT mode is available for this transmission.

Position Resolution: 32 Bit
Velocity Resolution: 32 Bit
Interpolator: 5 kHz
cycle times: 2-5ms

Analog Position

For an analog position target, the linear motor travels to a position proportional to the input voltage. The position is either scanned continuously, or only after a rising edge of the trigger signal. In order to prevent uncontrolled jumps in position, the motor travels to the positions with a programmable maximum acceleration and velocity (VA interpolator).

Inputs: Analog Inputs (X14.20, X14.8/X14.21)
Voltage range: 0 - 10VDC (X14.20)
-10 - +10VDC (X14.18/X14.21)
Resolution: 10 Bit
Scanning rate: 400µsec
Easy Steps

With the Easy Steps function, up to 6 positions or independent travel commands can be stored on the drive, and addressed via 6 serial interfaces, CANopen or DeviceNet.

<table>
<thead>
<tr>
<th>Input</th>
<th>Pos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input 1</td>
<td>Pos 125mm</td>
</tr>
<tr>
<td>Input 2</td>
<td>Pos 250mm</td>
</tr>
<tr>
<td>Input 3</td>
<td>Pos 50mm</td>
</tr>
<tr>
<td>Input 4</td>
<td>Pos -30mm</td>
</tr>
</tbody>
</table>

Digital inputs: max. 6
Interface: X14
Scanning rate: 400µsec

Interpolated Moves

For direct position targets, using absolute or relative positioning, the desired position is reached using an acceleration and velocity-limited motion profile (VA interpolator). Positioning commands can be invoked via the serial interfaces, CANopen, DeviceNet, or a trigger input.

- Stroke range: ±100mm
- Position Resolution: 0.1µm (32Bit)
- Velocity Resolution: 1.0µm/s (32Bit)
- Velocity Resolution: 10.0µm/s (32Bit)

```
2
Goto 100mm
vmax = 2.5 m/s
amax = 3.0 m/s^2
```

Easy Steps Parameter Scale

Easy Steps provide the ability to parameterize internal parameters using two analog inputs. If, for example, the maximum motor current is read at an analog input, then the maximum motor force can be provided as analog for freely programmable joining processes.

Inputs: Analog Inputs (X14.20, X14.8/X14.21)
Voltage range: 0 - 10VDC (X14.20)
Resolution: -10 - +10VDC (X14.18/X14.21)
Scanning rate: 10 Bit
Scan rate: 400µsec

```
0% 100%
ForceMax
Time[ms]
```

Series B1100

Inputs:
- Analog Inputs (X14.20, X14.8/X14.21)
- Voltage range: 0 - 10VDC (X14.20)
- Resolution: -10 - +10VDC (X14.18/X14.21)
- Scanning rate: 400µsec
Position Indexing
±10V Force or Velocity Control
Setpoint Streaming (CAN)
Analog Position Target
MPC Commands
Easy Step
Easy Steps Parameter Scale
Serial Interfaces RS232/RS485
CANopen
DeviceNet
Encoder Simulation

Replacing Pneumatics
Due to their simple controls via digital inputs and outputs, B1100-PP drive make excellent substitutes for pneumatic cylinders.
Using digital inputs, the linear motor can move to up to six freely programmable positions. As soon as the linear motor has reached the position, the corresponding In-Postion output is actuated.
The linear motor can thus be controlled like a pneumatic cylinder with end position switches.

Easy Steps positioning commands
Using the Easy Steps function, up to six absolute or relative move commands can be stored in the drive, and invoked via six digital inputs.
Easy Steps also provide the ability to parameterize internal parameters using two analog inputs. If, for example, the maximum motor current is read at an analog input, then the maximum motor force can be provided as analog for freely programmable joining processes.

Analog Position Target
Any position can be set, using an analog 0...10V signal.
During configuration, for each position value, one input signal of 0V and 10V is programmed. Any intermediate position can then be set via the analog input signal during operation.
The dynamics can be constrained by limits on speed and acceleration.
The B1100-VF servo amplifier allows LinMot linear motors to be integrated in systems an overlaid axis drive with analog velocity (RPM) or force target (torque).

In velocity mode, the analog input voltage is used as a velocity target for the connected linear motor. The velocity control loop is closed via a PI drive in the amplifier.

In force mode, the amplifier works like a torque amplifier for rotary motors. The analog control signal is converted to a current that the VF amplifier applies to the connected motor.

Motor force is proportional to the current motor current (see motor data sheets for force constant cf).

For step-direction targets, the target position is provided by the overlaid drive via STEP, DIRECTION, and ZERO signals.

The maximum motor current (force) can be limited via a digital input.

No additional external sensors are needed for position measurement. The current actual position of the linear motor is captured by the integrated position measurement, and is available to the overlaid position drive as an encoder signal.

The resolution of the differential A/B encoder signals (RS422) is adjustable in the following ranges:
1µm, 2µm, 5µm, 10µm, 20µm, 50µm

If an external position sensor is used, it can be read by the B1100 amplifier.
### Force Velocity Drive Specifications

- **Model:** B1100-PP
- **Supply:** 24-80V DC
- **Phase Current:** 8A/15A/25A
- **Supplies:**
  - 3x400VAC 230VAC
  - 8A/15A/25A Phase Current
- **Inputs/Outputs:**
  - PH1+, PH1-, PH2+, PH2-
  - SIN, COS, TEMP, +5V, GND
  - PH1+, PH1-, PH2+, PH2-
  - 5V, GND
- **Optional External Position Sensor:**
  - A+, SIN+
  - A-, SIN-
  - B+, COS+
  - B-, COS-
  - Z+, ZERO+
  - Z-, ZERO-
  - U+, V+, W+
  - U-, V-, W-
  - ENC Alarm +5VDC, GND
- **Interface Configuration:**
  - RS232, CAN, RS485
  - Interface Configuration CAN

### Part Numbers

- **B1100-VF:** Force Velocity Drive (72V/4A)
  - Part Number: 0150-1685
- **B1100-VF-HC:** Force Velocity Drive (72V/15A)
  - Part Number: 0150-1686
- **B1100-VF-XC:** Force Velocity Drive (72V/25A)
  - Part Number: 0150-1739

---

*Edition 16* subject to change
The LinMot B1100-GP series Servo Drives support the LinRS serial communications protocol. LinRS is a proprietary protocol for actuating LinMot Servo Drives via the RS 232, RS 422, and RS 485 interfaces.

If the drive is actuated by the overarching drive via the serial interface, then this is configured from the PC via CanBus. The USBSAN converter (item no. 0150-3134), supported by LinMot Talk, is used for this.

Adjustable baud rates: 9.6 - 115.2kBaud

The LinMot B1100-GP drives support the CiA DS301 communications protocol.

The following resources are available:
- 3 T_PDO, 3 R_PDO, 1 T_SDO, 1 R_SDO

The following protocols are supported by the CO drives:
- NMT Error Control (Nodeguarding Protocol or HeartBeat Protocol)
- PDO (Transmission type 254 and 1)
- SDO Upload and Download
- NMT (Start, Stop, Enter PreOp, Reset Node, Reset Communication) Boot-Up Message

With the DeviceNet protocol, even complicated motion sequences can be realized with the highest possible flexibility.

The drive can be actuated and monitored via the DeviceNet connection.

B1100-GP are UCMM Group 3-capable slaves, and support polled I/O runtime data transfer.
**Item**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1100-GP</td>
<td>Point to Point Drive (72V/8A)</td>
<td>0150-1737</td>
</tr>
<tr>
<td>B1100-GP-HC</td>
<td>Point to Point Drive (72V/15A)</td>
<td>0150-1738</td>
</tr>
<tr>
<td>B1100-GP-XC</td>
<td>Point to Point Drive (72V/25A)</td>
<td>0150-1741</td>
</tr>
</tbody>
</table>

**General Purpose**

**SUPPLY**
- 3x400VAC
- 230VAC

**MOTOR SUPPLY**

**LINEAR MOTOR**

**BRUSHLESS DC MOTOR**

**SUPPLY**
- 24...80V DC
- 8A/15A/25A PHASECURRENT

**PHASE CURRENT**
- X1, X2 (HC)
- X3

**MACHINE CONTROLLER PLC, IPC**
- SUPPLY 3x400VAC

**LOGIC SUPPLY**

**INTERFACE CONFIGURATION RS232/RS485 CAN**

**INTERFACE**
- RS232/RS485

**COMMUNICATION INTERFACE RS485 CANOPEN DEVICENET**

**COMMUNICATION INTERFACE**
- RS485
- CANOPEN DEVICENET

**RS485**
- CAN

**RS485**
- CAN

**X7**
- RS485

**X8**
- CAN

**X14**
- STEP/DIR/ZERO 0...10V
- INPUTS 1-6
- 10V
- OUTPUTS 1-6
- +24VDC
- GND

**X5**
- RS232/RS485

**X13**
- A+ SIN+
- A- SIN-
- B+ COS+
- B- COS-
- Z+ ZERO+
- Z- ZERO-
- U+
- U-
- V+
- V-
- W+
- W-
- ENC ALARM
- +5VDC
- GND

**X1**
- X1

**X2 (HC)**
- X2

**X3**
- PH1+
- PH1-
- PH2+
- PH2-
- SIN
- COS
- TEMP
- +5V
- GND

**X10**
- +5VDC
- GND

**B1100-GP**
- Point to Point Drive (72V/8A)
- Part Number: 0150-1737

**B1100-GP-HC**
- Point to Point Drive (72V/15A)
- Part Number: 0150-1738

**B1100-GP-XC**
- Point to Point Drive (72V/25A)
- Part Number: 0150-1741
Interfaces

**X1  Motor Supply**

- **Motor Supply:**
  - Motor Supply Voltage 24...85VDC.
  - Absolute max. Rating 72VDC + 20%

  External fusing: 10AT for LC (8A peak Servos), 16AT for HC and XC (15/25A peak) Servos

  If motor supply voltage is exceeding 90VDC, the drive will go into error state

**X2  Motor Phases**

The motor phases on X2 and X3 are internally connected.
If the RMS current is higher than 5A RMS, the phases must be connected to X2 and not to X3.

- **Motor Supply Voltage** 24...85VDC.
- **Absolute max. Rating** 72VDC + 20%
- **External fusing:** 10AT for LC (8A peak Servos), 16AT for HC and XC (15/25A peak) Servos
- **If motor supply voltage exceeds 90VDC, the drive will go into error state**

**X3  Motor**

- **Use X3 for motor phase wiring if phase current does not exceed 2Arms or 4A peak.**
- **X3.3 (+5VDC)** may be used only to supply motor hall-effect sensors (max. 100mA).
- **X3.8 (AGND)** may be used only to supply motor hall-effect sensors, and must not be connected to GND externally.
Motor | Motor wiring
---|---
| |
1+ u | 1 |
1- v | 2 |
2+ w | 3 |
2- x | 4 |
SCRN | 5 |

For LinMot Linear Motors only use original LinMot double shielded motor cable K, KS, or KR

Motor wiring for phase current below 2Arms and below 4Apeak

<table>
<thead>
<tr>
<th>X3: DSUB-9 (f)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>9</td>
</tr>
</tbody>
</table>

For LinMot Linear Motors only use original LinMot double shielded motor cable K, KS, or KR

S4 | Bus Termination
---|---
| Switch | |
| Switch 1: RS232 (switch “off” / RS485 “on”) | Select serial RS23 or RS485 |
| Switch 2: Termination RS485 on/off | |
| Switch 3: Termination CAN on/off | |
| Switch 4: Bootstrap | Factory settings: all switches “off” |
Interfaces

**X5 COM**

<table>
<thead>
<tr>
<th>NR</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RS485_TX+</td>
</tr>
<tr>
<td>2</td>
<td>RS485_RX-</td>
</tr>
<tr>
<td>3</td>
<td>RS485_TX-</td>
</tr>
<tr>
<td>4</td>
<td>RS485_RX+</td>
</tr>
<tr>
<td>5</td>
<td>CAN_L</td>
</tr>
<tr>
<td>6</td>
<td>CAN_H</td>
</tr>
<tr>
<td>7</td>
<td>GND</td>
</tr>
<tr>
<td>8</td>
<td>RS485_TX-</td>
</tr>
</tbody>
</table>

**X7-X8 RS485/CAN**

- X7 internally connected to X8 (1:1 connection)
- Use twisted pair (1-2, 3-6, 4-5, 7-8) cable for wiring.
- The built in CAN and RS485 terminations can be activated by S3.2 and S3.3.

**LED State Display**

- **Green:**
  - 24VDC Logic Supply OK
- **Red:**
  - State: Error
  - Blinking: Fatal Error
Max. Input Frequency: 2MHz (incremental RS422), 240ns edge separation

Sensor Supply Current: max. 100mA

Position Encoder Inputs: RS422, Max Input Frequency: 2MHz, 4 M counts/s with quadrature decoding, 240ns edge separation

Encoder Simulated Outputs: RS422, Max Output Frequency: 2.5MHz, 5 M counts/s with quadrature decoding, 200ns edge separation

Differential Hall Switch Inputs: RS422, Max Input Frequency: <1kHz

Enc. Alarm In: 5V / 1mA

Sensor Supply: 5VDC, max 100mA
Interfaces

X14  Digital I/O

Logic Supply: Switch Mode Power Supply: 24VDC (22...26VDC)
External Fuse: 2AT

All Digital Inputs: Direct interfacing to digital 24VDC PLC outputs.
Input Current: 1mA
Logic Levels: Low Level: guaranteed: -5 to 5VDC, typically < 8VDC
High Level: guaranteed: 20...30VDC, typically > 16VDC
Sample Rate: 400us

All Digital Outputs: Short circuit and overload protected high side switches
Voltage: 24VDC
Sample Rate: 400us
Max. Current: 100mA / 500mA (X14.17)
Peak Current: 370mA / 1100mA (X14.17)
Outputs may directly drive inductive loads.

Analog Input on X14.20:
Range: 0V...+10V 10Bit ADC
Sample Rate: 400us

Differential Analog Input
Range: -10V...+10V 10Bit ADC
Sample Rate: 400us
on X14.8 X14.21 X14.9

Shield:
Differential Step Dir Zero: Indexer Inputs: RS422
Max. Input Frequency: 2MHz
4 M counts/s with quadrature decoding, 240ns edge separation
Cable length: <30m
## Servo Drive Series B1100

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1100-PP</td>
<td>Point to Point Drive (72V/8A)</td>
<td>0150-1735</td>
</tr>
<tr>
<td>B1100-PP-HC</td>
<td>Point to Point Drive (72V/15A)</td>
<td>0150-1736</td>
</tr>
<tr>
<td>B1100-PP-XC</td>
<td>Point to Point Drive (72V/25A)</td>
<td>0150-1740</td>
</tr>
<tr>
<td>B1100-VF</td>
<td>Force Velocity Drive (72V/8A)</td>
<td>0150-1685</td>
</tr>
<tr>
<td>B1100-VF-HC</td>
<td>Force Velocity Drive (72V/15A)</td>
<td>0150-1686</td>
</tr>
<tr>
<td>B1100-VF-XC</td>
<td>Force Velocity Drive (72V/25A)</td>
<td>0150-1739</td>
</tr>
<tr>
<td>B1100-GP</td>
<td>Point to Point Drive (72V/8A)</td>
<td>0150-1737</td>
</tr>
<tr>
<td>B1100-GP-HC</td>
<td>Point to Point Drive (72V/15A)</td>
<td>0150-1738</td>
</tr>
<tr>
<td>B1100-GP-XC</td>
<td>Point to Point Drive (72V/25A)</td>
<td>0150-1741</td>
</tr>
</tbody>
</table>

### Dimensions

**Width** mm (in) 31 (1.3)

**Height** mm (in) 166 (6.6)

**Height without fixings** mm (in) 206 (8.1)

**Depth** mm (in) 106 (4.2)

**Weight** g (lb) 700 (1.6)

**IP Protection class** IP 20

**Storage temperature** °C -25...40

**Transport temperature** °C -25...70

**Operating temperature** °C 0...40 at rated date

**Max. case temperature** °C 70

**Max. power dissipation** W 30

**Min. distance between drives** mm (in) 20 (0.8) left/right

**Min. distance between drives** mm (in) 50 (2) top/bottom

Dimensions in mm
### Switched-Mode Power Supplies

115VAC / 230VAC

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>S01-72/500</td>
<td>Switched-Mode Power Supply 72V/500W</td>
<td>0150-1874</td>
</tr>
<tr>
<td>S01-72/1000</td>
<td>Switched-Mode Power Supply 72V/1000W</td>
<td>0150-1872</td>
</tr>
</tbody>
</table>

### Transformer Supply T01

3x230/280/400/480VAC

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>T01-72/420...1500-Multi</td>
<td>Transformer Supply 3x230/280/400/480VAC, 50/60Hz, 420...1500W</td>
<td>see page 534</td>
</tr>
</tbody>
</table>

### Control Box B01-E1100

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>B01-E1100</td>
<td>Control Box for E1100 (incl. cable and connectors)</td>
<td>0150-1970</td>
</tr>
<tr>
<td>B01-B1100</td>
<td>Control Box for B1100 (incl. cable and connectors)</td>
<td>0150-2110</td>
</tr>
</tbody>
</table>
## Accessory B1100

### Connector Cable and USB-Converter

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS232 PC config. cable 2m</td>
<td>for E100/E1001/E1100/B1100</td>
<td>0150-3307</td>
</tr>
<tr>
<td>USB-Serial Converter</td>
<td>USB to 9-pin Serial Converter</td>
<td>0150-3110</td>
</tr>
<tr>
<td>USB-CAN Converter</td>
<td>USB to CAN Converter for E1100/B1100</td>
<td>0150-3134</td>
</tr>
<tr>
<td>RJ45-08/0.3</td>
<td>RJ45 patch cable 0.3m for E1100/B1100</td>
<td>0150-1852</td>
</tr>
<tr>
<td>RJ45-08/0.6</td>
<td>RJ45 crossover patch cable 0.6m</td>
<td>0150-1853</td>
</tr>
</tbody>
</table>

### Option: External High Resolution Encoder

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS01-1/D</td>
<td>Linear Encoder 1um, A/B (for 1mm magnetic band)</td>
<td>0150-1840</td>
</tr>
<tr>
<td>MB01-1000</td>
<td>Magnetic Band 1mm pitch, per cm</td>
<td>0150-1963</td>
</tr>
</tbody>
</table>
# Servo Drive E1100

<table>
<thead>
<tr>
<th>Series</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1100-RS/-DN/-CO</td>
<td>356</td>
</tr>
<tr>
<td>E1130-DP</td>
<td>358</td>
</tr>
<tr>
<td>E1100-GP</td>
<td>360</td>
</tr>
</tbody>
</table>
Servo Drive E1100

Series E1100 Servo Drives are modular axis drives, with 32-bit position resolution and an integrated power element, for linear motors and rotary drives.

The drives are suitable for simplest, standard, and high-end positioning tasks, across the entire force range of the LinMot product range.

Connection to Machine Drive

The Series E1100 Servo Drives can be actuated by machine controls from any manufacturer or brand, via digital inputs and outputs, RS232 or RS485 serial interface, CanBus CANopen and DeviceNet interfaces, Profibus DP.

For complex motion sequences that are run in an overlaid position drive, B1100 small servo amplifiers are available, with analog velocity or force control and encoder simulation.

Process and Safety Interfaces

Fast process interfaces for direct processing of sensor signals are available as freely programmable analog and digital inputs, a fast trigger input, and a capture input.

The safe pulse inhibitor on Servo Drive with fieldbus interfaces allows safe stoppage of the drives via control signals, per EN 954-1, without interrupting the power supply.

Logic and Power Supply

The Servo Drives have two separate power supplies for the logic and power elements.

In an E-stop and safe stop of the drive, only the power element supply is cut off from the drive. The logic supply and the drive continue to run.

This has the advantage that the drive and linear motor do not need to be reinitialized when the machine is restarted, since all process data, including the current position of the linear motor, are still up to date.
Series E1100 Servo Drives provide all necessary interfaces to operate linear or rotary motors with optional external peripherals, such as end position and reference switches, a mechanical brake, or a high-resolution external position sensor.

In special applications, two drives can be synchronized with each other using the synchronization interface in master booster or master gantry mode.

Fieldbusses and interfaces to the overlaid control

System Integration
Flexible hardware enables control of any 1/2/3-phase motors. Thus, low-power rotary servomotors, such as brushless DC motors, can be integrated in the same controls concept.

Additionally, the drives can be equipped with optional peripherals, such as reference and end stop switches, high-precision external position sensors, or a mechanical holding brake.

Series E1100 Servo Drives have analog and digital inputs and outputs, serial interfaces, fieldbusses. The user is, therefore, not dependent on the selection of the overlaid drive. An appropriate interface is available, with associated protocols, for any PLC or IPC solution.

With flexibility and a compact form factor, LinMot Series E1100 Servo Drives provide a complete solution for a flexible drive concept in single and multiple axis applications, with linear motors and other actuators.

Technology Functions
Technology functions are functional blocks that provide a complete solution for standard applications and frequently encountered, customer-specific problems. Technology functions can, for example, handle the complete sequence for winding textile yarns or glass fiber cables, or high-precision joining processes with force control can be implemented directly in the drive.

Option: Master Encoder Module
For synchronization to a mechanical master shaft, or a rotating main drive, the Axis (linear motors and rotary motors) can be coupled to an electronic main shaft via the Master Encoder Interface.

The encoder signal from the main shaft can be passed through by the Master Encoder Interface, so that any number of linear motors can be synchronized to the main shaft.

Motor Interfaces
E1100 Servo Drives provide all necessary interfaces to operate linear or rotary motors with optional external peripherals, such as end position and reference switches, a mechanical brake, or a high-resolution external position sensor.

In special applications, two drives can be synchronized with each other using the synchronization interface in master booster or master gantry mode.

Configuration
Parameterization and configuration of the Servo Drive is done via the RS232 interface on the front side, or CANBus for simultaneous configuration of several drives.

LinMot Talk user-friendly PC software is available for configuration. In addition to online documentation, LinMot Talk provides extensive debugging tools, such as an oscilloscope and an error inspector, for simple and rapid start-up of the Axis.

Fieldbus drives can also be configured directly by the overlaid control.
### Interpolated Moves

For direct position targets, using absolute or relative positioning, the desired position is reached using acceleration and velocity-limited motion profiles or jerk optimized Bestehorn profiles. Positioning commands can be invoked via the serial interfaces, CANopen, DeviceNet, Profibus or a trigger input.

- Stroke range: ±100m
- Position Resolution: 0.1µm (32Bit)
- Velocity Resolution: 1.0µm/s (32Bit)
- Velocity Resolution: 10.0µm/s² (32Bit)

### Time Curves

Up to 99 different time curves can be stored Series E1100 drives, with up to 16,000 individual waypoints. The motor can thus travel along time curves of any complexity, such as those generated by CAD programs and stored in the drive (Excel CSV format). The time curves can be invoked via the serial interface, fieldbusses, ETHERNET, or the trigger input.

- Stroke range: ±100m
- Position Resolution: 0.1µm (32Bit)
- Motion profiles: Max. 99 Time Curves
- Curve points: Max. 16'000 points

### Profiled Moves

For travel to an absolute position, or shifting by a relative position, any desired motion rules can be stored besides the VA interpolator. They are stored in the drive as motion profiles (Excel CSV format). The positions can be approached, for example, with a sinusoidal motion to optimize power loss, or special reverse optimized motion profiles.

- Stroke range: ±100m
- Position Resolution: 0.1µm (32Bit)
- Motion profiles: Max. 99 Bewegungsprofile
- Curve points: Max. 16'000 Punkte

### Setpoint Streaming

Overlaid NC drives with fieldbus interfaces communicate with the Servo Drives via "Position Streaming". The position and velocity calculated in the overlaid control is transmitted to the Servo Drive cyclically. The P, PV, or PVT mode is available for this transmission.

- Position Resolution: 32 Bit
- Velocity Resolution: 32 Bit
- Interpolator: 3 kHz
- cycle times: 2-5ms
**Series E1100**

### Easy Steps

With the Easy Steps function, up to 8 positions or independent travel commands can be stored on the drive, and addressed via 8 digital inputs or fieldbus interfaces/ETHERNET.

<table>
<thead>
<tr>
<th>Input 1</th>
<th>Pos 125mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input 2</td>
<td>Pos 250mm</td>
</tr>
<tr>
<td>Input 3</td>
<td>Curve 1</td>
</tr>
<tr>
<td>Input 4</td>
<td>Pos -30mm</td>
</tr>
<tr>
<td>Input 5</td>
<td>Pos +12.5mm</td>
</tr>
<tr>
<td>Input 6</td>
<td>Curve 2</td>
</tr>
<tr>
<td>Input 7</td>
<td>Pos 2mm</td>
</tr>
<tr>
<td>Input 8</td>
<td>Pos -12.5mm</td>
</tr>
</tbody>
</table>

- **Digital inputs:** max. 8
- **Interface:** X4
- **Resolution:** 10 Bit
- **Scanning rate:** 330µsec

### Command Table

Entire motion sequences with up to 256 individual motion commands can be stored in the Command Table. This is primarily advantageous if complete motion sequences need to be executed very quickly, without dead time from the overlaid drive. In the Command Table, the programmer has access to all motion commands, internal parameters, and digital inputs and outputs.

- **Commands:** max. 256
- **Cycle time:** 330µsec

### Master Encoder Synchronization (MT)

For synchronization to an external main or master shaft, the linear motor travels along the motion profiles stored in the drive, at the machine speed (machine angle 0...360°). Using this function, mechanical cam discs can be replaced with highly dynamic linear motors. The motion profiles can be freely defined, and the correct motion profile can be invoked during product changeover with no changeover time.

- **Motion profiles:** Max. 99 curve profiles
- **Curve points:** Max. 16'000 points
- **Encoder Counter:** 32 Bit
- **Encoder Input:** A/B/Z (RS422)
- **Max. counting frequency:** Max. 4.5 MHz

### Belt Synchronization

Synchronization to a belt speed can be done using the Master Encoder Interface or Step/Direction/Zero interface. Applications such as the "flying saw", synchronous loading or unloading, synchronous filling or labeling of bottles or containers on a conveyor belt, and many other applications can be implemented in this way.

- **Encoder Counter:** 32 Bit
- **Encoder Input:** A/B/Z (RS422), max. 5 MHz
- **Max. counting frequency:** Max. 4.5 MHz
### Operating Modes

#### Position Indexing

In position indexing, the linear motor is controlled like a stepper motor, using Step/Dir/Zero, or A/B/Z signals. The step distance is freely programmable from 1.5x10^-6 µm to 3.275 mm/step. The input signal can be used directly as the target position, or it can be filtered by the VA interpolator.

- **Operating Modes**: Step/Dir/Zero, A/B/Z
- **Inputs**: differential RS422 (X10)
- **Step distance**: 1.5x10^-6 µm to 3.275 mm, 32 Bit
- **Max. counting frequency**: 4.5 MHz

#### Master-Booster Synchronisation

Using master-slave synchronization, two linear motors can be synchronized via a serial communications connection between two drives, so that the overlaid drive can control them as a single axis.

Master Booster Synchronization

Master booster synchronization is used to double the force when two motors are mechanically rigidly connected to each other.

#### Master-Gantry Synchronisation

Using master-slave synchronization, two linear motors can be synchronized via a serial communications connection between two drives, so that the overlaid drive can control them as a single axis.

Master Gantry Synchronisation

Master gantry synchronization is used for portal designs with two parallel Axis at different locations.

#### Analog Position

For an analog position target, the linear motor travels to a position proportional to the input voltage. The position is either scanned continuously, or only after a rising edge of the trigger signal. In order to prevent uncontrolled jumps in position, the motor travels to the positions with a programmable maximum acceleration and velocity (VA interpolator).

- **Inputs**: Analog Input (X4.4)
- **Voltage range**: 0-10VDC
- **Resolution**: 10 Bit
- **Scanning rate**: 330 µsec
Easy Steps Parameter Scale

Easy Steps provide the ability to parameterize internal parameters using two analog inputs. If, for example, the maximum motor current is read at an analog input, then the maximum motor force can be provided as analog for freely programmable joining processes.

Inputs: 2 x Analog (X4.4, X4.7)
Voltage range: 0-10VDC
Resolution: 10 Bit
Resolution: 330µsec

Winding Application

For winding textile yarns, glass fiber optics, or wires, a complete functional block is available that controls the entire sequence of a complete winding process.

Closed Loop Force Control

Using the Force Control technology function, precise joining processes can be implemented reliably and reproducibly with high-precision force control. For force control, the current motor force is measured with a load cell and controlled in the drive. Joining process or quality checks with high requirements for applied force can be implemented.

Analog Input: 0-10V
Resolution: 10 Bit
Min. Force Resolution: 0.1N
LinMot Talk

LinMot Talk configuration software is a Windows-based interface that supports the user during start-up and configuration of the LinMot Servo Drives. The software has a powerful, modular, graphical interface that covers all the tasks surrounding the LinMot Servo Drive. Great emphasis was placed on a high level of user-friendliness during development.

In addition to start-up, LinMot Talk can also be used for training purposes and for actuation via serial interfaces, fieldbusses, or industrial ETHERNET. Using the integrated Control Panel, the user has direct access to control and status words, as well as all commands that are invoked for operation by the overlay control. The user learns the meaning of the control and status words easily, and can get to know the individual commands in the Motion Command Interface.

Start-up and Analysis Tools
Using the LinMot Talk PC interface, LinMot Servo Drives are configured. Additionally, the drives can be monitored during operation with the machine running, and the current motion sequences, as well as earlier warnings and error messages, can be analyzed in detail (monitoring).

Single or Multiple Axis Configuration
For start-up and monitoring, the Servo Drive is connected to a PC via the RS232 interface on the front or via CAN Bus. If the connection to the PC is made via USBS2CAN converter (see accessories,) then up to 16 Axis can be configured and monitored simultaneously.

Parameterization
Using the “Parameter Inspector,” the drives are parameterized in a simple manner. The user has a wide range of adjustments available for operating modes, error management, warning messages, and regulating parameters. Entire parameter sets can be stored, loaded, and printed out.

The “Curve Inspector” allows creation of motion profiles. In addition, existing curves can be loaded, stored, edited, combined, and printed out. Further, complex motion sequences can be generated as desired in MS Excel, and loaded into the drive.

Optimization
The integrated 8-channel oscilloscope helps the user during start-up and optimization of the drive system. Internal variables, such as the target and actual position, can be shown in real time on the screen, and then printed out. The displayed data can be stored in CSV format for further processing in MS Excel, or stored for documentation purposes.

Monitoring
The user has many tools available for monitoring and analysis of the drive. Both current warnings and fault messages, and older fault messages stored in non-volatile memory, state changes, and many other pieces of information can be obtained.

Internal variables, drive parameters, inputs, and outputs can be combined as desired and displayed cyclically.

Using the oscilloscope, internal parameters can be charted when warning and fault messages occur.

Online Help & Documentation
Using the multilingual Online Help, the user can find useful information about the individual parameters and their functionality. All manuals and installation instructions can then be called up on the PC, after LinMot Talk is installed, via the Windows Start Menu, or they can be directly generated in HTML format.
### Interfaces

<table>
<thead>
<tr>
<th></th>
<th>E1100-RS</th>
<th>E1100-CO</th>
<th>E1100-DN</th>
<th>E1100-CP</th>
<th>E1100-GP</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1</td>
<td>Motor Supply</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Regenerator Resistor</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>X2</td>
<td>Motor Phases</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>X3</td>
<td>Motor Connector</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>X4</td>
<td>Control / Logic Supply</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>X5</td>
<td>COM Interface</td>
<td>RS232</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>RS485 / CAN</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>X6</td>
<td>Digital I/O</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>X7</td>
<td>RS485 / CAN In</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>X8</td>
<td>RS485 / CAN Out</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>X9</td>
<td>Profibus Interface</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>X10</td>
<td>Master Encoder In</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>X11</td>
<td>Master Encoder Out</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>X12</td>
<td>External Encoder (D-Sub 9)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>X13</td>
<td>External Encoder (D-Sub 15)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>LED</td>
<td>State Display</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>S1</td>
<td>Bus Address RS/CAN/ETH High</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>S2</td>
<td>Bus Address RS/CAN/ETH Low</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>S3</td>
<td>Bus Termination</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>
The LinMot Series E1100-RS Servo Drives support the LinRS serial communication protocol. LinRS is a proprietary protocol for actuating LinMot Servo Drives via the RS 232, RS 422, and RS 485 interfaces.

If the drive is actuated by the overlaid control via the serial interface, then this is configured from the PC via CANBus. The USBSCAN converter (item no. 0150-3134), supported by LinMot Talk, is used for this.

Adjustable Baud rates: 9.6-115.2kBaud

LinRS Serial Interface

LinMot CO drives, with integrated CANopen interface, support the CiA DS301 communication profile.

The following resources are available: 3 T_PDO, 3 R_PDO, 1 T_SDO, 1 R_SDO

The following protocols are supported by the CO drives:
- NMT Error Control (Nodeguarding Protocol or HeartBeat Protocol)
- PDO (Transmission type 254 and 1)
- SDO Upload and Download - NMT (Start, Stop, Enter PreOp, Reset Node, Reset Communication)
- Boot-Up Message

CANopen

Series E1100-DN drives feature an integrated DeviceNet interface. With the DeviceNet interface, even complicated motion sequences can be realized with the highest possible flexibility.

The drive can be actuated and monitored via the DeviceNet connection.

E1100-DN are UCMM Group 3-capable slaves, and support polled IO runtime data transfer

DeviceNet
### RS/DeviceNet/CANopen

#### E1100-RS
- E1100-RS
- E1100-RS-HC
- E1100-RS-XC
- E1100-CO
- E1100-CO-HC
- E1100-CO-XC
- E1100-DN
- E1100-DN-HC
- E1100-DN-XC

#### Item Description Part Number
- E1100-RS RS232/485 Drive (72V/8A) 0150-1677
- E1100-RS-HC RS232/485 Drive (72V/15A) 0150-1678
- E1100-RS-XC RS232/485 Drive (72V/25A) 0150-1680
- E1100-CO CANopen Drive (72V/8A) 0150-1681
- E1100-CO-HC CANopen Drive (72V/15A) 0150-1682
- E1100-CO-XC CANopen Drive (72V/25A) 0150-1683
- E1100-DN DeviceNet Drive (72V/8A) 0150-1679
- E1100-DN-HC DeviceNet Drive (72V/15A) 0150-1680
- E1100-DN-XC DeviceNet Drive (72V/25A) 0150-1683
Absolute & Relative Positioning
Travel Along Time Curves
Positioning using Motion Profiles
Internally stored Motion Commands
Internally stored Motion Sequences
Master Encoder Synchronization
Synchronization to Belt Speed
Step and Direction Interface
Position Streaming
Master-Slave Synchronization
Analog Position Target
Analog Parameter Scaling
Winding Function Block
Force Control Technology Function
Customer-Specific Functions

Profibus DP

DP Servo Drives feature an integrated PROFIBUS-DP interface. PROFIBUS-DP provides the user with a standardized fieldbus interface for rapid data interchange between the Servo Drive and the overlaid control.

With fast data transfer and command initiation, as well as simple system integration, the Profibus drives are the ideal solution for applications with motions and sequences that change frequently, such as required, for example, in flexible machines and systems with automatic format changes.

The PROFIBUS-DP interface supports all baud rates from 9.6 Kbit/s to 12 Mbit/s. The maximum net data quantity exchanged in cyclical data traffic is 64 bytes per cycle. The smallest achievable bus cycle time is 100 µs.

The structure and scope of cyclical data can be collected from any individual data modules into an overall data quantity when planning the system.

A GSD device master file is provided for open planning in conformance with the PROFIBUS-DP standard.

The 9-pole Profibus connector on the front side provides power for an external bus termination. A positive directional control signal is provided to control repeaters or optical fibers.

All signals on the PROFIBUS connector are galvanically separated.

The PROFIBUS-DP address is set by two hex code switches (ID1 and ID2).

All addresses permitted by the standard are supported (0..125).
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1130-DP</td>
<td>Profibus DP Drive, (72V/8A)</td>
<td>0150-1667</td>
</tr>
<tr>
<td>E1130-DP-HC</td>
<td>Profibus DP Drive, (72V/15A)</td>
<td>0150-1668</td>
</tr>
<tr>
<td>E1130-DP-XC</td>
<td>Profibus DP Drive, (72V/25A)</td>
<td>0150-1861</td>
</tr>
</tbody>
</table>
In addition to actuation via serial interfaces and fieldbusses, Series E1100-GP drives can use direct addressing of up to 256 commands in the Command Table, via 8 digital inputs (X6).

Even complex drive tasks and complete, automated sequences can be controlled using simple digital signals.
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1100-GP</td>
<td>General Purpose (72V/8A)</td>
<td>0150-1665</td>
</tr>
<tr>
<td>E1100-GP-HC</td>
<td>General Purpose (72V/15A)</td>
<td>0150-1666</td>
</tr>
<tr>
<td>E1100-GP-XC</td>
<td>General Purpose (72V/25A)</td>
<td>0150-1864</td>
</tr>
</tbody>
</table>

General Purpose

- **E1100-GP**
  - **Description**: General Purpose (72V/8A)
  - **Part Number**: 0150-1665

- **E1100-GP-HC**
  - **Description**: General Purpose (72V/15A)
  - **Part Number**: 0150-1666

- **E1100-GP-XC**
  - **Description**: General Purpose (72V/25A)
  - **Part Number**: 0150-1864
**Interfaces**

**X1  Motor Supply / Regeneration Resistor**

Screw Terminals 2.5 mm² (AWG14)

**Motor Supply:**

Motor Supply Voltage 24...80VDC. Absolute max. Rating 72VDC + 20%

If motor supply voltage is exceeding 90VDC, the drive will go into error state

**X2  Motor Phases**

Screw Terminals 1.5-2.5mm² (AWG16-14)

- If the RMS current is not higher than 5Arms, respectively 7.5 Apeak, the phases can be connected to X3.
- Do NOT connect X2 and X3.

**X3  Motor**

- Use X2 for motor phase wiring if phase current exceeds 5Arms or 7.5 Apeak
- Use +5V (X3.3) and AGND (X3.8) only for motor internal Hall Sensor supply (max. 100mA)
- Do NOT connect AGND (X3.8) to ground or earth!
Motor | Motor wiring
---|---
1+ u | PHASE 1+
1- v | PHASE 1-
2+ w | PHASE 2+
2- x | PHASE 2-
SCRN | \( +5V \text{DC} \)

For LinMot Linear Motors only use original LinMot double shielded motor cable K, KS, or KR.

Motor wiring for phase current below 5Arms and below 7.5Apeak

For LinMot Linear Motors only use original LinMot double shielded motor cable K, KS, or KR.

S1-3 | Address Selectors / Bus Termination
---|---
Switch | \( \text{S1-Bus ID High (0…F)} \) \( \text{S2-Bus ID Low(0…F)} \) \( \text{E1100} \)
Switch 1: | RS232 “off” / RS485 “on” Select serial RS23 or RS485
Switch 2: | RS485 Terminatio on/off
Switch 3: | CAN Termination on/off
Switch 4: | Bus Interface on/off

Factory settings: all switches “off”
Interfaces

X4: 12pin  Control / Supply E1130-DP, E1100-CO, E1100-DN, E1100-RS

Inputs
- 24V / 1mA

Outputs
- 24V / max. 100mA

Brake Output (X4.3) 24V / max. 1.0A

Sample Rate
- Inputs/Outputs 1ms, Trigger Input 0.315msec

Supply
- 24VDC / typ. 400mA / max. 2.1A (if all outputs “on” with max. load.)

Wiring
- 0.25-1.5mm² (AWG24-16)

X4: 11pin  Control / Supply E1100-GP

Inputs
- 24V / 1mA

Outputs
- 24V / max. 100mA

Brake Output (X4.3) 24V / max. 1.0A

Sample Rate
- Inputs/Outputs 1ms, Trigger Input 0.315msec

Supply
- 24VDC / typ. 400mA / max. 2.1A (if all outputs “on” with max. load.)

Wiring
- 0.25-1.5mm² (AWG24-16)
All Inputs: Direct interfacing to digital 24VDC PLC outputs.
  Input current: 1mA
  low level: -0.5…5VDC
  high level: 15…30VDC
  Sample rate: 625µs

All Outputs: Short circuit and overload protected high side switches
  Voltage: 24VDC
  Max. current: 100mA
  High Level: 15…30VDC
  Update rate: 625µs

Outputs may directly drive inductive loads
**Interfaces**

**X5 COM**

<table>
<thead>
<tr>
<th>COM Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS485_TX+</td>
</tr>
<tr>
<td>RS485_RX-</td>
</tr>
<tr>
<td>RS232_TX</td>
</tr>
<tr>
<td>RS485_TX-</td>
</tr>
<tr>
<td>RS232_RX</td>
</tr>
<tr>
<td>CAN_L</td>
</tr>
<tr>
<td>RS485_RX+</td>
</tr>
<tr>
<td>CAN_H</td>
</tr>
<tr>
<td>GND</td>
</tr>
</tbody>
</table>

**LED State Display**

**Green:**

- 24VDC Logic Supply OK

**Stat A Yellow:**

- Motor Enabled

**Stat B Yellow:**

- Warning

**Red:**

- Error

**X7-X8 RS485/CAN**

<table>
<thead>
<tr>
<th>Nr</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<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></td>
<td>Case</td>
<td>Shield</td>
</tr>
</tbody>
</table>

- X7 internally connected to X8 (1:1 connection)
- Use twisted pair (1-2, 3-6, 4-5, 7-8) cable for wiring.
- The built-in CAN and RS485 terminations can be activated by S3.2 and S3.3.
**Series E1100**

**X9  Profibus DP**

<table>
<thead>
<tr>
<th>Nr</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>RxD/TxD-P</td>
</tr>
<tr>
<td>4</td>
<td>CNTR-P</td>
</tr>
<tr>
<td>5</td>
<td>GND (galvanically seperated)</td>
</tr>
<tr>
<td>6</td>
<td>+5V (galvanically seperated)</td>
</tr>
<tr>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>RxD/TxD-N</td>
</tr>
<tr>
<td>9</td>
<td>-</td>
</tr>
</tbody>
</table>

Case: Shield

Max. Baud rate: 12 Mbaud

**X10-X11  Master Encoder IN (X10) / Master Encoder OUT (X11)**

<table>
<thead>
<tr>
<th>Nr</th>
<th>Incremental</th>
<th>Step/Direction</th>
<th>EIA/TIA 568A colors</th>
</tr>
</thead>
<tbody>
<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>
</tbody>
</table>

Case: Shield

- CAN internally connected to X7, X8
- CAN und RS485 Termination can be turned on by S3.2 alt. S3.3.
- X10 an X11: Use twisted pair (1-2, 3-6, 4-5, 7-8) cable for wiring.
- X10 Master Encoder Inputs: Differential RS422, max. Input Frequency 4.5MHz
- X11Master Encoder Outputs: Amplified RS422 differential signals from Master Encoder IN (X10)

**X12  External Positions Sensor**

<table>
<thead>
<tr>
<th>Nr</th>
<th>Incremental:</th>
<th>Sin/Cos</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+5V DDC</td>
<td>+5V DC</td>
</tr>
<tr>
<td>2</td>
<td>A-</td>
<td>SIN-</td>
</tr>
<tr>
<td>3</td>
<td>B-</td>
<td>COS-</td>
</tr>
<tr>
<td>4</td>
<td>Z-</td>
<td>ZERO-</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>GND</td>
</tr>
<tr>
<td>6</td>
<td>A+</td>
<td>SIN+</td>
</tr>
<tr>
<td>7</td>
<td>B+</td>
<td>COS+</td>
</tr>
<tr>
<td>8</td>
<td>Z+</td>
<td>ZERO+</td>
</tr>
<tr>
<td>9</td>
<td>Enc. Alarm</td>
<td>Enc. Alarm</td>
</tr>
</tbody>
</table>

Case: Shield

Encoder Inputs:
- Incremental:RS422
- Sin/Cos:1Vpp

Maximal Input Frequency:
4.5 Mio. Incr./sec (incremental RS422), minimal pulsewidth > 220nsec
10kHz (analog 1Vpp), 10Bit AD

Sensor Supply: 5VDC (max. 100mA)

Sensor Alarm Input: 5V / 1mA
Ordering Information

Servo Drives Series

<table>
<thead>
<tr>
<th>E1100</th>
<th>Width</th>
<th>38 (1.5) mm (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Height</td>
<td>255 (10.0) mm (in)</td>
</tr>
<tr>
<td></td>
<td>Height without fixings</td>
<td>218 (8.6) mm (in)</td>
</tr>
<tr>
<td></td>
<td>Depth</td>
<td>180 (7.1) mm (in)</td>
</tr>
<tr>
<td></td>
<td>Weight</td>
<td>1.5 (3.3) kg (lb)</td>
</tr>
<tr>
<td></td>
<td>IP Protection class</td>
<td>IP</td>
</tr>
<tr>
<td></td>
<td>Storage temperature</td>
<td>-25...40 °C</td>
</tr>
<tr>
<td></td>
<td>Transport temperature</td>
<td>-25...70 °C</td>
</tr>
<tr>
<td></td>
<td>Operating temperature</td>
<td>0...40 at rated date</td>
</tr>
<tr>
<td></td>
<td>Max. case temperature</td>
<td>65 °C</td>
</tr>
<tr>
<td></td>
<td>Max. power dissipation</td>
<td>30 W</td>
</tr>
<tr>
<td></td>
<td>Min. distance between drives</td>
<td>20 (0.8) left/right</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50 (2) top/bottom</td>
</tr>
</tbody>
</table>

E1100-RS | RS232/485 Drive (72V/8A) | 0150-1677
E1100-RS-HC | RS232/485 Drive (72V/15A) | 0150-1678
E1100-RS-XC | RS232/485 Drive (72V/25A) | 0150-1682
E1100-CO | CANopen Drive (72V/8A) | 0150-1681
E1100-CO-HC | CANopen Drive (72V/15A) | 0150-1682
E1100-CO-XC | CANopen Drive (72V/25A) | 0150-1683
E1100-DN | DeviceNet Drive (72V/8A) | 0150-1679
E1100-DN-HC | DeviceNet Drive (72V/15A) | 0150-1680
E1100-DN-XC | DeviceNet Drive (72V/25A) | 0150-1683
E1100-GP | General Purpose (72V/8A) | 0150-1665
E1100-GP-HC | General Purpose Drive (72V/15A) | 0150-1666
E1100-GP-XC | General Purpose Drive (72V/25A) | 0150-1864
E1130-DP | Profibus DP Drive, (72V/8A) | 0150-1667
E1130-DP-HC | Profibus DP Drive, (72V/15A) | 0150-1668
E1130-DP-XC | Profibus DP Drive, (72V/25A) | 0150-1861
## Accessories E1100

### Switched-Mode Power Supplies

#### 115VAC / 230VAC

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>S01-72/500</td>
<td>Switched-Mode Power Supply 72V/500W</td>
<td>0150-1874</td>
</tr>
<tr>
<td>S01-72/1000</td>
<td>Switched-Mode Power Supply 72V/1000W</td>
<td>0150-1872</td>
</tr>
</tbody>
</table>

### Transformer Supply T01

#### 3x230/280/400/480VAC

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>T01-72/420...1500-Multi</td>
<td>Transformer Supply 3x230/280/400/480VAC, 50/60Hz, 420...1500W</td>
<td>see page 532</td>
</tr>
</tbody>
</table>

### Control Box B01-E1100

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>B01-E1100</td>
<td>Control Box for E1100 (incl. cable and connectors)</td>
<td>0150-1970</td>
</tr>
</tbody>
</table>
### Connector Cable and USB-Converter

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS232 PC config. cable 2m</td>
<td>for E100/E1001</td>
<td>0150-3009</td>
</tr>
<tr>
<td>RS232 PC config. cable 2m</td>
<td>for E100/E1001/E1100/B1100</td>
<td>0150-3307</td>
</tr>
<tr>
<td>RS232 PC config. cable 2.5m</td>
<td>for E1200/E1400</td>
<td>0150-2143</td>
</tr>
<tr>
<td>USB-Serial Converter</td>
<td>USB to 9-pin Serial Converter</td>
<td>0150-3110</td>
</tr>
<tr>
<td>USB-CAN Converter</td>
<td>USB to CAN Converter for E1100</td>
<td>0150-3134</td>
</tr>
<tr>
<td>RJ45-08/0.3</td>
<td>RJ45 patch cable 0.3m for E1100</td>
<td>0150-1852</td>
</tr>
<tr>
<td>RJ45-08/0.6</td>
<td>RJ45 crossover patch cable 0.6m</td>
<td>0150-1853</td>
</tr>
<tr>
<td>RJ45/RJ45-0.2-ML1</td>
<td>MC-Link cable 0.2m</td>
<td>0150-3308</td>
</tr>
</tbody>
</table>

### Option: External High Resolution Encoder

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS01-1/D</td>
<td>Linear Encoder 1um, A/B (for 1mm magnetic band)</td>
<td>0150-1840</td>
</tr>
<tr>
<td>MB01-1000</td>
<td>Magnetic Band 1mm pitch, per cm</td>
<td>0150-1963</td>
</tr>
</tbody>
</table>