J1 Line Shafted rotary position sensors
J158 / J150 / J140 / J130
Shafted; Brief / 1 of 2

J1 LINE SHAFTED ROTARY ENCODERS

Joral manufactures J1 Line shafted rotary position sensors for the market of controls, power equipment, hydraulics, and off road vehicles. The J1 shafted rotary position sensor marries a unique mechanical design with the latest in magnetic sensing technologies to provide a sensor that will survive in the most extreme real world environments.

- Rugged duty, bullet proof hardware (MIL STD 202)
- Totally encapsulated electronics & sealed bearings (IP67)
- Unique Captive Shaft Design
- Standard housings as well as application specific pages (standard housings 30mm, 40mm, 50mm, 58mm)
- LED indicators provide live feedback for power and output

UNIQUE CAPTIVE SHAFT DESIGN

J1 Line sensor’s shaft and bearing package is designed captive to provide extreme resistance to shaft push out forces.

- Solid aluminum body design
- Dual chrome steel ball bearings and heavy clamp ring captive shaft design
- Simple mechanical design with minimum moving components
- Designed to withstand drop onto shaft and shaft push-out forces

TOTALLY ENCAPSULATED ELECTRONICS

The J1 Line’s electronics are 100% sealed in an automotive grade potting compound

- Provides protection from shock, vibration, and direct impact, as well as external contaminants and moisture
- Clear compound allows LED indicators to be clearly viewed for live feedback

AT-A-GLANCE SPECIFICATIONS

Connection options include but not limited to: M12, M12 Pigtail, M8, Terminal Block, Flying Lead Cable, and various Deutsch connectors

Available Incremental Outputs: Available Absolute Position Outputs:
- Quadrature Single Ended
- Quadrature Differential
- Step and Direction
- J1939 CAN Bus
- SSI (Synchronous serial interface)
- Analog or Current Output
- PWM (Pulse width modulation)
- J1939 CAN Bus
- Modicon MODBUS

ZERO POWER Multi-turn Capable Contact Joral for available Zero Power options
**STANDARD OPERATING CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Encoder Output</th>
<th>Resolution</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quadrature Single Ended Incremental Output</td>
<td>8 to 2048 PPR - Standard Resolutions: 8, 10, 16, 20, 32, 40, 50, 64, 80, 100, 125, 128, 200, 250, 256, 400, 500, 512, 1024, 2048</td>
<td>Format: Two channel quadrature A and B outputs with index pulse Z Driver: 7272 push-pull driver</td>
</tr>
<tr>
<td>Quadrature Differential Incremental Output</td>
<td>8 to 2048 PPR - Standard Resolutions: 8, 10, 16, 20, 32, 40, 50, 64, 80, 100, 125, 128, 200, 250, 256, 400, 500, 512, 1024, 2048</td>
<td>Format: Two channel quadrature A and B outputs with index pulse Z and complementary outputs A', B', and Z Driver: 7272 push-pull driver</td>
</tr>
<tr>
<td>Step and Direction Incremental Output</td>
<td>16 to 512 PPR - Standard Resolutions: 16, 32, 64, 128, 256, 512</td>
<td>Format: One channel STE P output and one channel DIRECTION output with Index pulse Z Driver: 7272 push-pull driver</td>
</tr>
<tr>
<td>SSI Absolute Position Output Absolute Output</td>
<td>8192 Positions 0.0439 degrees per position</td>
<td>Format: Clock and data output Driver: Differential Output</td>
</tr>
<tr>
<td>PWM Absolute Position Output Absolute Output</td>
<td>1024 or 2048 Positions</td>
<td>Format: Pulse Width Modulation in 1 μsec increments Driver: 7272 push-pull driver</td>
</tr>
<tr>
<td>Analog Voltage Absolute Position Absolute Output</td>
<td>0 to 5 VDC - OR 4 to 20 mA 10 bit internal resolution</td>
<td>Format: Output Voltage/Current proportional to 0-360 degrees Output Loading: 10mA max</td>
</tr>
<tr>
<td>J1939 CAN Bus Absolute or Incremental Output</td>
<td>1000 or 8192 Positions - see J1939 output pages for message information</td>
<td>Format: Standard SAE J1939 CAN Bus - One message for status, one message for settings</td>
</tr>
</tbody>
</table>

**ELECTRICAL SPECIFICATIONS**

- Input Power: 6 to 30 VDC at approximately 60mA max, not including output loads
- Electrical Protection: Over-voltage, Reserve-voltage, Output short-circuit protected
- LED Indicators: Power and output channel status
- Connection Types: M8, M12, M12 on pigtail, Terminal block, Flying lead cable, Deutsch - 4 or 6 pin

**ENVIRONMENTAL SPECIFICATIONS**

- Operating Temperature: -30 to +80 degrees C
- Storage Temperature: -40 to +100 degrees C
- Humidity: 100%
- Vibration: 5 to 3000 Hz, 20g (MIL STD 202)
- Shock: 400g 6msec (MIL STD 202)
- Sensor Sealing: IP67 (connector Dependant) **Terminal block not IPRated**

**MECHANICAL SPECIFICATIONS**

- Housing Diameter: 30mm, 40mm, 50mm, 58mm
- Housing Material: Aluminum
- Standard Shaft Diameter: 6mm (w/ flat spot)
- Standard Shaft Length: 0.411 inches (10.44mm)
- Shaft Material: Non-magnetic stainless steel
- Bearings: Dual chrome ball-bearings
- Max Speed: 3000 RPM

<table>
<thead>
<tr>
<th>Model</th>
<th>Housing Diam.</th>
<th>Weight</th>
<th>Height</th>
<th>Height w/ M12</th>
</tr>
</thead>
<tbody>
<tr>
<td>J130</td>
<td>30mm</td>
<td>4 oz</td>
<td>1.49 inches (37.85mm)</td>
<td>2.15 inches (54.6mm)</td>
</tr>
<tr>
<td>J140</td>
<td>40mm</td>
<td>4 oz</td>
<td>1.7 inches (43.2mm)</td>
<td>2.13 inches (54.1mm)</td>
</tr>
<tr>
<td>J150</td>
<td>50mm</td>
<td>6 oz</td>
<td>1.53 inches (38.86mm)</td>
<td>2.08 inches (52.8mm)</td>
</tr>
<tr>
<td>J150 [63]</td>
<td>50mm w/ flange</td>
<td>7 oz</td>
<td>1.53 inches (38.86mm)</td>
<td>2.08 inches (52.8mm)</td>
</tr>
<tr>
<td>J158</td>
<td>58mm</td>
<td>8 oz</td>
<td>1.55 inches (39.4mm)</td>
<td>2.1 inches (53.3mm)</td>
</tr>
</tbody>
</table>