



Features

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

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ES Series - Shaftless Contacting Encoders

Electrical Characteristics

Output.....	2-bit quadrature 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

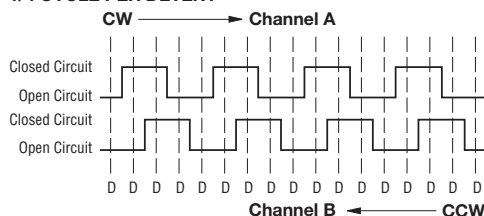
Mechanical Characteristics

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.....	96.5Sn/3.0Ag/0.5Cu solid wire or no-clean rosin cored wire; 370 °C (700 °F) max. for 3 seconds
Manual Soldering.....	96.5Sn/3.0Ag/0.5Cu solder with no-clean flux; 260 °C (500 °F) max. for 5 seconds
Wave Soldering.....	Not recommended
Wash Processes.....	Manufacturer's name and trademark, part number and date code
Marking.....	No hardware supplied
Hardware.....	

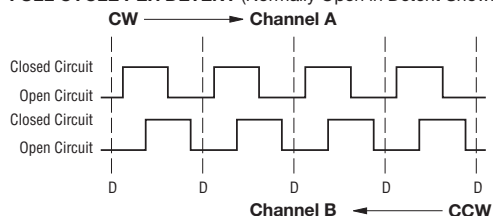
Quadrature Output Table

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

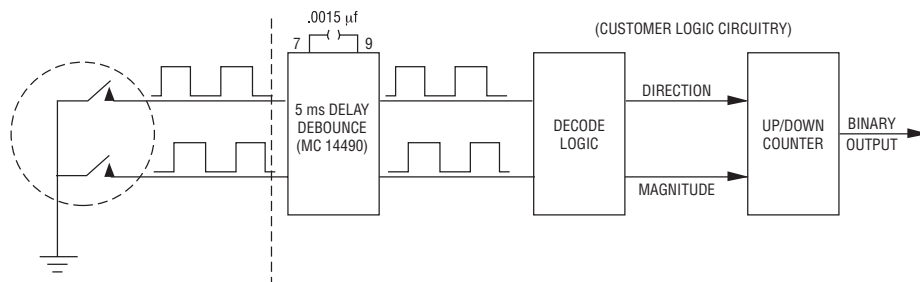
1/4 CYCLE PER DETENT



FULL CYCLE PER DETENT (Normally Open in Detent Shown)



RECOMMENDED INCREMENTAL CONTROL DIAGRAM FOR USE WITH A DEBOUNCE CIRCUIT



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

*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

Specifications are subject to change without notice.

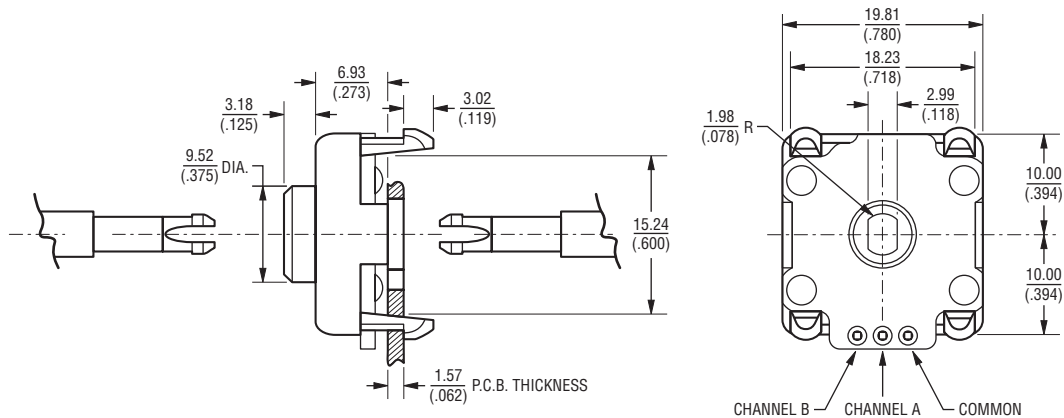
Users should verify actual device performance in their specific applications.

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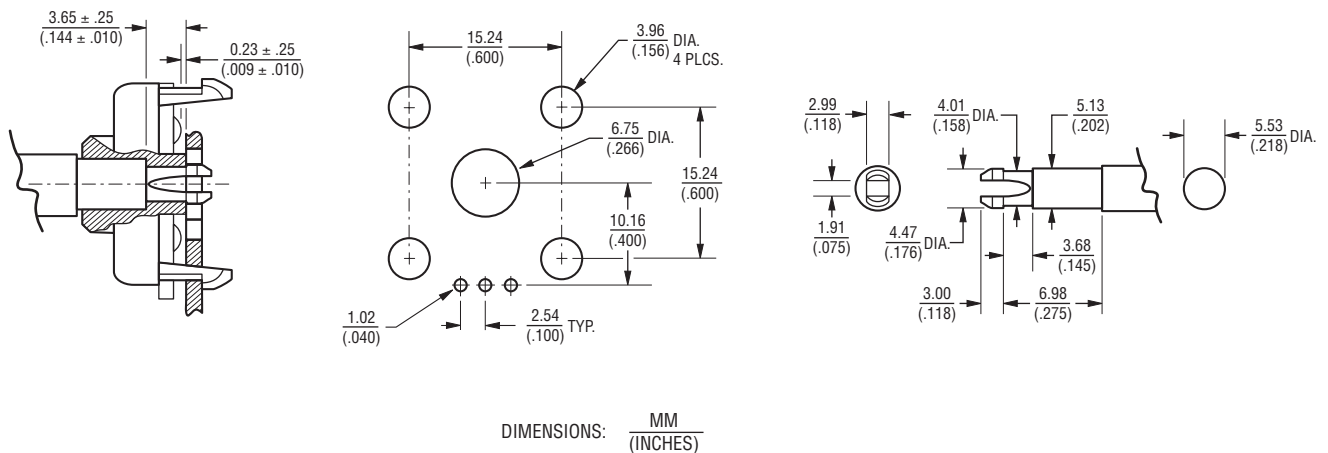
ES Series - Shaftless Contacting Encoders

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Product Dimensions



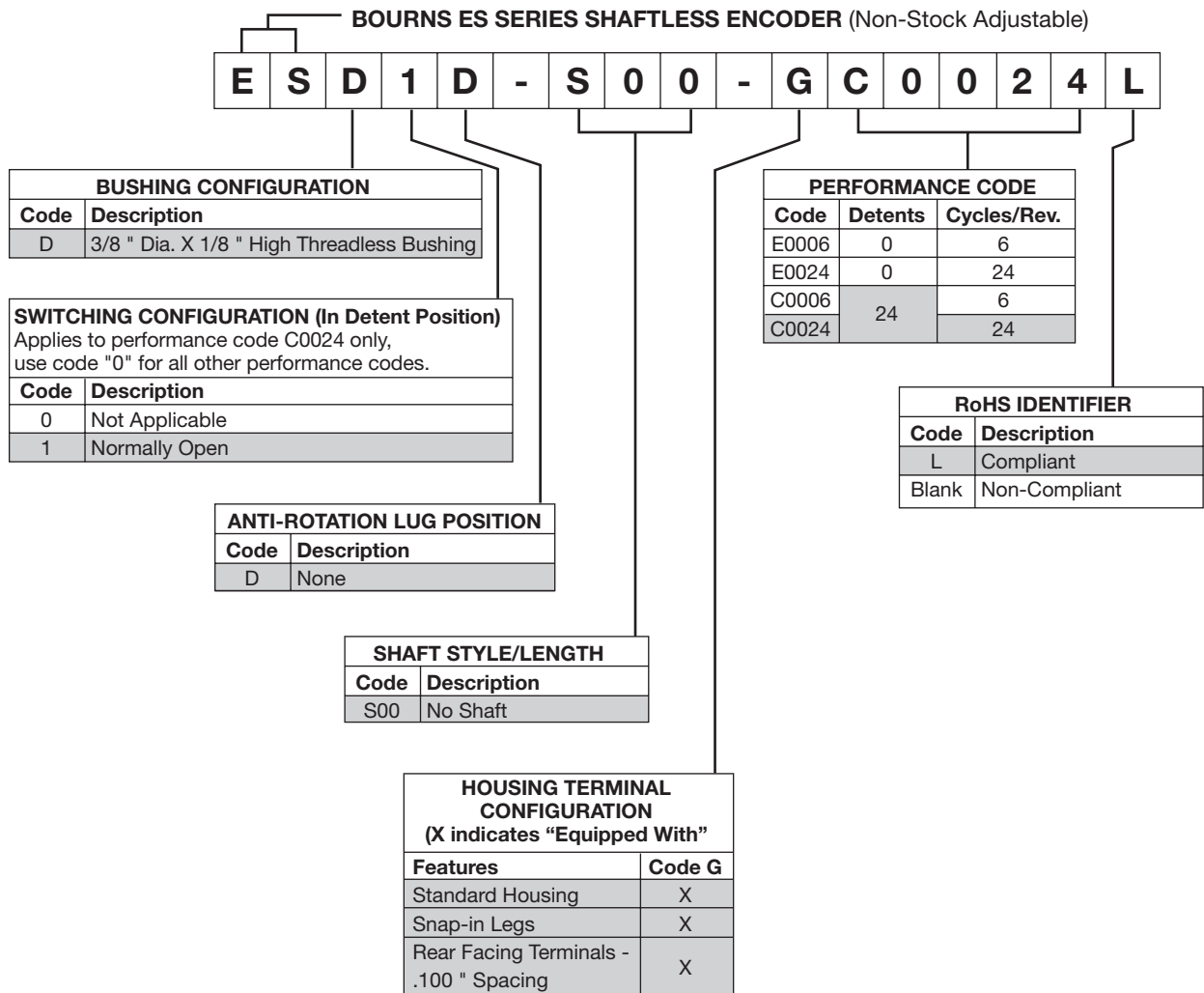
Mounting Dimensions



ES Series - Shaftless Contacting Encoders

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How To Order



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