### HP38 Hockey Puck™ non-contact rotary position sensor

- **OEM driven solution with minimum order quantities**
  - Compact bare bones non-contact rotary encoder
    - Body only 0.69” (17.5mm) tall
  - Patented true non-contact position sensing
    - 0.5” (12mm) gap between sensor and application
    - 0.10” (2.5mm) center alignment
    - 30° planar tilt
- Totally sealed IP69K (connector dependent)
- LED indicators for power and output feedback
- Outputs: Quadrature, SSI, Analog, & J1939 Can Bus

### STANDARD OPERATING CHARACTERISTICS

#### ELECTRICAL

<table>
<thead>
<tr>
<th>Outputs</th>
<th>B - [PPR] - SEPP</th>
<th>Incremental 10 bit Quadrature w/ Single Ended Output</th>
<th>A B Z</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B - 1939</td>
<td>J1939 10 bit @ 512 positions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B - PWM</td>
<td>PWM absolute position</td>
<td></td>
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<tr>
<td></td>
<td>B - SSI1</td>
<td>SSI absolute position @ 512 positions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>V1</td>
<td>Voltage Out / 5 VDC IN, 0-5 VDC OUT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>V2</td>
<td>Voltage Out / 6-36 VDC IN, 0-5 VDC OUT</td>
<td></td>
</tr>
</tbody>
</table>

- **Input Power**
  - 6 to 30 VDC at approx 60 mA max, not including output loads
- **Electrical Protection**
  - Over-voltage, reserve-voltage, output short-circuit protected
- **LED Indicators**
  - Power and output channels
- **Connections**
  - M8, M12 Pigtail, Terminal Block, Flying Lead Cable, or Deutsch (4 or 6 pin)
- **Resolution**
  - 0.3°
- **Repeatability**
  - 0.30%
- **Nonlinearity**
  - <1%

#### MECHANICAL

- **Housing Diameter**
  - 38mm
- **Housing Material**
  - Black Delrin™ (standard)
- **Housing Height**
  - 0.69” (17.5mm) body
- **Mounting**
  - 32mm (.884) spacing w/ 4mm diameter screws
- **Weight**
  - 1.3 oz
- **Magnet / sensor gap**
  - Standard 0.5” (12mm) (Max w/ custom mag assembly up to 1” [30mm])
- **Rated planar tilt / axial gap**
  - Planar 30° (Max 45°) / Axial 0.1” (2.5mm) (Max 0.16” [4mm])
- **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**
  - IP69K (connection dependent)

*Non-contact tolerances rated using MAGH-RING 1/4x20 magnet accessory.

General ordering guide found on next page (S2; I4 / 2)
HP38 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:

HP38-B-0256-SEPP-M12P - Black Delrin™ (HP38), M12 pigtail (M12P), 10 bit incremental quadrature @ 256 ppr
HP38-B-1939-SC72 - Black Delrin™ (HP38), 72” Shielded cable, 10 bit J1939 @ 512 positions
HP38-V1-0-360-5-4.5-CW-C72 - Black Delrin™ (HP38), 72” Cable (SC72), 0-5v Voltage Out (V1) @ 0-360°, 0.5-4.5v out, clockwise signal

<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>HP38</td>
<td>B - ______ - SEPP</td>
<td>TRM</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>10 bit single ended quadrature - A B Z</td>
<td>M8</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>B - 1939</td>
<td>M12P</td>
<td>10 bit J1939 @ 512 positions</td>
</tr>
<tr>
<td></td>
<td>B - SSI1</td>
<td>CXX</td>
<td>Shielded cable (enter XX as inches)</td>
</tr>
<tr>
<td></td>
<td>B - PWM</td>
<td>SCXX</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Absolute position SSI @ 512 positions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PWM absolute position</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>* More outputs and connection options available, contact Joral if desired configuration is not listed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Special Part Number Information

Review below code sections for important P/N build information

Code 1: Housing Style
- Modifier 33 - For BACK EXIT connector orientation on HP38 add code 33 to end of Joral P/N
- HP38 - Handles ALL back exit and CABLE ONLY side exit connections

Code 2: MagElec
(B - ______ - SEPP)
- Enter Quadrature PPR in place of ______
- B = 10 bit PPR
- Available 10 bit PPR: 0032, 0064, 0128, 0256

B - 1939
- 10 bit J1939 output is 512 positions
- B = 10 bit

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
- HP38 - V1 - 0-360 - 0.5-4.5 - CW - C72
- HP38 - V2 - 0-180 - 0-5 - CCW - C72
- HP38 - I1 - 180-270 - 4-20 - CW - C72

Code 3: Connections
- All Outputs, All Connections - Standard connection orientation SIDE EXIT. For BACK EXIT connector on HP38 add 33 to end of Joral HP38 P/N
- J1939 Output - Addressing via varying value resistor in connection requires at least five conductors (M12, DE6 and Cables addressing compatible)
- All Outputs w/ Deutsch - DE4 and DE6 connection Deutsch connectors add $20 to HP38 list
**HP38 DIMENSIONS & GENERAL PIN OUTS**

**STANDARD MAGNET**
MAG-H-RING-ASSM.
1/4-20 X .47

**MAGNET NOTE:**
STANDARD MAGNET INCLUDED AS ACCESSORY WITH PURCHASE OF NON-CONTACT SENSOR

**V1, V2, I1**
HEX ADJUSTABLE MAGNET DETAIL (FACE VIEW)

**HEX ADJUSTABLE MAGNET NOTE:**
ADJUSTABLE RING MAGNET INCLUDED AS ACCESSORY WITH PURCHASE OF ANALOG/VOLTAGE NON-CONTACT SENSOR (OUTPUTS V1, V2, I1)
FOR ZERO/HOME POSITION CAPABILITY WITH ALL ANALOG ABSOLUTE NON-CONTACT POSITION SENSORS

**HOUSING/INSTALL NOTES:**
MAGNET MOUNT MATERIALS MUST HAVE Ø1.0 [25.4] HOLE CENTERED ON SENSOR CENTERLINE

NON-MAGNETIC MOUNT MATERIAL, MAY BE SOLID

MOUNT WITH 316 STAINLESS STEEL 4-40 SCREWS

**HP38 Dimensions & General Pin-outs**
Non-contact; HP38 / 3 of 3
Joral REF S2; 14 / 3

DIMENSIONS INFORMATIVE ONLY
FOR MOST RECENT DIMENSIONS PLEASE CONSULT FACTORY