

Magnetic rotary hollow shaft position sensor.

# Contactless sensor. PST-360

Available with  
**CAN** SAE J1939



The PST-360 through / hollow shaft position sensors combines three critical design features; 1) through hole where the shaft passes through the sensor, 2) high accuracy absolute position feedback over up to 360°, and 3) a true non-contacting sensing element. Piher’s design does not rely on gears or other rotating parts.

This innovative and unique patented design, features the following advantages:

- Compliments the attributes of the target application.
- Mechanical integrity that matches customer´s application by design.
- Unique shaft mounted design that mounts at the pivot point of the application.
- No levers, connecting rods or mechanical interfaces needed.
- Adapts to shaft´s eccentricity, mounting tolerances and mechanical wear over the life of the application.

## Mechanical specifications

Rotational life [depends on application and mounting]	up to 50.000.000 cycles.
Operating temperature <sup>1</sup>	up to -40°C to +125°C
Sealing [electronics] <sup>1</sup>	IP67

## Electrical specifications

Linearity <sup>1</sup>	±1% absolute (0.5% upon request).
Angular range	Programmable from 15 to 360 degrees (without dead band).
Output <sup>2</sup>	Analog (Ratiometric), PWM, Serial, CAN SAE J1939.
Switch output	Yes, programmable. Two-switches version upon request.
Angular Resolution [depends on electrical angle and rotational speed]	Analog & PWM: up to 12 bits. Serial Protocol (SPI) & CAN: up to 14 bits.
Operating temperature	-40°C to +85°C (-13°F to + 158°F)
Supply voltage <sup>1</sup>	5V/12V/15V ±10%
Supply current	Typ 8.5mA for single version Typ 17mA for redundant version

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

<sup>2</sup> CAN protocol: check for available versions before ordering.

## 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, exteme temperatures.
- Multiturn (endless rotation).
- 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 sSensor.
- Throttle/EGR valve and gear position sensor.
- Height & suspension sensor
- Motor-shaft position sensor.
- Pivot point angle sensing for all applications.
- Off road / highway steering.
- Agricultural machinery hydraulic lift arms, scoops, articulations/joints.
- Forklifts / material handling.
- Industrial pumps.
- 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

PIHER

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Contactless sensor.  
PST-360

How to order.

Simple output (analogic / PWM).

PST360	-	-	-	-	-	---	-	---	-	-	-	---
Series												
	Rotor	Type	Output1	Switch	Switch ON	Output function	Electrical rotation angle	Voltage supply	Temp. range		PWM Frequency (Hz.)1	
	[empty] = 14mm B = 17mm (see note 1)	1 = simple	A = Analogic P = PWM (see note 2)	[empty] = none W = switch	001 016 ... 359 (see note 3)	C0000 C0001 (see note 4)	ERA015 ERA016 ... ERA360	05 12 15	E = -40 to +85°C K= -40 to +125°C		F100 ... F999 (see note 5)	

Simple output (CAN SAE J1939).

PST360	-	-	-	-	---	-	---	-	-	---
Series										
	Rotor	Type	Output1	Output function	Electrical rotation angle	Voltage supply	Temp. range	Speed		
	[empty] = 14mm B = 17mm (see note 1)	1 = simple	C = CAN	C0000 C0001 (see note 4)	ERA015 ERA016 ... ERA360	05 12 15	E = -40 to +85°C K= -40 to +125°C	250 = 250K baud. 500 = 500K baud.		

Simple output (SPI).

PST360	-	-	-	-	---	-	---	-	-
Series									
	Rotor	Type	Output1	Output function	Electrical rotation angle	Voltage supply	Temp. range		
	[empty] = 14mm B = 17mm (see note 1)	1 = simple	S = SPI	C0000 C0001 (see note 4)	ERA015 ERA016 ... ERA360	05	E = -40 to +85°C K= -40 to +125°C		

Redundant output.

PST360	-	-	-	-	---	-	---	-	---	-	---	---
Series												
	Rotor	Type	Output	Switch1	Switch1 ON	Output function	Electrical rotation angle	Voltage supply		PWM Frequency (Hz.)1	PWM Frequency (Hz.)2	
	[empty] = 14mm B = 17mm (see note 1)	2 = redundant	AA = Analogic PP = PWM (see note 2)	[empty] = none W = switch	001 016 ... 359 (see note 2)	C0002 C0003 (see note 4)	ERA015 ERA016 ... ERA360	05 12 15		F100 ... F999 (see note 5)	F100 ... F999 (see note 5)	
									Temp. range			
									E = -40 to +85°C K= -40 to +125°C			

Other product configurations will be studied case by case.

(1) Other rotors: check availability.

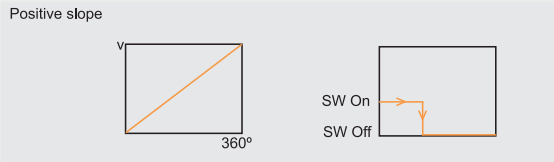
(2) The analog output is a ratiometric output, proportional to input supply voltage.

- For supply voltage 5V: to input supply voltage.
- For supply voltage 12V: to 5V.
- For supply voltage 15V: to 5V.

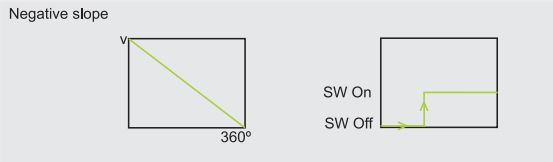
(3) Leave empty if no applicable.

Switch function diagram:

Positive slope



Negative slope



(4) Other output functions available check availability. In the How To Order reference, enter **CXXXX** meanwhile the new output function reference is not defined.

(5) Leave empty if no applicable. Default frequency is 200 Hz

Notes

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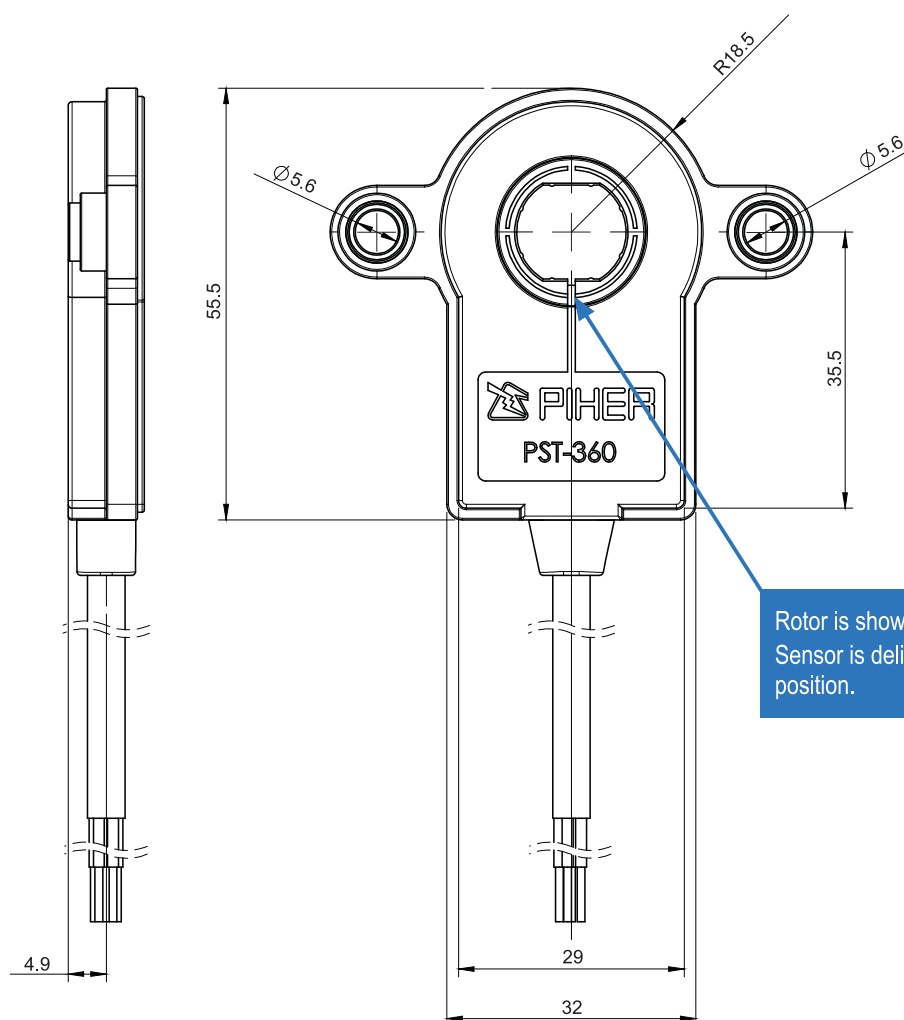
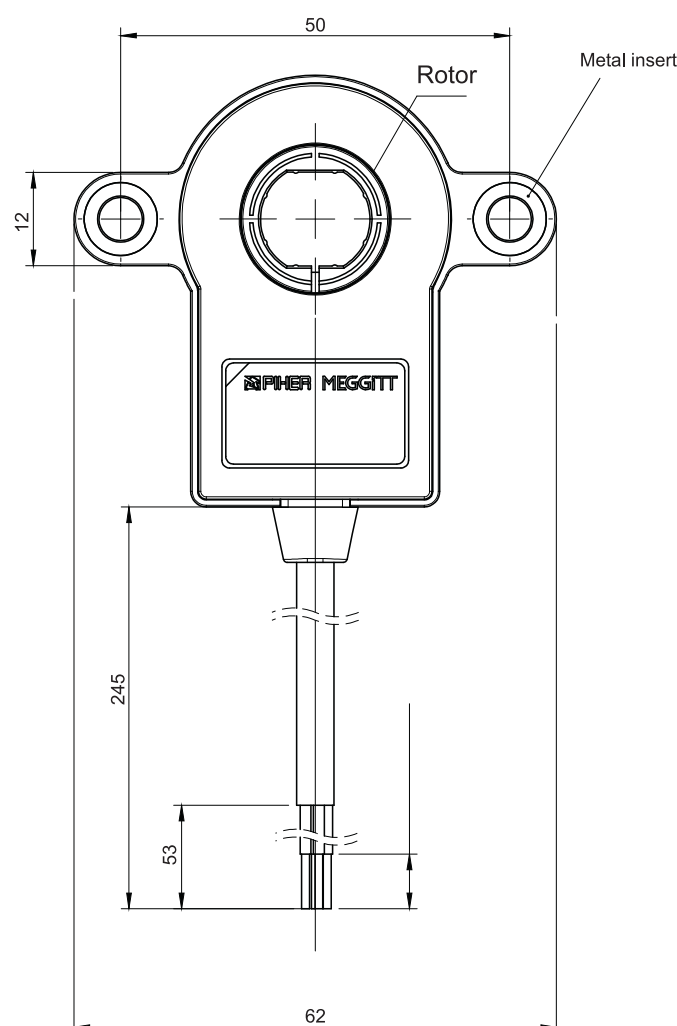
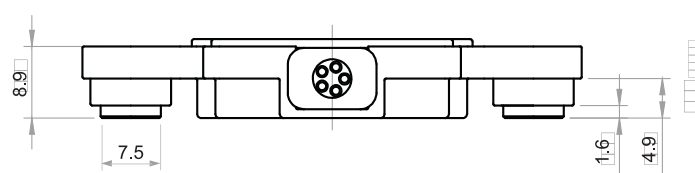
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## Options.

- Special outputs slopes and protocols.
- Full redundant version with switches.
- Energy harvesting versions.
- Fast versions.
- Custom cabling and connector configurations.
- IP sealing.
- Shaft interfaces.
- Contact the factory for other options.

## Dimensions.



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

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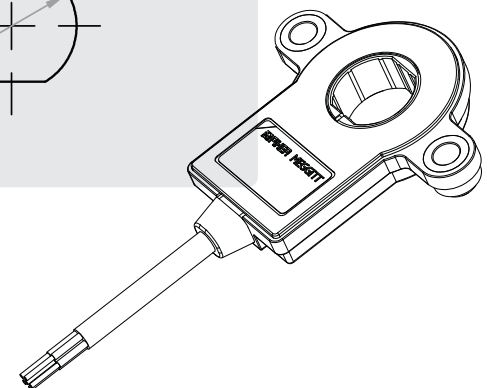
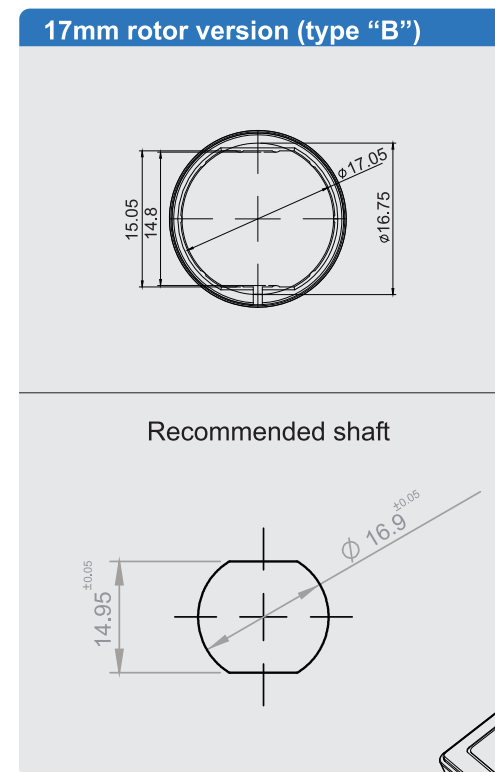
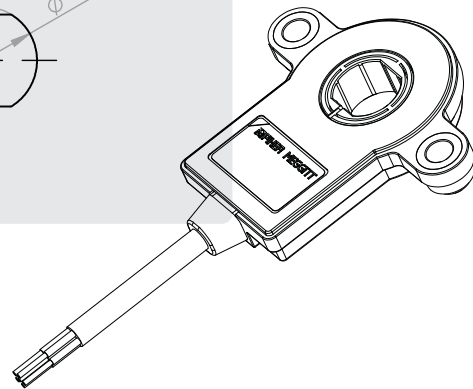
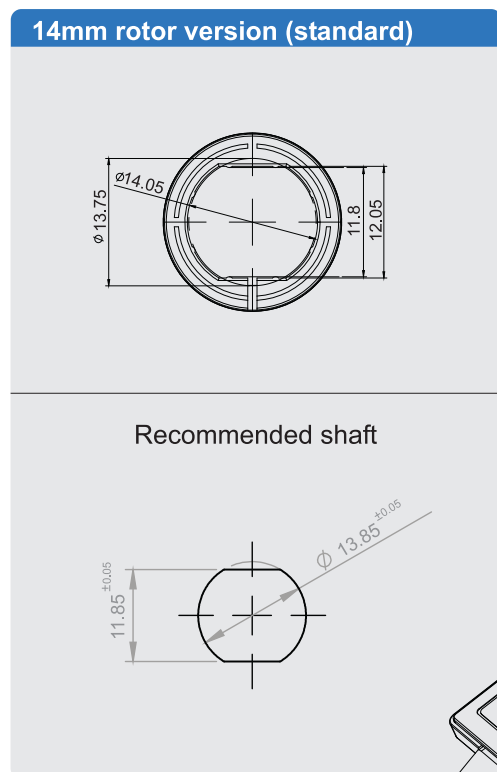
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### Recommended shaft



### 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).



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

### 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

CAN SAE J1939 wiring:

- CAN High.
- CAN Low.
- Power supply.
- Ground.

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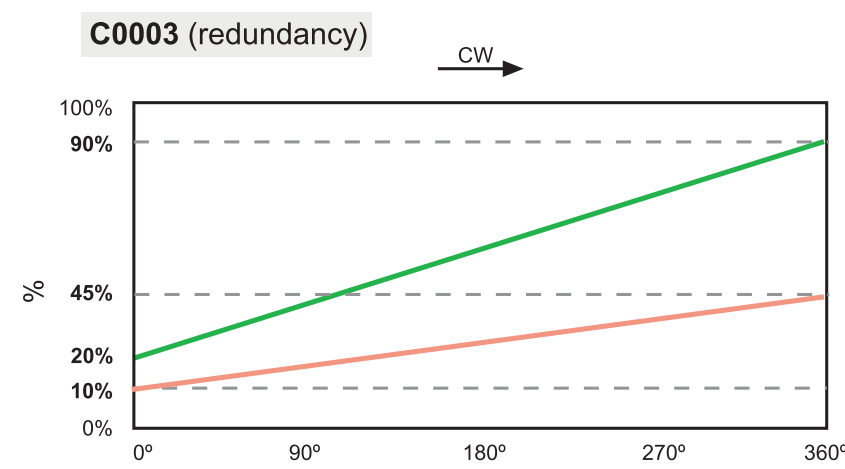
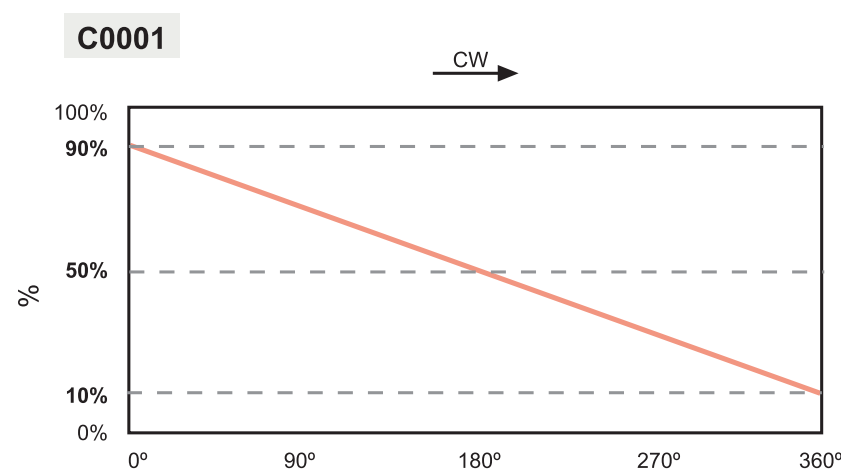
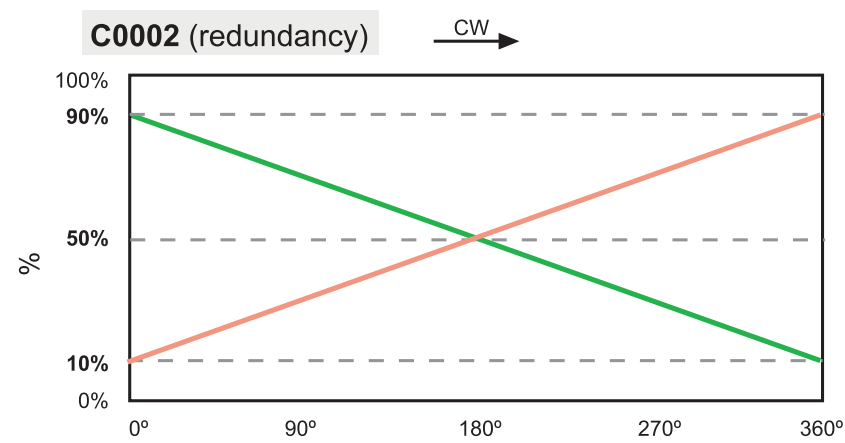
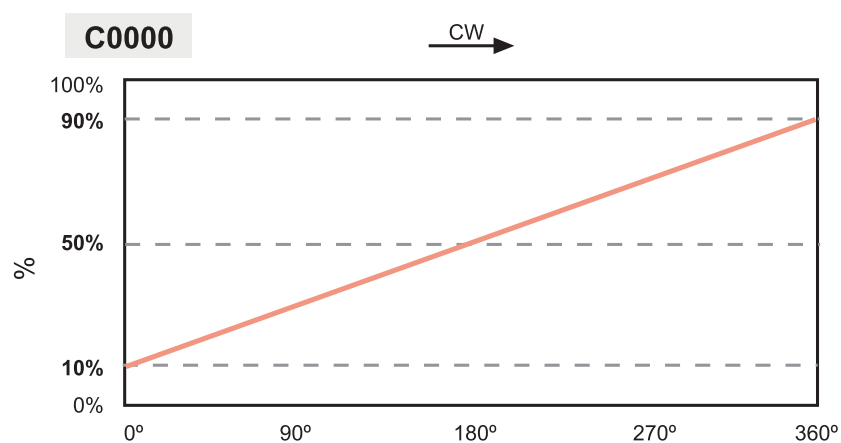
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## Output examples.



## Disclaimer

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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