

# MODEL A58SE - ETHERNET ABSOLUTE ENCODER



Ø58 mm

**EtherCAT**®

**EtherNet/IP**®

**PROFINET**®

## FEATURES

- Single turn/multi-turn absolute encoder (16 Bit ST / 43 Bit MT)
- Available in three industrial ethernet protocols:
  - EtherCAT® with CoE, FoE, EoE – device profile: CiA DS-406 V4.0.2, Class 3
  - EtherNet/IP™ position sensor, DLR
  - PROFINET® I-O (CC-C) – device profile: switchable V4.1, Class 3, 4
- Maintenance-free and environmentally friendly magnetic design
- Energy harvesting magnetic multi-turn technology
- No gears or batteries
- Low TCO and easy provisioning with internal web server
- Shaft loads up to 400 N
- Color LEDs for operating condition, bus status, link activity
- Compact design with bus cover
- MP housing option is the most compact ethernet model available
- 58 mm (2.28") diameter package

The Model A58SE is an EtherCAT®, EtherNet/IP™, or PROFINET® protocol, multi-turn absolute encoder designed for heavy duty industrial applications. It is particularly suited to applications where Ethernet-based connectivity is required, and the encoder must retain position information after power-off events. Easily designed into a wide variety of system applications, the A58SE plugs directly into your network with minimal provisioning for rapid deployment, facilitating data exchange among myriad networked devices. The Model A58SE retains absolute position information even after a power loss, facilitating speedy system recovery at start-up without the need for system re-homing.

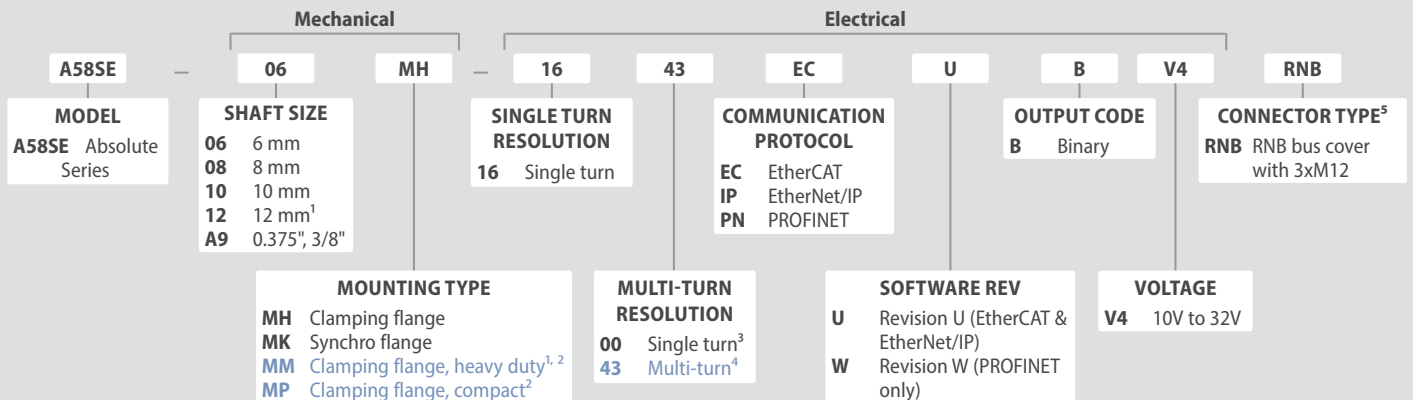
Ready for Industry 4.0 and for the Industrial Internet of Things (IIoT), data exchange between the Model A58SE and other applications has no influence on the control loop. The Model A58SE is non-reactive and can work independently from the PLC or master, transferring data through network gateways to other automation networks and sites, and up to the cloud for analysis.

## COMMON APPLICATIONS

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

## MODEL A58SE ORDERING GUIDE

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



### NOTES:

- The 12 mm shaft is the only shaft option available with the MM, and is not available with any other mount.
- Additional lead times required.
- Single turn encoders cannot be configured for multi-turn resolution.
- Customer configures actual resolution at setup.
- For mating connectors, cables, and cordsets see [encoder.com/encoder-accessories](http://encoder.com/encoder-accessories)

EtherCAT® (Ethernet for Control and Automation Technology) is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.  
EtherNet/IP™ is a trademark of ODVA, Inc.  
PROFINET® is a registered trademark and patented technology, licensed by PU (PROFIBUS & PROFINET) International.

# MODEL A58SE - ETHERNET ABSOLUTE ENCODER

## MODEL A58SE SPECIFICATIONS

### Electrical

Power Supply .....10 VDC up to 32 VDC  
 Current Consumption.....typ. 125 mA  
 Power Consumption .....typ. 3 W

### Sensor Specification

Internal Cycle Time.....50  $\mu$ s  
 Resolution  
 Single Turn .....Up to 65,536 steps/360° (16 bit)  
 Multi-Turn.....43 bit  
 Accuracy  
 Single Turn ..... $\pm 0.0878^\circ$  ( $\leq 12$  bit)  
 Single Turn, Repeat Accuracy  $\pm 0.0878^\circ$  ( $\leq 12$  bit)  
 Technology  
 Single Turn .....Innovative Hall-sensor technology  
 Multi-Turn .....Patented energy-harvesting technology,  
 no battery and no gears  
 Turn on time .....< 1.5 s

### Interface

Interface.....Industrial Ethernet  
 Protocol.....EtherCAT, EtherNet/IP, PROFINET-IO (CC-C)  
 Device Profile.....EtherCAT: CiA DS-406 V4.0.2, Class 3;  
 EtherNet/IP: Conformance per CT-18,  
 Specification Vol 2, Ed 1.29, CIP  
 Specification Vol 1, Ed 3.31;  
 PROFINET: V4.1, Class 3, 4  
 Data Transfer.....100BASE-TX  
 Cycle time.....EtherCAT: up to 50  $\mu$ s  
 EtherNet/IP: 1 ms  
 PROFINET: 250  $\mu$ s, applicable for up  
 to 125  $\mu$ s  
 Code.....Binary, CW default, programmable

Programmable Parameters.....Steps per revolution; counts of  
 revolution; preset; scale; counting  
 direction  
 EtherCAT: 2x 8 cam switches; DC-Mode  
 EtherNet/IP: CAMs, warning messages  
 PROFINET: MRPD; MRP; LLDP; IRT  
 See associated protocol Technical  
 Reference Manual for full list of  
 programmable attributes for that  
 protocol.

Diagnostic LED .....Traffic and connection management:  
 L/A1: Port 1 (IN) L/A2: Port 2 (OUT)

Status LED.....STAT, MOD: status of encoder and bus

### Mechanical

Flange.....Synchro, Clamping, Clamping Heavy  
 Duty, Clamping Compact  
 Flange Material .....Aluminum  
 Shaft Material .....Stainless steel  
 Shaft Length  
 6 mm dia. ....12 mm length  
 8 mm dia. ....19 mm length  
 10 mm dia. ....20 mm length  
 3/8" dia. ....20 mm / 0.787" length  
 12 mm dia. ....25 mm length  
 Housing Cap .....Steel case chrome-plated, magnetic  
 shielding  
 Connection Cover.....Die cast aluminum, powder coated  
 Weight.....24.7 oz / 700 g approx  
 Max Radial Shaft Load  
 MH and MK.....125 N (28.1 lb) for 6 mm and 8 mm  
 shafts  
 220 N (49.4 lb) for 10 mm and 3/8"  
 shafts  
 MM.....400 N (89.9 lb)  
 MP .....60 N (13.5 lb)

### Max Axial Shaft Load

MH and MK .....120 N (27 lb)  
 MM .....400 N (89.9 lb)  
 MP .....50 N (11.2 lb)  
 Starting Torque .....Approximately 1 Ncm (1.416 oz-in) at  
 ambient temperature.  
 Max Shaft Speed.....8000 RPM

### Bearings

Bearings Type .....2 precision ball bearings  
 Nominal Service Life .....1 x 10<sup>9</sup> revs. at 100% rated shaft load  
 1 x 10<sup>10</sup> revs. at 40% rated shaft load  
 1 x 10<sup>11</sup> revs. at 20% rated shaft load

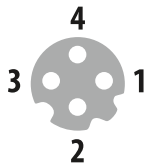
### Environmental

Operating Temp .....-40° to 85° C  
 Storage Temp .....-40° to 100° C  
 Sealing.....IP65 tested per EN 60529  
 ESD .....8 kV tested per EN 61000-4-2  
 Burst.....2 kV tested per 61000-4-4  
 EMC .....EN 61000-6-2; EN 61000-6-3  
 Vibration .....200 m/s<sup>2</sup> (10 Hz up to 1000 Hz)  
 (20.3 g [10Hz up to 1000 Hz])  
 tested per EN 60068-2-6  
 Shock .....5000 m/s<sup>2</sup> (6 ms)  
 509.8 g (6 ms)  
 tested per EN 60068-2-27  
 Design .....According to DIN VDE 0160

## NETWORK BUS CONNECTOR PINOUT

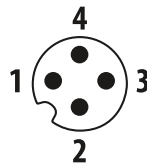
Bus cover with 3x M12x1. For EPC-supplied mating cables, wiring table is provided with cable. Trim back and insulate unused wires.

### Female Connector Port1 (IN)



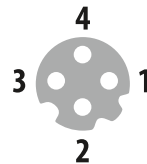
Function	M12x1, 4-pin, D-coded
Tx+	1
Rx+	2
Tx-	3
Rx-	4

### Power



Function	M12x1, 4-pin, A-coded
(+) Vcc	1
n. c.	2
GND	3
n. c.	4

### Female Connector Port2 (OUT)

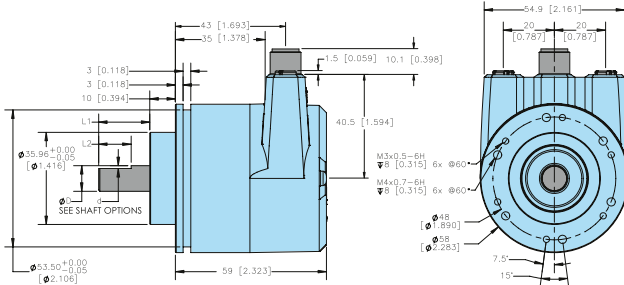


Function	M12x1, 4-pin, D-coded
Tx+	1
Rx+	2
Tx-	3
Rx-	4

EPC RESERVES THE RIGHT TO UPDATE, REVISE AND AMEND ALL SOFTWARE AND TECHNICAL DATA OR CONTENT AT ANY TIME. EPC SHALL HAVE NO LIABILITY OF ANY KIND OR NATURE FOR ANY TECHNICAL ERRORS OR OMISSIONS IN ANY SOFTWARE OR TECHNICAL DATA. See encoder.com for more information.

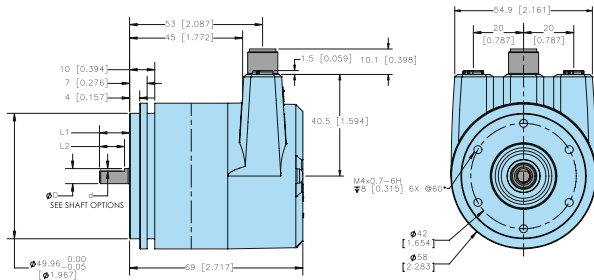
# MODEL A58SE - ETHERNET ABSOLUTE ENCODER

## MODEL A58SE CLAMPING FLANGE (MH)



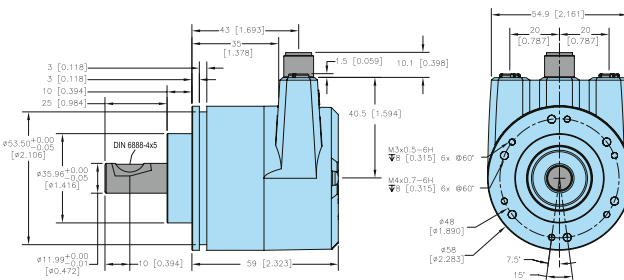
SHAFT SIZE	$\phi D$	L1	d	L2
6mm	6 [0.236]	12 [0.472]	0.7 [0.028]	10 [0.394]
8mm	8 [0.315]	19 [0.748]	0.5 [0.020]	15 [0.591]
10mm	10 [0.394]	20 [0.787]	no flat	n/a
3/8"	9.5 [0.375]	20 [0.787]	1.2 [0.047]	10 [0.394]

## MODEL A58SE SYNCHRO FLANGE (MK)

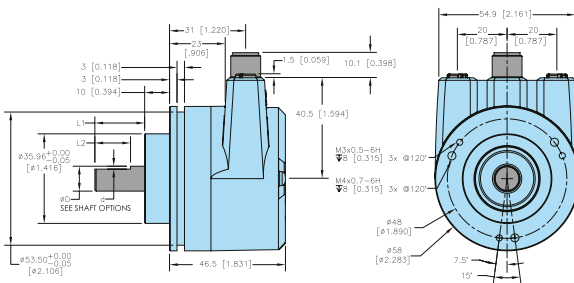


SHAFT SIZE	$\phi D$	L1	d	L2
6mm	6 [0.236]	12 [0.472]	0.7 [0.028]	10 [0.394]
8mm	8 [0.315]	19 [0.748]	0.5 [0.020]	15 [0.591]
10mm	10 [0.394]	20 [0.787]	no flat	n/a
3/8"	9.5 [0.375]	20 [0.787]	1.2 [0.047]	10 [0.394]

## MODEL A58SE CLAMPING FLANGE HEADY DUTY (MM)



## MODEL A58SE CLAMPING FLANGE COMPACT (MP)



SHAFT SIZE	$\phi D$	L1	d	L2
6mm	6 [0.236]	12 [0.472]	0.7 [0.028]	10 [0.394]
8mm	8 [0.315]	19 [0.748]	0.5 [0.020]	15 [0.591]
10mm	10 [0.394]	20 [0.787]	no flat	n/a
3/8"	9.5 [0.375]	20 [0.787]	1.2 [0.047]	10 [0.394]

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