MODEL A36SB - ABSOLUTE SHAFT ENCODER

Ø36 mm

SAE INTERNATIONAL J1939 CANopen SSI Synchronous Serial Interface

FEATURES

Single Turn/Multi-Turn Absolute Encoder (16 Bit ST / 43 Bit MT)
SSI, CANopen®, or SAE J1939 communication
Maintenance-free and environmentally friendly all-magnetic design
Energy harvesting magnetic multi-turn technology
No gears or batteries
Standard Size 36 mm (1.42") package
Heavy duty IP69K option with 10mm shaft available
Meets CE/EMC standards for immunity and emissions

The Model A36SB 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 A36SB an excellent choice, even in tough industrial environments. Available with a 1/4" or 6 mm shaft and a servo mount, or with a heavy duty 10 mm shaft and servo mount with IP69K rating, the Model A36SB is easily designed into a variety of applications.

COMMON APPLICATIONS

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

MODEL A36SB ORDERING GUIDE

Blue type indicates price adder options

Model	Mechanical		Electrical							Environmental	
A36SB	06	MB	12	10	CO	A	B	V2	AMJ	NR	S7

MODEL
A36SB Absolute Series

MOUNTING TYPE
MB 36 mm Servo Mount

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

SOFTWARE REV
A Revision A

INPUT VOLTAGE
5 5 VDC[6]
V2 5 to 32 VDC

TERMINATING RESISTOR[8]
NR None (Std)
RS Internal resistor option (fixed 120 Ohm)

SHAFT SIZE
06 6 mm
A5 1/4", 0.250"
10 10mm[1]

SINGLE TURN RESOLUTION
01 to 16 Bit

COMMUNICATION PROTOCOL
CO CANopen[2]
CJ SAE J1939[3,4]
SI SSI[5]

OUTPUT CODE
B Binary
G Gray[6]

CONNECTOR TYPE[7]
AMJ 5-pin M12 Axial Mount[8]
AMK 8-pin M12 Axial Mount[6]
AC6 6-ft Axial Mount Cable[6]
RC6 6-ft Radial Mount Cable[6]

Sealing
S7 IP65+IP67
S8 IP67+IP69K[1]

Notes:

1 S8 Sealing option only available with 10mm shaft. S8 sealing option is shaft sealed to IP67 and housing/cable IP69K. S7 sealing option is only available with 1/4" adn 6mm shafts. S7 sealing option is shaft sealed to IP65 and housing/cable to IP67.
2 Please refer to CANopen Interface Technical Reference Manual at encoder.com.
3 SAE J1939 can transmit a maximum of 32 bits in process data. The sum of single turn and multiturn results in a maximum of 32 bits. This can be, for example, 12-bit MT or 16-bit ST and 16-bit MT.
4 Please refer to Technical Bulletin TB-546: SAE J1939 Interface and Process Data at encoder.com.
5 Please refer to Technical Bulletin TB-529: Understanding EPC's SSI Encoders at encoder.com.
6 Available with SSI only.
7 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.
8 Available with CANopen and SAE J1939 only.

1-800-366-5412 | encoder.com | sales@encoder.com

MODEL A36SB - ABSOLUTE SHAFT ENCODER

Electrical

Input Voltage	5 to 32 VDC max SSI or CANopen 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	<±0.0878°
Repeatability	<±0.0878°
CE/EMC	Immunity tested per EN 61000-6-2:2006 Emissions tested per EN 61000-6-3:2011

Mechanical

Max Shaft Speed	12000 RPM
Radial Shaft Load	Bearing life of $1.4x10^8$ revolutions: 17 lbs (80 N)
Axial Shaft Load	Bearing life of $1.4x10^8$ revolutions: 11 lbs (50 N)
Housing	All metal with protective finish
Weight	5 oz typical

Environmental

Operating Temp	-40° C to 85° C
Storage Temp	-40° C to 100° C
Humidity	95% RH non-condensing
Vibration	30.6 g (10 Hz up to 2000 Hz)
Shock	510 g @ 6 ms duration
Sealing	IP67, shaft sealed to IP65; IP69K, shaft sealed to IP67

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 Number	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 205) and the SDO protocol (e.g. PDOs, scaling, heartbeat, node-ID, baud rate, etc.)	

Programmable CANopen Transmission Modes

Synchronis	When a synchornization telegram (SYNC) is received from another bus node, PDOs are transmitted independently
Asynchronis	A PDO message is triggered by an internal event (e.g. change of measured value, internal timer, etc.)

SAE J1939

CAN physical layer	ISO 11898 (High Speed CAN)
Protocol	ISO 11898 (High Speed CAN)
Baud Rate	Auto-Baud-Detection
Standard Preset configuration	(other configurations on request)
Direction of counting	CCW (view from shaft end)
ECU-address	0x0A
Process data Identifier	0x18FF000A
PGN	0xFF00
Process data mapping	Byte 0-3 32 Bit Position Value Byte 4 8 Bit Error Register PDU timer and Position Preset can be adjusted by PGN configuration 0xEF00 (Prop. A)
PDU - Time	50ms (default)
Configuration - PGN	0xEF 00 (Prop. A)
Byte 0	0x01
Byte 1	0xFF
Byte 2	PDU time LSB
Byte 3	PDU time MSB
Byte 4	Preset LSB
Byte 5,6	Preset
Byte 7	Preset MSB

SSI Interface

Clock Input	Via opto coupler
Clock Frequency	100Kz to 500Kz, 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 Connnect 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

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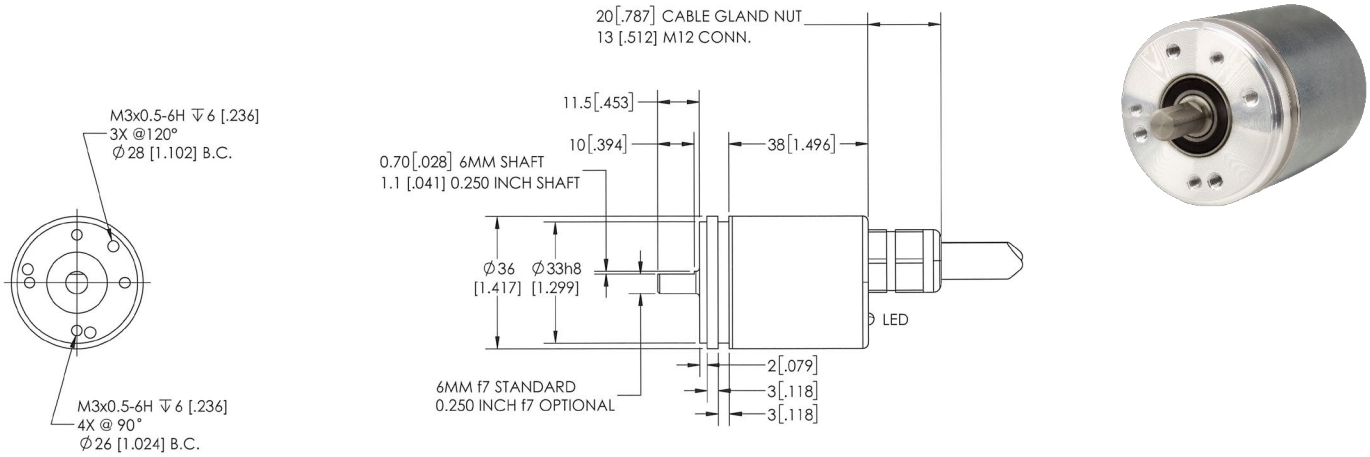
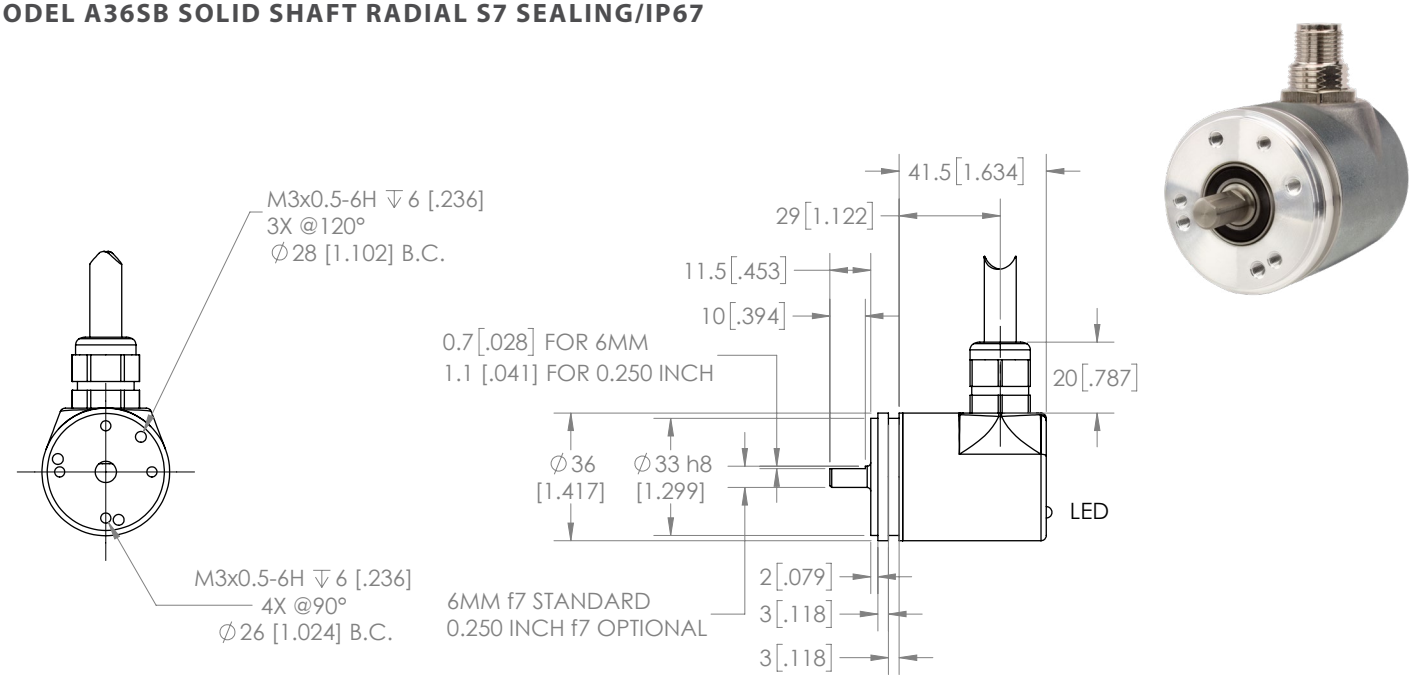
MODEL A36SB SOLID SHAFT AXIAL S7 SEALING/IP67



MODEL A36SB SOLID SHAFT RADIAL S7 SEALING/IP67



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

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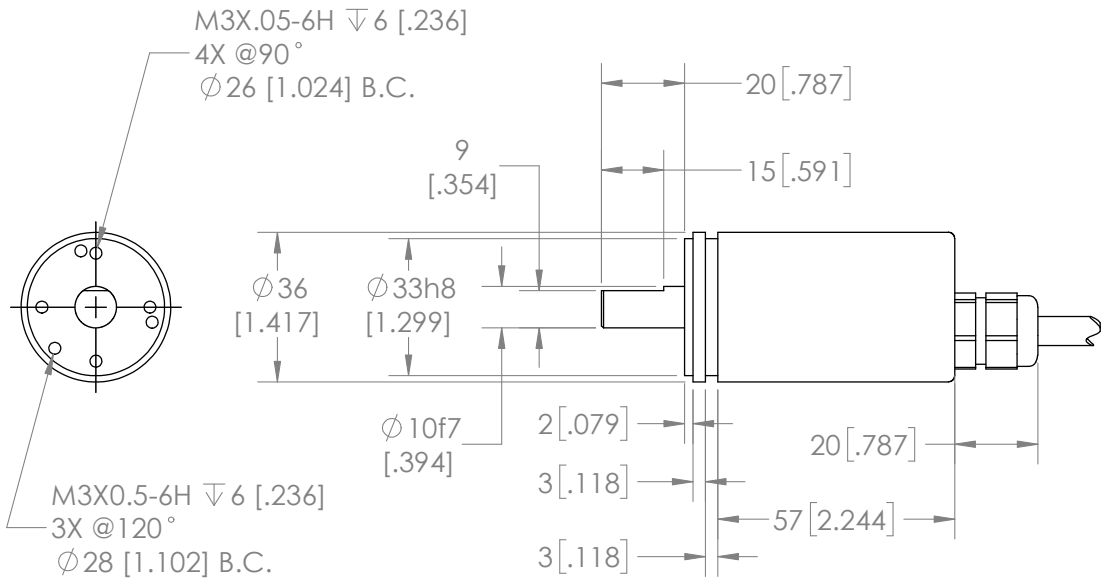
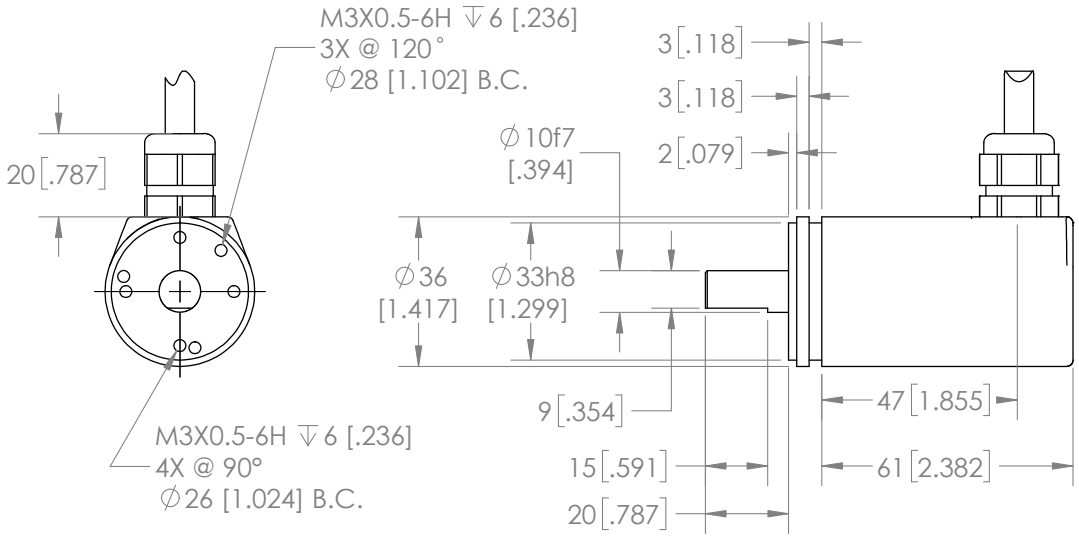
MODEL A36SB SOLID SHAFT AXIAL S8 SEALING/IP69K



MODEL A36SB SOLID SHAFT RADIAL S8 SEALING/IP69K



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WIRING TABLE

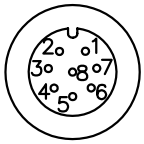
For EPC-supplied mating cables, refer to wiring table provided with cable. For CE (Conformity European) requirements, use M12 cordset with shield connected to M12 coupling nut. Trim back and insulate unused wires.

SSI Encoders
Flying Lead

Function	Gland cable wire color*
Ground (GND)	White
+VDC	Brown
SSI CLK+	Green
SSI CLK-	Yellow
SSI DATA+	Gray
SSI DATA-	Pink
PRESET	Blue
DIR	Red
Shield	Side-exit housing End-Exit N/C

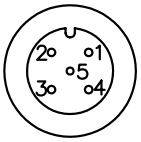
**Standard cable is 24 AWG conductors with foil and braid shield.*

SSI Encoders
8-pin M12



Function	8-Pin M12
Ground (GND)	1
+VDC	2
SSI CLK+	3
SSI CLK-	4
SSI DATA+	5
SSI DATA-	6
PRESET	7
DIR	8
Shield	Housing

CANopen and SAE J1939 Encoders
5-pin M12



Function	Pin
+VDC	2
Ground (GND)	3
CAN_{High}	4
CAN_{Low}	5
CAN_{GND} / Shield	1