



BEI Electronics, Inc.

Industrial Encoder
Division

7230 Hollister Avenue
Goleta, California 93117-2891
(805) 968-0782

Specification

924 - 02017 - 001

General Specifications

Type H29

Incremental Optical Encoder

Special Features: 1.062 Pilot Dia.
2.81 Face Dia.
1.187 Long Shaft with Flat

Notice: The design and specifications of the instruments and accessories illustrated and described in this publication are subject to improvement without notice.

C	Updated	4-20-81	PREP BY <i>M. Quinn</i> 5/3/78
B	ECN 1224	10-23-79	CHK. <i>[Signature]</i> 5/4/78
A	Rev. Table II Page 7 Per ECN 1093	10-11-78	ANPD <i>[Signature]</i> 5/4/78
REV	DESCRIPTION	DATE	© 1978 BEI Electronics, Inc.

02017-001

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REV C



TITLE

NO.

924-02017-001

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- 1.0 Scope: This specification describes the BEI Industrial Encoder Division Heavy Duty Type H29 Incremental Optical Encoder.
- 2.0 Mechanical Specifications
- 2.1 Dimensions See Figure 2
- 2.2 Shaft Diameter Standard: .3747/.3745 Dia.
Options: Available with stepped shaft .2497/.2495 Dia.
- 2.3 Shaft Loading Up to 40 lbs Axial and 35 lbs Radial
- 2.4 Shaft Runout .0005 T.I.R.
- 2.5 Starting Torque at 25^oC (Standard without sealed bearings) 1.0 Oz. In. Max.
- 2.6 Starting Torque at 25^oC (With optional sealed bearings) 1.5 Oz. In. Max.
- 2.7 Bearings Class ABEC 7
- 2.8 Shaft 416 Stainless Steel
- 2.9 Housing and Cover Die Cast Aluminum
- 2.10 Bearing Life (Mfr's Specifications) 2×10^8 Revs at rated shaft loading. 5×10^{10} Revs at 10% of rated shaft loading.
- 2.11 Moment of Inertia 4.1×10^{-4} Oz. In. Sec.²
- 2.12 Slew Speed 5000 RPM Max.
- 2.13 Weight 20 Oz. Max.



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3.0 Electrical Specifications

- 3.1 Code Incremental
- 3.2 Cycles Per Shaft Turn 1 to 2540
- 3.3 Supply Voltage See Table I
- 3.4 Current Requirements TTL 200 Ma Max., 150 Ma Typ.
CMOS 150 Ma Max., 125 Ma Typ.
- 3.5 Output Format 2 Channels (A and B) in quadrature $\pm 27^{\circ}$ electrical at 10 KHZ. See Figure 1.
- 3.6 Output Format Options Index and Complementary outputs are available
- 3.7 Output Options See Table I

TABLE I

<u>I.C. Number</u>	<u>Type</u>	<u>Feature</u>	<u>Optional Pull-up Resistor</u>	<u>Output</u>	<u>Supply Voltage $\pm 5\%$</u>
SN7404	T ² L	Totem Pole		16 MA/5V	+5 VDC
SN7406	T ² L	Open Collector Hi-Voltage	470 Ohms	40 MA/30V	+5 VDC
SN74C04	CMOS				+5 to 15 VDC *
MC680	HTL	Totem Pole			+15 VDC
MC681	HTL	Open Collector	15K Ohms		+15 VDC
MC689	HTL	Open Collector Hi-Voltage	15K Ohms	20V	+15 VDC
DM8830	T ² L	Line Driver			+5 VDC
MMS8C30	CMOS	Line Driver			+5 to 15 VDC *

*Specify Actual Voltage

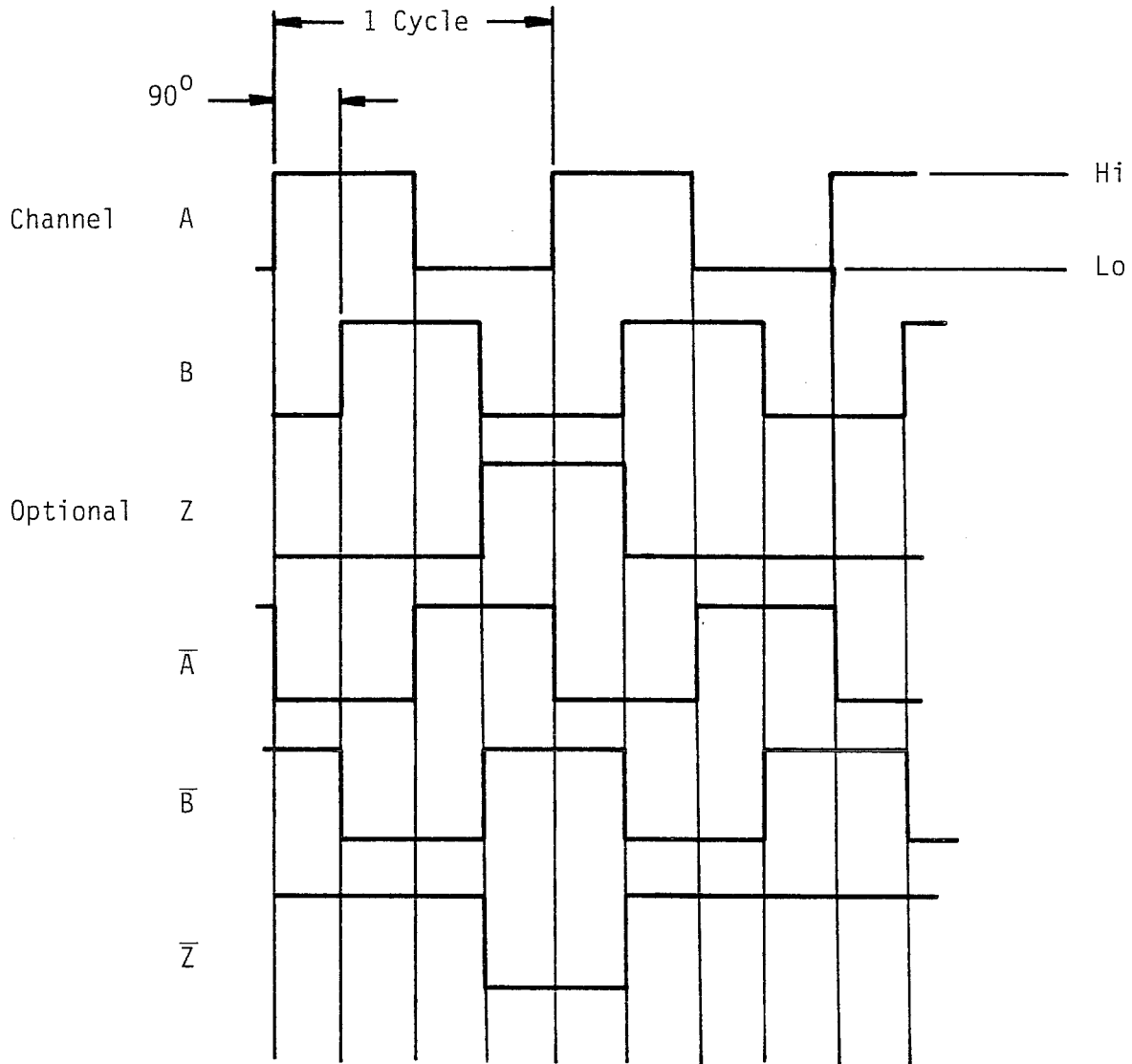


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- 3.8 Illumination Incandescent Lamp
(40,000 hours life)
or LED, Optional
- 3.9 Frequency Response (Channels A and B) 50 KHZ
- 3.10 Frequency Response (Index) 20 KHZ
- 4.0 Environmental Specifications
- 4.1 Temperature
 - Operating 0 to 70°C Standard
 - Storage -25 to 90°C
- 4.2 Shock 50 G's for 11 MSEC duration
- 4.3 Vibration 5 to 2000 HZ @ 20 G's
- 4.4 Humidity 98% RH without condensation
- 5.0 Options (For the following option capability, consult factory for complete specification)
- 5.1 Direction Sensing Pulse Output X1, X2, or X4
- 5.2 Interpolation Multiplied Square Wave Output X5
- 5.3 Dual Resolution Selectable Output
- 5.4 Sinewave Differential Amplified Outputs



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CCW ROTATION
VIEWING SHAFT
→

FIGURE 1
OUTPUT WAVE FORMS



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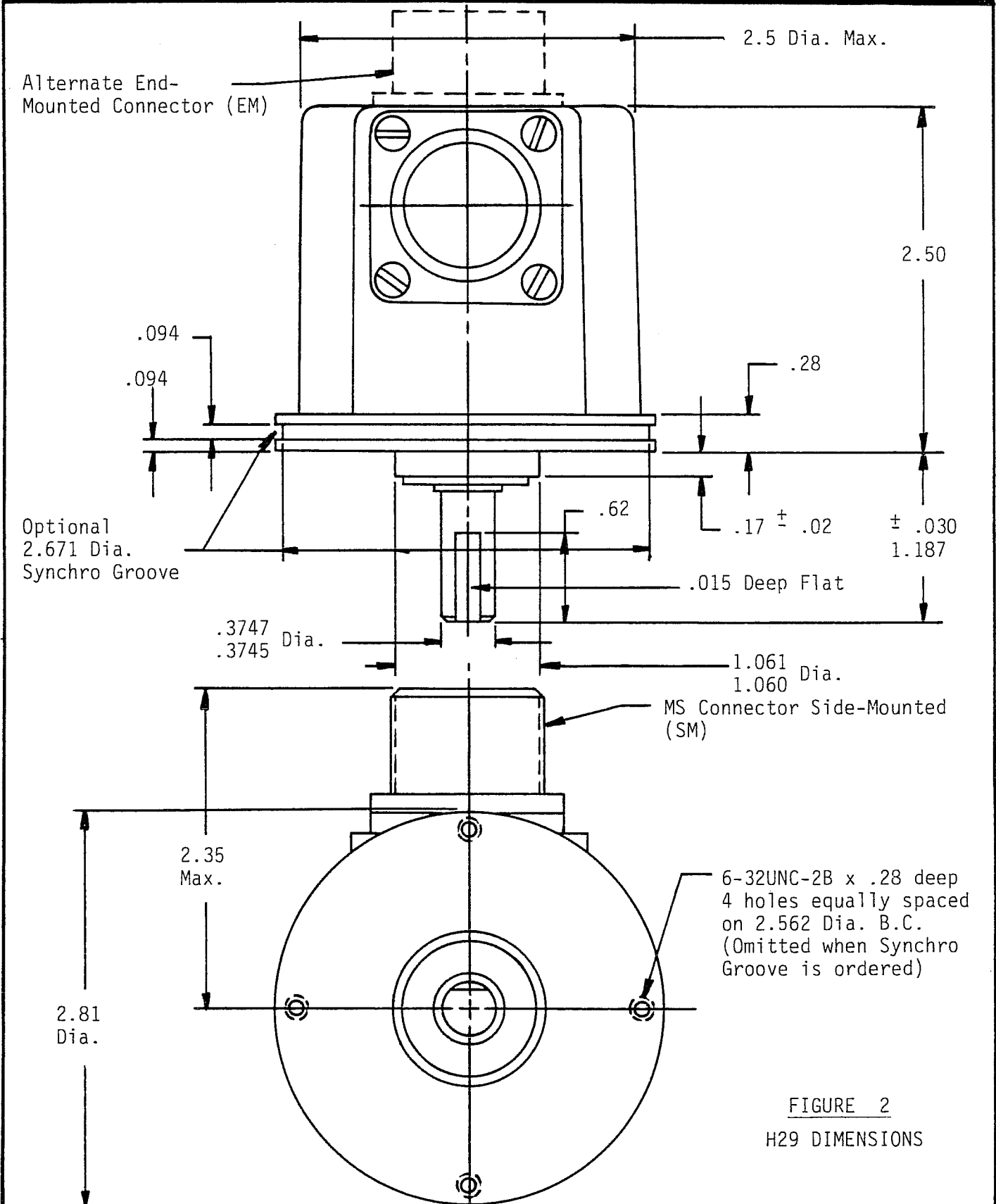


FIGURE 2
H29 DIMENSIONS



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TABLE II
OUTPUT TERMINATIONS

MS3102E18-1P

<u>PIN</u>	<u>FUNCTION</u>
A	Channel A
B	Channel \bar{A}
C	Channel B
D	Channel \bar{B}
E	Channel Z
F	Channel \bar{Z}
G	Case Ground
H	N/C
I	+V
J	Ground

Channels \bar{A} , \bar{B} and \bar{Z} are optional



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6.0 Ordering Information: Encoder may be specified using the following model numbering system:

TYPE: _____
 H = Heavy Duty

BASIC SIZE: _____
 29 = 2.81 Dia.

HOUSING CONFIGURATION LETTER: _____
 E = Synchro Mount
 F = Face Mount

SHAFT SEAL CONFIGURATION: _____
 SB = Seal, Integral with Bearing
 Blank = Shielded Bearing

CYCLES PER TURN: _____
 Enter Cycles:
 500 = 500 Cycles
 2500 = 2500 Cycles
 Etc.

NO. OF CHANNELS: _____
 A = Single Channel
 AB = Dual Quadrature Channels
 ABZ = Dual with Index
 AZ = Single with Index

COMPLEMENTS: _____
 C = Complementary Outputs
 Blank = None

OUTPUT I.C.: _____
 7406, 8830, 7404, etc. (See Table I)
 Followed by "R" = Pull-up Resistor

ILLUMINATION: _____
 Blank = Incandescent (Standard)
 LED = Light Emitting Diode (Optional)

OUTPUT TERMINATION LOCATION: _____
 E = End
 S = Side

OUTPUT TERMINATION: _____
 M18 = MS3102E18-1P Connector

S = Special Non-Standard Features _____
 specified on purchase order
 or customer's spec.

