DS2020 Single Axis Extremely Compact Servo Drives

If you need the best performance and design flexibility, look no further than Moog and its expertise. With collaboration, creativity and cutting-edge technological solutions, we can help you tackle the toughest problems and improve the performance of your machines.

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SYSTEM OVERVIEW

Highly compact, modular design for top productivity

- The DS2020 is the new digital "stand-alone" servodrive, purposely designed with reduced dimensions. The current sizes of the four versions (50, 75, 85 and 125 mm) range from 2 Arms to 48 Arms continuous, and from 4 Arms to 96 Arms peak.

Designed to work with different motor types and feedback devices

- The DS2020 servodrive is designed to control synchronous brushless or asynchronous motors (it is compatible with various feedback systems (Resolver standard, Encoder Stegmann single and multi-turn, incremental) as well as motors with sensorless algorithms.

User-friendly graphic user interface (GUI)

- The graphic user interface offers easy access to all the functions, simplifying the settings, initial start-up and system monitoring. Communication with the PC is via a USB or RS422 interface.

Integrated Safe Torque Off (STO) function

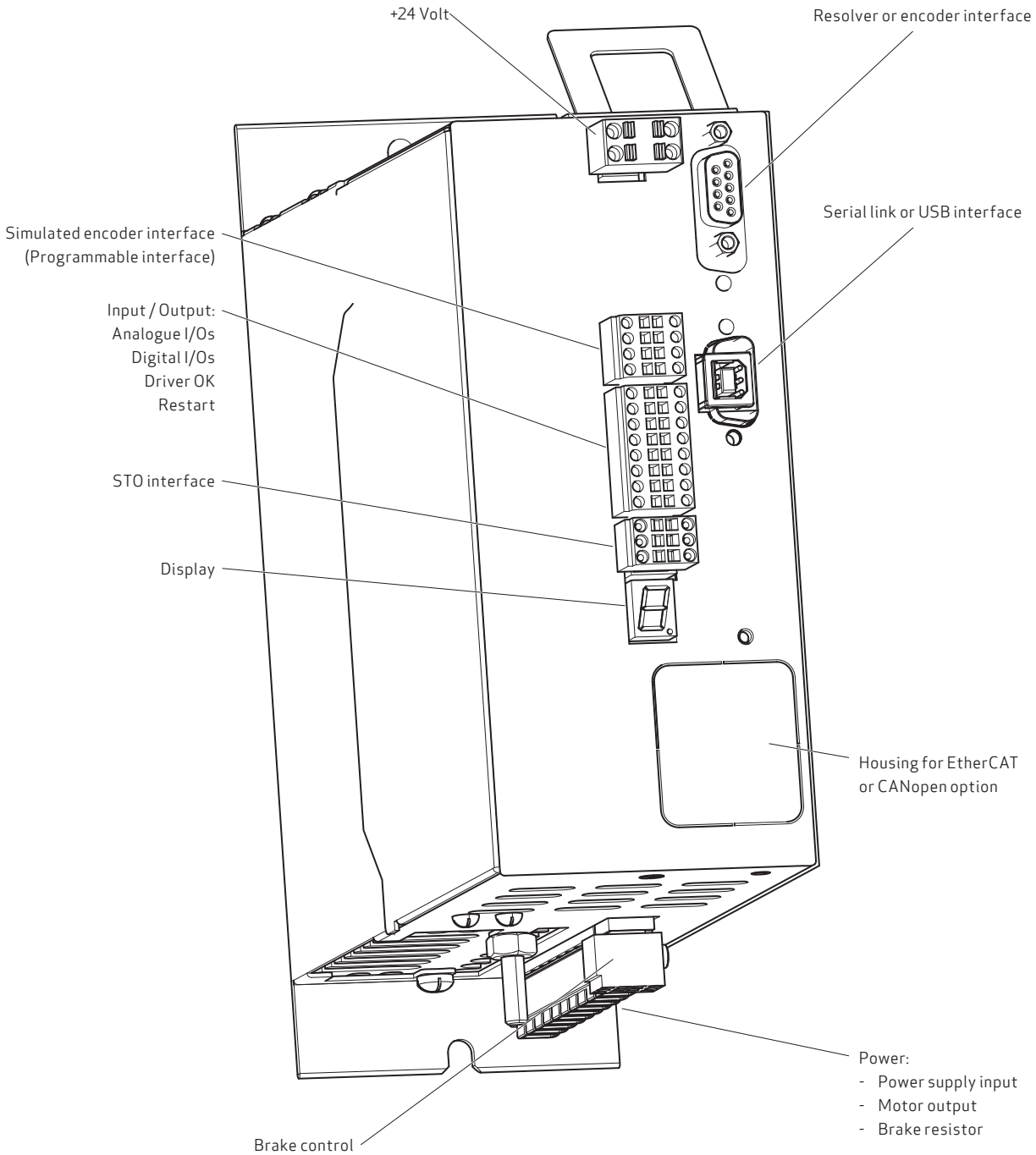
- The Safe Torque Off safety function is integrated as standard in every servodrive

Applications

- Single-axis applications in industrial automation
- Applications with high precision and top dynamics
- Applications requiring significant space saving during installation
- Applications with personalised functions and flexible configurations
- Applications requiring quick, precise movements

AXIS MODULE

Interface

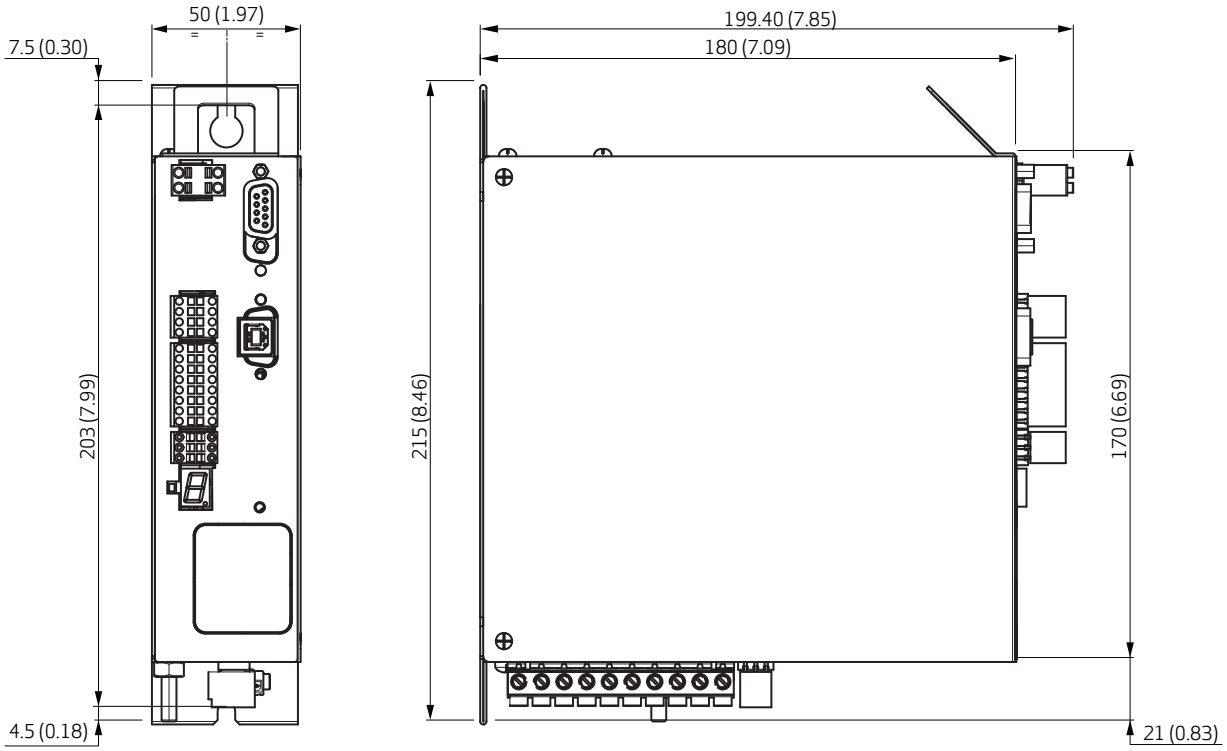


Technical characteristics and environmental data

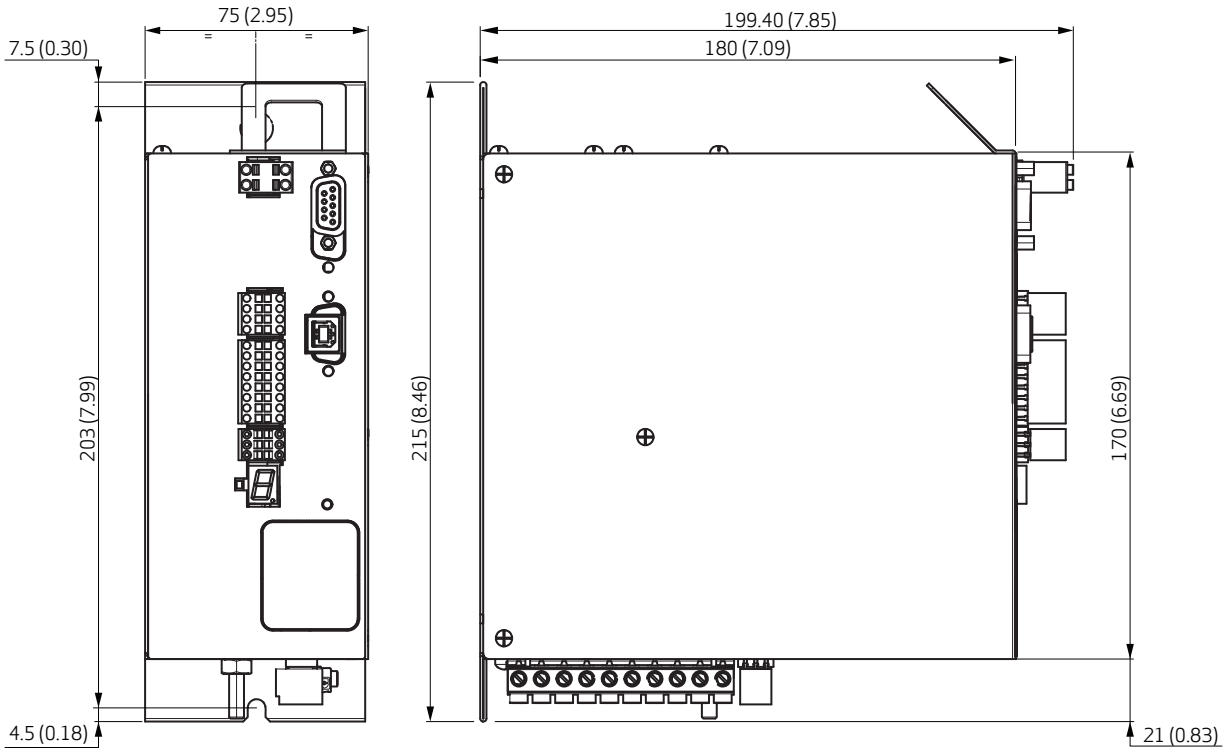
Control functions	Implementation of Torque, Speed and Position loops
Command protocols	EtherCAT, CANopen and "Analogue"
Machine safety	STO (Safe Torque Off) SILCL3 PL"e"
AC/DC conversion	Three-phase input jumper with soft start
Power supply range	Up to 480 V AC +/- 10 %
PWM frequency	8 kHz (from 2 to 16 kHz conf. via SW)
Encoder simulation	Simulated encoder output with programmable number of pulses
Auxiliary power supply voltage	+ 24V AC +/- 10%
Rated current	From 2 to 48 Arms
Peak current	From 4 to 96 Arms
Analogue inputs	2 inputs +/- 10 volt, differential
Analogue outputs	2 outputs +/- 10 volt, single-ended
Digital inputs	2 opto-insulated digital inputs / 1 restart input
Digital outputs	1 opto-insulated digital output / 1 drive OK output
Communication interface for set-up	USB, RS422
Ambient operating temperature	From 0°C to 40°C; up to 55°C with an output current reduction (-2%/°C)
Storage temperature	From -25°C to +55°C
Transport temperature	From -25 °C to +55 °C (for short periods of no more than 24 hours, it is possible to reach up to +70 °C)
Humidity permitted during operation	From 5 to 85% (condensate not permitted)
Humidity permitted for storage	From 5 to 95%
Humidity permitted for transport	95% at +40 °C
Assembly height	Up to 1000m; up to 2000m with an output current reduction (-2%/100m)
Mechanical resistance in compliance with EN 60721-3-3	Vibration: 3mm for frequencies between 2 and 9 Hz Vibration: 9.8 m/s^2 (1 g) for frequencies between 9 and 200 Hz Shock: 98 m/s^2 (10 g) for 11 ms
Motor overtemperature protection	PTC or NTC
Motor brake command	Integrated (max. 2 Amp current)
Brake resistor	Integrated
Certifications	EC
IP protection rating	IP20

Dimensions

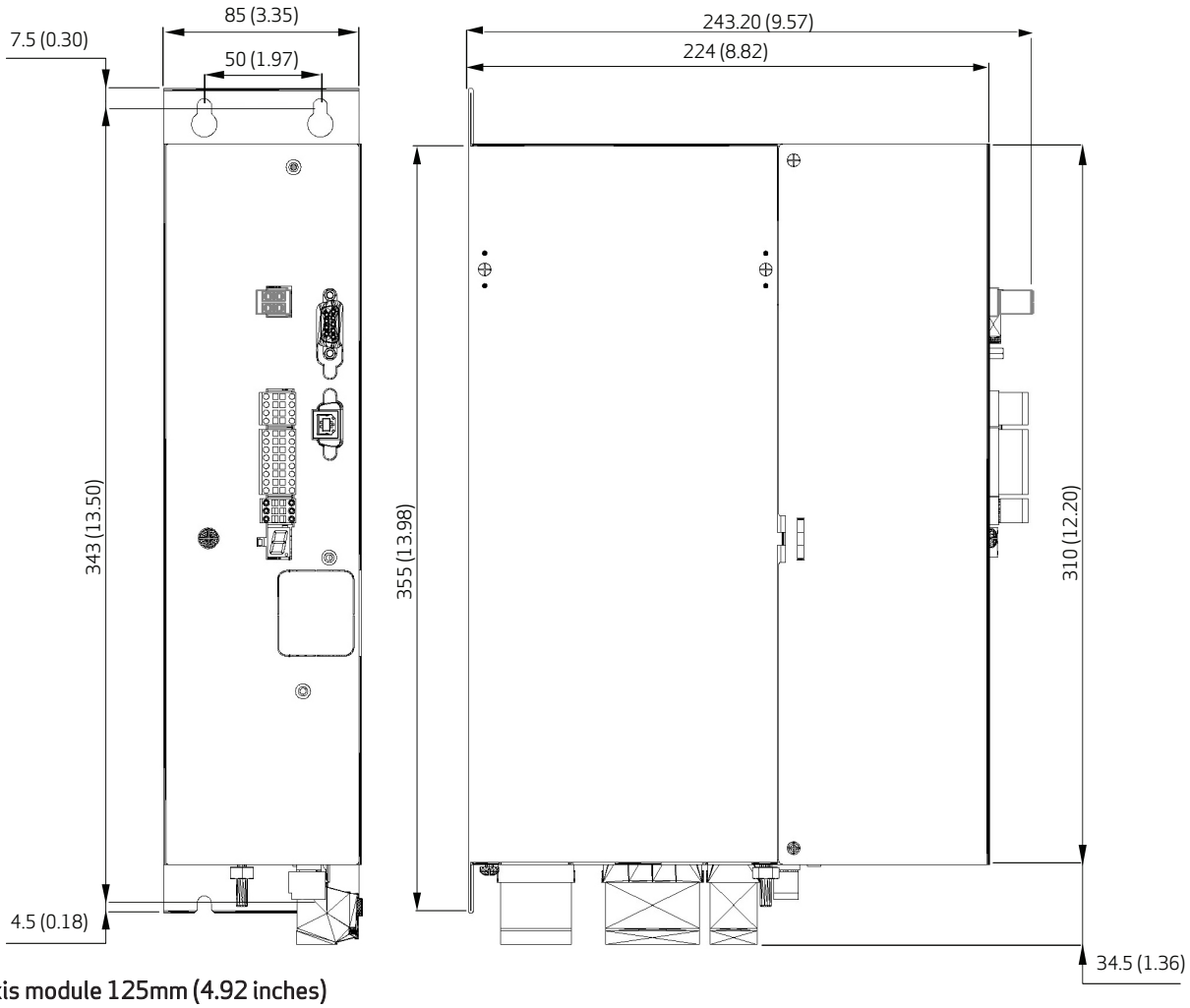
Axis module 50mm (1.97 inches)



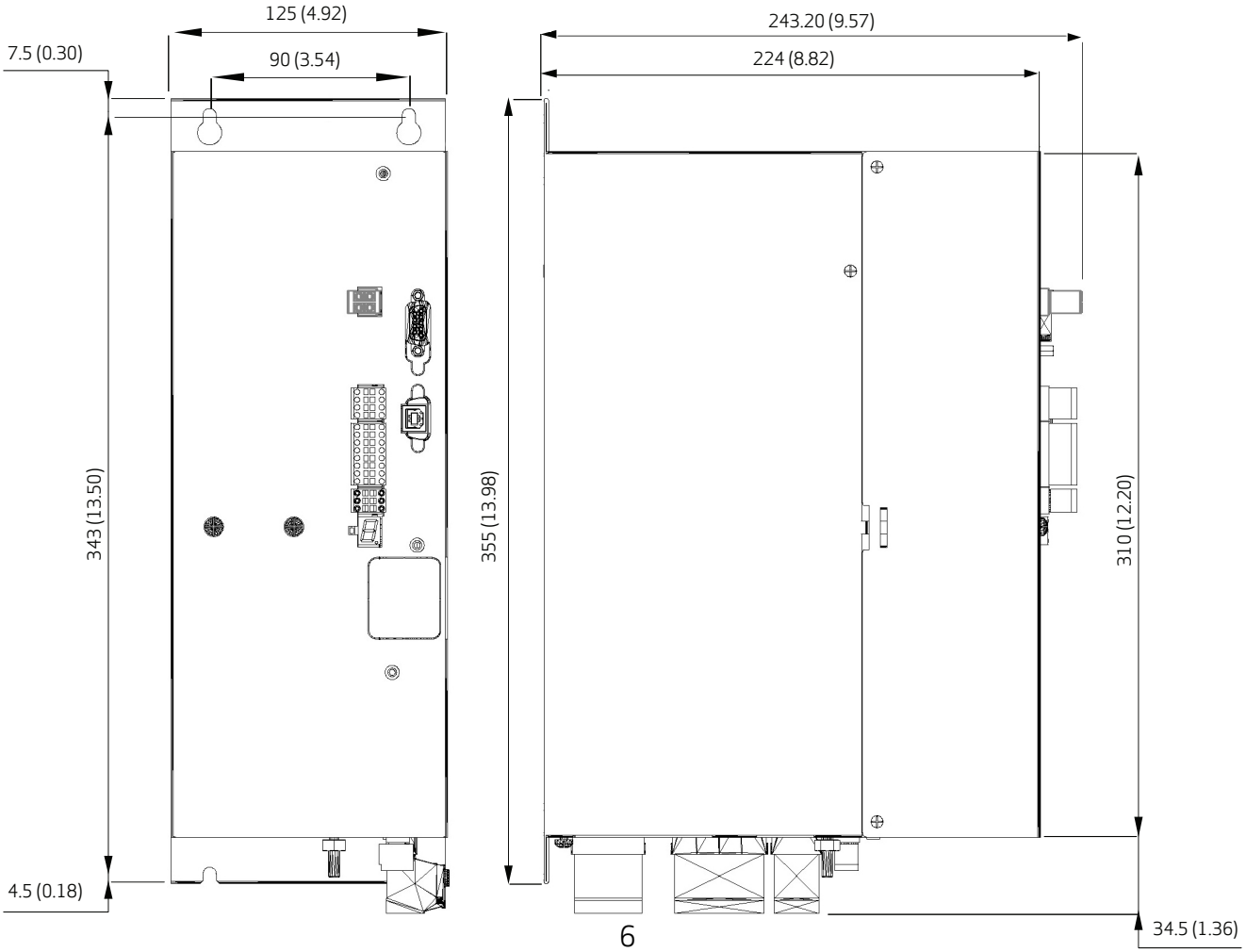
Axis module 75mm (2.95 inches)



Axis module 85mm (3.35 inches)



Axis module 125mm (4.92 inches)



FIELDBUS

EtherCAT

- Synchronous and real-time high-performance RT-Ethernet fieldbus
- CANopen over EtherCAT communication profile (CoE)
- CiA 402 device profile

CAN Bus

- CAN (ISO 11898, IEC/EN 61800-7) fieldbus
- 10 kb/s to 1 Mb/s baud rate
- CANopen (CiA 301) communication profile
- CiA 402 device profile

GRAPHIC INTERFACE (GUI)

The DX2020GUI graphic interface is used for:

- Basic configuration with access to the system parameters (transducers, digital and analogue I/Os, motor parameters, etc.)
- Calibration of the speed and position loops to personalise and optimise the drive response
- Direct control of the drive (jog mode, speed profile with internal generator, etc.)
- Commissioning and diagnostics
- Drive and I/O monitoring
- Registration of the centre distance sizes via internal memory support and signal visualisation on 4-track digital oscilloscope
- Firmware updating, drive parameter management (saving, backup, etc.)

OPTIONS AND ACCESSORIES

- Optional external braking resistors for heavy-duty applications
- Fieldbus option (EtherCAT or CANopen)
- Motor feedback interface option (Resolver (standard), sinusoidal encoder or TTL encoder)
- Communication interface option (USB or RS422 (standard))

Connector kit option

All the connectors can be ordered by means of a separate code. These kits are necessary for the wiring of the power supply and for the spare part or repair of the wiring.

For the correct coupling between the connector kit and the module, refer to the page "TO ORDER".

Each connector kit contains:

- 3 digital part connectors
- 1 24 V connector
- 1 power connector
- 1 brake connector
- 1 transducer connector (9 poles per Resolver, 15 poles per Encoder)

Network filters

Rated voltage	3 x 480V, + 10%, 50/60 Hz, at +50°C
Overload	1.5x for 60s, repeatable every 60 minutes
Ambient temperature	From -25 °C to +100 °C, with current reduction starting from +60 °C (1.3%/°C)
Assembly height	1000 m, with current reduction of up to 4000 m (6%/1000 m)
Relative air humidity	From 15 to 85% (condensate not permitted)
Storage temperature	From -25 °C to +70 °C
IP protection rating	IP20
Acceptance test	Complies with EC
Industrial environment - EN61800-3 complies with radio shielding	Permitted drive cable length - up to 100m

	Code	**Rated current at 50°C (40°C)**	**Drive size**
EMC filters	AT6009	7 (7.7)	2/4 4/8 6/12 8/16
	AT6010	16 (17.5)	12/22
	AT6011	30 (33)	16/32 24/48
	AT6012	42 (46)	32/64
	AT6013	55 (66)	48/96

ORDERING

Axis module coding

Version	
1	Standard model
E	Special model

Mechanical hardware configuration			
Value	Type / Width	Rated current	Peak current
02	Single / 50mm L50A	2 Arms	4 Arms
04	Single / 50mm L50A	4 Arms	8 Arms
06	Single / 75mm L75A	6 Arms	12 Arms
08	Single / 75mm L75A	8 Arms	16 Arms
12	Single / 75mm L75B	12 Arms	22 Arms
16	Single / 85mm L85A	16 Arms	24 Arms
24	Single /85mm L85A	24 Arms	32 Arms
32	Single / 125mm L125A	32 Arms	48 Arms
48	Single / 75mm L75B	48 Arms	96 Arms

X2 / X3 - Type of transducer and type of Serial link RS422		
Value	Type	
R (1)	RESOLVER	SERIAL
T	RESOLVER	USB
E	ENCODER SINCOS	SERIAL
U	ENCODER SINCOS	USB
G	TTL SINGLE ENDED	SERIAL
H	TTL FULL DIFFERENTIAL	SERIAL
L	TTL SINGLE ENDED	USB
M	TTL FULL DIFFERENTIAL	USB

Special versions
Value - Internal coding (2)

Special configurations	
Value - Internal coding (2)	
00	Standard

Hardware revision
Value - Internal coding (2)

Fieldbus configuration	
Value	Type
0	Analogue references (1)
1	CanBus configuration (option)
2	EtherCAT configuration (option)

To order the connectors

Connector kit code	Type of transducer and type of serial link	
BC8901-R	RESOLVER	SERIAL
	RESOLVER	USB
BC8902-R	ENCODER SINCOS	SERIAL
	ENCODER SINCOS	USB
	TTL SINGLE ENDED	SERIAL
	TTL FULL DIFFERENTIAL	SERIAL
	TTL SINGLE ENDED	USB
	TTL FULL DIFFERENTIAL	USB

(1) Standard version

(2) Values assigned by Moog

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