

# MODEL MA36S - MULTI-TURN ABSOLUTE ENCODER

During the rebranding relaunch, the old version of this datasheet got overridden. This is just for reference.



Ø36 mm

- 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
  - Meets CE/EMC Standards for Immunity and Emissions

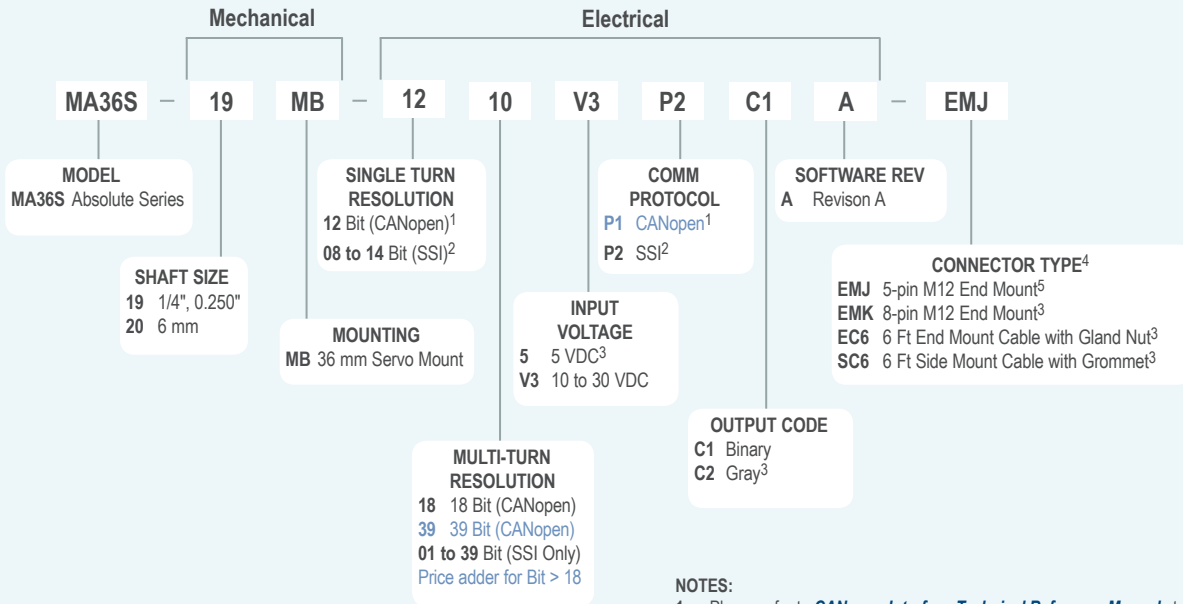
The Model MA36S Multi-Turn Absolute Encoder offers a high performance solution for your absolute feedback needs. It provides maintenance-free feedback thanks to its innovative battery-free and gear-free multi-turn technology. This encoder is especially suited for applications where position information 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 MA36S an excellent choice, even in the harshest industrial environments. Available with a 1/4" or 6 mm shaft and a servo mount, the Model MA36S 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 MA36S ORDERING GUIDE**

Blue type indicates price adder options. Not all configuration combinations may be available. Contact Customer Service for details. For single turn applications see Model SA36S.



**NOTES:**

- Please refer to [CANopen Interface Technical Reference Manual](#) at [encoder.com](#).
- Please refer to Technical Bulletin [TB-529: Understanding EPC's SSI Encoders](#) at [encoder.com](#).
- Available with SSI only.
- 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](#).
- 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.

## MODEL MA36S 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 80mA 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.....	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 <b>TB-529:</b> <b>Understanding EPC's SSI Encoders</b>
Protection .....	Galvanic Isolation

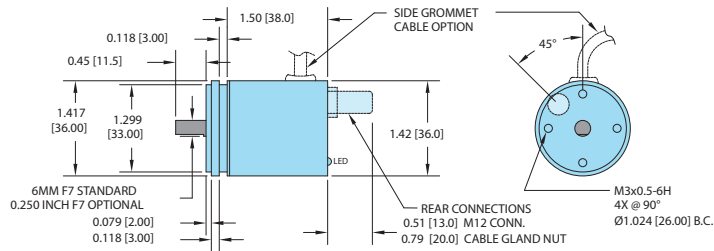
### Mechanical

Max Shaft Speed .....	12,000 RPM
Radial Shaft Load .....	7 lb (32 N) = bearing life 1.10 <sup>10</sup> revs 3.6 lb (16 N) = bearing life 1.10 <sup>11</sup> revs
Axial Shaft Load .....	5 lb (20 N) = bearing life 1.10 <sup>10</sup> revs 2.3 lb (10 N) = bearing life 1.10 <sup>11</sup> revs
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 MA36S SOLID SHAFT



All dimensions are in inches with a tolerance of +0.005" or +0.01" unless otherwise specified. Metric dimensions are given in brackets [mm].



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

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

CANOPEN ENCODERS	
Function	Pin
+VDC	2
Ground (GND)	3
CAN <sub>High</sub>	4
CAN <sub>Low</sub>	5
CAN <sub>GND</sub> / Shield	1