Model A25SB - 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
- IP67 Sealing Available
- Servo and Flange Mounting
- Standard Size 25 Package (2.5” x 2.5”)
- Meets CE/EMC Standards for Immunity and Emissions

The Model A25SB Absolute Encoder offers a high performance solution for your absolute feedback needs. This encoder is especially suited for applications where position information must be retained after loss of system power. It provides maintenance-free feedback thanks to its innovative battery-free and gear-free multi-turn technology. This encoder is the perfect choice for harsh industrial applications thanks to its rugged magnetic technology, available IP67 rating, and proven double bearing design. Available with several shaft sizes and mounting styles, the Model A25SB is easily designed into OEM and aftermarket applications.

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

**Model A25SB Ordering Guide**

Blue type indicates price adder options. Not all configuration combinations may be available. Contact Customer Service for details.

**Mechanical**
- SHAFT SIZE
  - 10 mm
  - A9 3/8", 0.375" (3/8"")
  - A5 1/4", 0.250" (1/4"")
- MOUNTING
  - MA 2.50" Flange
  - MC 2.50" Servo Mount

**Electrical**
- SINGLE TURN RESOLUTION
  - 10 to 16 Bit
- MULTI-TURN RESOLUTION
  - 01 to 43 Multi-Turn
- COMM PROTOCOL
  - CO CANopen
  - SI SSI
- SOFTWARE REV
  - A Revision A
- INPUT VOLTAGE
  - 5 VDC
  - V4 10 to 32 VDC
- OUTPUT CODE
  - B Binary
  - G Gray
- CONNECTOR TYPE
  - RMJ 5-pin M12 Side Mount
  - RMK 8-pin M12 Side Mount
- TEMP
  - 0° to 80° C Std
  - T5 -40° to 80° C
- SEAL
  - IP50 Std
  - S3 IP66
  - S4 IP67

**Notes:**
3. Available with SSI only.
4. For mating connectors, cables, and cordsets see Accessories at encoder.com. For Connector Pin Configuration Diagrams, see Technical Information or see Connector Pin Configuration Diagrams at encoder.com.
5. Available with CANopen only.
MODEL A25SB SPECIFICATIONS

Electrical
Input Voltage
10 to 32 VDC max SSI or CANopen
5 VDC SSI Only
Input Current
50 mA typical for 10 to 32 VDC
80mA typical for 5 VDC
Power Consumption
0.5 W max
Resolution (Single)
0 to 16 bit
Resolution (Multi)
0 to 43 bit
Accuracy
± 0.35°
Repeatability
± 0.2°
CE/EMC
Immunity tested per EN 61000-6-2:2006
Emissions tested per EN 61000-6-3:2011

CANopen Interface
Protocol
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. Contact Customer Service.
Data Output
RS485 / RS422 compatible
Output Code
Gray or binary
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
Set to Zero
Yes, see Technical Bulletin TB-529: Understanding EPC’s SSI Encoders
Protection
Galvanic Isolation

Mechanical
Max Shaft Speed
8,000 RPM
Shaft Material
303 Stainless Steel
Radial Shaft Load
80 lb (355 N) max. Rated load of 20 to 40 lb (88 to 177 N) = bearing life of 1.5 x10^9 revolutions
Axial Shaft Load
80 lb (355 N) max. Rated load of 20 to 40 lb (88 to 177 N) = bearing life of 1.5 x10^9 revolutions
Starting Torque
1.0 oz-in typical with no seal
3.0 oz-in typical with IP66 shaft seal
7.0 oz-in typical with IP67 shaft seal
Housing
Black non-corrosive finish
Weight
20 oz typical

Environmental
Storage Temp
-40° to 100° C
Humidity
95% RH non-condensing
Vibration
5 g @ 10 to 2000 Hz
Shock
100 g @ 6 ms duration
Sealing
IP50 standard; IP66 or IP67 optional

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

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Ground (GND)</td>
</tr>
<tr>
<td>2</td>
<td>+VDC</td>
</tr>
<tr>
<td>3</td>
<td>SSI CLK+</td>
</tr>
<tr>
<td>4</td>
<td>SSI CLK</td>
</tr>
<tr>
<td>5</td>
<td>SSI DATA+</td>
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<td>6</td>
<td>SSI DATA-</td>
</tr>
<tr>
<td>7</td>
<td>PRESET</td>
</tr>
<tr>
<td>8</td>
<td>DIR</td>
</tr>
<tr>
<td>9</td>
<td>Shield</td>
</tr>
<tr>
<td>10</td>
<td>Housing</td>
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</table>

CANOPEN ENCODERS

<table>
<thead>
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<th>Pin</th>
<th>Function</th>
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<tbody>
<tr>
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<tr>
<td>3</td>
<td>CAN_high</td>
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<tr>
<td>4</td>
<td>CAN_low</td>
</tr>
<tr>
<td>5</td>
<td>CAN in / Shield</td>
</tr>
</tbody>
</table>

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