FEATURES

- Single/Multi-Turn Absolute Encoder (16 Bit ST / 43 Bit MT)
- Available in two industrial Ethernet protocols:
  - EtherCAT with CoE, FoE, EoE – device profile: CiA DS-406 V4.0.2, Class 3
  - 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 most the compact EtherCAT and PROFINET model available
- 58 mm (2.28") diameter package

COMMON APPLICATIONS

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

EPC Absolute Encoder with Ethernet connectivity

The Model A58SE is an EtherCAT or PROFINET-ready, multi-turn absolute encoder designed for harsh factory and plant environments. 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.

MODEL A58SE ORDERING GUIDE

Blue type indicates price adder options.

<table>
<thead>
<tr>
<th>A58SE</th>
<th>06</th>
<th>MH</th>
<th>16</th>
<th>43</th>
<th>EC</th>
<th>U</th>
<th>B</th>
<th>V4</th>
<th>RNB</th>
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<tbody>
<tr>
<td>MODEL</td>
<td>A58SE Absolute Series</td>
<td>SHAFT SIZE</td>
<td>SINGLE TURN RESOLUTION</td>
<td>-comm</td>
<td>COMM PROTOCOL</td>
<td>OUTPUT CODE</td>
<td>SOFTWARE REV</td>
<td>VOLTAGE</td>
<td>CONNECTOR TYPE</td>
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<td>16 Single Turn</td>
<td>EC EtherCAT</td>
<td>B Binary</td>
<td>U Revision U</td>
<td>V4 10V - 32V</td>
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</table>

NOTES:

1. The 12 mm shaft is the only shaft option available with the MM, and is not available with any other mount.
2. Additional lead times required.
3. Customer configures at setup.
4. Single turn encoders cannot be configured for multi-turn resolution.
5. For mating connectors, cables, and cordsets, see Accessories at encoder.com.
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 µs
Resolution
Single Turn .......... up to 65,536 steps/360° (16 bit)
Multi-Turn ............. 43 bit
Accuracy
Single Turn, Repeat Accuracy .......... ± 0.0878° (≤ 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 or PROFINET-Io (CC-C)
Device Profile ........ EtherCAT: CIA DS-406 V4.0, Class 3;
PROFINET: V4.1, Class 3,
Data Transfer .......... 100 BASE-TX
Cycle time .......... EtherCAT: up to 50 µs
PROFINET: 250 µs, applicable for up to 125 µs
Code .......... Binary, CW default, programmable

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

Type .......... 2 precision ball bearings
Nominal Service Life .......... 1 x 10^9 revs. at 100% rated shaft load
1 x 10^10 revs. at 40% rated shaft load
1 x 10^11 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 .......... 100 m/s² (10 Hz up to 1000 Hz)
Shock .......... 5000 m/s² (6 ms)
509.8 g (6 ms)

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.

<table>
<thead>
<tr>
<th>Female Connector</th>
<th>Power</th>
<th>Female Connector</th>
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</thead>
<tbody>
<tr>
<td>Port1 (IN)</td>
<td></td>
<td>Port2 (OUT)</td>
</tr>
<tr>
<td>M12x1, 4-pin, D-coded</td>
<td></td>
<td>M12x1, 4-pin, A-coded</td>
</tr>
<tr>
<td><strong>Function</strong></td>
<td><strong>Function</strong></td>
<td><strong>Function</strong></td>
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<tr>
<td>Tx+</td>
<td>(+) Vcc</td>
<td>Tx+</td>
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<tr>
<td>Rx+</td>
<td>n. c.</td>
<td>Rx+</td>
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<tr>
<td>Tx-</td>
<td>GND</td>
<td>Tx-</td>
</tr>
<tr>
<td>Rx-</td>
<td>n. c.</td>
<td>Rx-</td>
</tr>
</tbody>
</table>

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MODEL A58SE CLAMPING FLANGE (MH)

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

MODEL A58SE SYNCHRO FLANGE (MK)

Primary dimensions are in mm, secondary dimensions SI units [inches] in brackets for reference only.
<table>
<thead>
<tr>
<th>SHAFT SIZE</th>
<th>D</th>
<th>L1</th>
<th>d</th>
<th>L2</th>
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<tbody>
<tr>
<td>6mm</td>
<td>6 [0.236]</td>
<td>12 [0.472]</td>
<td>0.7 [0.028]</td>
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<tr>
<td>8mm</td>
<td>8 [0.315]</td>
<td>19 [0.748]</td>
<td>0.5 [0.020]</td>
<td>15 [0.591]</td>
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<tr>
<td>10mm</td>
<td>10 [0.394]</td>
<td>20 [0.787]</td>
<td>no flat</td>
<td>n/a</td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>9.5 [0.375]</td>
<td>20 [0.787]</td>
<td>1.2 [0.047]</td>
<td>10 [0.394]</td>
</tr>
</tbody>
</table>

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

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