MODEL A58SB - ABSOLUTE SHAFT ENCODER

FEATURES
Single Turn/Multi-Turn Absolute Encoder (16 Bit ST / 43 Bit MT)
SSI or CANopen® communication
Maintenance-free and environmentally friendly 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

<table>
<thead>
<tr>
<th>Mechanical</th>
<th>Electrical</th>
<th>Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>A58SB 06 MH</td>
<td>14 CO A B V2</td>
<td>RMJ RESISTOR¹</td>
</tr>
<tr>
<td>MODEL A58SB Absolute series</td>
<td>SOFTWARE REV A</td>
<td>None (Std)</td>
</tr>
<tr>
<td>MOUNTING TYPE MH MK</td>
<td>COMMUNICATION PROTOCOL SSI² CANopen¹</td>
<td>Internal resistor option (fixed 120 Ohm)</td>
</tr>
<tr>
<td>SHAFT SIZE 06 6 mm 10 10 mm</td>
<td>OUTPUT CODE B Binary G Gray³</td>
<td></td>
</tr>
<tr>
<td>SINGLE TURN RESOLUTION 01 to 16 Bit</td>
<td>CONNECTOR TYPE⁴ AMJ 5-pin M12 axial mount³</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
3 Available with SSI only.
4 For mating connectors, cables, and cordsets see Accessories at encoder.com.
5 Available with CANopen only.

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See encoder.com for more information.
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MODEL A58SB SPECIFICATIONS

Electrical
Input Voltage ......................... 5 to 32 VDC max
Input Current ......................... 50 mA typical for 5 to 32 VDC
Power Consumption .................. 0.5 W max
Resolution (Single) ................. 1 to 16 bit
Resolution (Multi) ................... 1 to 43 bit
Accuracy .............................. <± 0.0878°
Repeatability ....................... <± 0.0878°
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 .................. 0 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 ............... 100KHz to 500KHz; Higher frequencies may be available.
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 TB-529: Understanding EPC’s SSI Encoders
Protection ......................... Galvanic Isolation with SSI option

Mechanical
Max Shaft Speed .................... 8,000 RPM
Shaft Rotation ................. Bi-directional
Radial Shaft Load ................. Bearing life of 1x10⁹ revolutions:
                                6 mm dia. 28 lbs (125 N)
                                10 mm dia. 49 lbs (220 N)
Axial Shaft Load ................. Bearing life of 1x10⁹ revolutions:
                                6 mm dia. 27 lbs (120 N)
                                10 mm dia. 27 lbs (120 N)
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

All dimensions are in inches with a tolerance of ±0.005" or ±0.01" unless otherwise specified.
Metric dimensions are given in brackets [mm].
**MODEL A58SB - ABSOLUTE SHAFT ENCODER**

**SHAFT SIZES**

<table>
<thead>
<tr>
<th>SHAFT SIZE</th>
<th>ØD</th>
<th>L1</th>
<th>d</th>
<th>L2</th>
</tr>
</thead>
<tbody>
<tr>
<td>6mm</td>
<td>6 [0.236]</td>
<td>12 [0.472]</td>
<td>0.70 [0.028]</td>
<td>10 [0.394]</td>
</tr>
<tr>
<td>10mm</td>
<td>10 [0.394]</td>
<td>20 [0.787]</td>
<td>no flat</td>
<td>n/a</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Function</th>
<th>8-Pin M12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground (GND)</td>
<td>1</td>
</tr>
<tr>
<td>+VDC</td>
<td>2</td>
</tr>
<tr>
<td>SSI CLK+</td>
<td>3</td>
</tr>
<tr>
<td>SSI CLK-</td>
<td>4</td>
</tr>
<tr>
<td>SSI DATA+</td>
<td>5</td>
</tr>
<tr>
<td>SSI DATA-</td>
<td>6</td>
</tr>
<tr>
<td>PRESET</td>
<td>7</td>
</tr>
<tr>
<td>DIR</td>
<td>8</td>
</tr>
<tr>
<td>Shield</td>
<td>Housing</td>
</tr>
</tbody>
</table>

### CANopen Encoders
5-pin M12

<table>
<thead>
<tr>
<th>Function</th>
<th>5-Pin M12</th>
</tr>
</thead>
<tbody>
<tr>
<td>+VDC</td>
<td>2</td>
</tr>
<tr>
<td>Ground (GND)</td>
<td>3</td>
</tr>
<tr>
<td>CAN&lt;sub&gt;High&lt;/sub&gt;</td>
<td>4</td>
</tr>
<tr>
<td>CAN&lt;sub&gt;Low&lt;/sub&gt;</td>
<td>5</td>
</tr>
<tr>
<td>CAN&lt;sub&gt;GND&lt;/sub&gt; / Shield</td>
<td>1</td>
</tr>
</tbody>
</table>