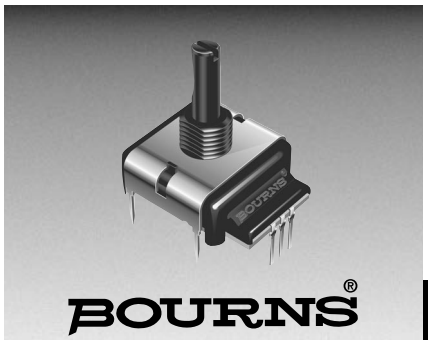


BOURNS®

Features

- Incremental encoder / quadrature output
- Exceptionally long operating life
- High operating temperature capabilities - up to 125°C
- Sturdy construction
- Bushing mount
- Available with PC board mounting bracket (optional)

ECW - Digital Contacting Encoder

Electrical Characteristics

Output .....2-bit gray code, Channel A leads Channel B by 90º electrically turning clockwise (CW)
Closed Circuit Resistance .....5 ohms maximum
Open Circuit Resistance .....100K ohms minimum
Contact Rating .....10 milliamp @ 10 VDC or 0.1 watt maximum
Insulation Resistance (500 VDC) .....1,000 megohms minimum
Dielectric Withstanding Voltage .....MIL-STD-202 Method 301
Sea Level .....1,000 VAC minimum
Electrical Travel .....Continuous
Contact Bounce (15 RPM) .....5 milliseconds maximum
RPM (Operating) .....120 maximum

Environmental Characteristics

Storage Temperature Range .....-40ºC to +140ºC
Operating Temperature Range .....+1ºC to +125ºC
Humidity .....MIL-STD-202, Method 103B, Condition B
Vibration 15G
Contact Bounce .....0.1 millisecond maximum
Shock 50G
Contact Bounce .....0.1 millisecond maximum
Rotational Life .....200,000 shaft revolutions*

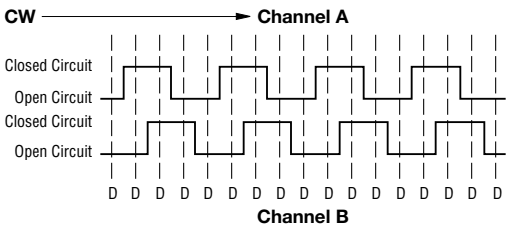
Mechanical Characteristics

Mechanical Angle .....Continuous
Weight .....Approximately 0.75 oz.
Torque (Detented) .....0.75 to 2.25 oz-in.
Mounting Torque .....7 in-lbs. maximum
Shaft Side Load (Static) .....10 lbs. minimum

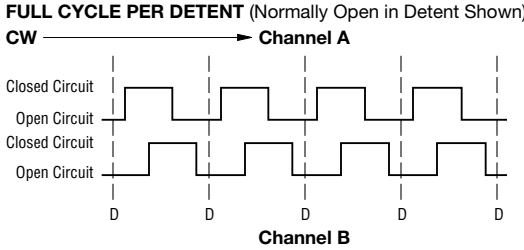
*Applies to EC Option.

QUADRATURE OUTPUT TABLE
This table is intended to show available outputs as currently defined.

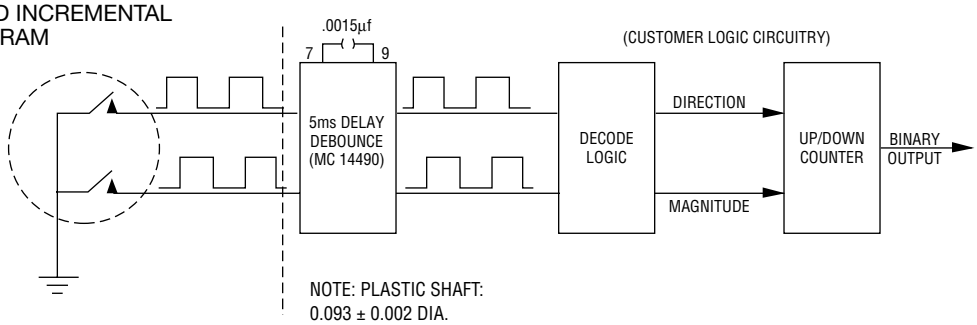
1/4 CYCLE PER DETENT



FULL CYCLE PER DETENT (Normally Open in Detent Shown)



RECOMMENDED INCREMENTAL CONTROL DIAGRAM



NOTE: PLASTIC SHAFT:
0.093 ± 0.002 DIA.
WITH A 0.025 ± 0.004 WIDE
X 0.030 ± 0.010 DEEP ADJUSTMENT SLOT

DIGITAL CONTACTING

The Digital Contacting Encoder is commonly referred to by such names as Digital Panel Control, Bit Switch, Gray Switch and Digital Switch. All such names are synonymous with a device whose output is a digital gray code signal, rather than a conventional potentiometric voltage ratio output.

The advantage of the Digital Contacting Encoder is that it permits the direct entry of digitized analog data into a digital circuit without A/D conversion. The two (2) channel gray coded signal of this incremental encoder allows the user's decoder circuit to sense analog direction of rotation, as well as up-down counter capabilities . . . all without the time and cost required for A/D conversion. This approach can reduce memory overhead, wiring and wiring interconnects, and can provide greater MPU program speed.

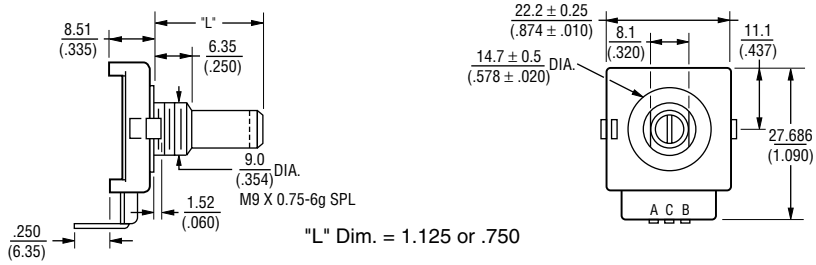
ECW - Digital Contacting Encoder

BOURNS®

FOR ORDERING INFORMATION, SEE FOLLOWING PAGE.

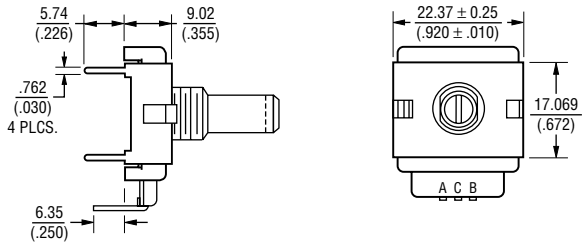
BUSHING MOUNTED - HOUSING **A**
W style bushing shown.

Shaft lengths "L" for B, C, R and Y styles
24 = .750" (19mm)
36 = 1.125" (28.5mm)

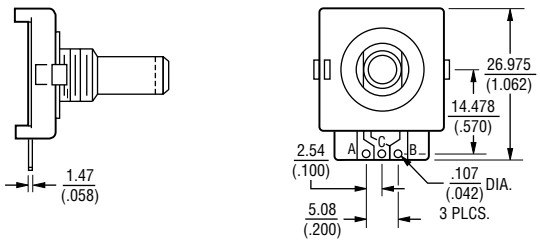


"L" Dim. = 1.125 or .750

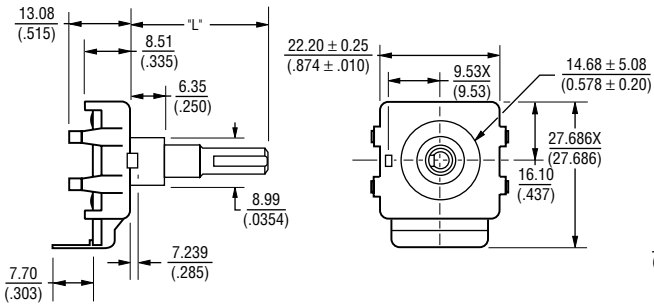
PCB BRACKET MOUNTED - HOUSING **B**
Dimensions not given are the same as Bushing Mounted.



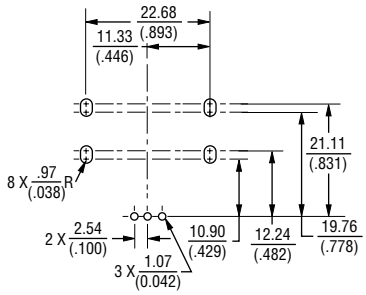
SOLDER HOLES - HOUSING **C**
Dimensions not given are the same as Bushing Mounted.



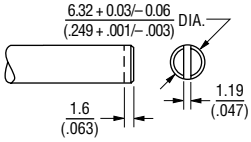
SNAP-IN MOUNT - Housing **G**



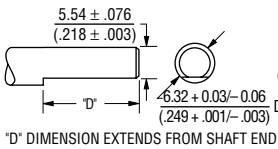
PCB MOUNTING DIMENSIONS



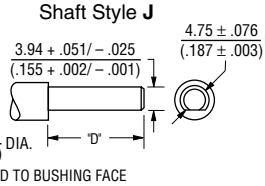
Shaft Style **B**



Shaft Style **C**

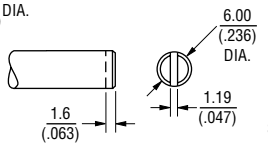


Shaft Style **J**

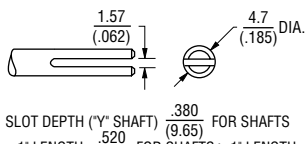


"D" DIMENSION EXTENDS FROM SHAFT END TO BUSHING FACE
"D" = (SHAFT LENGTH, FMS) – (BUSHING LENGTH)

Shaft Style **R**

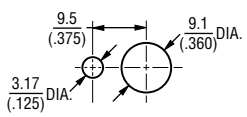


Shaft Style **Y**

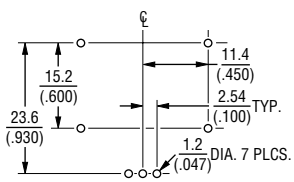


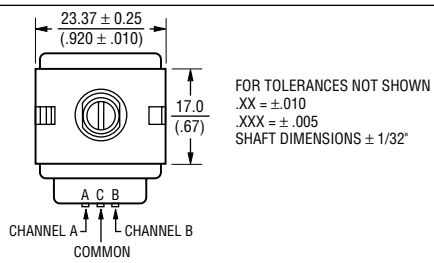
SLOT DEPTH ("Y" SHAFT) .380 (9.65) FOR SHAFTS < 1" LENGTH .520 (14.7) FOR SHAFTS ≥ 1" LENGTH

PANEL HOLE DIMENSIONS
Bushing Mounted



PCB MOUNTING DIMENSIONS
(Housing Styles B and E)





FOR TOLERANCES NOT SHOWN
.XX = ±.010
.XXX = ± .005
SHAFT DIMENSIONS ± 1/32"

ECW - Digital Contacting Encoder - How To Order

BOURNS®

PART NUMBERING SYSTEM

E	C	W	1	J	-	B	2	4	-	B	C	0	0	2	4

Code	Rotational Life
C	**200,000 Revolutions**

BUSHING CONFIGURATION	
Code	**Description**
W	**9mm x 1/4" Length. Threaded M9x0.75**
L	9mm x 3/8" Length. Threaded M9x0.75 (Use B shaft only.)
T	9mm x 1/4". No Thread.

SWITCHING CONFIGURATION (In Detent Position) Applies to performance codes B0012 and C0024 only, use code "0" for all other performance codes.	
Code	**Description**
0	**Not Applicable**
1	**Normally Open**
2	Normally Closed

ANTI-ROTATION LUG POSITION	
Code	**Description**
J	**9:00 Position**
D	None

SHAFT STYLE (See Outline Drawing for Details)	
Code	**Description**
B	**Plain with Inserted Slot (1/4" Dia.)**
C	**Single Flatted (1/4" Dia.)**
R	**Plain with Inserted Slot (6mm Dia.)**
Y	Split Shaft Version (.185" Dia.)
J	Flatted Shaft (3/16" Dia.)

PERFORMANCE CODE		
Code	**Detents**	**Cycles/Rev.**
E0006	**0**	**6**
E0009	**0**	**9**
E0012	**0**	**12**
E0024	**0**	**24**
B0012	**12**	**12**
C0006	**24**	**6**
C0024		**24**
D0009	**36**	**9**

HOUSING TERMINAL CONFIGURATION (X indicates "Equipped With"							
	Code						
Features	**A**	**B**	**C**	**D**	**E**	**F**	**G***
Terminal Cover	**X**	**X**			X		X
Terminals	**X**	**X**			X		X
Solder Holes			X	X		X	
PCB Bracket		**X**		X	X	X	
Hardware Included	**X**		X		X	X	
Snap-In Mount							X

**Bushing code T only.*

SHAFT LENGTH (FMS)		
Code	**Description**	**Available Shaft Styles**
16	1/2" Length	B
20	5/8" (15.9mm) Length	J
24	**3/4" (19mm) Length**	**B, C, J, Y**
28	**7/8" (22.2mm) Length**	**B, C, J, Y**
32	1" (25.4mm) Length	B, C, J, Y
36	1-1/8" (28.6mm) Length	B, C, J, Y
	Metric	
19	19mm Length	R
22	22mm Length	R
24	**24mm Length**	**R**

The sample part number demonstrates the identification code for Bourns contacting encoders.

Boldface features are Bourns standard options. All others are available with higher minimum order quantities.