**J130/J140 J1 Line shafted rotary position sensor**

- Multiple shaft and connector options available
- Shaft and captive bearing package resistant to shaft push out forces, withstands extreme mechanical vibration
- Extremely compact, J1939 capable
- LED indicators for power and output feedback
- 100% moisture resistant electronic package (IP67)
- Outputs: Quadrature, Step and Direction, SSI, PWM, Analog, Modicon MODBUS, & J1939 Can Bus

**STANDARD OPERATING CHARACTERISTICS**

<table>
<thead>
<tr>
<th>ELECTRICAL</th>
<th>Outputs</th>
<th>A - [PPR] - SEPP</th>
<th>Incremental 13 bit Quadrature w/ Single Ended Output</th>
<th>A B Z</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A - 1939</td>
<td>J1939 13 bit (8192 positions max)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>B - PWM</td>
<td>PWM absolute position</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>A - SSI</td>
<td>SSI absolute position (8192 positions)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>V1 Voltage Out / 5 VDC IN, 0-5 VDC OUT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>V2 Voltage Out / 6-36 VDC IN, 0-5 VDC OUT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I1 Current Output / 0-24 VDC IN, 4-20 mA OUT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input Power</td>
<td>6 to 30 VDC at approx 60 mA max, <em>not including output loads</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical Protection</td>
<td>Over-voltage, reserve-voltage, output short-circuit protected</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED Indicators</td>
<td>Power and output channels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connections</td>
<td>Terminal Rug, M8, M12, M12 Righttail, Flying Lead Cable, Shielded Flying Lead, or Deutsch - 4 or 6 pin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>0.3°</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeatability</td>
<td>0.30%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonlinearity</td>
<td>&lt;1%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MECHANICAL**

- Housing Diameter: 30mm (J130) or 40mm (J140)
- Housing Material: Aluminum
- Housing Height: J130 - 1.49” body; 2.15” w/ M12 (and) J140 - 1.7” body; 2.13” w/ M12
- Mounting: Mounting holes or servo groove
- Weight: J130 & J140 - 4 oz
- Shaft Form Factor: 6mm w/ flat, Extended 6mm w/ flat, 1/4” (0.250”) w/ flat, 10mm round, 3/8” slotted, Extended 3/8” slotted
- Shaft Material: Non-magnetic stainless steel
- Bearing Material: Dual chrome ball-bearings
- Shaft Speed: 3000 RPM max

**ENVIRONMENTAL**

- Operating Temperature: -30° to +80° C
- Storage Temperature: -40° to +90° C
- Humidity: 100%
- Shock: 400g/6ms (MIL STD 202)
- Vibration: 5 to 3000 Hz, 20g (MIL STD 202)
- Protection Class: IP67 (connection dependent)

General ordering guide found on next page (S1; I2 / 2)
### J130/J140 General Ordering Guide

Build part number first by selecting **Housing Style** (code 1), **MagElec** (code 2), and **Connection** (code 3). Add **Special Codes** (code 4) to the end of the Joral part number. Refer to 'Special Part Number Information' for explanation of modifiers.

**Examples:**
- **J130-A-0512-SEPP-M12-42** - 30mm Red aluminum (J130), 3/8" slotted shaft (modifier 42), 13 bit incremental quadrature @ 512 PPR
- **J140-A-1939-SC72-90** - 40mm Red aluminum (J140), 72" Shielded cable (SC72), 13 bit J1939 @ 8192 counts per rotation (modifier 90)
- **J130-V1-0-270-0-5-CW-C72** - Red aluminum (J130), 72" Cable (C72), 5v input (V1) @0-270°, 0v to 5v out, clockwise direction (CW)

<table>
<thead>
<tr>
<th>Code 1: Housing Style</th>
<th>Code 2: MagElec (Sensor Output)</th>
<th>Code 3: Connection</th>
<th>Code 4: Special Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>J130</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J130 = 30mm shafted made out of red aluminum, Connector orientation BACK EXIT only.</td>
<td>A - _ _ _ _ - SEPP</td>
<td>TRM</td>
<td>13 bit single ended quadrature - A B Z</td>
</tr>
<tr>
<td></td>
<td>A - _ _ _ _ - DIPP</td>
<td>INS</td>
<td>13 bit differential quadrature - A B Z, A B Z</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M8</td>
<td>M8 male</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M12</td>
<td>M12 male</td>
</tr>
</tbody>
</table>

| **J140**              |                                 |                    |                       |
| A - 1939              | 13 bit J1939 @1000 positions | M12P | M12 male on 18' pigtail | 44 | Extended 6mm w/ flat |
| B - PWM               | Absolute position PWM | CXX | Flying lead cable (enter XX as inches) | 45 | 6mm w/ flat |
| A - SSI1              | Absolute position SSI @8192 positions | SCXX | Shielded cable (enter XX as inches) | 53 | Black aluminum |

* More outputs and connection options available, contact Joral if desired configuration is not listed

### Special Part Number Information

Review below code sections for important P/N build information

#### Code 1: Housing Style
- **J130** - 30mm, Red aluminum / Back exit connections only
- **J140** - 40mm, Red aluminum / Back exit connections only

#### Code 2: MagElec
**(A - ____ - SEPP) or (A - ____ - DIPP)**
- Enter Quadrature PPR in place of ____
- A = 13 bit PPR
- Available 13 bit PPR: 0008, 0010, 0016, 0020, 0025, 0032, 0040, 0050, 0064, 0080, 0100, 0125, 0128, 0200, 0250, 0256, 0400, 0500, 1024, 2048

**A - 1939**
- Standard J1939 output is 1000 positions
- A = 13 bit
- MODIFIER 90 - for 8192 positions (max resolution) add code 90 to end of J130/J140 P/N

**V1, V2, and I1** (Analog MagElec P/N Guide)
- First select MagElec code (V1, V2 or I1) then Angle Range (A1-A2), Voltage Range (VR1-VR2) and Signal Direction (Clockwise [CW] or Counter [CCW])
- **PART NUMBER FORMULA**
  (MagElec)-(A1-A2)-(VR1-VR2)-(CW or CCW)
- **EXACT V1, V2, and I1 EXAMPLES**
  - **J130** - V1 - 0-360 - 0.5-4.5 - CW - C72
  - **J140** - V2 - 0-180 - 0-5 - CCW - CB4
  - **J130** - I1 - 180-270 - 4-20 - CW - M12

#### Code 3: Connections
- **All Outputs, All Connections** - Connector exit back exit only (sensor epoxy side) for housing style J130 and J140
- **J1939 Output** - Addressing via varying value resistor in connection requires at least five conductors (M12, DB6 and Cables addressing compatible)
- **All Outputs w/ Deutsch** - DB6 and DE6 connection Deutsch connectors add $20 to J130/J140 list

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Joral, LLC • 640 Perkins Drive • Mukwonago, WI 53149 • (262)378-5500 • www.JORALLLC.com
Shafted rotary position sensor

J1 Line

Dimensions informative only
For most recent dimensions please consult factory

Dimensions & General Pin-outs

J140 Dimensions & General Pin-outs

Shafted; J130/J140 / 4 of 4

Shafted Rotary Position Sensors

DT04-6P J1939 OUTPUT

1 = YEL = CAN HIGH
2 = GRN = CAN LOW
3 = RED = +VDC (VIN)
4 = BLK = ADDRESS GROUND
5 = WHT = ADDRESS PROG. RESISTOR
6 = BLK = COMMON/GROUND

M12-5P J1939 OUTPUT

1 = BRN = +VDC (VIN)
2 = WH1 = CHANNEL B
3 = BLUE = COMMON/GROUND
4 = BLK = CHANNEL A
5 = GRY = CHANNEL Z

M12-5P/CABLE/FLYING LEAD QUADRATURE OUTPUT

1 = BRN = +VDC (VIN)
2 = WHT = DIG. LIMIT OUT*
3 = BLUE = COMMON/GROUND
4 = BLK = PROP. VDC OUTPUT
5 = GRY = NOT USED

*OPTION CONSULT FACTORY

M12-5P/CABLE/FLYING LEAD PROPORTIONAL (ANALOG) OUTPUT

1 = BRN = +VDC (VIN)
2 = WHT = CAN HIGH
3 = BLUE = COMMON/GROUND
4 = BLK = CAN LOW
5 = GRY = OPTIONAL ADDRESS PROGRAMMING RESISTOR

Dimensions informative only
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