Magnetic rotary angle and position sensor-control.

Contactless sensor.

PSC-360

The robust PSC-360 is a low-cost high performance non-contacting rotary position sensor for automotive, off-road, medical and industrial applications without the limitations of potentiometric solutions (wear, limited electrical angles...). A configurable switch output is integrated within the sensor too.

Full redundancy can be achieved by employing a dual core version or the simple placement of two sensors within the housing.

Sealed and flange mounted for ease of positioning when necessary, it provides high stability under harsh environment conditions such as vibration, shock, extreme temperatures / humidity, dither, moisture or dirt. Featuring a modular architecture, electrical & mechanical characteristics can be fully customised to customer’s needs as well as connector configurations.

### Mechanical specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotational life</td>
<td>up to 50,000,000 cycles.</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>up to -40°C to +125°C.</td>
</tr>
<tr>
<td>Sealing</td>
<td>IP67</td>
</tr>
</tbody>
</table>

### Electrical specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linearity</td>
<td>±1% absolute (0.5% check availability).</td>
</tr>
<tr>
<td>Angular range</td>
<td>Programmable from 15 to 360 degrees (without dead band).</td>
</tr>
<tr>
<td>Output</td>
<td>Analog (Ratiometric), PWM, Serial Protocol.</td>
</tr>
<tr>
<td>Switch output</td>
<td>Yes, programmable.</td>
</tr>
<tr>
<td>Angular Resolution</td>
<td>Programmable from 15 to 360 degrees (without dead band).</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>Serial Protocol (SPI): up to 14 bits.</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>5V/12V/15V ±10%.</td>
</tr>
<tr>
<td>Supply current</td>
<td>Typ 8.5mA for single version.</td>
</tr>
<tr>
<td></td>
<td>Typ 17mA for redundant version.</td>
</tr>
</tbody>
</table>

---

1 Others check availability.

**Piher Sensors & Controls SA**

Our product competencies and services:

- Potentiometers | Position / angle sensors | Rotary switches | Incremental encoders
- Printed circuit resistors | Mechatronics | Value added assemblies
**Magnetic rotary angle and position sensor-control.**

**Contactless sensor.**

**PSC-360**

**How to order.**

Simple output (analogic / PWM)

<table>
<thead>
<tr>
<th>PSC360</th>
<th>Shaft</th>
<th>Type</th>
<th>Output1</th>
<th>Electrical rotation angle</th>
<th>Voltage supply</th>
<th>Temp. range</th>
<th>PWM Frequency (Hz.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F = flat shaft</td>
<td>1 = simple</td>
<td>A = Analogic P = PWM (see note 1)</td>
<td>ERA015 ERA016 ERA360</td>
<td>05 12 15</td>
<td>E = -40 to +85°C K= -40 to +125°C</td>
<td>F100 F999 (see note 4)</td>
</tr>
</tbody>
</table>

Simple output (SPI)

<table>
<thead>
<tr>
<th>PSC360</th>
<th>Shaft</th>
<th>Type</th>
<th>Output1</th>
<th>Electrical rotation angle</th>
<th>Voltage supply</th>
<th>Temp. range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F = flat shaft</td>
<td>1 = simple</td>
<td>S = SPI</td>
<td>ERA015 ERA016 ERA360</td>
<td>05</td>
<td>E = -40 to +85°C K= -40 to +125°C</td>
</tr>
</tbody>
</table>

Redundant output (analogic / PWM) without switch

<table>
<thead>
<tr>
<th>PSC360</th>
<th>Shaft</th>
<th>Outputs</th>
<th>Output1</th>
<th>Electrical rotation angle</th>
<th>Voltage supply</th>
<th>PWM Frequency (Hz.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F = flat shaft</td>
<td>AA = Analogic PP = PWM (see note 1)</td>
<td>C0002 C0003 (see note 3)</td>
<td>ERA015 ERA016 ERA360</td>
<td>05 12 15</td>
<td>F100 F999 (see note 4)</td>
</tr>
</tbody>
</table>

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

1. The analog output is a ratioelectric output, proportional to:
   - For supply voltage 5V: to input supply voltage.
   - For supply voltage 12V: to 5V.
   - For supply voltage 15V: to 5V.
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. Leave empty if no applicable. Default frequency is 200 Hz

**Notes**

**Piher Sensors & Controls SA**

Our product competencies and services:
- Potentiometers | Position / angle sensors | Rotary switches | Incremental encoders
- Printed circuit resistors | Mechatronics | Value added assemblies
Magnetic rotary angle and position sensor-control.

Contactless sensor.
PSC-360

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

Shaft is shown at zero position. Sensor is delivered at random position.

Pihers Sensors & Controls SA
Magnetic rotary angle and position sensor-control.

**Contactless sensor.**

**PSC-360**

**Mounting instructions.**

1. Place the component on a flat surface.
2. Fasten the two M4 screws (M4 washers are recommended).
3. Fit the actuator onto the shaft avoiding any mechanical play/wobble.

**Connections scheme.**

Simple analog output connection wiring scheme:

- **Brown** = Power supply.
- **Blue** = Ground.
- **Black** = Signal output.
- **White** = Not used.
- **Grey** = Not used.

Cable length: 245mm

**Output.**

![Graphs showing output for different sensors](image)

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Magnetic rotary angle and position sensor-control.

Contactless sensor.
PSC-360U

The robust PSC-360U is a low-cost high performance non-contacting rotary position sensor for automotive, off-road, medical and industrial applications without the limitations of potentiometric solutions (wear, limited electrical angles...)

A configurable switch output is integrated within the sensor too.

Full redundancy can be achieved by employing a dual core version or the simple placement of two sensors within the housing.

Sealed and flange mounted for easy positioning when necessary, it provides high stability under harsh environment conditions such as vibration, shock, extreme temperatures / humidity, dither, moisture or dirt. Featuring a modular architecture, electrical & mechanical characteristics can be fully customised to customer’s needs as well as connector configurations.

Mechanical specifications

<table>
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<tr>
<th>Specification</th>
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<tr>
<td>Rotational life</td>
<td>up to 50,000,000 cycles</td>
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<tr>
<td>Operating temperature</td>
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</tr>
<tr>
<td>Sealing</td>
<td>IP67</td>
</tr>
</tbody>
</table>

Electrical specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Linearity</td>
<td>±1% absolute (0.5% check availability)</td>
</tr>
<tr>
<td>Angular range</td>
<td>Programmable from 15 to 360 degrees (without dead band)</td>
</tr>
<tr>
<td>Output</td>
<td>Analog (Ratiometric), PWM, Serial Protocol</td>
</tr>
<tr>
<td>Switch output</td>
<td>Yes, programmable.</td>
</tr>
<tr>
<td>Angular Resolution</td>
<td>Programmable from 15 to 360 degrees (without dead band)</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-40°C to +85°C [-13°F to +158°F]</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>5V/12V/15V ±10%</td>
</tr>
<tr>
<td>Supply current</td>
<td>Typ 8.5mA for single version.</td>
</tr>
<tr>
<td></td>
<td>Typ 17mA for redundant version.</td>
</tr>
</tbody>
</table>

1 Others check availability.

Key features

- Simple & Robust Magnetic Design.
- High resolution (up to 14-bit)
- Absolute position feedback up to 360° (keeps position on power loss).
- Low profile.
- Easy integration into existing systems.
- Full true-redundant versions.
- Conceived for harsh environments applications.
- Protected from magnetic fields, dust, moisture, vibrations, extreme temperatures.
- Analog output ready for easy potentiometer replacement.
- Multiturn.
- Programmable Linear Transfer Characteristic: [some positive slopes & one negative slope can be programmed in the same transfer characteristic; up to 4 programmable points; see last page]
- Self-Diagnostic features
- Over voltage protection and reverse voltage protection.

Applications

- Non-Contacting long life angle/position sensor.
- Absolute rotary position sensor.
- Pedal position sensor.
- Throttle/EGR valve and gear position sensor.
- Height & suspension sensor.
- Non-contacting potentiometer.
- Float-level sensor.
- Motor-shaft position sensor.
- Precision robotics, industrial equipment, HVAC monitoring & control, etc.

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Our product competencies and services:
Potentiometers | Position / angle sensors | Rotary switches | Incremental encoders
Printed circuit resistors | Mechatronics | Value added assemblies
How to order.

PSC360U Series

<table>
<thead>
<tr>
<th>Shaft</th>
<th>Type</th>
<th>Output</th>
<th>Switch1</th>
<th>Switch2</th>
<th>Output</th>
<th>Electrical rotation angle</th>
<th>Voltage supply</th>
<th>Temp. range</th>
<th>PWM Frequency (Hz.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F = flat shaft</td>
<td>L = slot shaft</td>
<td>A = Analogic P = PWM</td>
<td>(empty) = none</td>
<td>W = switch</td>
<td>C0000</td>
<td>ERA105 ERA016 ERA360</td>
<td>05</td>
<td>E = -40 to +85°C K= -40 to +125°C</td>
<td></td>
</tr>
<tr>
<td>F = flat shaft</td>
<td>L = slot shaft</td>
<td>3 = full redundant</td>
<td>A = Analogic P = PWM</td>
<td>(empty) = none</td>
<td>C0002</td>
<td>ERA105 ERA016 ERA360</td>
<td>05</td>
<td>E = -40 to +85°C K= -40 to +125°C</td>
<td></td>
</tr>
</tbody>
</table>

Switch function diagram:

1. The analog output is a ratioometric output, proportional to:
   - For supply voltage 5V: to input supply voltage.
   - For supply voltage 12V: to 5V.
   - For supply voltage 15V: to 5V.

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. Leave empty if no applicable. Default frequency is 200 Hz.
Magnetic rotary angle and position sensor-control.

Contactless sensor.
PSC-360U

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.

Flat shaft version.

Shaft is shown at zero position.
Sensor is delivered at random position.

* Nut & washer included.

Piher Sensors & Controls SA
Magnetic rotary angle and position sensor-control.

**Contactless sensor.**
PSC-360U

**Dimensions.**
Slotted shaft version.

![Shaft detail](image)

* Nut & washer included.

**Mounting instructions.**
Electronic semiconductor products are sensitive to Electro Static Discharge (ESD).
Always observe Electro Static Discharge control procedures whenever handling semiconductor products.

**Connections scheme.**
Simple analog output connection scheme:

1. Supply voltage
2. Not used *
3. Not used
4. Not used
5. Not used
6. Ground
7. Analog output

* The output pin needs to be connected to the ground

Pifer Sensors & Controls SA

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PSC-360U

Output.

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