Magnetic rotary angle and position sensor-control.  
**Through-hole contactless sensor.**  
**MTS-360PCB**

Designed with the sensor directly mounted onto a PCB, the innovative MTS-360 Sensor/PCB Combo package allows engineers to easily mount a fully featured rotary sensor without first having to design a printed circuit board for the sensor. The result is time-savings and convenience.

The MTS-360 Sensor/PCB assembly is available with or without 2.54 mm pitch connector, both easily secured with standard M3 screws. The entire assembly measures just 35mm wide by 36mm long, allowing for applications with tight packaging constraints.

The new MTS-360PCB Mechanical Mount sensor model incorporates all the breakthrough sensor technology performance features of the original MTS-360 by merging a through-shaft design with 360º absolute position feedback in a small size package. The result is an extremely small fully featured rotary sensor with reliability up to 50 million cycles. The MTS-360 relies on patented Hall effect technology to enable true non-contacting through-hole shaft sensing now using a simple three eared mounting. The standard model features a 4mm double D-flat through-hole and (3) slotted mounting holes allowing final rotational adjustment at assembly.

### Mechanical specifications

- **Rotational life** (depends on application and mounting): up to 50,000,000 cycles.
- **Operating temperature**
  - With connector: up to -40ºC to +105ºC
  - Without connector: up to -40ºC to +125ºC
- **Sealing**: IP50

### Electrical specifications

- **Linearity**
  - ±1% absolute (±0.5% check availability).
- **Angular range**: Programmable from 15 to 360 degrees (without dead band).
- **Output**: Analog (Ratiometric), PWM, Serial Protocol.
- **Switch output**: Yes, programmable.
- **Angular Resolution** (depends on electrical angle and rotational speed): Analog & PWM: up to 12 bits. Serial Protocol (SPI): up to 14 bits.
- **Operating temperature**: -40ºC to +85ºC (-13ºF to +158ºF)
- **Supply voltage**: 5V ±10%
- **Supply current**
  - TYP 8.5mA for single version.
  - TYP 17mA for redundant version.

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1. Others check availability.
2. Ferromagnetic materials close to the sensor (i.e., shaft, mounting surface) may affect the sensor’s linearity. Please contact Piher for advise.

**Piher Sensors & Controls SA**

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- Potentiometers | Position / angle sensors | Rotary switches | Incremental encoders
- Printed circuit resistors | Mechatronics | Value added assemblies
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#### How to order.

**3 pin version - Simple output (analogic / PWM)**

<table>
<thead>
<tr>
<th>MTS360PCB3</th>
<th>Series</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>1 = simple</td>
</tr>
<tr>
<td><strong>Output1</strong></td>
<td>A = Analogic P = PWM (see note 1)</td>
</tr>
<tr>
<td><strong>Output function</strong></td>
<td>C0000</td>
</tr>
<tr>
<td><strong>Electrical rotation angle</strong></td>
<td>ERA015 ERA016 ERA360</td>
</tr>
<tr>
<td><strong>Voltage supply</strong></td>
<td>05</td>
</tr>
<tr>
<td><strong>Temp. range</strong></td>
<td>E = -40 to +85°C K = -40 to +125°C (see note 4)</td>
</tr>
<tr>
<td><strong>PWM Frequency (Hz.)</strong></td>
<td>F100 F999 (see note 5)</td>
</tr>
<tr>
<td><strong>Connector</strong></td>
<td>C = with N = without</td>
</tr>
</tbody>
</table>

**6 pin version - Simple output (analogic / PWM)**

<table>
<thead>
<tr>
<th>MTS360PCB6</th>
<th>Series</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>1 = simple</td>
</tr>
<tr>
<td><strong>Switch1</strong></td>
<td>[empty] = none W = switch</td>
</tr>
<tr>
<td><strong>Switch2</strong></td>
<td>[empty] = none W = switch</td>
</tr>
<tr>
<td><strong>Output1</strong></td>
<td>A = Analogic P = PWM (see note 1)</td>
</tr>
<tr>
<td><strong>Switch1 ON</strong></td>
<td>001 016 359 (see note 2)</td>
</tr>
<tr>
<td><strong>Switch2 ON</strong></td>
<td>001 016 359 (see note 2)</td>
</tr>
<tr>
<td><strong>Output function</strong></td>
<td>C0000</td>
</tr>
<tr>
<td><strong>Electrical rotation angle</strong></td>
<td>ERA015 ERA016 ERA360</td>
</tr>
<tr>
<td><strong>Voltage supply</strong></td>
<td>05</td>
</tr>
<tr>
<td><strong>Temp. range</strong></td>
<td>E = -40 to +85°C K = -40 to +125°C (see note 4)</td>
</tr>
<tr>
<td><strong>PWM Frequency (Hz.)</strong></td>
<td>F100 F999 (see note 5)</td>
</tr>
<tr>
<td><strong>Connector</strong></td>
<td>C = with N = without</td>
</tr>
</tbody>
</table>

**6 pin version - Redundant output (analogic / PWM)**

<table>
<thead>
<tr>
<th>MTS360PCB6</th>
<th>Series</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>2 = redundant</td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td>AA = Analogic PP = PWM (see note 1)</td>
</tr>
<tr>
<td><strong>Switch1 ON</strong></td>
<td>001 016 359 (see note 2)</td>
</tr>
<tr>
<td><strong>Switch2 ON</strong></td>
<td>001 016 359 (see note 2)</td>
</tr>
<tr>
<td><strong>Output function</strong></td>
<td>C0000</td>
</tr>
<tr>
<td><strong>Electrical rotation angle</strong></td>
<td>ERA015 ERA016 ERA360</td>
</tr>
<tr>
<td><strong>Voltage supply</strong></td>
<td>05</td>
</tr>
<tr>
<td><strong>PWM Frequency (Hz.)1</strong></td>
<td>F100 F999 (see note 5)</td>
</tr>
<tr>
<td><strong>PWM Frequency (Hz.)2</strong></td>
<td>F100 F999 (see note 5)</td>
</tr>
<tr>
<td><strong>Connector</strong></td>
<td>C = with N = without</td>
</tr>
</tbody>
</table>

**Other product configurations will be studied case by case.**

1. The analog output is a ratiometric output, proportional to input supply voltage.
2. Leave empty if no applicable.
3. Other output functions available check availability. In the How To Order reference, enter CXXXX meanwhile the new output function reference is not defined.
4. If “with” connector, then K is limited to +105°C
5. Leave empty if no applicable. Default frequency is 200 Hz

### Notes
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Options
- Special outputs slopes and protocols.
- Full redundant version with switches.
- Energy harvesting versions.
- Fast versions.
- Connectors.
- IP sealing.
- Shaft interfaces.
- Contact the factory for other options.

Dimensions

6 pin version

3 pin version

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**Mounting instructions.**

Electronic semiconductor products are sensitive to Electro Static Discharge (ESD). Always observe Electro Static Discharge control procedures whenever handling semiconductor products. By default this sensor is programmed at the factory using a ferromagnetic actuator. If your application’s actuator/shaft is not ferromagnetic please let us know before ordering.

**Connections scheme.**

Output.

**Recommended mate connector:**
Molex 90156-0143

**Recommended crimp terminals:**
Molex 90119-2120  
Molex 90119-2121  
Molex 90119-2122

**Recommended mate connector:**
Molex 90119-2122

**Recommended crimp terminals:**
Molex 90119-2120  
Molex 90119-2121  
Molex 90119-2122

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Disclaimer

Ferromagnetic parts close to the sensor, including the shaft, may modify the performance of the sensor. Therefore, this has to be communicated to Piher for prior analysis.

No external magnetic perturbations are considered on the application where the sensor is mounted. If so, amplitude and direction of flux density generator type and characteristics (magnet, cable, motor...) must be notified to Piher.

The product information in this catalogue is for reference purposes. Please consult for the most up to date and accurate design information.

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