



Features

- Incremental encoder / quadrature output
- Exceptionally long operating life
- 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 90 ° electrically turning clockwise (CW)
Closed Circuit Resistance	5 ohms maximum
Open Circuit Resistance	100 K 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
Phase Tolerance (CH A to CH B)	90 ° ± 72 °

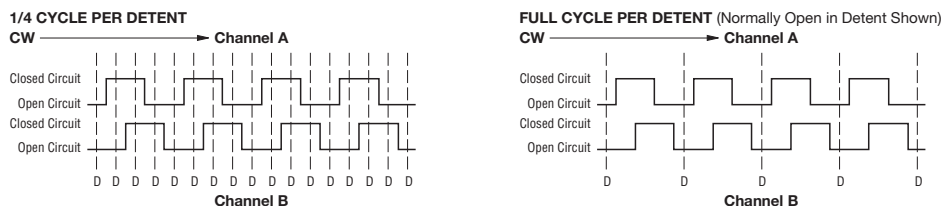
Environmental Characteristics

Operating Temperature Range	-40 °C to +85 °C (-40 °F to 185 °F)
Storage Temperature Range	-40 °C to +85 °C (-40 °F to +185 °F)
Humidity	MIL-STD-202, Method 103B, Condition B
Vibration	15 G
Contact Bounce	0.1 millisecond maximum
Shock	50 G
Contact Bounce	0.1 millisecond maximum
Rotational Life	200,000 shaft revolutions
IP Rating	IP 40

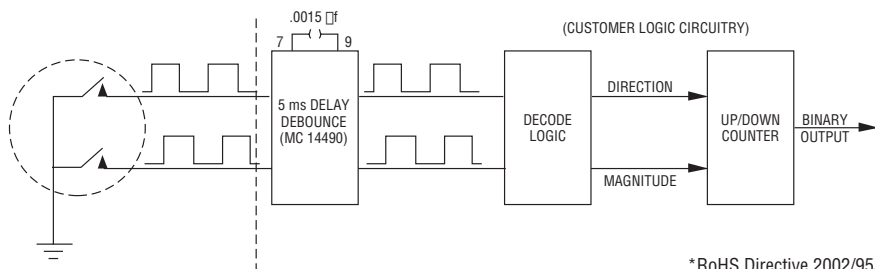
Mechanical Characteristics

Mechanical Angle	Continuous
Running Torque (Detented)	0.5 to 1.5 N-cm (0.75 to 2.25 oz-in.)
Undetented Torque	0.17 to 1.0 N-cm (0.25 to 1.50 oz-in.)
Mounting Torque	79 N-cm (7 lb.-in.) maximum
Shaft Side Load (Static)	4.5 kg (10 lbs.) minimum
Weight	Approximately 21 gms. (0.75 oz.)
Terminals	PC pin or solder lug
Soldering Condition	
Manual Soldering	96.5Sn/3.0Ag/0.5Cu solid wire or no-clean rosin cored wire
Wave Soldering	370 °C (700 °F) max. for 3 seconds
Wash processes	96.5Sn/3.0Ag/0.5Cu solder with no-clean flux
Wash processes	260 °C (500 °F) max. for 5 seconds
Marking	Not recommended
Hardware	One lockwasher and one mounting nut are shipped with each encoder, except where noted in the part number.

Quadrature Output Table – This table is intended to show available outputs as currently defined.



RECOMMENDED INCREMENTAL CONTROL DIAGRAM FOR USE WITH A DEBOUNCE CIRCUIT



*RoHS Directive 2002/95/EC Jan 27 2003 including Annex.
Specifications are subject to change without notice.

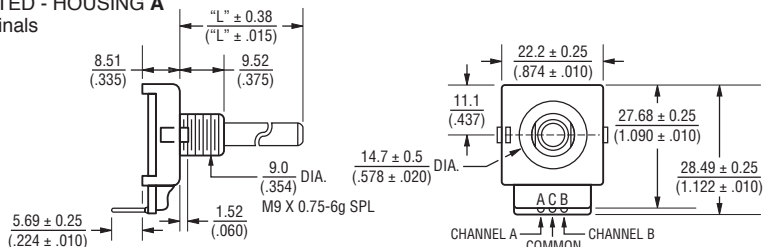
Customers should verify actual device performance in their specific applications

ECW - Digital Contacting Encoder

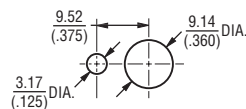
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Dimensional Drawings

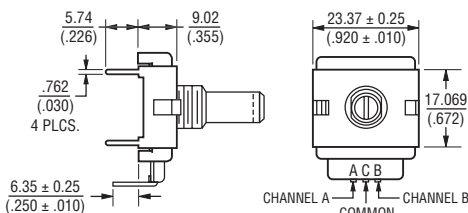
BUSHING MOUNTED - HOUSING A Rear-Facing Terminals



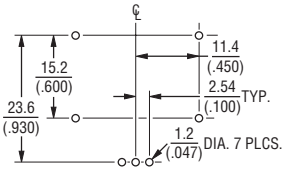
PANEL HOLE DIMENSIONS Bushings Mounted



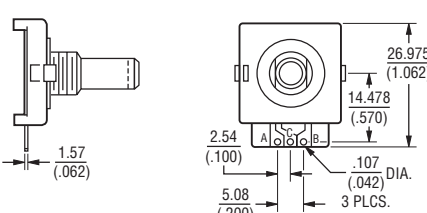
PCB BRACKET MOUNTED - HOUSING B Dimensions not given are the same as Bushing Mounted.



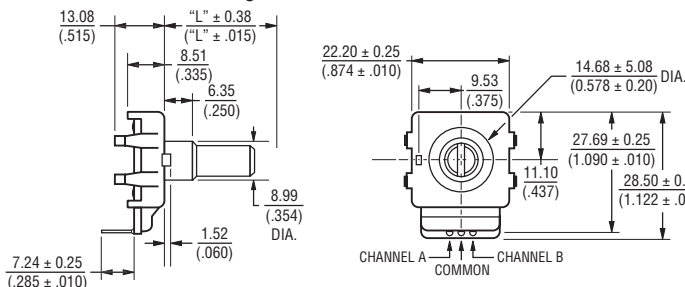
PCB MOUNTING DIMENSIONS (Housing Styles B and E)



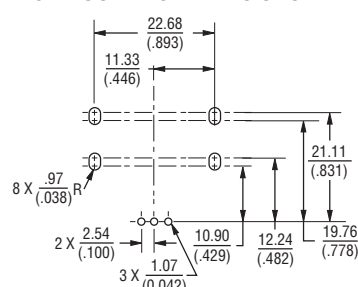
SOLDER HOLES - HOUSING C Dimensions not given are the same as Bushing Mounted.



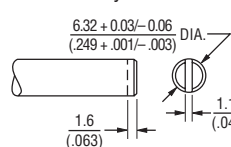
SNAP-IN MOUNT - Housing G



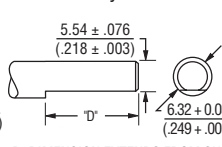
PCB MOUNTING DIMENSIONS



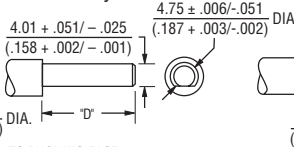
Shaft Style B



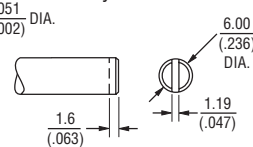
Shaft Style C



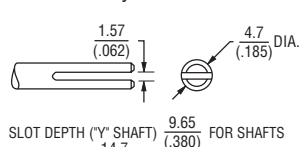
Shaft Style J



Shaft Style R



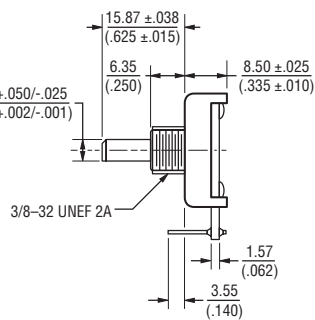
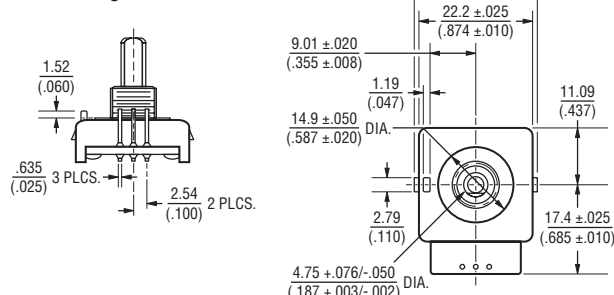
Shaft Style Y



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

SLOT DEPTH ("Y" SHAFT) 9.65 (.380) FOR SHAFTS
< 1" LENGTH 14.7 (.578) FOR SHAFTS ≥ 1" LENGTH

BUSHING MOUNTED - HOUSING H Front-Facing Terminals

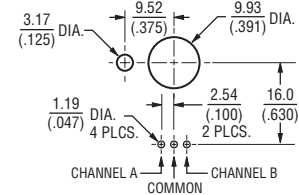


FOR TOLERANCES NOT SHOWN

.XX = ± .25 (.010) .XXX = ± .13 (.005)

SHAFT DIMENSIONS ± 1/32"

DIMENSIONS: MM (IN)



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ECW - Digital Contacting Encoder

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How to Order

PART NUMBERING SYSTEM

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

Code	Rotational Life
C	200,000 Revolutions

BUSHING CONFIGURATION	
Code	Description
W	9 mm x 1/4 " Length. Threaded M9x0.75
L	9 mm x 3/8 " Length. Threaded M9x0.75 (Use B shaft only.)
T	9 mm 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

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 (6 mm Dia.)
Y	Split Shaft Version (.185 " Dia.)
J	Flatted Shaft (3/16 " Dia.)

RoHS IDENTIFIER	
Code	Description
L	Compliant
Blank	Non-Compliant

PERFORMANCE CODE		
Code	Detents	Cycles/Rev.
E0006	0	6
E0009	0	9
E0012	0	12
E0024	0	24
E0036	0	36
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*	H	K
Terminal Cover	X	X			X		X		
Rear-Facing Terminals	X	X			X		X		
Solder Holes			X	X		X			
PCB Bracket		X		X	X	X			
Hardware Included	X		X		X	X		X	
Snap-In Mount							X		
Forward-Facing Terminals								X	X

*Bushing code T only.

SHAFT LENGTH (FMS)

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

REV. 09/09

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