PS2P-LIN.
Linear touchless position sensor.

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.

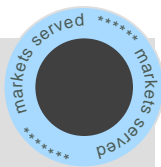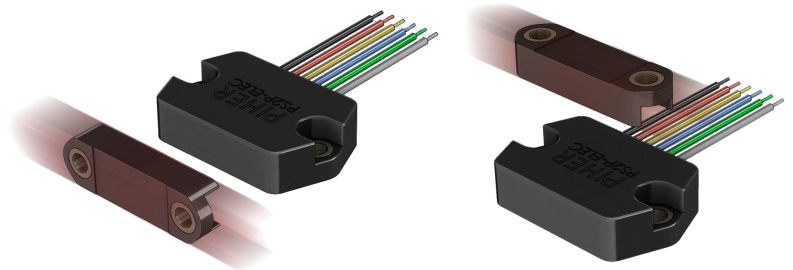Our touchless sensor is Piher Sensing Systems at its best, packaging its core technology -slimline magnetic Hall Effect sensing- into something truly original.

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: -40ºC to +125ºC
- Self-diagnostic features.

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

Lateral magnet linear displacement version.

Concentric magnet linear displacement version.

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.

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.
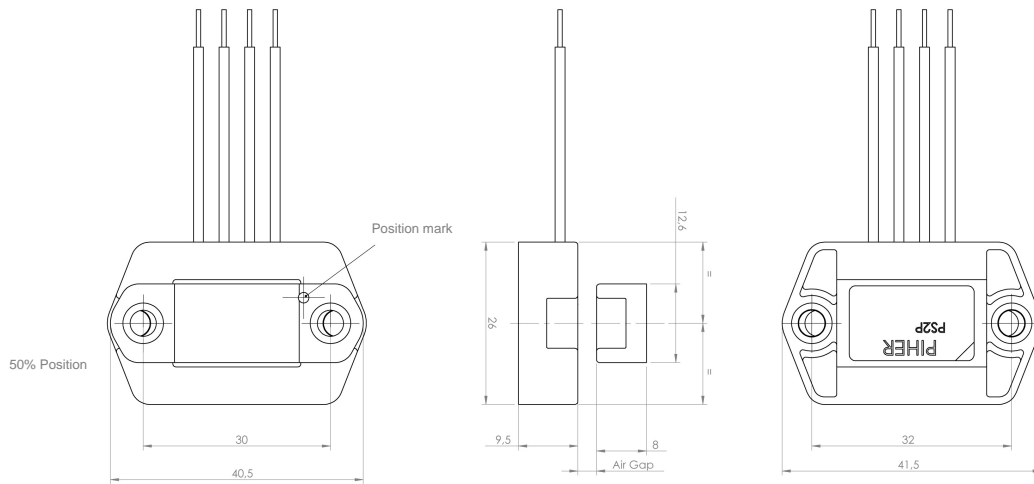
PS2P-LIN. Dimensions
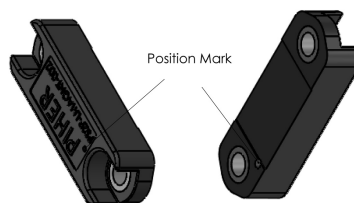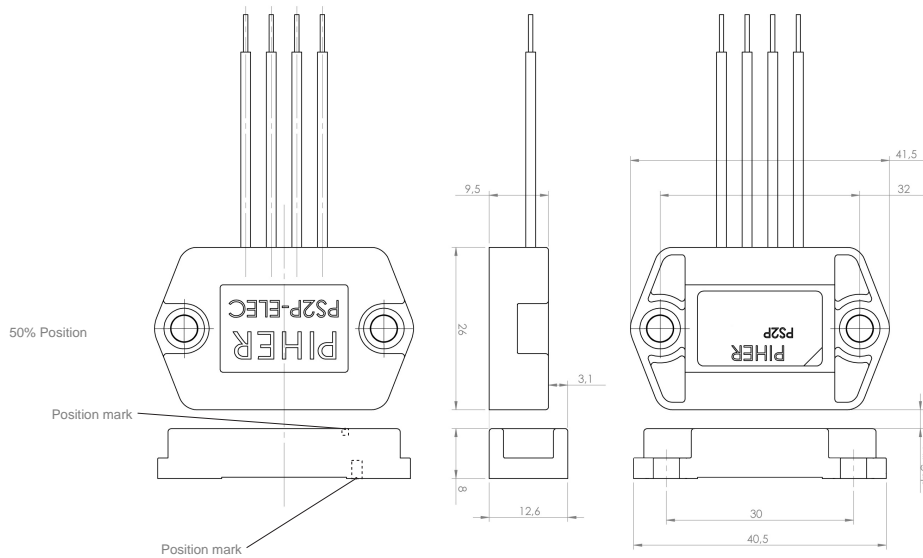# Linear touchless position sensor

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.*

Position mark

50% Position

30

40,5

12,6

26

9,5

8

Air Gap

32

41,5

PIHER PS2P

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

50% Position

PIHER PS2P-ELEC

Position mark

Position mark

9,5

26

3,1

8

12,6

41,5

32

PIHER PS2P
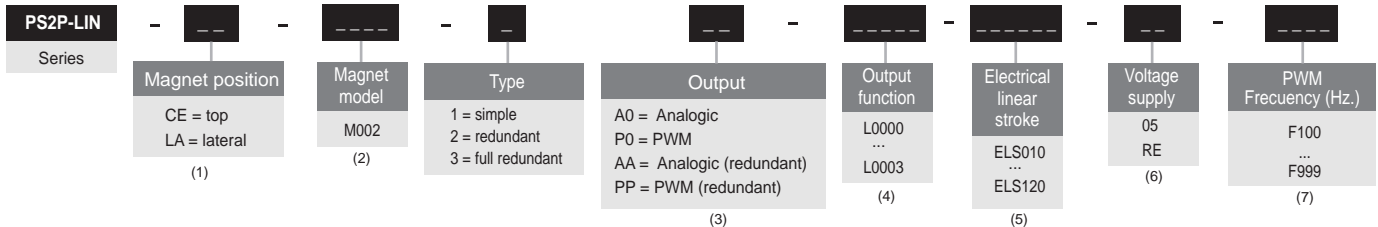
30

40,5

Air gap

Position Mark

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		M002		1 = simple 2 = redundant 3 = full redundant		A0 = Analogic P0 = PWM AA = Analogic (redundant) PP = PWM (redundant)		L0000 ... L0003		ELS010 ... ELS120		05 RE		F100 ... F999
		(1)		(2)				(3)		(4)		(5)		(6)		(7)

---

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

---
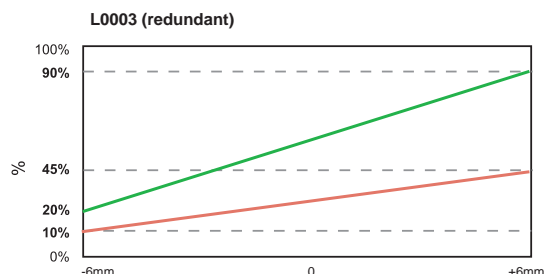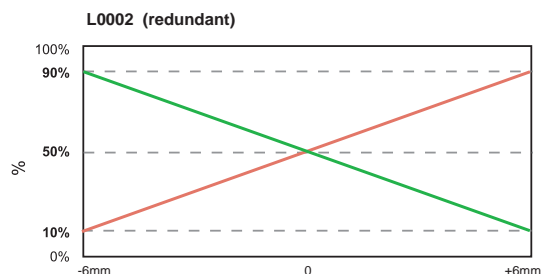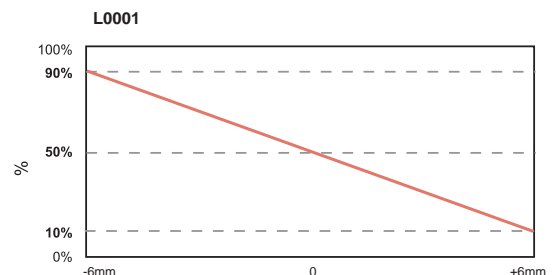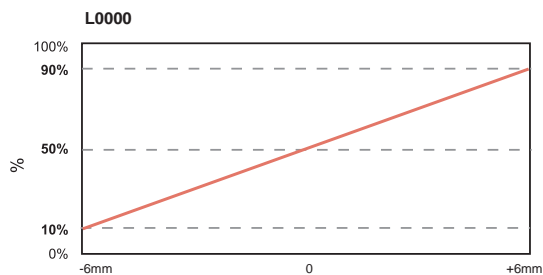
(5)   **Electrical linear stroke**

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