# ENCODER
## PRODUCTS COMPANY

# MODEL A58SB - ABSOLUTE SHAFT ENCODER

Ø58 mm

**SSI CANopen**
Synchronous Serial Interface

## FEATURES

Single Turn/Multi-Turn Absolute Encoder (16 Bit ST / 43 Bit MT)
SSI or CANopen® communication
Maintenance-free and environmentally friendly all-magnetic design
Energy harvesting magnetic multi-turn technology
No gears or batteries
58 mm (2.28") diameter shaft encoder
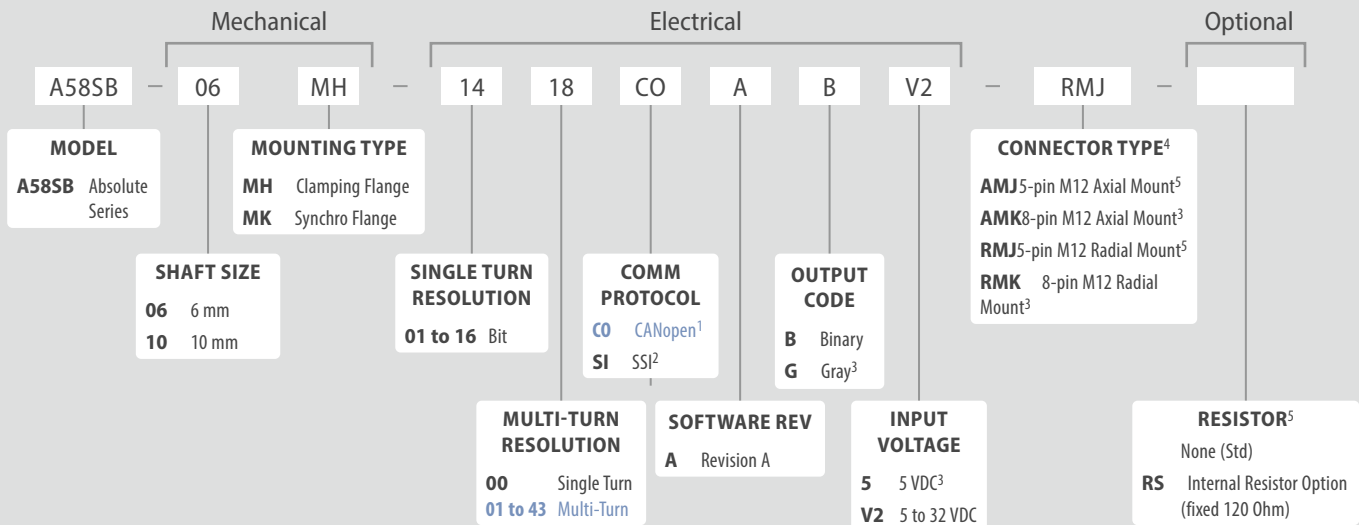Meets CE/EMC standards for immunity and emissions

The Model A58SB Absolute Encoder offers a high performance solution for your absolute feedback needs. It provides maintenance-free feedback thanks to its innovative battery-free and gear-free multi-turn technology. This encoder is especially suited for applications where position information must be retained after loss of system power. Its rugged magnetic technology and high IP rating make the Model A58SB an excellent choice, even in tough industrial environments. Available with two shaft sizes, 6 mm or 10 mm, and two mounting options, the Model A58SB is easily designed into a variety of applications.

## COMMON APPLICATIONS

Robotics, Telescopes, Antennas, Medical Scanners, Wind Turbines, Elevators, Lifts, Motors, Automatic Guided Vehicles, Rotary and X/Y Positioning Tables

## MODEL A58SB ORDERING GUIDE

Blue type indicates price adder options

| Mechanical | | | Electrical | | | | | | Optional | |
|---|---|---|---|---|---|---|---|---|---|---|
| A58SB | 06 | MH | 14 | 18 | CO | A | B | V2 | RMJ | |

**MODEL**
A58SB  Absolute Series

**MOUNTING TYPE**
MH  Clamping Flange
MK  Synchro Flange

**SHAFT SIZE**
06  6 mm
10  10 mm

**SINGLE TURN RESOLUTION**
01 to 16  Bit

**COMM PROTOCOL**
CO  CANopen[1]
SI  SSI[2]

**MULTI-TURN RESOLUTION**
00  Single Turn
01 to 43  Multi-Turn

**SOFTWARE REV**
A  Revision A

**OUTPUT CODE**
B  Binary
G  Gray[3]

**INPUT VOLTAGE**
5  5 VDC[3]
V2  5 to 32 VDC

**CONNECTOR TYPE[4]**
AMJ 5-pin M12 Axial Mount[5]
AMK 8-pin M12 Axial Mount[3]
RMJ 5-pin M12 Radial Mount[5]
RMK 8-pin M12 Radial Mount[3]

**RESISTOR[5]**
None (Std)
RS  Internal Resistor Option (fixed 120 Ohm)

NOTES:
1   Please refer to CANopen® Interface Technical Reference Manual at encoder.com
2   Please refer to Technical Bulletin TB-529: Understanding EPC's SSI Encoders at encoder.com
3   Available with SSI only
4   For mating connectors, cables, and cordsets see Accessories at encoder.com
5   Available with CANopen® only

## MODEL A58SB SPECIFICATIONS

**Electrical**

Input Voltage........................5 to 32 VDC max

............................................5 VDC SSI only

Input Current........................50 mA typical for 5 to 32 VDC

............................................80 mA typical for 5 VDC

Power: Consumption............0.5 W max

Resolution (Single)..............01 to 16 bit

Resolution (Multi)...............01 to 43 bit

Accuracy...............................$<\pm$ 0.35°

Repeatability........................$<\pm$ 0.2°

CE/EMC................................Immunity tested per EN 61000-6-2:2006 Emissions tested per EN 61000-6-3:2011

**CANopen® Interface**

Protocol................................CANopen: Communication profile CiA 301 Device profile for encoder CiA 406 V3.2 class C2

Node Number.......................1 to 127 (default 127)

Baud Rate.............................10 Kbaud to 1 Mbaud with automatic bit rate detection

Note: The standard settings, as well as any customization in the software, can be changed via LSS (CiA 305) and the SDO protocol (e.g., PDOs, scaling, heartbeat, node-ID, baud rate, etc.).

**Programmable CANopen® Transmission Modes**

Synchronous.........................When a synchronization telegram (SYNC) is received from another bus node, PDOs are transmitted independently.

Asynchronous.......................A PDO message is triggered by an internal event (e.g., change of measured value, internal timer, etc.).

**SSI Interface**

Clock Input...........................Via opto-coupler

Clock Frequency...................100 kHz to 500 kHz. Higher frequencies may be available. Contact Customer Service.

Data Output..........................RS485 / RS422 compatible

Output Code..........................Gray or binary

SSI Output............................Angular position value

Parity Bit..............................Optional (even/odd)

Error Bit...............................Optional

Turn On Time........................< 1.5 sec

Pos. Counting Dir.................Connect DIR to GND for CW Connect DIR to VDC for CCW (when viewed from shaft end)

Set to Zero............................Yes, see Technical Bulletin TB529: Understanding EPC's SSI Encoders

Protection.............................Galvanic Isolation with SSI option

**Mechanical**

Max Shaft Speed...................8000 RPM

Shaft Rotation......................Bi-directional

Radial Shaft Load.................Bearing life of $1\times10^9$ revolutions: 6 mm dia. 28 lbs (125N); 10 mm dia. 49 lbs (220N)

Axial Shaft Load...................Bearing life of $1\times10^9$ revolutions: 6 mm dia. 27 lbs (120N); 10 mm dia. 27 lbs (120N)

Starting Torque....................2.3 oz-in typical

Housing................................All metal with protective finish

Bearings...............................2 precision ball bearings

Weight..................................7.5 oz typical

**Environmental**

Operating Temp....................-40° to 85° C

Storage Temp........................-40° to 100° C

Vibration..............................30.6 g (10 Hz up to 2000 Hz)

Shock...................................510 g (6 ms)

Sealing.................................IP67, shaft sealed to IP65

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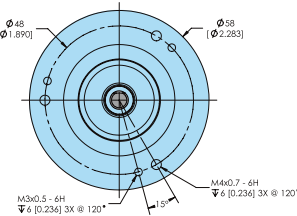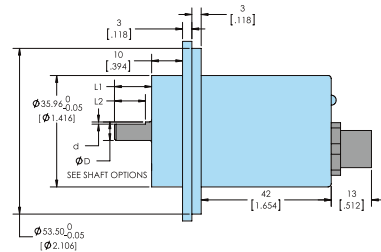
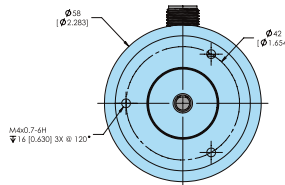## MODEL A58SB CLAMPING FLANGE (MH)
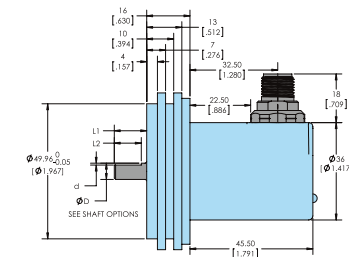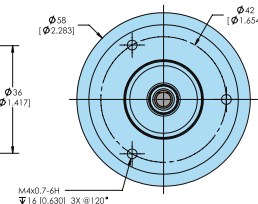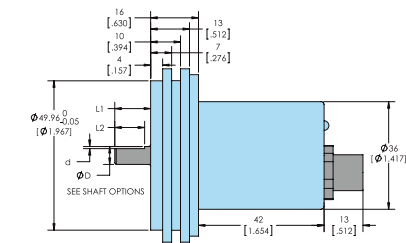
RADIAL CONNECTOR
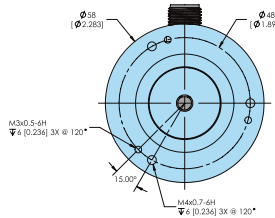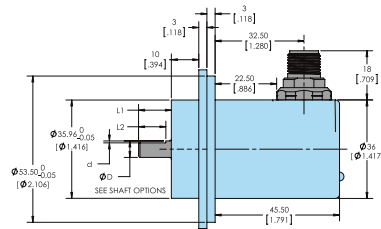


AXIAL CONNECTOR



## MODEL A58SB SYNCHRO FLANGE (MK)

RADIAL CONNECTOR



AXIAL CONNECTOR



Primary dimensions are in mm, secondary dimensions SI units [inches] in brackets for reference only.

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## MODEL A58SB

### SHAFT SIZES

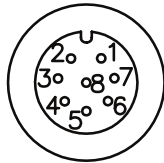| SHAFT SIZE | ØD | L1 | d | L2 |
|---|---|---|---|---|
| 6mm | 6 [0.236] | 12 [0.472] | 0.70 [0.028] | 10 [0.394] |
| 10mm | 10 [0.394] | 20 [0.787] | no flat | n/a |

### WIRING TABLE

For EPC-supplied mating cables, refer to wiring table provided with cable.

For CE (Conformity European) requirements, use M12 cordset with shield connected to M12 coupling nut. Trim back and insulate unused wires.
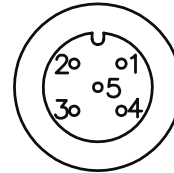
SSI ENCODERS

8-pin M12



| Function | 8-Pin M-12 |
|---|---|
| Ground (GND) | 1 |
| +VDC | 2 |
| SSI CLK+ | 3 |
| SSI CLK- | 4 |
| SSI DATA+ | 5 |
| SSI DATA- | 6 |
| PRESET | 7 |
| DIR | 8 |
| Shield | Housing |

CANOPEN® ENCODERS

5-pin M12



| Function | 5-Pin M12 |
|---|---|
| +VDC | 2 |
| Ground (GND) | 3 |
| CAN $_{High}$ | 4 |
| CAN $_{Low}$ | 5 |
| CAN $_{GND}$ / Shield | 1 |