

Features

- Up to 40,000 steps at 10,000 impulses
- Short-circuit and overload protection (10-30V)
- Maximum pulse frequency 300 kHz
- Synchro, square or clamping flange
- Enclosure class IP 65
- RS 422
- Push-pull complementary
- Encoder monitoring/alarm output
- EMC: class IV as per IEC 801

BI 58 - Incremental Shaft Encoder With Opto-Asic

Electrical Characteristics

Output.....	RS 422 (TTL), Push-pull, Push-pull complementary
Supply Voltage	
RS 422.....	5 VDC, 10-30 VDC
Push-Pull.....	5 VDC, 10-30 VDC
Push-Pull Complementary.....	10-30 VDC
Power Consumption	
RS 422.....	40 mA (5 VDC)
Push-Pull.....	30 mA (24 VDC), 40 mA (5 VDC)
Push-Pull Complementary.....	30 mA (24 VDC), 60 mA (10 VDC)
Maximum Pulse Frequency	
RS 422.....	300 kHz
Push-Pull.....	200 kHz/300 kHz
Push-Pull Complementary.....	200 kHz
Output - H	
RS 422.....	≥ 2.5 V
Push-Pull 5 V.....	≥ 2.5 V
Push-Pull 10-30 V.....	UB - 3 V
Push-Pull Complementary.....	UB - 3 V
Output - L	
RS 422.....	≤ 0.5 V
Push-Pull 5 V.....	≤ 0.5 V
Push-Pull 10-30 V.....	≤ 2 V
Push-Pull Complementary.....	≤ 2 V
Maximum Output Load	
RS 422.....	±20 mA/channel
Push-Pull 5 V.....	±10 mA/channel
Push-pull 10-30 V.....	±30 mA/channel
Push-Pull Complementary.....	±30 mA/channel
Alarm Output.....	O.C. NPN 10 mA

Environmental Characteristics

Operating Temperature Range.....	-10°C to +70°C
Storage Temperature Range.....	-25°C to +85°C
Vibration Performance (IEC 68-2-6).....	100 ms ² (10-2,000 Hz)
Shock Resistance (IEC 68-2-27).....	1,000 ms ² (3 ms)

Mechanical Characteristics

Shaft Diameter.....	6mm, 6.35mm (synchro flange), 10mm, 9.52mm, (clamping, square flange)
Absolute Maximum Shaft Load	
10mm Dia./9.52mm Dia.....	Radial 160 N (35 lbs.), axial 107 N (24 lbs.)
6mm Dia./6.35mm Dia.....	Radial 110 N (24 lbs.), axial 60 N (13 lbs.)
Absolute Maximum Speed.....	10,000 rpm
Torque.....	≤ 1 Ngm (IP 64)
Moment of Inertia.....	14 gcm ² approx.
Protection (DIN 40050).....	IP 65, IP 67*
General Design.....	As per DIN VDE 0160
Connection, Axial or Radial.....	1.5-m cable** or connectors
Housing.....	Aluminum 58mm dia.
Flange.....	S = synchro flange, K = clamping flange, Q = square flange, M = synchro flange (63.5mm)
Weight.....	360G approx.
Bearing Life.....	1 X 10 ¹¹ revolutions (typ.) at 35% of full rated shaft load 1 X 10 ⁹ revolutions (typ.) at 75% of full rated shaft load 1 X 10 ⁸ revolutions (typ.) at 100% of full rated shaft load

For example, 30,000 h at 6,000 RPM with a 13 lb. radial load (10mm or 9.52 mm shaft)

*Other specifications available on request

**Other lengths of lead available on request

Specifications are subject to change without notice.

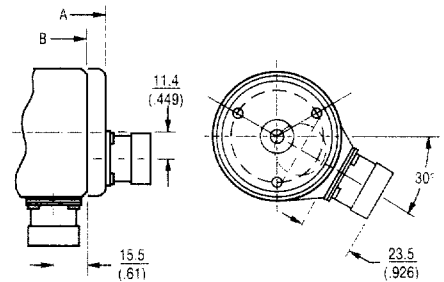
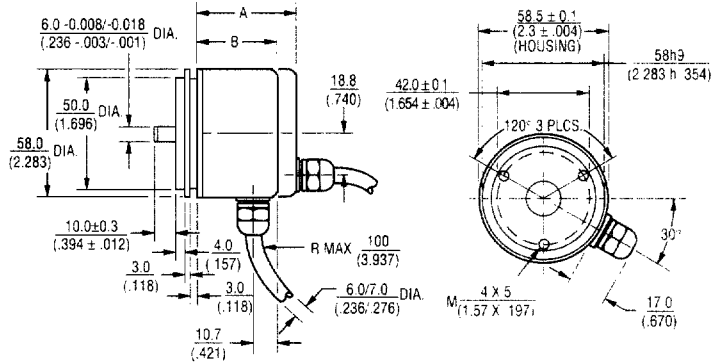
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SYNCHRO FLANGE, 58mm

Connecting Cable, axial/radial

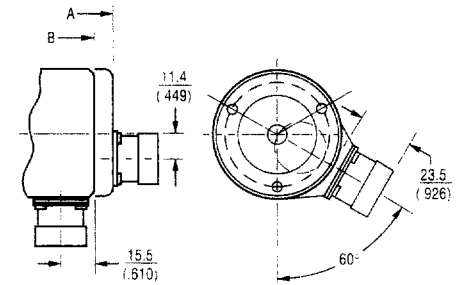
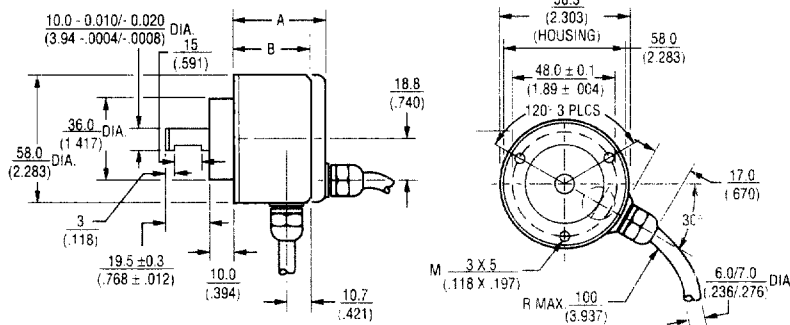
12-pin Plug, axial, radial



CLAMPING FLANGE, 58mm

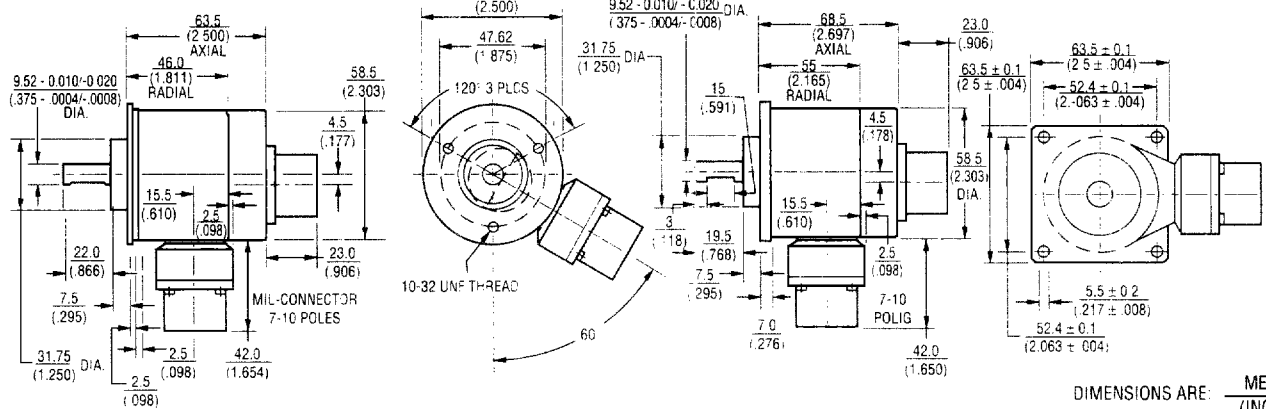
Connecting Cable, axial/radial

12-pin Plug, axial, radial



SYNCHRO FLANGE, 63.5mm (2.5 inches)

SQUARE FLANGE, 63.5mm (2.5 inches)



DIMENSIONS ARE: METRIC (INCHES)

TYPE	CONNECTION	OUTPUT	A	B	TYPE	CONNECTION	OUTPUT	A	B
Synchro Flange, 58mm	Cable	RS 422 (5V), Push-Pull	51.5 (2.03)	41.5 (1.63)	Clamping Flange 58mm	Cable	RS 422 (5 V), Push-Pull	45.5 (1.79)	35.5 (1.40)
		RS 422 (10...30V)	56 (2.20)	56 (2.20)			RS 422 (10...30V)	50 (1.97)	50 (1.97)
	Flange Box	RS 422 (5V), Push-Pull	57.5 (2.26)	51.5 (2.02)		Flange Box	RS 422 (5V), Push-Pull	51.5 (2.03)	45.5 (1.79)
		RS 422 (10...30V)	57.5 (2.26)	56 (2.20)			RS 422 (10...30V)	51.5 (2.03)	50 (1.97)

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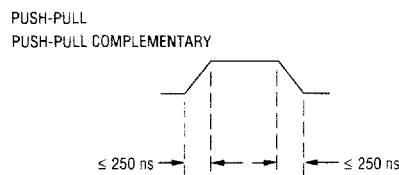
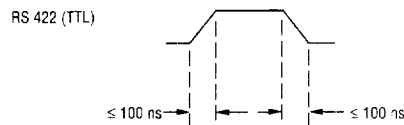
Performance depends on voltage and frequency

Length	RS 422	Push-Pull	Push-Pull Complementary
10m	5 VDC, 300 kHz	12 VDC, 200 kHz 24 VDC, 200 kHz 30 VDC, 200 kHz	12 VDC, 200 kHz 24 VDC, 200 kHz 30 VDC, 200 kHz
50m	5 VDC, 300 kHz	12 VDC, 200 kHz 24 VDC, 175 kHz 30 VDC, 100 kHz	12 VDC, 200 kHz 24 VDC, 50 kHz 30 VDC, 25 kHz
100m	5 VDC, 300 kHz	12 VDC, 200 kHz 24 VDC, 75 kHz 30 VDC, 50 kHz	12 VDC, 150 kHz 24 VDC, 25 kHz 30 VDC, 12 kHz

Standard Resolutions Available

Resolution	5	10	20	25	30	50	60	100	120	125	128	150
180	180											
200	200											
226	226											
250	250											
256	256											
280	280											
300	300											
314	314											
360	360											
3925	3925											
4096	4096											
5000	5000											
9000	9000											
10000	10000											

Pulse shape:
 Pulse duty factor: 1:1
 Tolerance: ± 25° electrical



*DISTANCE FROM A TO B IS AT LEAST 0.45 μs.

SHORT CIRCUIT AND OVERLOAD PROOF OVER THE WHOLE TEMPERATURE RANGE. POLARITY PROTECTION

Consult factory for non-standard resolutions.

How To Order

BI 58 - 0 / 1000 E S - 4 1 K B

Model _____

0 = Opto-ASIC _____

Number of Pulses _____

Supply Voltage _____

A = 5 VDC _____

E = 10-30 VDC _____

Type of Flange _____

S = Synchro Flange _____

K = Clamping Flange _____

Q = Square Flange _____

M = Synchro Flange (63.5mm) _____

Enclosure Class _____

4 = IP 65 _____

Shaft Diameter _____

1 = 6mm (S) _____

2 = 10mm (K, Q) _____

5 = 6.35mm (S) _____

6 = 9.52mm (K, Q, M) _____

Output _____

T = RS 422 (TTL)¹ + sense _____

K = Push-pull, short circuit proof _____

I = Push-pull² complementary _____

R = RS 422 + Alarm _____

D = 5V/30 mA _____

Type of Connection _____

A = Cable Axial _____

B = Cable Radial _____

C = Conin-plug, axial right-turning _____

D = Conin-plug, radial right-turning _____

G = Conin-plug, axial left-turning _____

H = Conin-plug, radial left-turning _____

O = MIL MS Conn., 10 pin, axial³ _____

K = MIL MS Conn., 10 pin, radial³ _____

P = MIL MS Conn., 7 pin, axial⁴ _____

L = MIL MS Conn., 7 pin, radial⁴ _____

M = MIL MS Conn., 6 pin, axial⁴ _____

Q = MIL MS Conn., 6 pin, radial⁴ _____

R = MIL MS Conn., 10 pin, axial⁵ _____

T = MIL MS Conn., 10 pin, radial⁵ _____

- ¹ Only with 5 VDC
- ² Only with 10-30 VDC
- ³ Euro pinout; not with RS 422 + sense
- ⁴ Only with push-pull
- ⁵ U.S. pinout; not with RS 422 + sense

Tolerances Except Where Noted (DIN 7169):

0 - 6	±0.1
(0 - 236	±0.004)
6-30	±0.2
(.236 - 1.181	±0.008)
30-120	±0.3
(1.181 - 4.724	±0.0118)

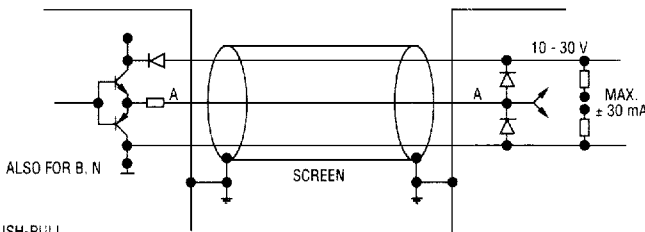
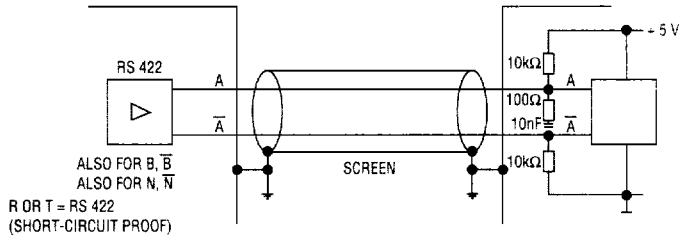
DIMENSIONS ARE: METRIC / INCHES

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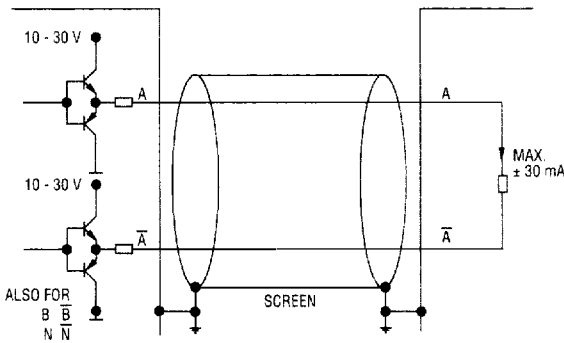
BOURNS

Output Table

(Shaft Turning Clockwise As Seen From Front Of Encoder)

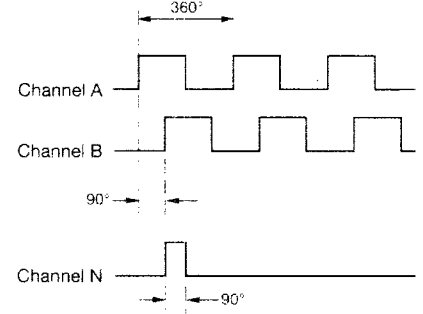


K = PUSH-PULL
(SHORT CIRCUIT PROOF AND OVERLOAD-PROOF)

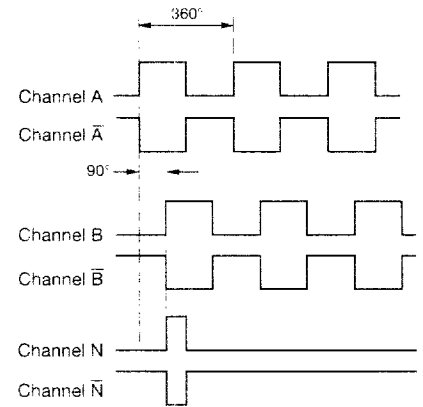


I = PUSH-PULL COMPLEMENTARY
(SHORT CIRCUIT PROOF AND OVERLOAD-PROOF)

PUSH-PULL



RS-422 & PUSH-PULL COMPLEMENTARY



BI 58 - Incremental Shaft Encoder With Opto-Asic

BOURNS[®]

Connection Cable

CABLE PVC COLOR	CABLE PUR COLOR	RS 422 + SENSE (T)	OUTPUT RS 422 + ALARM (R)	PUSH-PULL (K)	PUSH-PULL COMP. (I)
Red	Brown/Green	5 VDC = ±10%	5/10-30 VDC =	5/10-30 VDC =	10-30 VDC =
Yellow/Red	Blue	Sense Vcc ²	Sense Vcc	Alarm ¹	Sense Vcc
White	Brown	Channel A	Channel A	Channel A	Channel A
White/Brown	Green	Channel \bar{A}	Channel \bar{A}	N.C.	Channel \bar{A}
Green	Gray	Channel B	Channel B	Channel B	Channel B
Green/Brown	Pink	Channel \bar{B}	Channel \bar{B}	N.C.	Channel \bar{B}
Yellow	Red	Channel N	Channel N	Channel N	Channel N
Yellow/Brown	Black	Channel \bar{N}	Channel \bar{N}	N.C.	Channel \bar{N}
Black	White/Green	GND	GND	GND	GND
Yellow/Black	Violet (white) ¹	Sense GND	Alarm	Alarm ¹	Alarm
Screen ³	Screen ³	Screen ³	Screen ³	Screen ³	Screen ³

¹ White for RS 422 + sense (T)

³ Connected to the housing

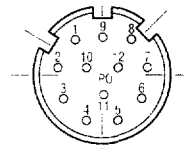
² Do not connect with red (PVC) or brown/green (PUR)

⁴ When cable is PVC use either yellow/red or yellow/black; only use violet when cable is TPE

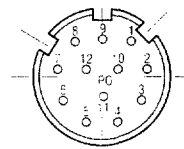
12 Pole Connector

PIN	RS 422 + SENSE (T)	RS 422 + ALARM (R)	PUSH-PULL (K)	PUSH-PULL COMP. (I)
1	Channel \bar{B}	Channel \bar{B}	N.C.	Channel \bar{B}
2	Sense Vcc ⁵	Sense Vcc	N.C.	Sense Vcc
3	Channel N	Channel N	Channel N	Channel N
4	Channel \bar{N}	Channel \bar{N}	N.C.	Channel \bar{N}
5	Channel A	Channel A	Channel A	Channel A
6	Channel \bar{A}	Channel \bar{A}	N.C.	Channel \bar{A}
7	N.C.	Alarm	Alarm	Alarm
8	Channel B	Channel B	Channel B	Channel B
9	N.C.	N.C.	N.C.	N.C.
10	GND	GND	GND	GND
11	Sense GND	N.C.	N.C.	N.C.
12	5 VDC = ± 10%	5/10-30 VDC =	5/10-30 VDC =	10-30 VDC =

⁵ Do not connect to pin 12



PIN ASSIGNMENT
FLANGE BOX
LEFT-TURNING



FLANGE BOX
RIGHT-TURNING

MIL Connector

PIN	10 POLES RS 422/EURO-PINOUT (CONNECTOR CODES O AND K)	10 POLES RS 422/U.S.-PINOUT (CONNECTOR CODES R AND T)	6 POLES PUSH-PULL	7 POLES PUSH-PULL
	1/A	Channel A	Channel A	5 VDC ± 10%/10-30 VDC
2/B	Channel B	Channel B	Channel A	Channel B
3/C	Channel N	Channel N	Channel B	Channel N
4/D	5 VDC = ±10%/10-30 VDC	5 VDC = ±10%/10-30 VDC =	Channel N	5 VDC ±10%/10-30 VDC
5/E	Alarm	Alarm	GND	Alarm
6/F	GND	GND	Screen	GND
7/G	Channel \bar{A}	Screen		Screen
8/H	Channel \bar{B}	Channel \bar{A}		
9/I	Channel \bar{N}	Channel B		
10/J	Screen	Channel \bar{N}		