

Multi Axes System B1150 / B8050

**Servo Drive B1150-ML**

428

Bus Module B8050-ML

430

Multi-Axes System B1150 / B8050

Series B1150 Servo Drives are compact axis drives, with 32-bit position resolution and an integrated power element, for LinMot P01 linear motors and rotary servo motors.

B1150 drives together with the bus modules B8050 are designed for cost optimized, modular multi axes systems with the industrial Ethernet interfaces EtherCAT, Profinet, EthernetIP, Sercos III and Powerlink.



Connection to Machine Drive

The Series B1150 Servo Drives can be actuated by machine controls from any manufacturer or brand, via industrial Ethernet.

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.

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.

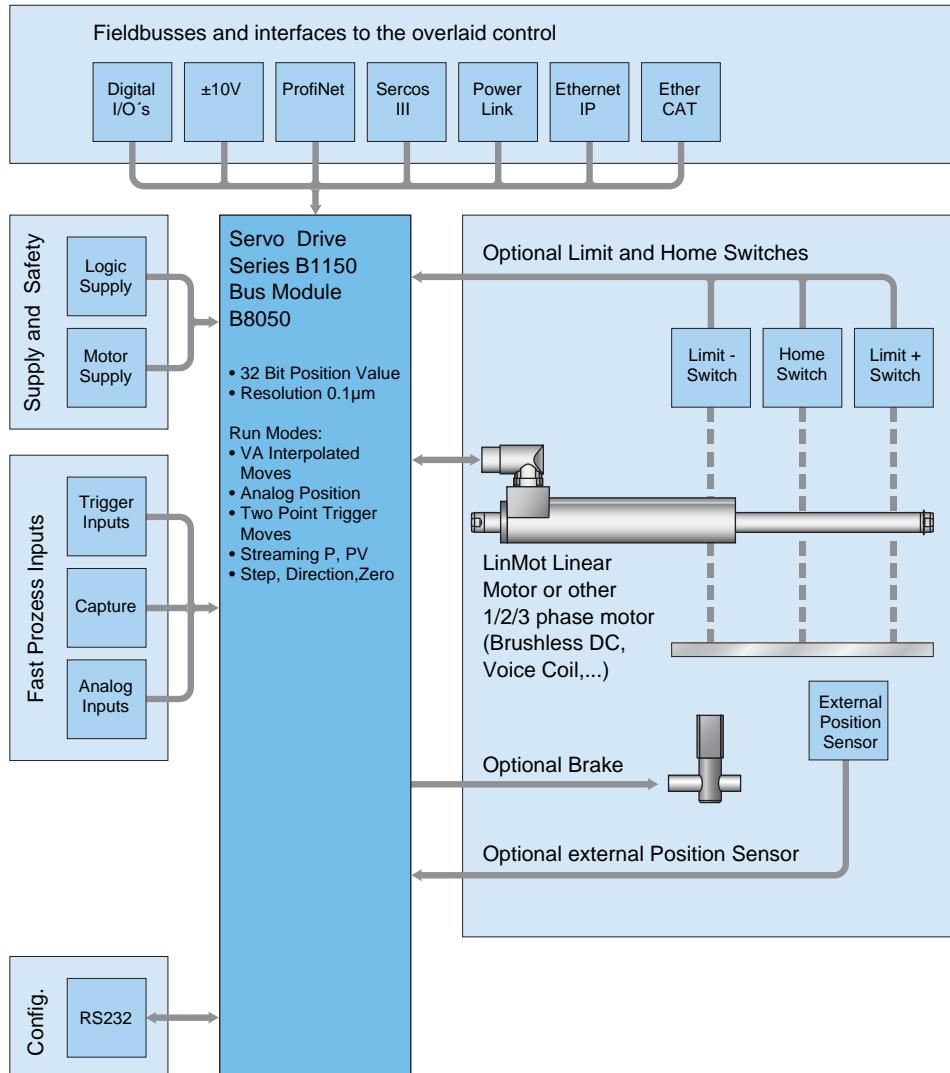
For high-accuracy applications, a freely configurable encoder interface is available. It analyzes the commutation signals from brushless, rotary servomotors as well.

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.

**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 B1150 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 B1150 Servo Drives provide a complete solution for a flexible drive concept in single and multiple axis applications, with linear motors and other actuators.

Diverse Korrekturen im Deutschen, siehe Korrekturen von Dani

Position Streaming

With a cyclical target value, or "position streaming," the overarching NC or CNC drive communicates with the Servo Drive via industrial Ethernet.

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 B1150 Servo Drives allow control of 1, 2, or 3 phase linear motors and brushless rotary servomotors.

B1150 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.

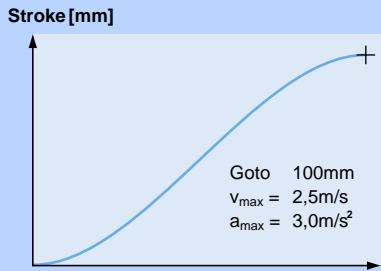
Configuration

Parameterization and configuration of the Servo Drive is done via the RS232 interface on the front side.

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.

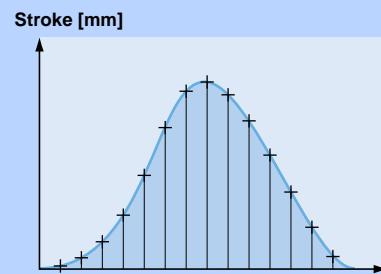
Fieldbus and Ethernet drives can also be configured directly by the overarching drive.

Interpolated Moves



Stroke range: $\pm 100\text{m}$
 Position Resolution: $0.1\mu\text{m}$ (32Bit)
 Velocity Resolution: $1.0\mu\text{m/s}$ (32Bit)
 Velocity Resolution: $10.0\mu\text{m/s}^2$ (32Bit)

Setpoint Streaming



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

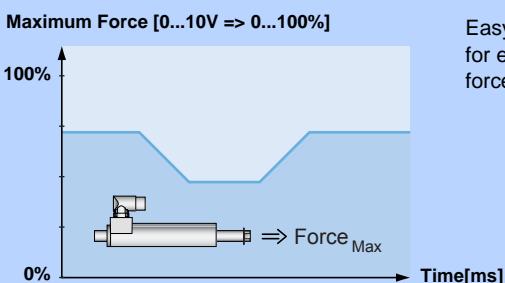
Easy Steps

Input 1	Pos 125mm
Input 2	Pos 250mm
Input 3	Pos 50mm
Input 4	Pos -30mm

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 or industrial Ethernet.

Digital inputs: max. 6
 Interface: X14
 Scanning rate: 400μsec / 2μsec with Ethernet

Easy Steps Parameter Scale



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



1-Axes



2-Axes



3-Axes



4-Axes



5-Axes



6-Axes



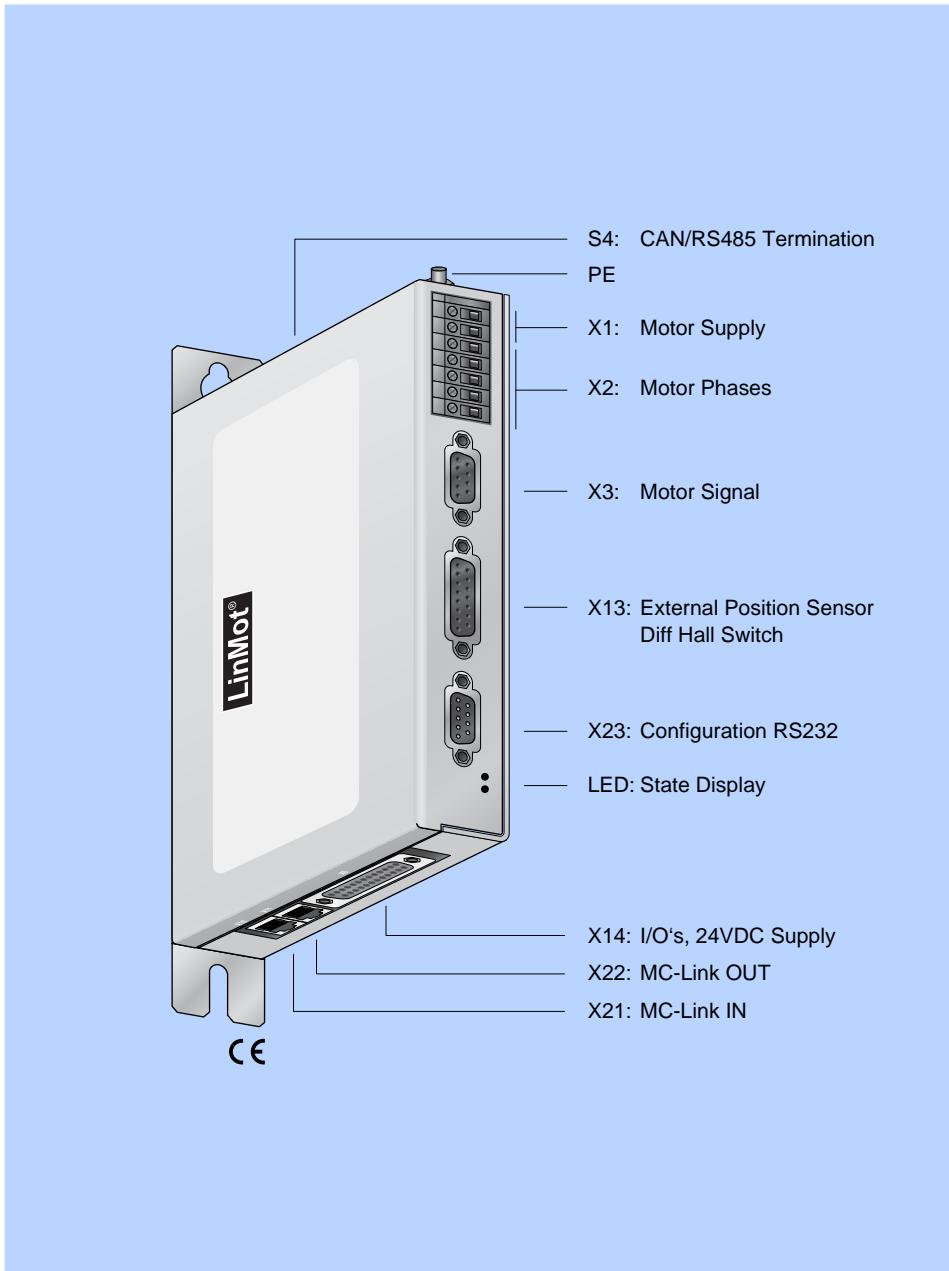
7-Axes



8-Axes

B1150-ML
B1150-ML-HC
B1150-ML-XC

- Interpolated Moves
- Setpoint Streaming P
- Setpoint Streaming PV
- Setpoint Streaming PVT
- Easy Step
- Easy Steps Parameter Scale
- Encoder Simulation



Industrial Ethernet

LinMot B1150-ML series Servo Drives together with the bus modules B8050-ML support the following industrial Ethernet Interfaces:

- EtherCat
- Ethernet IP
- Powerlink
- Profinet
- Sercos III

Modular Multi Axes Systems

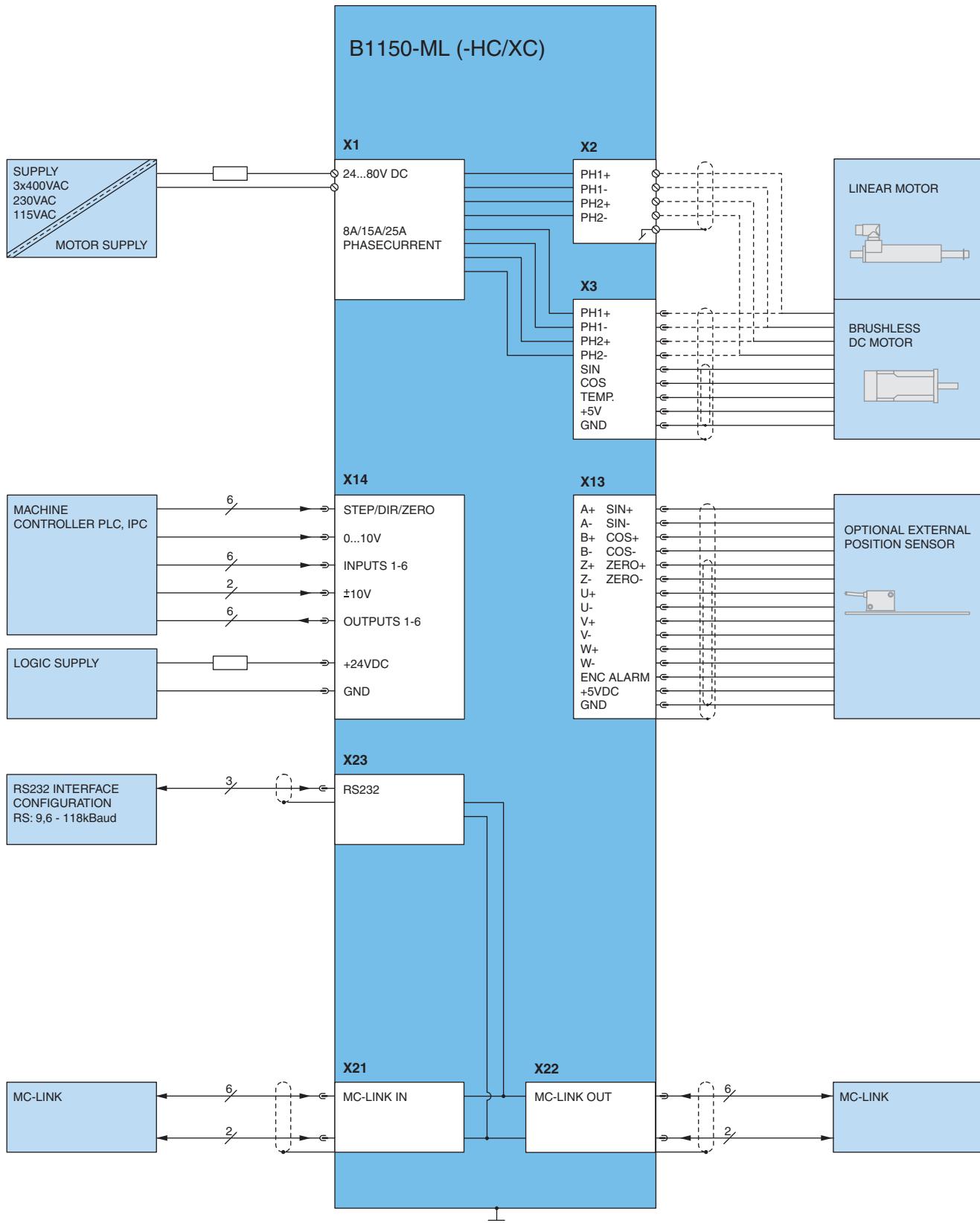
The modular B1150/B8050 system is designed for multi axes applications and integration in industrial Ethernet communication from different PLC or NC manufacturers over a single bus node.

Up to 8 B1150-ML drives may be connected to a bus module B8050 and controlled over industrial Ethernet interfaces.

Interfaces

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

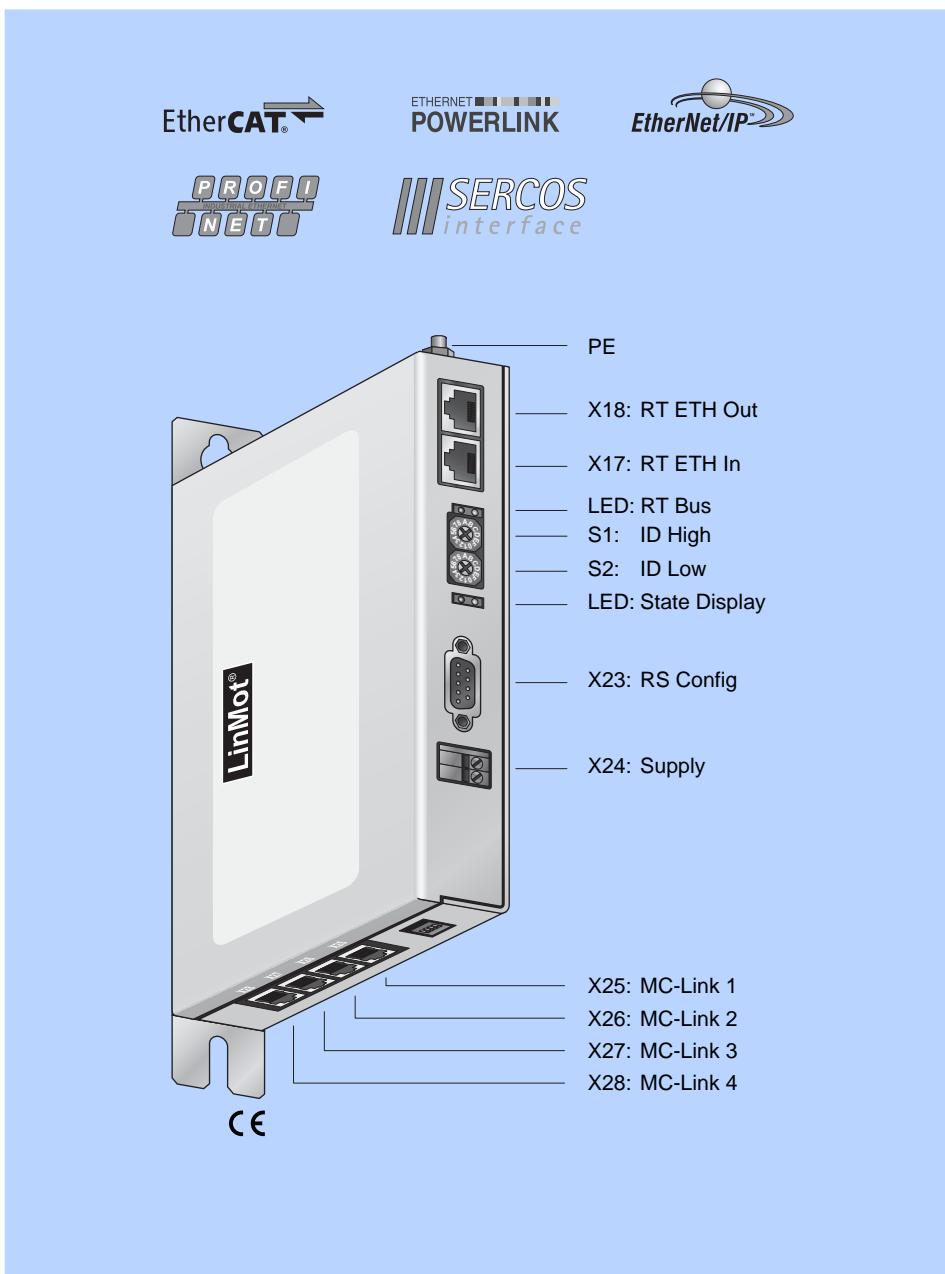
Using digital inputs, the linear motor can move to up to six freely programmable positions. The resolution of the high resolution A/B/Z encoder input or A/B encoder simulation output is adjustable.



Item	Description	Part Number
B1150-ML	MC-Link Drive (72V/8A)	0150-1796
B1150-ML-HC	MC-Link Drive (72V/15A)	0150-1797
B1150-ML-XC	MC-Link Drive (72V/25A)	0150-1798

B8050-ML-EC
B8050-ML-IP
B8050-ML-PL
B8050-ML-PN
B8050-ML-SC

- ✓ Industrial Ethernet Interfacing
- ✓ Multi Axes Interfacing
- ✓ EtherCAT
- ✓ Ethernet IP
- ✓ Powerlink
- ✓ Profnet
- ✓ Sercos III



Modular Multi Axes Systems

The modular B1150/B8050 system is designed for multi axes applications and integration in industrial Ethernet communication from different PLC or NC manufacturers over a single bus node.

Up to 8 B1150-ML drives may be connected to a bus module B8050 and controlled over industrial Ethernet interfaces.

Industrial Ethernet

LinMot B8050-ML bus modules support the following industrial Ethernet Interfaces:

- EtherCat
- Ethernet IP
- Powerlink
- Profinet
- Sercos III

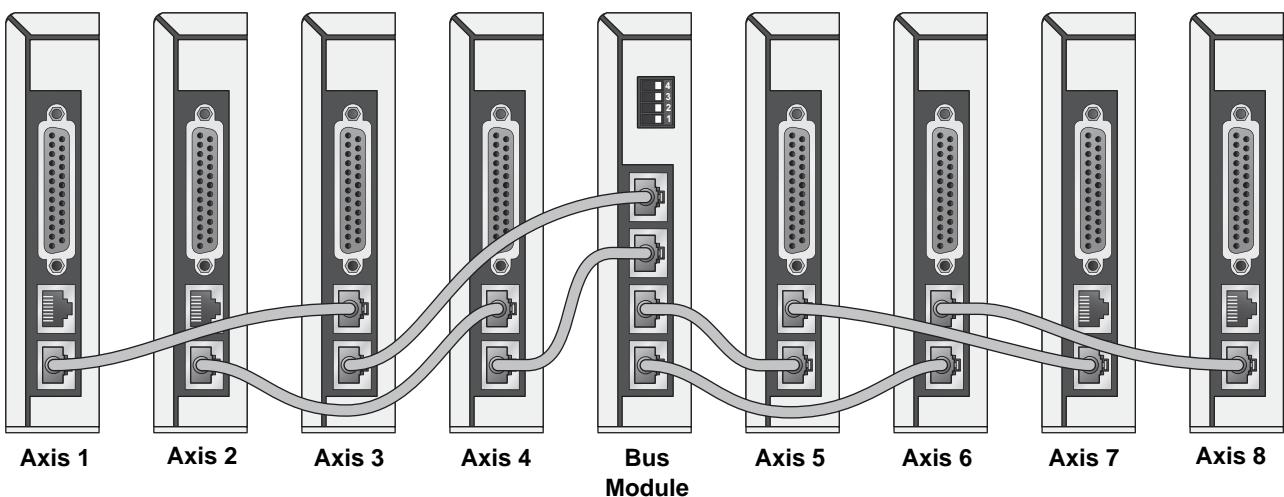
Motion Commands

Motion commands for the B1150/B8050 multi axes systems are identical to the B1100 motion commands.

For simple positioning tasks, relative and absolute position commands with velocity and acceleration limitation are available. For more complex motions or synchronization, the motion profiles are calculated in the overlaid drive and transmitted via set-point streaming.

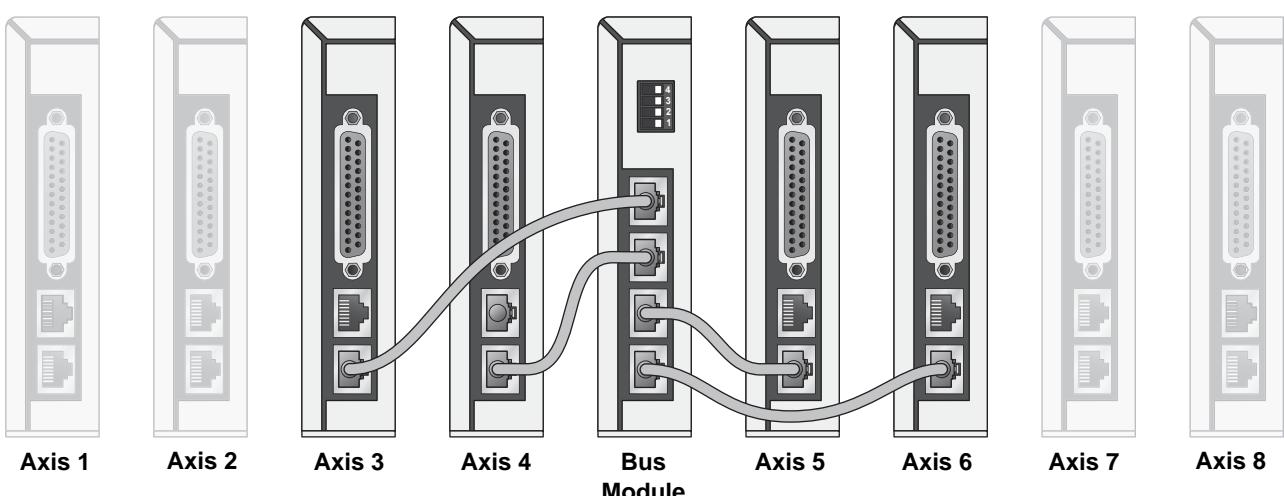
8 Axes System

TOP
Termination
Settings

**BOTTOM**

4 Axes System

TOP
Termination
Settings

**BOTTOM**

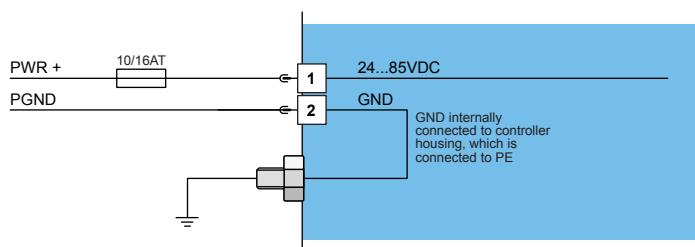
Item	Description	Part Number
B8050-ML-EC	8-Axes Bus Module Etercat	0150-1878
B8050-ML-IP	8-Axes Bus Module Ethernet IP	0150-1879
B8050-ML-PL	8-Axes Bus Module Powerlink	0150-1877
B8050-ML-PN	8-Axes Bus Module Profinet	0150-1880
B8050-ML-SC	8-Axes Bus Module Sercos III	0150-1881

X1

Motor Supply



Screw Terminals
2.5 mm² (AWG14)



Motor Supply:

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

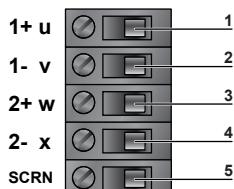
External fusing: 10AT for LC (8A_{peak} Servos), 16AT for HC and XC (15/25A_{peak}) Servos



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

X2

Motor Phases



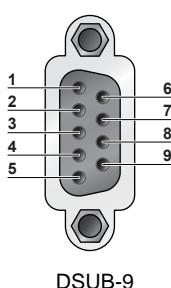
Screw Terminals
1.5-2.5mm²
(AWG16-14)

Nr.	Designation	LinMot Linear Motor	Color	3-Phase-Motor
1	PH1+ /U	Motor Phase 1+	red	Motor Phase U
2	PH1- /V	Motor Phase 1-	pink	Motor Phase V
3	PH2+ /W	Motor Phase 2+	blue	Motor Phase W
4	PH2-	Motor Phase 2-	grey	
5	SCRN	Shield		

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.

X3

Motor



Nr	LinMot Linear Motor	3-Phase-Motor
1	Motor Phase 1+	Motor Phase U
2	Motor Phase 2+	Motor Phase W
3	+5VDC	
4	Sine	Hall U
5	Temperature	Hall W
6	Motor Phase 1-	Motor Phase V
7	Motor Phase 2-	
8	AGND	
9	Cosine	Hall V
Case	Shield	

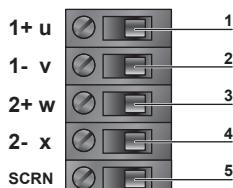
- Use +5V (X3.3) and AGND (X3.8) only for motor internal hall sensor supply (max. 100mA)

Caution: - Do NOT connect AGND (X3.8) to ground or earth!

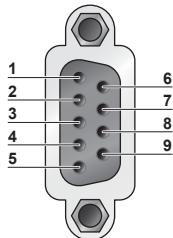
- It is only allowed to use X3 for connecting the motor phases if RMS current is below 2A and peak current below 4A.

Motor

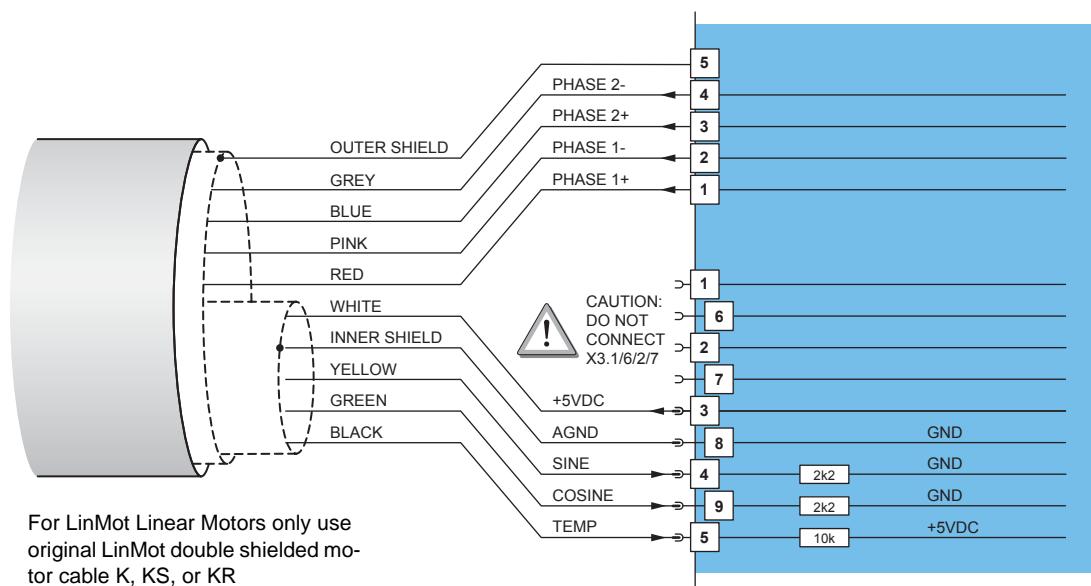
Motor wiring



X2: Screw Terminals



X3: DSUB-9 (f)

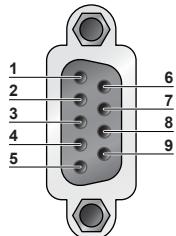


Important:

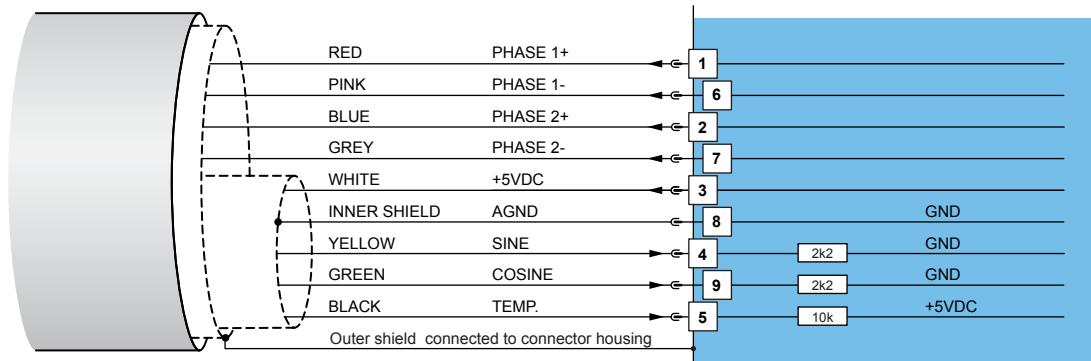
If motor phase current exceeds $2A_{RMS}$ or $4A_{peak}$, motor phases must be wired to X2!

Motor

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



X3: DSUB-9 (f)



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



Important:

Motor phases may only be connected to X3 if RMS current is below 2A and peak current is below 4A!

S6

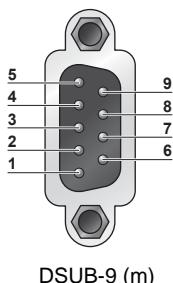
MC-Link Termination



Switch		
S6	Switch 4: Bootstrap Switch 3: Termination A on/off Switch 2: Termination B on/off Switch 1: Not used	Factory settings: Switch 3 "on" all other switches "off"

X23

Motor



Nr	
1	(Do not connect)
2	RS232_Tx
3	RS232_Rx
4	(Do not connect)
5	GND
6	(Do not connect)
7	(Do not connect)
8	(Do not connect)
9	(Do not connect)

Case Shield

RS232:

Configuration on all drives: use 1:1 connection cable to PC with only 2,3 and 5 connected.
Use LinMot RS Config Cable (Art.-No. 0150-3307)

LED

State Display

Green:



24VDC Logic Supply OK

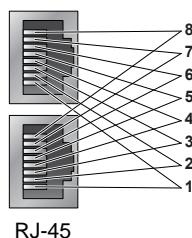
Red:



State: Error
Blinking: Fatal Error

X21-X22

MC-Link



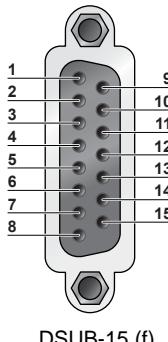
Nr	
1	ML1+
2	ML1-
3	ML2+
4	Cable Select
5	GND
6	ML2-
7	ML3+
8	ML3-

Case Shield

Use MC-Link cables (Art.-No. 0150-3308)

X13

External Position Sensor Commutation



Nr	Description	
1	+5V DC	
9	A+	Encoder
2	A-	Encoder
10	B+	Encoder
3	B-	Encoder
11	Z+	Encoder
4	Z-	Encoder
12	Encoder Alarm	
5	GND	
13	U+	Commutation
6	U-	Commutation
14	V+	Commutation
7	V-	Commutation
15	W+	Commutation
8	W-	Commutation
case	Shield	

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

X17-X18

RealTime Ethernet 10/100 Mbit/s



X18 out

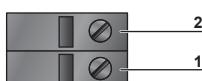
RJ-45

Nr	Bez.
X17	RT ETH In
X18	RT ETH Out

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

X24

Supply



Nr	Bez.
2	+24VDC Supply (22-26VDC).
1	GND Supply

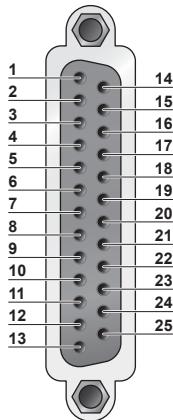
Supply 24V / typ. 150mA

Stripping Length: 10mm, Connection in acc. with standard:EN-VDE,

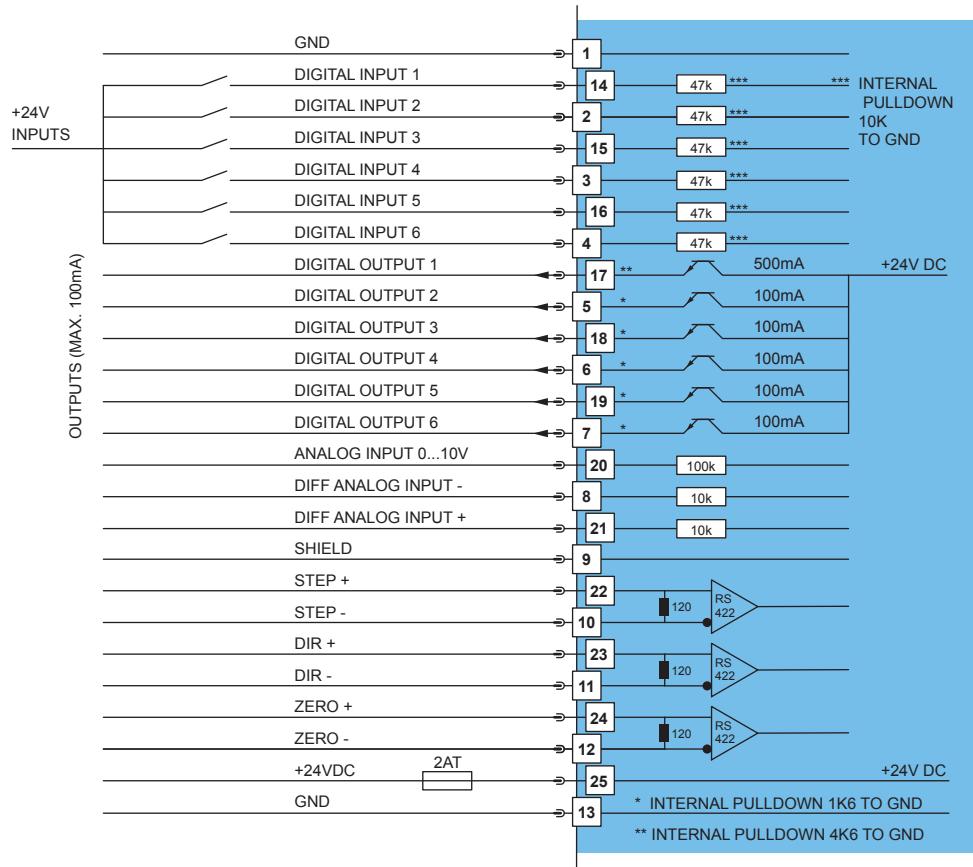
Use 60/75°C Copper Conductors only, Conductor cross-section max. 1.5mm²

X14

24VDC Supply and IOs



X14: DSUB-25 (f)



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

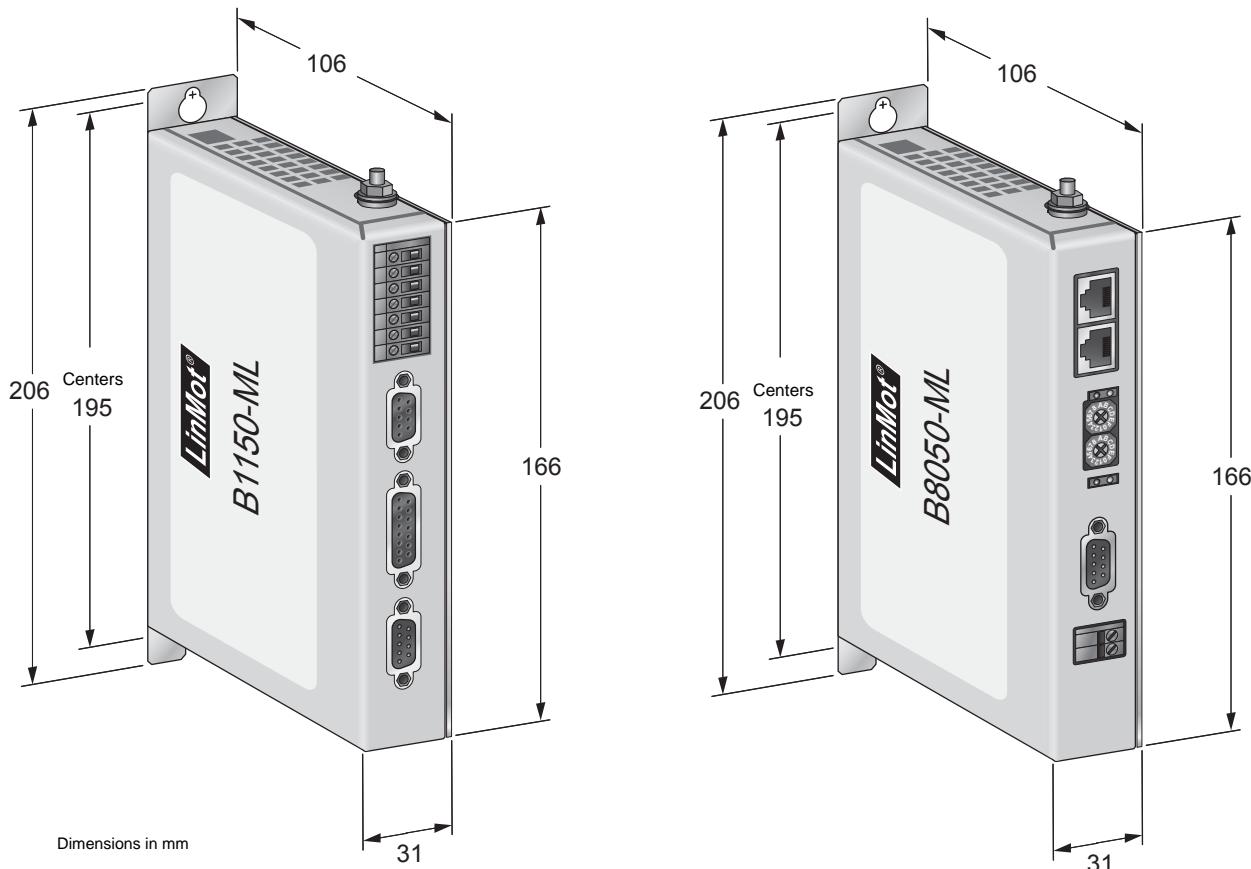
All Digital Outputs: Short circuit and overload protected high side switches
Voltage: 24VDC
Update Rate: 400us
Max. Current: 100mA/500mA (X14.17)
Peak Current: 370mA/1100mA (X14.17)

Outputs may directly drive inductive loads. Do not connect any capacity because of the peak current!

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

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

Differential Step Dir Zero: Indexer Inputs: RS422
Max. Input Frequency: 2MHz
4 M counts/s with quadrature decoding, 240ns edge separation

**Servo Drive Series B1150/8050**

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 40...50 with power derating
Max. case temperature	°C	70
Max. power dissipation	W	30
Clearance around Drives	mm (in)	15 (0.8) left/right 50 (2) top 100 (4) bottom 90 (3.5) front

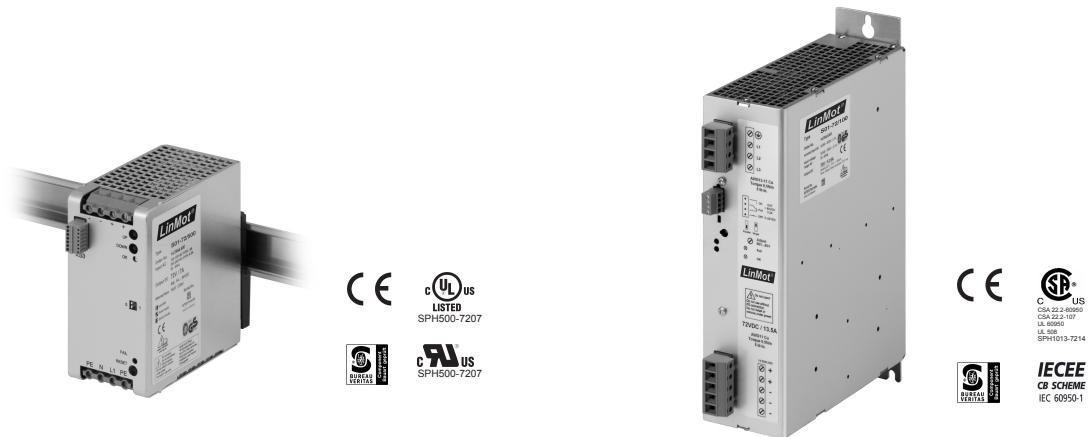
Item	Description	Part Number
B1150-ML	MC-Link Drive (72V/8A)	0150-1796
B1150-ML-HC	MC-Link Drive (72V/15A)	0150-1797
B1150-ML-XC	MC-Link Drive (72V/25A)	0150-1798
B8050-ML-EC	8-Axes Bus Module EtherCAT	0150-1878
B8050-ML-IP	8-Axes Bus Module Ethernet IP	0150-1879
B8050-ML-PL	8-Axes Bus Module Powerlink	0150-1877
B8050-ML-PN	8-Axes Bus Module Profinet	0150-1880
B8050-ML-SC	8-Axes Bus Module Sercos III	0150-1881

Accessories B1150/B8050

LinMot®

Switched-Mode Power Supplies

115VAC / 230VAC



Item	Description	Part Number
S01-72/500	Switched-Mode Power Supply 72V/500W	0150-1874
S01-72/1000	Switched-Mode Power Supply 72V/1000W	0150-1872

Transformer Supply T01

3x230/280/400/480VAC



Item	Description	Part Number
T01-72/420...1500-Multi	Transformer Supply 3x230/280/400/480VAC, 50/60Hz, 420...1500W	see page 532

Control Box B01-E1100



Item	Description	Part Number
B01-E1100	Control Box for E1100 (incl. cable and connectors)	0150-1970
B01-B1150	Control Box for B1150 (incl. cable and connectors)	0150-2110

Connector Cable and USB-Converter



Item	Description	Part Number
RS232 PC config. cabel 2m	for E100/E1001/E1100/B1150	0150-3307
USB-Serial Converter	USB to 9-pin Serial Converter	0150-3110
RJ45/RJ45-0.2-ML1	MC-Link Cable, 0.2m	0150-3308

Option: External High Resolution Encoder



Item	Description	Part Number
MS01-1/D	Linear Encoder 1um, A/B (for 1mm magnetic band)	0150-1840
MB01-1000	Magnetic Band 1mm pitch, per cm	0150-1963