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. For wider ranges: please check availability.
- Nominal air gap: 3mm between plastic parts.
- Maximum air gap range: 5mm. For higher air gap: check availability.
- Maximum magnet lateral offset allowed: ± 1mm.
(Measured directly on non-ferromagnetic material. For other configurations check with Piher.)
- Resolution: analogue & PWM: 12 bits / SPI: 14 bits.
- Linearity: +/-1% absolute (+/-0.5% upon request).
- Over voltage protection.
- Reverse voltage protection.
- Supply voltage up to 25V.
- 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.

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.

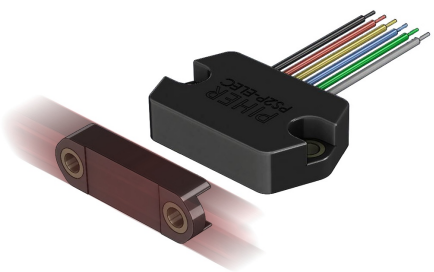
Something that is truly contactless. One magnet, One electronics module. No gears. Nothing to wear out over a lifetime.

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.

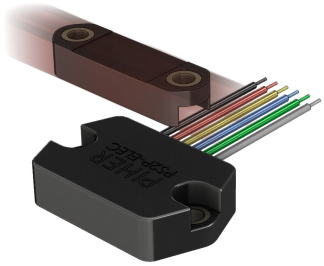
Something that is easy to assemble -delivering additional cost reduction on the production line.

Something that can be fitted anywhere on the moving element, 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.

- Automotive
- Industrial
- Marine
- Off-highway
- Transportation

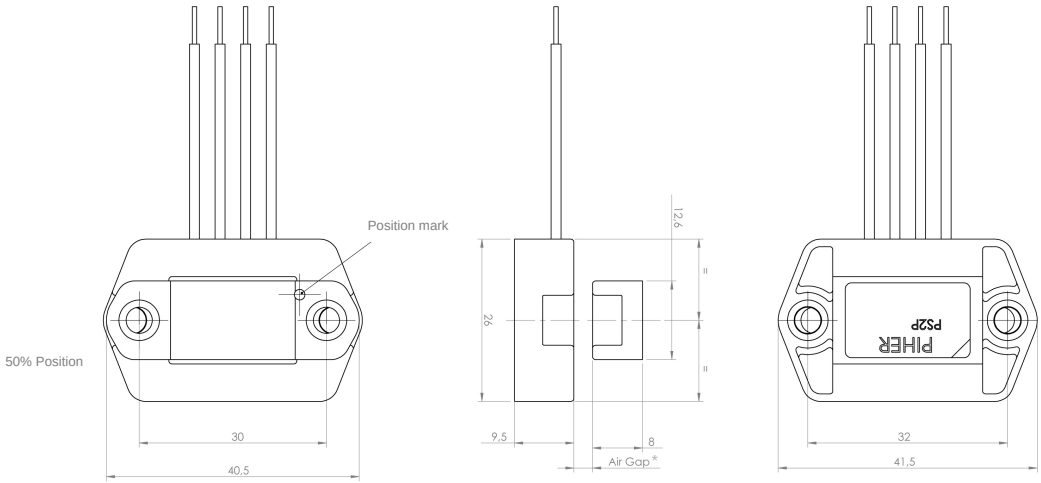
markets served ***** markets served ******

RoHS compliant

PS2P-LIN. Dimensions
Linear touchless position sensor

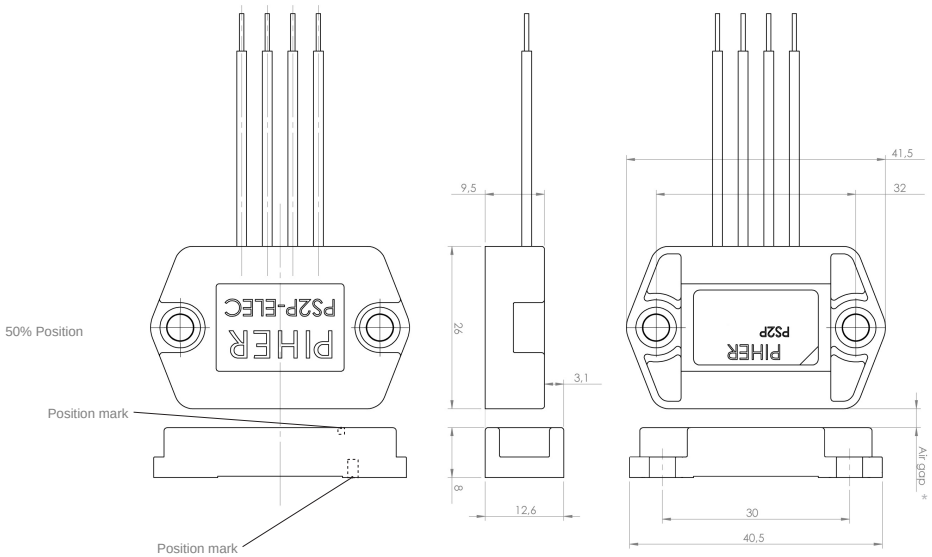
Dimensions in mm. Drawings not to scale.
Number and function of wires pictured in this datasheet may vary according to the selected output configuration.

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

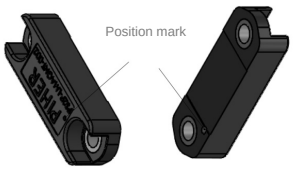


* Nominal air gap: 3mm.
For higher air gap please contact sales@piher.net

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



* Nominal air gap: 3mm.
For higher air gap please contact
sales@piher.net



Download the STEP file here:
https://piher.net/piher/?p=1700

Instructions
of use available at
www.piher.net

PIHER sensing systems

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: CE = top; LA = lateral (1)
Magnet model: M002 (2)
Type: 1 = simple; 2 = redundant; 3 = full redundant
Output: A0 = Analogic; P0 = PWM; AA = Analogic (redundant); PP = PWM (redundant) (3)
Output function: L0000 ... L0003 (4)
Electrical linear stroke: ELS010 ... ELS120 (5)
Voltage supply: 05; RE (6)
PWM Frecuency (Hz.): 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:

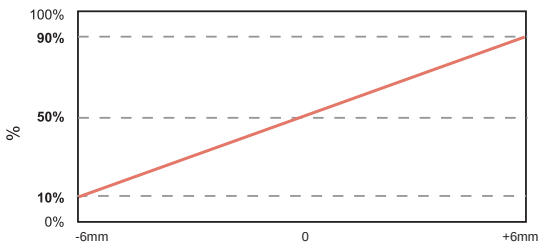
- For supply voltage 5V: to input supply voltage.
- For supply voltage RE: to 5V.

(4) Output function

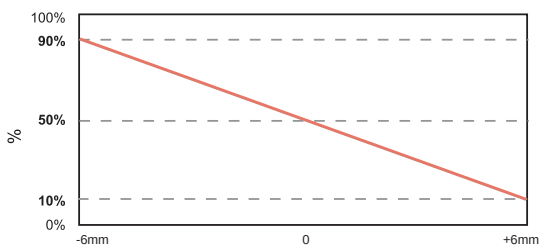
Other output functions available check availability. In the How To Order reference, enter LXXXX if the new output function reference has not yet been defined.

Standard output functions:

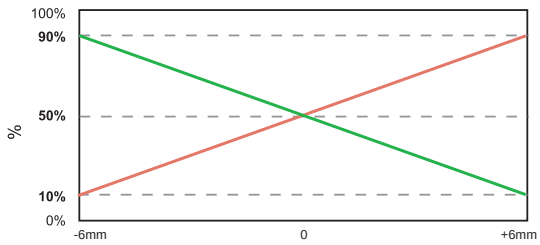
L0000



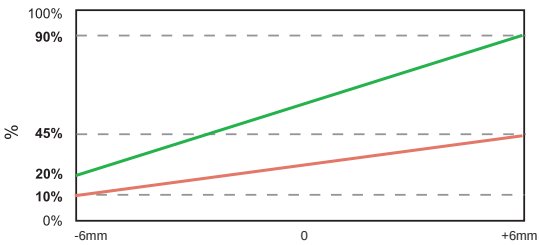
L0001



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 - 25V

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

PS2P-LIN. Specifications & standards
Linear touchless position sensor

Mechanical specifications

Vibration	EN 60068-2-6	5-2000 Hz; 20g; Amax 0,75 mm
Shock	EN 60068-2-27	50g
IP sealing	IEC 60529	IP67
Operating & storage temperature	ºC	-40 to +125
Life	movements	no limit
Mechanical range	degrees	360 (continuous rotation)

Check avaiability for orther specifications

Standards

CISPR 16-2-3 class B emission radiated (30 ... 230MHz)	max. 30 dB (µV/m)
CISPR 16-2-3 class B, emission radiated (230 ... 1000MHz)	max. 37 dB (µV/m)
EN 61000-4-2, ESD on housing and connections (contact/air)	±4 / ±8 kV
EN 61000-4-4, Burst (on supply lines / signal lines)	±1 kV
EN 61000-4-5, Surge (on supply lines / signal lines)	±1 kV
EN 61000-4-3, immunity HF radiated (80 ... 2000 MHz)	10 V/m
EN 61000-4-6, immunity HF conducted (0,15 ... 80MHz)	10 Vemk
EN 61000-4-8, immunity magnetic field (50 Hz)	30 A/m

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