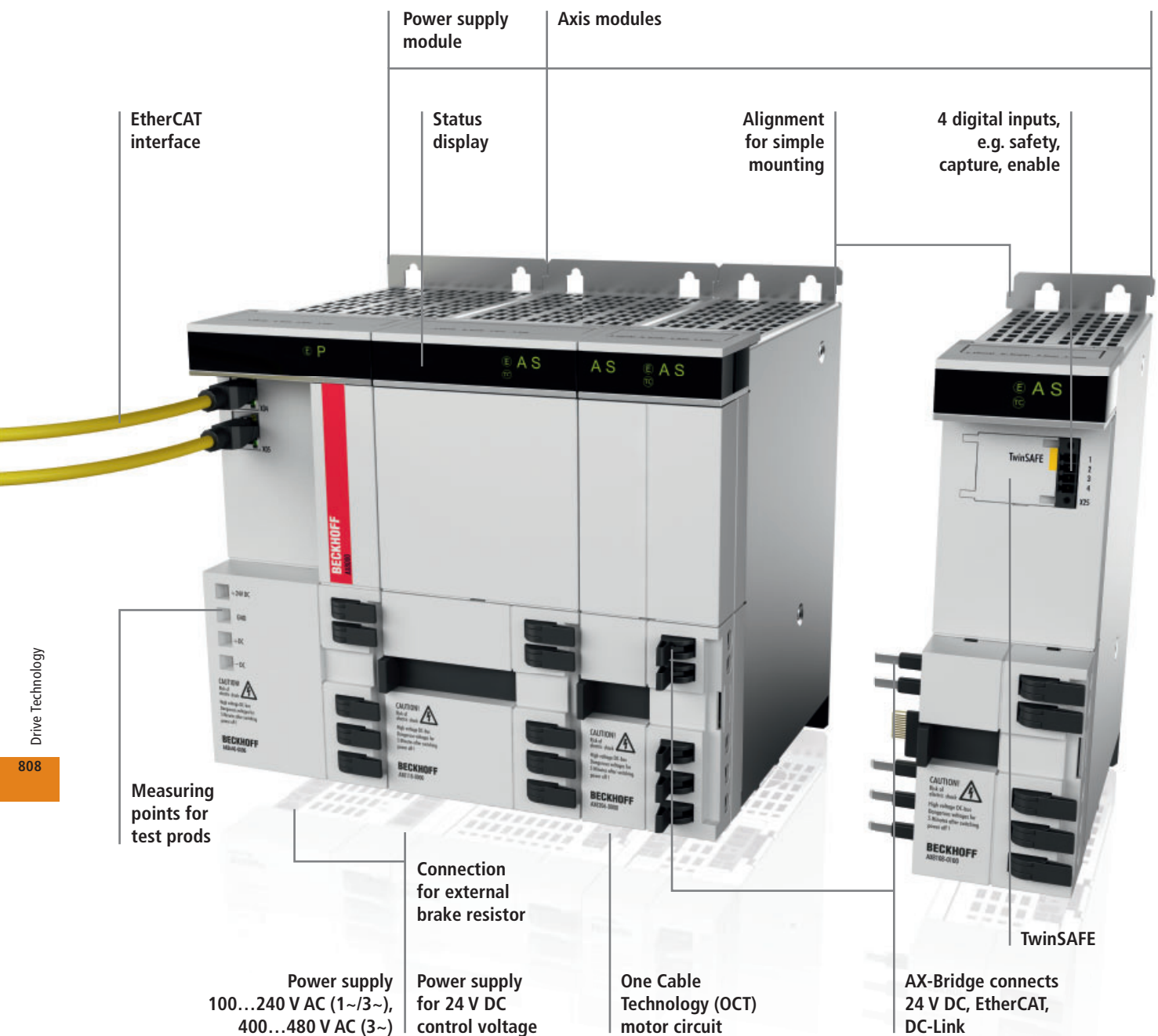


AX8000 | Multi-axis servo system





AX8620 | Power supply module, 20 A



AX8640 | Power supply module, 40 A



AX8108 | Axis module, 8 A



AX8118 | Axis module, 18 A



AX8206 | Double-axis module, 2 x 6 A

The AX8000 multi-axis servo system greatly simplifies the implementation of multi-channel drive solutions. The required number of 1-channel or 2-channel axis modules are attached to the central supply module. The modules are connected without screws or tools using the built-in AX-Bridge quick connection system, which is based on spring-loaded terminals. The 1-axis and 2-axis modules can optionally be equipped with STO or TwinSAFE (drive-integrated safety functions).

eXtreme Fast Control in the drive

The EtherCAT-based AX8000 multi-axis servo system combines powerful FPGA technology with multi-core ARM processors. The new multi-channel current control technology enables extremely short sampling and response times. The entirely hardware-implemented current controller combines

the advantages of analog and digital control technology: reaction to a current deviation from the setpoint value is possible within 1 μ s; the velocity controller cycle time is around 16 μ s at a switching frequency of 32 kHz. The processing of EtherCAT process data (actual and setpoint values) is carried out without a processor almost without delay in the hardware, so that the minimum EtherCAT cycle time is only 62.5 μ s.

One Cable Technology (OCT)

The AX8000 multi-axis servo system supports OCT, the One Cable Technology for power and feedback. In connection with the servomotors from the AM8000 (standard), AM8500 (increased inertia) and AM8800 (stainless steel) series, the wiring is reduced to the standard motor cable, via which the feedback signals are also transmitted. As in sensorless control,

the user no longer has to use an additional feedback cable. All information required for control purposes is transmitted reliably and interference-proof via a digital interface.

Drive-integrated safety functions

The AX8000 with TwinSAFE supports the typical drive-integrated safety functions and fulfills the requirements of DIN EN ISO 13849-1:2008 (Cat. 4, PL e).

- stop functions (STO, SOS, SS1, SS2)
- speed functions (SLS, SSM, SSR, SMS) with up to 8 speeds
- position functions (SLP, SCA, SLI) with reference cams
- acceleration functions (SAR, SMA)
- rotating direction functions (SDIp, SDIn)
- brake function (SBC)
- safely limited torque (SLT)

Technical data	AX8000
Bus system	EtherCAT
Drive profile	CiA402 according to IEC 61800-7-201 (CoE)
Rated supply voltage	100...480 V AC, 50/60Hz
DC-Link voltage	140...890 V DC
Current control	1 μ s update time, 16 μ s cycle time
Design form	modular system with 60 or 90 mm wide elements
Protection class	IP 20
Operating/storage temperature	5...40 °C
Approvals	CE, cULus (in preparation)

► www.beckhoff.com/AX8000



AX8620, AX8640 | Power supply modules

A power supply module generates the DC-Link voltage (DC) for the supply of the axis modules and the option modules from the mains voltage. It already contains a mains filter, for which the drive is tested and certified in accordance

with EN 61800-3 for Category C3 use.

Any regenerative energy produced, e.g. through strong braking of the motors, can be converted into heat either via the internal brake resistor or via the combination of built-in brake

chopper and external brake resistor. Alternatively, the energy can be buffered in the AX8810 capacitor module.

AX8000 supply modules can be used on 1- and 3-phase low-voltage mains supplies.

- 1-phase mains supplies 100...240 V AC, 50/60 Hz
- 3-phase mains supplies 3 x 200...3 x 480 V AC, 50/60 Hz

A separate 24 V DC power supply is required in each case.

Technical data 400...480 V	AX8620-0000	AX8640-0000
Rated supply voltage	3 x 400...480 V AC	
Rated input current at 40 °C	3~: 20 A	3~: 40 A
Rated output current	3~: 24.5 A DC	3~: 49.0 A DC
Rated output	3~: 13 kW	3~: 26 kW
DC-Link voltage	max. 890 V DC	
DC-Link capacitance	675 µF	405 µF
Max. braking power (internal/external)	52.1 kW/43.6 kW	21.8 kW/21.8 kW
Further information	www.beckhoff.com/AX8620	www.beckhoff.com/AX8640

Technical data 100...240 V	AX8620-1000	AX8640-1000
Rated supply voltage	3 x 200...240 V AC 1 x 100...240 V AC	3 x 200...240 V AC
Rated input current at 40 °C	1~: 10 A 3~: 20 A	3~: 40 A
Rated output current	1~: 5 A DC 3~: 24.5 A DC	3~: 49.0 A DC
Rated output	1~: 1.5 kW 3~: 7.5 kW	3~: 15 kW
DC-Link voltage	max. 440 V DC	
DC-Link capacitance	1020 µF	1700 µF
Max. braking power (internal/external)	5.4 kW/9.8 kW	10.7 kW/22 kW
Further information	www.beckhoff.com/AX8620	www.beckhoff.com/AX8640



AX81xx, AX82xx | Axis modules

An axis module contains the DC-Link and the inverter for supplying the motor. Depending on the required number of axes, the axis modules are attached to the supply module to form the multi-axis servo system. Axis modules with different ratings can be combined in order to enable an optimised design of the individual axes.

Supporting a wide supply voltage range from 100 to 480 V AC, the axis modules can be operated without limitation with any of the supply modules. This flexibility simplifies the implementation of machine configurations for any type of mains supply. The electrical connection is established with-out tools via the already inte-

grated AX-Bridge: it automatically connects DC-Link, 24 V DC control voltage and communication via EtherCAT between the attached modules. The DC-Link connection enables the exchange of energy during acceleration and braking procedures, where the regenerative brake energy is primarily stored in the common DC-Link. If the energy exceeds

the DC-Link capacitance, it can be destroyed via a brake resistor of the supply module.

Technical data	AX8108-0000	AX8118-0000	AX8206-0000
Rated current	1 x 8 A	1 x 18 A	2 x 6 A
DC-Link voltage	max. 890 V DC		
DC-Link capacitance	135 µF	270 µF	135 µF
Number of channels	1	1	2
Minimum rated channel current at full current resolution	1 A	4 A	1 A
Peak output current	20 A	40 A	14 A 20 A
Further information	www.beckhoff.com/AX81xx	www.beckhoff.com/AX81xx	www.beckhoff.com/AX82xx

AX88xx | Option modules

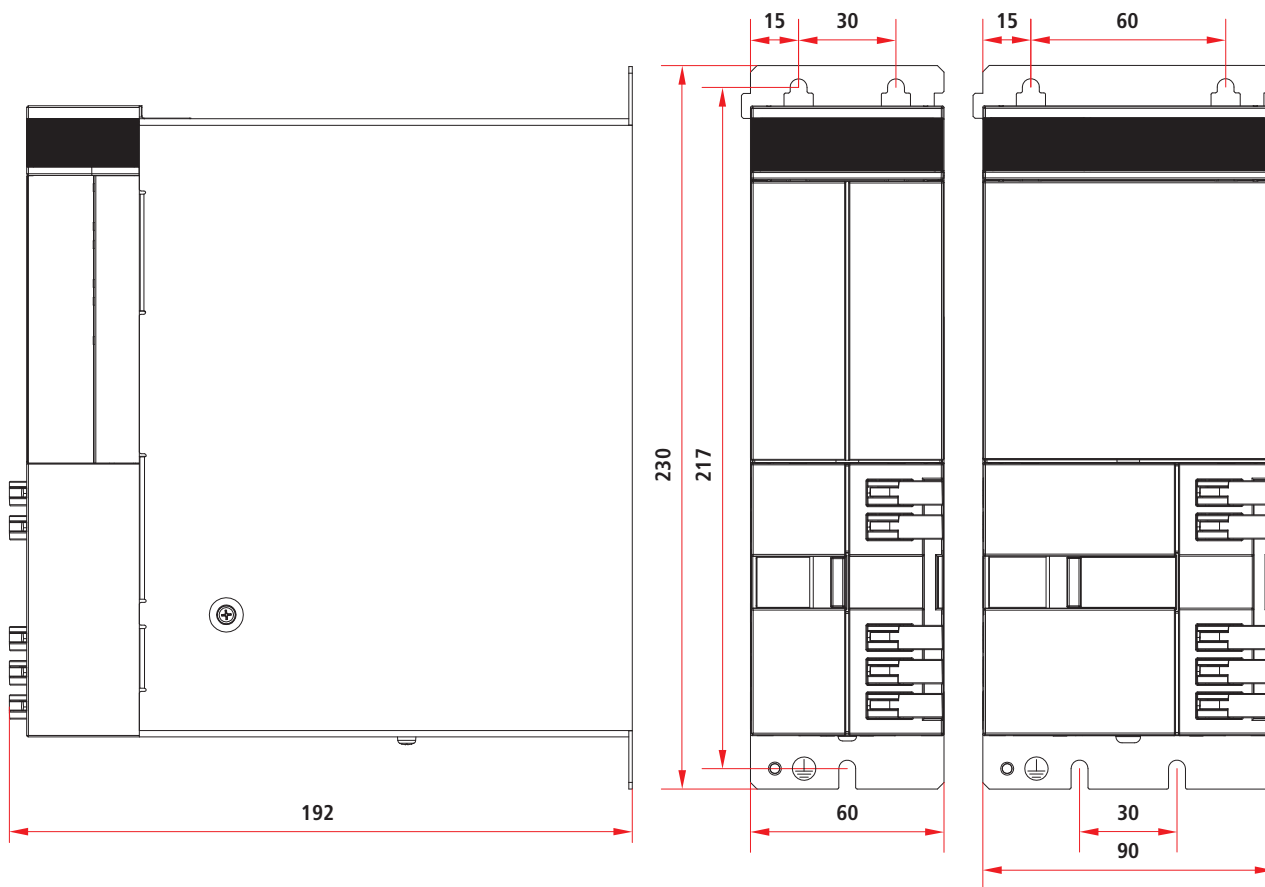
An AX8810 capacitor module extends the DC-Link capacitance and is particularly suitable in combination with the AX8620-1000 single-phase supply for

the support of the DC-Link. It enables energy savings: voltage peaks generated by braking motors are taken up and stored. This makes the activation of

the brake resistor mostly unnecessary and helps to reduce power losses. Overall, the use of the capacitor module makes a reduction in the total connected

load possible and also a smaller dimensioning of the fuse.

Technical data	AX8810-0000	AX8810-1000
Function	capacitor module/DC-Link extension module	
For power supply modules	AX86xx-0000	AX86xx-1000
DC-Link voltage	max. 890 V DC	max. 440 V DC
DC-Link capacitance	1755 µF	4420 µF
Further information	www.beckhoff.com/AX8810	



Dimensions	Height without connectors	Depth without connectors	Width
AX8620	230 mm	192 mm	60 mm
AX8640	230 mm	192 mm	90 mm
AX8108	230 mm	192 mm	60 mm
AX8118	230 mm	192 mm	90 mm
AX8206	230 mm	192 mm	60 mm
AX8810	230 mm	192 mm	60 mm

Accessories for AX8000 Servo Drives at AM8xxx

Motor cables 1 mm² with iTec plug system for AM801x, AM802x, AM803x and AM853x at AX8108 and AX8206

Ordering information	Motor cable with 1 mm ² wire gauge, highly flexible for drag-chain use
ZK4800-8022-xxxx	highly flexible, drag-chain suitable cable with 5 million bending cycles, max. 240 m/min, max. 30 m/s ² , min. bending radius = 81 mm (7 x OD), max. drag-chain length horizontal 20 m, vertical 5 m, (4 x 1 mm ² + (2 x 0.75 mm ²) + (2 x AWG22))
ZK4800-8022-0050	example for 5 m length
ZK4501-8022-xxxx	extension cable

Motor cables 1.5 mm² with M23 speedtec[®] plug for AM883x and AM8x4x up to AM8x6x (up to winding code P) at AX8108 and AX8206

Ordering information	Motor cable with 1.5 mm ² wire gauge, fixed installation
ZK4800-8003-xxxx	cables for fixed installation min. bending radius = 61 mm (5 x OD), (4 x 1.5 mm ² + (2 x 0.75 mm ²) + (2 x AWG22))
ZK4800-8003-0050	example for 5 m length
ZK4501-8003-xxxx	extension cable

Ordering information	Motor cable with 1.5 mm ² wire gauge, highly flexible for drag-chain use
ZK4800-8023-xxxx	highly flexible, drag-chain suitable cable with 5 million bending cycles, max. 240 m/min, max. 30 m/s ² , min. bending radius = 89 mm (7 x OD), max. drag-chain length horizontal 20 m, vertical 5 m, (4 x 1.5 mm ² + (2 x 0.75 mm ²) + (2 x AWG22))
ZK4800-8023-0050	example for 5 m length
ZK4501-8023-xxxx	extension cable

Motor cables 2.5 mm² with M23 speedtec[®] plug for AM8x4x up to AM8x6x (up to winding code P) at AX8118

Ordering information	Motor cable with 2.5 mm ² wire gauge, fixed installation
ZK4800-8004-xxxx	cables for fixed installation min. bending radius = 69 mm (5 x OD), (4 x 2.5 mm ² + (2 x 1 mm ²) + (2 x AWG22))
ZK4800-8004-0050	example for 5 m length
ZK4501-8004-xxxx	extension cable

Ordering information	Motor cable with 2.5 mm ² wire gauge, highly flexible for drag-chain use
ZK4800-8024-xxxx	highly flexible, drag-chain suitable cable with 5 million bending cycles, max. 240 m/min, max. 30 m/s ² , min. bending radius = 97 mm (7 x OD), max. drag-chain length horizontal 20 m, vertical 5 m, (4 x 2.5 mm ² + (2 x 1 mm ²) + (2 x AWG22))
ZK4800-8024-0050	example for 5 m length
ZK4501-8024-xxxx	extension cable

Brake energy management

Ordering information	AX2090-BW80-xxxx Ballast resistors
AX2090-BW80-1000	external ballast resistor for AX8620-1000 and AX8640-0000 supply modules, 1.0 kW, 18 Ω ⁽¹⁾
AX2090-BW80-1600	external ballast resistor for AX8620-0000 supply modules, 1.6 kW, 33 Ω ⁽¹⁾
AX2090-BW80-2000	external ballast resistor for AX8640-1000 supply modules, 2.0 kW, 8 Ω ⁽²⁾
AX2090-BW80-3000	external ballast resistor for AX8640-0000 supply modules, 3.0 kW, 15 Ω ⁽²⁾

Recommended interface cables: ⁽¹⁾ ZK4000-2101-2xxx (1.5 mm²), ⁽²⁾ ZK4000-2102-2xxx (2.5 mm²)