Enabling the Electronics Revolution

PIHER sensing systems
an Amphenol® company

PS2P-LIN

Touchless Hall-Effect Linear Position Sensor

Available with CAN

DESCRIPTION

Piher Sensing Systems' PS2P-LIN compact linear position sensor delivers true touchless sensing for harsh industrial and vehicle environments in a low profile and robust magnetic design.

Magnet and sensor module are placed in separate housings without the need for any gears, bearings or linkages and can be placed anywhere on the moving object. This allows for easy mounting, thereby delivering additional cost reduction on the production line. Furthermore, without wear and tear of radial forces product reliability and lifetime are increased significantly.

The PS2P-LIN measures changes in linear position relative to the sensor by detecting the movement of a magnetized magnet that is located in a separate housing and is only sensitive to the flux density co-planar with the IC surface.

The PS2P series is complemented by touchless rotary (PS2P-CON) and variable airgap arc (PS2P-ARC) position sensors. All sensors of the series are absolute sensors and will deliver the same level of precision and stability throughout their lifetime as on the first day they are installed - despite extremes of vibration, shock, temperature and contamination.

Touchless Sensor

True touchless operation
Without any internal or external gears or linkages the sensor is easily assembled and calibrated and free from wear and tear over lifetime.

Virtually unlimited life

Unlimited mechanical life
The separation of electronics and magnet module allows for a virtually unlimited lifetime independent of number of revolutions.

Compact size

Compact and low profile package
Without the need for a shaft the sensor is provided in a exceptionally compact and low profile package that fits in space contraint applications.

IP67 IP69K

Made for harsh environments
IP69K sealing, high operating temperature range as well as shock and vibration resistance allow the use in the most demanding environments.

Fully customizable

Adaptable to your requirements
Custom mechanical design, programmable transfer function and switch outputs as well as different output protocols and redundancy levels available.

up to 25 mm

Configurable measurement range
Accurate linear displacement feedback of up to 25mm. Other/higher ranges are available upon request.

APPLICATIONS

Off-Highway
- Bucket position
- Pedal / throttle position
- Hitch position
- Bus suspension / kneeling position
- Transmission systems

Automotive
- Transmission systems
- Gear shift position
- Park lock sensor

Home & Building Automation
- HVAC damper actuator monitoring

Marine
- Trim / tilt position

Industrial
- Machinery
- Monitoring of hydraulic valves and controls
- IoT modules

PS2P-LIN

Touchless Hall-Effect Linear Position Sensor

MECHANICAL SPECIFICATIONS

Life	Virtually unlimited
Nominal air gap	3mm
Maximum air gap[1]	5mm
Maximum allowed lateral offset	±1mm

[1] For higher air gap please contact Piher Sensing Systems.

ELECTRICAL SPECIFICATIONS

Linearity[1]		±1% absolute (±0.5% upon request)
Measurement range[2]		0 mm to 12 mm 0 mm to 25 mm
Output protocol		Analog (Ratiometric), CAN, PWM Serial Protocol (SPI) upon request
Output		Simple Redundant Full-redundant
Switch		On request
Resolution	Analog, CAN, PWM SPI	Up to 12 bit Up to 14 bit
Supply voltage[3]	Analog and PWM CAN	5V ±10% 7V to 15V 7V to 32V
Supply current	Single version Redundant version CAN version	Typ 8.5 mA Typ 17 mA Typ 47 mA
Voltage protection		±10V
Self-diagnostic features		Yes

[1] Ferromagnetic materials close to the sensor (i.e. mounting surface) may affect the sensor's linearity.
[2] For other/higher linear range please contact Piher Sensing Systems.
[3] Voltages up to 25 V possible on request.

ENVIRONMENTAL SPECIFICATIONS

Operating and storage temperature[1]	Analog, PWM, SPI CAN	-40°C to +125°C -40°C to +85°C
Shock		50g
Vibration		5Hz to 2000 Hz; 20g; A_{max} 0,75 mm
Sealing[2]		IP67, IP69K
Approval		CE[2]

[1] Other specifications available
[2] CE-approval applies to analogic models with M001 magnet

EMI/EMC Testing

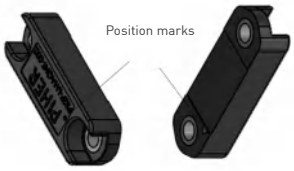
Characteristic	Standard	Level
Radiated emissions	CISPR 16-2-3 class B	30 MHz to 230 MHz, max. 30dB (µV/m) 230 MHz to 1000 MHz, max. 37dB (µV/m)
ESD on housing and connections	EN 61000-4-2:2009	±4 kV contact ±8 kV air
Burst (on supply lines / signal lines)	EN 61000-4-4:2012	±1kV
Surge (on supply lines / signal lines)	EN 61000-4-5:2014	±1kV
Immunity HF radiated (80 ... 2000 MHz)	EN 61000-4-3:2006	10 V/m
Immunity HF conducted (0,15 ... 80MHz)	EN 61000-4-6:2014	10 Vemk
Immunity magnetic field (50 Hz)	EN 61000-4-8:2010	30 A/m

PS2P-LIN

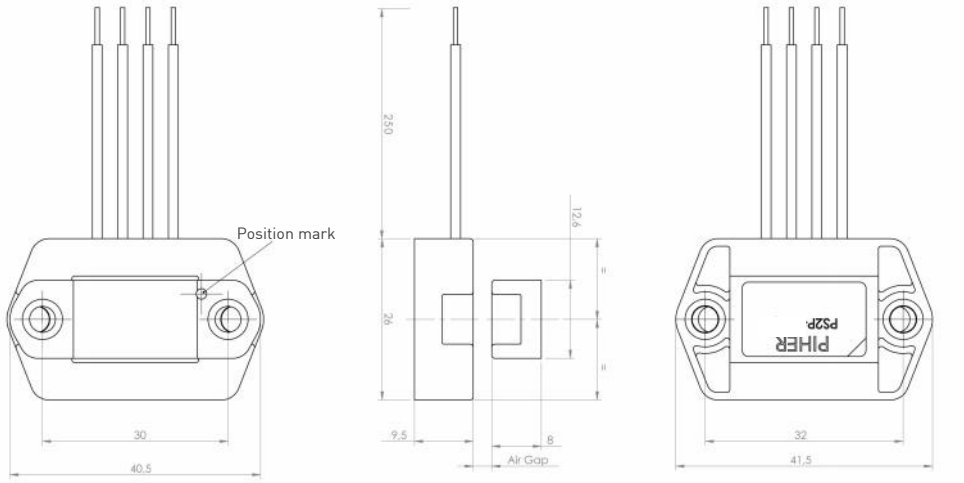
Touchless Hall-Effect Linear Position Sensor

DIMENSIONS (MM)

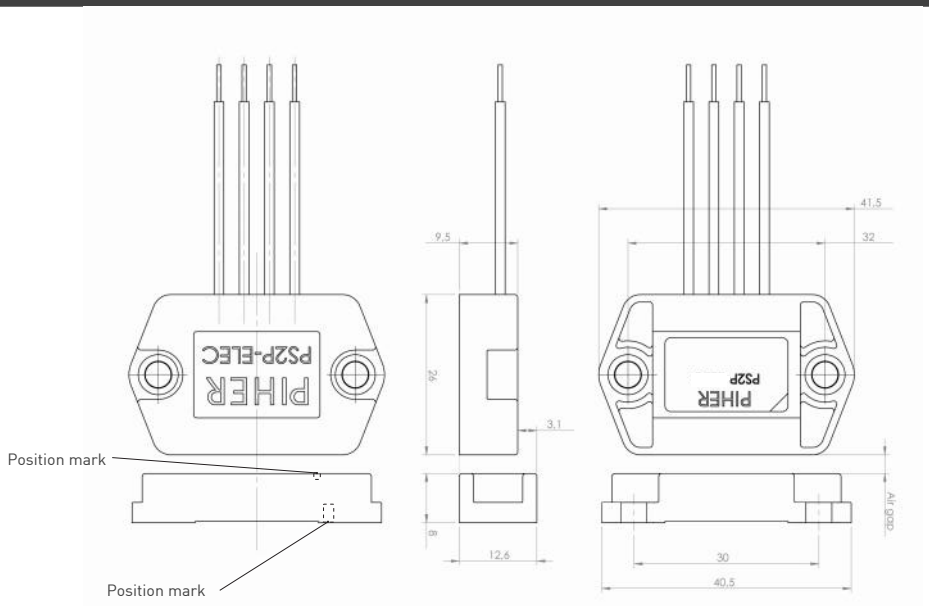
PS2P-LIN-CE (magnet positioned on top)



Download the STEP file here:
www.piher.net



PS2P-LIN-LA (magnet positioned laterally)



Magnet shown on 50% position. Nominal air gap: 3mm, higher on request
Drawings may not be to scale. Number and function of wires pictured in this datasheet may vary according to output configuration.

PS2P-LIN

Touchless Hall-Effect Linear Position Sensor

HOW TO ORDER (Example: PS2P-LIN-CE-M002-1A0-L0000-ELS120-05)

Simple Output

PS2P-LIN - __ - M002 - 1 __ - L____ - ELS___ - __ - ____

Series	Magnet position	Magnet model	Type	Output[1]	Output function[2]	Electric linear stroke[3]	Voltage supply[4]	PWM Frequency Hz[5]
	CE = on top LA = lateral	M002	1 = simple	A0 = analogic P0 = PWM J0 = CAN SAE J1939 O0 = CAN OPEN	L0000 L0001 L0021 L0025	ELS120 = 12mm ELS250 = 25mm ELSXYZ = XY,Zmm	05 = 5V ±10% RE = 7V-15V (A&PWM) / 7V-32V (CAN)	[empty] = 200Hz F100 = 100Hz F101 = 101Hz ... F999 = 999Hz

Redundant output

PS2P-LIN - __ - M002 - 2 __ - L____ - ELS___ - __ - ____ ____

Series	Magnet position	Magnet model	Type	Output[1]	Output function[2]	Electric linear stroke[3]	Voltage supply[4]	PWM Frequency Hz (1)[5]	PWM Frequency Hz (2)[5]
	CE = on top LA = lateral	M002	2 = redundant	AA = analogic PP = PWM	L0002 L0016	ELS120 = 12mm ELS250 = 25mm ELSXYZ = XY,Zmm	05 = 5V ±10% RE = 7V-15V	[empty] = 200Hz F100 = 100Hz F101 = 101Hz ... F999 = 999Hz	[empty] = 200Hz F100 = 100Hz F101 = 101Hz ... F999 = 999Hz

Full-redundant output

PS2P-LIN - __ - M002 - 3 __ - L____ - ELS___ - 05 - ____ ____

Series	Magnet position	Magnet model	Type	Output[1]	Output function[2]	Electric linear stroke[3]	Voltage supply	PWM Frequency Hz (1)[5]	PWM Frequency Hz (2)[5]
	CE = on top LA = lateral	M002	3 = full-redundant	AA = analogic PP = PWM	L0002 L0016	ELS120 = 12mm ELS250 = 25mm ELSXYZ = XY,Zmm	05 = 5V ±10%	[empty] = 200Hz F100 = 100Hz F101 = 101Hz ... F999 = 999Hz	[empty] = 200Hz F100 = 100Hz F101 = 101Hz ... F999 = 999Hz

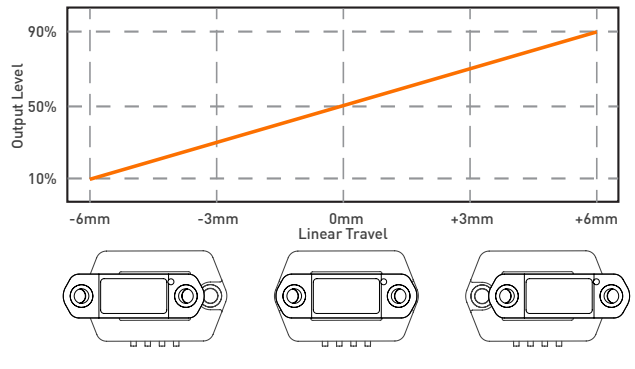
1 The analog output is ratiometric, proportional:
- for supply voltage "5V" to input voltage;
- for supply voltage "RE" to 5V.

2 Other output functions available, please check availability. Enter LXXXX as long as the new output function is not defined.
3 ELS is measured in steps of 0.1mm, min. ELS050 = 5mm effective electrical stroke, max. ELS250 = 25mm effective electrical stroke. Larger strokes available on request.
4 Voltages up to 25V possible on request.
5 Leave empty if not applicable. Default frequency is 200 Hz

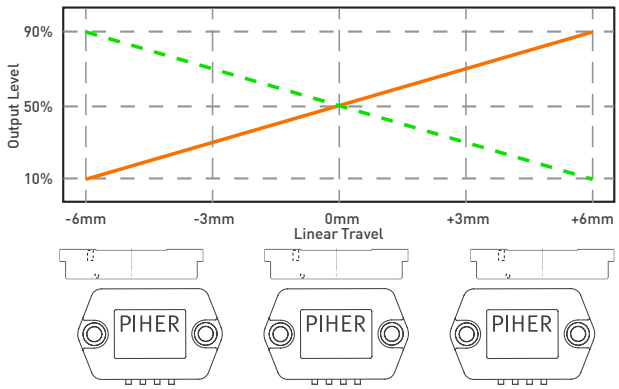
check inventory

OUTPUT VOLTAGE DEPENDING ON MAGNET POSITION

PS2P-LIN-CE-M002-1A0-L0000-ELS120-05



PS2P-LIN-LA-M002-2AA-L0002-ELS120-05

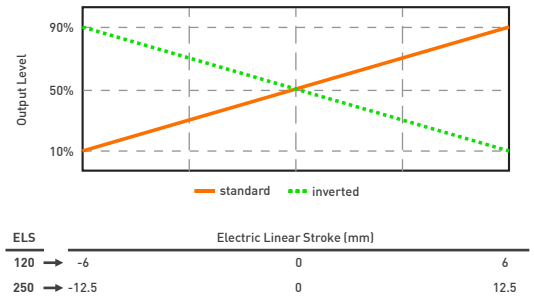


Custom output functions with up to 4 programmable points on request.

PS2P-LIN

Touchless Hall-Effect Linear Position Sensor

OUTPUT FUNCTIONS



ELS	Standard	Inverted	Redundant
120	L0000	L0001	L0002
250	L0021	L0025	L0016

Custom output functions on request

CONNECTION SCHEME

Color	Simple		Redundant		Full-redundant	CAN
	5V	7V to 15V	5V	7V to 15V		
Brown	Power supply	Power supply	Power supply	Power supply	Power supply 1	Power supply
Blue	Ground	Ground	Ground	Ground	Ground 1	Ground
Black	Signal output	Signal output	Signal output 1	Signal output 1	Ground 2	CAN High
White	n/a	n/a	Signal output 2	Signal output 2	Signal output 2	CAN Low
Red	n/a	n/a	n/a	n/a	Power supply 2	n/a
Yellow	n/a	n/a	n/a	n/a	Signal output 1	n/a
Grey	n/a	Not used	n/a	Not used	n/a	n/a

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

All our products are customizable to meet your specific requirements.
Please always use the latest updated datasheets and 3D models published on our website.

CONTACT

Piher Sensing Systems
Polígono Industrial Municipal
Vial T2, Nº22
31500 Tudela
Spain

sales@piher.net

✆ +34 948 820 450