The non-contact sensor’s internal rotating magnet couples with the external rotating magnet installed on the application.

The external rotating magnet (mounted on the application) and the internal rotating magnet (built into the encoder) magnetically couple and track as if they were physically connected.

**AT-A-GLANCE SPECIFICATIONS**

**Installation Tolerances:**
- GAP: 0.5” (12mm) between application magnet and encoder
- AXIAL: 0.10” (2.5mm) center alignment
- PLANAR: 30° tilt

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

**Available Incremental Outputs:**
- Quadrature Single Ended
- Quadrature Differential
- Step and Direction
- J1939 CAN Bus

**Available Absolute Position Outputs:**
- 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
TRUE NON-CONTACT POSITION SENSING
Joral true non-contact position sensors compensate for variations in distance, tilt, and off-center positioning of the magnet.

- Tolerances of 0.5” (12mm) gap, 30° tilt, and 0.1” (2.5mm) axial
- True non-contact limits mechanical wear
- Magnetic coupling makes for flexible installation

TOTALLY ENCAPSULATED ELECTRONICS
Automotive grade transparent potting compound protects electronic components and ensures a complete seal from external forces.

- Protection from shock, vibration, and direct impact
- IP69K protection for total moisture resistance
- Clear compound allows for LED indicators to be viewed

STANDARD PACKAGING STYLES
Joral non-contact sensors available in prox-style and puck-style housings; 18mm & 30mm housings make for compact rotary position sensing.

- Small, standard, and convenient housing options
- Standard diameter and thread patterns
- Uses standard prox mounting hardware

LED INDICATORS FOR LIVE FEEDBACK
LED indicators allow for constant monitoring of the sensor’s operation.

- Power LED displays the status of sensor’s power connections
- Channel and index LEDs relay the status of encoder output
- LEDs make for simple in-field troubleshooting and diagnostics

RUGGED-DUTY HARDWARE
Additional protection from electrical surges and mis-wiring are built into Joral non-contact rotary position sensors.

- Surge protectors for every input/output
- Reverse voltage protection provided against mis-wiring
- Internal auto-resettable fuse for extreme protection
**STANDARD OPERATING CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Encoder Output</th>
<th>Resolution</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quadrature Single Ended</td>
<td>8 to 2048 PPR</td>
<td>Format: Two channel quadrature A and B outputs with index pulse Z</td>
</tr>
<tr>
<td>Incremental Output</td>
<td></td>
<td>Driver: 7272 push-pull driver</td>
</tr>
<tr>
<td>Quadrature Differential</td>
<td>8 to 2048 PPR</td>
<td>Format: Two channel quadrature A and B outputs with index pulse Z and complementary outputs A', B', and Z'</td>
</tr>
<tr>
<td>Incremental Output</td>
<td></td>
<td>Driver: 7272 push-pull driver</td>
</tr>
<tr>
<td>Step and Direction</td>
<td>16 to 512 PPR</td>
<td>Format: One channel STEP output and one channel DIRECTION output with Index pulse Z</td>
</tr>
<tr>
<td>Incremental Output</td>
<td></td>
<td>Driver: 7272 push-pull driver</td>
</tr>
<tr>
<td>SSI Absolute Position Output</td>
<td>8192 Positions</td>
<td>Format: Clock and data output</td>
</tr>
<tr>
<td>Absolute Output</td>
<td></td>
<td>Driver: Differential Output</td>
</tr>
<tr>
<td>PWM Absolute Position Output</td>
<td>1024 or 2048 Positions</td>
<td>Format: Pulse Width Modulation in 1 µsec increments</td>
</tr>
<tr>
<td>Absolute Output</td>
<td></td>
<td>Driver: 7272 push-pull driver</td>
</tr>
<tr>
<td>Analog Voltage Absolute Position</td>
<td>0 to 5 VDC or 4 to 20 mA</td>
<td>Format: Output Voltage/Current proportional to 0-360 degrees</td>
</tr>
<tr>
<td>Absolute Output</td>
<td>10 bit internal resolution</td>
<td>Output Loading: 10mA max</td>
</tr>
<tr>
<td>J1939 CAN Bus</td>
<td>1000 or 8192 Positions</td>
<td>Format: Standard SAE J1939 CAN Bus - One message for status, one message for settings</td>
</tr>
<tr>
<td>Absolute or Incremental Output</td>
<td></td>
<td></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
- **Shock**: 400g 6msec (MIL STD 202)
- **Sensor Sealing**: IP69K (connector dependent) **Termial block not IP rated**

**MECHANICAL SPECIFICATIONS**

- **Housing Diameter**: 18mm, 30mm, 38mm, and 58mm
- **Housing Material**: Aluminum, Stainless Steel, or Delrin™
- **Max Speed**: 3000 RPM

<table>
<thead>
<tr>
<th>Model</th>
<th>Housing Diameter</th>
<th>Weight</th>
<th>Height</th>
<th>Height w/ M12</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE18</td>
<td>18mm</td>
<td>1 oz</td>
<td>1.87 inches (47.5mm)</td>
<td>N/A</td>
</tr>
<tr>
<td>PE30</td>
<td>30mm</td>
<td>1.5 oz</td>
<td>1.2 inches (30.5mm)</td>
<td>1.75 inches (44.5mm)</td>
</tr>
<tr>
<td>HP38</td>
<td>38mm</td>
<td>1.3 oz</td>
<td>0.69 inches (17.5mm)</td>
<td>N/A</td>
</tr>
<tr>
<td>HP58</td>
<td>58mm</td>
<td>2 oz</td>
<td>0.75 inches (19.1mm)</td>
<td>1.5 inches (38.1mm)</td>
</tr>
</tbody>
</table>