



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 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

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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.

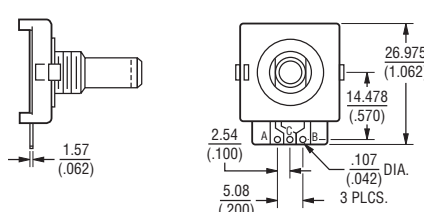


PCB MOUNTING DIMENSIONS (Housing Styles B and E)

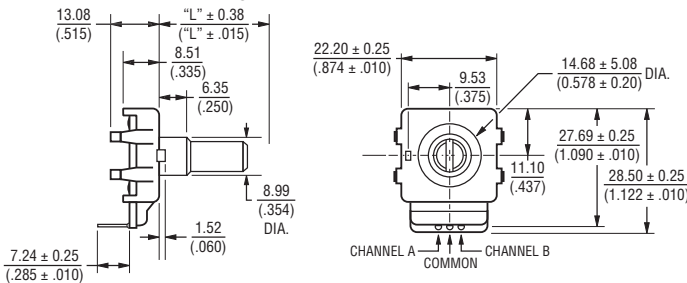


SOLDER HOLES - HOUSING C

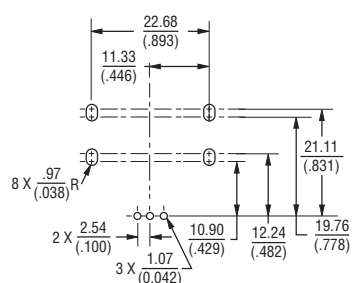
Dimensions not given are the same as Bushing Mounted.



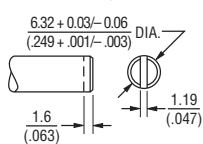
SNAP-IN MOUNT - Housing G



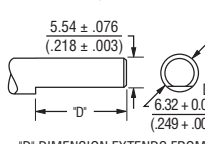
PCB MOUNTING DIMENSIONS



Shaft Style B

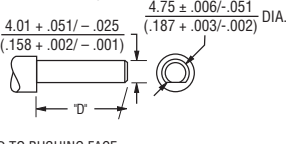


Shaft Style C

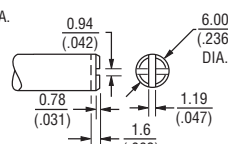


"D" DIMENSION EXTENDS FROM SHAFT END TO BUSHING FACE
 "D" = (SHAFT LENGTH, FMS) - (BUSHING LENGTH)

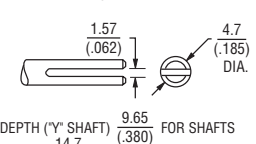
Shaft Style J



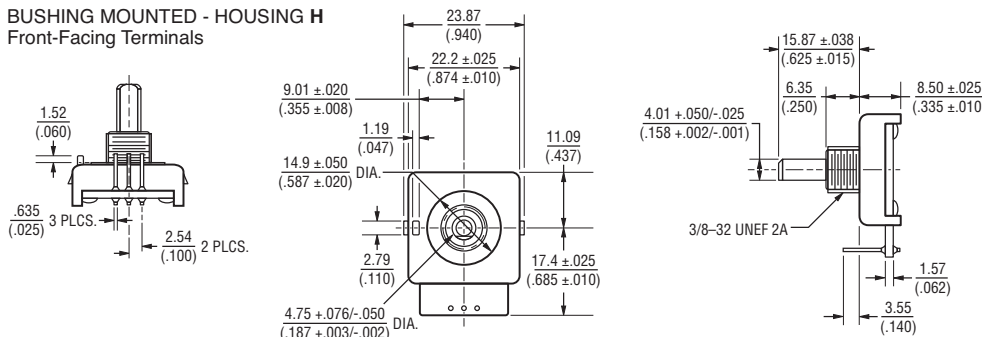
Shaft Style R



Shaft Style Y



BUSHING MOUNTED - HOUSING H Front-Facing Terminals

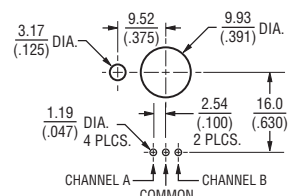


FOR TOLERANCES NOT SHOWN

.XX ± .25 (.010) .XXX ± .13 (.005)

SHAFT DIMENSIONS ± 1/32"

DIMENSIONS: MM (IN)



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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 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") | | | | | | | | | | |
|---|---|---|---|---|---|---|----|---|---|---|
| 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. 02/13

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