

8EI8X8HCT10.XXXX-1

1 Order data


Order number	Short description	Figure
	Cold plate or feed-through mounting	
8EI8X8HCT10.XXXX-1	ACOPOS P3 servo drive, 1 digital multi-standard encoder interface per axis, 3x 200-480 VAC, 3x 8.8 A, 3 axes, AS, cold plate or pass-through mounting	
	Optional accessories	
	Display modules	
8EAD0000.000-1	Display module, LCD, 128 x 64, black/white, 1x USB 3.0	
	Fan modules	
8EXF100.0000-00	ACOPOS P3 fan module, replacement fan for ACOPOS P3 servo drive single-width (8EI1X6/8EI2X2/8EI4X5/8EI8X8/8EI013/8EI017xxS)	
	Front covers	
8EXA200.0010-00	ACOPOS P3 dover, B&R orange, single-width, suitable for servo drives 8EI2X2xxDxx.xxxx-x / 8EI2X2xxTxx.xxxx-x / 8EI4X5xxDxx.xxxx-x / 8EI4X5xxTxx.xxxx-x / 8EI8X8xxDxx.xxxx-x / 8EI8X8xxTxx.xxxx-x / 8EI013xxSxx.xxxx-x / 8EI017xxSxx.xxxx-x	
8EXA200.0020-00	ACOPOS P3 cover, B&R dark gray, single-width, suitable for servo drives 8EI2X2xxDxx.xxxx-x / 8EI2X2xxTxx.xxxx-x / 8EI4X5xxDxx.xxxx-x / 8EI4X5xxTxx.xxxx-x / 8EI8X8xxDxx.xxxx-x / 8EI8X8xxTxx.xxxx-x / 8EI013xxSxx.xxxx-x / 8EI017xxSxx.xxxx-x	
	Line filters passive	
8B0F0160H000.000-1	Line filter, passive, 16 A, 3x 528 VAC, 50/60 Hz, IP20	
8B0F0300H000.000-1	Line filter, passive, 30 A, 3x 520 VAC, 50/60 Hz, IP20	
8B0F0550H000.000-1	Line filter, passive, 55 A, 3x 520 VAC, 50/60 Hz, IP20	
	Plug-in modules	
8EAC0122.001-1	ACOPOS P3 plug-in module, resolver interface 10 kHz	
8EAC0122.003-1	ACOPOS P3 plug-in module, 3 resolver interfaces 10 kHz	
8EAC0130.000-1	ACOPOS P3 plug-in module, 8 digital I/O 24 V (4x 400 mA, 4x 100 mA) individually configurable as inputs or outputs, 2 digital I/O 24 V 2 A configurable in pairs as inputs or outputs, order terminal block 8TB0230.221A-00 separately!	
8EAC0150.001-1	ACOPOS P3 plug-in module, digital multi-encoder interface	
8EAC0150.003-1	ACOPOS P3 plug-in module, 3 digital multi-encoder interfaces	
8EAC0151.001-1	ACOPOS P3 plug-in module, incremental encoder interface	
8EAC0151.003-1	ACOPOS P3 plug-in module, 3 incremental encoder interfaces	
8EAC0152.001-1	ACOPOS P3 plug-in module, analog multi-encoder interface	
8EAC0152.003-1	ACOPOS P3 plug-in module, 3 analog multi-encoder interfaces	
	Shield component sets	
8SCSE01.0100-00	ACOPOS P3 shield component set: 1x ACOPOS P3 shield mounting plate, 1x 2x M3x6 screws	
8SCSE01.0300-00	ACOPOS P3 shield component set: 1x support plate with 2 grounding clamps 3-6 mm, 1x M4x6 screw	
8SCSE02.0100-00	ACOPOS P3 shield component set: 1x shield connection clamp type SK14	
8SCSE02.0200-00	ACOPOS P3 shield component set: 1x shield connection clamp type SK20	
	Terminal blocks	
8TB2104.2210-00	4-pin push-in terminal block, 1-row, pitch: 5.08 mm, label 1: Numbered consecutively	
8TB2104.2210-50	4-pin push-in terminal block, yellow, 1-row, with locking mechanism, pitch: 5.08 mm, label 1: 4 3 2 1	
8TB2204.2210-50	4-pin push-in terminal block, yellow, 2-row, pitch: 5.08 mm, label 1: 4 3 2 1,	
8TB3102.222C-20	2-pin push-in terminal block, 1-row, with locking mechanism, pitch: 7.62 mm, label 2: COM 24 V, coding C: 10	
8TB3103.222A-20	3-pin push-in terminal block, 1-row, with locking mechanism, pitch: 7.62 mm, label 2: PE RB- RB+, coding A: 000	
8TB3106.222B-20	6-pin push-in terminal block, 1-row, with locking mechanism, pitch: 7.62 mm, label 2: PE L3 L2 L1 DC- DC+, coding B: 000001	
8TB3202.222C-40	2-pin push-in terminal block, 2-row, with locking mechanism, pitch: 7.62 mm, label 2: COM 24 V, coding C: 10	

Table 1: 8EI8X8HCT10.XXXX-1 - Order data

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Order number	Short description	Figure
8TB3206.222B-40	6-pin push-in terminal block, 2-row, with locking mechanism, pitch: 7.62 mm, label 2: PE L3 L2 L1 DC- DC+, coding B: 000001	
8TB3308.222A-00	4+4-pin push-in terminal block 1-row / 2-row, pitch: 7.62 mm, label 2: T- B- T+ B+ PE W V U coding A: 0000	
Terminal set		
8EZI8X8HT1.2201-0	Terminal block set for ACOPOS P3 modules 8E *X*H*T10.***-1: 1x 8TB2104.2210-00, 1x 8TB2104.2210-50, 1x 8TB3102.222C-20, 3x8TB3308.222A-00, 1x 8TB3106.222B-20, 1x 8TB3103.222A-20	
8EZI8X8HT1.2202-0	Terminal block set for ACOPOS P3 modules 8E *X*H*T10.***-1: 1x 8TB2104.2210-00, 1x 8TB2204.2210-50, 1x 8TB3202.222C-40, 3x 8TB3308.222A-00, 1x 8TB3206.222B-40, 1x 8TB3103.222A-20	

Table 1: 8EI8X8HCT10.XXXX-1 - Order data

2 Technical data

Order number	8EI8X8HCT10.XXXX-1
General information	
Support	
Dynamic node allocation (DNA)	Yes
Slots for plug-in modules	1
Certifications	
CE	Yes
UKCA	Yes
UL	cULus E225616
KC	Power conversion equipment In preparation
Mains connection	
Network configurations	TT, TN, TN-S, TN-C-S, IT ¹⁾²⁾
Mains input voltage	3x 200 VAC to 480 VAC ±10% 24 to 120 VDC ³⁾
Frequency	50 / 60 Hz ±4%
Installed load	Max. 10 kVA
Inrush current	Max. 45 A
Switch-on interval	Typ. 60 s
Integrated line filter per EN 61800-3, category C3	No ⁴⁾
Terminal connection cross section	
Flexible and fine-stranded wires With wire end sleeve	0.25 to 4 mm ²
Approbation data	
UL/C-UL-US	24 to 8 AWG
CSA	24 to 8 AWG
Power dissipation at device nominal power without braking resistor	$[(60 + 6.9 * P_{AVG} [kW] + 7.5 * (I_{AX1} [A] + I_{AX2} [A] + I_{AX3} [A]) + 0.25 * (I_{BR1}^2 [A] + I_{BR2}^2 [A] + I_{BR3}^2 [A]) + P_{VSL0T}) * 1.1] [W]$ ⁵⁾
Power dissipation remaining in the control cabinet	$P_{v_inside} = 0.58 * P_v + 1.6 * (T_{amb} - T_{inside})$
Max. line length	3 m ⁶⁾
DC bus connection	
Continuous power ⁷⁾	4 kW
Reduction of continuous power depending on mains input voltage ⁸⁾	
Mains input voltage <3x 400 VAC	4 kW * (Mains input voltage [V] / 400 V)
DC bus capacitance	470 µF
Terminal connection cross sections	
Flexible and fine-stranded wires With wire end sleeves	0.25 to 4 mm ²
Approbation data	
UL/C-UL-US	24 to 8 AWG
CSA	24 to 8 AWG
Max. line length	3 m ⁹⁾
24 VDC power supply	
Input voltage	24 VDC ±25%
Input capacitance	5500 µF
Current consumption	1.2 A + Current for motor holding brake ¹⁰⁾
Terminal connection cross sections	
Flexible and fine-stranded wires With wire end sleeves	0.25 to 4 mm ²
Approbation data	
UL/C-UL-US	24 to 8 AWG
CSA	24 to 8 AWG

Table 2: 8EI8X8HCT10.XXXX-1 - Technical data

Order number	8EI8X8HCT10.XXXX-1
Max. line length	30 m
Motor connection	
Quantity	3
Continuous power per motor connection ¹¹⁾	4 / 4 / 4 kW ¹²⁾
Continuous current per motor connection ¹³⁾	8.8 / 8.8 / 8.8 A _{eff}
Reduction of continuous current depending on ambient temperature	
Mains input voltage: 400 VAC	
Switching frequency 5 kHz	In preparation
Switching frequency 10 kHz	In preparation
Switching frequency 20 kHz	In preparation
Mains input voltage: 480 VAC	
Switching frequency 5 kHz	In preparation
Switching frequency 10 kHz	In preparation
Switching frequency 20 kHz	In preparation
Reduction of continuous current depending on installation elevation	
Starting at 500 m above sea level	0.88 A _{eff} per 1000 m
Peak current per motor connection	24 / 24 / 24 A _{eff}
Peak power output	10 / 10 / 10 kW ¹⁴⁾
Nominal switching frequency	5 kHz
Possible switching frequencies ¹⁵⁾	2.5 / 5 / 10 / 20 kHz ¹⁶⁾
Insulation stress of the connected motor per IEC TS 60034-25:2004	Limit value curve A ¹⁷⁾
Protective measures	
Overload protection	Yes
Short-circuit and ground fault protection	Yes
Max. output frequency	598 Hz ¹⁸⁾
Variant	
U, V, W, PE	Connector
Shield connection	Yes
	Clamping range of the grounding clamp: 11 to 16 mm
Terminal connection cross section	
Flexible and fine-stranded wires	
With wire end sleeve	1.5 to 6 mm ²
Approbation data	
UL/C-UL-US	24 to 8 AWG
CSA	24 to 8 AWG
Max. motor line length depending on switching frequency	
Switching frequency 5 kHz	75 m ¹⁹⁾
Switching frequency 10 kHz	38 m ¹⁹⁾
Switching frequency 20 kHz	19 m ¹⁹⁾
Motor holding brake connection	
Quantity	3
Output voltage ²⁰⁾	Depends on the input voltage on connector X2
Continuous current per connection	1.3 A
Max. internal resistance	0.25 Ω
Extinction potential	Approx. 30 V
Max. extinction energy per switching operation	1.5 Ws
Max. switching frequency	0.5 Hz
Terminal connection cross section	
Flexible and fine-stranded wires	
With wire end sleeve	0.25 to 4 mm ²
Approbation data	
UL/C-UL-US	24 to 8 AWG
CSA	24 to 8 AWG
Protective measures	
Overload and short-circuit protection	Yes
Open-circuit monitoring	Yes
Undervoltage monitoring	Yes
Response threshold for open-circuit monitoring	Approx. 30 mA
Response threshold for undervoltage monitoring	Approx. 23 V
Max. line length	75 m ²¹⁾
Braking resistor ²²⁾	
Peak power output	25 kW
Continuous power	2 kW
Minimum braking resistance (ext.)	25 Ω
Protective measures	
Overload protection	No
Short-circuit and ground fault protection	Short-circuit protection: Yes Ground fault protection: No

Table 2: 8EI8X8HCT10.XXXX-1 - Technical data

8EI8X8HCT10.XXXX-1

Order number	8EI8X8HCT10.XXXX-1
Max. line length	3 m
Fieldbus	
Type	POWERLINK V2 controlled node (CN)
Variant	2x RJ45, shielded, 2-port hub
Line length	Max. 100 m between 2 stations (segment length)
Transfer rate	100 Mbit/s
Enable inputs	
Quantity	2
Circuit	Sink
Electrical isolation	
Input - ACOPOS P3	Yes
Input - Input	Yes
Input voltage	
Nominal	24 VDC
Maximum	30 VDC
Input current at nominal voltage	Approx. 9 mA
Switching threshold	
Low	<5 V
High	>15 V
Switching delay at nominal input voltage	
Enable 1 → 0, PWM off	2 ms
Enable 0 → 1, ready for PWM	0.3 ms
	ACP10 5.16.2 and later: 4.3 ms
Modulation compared to ground potential	Max. ±38 V
OSSD signal connections ²³⁾	0.5 ms
Terminal connection cross sections	
Flexible and fine-stranded wires	
With plastic wire end sleeves	0.25 to 2.5 mm ²
Approbation data	
UL/C-UL-US	26 to 12 AWG
CSA	26 to 12 AWG
Max. line length	30 m
Encoder interfaces	
Quantity	3
Type	Digital multi-encoder interface, configurable ²⁴⁾
Connections	8-pin female Mini I/O connector
Status indicators	None ²⁵⁾
Electrical isolation	
Encoder - ACOPOS P3	No
Max. encoder cable length	75 m
	Depends on the cross section of the power supply wires in the encoder cable ²⁶⁾
Encoder power supply	
Output voltage	Configurable Typ. 11.45 V ±0.1 V / 5.2 V ±0.1 V ²⁷⁾²⁸⁾
Load capacity	Max. 300 mA
Protective measures	
Short-circuit proof	Yes
Overload-proof	Yes
Synchronous serial interface	
Signal transmission	RS485 ²⁹⁾
Data transfer rate	Depends on the configured encoder type
Differential voltage ³⁰⁾	
Minimum	2.0 V
Maximum	6.0 V
Max. power consumption per encoder interface	$P_{\text{ENCODER}} [\text{W}] = U_{24\text{V}} [\text{V}] * (I_{\text{ENCODER}} [\text{A}] * 0.7) + 0.5 \text{ W}^{31)}$
Trigger inputs	
Quantity	2
Circuit	Sink
Electrical isolation	
Input - ACOPOS P3	Yes
Input - Input	Yes
Input voltage	
Nominal	24 VDC
Maximum	30 VDC
Switching threshold	
Low	<5 V
High	>15 V
Input current at nominal voltage	7 mA
Switching delay	
Rising edge	<51 µs
Falling edge	<52 µs
Modulation compared to ground potential	Max. ±38 V

Table 2: 8EI8X8HCT10.XXXX-1 - Technical data

Order number	8EI8X8HCT10.XXXX-1
Terminal connection cross section	
Flexible and fine-stranded wires	
With wire end sleeve	0.25 to 2.5 mm ²
Approbation data	
UL/C-UL-US	26 to 12 AWG
CSA	26 to 12 AWG
Max. line length	100 m
Temperature sensor connection	
Quantity	3
Resistance range	500 Ω to 5 kΩ
Support	
Motion system	
mapp Motion	5.05.0 and higher
ACP10/ARNCO	3.11.2 and higher
Electrical properties	
Energy efficiency (IE classification) ³²⁾	
Power dissipation relative to continuous apparent power ³³⁾	IE2 (10,25) 1.6% IE2 (50,25) 1.6% IE2 (10,50) 1.7% IE2 (50,50) 1.8% IE2 (90,50) 1.9% IE2 (10,100) 2.1% IE2 (50,100) 2.3% IE2 (90,100) 2.6%
Nominal losses in standby mode	19 W
Operating conditions	
Permissible mounting orientations	
Hanging vertically	Yes
Horizontal, face up	No
Standing horizontally	No
Installation elevation above sea level	
Nominal	0 to 500 m
Maximum	4000 m ³⁴⁾
Pollution degree per EN 61800-5-1	2 (non-conductive pollution)
Overvoltage category per EN 61800-5-1	III
Degree of protection per EN 60529	IP20 ³⁵⁾
Ambient conditions	
Temperature	
Operation	
Nominal	5 to 40°C
Maximum	55°C
Storage	-25 to 55°C
Transport	-25 to 70°C
Relative humidity	
Operation	5 to 85%, non-condensing
Storage	5 to 95%
Transport	95% at 40°C
Mechanical properties	
Dimensions ³⁶⁾	
Width	66 mm
Height	374 mm
Depth	264.50 mm (with 8EXA front cover: 267 mm)
Weight	4.9 kg
Short description	ACPP3 H 8.8 A DME T C
Middle description	ACOPOS P3 servo drive, 1 digital multi-standard encoder interface per axis, 3x 200-480 VAC, 3x 8.8 A, 3 axes, AS, cold plate or pass-through mounting
Long description	ACOPOS P3 servo drive, 1 digital multi-standard encoder interface per axis, 3x 200-480 VAC, 3x 8.8 A, 3 axes, AS, cold plate or pass-through mounting

Table 2: 8EI8X8HCT10.XXXX-1 - Technical data

- 1) Operation on TT and IT power systems and on TN power systems that are not grounded to a star point is only permitted for 8EI servo drives with 8ZELxxxx Rev. E0 and higher. See the device information on the left side cover of the 8EI servo drive. Remove IT jumper X10 before operating in IT networks!
- 2) 8B0F and 8EF line filters are not permitted to be used when operating on phase-grounded/center-grounded delta networks (TT or TN) and IT networks. Compliance with EMC requirements must be ensured by the user. Certification per UL 61800-5-1 is not provided for TT power systems.
- 3) Operating the module at a mains input voltage of 24 to 120 VDC is only permitted if this mains input voltage is also specified in the device information located on the left-hand side cover (Input: ... 24 - 120 VDC ...).
- 4) A line filter must be connected.
CE compliance can only be ensured by connecting an upstream B&R line filter (8B0F...).
- 5) In extreme cases, using line filters from 3rd-party manufacturers can result in irreparable damage to the ACOPOS P3 8EI servo drive.
- 6) P_{AVG} ... Average continuous power of the module
I_{AX1}, I_{AX2}, I_{AX3} ... RMS value of the current on axis 1, axis 2, axis 3
I_{BR1}, I_{BR2}, I_{BR3} ... Nominal current of the motor holding brake on axis 1, axis 2, axis 3
P_{VSL0T} ... Power dissipation of the 8EAC plug-in module
- 7) Maximum line length between line filter and mains connection on the module.
Valid for mains input voltage ≥ 3x 400 VAC.
The sum of the continuous power on all motor connections and the power of the DC bus connector is not permitted to exceed this value.

- 8) Starting with mapp Motion V6.2.0, continuous total power monitoring (INVR_TPOW_CONT_LOAD) and peak total power monitoring (INVR_TPOW_PEAK_LOAD) are automatically disabled for a mains input voltage of 24 to 120 VDC.
- 9) This value applies to unshielded wiring inside a control cabinet.
Maximum length of the DC bus wiring inside a control cabinet.
- 10) Current consumption depends on the respective configuration of the ACOPOS P3 8EI servo drive.
The inrush current of the 24 VDC power supply is not limited by the module.
- 11) Valid under the following conditions: 560 VDC DC bus voltage, 5 kHz switching frequency, 40°C ambient temperature, installation elevation <500 m above sea level, no derating due to cooling type.
For DC bus voltages $U_{ZK} < 560$ VDC, maximum continuous power P_{OUT} is calculated as follows: $P_{OUT} = \text{Continuous power per motor connection} * U_{ZK} / 560$.
- 12) The total continuous power of all motor connections is not permitted to exceed 4 kW.
- 13) Valid under the following conditions: 560 VDC DC bus voltage, 5 kHz switching frequency, 40°C ambient temperature, installation elevation <500 m above sea level, no derating due to cooling type.
- 14) The total peak power of all motor connections is not permitted to exceed 10 kW.
- 15) B&R recommends operating the module at its nominal switching frequency. Operating the module at a higher switching frequency for application-specific reasons reduces the continuous current and increases CPU utilization.
- 16) Switching frequency 2.5 kHz is only available for 8EI servo drives with 8ZESxxxx Rev. E0 and higher.
- 17) Only applies when using B&R motor cables and B&R motors.
- 18) The module's electrical output frequency (SCTRL_SPEED_ACT * MOTOR_POLEPAIRS) is monitored to protect against dual use in accordance with Regulation (EC) 428/2009 | 3A225. If the electrical output frequency of the module exceeds the limit value of 598 Hz uninterrupted for more than 0.5 s, then the current movement is aborted and error 6060 is output ("Power unit: Limit speed exceeded").
- 19) The sum of the cable lengths of all motor cables connected to this module is not permitted to exceed this value.
- 20) At values <22.9 V, under voltage monitoring is triggered and the servo drive signals error 6029 or 6055. In this case, the input voltage at connection X2 (24 VDC power supply) is too low and must be increased.
- 21) During configuration, it is necessary to check if the minimum voltage can be maintained on the holding brake with the intended line length. For the permissible operating voltage range of the holding brake, see the user documentation for the motor being used.
- 22) This value applies to an external braking resistor. This module is not equipped with an internal braking resistor.
- 23) Output signal switching device (OSSD) signals are used for monitoring signal lines for short circuits and cross faults.
- 24) The encoder type is not predefined from the factory. The encoder type necessary in each case must be configured in Automation Studio.
- 25) The direction of rotation of the encoder can be displayed on the 8EAD0000.000-1 display module.
- 26) Maximum encoder cable length l_{max} can be calculated as follows (the maximum permissible encoder cable length of 75 m is not permitted to exceeded):

$$l_{max} = f / I_G * A * 1 / (2 * \rho)$$

f ... (Output voltage of encoder interface [V] - Min. permissible supply voltage of connected encoder [V]) * 1.1

I_G ... Max. current consumption of the connected encoder [A].

A ... Cross section of the power supply wires [mm²]

ρ ... Specific resistance [Ω mm²/m] (e.g. for copper: $\rho = 0.0178$)

- 27) The output voltage is not predefined from the factory (with the exception of encoder types EnDat 2.2, EnDat 3.0 and HIPERFACE DSL). It must be configured in Automation Studio based on the encoder type. If no output voltage is configured, then the encoder will not be supplied by digital multi-encoder interface X4x. Power to the encoder can then be supplied externally.
- 28) Output voltage 5.2 V is only available under the following conditions:
 - 8EI servo drive with 8ZECxxx revision D0 and higher - see the device information on the left side cover of the 8EI servo drive
 - ACOPOS operating system 3.15.0 and higher (for 8EIxxxxD... 2-axis modules and 8EIxxxxT... 3-axis modules)
 - ACOPOS operating system 3.17.0 and higher (for 8EIxxxxS... 1-axis modules)
- 29) Except encoder type HIPERFACE DSL.
- 30) Values valid for clock output and data input. Except encoder type HIPERFACE DSL.
- 31) $I_{ENCODER}$... Current consumption of the encoder
 U_{24V} ... Input voltage on the +24 VDC input of the module
- 32) The IE classification of the module is based on drive losses. This includes components such as EMC filters, etc. The power dissipation was determined at a switching frequency of 5 kHz (factory setting). Classification is performed at 90% of the frequency and at 100% of the continuous current. When operating the module in connection with an induction motor, the module is only permitted to be operated with a switching frequency of 5 kHz.
- 33) Continuous apparent power $S[VA] = \sqrt{3} * U_{Mains}[V_{rms}] * I_{Mains}[Arms]$. IE2 notation (a,b) stands respectively for a load point with frequency a (as a percentage of the nominal frequency of the motor) and current b (as a percentage of the continuous current).
- 34) For operation on phase-grounded/center-grounded delta networks (TT and TN) and IT networks, the value is reduced to 2000 m.
- 35) The specified degree of protection is only met if either the slot cover is installed on the module or an 8EAC plug-in module is installed and suitable terminals are connected to all connectors and all fans are installed.
- 36) These dimensions refer to the actual device dimensions including the respective mounting plate. Additional spacing above and below the devices must be taken into account for mounting, connections and air circulation.

3 Status indicators

3.1 3-axis modules

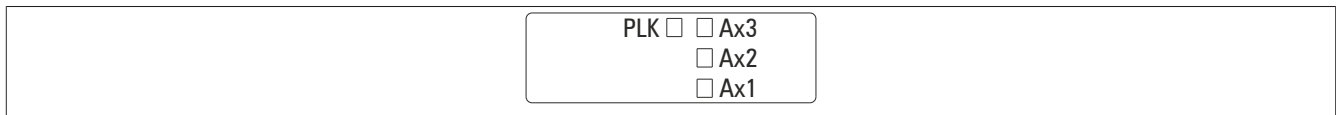


Figure 1: 8EI servo drives - Status indicators

3.2 LED state during startup

The following intervals are used for the LED status indicators:

Width of box: 50 ms

Repeats after: 3,000 ms

Status	Ax1/Ax2/Ax3	Display
1. Boot procedure for base hardware active	Green	
	Orange	
	Red	
2. Waiting for network telegram	Green	
	Orange	
	Red	
3. Network communication active	Green	
	Orange	
	Red	
4. ACOPOS operating system being transferred/burned	Green	
	Orange	
	Red	
5. Module booting	Ax1/Ax2/Ax3 PLK	
	Green	
	Orange	
6. Module ready for operation	Red	
	Green	
	Orange	
	Red	

Table 3: LED state during startup

3.3 POWERLINK - LED status indicators

Label	Color	Description	
PLK	Green	Blinking green (1x)	The client detects a valid POWERLINK frame on the network.
		Blinking green (2x)	Cyclic operation on the network, but the client itself is not yet in cyclic operation.
		Blinking green (3x)	Cyclic operation of the client is in preparation.
		Solid green	The client is in cyclic operation.
		Flickering green	The client is not in cyclic operation and also does not detect any other stations on the network in cyclic operation.
	Red	Solid red	The POWERLINK node number of the module is 0.
		Blinking red/green	The client is in an error state (drops out of cyclic operation).
	Orange	Solid orange	Module booting

Table 4: POWERLINK - LED status indicators

3.4 Ax1/Ax2/Ax3 - LED status indicators

Label	Color	Function	Description	
Ax1 Ax2 Ax3	Green	Ready	Solid green	The module is ready for operation and the power stage can be enabled (operating system present and booted, no pending permanent or temporary errors).
			Blinking green	The module is not ready for operation. Examples: <ul style="list-style-type: none"> No signal on one or both enable inputs DC bus voltage outside the tolerance range Overtemperature on the motor (temperature sensor) Motor feedback not connected or defective Motor temperature sensor not connected or defective Overtemperature on the module (IGBT junction, heat sink, etc.) Disturbance on network
	Red	Error	Solid red	There is a permanent error on the module. Examples: <ul style="list-style-type: none"> Permanent overcurrent Data in EPROM not valid
			Blinking red	Burning ACOPOS P3 operating system
	Orange	Run	Solid orange	The module's power stage is enabled.
	---	---	LED off	No voltage being supplied to module

Table 5: Ax1/Ax2/Ax3 - LED status indicators

4 Installation

4.1 3-axis modules, single-width

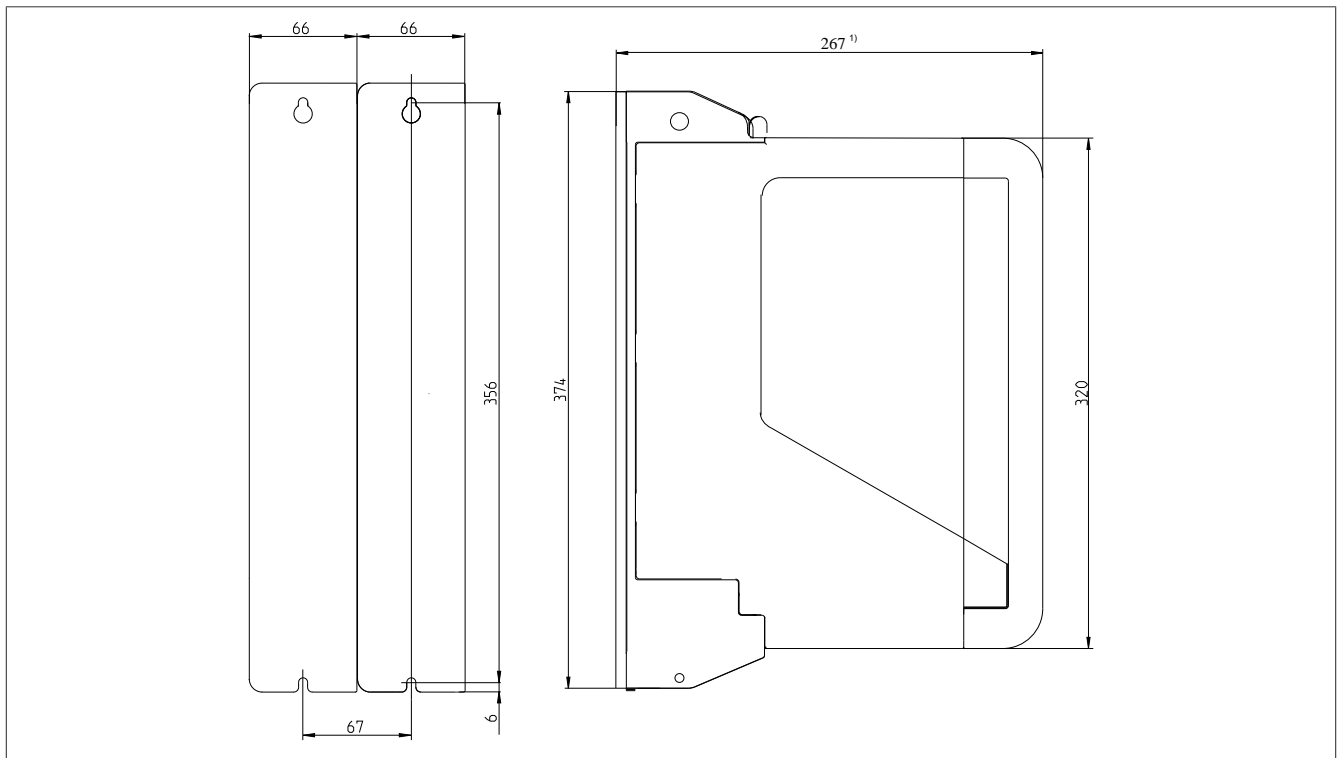


Figure 2: 3-axis modules, single-width - Dimension diagram

1) Without front cover: 264.5 mm

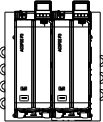
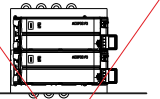
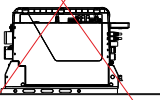
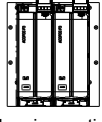

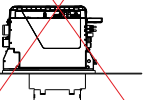
Cold plate mounting	Feed-through mounting
<p>Permissible mounting orientations</p>  <p>Hanging vertically</p> <p>Impermissible mounting orientations</p>  <p>Standing horizontally</p>  <p>Horizontal, face up</p>	<p>Permissible mounting orientations</p>  <p>Hanging vertically</p> <p>Impermissible mounting orientations</p>  <p>Standing horizontally</p>  <p>Horizontal, face up</p>

Table 6: Permissible and impermissible mounting orientations



Information:

When mounting ACOPOS P3 modules for cold-plate or feed-through mounting, be sure not to scratch the backplane. This can impair thermal dissipation to the mounting plate.

4.2 Installation dimensions

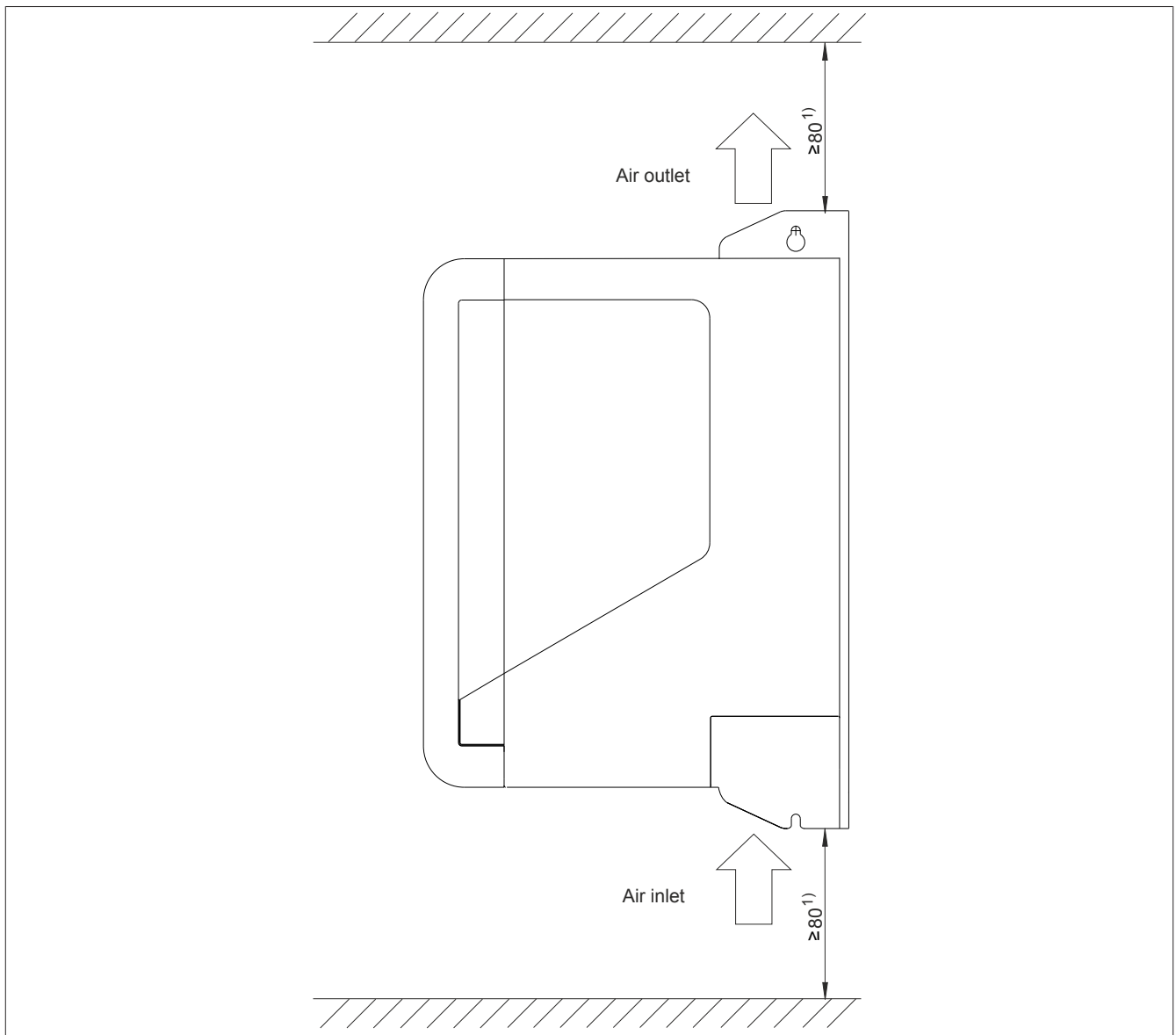


Figure 3: ACOPOS P3 8EI servo drives - Installation dimensions

- 1) For sufficient air circulation, a clearance of at least 80 mm must be provided above and below the module.
 In order to connect display module 8EAD0000.000-1 to the module without problems, spacing of at least 100 mm is necessary above the module.
 In order to ensure easy wiring (taking all minimum bend radii into account), spacing of at least 200 mm is necessary below the module.



Caution!

Cooling air exiting the 8EI servo drive can have a temperature up to 90°C. Any components installed near the air outlet must be designed to withstand these high temperatures!

5 wiring

5.1 Pinout overview

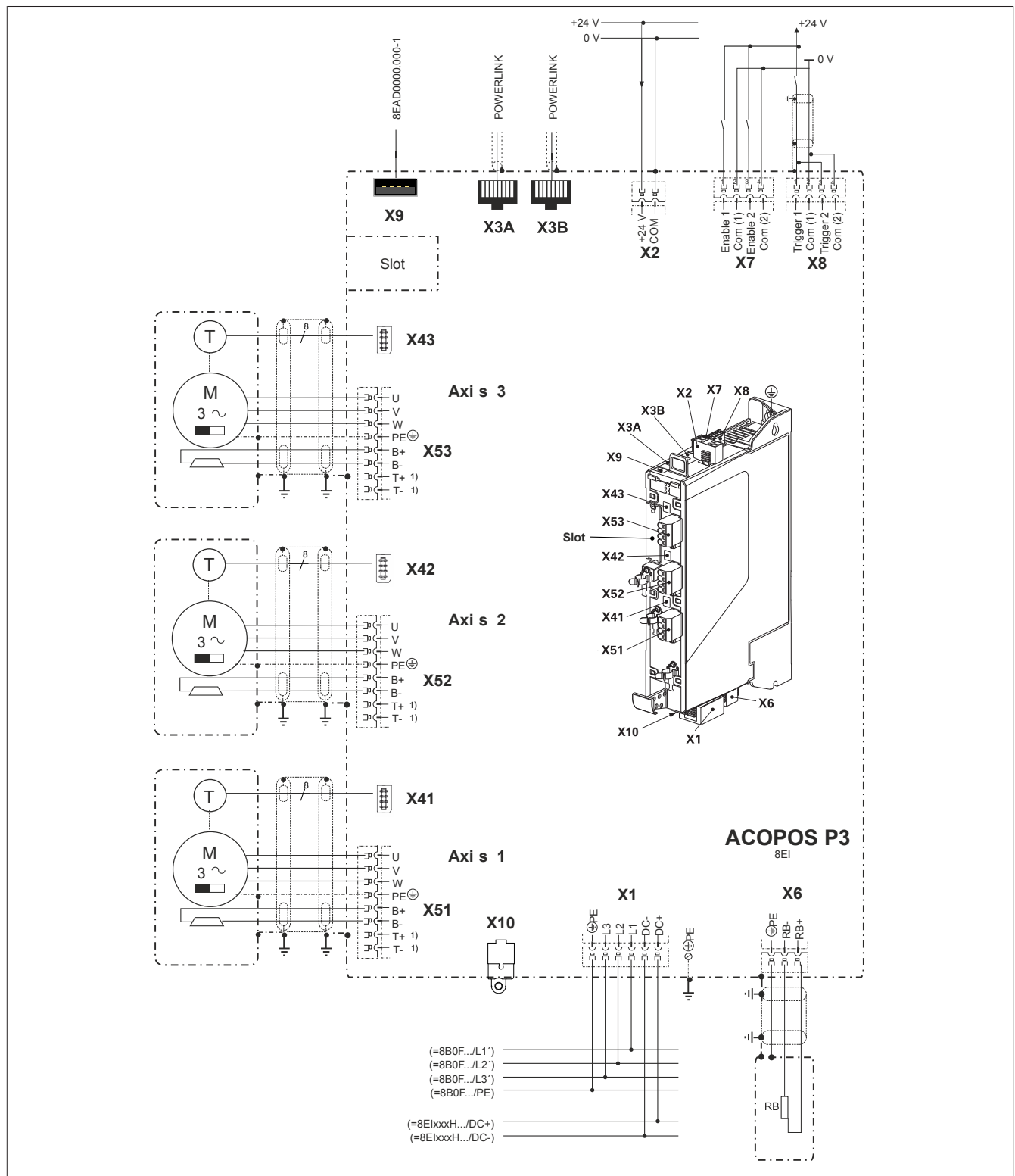


Figure 4: Mains input voltage - 3x 200 to 480 VAC

- 1) A temperature sensor does not need to be connected when using 8ECHxxx hybrid motor cables since the motor temperature is transferred digitally.
- 2) The COM connection on connector X2 must be grounded to achieve a defined relationship between the signal ground and ground potential!

5.2 Connector X1 - Pinout

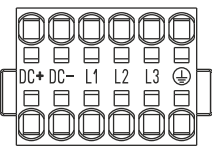
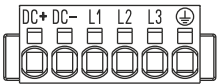

X1		Description	Function
 8TB3206.222B-40	 8TB3106.222B-20	DC+	DC bus connection DC+
		DC-	DC bus connection DC-
		L1	Mains connection L1
		L2	Mains connection L2
		L3	Mains connection L3
		PE	Protective ground conductor

Table 7: Connector X1 - Pinout



Warning!

Only DC bus circuits of 8EI servo drives with the same supply voltage range are permitted to be connected.

5.2.1 Mains connection

3x 200 - 480 VAC

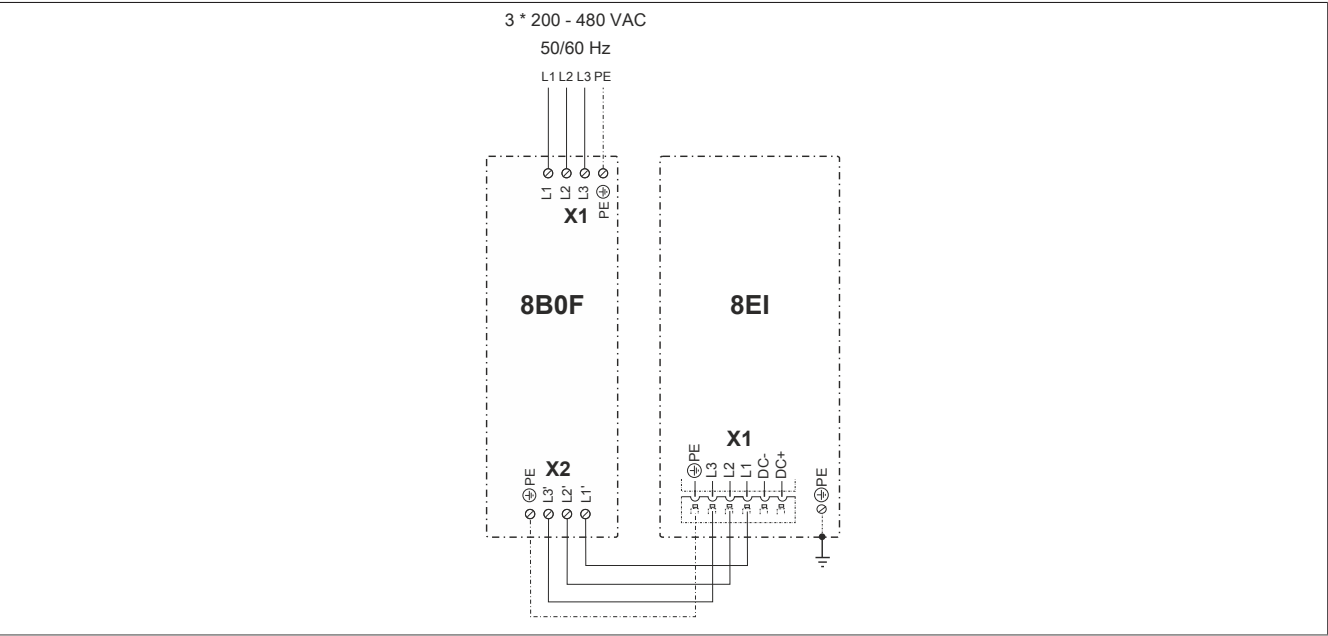


Figure 5: Mains connection 3x 200 - 480 VAC

5.3 Connector X2 - Pinout



X2		Name	Function
 8TB3202.222C-40	 8TB3102.222C-20	COM	0 V power supply
		24 V	+24 V power supply

Table 8: Connector X2 - Pinout

5.4 Connectors X3A, X3B - Pinout


<div> X3A, X3B  </div>	Pin	Name	Function
	1	RXD	Receive signal
	2	RXD\	Receive signal inverted
	3	TXD	Transmit signal
	4	Shield	Shield
	5	Shield	Shield
	6	TXD\	Transmit signal inverted
	7	Shield	Shield
	8	Shield	Shield

Table 9: X3A, X3B connectors - Pinout

5.5 Connector X4x (digital multi-encoder interface) - Pinout

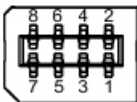
X4x	Pin	Name	Function depending on configured encoder type					HiPERFACE DSL	EnDat 3.0
			EnDat 2.2	SSI	BiSS	T-Format			
	1	U+	Encoder power supply +				---		
	2	T	Clock output				---		
	3	---	---	Sense input +5 V ¹⁾		---	HiPERFACE DSL	Encoder power supply / Signal +	
	4	T\	Clock output inverted				---		
	5	---	---	Sense input 0 V ¹⁾		---	HiPERFACE DSL inverted	Encoder power supply / Signal 0 V	
	6	D	Data				---		
	7	COM	Encoder power supply 0 V				---		
	8	D\	Data inverted				---		

Table 10: Connector X4x - Pinout

1) Only if the encoder supply voltage (5 V) is configured accordingly.

5.6 Connector X5x - Pinout

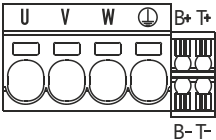
<div> X5x  </div>	Name	Function
<div> 8TB3308.222A-00 </div>	B+	Brake +
	B-	Brake -
	T+	Temperature sensor + ¹⁾
	T-	Temperature sensor - ¹⁾
	PE	Protective ground conductor
	U	Motor connection U
	V	Motor connection V
	W	Motor connection W

Table 11: Connector X5x - Pinout

1) A temperature sensor does not need to be connected when using a hybrid motor cable solution since the motor temperature is transferred digitally.



Danger!

The connections for the motor temperature sensors and the motor holding brake are safely isolated circuits. As a result, only devices or components that have at least safe isolation per IEC 60364-4-41 or EN 61800-5-1 are permitted to be connected to these connections.



Information:

B&R recommends wiring the ACOPOS P3 X5x motor connectors in the following order:

1. X51
2. X52



Caution!

If B+ and B- are swapped when connecting the permanent magnet holding brakes, then the brakes cannot be opened! ACOPOS P3 servo drive modules cannot determine if a holding brake is connected with reverse polarity!

5.7 Connector X6 - Pinout


X6	Name	Function
 8TB3103.222A-20	PE	Protective ground conductor
	RB-	Braking resistor -
	RB+	Braking resistor +

Table 12: Connector X6 - Pinout



Danger!

During operation, the contacts of connector X6 carry dangerous voltages greater than 60 VDC. Touching one of these contacts can result in a life-threatening electric shock. This could result in death or severe injury.

For this reason, terminal block 8TB3103.222A-20 or 8TB4103.222A-10 must always be connected to connector X6 during operation.

5.8 Connector X7 - Pinout

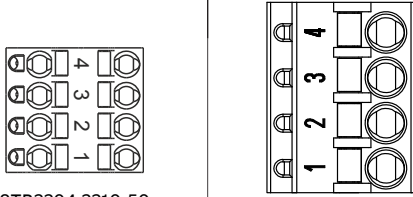
X7	Pin	Name	Function
 8TB2204.2210-50 8TB2104.2210-50	1	Enable 1	Enable 1
	2	COM (1)	Enable 1 0 V
	3	Enable 2	Enable 2
	4	COM (2)	Enable 2 0 V

Table 13: Connector X7 - Pinout

5.9 Connector X8 - Pinout

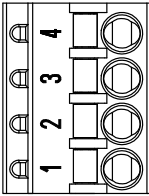
X8	Pin	Name	Function
 8TB2104.2210-00	1	Trigger 1	Trigger 1
	2	COM (1)	Trigger 1 0 V
	3	Trigger 2	Trigger 2
	4	COM (2)	Trigger 2 0 V

Table 14: Connector X8 - Pinout

5.10 IT jumper X10



Caution!

Remove IT jumper X10 before using the 8EI servo drive in IT power systems!

Procedure

- 1) Loosen and remove the locking screw on IT jumper X10.
- 2) Pull IT jumper X10 out of the 8EI servo drive.

6 Setting POWERLINK node numbers

ACOPOS P3 8EI servo drives do not have node number switches and are delivered with the node number set to 0.

There are 2 ways to set the node number:

- Setting with dynamic node allocation (DNA) in Automation Studio
- Setting with the 8EAD0000.000-1 display module



Information:

If an ACOPOS P3 8EI servo drive is supplied with 24 VDC and its node number is set to 0, then LED "PLK" is lit solid red.



Information:

Node numbers in the range 001 to 239 are permitted.

Node number 000 and in the range 240 to 255 are reserved and not permitted.



Information:

A node number set using the 8EAD0000.000-1 display module is only applied the next time the 24 VDC power supply of the ACOPOS P3 8EI servo drive is switched back on.

Setting with dynamic node allocation (DNA)



Information:

The node number of the first ACOPOS P3 8EI servo drive in an ACOPOS P3 drive system can only be set using DNA if it is connected via POWERLINK directly to the controller or another POWERLINK-capable module (in DNA mode) that can switch hub ports (e.g. X20BC...).

If this is not the case, the node number of the first ACOPOS P3 8EI servo drive in an ACOPOS P3 drive system can only be set using the 8EAD000.0000-00 display module.



Information:

Setting the node number using DNA only works on ACOPOS P3 8EI servo drives with node number 0 (factory setting).

See also section "Dynamic node allocation (DNA)" in Automation Help.

Setting with the 8EAD0000.000-1 display module

See "Accessories / Display module 8EAD0000.000-1" in the ACOPOS P3 user's manual.