



Features

- Incremental encoder / quadrature output
- Exceptionally long operating life
- Sturdy construction
- Bushing mount
- Available with PC board mounting bracket (optional)
- RoHS compliant*

ECW - Digital Contacting Encoder

Electrical Characteristics

| | |
|--|--|
| Output | 2-bit quadrature 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 ° |

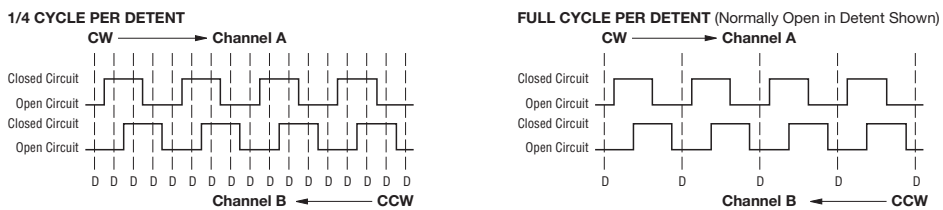
Environmental Characteristics

| | |
|-----------------------------------|---------------------------------------|
| 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 |

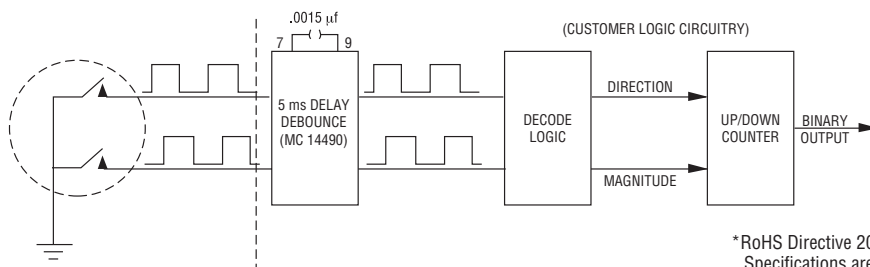
Mechanical Characteristics

| | |
|---------------------------------|---|
| 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 370 °C (700 °F) max. for 3 seconds |
| Wave Soldering | 96.5Sn/3.0Ag/0.5Cu solder with no-clean flux 260 °C (500 °F) max. for 5 seconds |
| Wash processes | Not recommended |
| Marking | Manufacturer's name and trademark, part number, and date code. |
| 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 2015/863, Mar 31, 2015 and Annex. Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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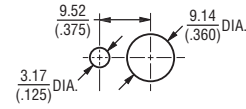
WARNING Cancer and Reproductive Harm
www.P65Warnings.ca.gov

Dimensional Drawings

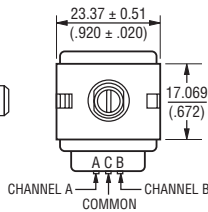
BUSHING MOUNTED - HOUSING A Rear-Facing Terminals



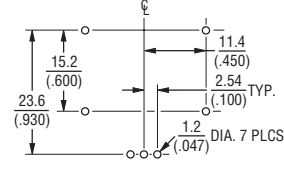
PANEL HOLE DIMENSIONS Bushing Mounted



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

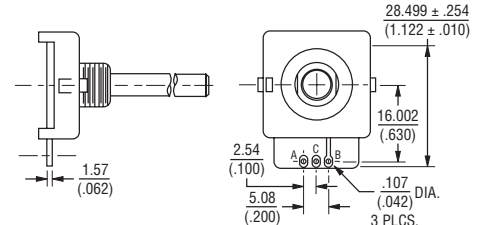


PCB MOUNTING DIMENSIONS (Housing Styles B and E)

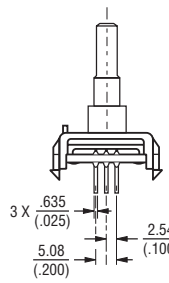
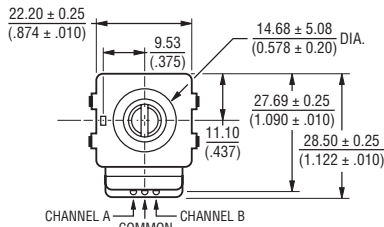
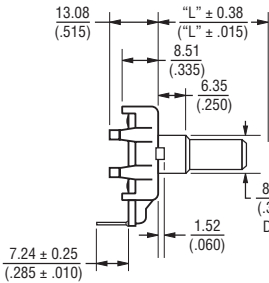


SOLDER HOLES - HOUSING C

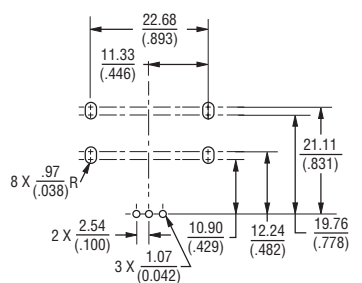
Dimensions not given are the same as Bushing Mounted.



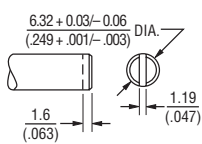
SNAP-IN MOUNT - Housing G



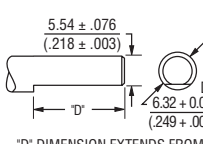
PCB MOUNTING DIMENSIONS



Shaft Style B

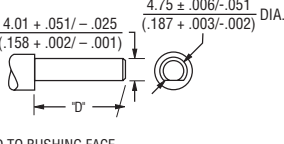


Shaft Style C

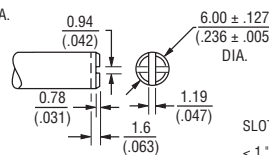


"D" DIMENSION EXTENDS FROM SHAFT END TO BUSHING FACE
"D" = (SHAFT LENGTH, FMS) - (BUSHING LENGTH)

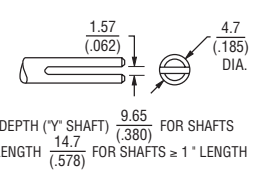
Shaft Style J



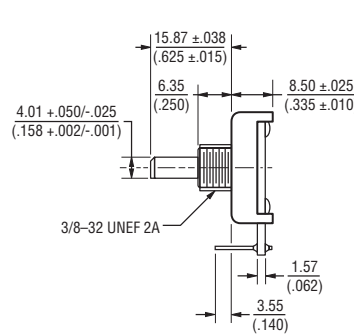
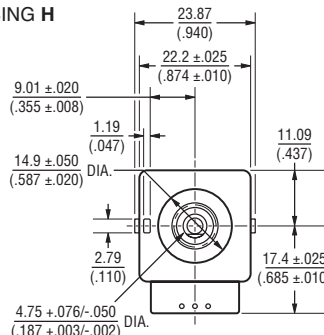
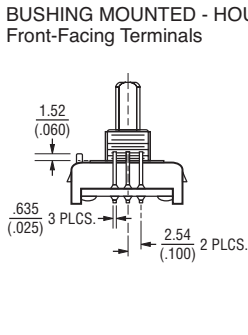
Shaft Style R



Shaft Style Y



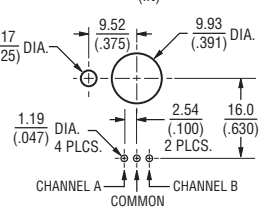
BUSHING MOUNTED - HOUSING H Front-Facing Terminals



FOR TOLERANCES NOT SHOWN
.XX ± .25 .XXX ± .13
(.010) (.005)

SHAFT DIMENSIONS ± 1/32"

DIMENSIONS: MM (IN)



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ECW - Digital Contacting Encoder

BOURNS®

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

| RoHS IDENTIFIER | |
|-----------------|-------------|
| Code | Description |
| L | 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")

| Features | Code | | | | | | | | | |
|--------------------------|------|---|---|---|---|---|----|---|---|--|
| | 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. 04/15/20

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