



Features

- The economical encoder for small appliances
- To 14,400 steps at 3600 impulses
- Short circuit proof and overload protected (10-30V)
- Very low torque

- Encoder self tests for disk contamination, disk breakage, over-temperature, undervoltage and excessive LED aging, and provides an alarm output if these conditions occur
- RS 422 output available on special request

BI 38 - Incremental Shaft Encoder With Opto-Asic

Electrical Characteristics

Output	RS422(TTL), and Push-pull
General Design	DIN VDE 0160
Supply Voltage - Please See Note 4	
Power Consumption	30 mA (24 VDC), 40 mA (5 VDC)
Pulse Frequency	
Output H - Please See Note 1	
Push-Pull (10-30 V) - Please See Note 2	$\geq U_B - 3 V$
Push-Pull (5 V)	$\geq 2.5V$
Output L	
Push-Pull (10-30 V) - Please See Note 3	$\leq 2 V$
Push-Pull (5 V)	$\leq 0.5 V$
Maximum Output Load	
Push-Pull (10-30 V) - Please See Note 5	$\pm 30 mA$
Push-Pull (5 V)	$\pm 10 mA, \pm 30 mA$
Alarm Output	
Push-Pull (10-30 V) - Please See Note 6	O.C. NPN 10 mA
Push-Pull (5 V)	O.C. NPN 10 mA

Notes

1. Pulse frequency
 RS 422, Push Pull (5V) Max. 300kHz
 Push Pull (10V - 30V) Max. 200kHz
2. RS422 $\geq 2.5V$
3. RS422 $\leq 0.5V$
4. Supply Voltage
 RS422 5VDC
 Push - Pull 5VDC, 10-30VDC
5. RS422 $\pm 20mA$
6. RS422

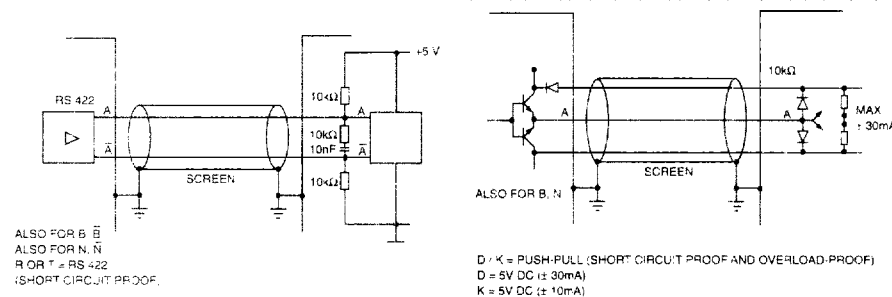
Environmental Characteristics

Operating Temperature Range	-10°C to +60°C
Storage Temperature Range	-25°C to +85°C
Vibration Proof	100 ms ⁻² (10-2000 Hz)
Shock Resistance	1,000 ms ⁻² (3 ms)

Mechanical Characteristics

Shaft Diameter	6mm
Absolute Maximum Shaft Load	Radial 10 N (2.2 lbs.), axial 5 N (1.1 lbs)
Absolute Maximum Speed	Max. 10,000 RPM
Torque	$\leq 0.2 Ncm$ (IP 50)
Protection (DIN 40050)	IP 50
Connection	Round cable, radial
Housing	Fiberglass reinforced plastics
Flange	Q =square flange
Weight	60 g approx.
Bearing Life	2.4×10^7 revolutions (typ.), for example 10,000 h at 6,000 RPM with a 2 lb. radial load

Output Circuit



Cable Lengths @ 25° With Respect To Bourns Cables (depends on voltage and frequency)

LENGTH	PUSH-PULL
10m	5 VDC, 300 kHz 12 VDC, 200 kHz 24 VDC, 200 kHz 30 VDC, 200 kHz

Consult factory for other lengths.

LENGTH	RS 422
10m	5 VDC, 300 kHz
50m	5 VDC, 300 kHz

For technical assistance call the Strategic Products number on the back cover.

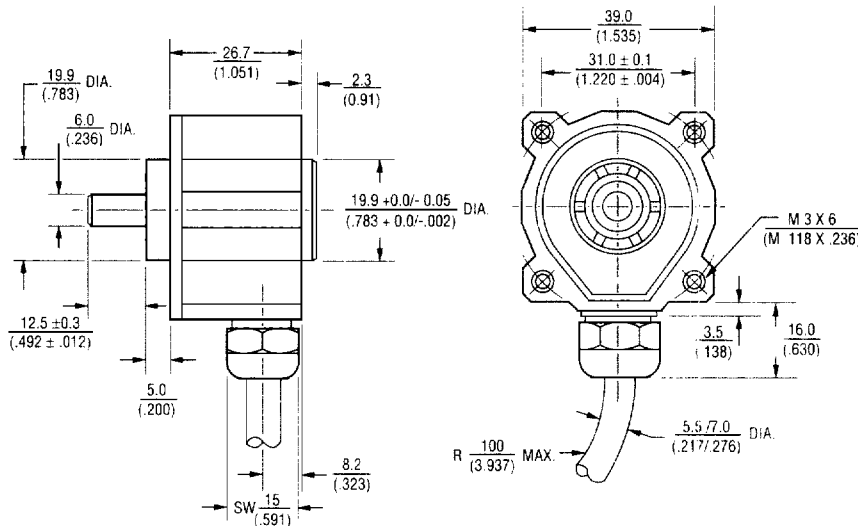
Additional Features

- Square form
- Front and back mounting
- Square flange 39 x 39
- Protection class IP 50

BI 38 - Incremental Shaft Encoder With Opto-Asic

BOURNS[®]

Dimensional Drawings



Tolerances Except Where Noted (DIN 7168):

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)

How To Order

BI 38 - O / 1024 E Q - 1 1 K B

Model _____

O = Opto-ASIC

Number of Pulses _____

Supply Voltage _____

A = 5 VDC

E = 10-30 VDC

Push-pull only

Type of Flange _____

Q = Square Flange

Enclosure Class _____

1 = IP 50

Shaft Diameter _____

1 = 6mm

Output _____

K = Push-Pull Short Circuit Proof

D = Push-Pull 5V, ±30 mA

Type of Connection _____

B = Cable Radial

Connection Diagram

Push-Pull	RS 422	Lead Diameter mm ²	Color
5 VDC ± 10%/10-30 VDC	5VDC ± 10%	0.5	Red
N.C.	Vcc Sense ¹	0.14	Yellow/Red
Channel A	Channel A	0.14	White
N.C.	Channel A	0.14	White/Brown
Channel B	Channel B	0.14	Green
N.C.	Channel B	0.14	Green/Brown
Channel N	Channel N	0.14	Yellow
N.C.	Channel N	0.14	Yellow/Brown
GND	GND	0.5	Black
Alarm	Alarm/Sense GND ²	0.14	Yellow/Black
Lead Shield			

¹ Only for RS 422 + Sense (T)

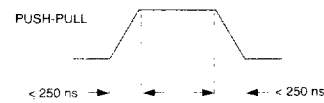
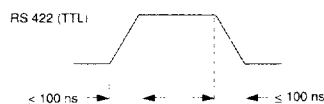
² Depends upon ordering code

Timing Times For 1.5M Cable

Pulse shape:

Pulse duty factor: 1:1

Tolerance: ± 25% electrical



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

Output Table

*Shaft turning clockwise as seen from front of encoder.

