

*RoHS COMPLIANT
VERSIONS
AVAILABLE



BOURNS®

Features

- Quadrature output
- Detent option
- Snap-in PC board mount
- Long operating life
- Incremental output
- Up to 24 full quadrature outputs per revolution

ES Series - Shaftless Contacting Encoders

Electrical Characteristics

| | |
|--|---|
| Output | 2-bit gray code, Channel A leads Channel B 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 |

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 |

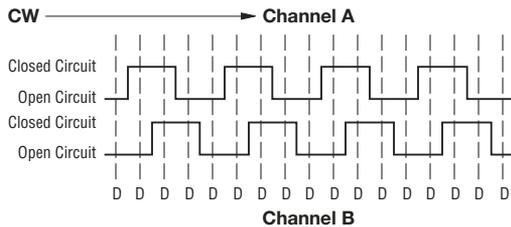
Mechanical Characteristics

| | |
|---------------------------------|--|
| 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 0.8 N-cm (0.25 to 1.25 oz-in.) |
| Weight | Approximately 8 gm (0.28 oz.) |
| Terminals | Printed circuit board terminals |
| 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 | No hardware supplied |

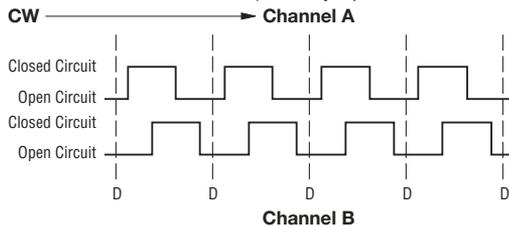
Quadrature Output Table

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

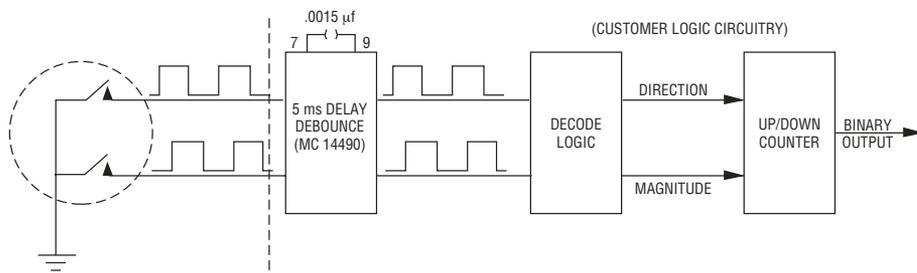
1/4 CYCLE PER DETENT



FULL CYCLE PER DETENT (Normally Open in Detent Shown)



RECOMMENDED INCREMENTAL CONTROL DIAGRAM FOR USE WITH A DEBOUNCE CIRCUIT

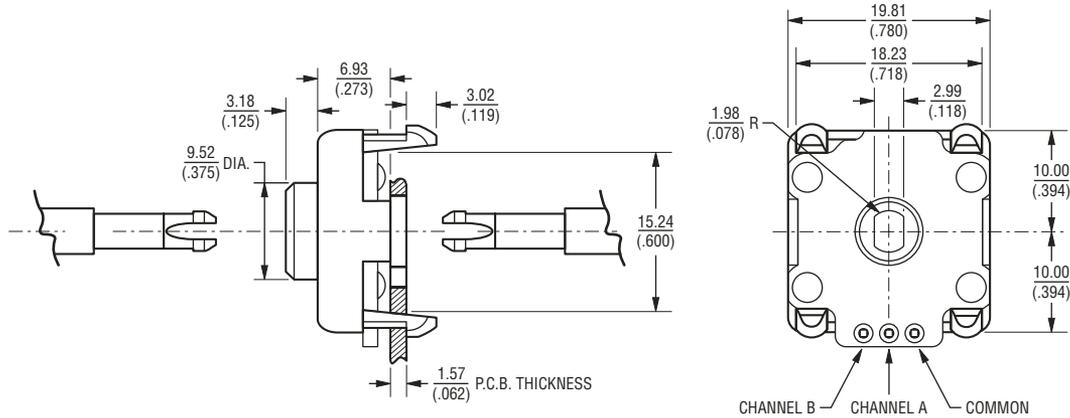


*RoHS Directive 2002/95/EC Jan 27 2003 including Annex
Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

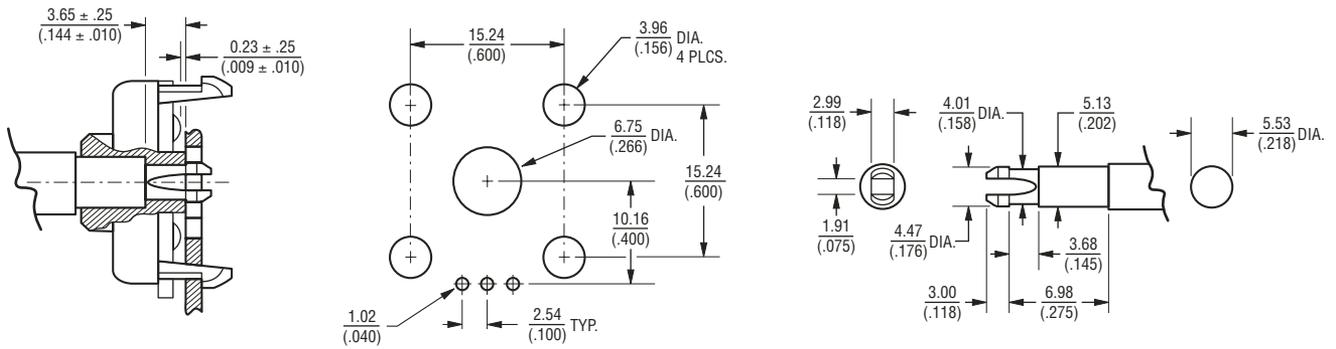
ES Series - Shaftless Contacting Encoders

BOURNS®

Product Dimensions



Mounting Dimensions



DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

ES Series - Shaftless Contacting Encoders

How To Order



| BUSHING CONFIGURATION | |
|-----------------------|--|
| Code | Description |
| D | 3/8 " Dia. X 1/8 " High Threadless Bushing |

| 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 |
| D | None |

| SHAFT STYLE/LENGTH | |
|--------------------|-------------|
| Code | Description |
| S00 | No Shaft |

| HOUSING TERMINAL CONFIGURATION (X indicates "Equipped With") | |
|---|--------|
| Features | Code G |
| Standard Housing | X |
| Snap-in Legs | X |
| Rear Facing Terminals - .100 " Spacing | X |

| 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 |

*Consult factory.

| RoHS IDENTIFIER | |
|-----------------|---------------|
| Code | Description |
| L | Compliant |
| Blank | Non-Compliant |