PIHER sensing systems

PS2P-LIN.
Linear touchless position sensor.

Main features.

- True touchless operation: free from wear and tear.
- Low profile & robust magnetic design that easily adapts to your design.
- Selectable output: analogue (ratiometric) or PWM. SPI upon request.
- Programmable measuring range: up to 12mm.
- Resolution: analogue & PWM: 12 bits / SPI: 14 bits.
- Linearity: +/-1% absolute (+/-0.5% upon request).
- Over voltage protection up to 30V.
- Reverse voltage protection up to -50V.
- Supply voltage up to 30V.
- Programmable linear transfer characteristic
(some positive slopes & one negative slope can be programmed in the same transfer characteristic; up to 4 programmable points)
- Unlimited mechanical life.
- High vertical & lateral tolerance to magnet misalignment.
- Simple, redundant and full redundant versions available.
- Sealed for harsh environments.
- Operating temperature: -40°C to +125°C
- Self-diagnostic features.

- Agriculture.
- Construction & forestry.
- Material handling.
- Lifts & cranes.
- Marine.

Sensing the position, avoiding contact.

The linear touchless linear sensors create immunity to magnet´s misalignment that negatively impacts operational performance and results in labour intensive maintenance programmes. It complements our concentric and variable air-gap touchless series of non-contact angular rotary position sensors.

The magnet is attached to the moving parts whose displacement is to be measured, such as hydraulic/pneumatic controls or gear selector, and the electronics module is fixed to the chassis (or vice versa).

As absolute sensors, they will not lose the values even after a power failure.

All Piher touchless sensors are compact, sealed, low-profile, yet extremely rugged and can be custom-engineered to fit customer's specifications and existing mechanical assemblies.

Description.

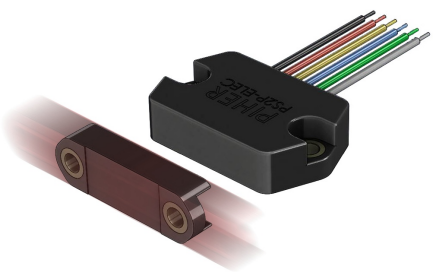
Something that is truly contactless. One magnet, One electronics module. No gears. Nothing to wear out over a lifetime.

A sensor that will deliver the same level of precision and stability throughout its life as the first day it was installed -despite extremes of vibration, shock, temperature and contamination.

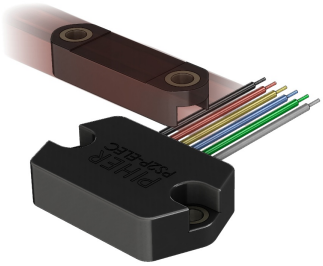
Something that is easy to assemble -delivering additional cost reduction on the production line.

Something that can be fitted anywhere on the pivoting shaft, giving engineers the flexibility to be creative.

Our touchless sensor is Piher Sensing Systems at its best, packaging its core technology -slimline magnetic Hall Effect sensing- into something truly original.



Lateral magnet linear displacement version.



Concentric magnet linear displacement version.

Touchless working principle

Measurement of linear position using variation of magnetic field amplitude induced by the displacement of a moving magnet has been intensively developed over the last fifteen years. However, these solutions have limits in terms of angular range and temperature influence.

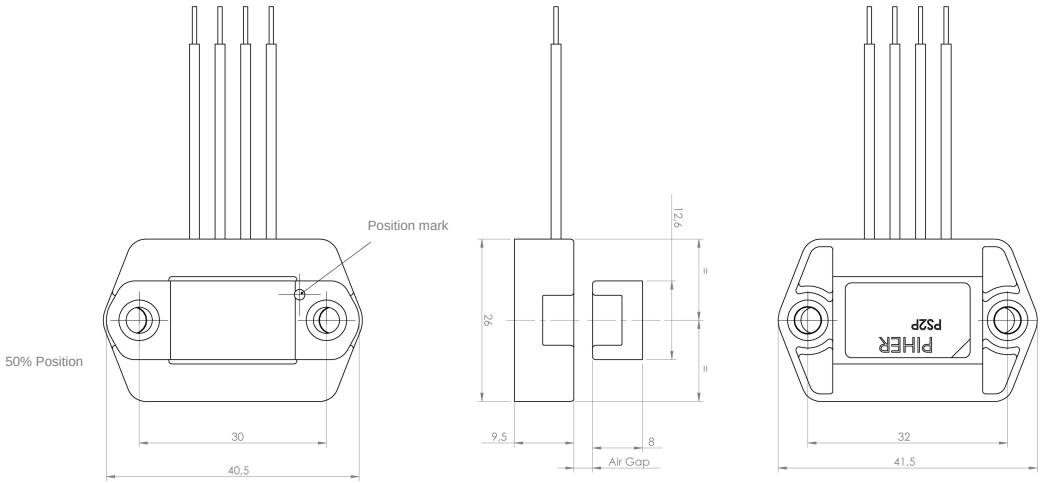
The technology used by Piher is only sensitive to the flux density coplanar with the IC surface.

The absolute position information is computed from both vectorial components of the flux density (i.e. BX and BY) of a magnet. Then an output signal proportional to the decoded position is produced.

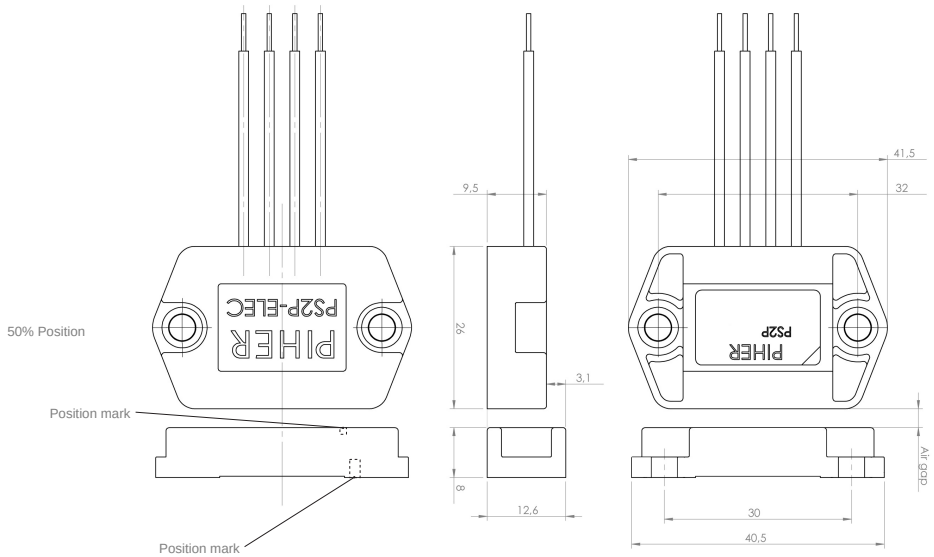
PS2P-LIN. Dimensions
Linear touchless position sensor

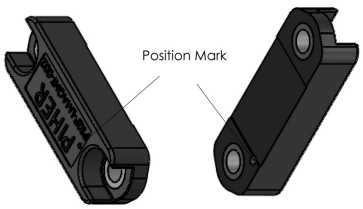
Dimensions in mm. Drawings not to scale.
Number and function of wires pictured in this datasheet may vary according to the selected output configuration.

PS2P-LIN-CE version. *Concentric magnet linear displacement.*



PS2P-LIN-LA version. *Lateral magnet linear displacement.*





PS2P-LIN. Ordering information
Linear touchless position sensor

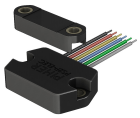
Part number examples:
Redundant type with lateral magnet, PWM output, L0003 function, linear sensing of 12mm and 5V supply: PS2P-LIN-LA-M002-2PP-L0003-ELS120-05-F200F200
Simple type with magnet on top, analogic output, L0000 output function, linear sensing of 12mm and 5V supply : PS2P-LIN-CE-M002-1A0-L0000-ELS120-05

PS2P-LIN	- __	- ____	- _	- __	- _____	- _____	- __	- ____
Series	Magnet position	Magnet model	Type	Output	Output function	Electrical linear stroke	Voltage supply	PWM Frecuency (Hz.)
	CE = top LA = lateral (1)	M002 (2)	1 = simple 2 = redundant 3 = full redundant	A0 = Analogic P0 = PWM AA = Analogic (redundant) PP = PWM (redundant) (3)	L0000 ... L0003 (4)	ELS010 ... ELS120 (5)	05 RE (6)	F100 ... F999 (7)

Free online expert advice at http://piher.net/configurator/2018/04/13/touchless-sensor-configurator/

(1) Magnet position

Magnet on top.



Lateral magnet.

(2) Magnet Model

M002
Magnet for linear sensing

(3) Output

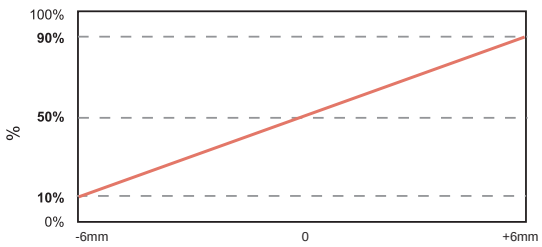
The analog output is a ratiometric output, proportional to:
- For supply voltage 5V: to input supply voltage.
- For supply voltage RE: to 5V.

(4) Output function

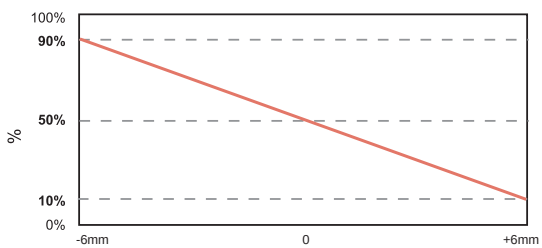
Other output functions available check availability. In the How To Order reference, enter **LXXXX** if the new output function reference has not yet been defined.

Standard output functions:

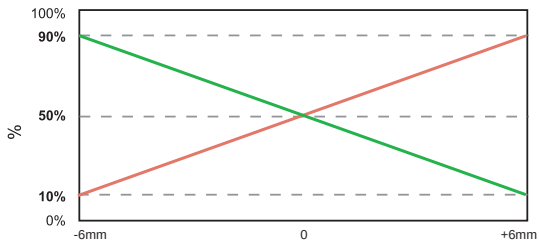
L0000



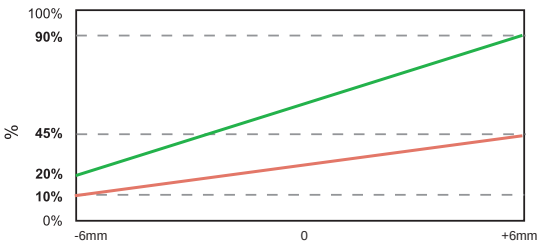
L0001



L0002 (redundant)



L0003 (redundant)



(5) Electrical linear stroke

ELS = measured in steps of 0.1mm. Examples:
ELS010 = 1mm effective electrical stroke (minimun).
ELS100 = 10mm effective electrical stroke.
ELS120 = 12mm of effective electrical stroke.
For larger strokes: check availability.

(6) Voltage supply

05: 5V ±10%
RE: 7V - 30V
RE not available for full redundant versions.

(7) PWM frecuency

Leave empty if no applicable. Default frequency is 200 Hz
For redundant versions, please, write both frequencies: -FXXXFXXX

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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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