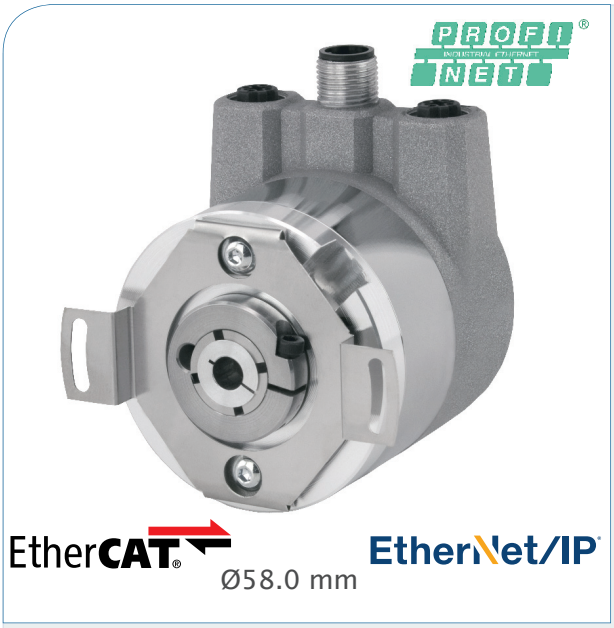
# Model A58HE - Hollow Bore EtherNet Absolute Encoder

BRITISH ENCODER PRODUCTS COMPANY




## 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
  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
- Color LEDs for operating condition, bus status, link activity
- 58 mm (2.28") diameter package
- Compact design with bus cover

## Common Applications

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

## BEPc Absolute Encoder - now with EtherCAT Connectivity

The Model A58HE 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 A58HE plugs directly into your network with minimal provisioning for rapid deployment, facilitating data exchange among myriad networked devices. The Model A58HE 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 A58HE and other applications has no influence on the control loop. The Model A58HE 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 A58HE Ordering Guide

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

**A58HE — 06 — SR — 16 — 00 — EC — U — B — V4 — RNB**

**MODEL**
A58HE Hollow Bore

**BORE SIZE**
06 6mm
07 7mm
08 8mm
10 10mm
12 12mm
14 14mm
15 15mm
A5 0.250" (1/4")
A9 0.375" (3/8")

**MOUNTING TYPE**
SR 63mm PCD 2-pt, Flex Mount

**SINGLE TURN RESOLUTION[1]**
16 Single Turn

**MULTI-TURN RESOLUTION[1]**
00 Single Turn [2]
43 Multi-Turn

**COMM PROTOCOL**
EC EtherCAT
IP EtherNet/IP
PN PROFINET

**SOFTWARE REV**
U Revision U (EtherCAT & EtherNet/IP Only)
W Revision W (PROFINET Only)

**OUTPUT CODE**
B Binary

**VOLTAGE**
V4 10V - 32V

**CONNECTOR TYPE [3]**
RNB RNB Bus Cover with 3xM12

**For specification assistance call Customer Service at +44 (0)1978 262100**

NOTES:

1 Customer configures at setup.
2 Single turn encoders cannot be configured for multi-turn resolution.
3 For mating connectors, cables, and cordsets see Accessories at encoder.co.uk

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*EtherNet/IP™ is a trademark of ODVA, Inc.*
*PROFINET® is a registered trademark and patented technology, licensed by PU (PROFIBUS & PROFINET) International.*

Rev: C

# Model A58HE - Hollow Bore EtherNet Absolute Encoder

## Model A58HE Specifications

**Electrical**

Power Supply .....10 VDC up to 32 VDC
Current Consumptiontyp. 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 .....± 0.0878° (≤ 12 bit)
  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, 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 µs
EtherNet/IP: 1 ms
PROFINET: 250 µs, applicable for up to 125 µs
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**

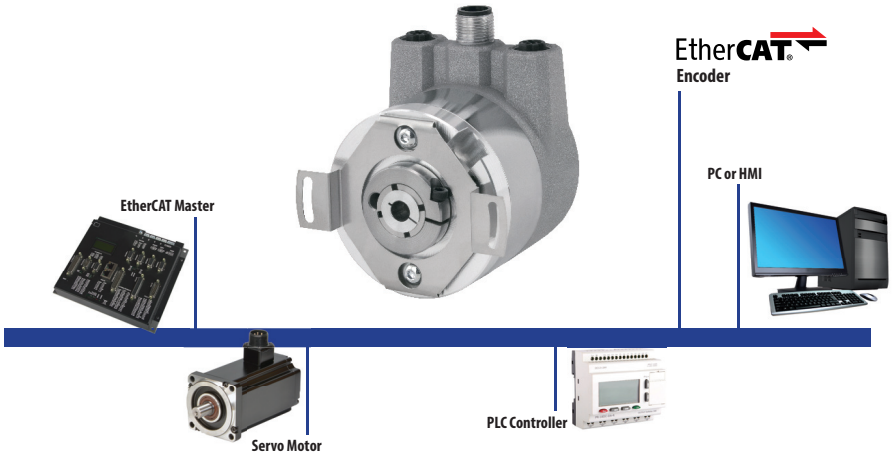
Flange.....Blind hollow bore
Flange Material.....Aluminum
Shaft Material .....Stainless steel
Shaft Length.....17 mm
Insertion depth
  min.....10 mm
  max.....19 mm
Housing Cap.....Steel case chrome-plated, magnetic shielding
Connection Cover.....Die cast aluminum, powder coated
Weight .....14.462 oz / 410 g approx
Max Radial Shaft Load 80 N (17.9 lb)
Max Axial Shaft Load 50 N (11.2 lb)
Starting Torque .....Approximately 1.6 Ncm (2.226 oz-in) at ambient temperature.
Max Shaft Speed.....6000 RPM

**Bearings**

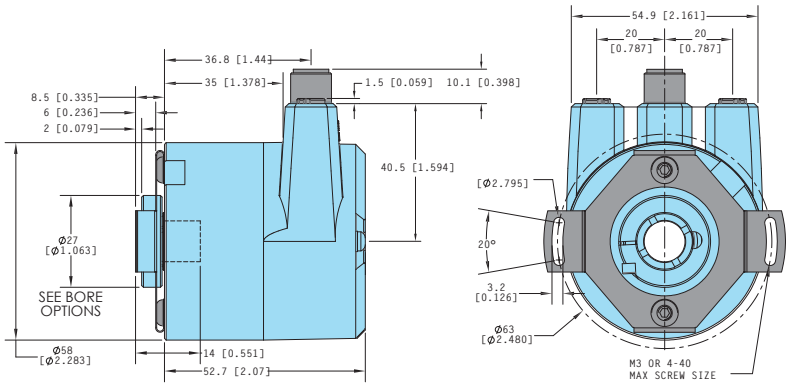
Bearings Type .....2 precision ball bearings
Nominal Service Life 1 x 109 revs. at 100% rated shaft load
1 x 1010 revs. at 40% rated shaft load
1 x 1011 revs. at 20% rated shaft load

**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/s2 (10 Hz up to 1000 Hz)
(20.3 g [10Hz up to 1000 Hz])
tested per EN 60068-2-6
Shock.....5000 m/s2 (6 ms)
509.8 g (6 ms)
tested per EN 60068-2-27
Design .....According to DIN VDE 0160




## Model A58HE 63 mm 2 pt. Flex mount (SR)




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

## NETWORK BUS CONNECTOR PINOUT

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

**Female Connector Port 1 (In)**

Assignments

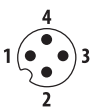
RNB

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

**Power**

Assignments

RNB




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

**Female Connector Port 2 (Out)**

Assignments

RNB

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

## MATING CABLES/CORDSETS

| DC Power Cable A-Code | | Signal Cable D-Code, M12 4-Pin to RJ-45 | | Signal Cable D-Code, M12 4-Pin to M12 4-Pin | |
|---|---|---|---|---|---|
| Stock # | Length | Stock # | Length | Stock # | Length |
| 075241 | 2 m | 075245 | 2 m | 075249 | 2 m |
| 075242 | 5 m | 075246 | 5 m | 075250 | 5 m |
| 075243 | 10 m | 075247 | 10 m | 075251 | 10 m |
| 075244 | 20 m | 075248 | 20 m | 075252 | 20 m |