H25 | OMNICODER®

Introduction

The Omnicoder® features a patented dynamic encoder resolution capability that allows users to easily program the encoder resolution to any value between 1 and 10,000 counts per turn. Packaged in BEI's flagship Model H25 incremental encoder, the Omnicoder® allows for virtually unlimited resolution variations.

Using the simple programming interface software and USB interface cable, users can program the encoder resolution on site as needed. In the software, type the encoder resolution and click 'Program'. A new resolution is now programmed. It's that easy!

With the Omnicoder®, resolution can be programmed and reprogrammed at any time by the user.

For users with multiple resolution requirements, Omnicoders® can be kept in stock and programmed as needed.

SPECIFICATIONS

Mechanical

Shaft Diameter	3/8" (1/2"as special feature)
Flat On Shaft	**3/8" Shaft:** 0.80 long X 0.03" deep **1/2" Shaft:** 0.80 long X 0.04" deep
Shaft Loading	**3/8" shaft:** Up to 40 pounds axial and 35 pounds radial **1/2" shaft:** Up to 90 pounds axial and 80 pounds radial
Shaft Runout	0.0005 T.I.R. at midpoint regardless of shaft diameter
Starting Torque at 25°C	Without shaft seal 1.0 in-oz (max); With shaft seal 2.5 in-oz (max); 1/2" shaft with shaft seal: 3.5 in-oz (max)
Bearings	Class ABEC 7 standard, ABEC 5 for 1/2" shaft
Shaft Material	416 stainless steel
Bearing Housing	Die cast aluminum with protective finish; stainless steel (special feature)
Cover	Die cast aluminum; stainless steel (special feature)
Bearing Life	2×10^8 revs (1300 hrs at 2500 RPM) at rated load 1×10^{10} revs (67,000 hrs at 2500 RPM) at 10% of rated load
Maximum RPM	12,000 RPM nominal, 8000 RPM with 1/2" shaft (see Frequency Response, below) 30,000 RPM available on units with 3/8" shaft—consult with factory
Moment of Inertia	4.1×10^{-4} oz-in-sec^2; 5.2×10^{-4} oz-in-sec^2 with 1/2" shaft
Weight	13 oz typical, 14.5 oz typical with 1/2" shaft

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Electrical

Code	Incremental
Output Format	2 channels in quadrature, 1/2 cycle index gated with negative B channel
Cycles per Shaft Turn	1 to 10,000 reprogrammable resolutions. Place "OMNI" in resolution option box.
Supply Voltage	5 to 28 VDC available
Current Requirements	140 mA typical + output load, 290 mA (max).
Voltage/Output	(see note 5) **28V/V:** Line Driver, 5–28 VDC in, Vout = Vin
Protection Level	Reverse, overvoltage and output short circuit (see note 5)
Frequency Response	Max RPM of 3,000.
Output Terminations	M18
Note	Consult factory for other electrical options

Environmental

| Enclosure Rating	NEMA 4 & 13 (IP 66) when ordered with shaft seal (on units with an MS connector) or a cable gland (on units with cable termination).
Temperature	Operating, 0º to 70º C; extended temperature testing available (see note 8); Storage, -25º to 90º C unless extended temperature option called out.
Shock	50 g's for 11 msec duration
Vibration	5 to 2000 Hz @ 20 g's
Humidity	98% RH without condensation

**Notes & Tables:** All notes and tables referred to in the text can be found on page 5.

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H25D - Square Flange

1.30 (SM16)
1.65 (SM18)

SM CONNECTOR POSITION

2.50

Ø 2.52 MAX

0.255

0.30

Ø 0.3747 / 0.3745

1.2500 / 1.2495

Ø

0.88 ± 0.03

2.064 TYP

1.032

0.21 R

2.625 SQUARE

Ø 0.218 4 HOLES (Ø 2.919 B.C. REF)
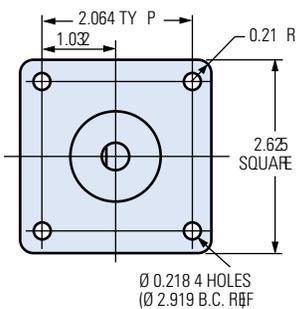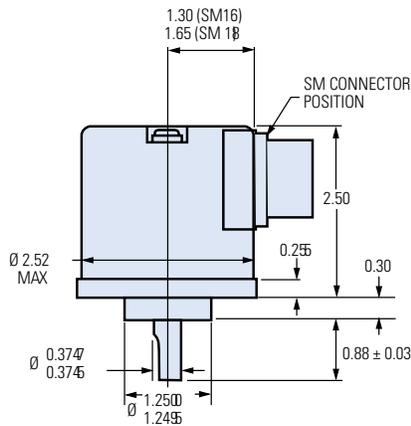
TOLERANCES: .XX = ± 0.01 , .XXX = ± 0.005

H25E - 2.50 Servo Mount

0.88 ± 0.03

0.300
0.100
.100 MIN

Ø 2.500

Ø 1.2500 / 1.2495

Ø 2.275

1.38

0.34

H25G - 2.62 Dia Servo Mount

0.88 ± 0.03

0.125
0.125

Ø 2.500 / 2.498

Ø 2.625
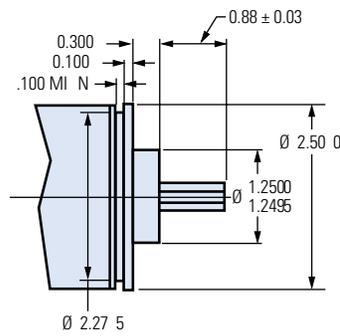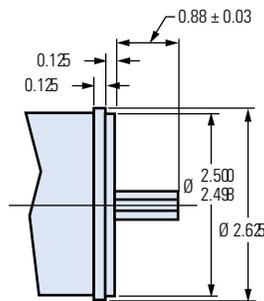
NOTE: SHAFT SEAL NOT AVAILABLE ON H25

Optional Face Mounts

30°
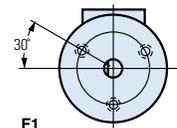
F1
10-32 UNF-2B
0.188 Min. Deep
3 places equally spaced
on a Ø 1.875 bolt circle

45°
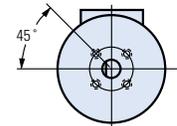
F2 (H25G Only)
4-40 UNC-2B
0.250 Min. Deep
4 places equally spaced
on a Ø 1.272 bolt circle
(0.900 square, Ref.)
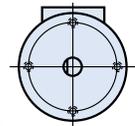
F3
4-40 UNC-2B
0.250 Min. Deep
4 places equally spaced
on a Ø 2.00 bolt circle.

30°
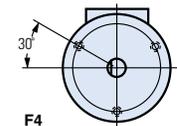
F4
6-32 UNC-2B
0.250 Min. Deep
3 places equally spaced
on a Ø 2.00 bolt circle.

Installing the Driver and Software

Step 1 Go to www.beisensors.com/downloads to view the download page

Step 2 Click on the "Windows: USB Virtual COM Port Driver" and save the file to your hard drive. (Omnicoder® Programming is currently supported on WIndows only).

Step 3 Unzip the USB driver to a directory on your hard drive

Step 4 Run "setup" to install drivers

Step 5 From the BEI download web page, click on the "Windows: Omnicoder® Program" and save the file to your hard drive

Step 6 Unzip the program to a directory on the hard drive.

Step 7 Run "setup" to install the Omnicoder® Programming software.

Step 8 The program should start automatically. You have finished installing the software and are now ready to program your Omnicoder®. (All Omnicoders® are shipped pre-programmed for 1024 CPT). Below is a screen shot of the program interface.
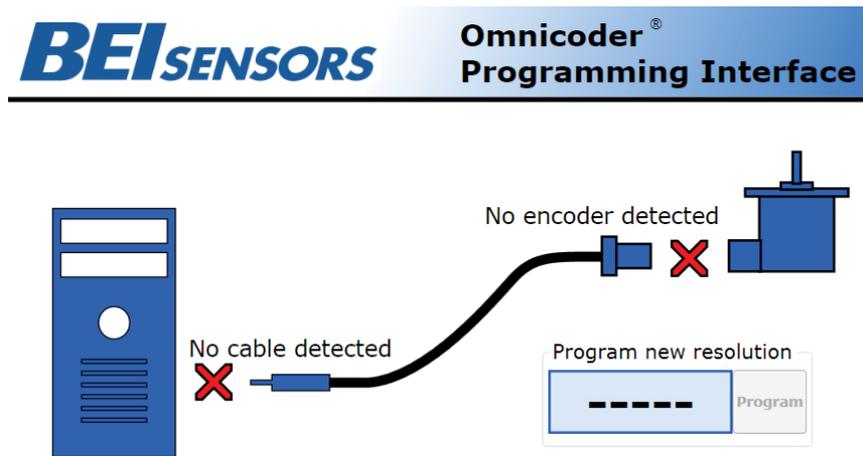
Programming the Omnicoder®

Step 9 Using the Omnicoder® programming cable, plug the USB connector end into your PC. The red X (No cable detected) should change to a green check mark, indicating that the USB Programming Module was detected. (This may take up to 15 seconds)

Step 10 Plug the M18 connector end into the Omnicoder® unit. The red X (No encoder detected) should change to a green check mark, and the current Omnicoder® resolution will be displayed on your computer screen.

Step 11 To change the Omnicoder® resolution, enter a new resolution as an integer between 1 and 10000 in the box labeled "Program New Resolution." Then click the "Program" button. In a few seconds, the new resolution will be uploaded to the Omnicoder®. The Omnicoder® is now programmed and can be disconnected. To program a new resolution, repeat Steps 9-11.

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NOTES

1. Mounting is usually done either using the D-style square flange mount, E- or G-style servo mounts, or one of the standard face mounts, F1 for example. Consult factory for additional face mount options.

2. The shaft seal is recommended in virtually all installations. The most common exceptions are applications requiring a very low starting torque or those requiring operation at both high temperature and high speed.

3. **Output IC's:** Output IC's are available as either Line Driver (LD) or NPN Open Collector (OC) types. Open Collectors require pull-up resistors, resulting in higher output source impedance (sink impedance is similar to that of line drivers). In general, use of a Line Driver style output is recommended. Line Drivers source or sink current and their lower impedance mean better noise immunity and faster switching times. **Warning:** Do not connect any line driver outputs directly to circuit common/OV, which may damage the driver. Unused outputs should be isolated and left floating. Our applications specialists would be pleased to discuss your system requirements and the compatibility of your receiving electronics with Line Driver type outputs.

28V/V: Multi-voltage Line Driver (7272): 100 mA source/sink. Input voltage 5 to 28 VDC +/- 5% standard (Note: Vout = Vin). This driver is TTL compatible when used with 5 volt supply. Supply lines are protected against overvoltage to 60 volts and reverse voltage. Outputs are short circuit protected for one minute. Supply current is 120 mA typical (plus load current). This is the recommended replacement for 3904R and 7406R open collector outputs with internal pullup resistors. It is also a direct replacement for any 4469, 88C30, 8830 or 26LS31 line driver use

4. Special –S at the end of the model number is used to define a variety of non-standard features such as special shaft lengths, voltage options, or special testing. Please consult the factory to discuss your special requirements.

5. Higher frequency response may be available. Consult factory.

6. Mating straight plug receptacles may be ordered from the factory:
   For M18 use MS3106F18-1S

Figure 1: Output Waveform

CCW Rotation Viewing Shaft
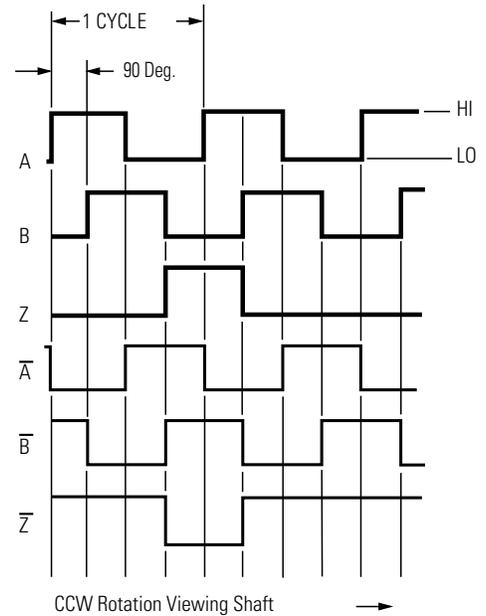
Table 1: Incremental Output Terminations

M18 Connector	
Pin	**Channel**
A	A
B	B
C	Z
D	+V
E	—
F	0V
G	CG
H	$\overline{A}$
I	$\overline{B}$
J	$\overline{Z}$

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Contact the factory for special versions, ex: special flanges, electronics, connections…

H25 — **D** — — **SS** — **OMNI** — **ABZ** **C** — **28** — **S** **M18** —

Type

H = Heavy Duty;
25 = 2.500" Diameter

Housing Configuration

D = Square Flange
E = 2.50 Diameter Servo Mount
G = 2.62 Diameter Servo Mount
See dimensions

Optional Face Mounts

F1, F2, F3, or F4
Blank = None
See note 1

Shaft Seal Configuration

SS = Shaft Seal (Not available on H25G)
Blank = Shielded Bearing
See note 2

Cycles Per Turn

OMNI = Omnicoder® reprogrammable resolution,
select 1 to 10,000 integer CPT

Number of Channels

ABZ = Dual with Index

Complements

C = Complementary Outputs

Voltage/Output

28V/V = 5–28V$_{in}$/$_{out}$
See note 3

Output Termination Location

S = Side

Output Termination

M18 = MS3102R18-1P
See table 1 & note 6

Special Features

S = Special
Features specified on purchase order (consult factory)
See note 4

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AGENCY APPROVALS & CERTIFICATIONS

CE EN 55011 and EN 61000-6-2

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