**MODEL MA36H - MULTI-TURN ABSOLUTE ENCODER**

**DISCONTINUED - PLEASE SEE REPLACEMENT MODEL A36HB**

**Features**
- Standard Size 36 mm Package (1.42"
- Durable Magnetic Technology
- Multi-Turn Absolute Encoder (14 Bit ST / 39 Bit MT)
- SSI and CANopen Communication
- Proven Turns Counting Technology – No Gears or Batteries
- Flex Mount Eliminates Couplings and is Ideal for Motors or Shafts
- Meets CE/EMC Standards for Immunity and Emissions

The Model MA36H Multi-Turn 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 (i.e., system resets, outages, etc.). Its rugged magnetic technology and high IP rating make the Model MA36H an excellent choice, even in the harshest industrial environments. Available with a 1/4" or 6 mm hollow bore and a wide selection of flexible mounting options, the Model MA36H 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 MA36H Ordering Guide**

<table>
<thead>
<tr>
<th>Mechanical</th>
<th>Electrical</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td><strong>Software</strong></td>
</tr>
<tr>
<td>MA36H 01 SF 12 10 V3 C1 A EMJ</td>
<td><strong>Connector Type</strong></td>
</tr>
<tr>
<td><strong>Bore Size</strong></td>
<td><strong>Input Voltage</strong></td>
</tr>
<tr>
<td>01 1/4&quot;, 0.250&quot;</td>
<td>5 5 VDC</td>
</tr>
<tr>
<td>04 6 mm</td>
<td>V3 10 to 30 VDC</td>
</tr>
<tr>
<td><strong>Mounting</strong></td>
<td><strong>Output Code</strong></td>
</tr>
<tr>
<td>SF 1.812&quot; (46 mm) Slotted Flex-Mount</td>
<td>C1 Binary</td>
</tr>
<tr>
<td>SD 1.575&quot; (40 mm) Slotted Flex-Mount</td>
<td>C2 Gray</td>
</tr>
<tr>
<td>SW 1.653&quot; (42 mm) Slotted Flex-Mount</td>
<td><strong>Multi-Turn Resolution</strong></td>
</tr>
<tr>
<td><strong>Single Turn Resolution</strong></td>
<td>18 18 Bit (CANopen)</td>
</tr>
<tr>
<td>08 to 14 Bit (SSI)</td>
<td>39 39 Bit (CANopen)</td>
</tr>
<tr>
<td><strong>Comm Protocol</strong></td>
<td>01 to 39 Bit (SSI Only)</td>
</tr>
<tr>
<td>P1 CANopen</td>
<td>Price adder for Bit &gt; 18</td>
</tr>
<tr>
<td>P2 SSI</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.

Please note that configuration options for this product have changed. Confirm configuration options before ordering, or contact Customer Service for assistance.

1-800-366-5412 • www.encoder.com • sales@encoder.com

Rev. 03/26/19
MODEL MA36H SPECIFICATIONS

Electrical
Input Voltage.........10 to 30 VDC max SSI or CANopen
5 VDC SSI only
Input Current .................50 mA typical for 10 to 30 VDC
80 mA typical for 5 VDC
Power Consumption...0.5 W max
Resolution (Single)...12 bit (CANopen)
8 to 14 bit (SSI)
Resolution (Multi)...Up to 39 bit multi-turn (CANopen or SSI)
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.................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. 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 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

Mechanical
Max Shaft Speed........12,000 RPM
Bore Depth..................17 mm (0.669"
User Shaft.................
Radial Runout.............0.005" max
Starting Torque ...........< 0.45 oz-in typical
Housing....................Ferrous chrome-plated magnetic
screening
Weight......................5 oz typical

Environmental
Operating Temp............-40° to 85° C
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....................IP67; shaft sealed to IP65

MODEL MA36H 1.812" (46 MM) SLOTTED FLEX MOUNT (SF)

1.653" (42 mm) SW

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>Function</th>
<th>Gland Cable†</th>
<th>Wire Color</th>
<th>8-pin M-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground (GND)</td>
<td>White</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>+VDC</td>
<td>Brown</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>SSI CLK+</td>
<td>Green</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SSI CLK-</td>
<td>Yellow</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>SSI DATA+</td>
<td>Gray</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>SSI DATA-</td>
<td>Pink</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>PRESET</td>
<td>Blue</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>DIR</td>
<td>Red</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Shield</td>
<td>Side - Exit Housing</td>
<td>End - Exit N/C</td>
<td>Housing</td>
</tr>
</tbody>
</table>

CANOPEN ENCODERS

<table>
<thead>
<tr>
<th>Function</th>
<th>Pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>+VDC</td>
<td>2</td>
</tr>
<tr>
<td>Ground (GND)</td>
<td>3</td>
</tr>
<tr>
<td>CAN_high</td>
<td>4</td>
</tr>
<tr>
<td>CAN_low</td>
<td>5</td>
</tr>
<tr>
<td>CAN_gnd / Shield</td>
<td>1</td>
</tr>
</tbody>
</table>

†Standard cable is 24 AWG conductors with foil and braid shield.