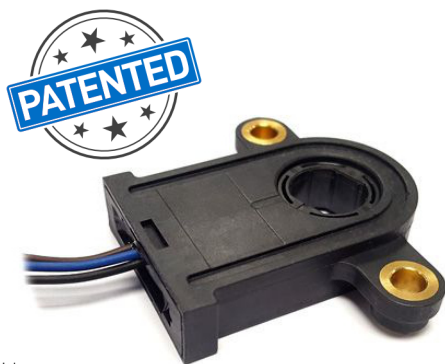


PST-360

Hall-Effect Through-Shaft Rotary Position Sensor



Available with

CAN

CE

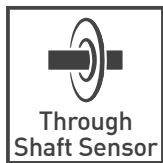
KEY FEATURES



**Non-
contacting**

True, contactless operation

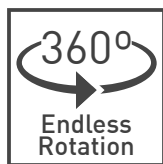
Without any gears or mechanical interfaces the sensor is easily assembled and calibrated and subject to limited wear and tear over lifetime.



**Through
Shaft Sensor**

Through-hole design

Allows shaft insertion from top or bottom, simple assembly and makes it even more suitable in applications where space is limited.



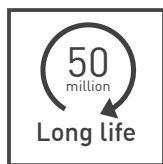
360 degree absolute position feedback

Endless mechanical rotational angle without dead band, keeps the position on power loss with programmable electrical angles from 15 to 360 degrees.



Made for harsh environments

The rugged package protects the sensor from dust, moisture, vibration and extreme temperatures for usage in the most demanding environments.



Durable and robust design

The non-contacting design allows for an extra-long product lifetime of up to 50 million cycles.



Adaptable to your requirements

Programmable transfer function and switch outputs as well as different output protocols and redundancy levels available.

DESCRIPTION

The PST-360 position sensor combines a through-shaft design with accurate absolute position feedback and a true non-contacting sensing element that does not rely on gears or other rotating parts.

This innovative and unique patented design complements the attributes of the target application and maintains the mechanical integrity of the application by design. As the sensor is mounted directly at the pivot point no levers, connecting rods or other mechanical interfaces are needed. Furthermore it adapts to shaft's eccentricity, mounting tolerances and mechanical wear over the life of the application.

The endless rotation sensor is highly configurable with a programmable angular range between 15 and 360 degrees, different signal output options and support for low and high-voltage power supply. Multi-turn configurations are available on request.

APPLICATIONS

Industrial

- ▶ Autonomous warehouse robotics
- ▶ Robotics and automation feedback
- ▶ Robot arm position
- ▶ Valve monitoring
- ▶ Conveyor operation

Transportation

- ▶ Steering angle
- ▶ Pedal position
- ▶ Fork height and mast tilt
- ▶ Bucket position
- ▶ Hitch position
- ▶ Boom angle
- ▶ Joystick controls

Marine

- ▶ Steering and shifter sensor
- ▶ Engine throttle

Home and Building Automation

- ▶ HVAC systems

Medical

- ▶ Electric hospital bed
- ▶ Mobility chair steering and throttle

PST-360

Hall-Effect Through-Shaft Rotary Position Sensor

MECHANICAL SPECIFICATIONS

| | |
|-----------------------------|-------------------------|
| Rotational life | Up to 50.000.000 cycles |
| Mechanical angular range | 360° (endless rotation) |
| Rotor diameter ¹ | 14mm 17mm |

¹ Other rotors on request

ELECTRICAL SPECIFICATIONS

| | | |
|---------------------------------------|--|---|
| Linearity ¹ | Analog, PWM, SPI CAN | ±1% absolute (±0.5% upon request) ±1,5% absolute |
| Electrical angular range ² | | Programmable from 15° to 360° |
| Output | | Analog (ratiometric), PWM Serial Protocol (SPI) CAN SAE J1939 CAN Open |
| Switch output | | Programmable upon request |
| Resolution | Analog, CAN, PWM SPI | Up to 12 bit Up to 14 bit |
| Supply voltage ³ | | 5V ±10% 7V to 15V |
| Supply current | Single version Redundant version CAN version | Typ 8.5 mA Typ 17 mA Typ 47 mA |
| Voltage protection | | ±10 V |
| Self-diagnostic features | | Yes |

¹ Ferromagnetic materials close to the sensor (i.e. shaft, mounting surface) may affect the sensor's linearity.

² For information on multi-turn sensors please contact Piher

³ Voltages up to 25 V possible on request.

ENVIRONMENTAL SPECIFICATIONS

| | |
|--|------------------------------|
| Operating and storage temperature ¹ | -40°C to +125°C |
| Shock | 50g |
| Vibration | 5-2000 Hz; 20g; Amax 0,75 mm |
| Sealing ² | IP67, IP69K |
| Approval | CE ³ |

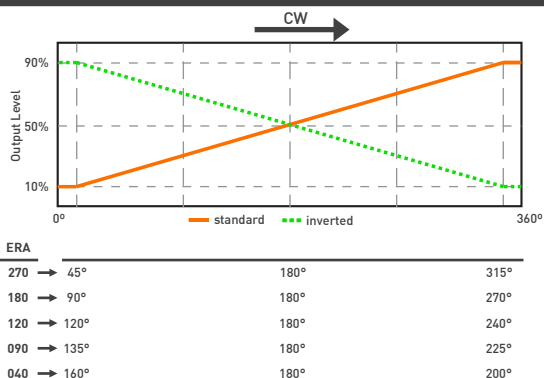
¹ Other specifications available

² IP rating on electronics

³ EMC-testing according to standards EN 61000-6-2 and EN 6100-6-3. CE-approval applies to analogic-simple and analogic-redundant models.

OUTPUT FUNCTIONS

| | ERA | Standard | Inverted | Redundant & Full Redundant |
|--|------|----------|----------|----------------------------|
| | 360° | C0000 | C0001 | C0002 |
| | 270° | C0208 | C0158 | C0031 |
| | 180° | C0007 | C0072 | C0036 |
| | 120° | C0024 | C0234 | C0032 |
| | 90° | C0011 | CXXXX | C0025 |
| | 70° | C0150 | CXXXX | C0149 |
| | 60° | C0006 | C0260 | C0020 |
| | 40° | C0026 | CXXXX | C0123 |



All output functions listed are centered in 180°. Output level from 10% to 90%

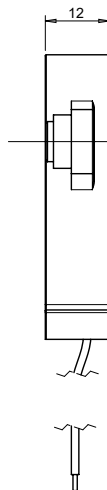
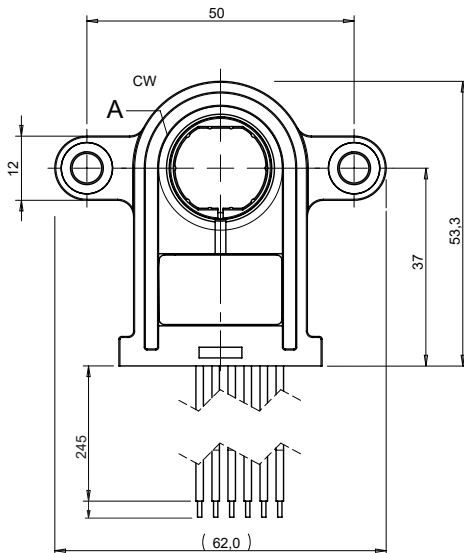
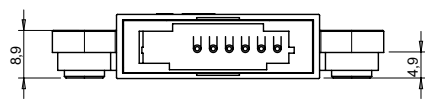
Linearity is assured within the electrical rotational angle (ERA) only. Other output functions available on request.

PST-360

Hall-Effect Through-Shaft Rotary Position Sensor

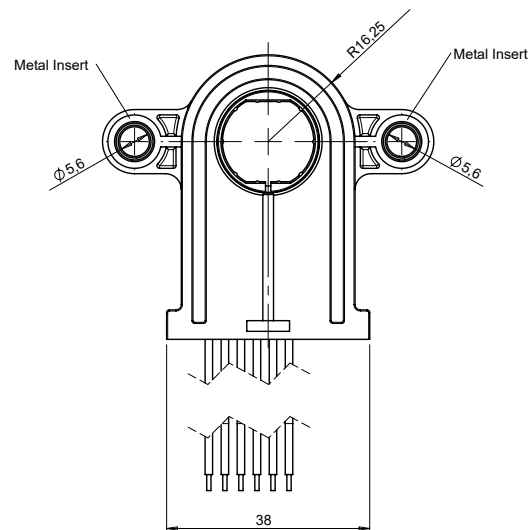
DIMENSIONS (MM)

Outer Dimensions



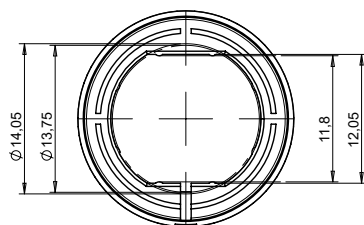
Download the STEP files at:
www.piher.net

Shaft should be non-ferromagnetic material. If you want to use a ferromagnetic shaft please contact Piher.

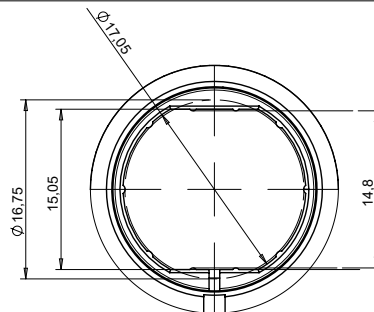


Sensor shown above is the 17mm version with the rotor at zero position. Sensor is delivered at random position. Wires: 0.35mm² TXL SAE J1128

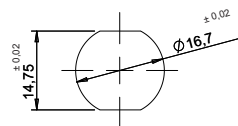
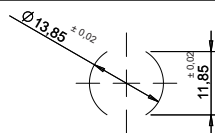
14mm rotor



17mm rotor



Recommended shaft dimensions



CONNECTION SCHEME

| Color | Simple | 7V to 15V | Redundant | 7V to 15V | Full-redundant | CAN | SPI |
|--------|---------------|---------------|-----------------|-----------------|-----------------|--------------|--------------|
| Brown | Power supply | Power supply | Power supply | Power supply | Power supply 1 | Power supply | Power supply |
| Blue | Ground | Ground | Ground | Ground | Ground 1 | Ground | Ground |
| Black | Signal output | Signal output | Signal output 1 | Signal output 1 | Ground 2 | CAN High | MOSI |
| White | n/a | n/a | Signal output 2 | Signal output 2 | Signal output 2 | CAN Low | /SS |
| Red | n/a | n/a | n/a | n/a | Power supply 2 | n/a | n/a |
| Yellow | n/a | n/a | n/a | n/a | Signal output 1 | n/a | n/a |
| Grey | n/a | Not used | n/a | Not used | n/a | n/a | SCLK |

More instructions of use on www.piher.net. Connector assembly available on request.

PST-360

Hall-Effect Through-Shaft Rotary Position Sensor

HOW TO ORDER (Example: PST360G2-1A-C0001-ERA190-05K)

Simple Output - Analogic, PWM and CAN

| PST360G2 | - | — | 1 | — | - | C _____ | - | ERA ____ | - | __ | K | - | _____ |
|----------|----------------------------|------------|--|------------------------------|--|-----------------------------|---------------------|--|---|----|---|---|-------|
| Series | Rotor ¹ | Type | Output ² | Output function ³ | Electric rotational angle ⁴ | Voltage supply ⁵ | Temp. range | PWM Frequency Hz ⁶ | | | | | |
| | [empty] = 14mm B = 17mm | 1 = simple | A = analogic P = PWM J = CAN SAE J1939 O = CAN OPEN | C0000 C0001 | ERA040 ERA041 ... ERA360 | 05 = 5V ±10% RE = 7V-15V | K = -40°C to +125°C | [empty] = 200Hz F100 = 100Hz F101 = 101Hz ... F999 = 999Hz | | | | | |

Simple output - SPI

| PST360G2 | - | _ | 1 | S | - | C_____ | - | ERA____ | - | __ | K |
|----------|----------------------------|------------|---------------------|------------------------------|--|-----------------------------|---------------------|---------|---|----|---|
| Series | Rotor ¹ | Type | Output ² | Output function ³ | Electric rotational angle ⁴ | Voltage supply ⁵ | Temp. range | | | | |
| | [empty] = 14mm B = 17mm | 1 = simple | S = SPI | C0000 C0001 | ERA040 ERA041 ... ERA360 | 05 = 5V ±10% RE = 7V-15V | K = -40°C to +125°C | | | | |

Redundant output - Analogic, PWM and CAN

| PST360G2 | - | — | 2 | — | - | C ——— | - | ERA ——— | - | — | K | - | ——— | ——— |
|----------|----------------------------|---------------|---|------------------------------|--|-----------------------------|---------------------|------------------------------------|------------------------------------|---|---|---|-----|-----|
| Series | Rotor ¹ | Type | Output ² | Output function ³ | Electric rotational angle ⁴ | Voltage supply ⁵ | Temp. range | PWM Frequency Hz. [1] ⁶ | PWM Frequency Hz. [2] ⁶ | | | | | |
| | [empty] = 14mm B = 17mm | 2 = redundant | AA= analogic PP = PWM JJ = CAN SAE J1939 OO = CAN OPEN | C0002 | ERA040 ERA041 ... ERA360 | 05 = 5V ±10% RE = 7V-15V | K = -40°C to +125°C | F100 F101 ... F999 | F100 F101 ... F999 | | | | | |

Full-redundant output - Analogic and PWM

| | | | | | | | | | | | | | | |
|----------|----------------------------|--------------------|--------------------------|------------------------------|--|----------------|---------------------|------------------------------------|------------------------------------|----|---|---|-----|-----|
| PST360G2 | - | — | 3 | — | - | C ——— | - | ERA ——— | - | 05 | K | - | ——— | ——— |
| Series | Rotor ¹ | Type | Output ² | Output function ³ | Electric rotational angle ⁴ | Voltage supply | Temp. range | PWM Frequency Hz. [1] ⁵ | PWM Frequency Hz. [2] ⁵ | | | | | |
| | [empty] = 14mm B = 17mm | 3 = full-redundant | AA= analogic PP = PWM | C0002 | ERA040 ERA041 ... ERA360 | 05 = 5V ±10% | K = -40°C to +125°C | F100 F101 ... F999 | F100 F101 ... F999 | | | | | |

1 Other rotors available on request.

2 The analog output is ratiometric, proportional: - for supply voltage "5V" to input voltage; -for supply voltage "RE" to 5V.

3 Other output functions available, please check availability. Enter CXXXX as long as the new output function is not defined.

4 Models with ERA < 40° available on request

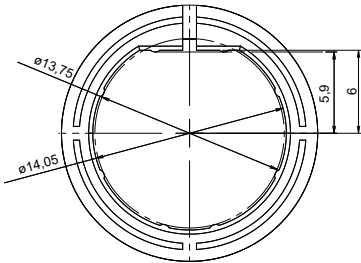
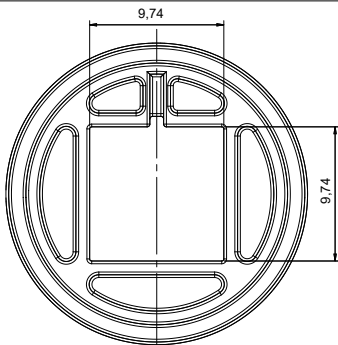
5 Voltages up to 25V possible on request.

6 Leave empty if not applicable. Default frequency is 200 Hz

PST-360

Hall-Effect Through-Shaft Rotary Position Sensor

SPECIAL ROTORS

| Ref. 3457 | Ref. 3458 |
|---|--|
|  |  |

For more information visit: www.piher.net

MOUNTING INSTRUCTIONS

1. Place the component on a flat surface.
2. Fit the shaft of the application (see recommended shaft dimensions) through the sensor's rotor avoiding any mechanical play/wobble.
3. Fasten the two M5 screws (M5 washers are recommended).

OUR ADVANTAGE

- ▶ Leading-edge innovative position sensing solutions
 - ▷ Contactless (Hall-effect and Inductive Technology)
 - ▷ Contacting (Potentiometers, Printed Electronics)
- ▶ Engineering design-in support
- ▶ All our products can be customized to fit target application and customer requirement
- ▶ Capability to move seamlessly from development to true high-volume production
- ▶ A global footprint with global engineering and commercial support
- ▶ One-stop shop not limited to position sensors (temperature, pressure, gas,...) through group collaboration
- ▶ Flexibility and entrepreneurship of a medium-sized company with the backing of Amphenol Corporation



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