
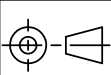


DRAWINGS NOT TO BE CHANGED WITHOUT REFERENCE TO THE CHANGE PROCEDURE.
CHANGES TO PARTS USED IN INTRINSICALLY SAFE PRODUCT MUST BE APPROVED BY THE AUTHORISED PERSON.
THIS IS AN UNCONTROLLED PRINT AND WILL NOT BE UPDATED.

REV	CHANGE HISTORY	DR'WN	DATE	CHK'D
M	SINGLE PIECE RADIAL END CAP ADDED RAN1167	ASC	23/09/2021	ASC



APPROVED BY RDM	REV M		X ±0.4 X.X ±0.2 X.XX ±0.1 DIMS mm
DESCRIPTION P112 LIPS GAUGE HEAD POSITION SENSOR			
SCALE A3	DRAWING NUMBER P112-11		

SHEET 1 OF 1



P112 GAUGE HEAD POSITION SENSOR

Position feedback for industrial and scientific applications

- **Gauge head positioning for industrial and scientific applications**
- **Non-contacting inductive technology to eliminate wear**
- **Travel set to customer's requirement**
- **Compact 19 mm diameter body**
- **Sealing to IP67**



As a leading designer and manufacturer of linear, rotary, tilt and intrinsically safe position sensors, Positek® has the expertise to supply a sensor to suit a wide variety of applications.

Our P112 is an affordable, durable high-accuracy sensor for gauge head positioning in industrial and scientific applications. The P112, like all Positek® sensors, provides a linear output proportional to travel. Each sensor is supplied with the output calibrated to the travel required by the customer, from 5mm to 50mm and with full EMC protection built in.

It is particularly suitable for OEMs seeking good sensor performance for arduous applications such as industrial machinery where cost is important.

Overall performance, repeatability and stability are outstanding over a wide temperature range. The sensor is very robust, the body and plunger being made of stainless steel for long service life and environmental resistance.

The plunger is spring loaded with a domed end. The P112 is easy to install with a long 1/2 inch UNF mounting thread and is supplied with two lock nuts for positioning. Environmental sealing is to IP67.

SPECIFICATION

Dimensions

Body diameter	19 mm
Body Length (excluding thread)	
(Axial version)	160.7 mm
(Radial version)	166 mm cable
(Radial version)	169.5 mm connector
Mounting Thread Length	59 mm

For full mechanical details see drawing P112-11

Spring Force 1.5 - 4.5 N approx.

Independent Linearity $\leq \pm 0.25\%$ FSO @ 20°C

$\leq \pm 0.1\%$ FSO @ 20°C* available upon request.

*Sensors with calibrated travel of 10 mm and above.

Temperature Coefficients

$< \pm 0.01\%/^{\circ}\text{C}$ Gain &
 $< \pm 0.01\%\text{FS}/^{\circ}\text{C}$ Offset

Frequency Response > 10 kHz (-3dB)

Resolution Infinite

Noise $< 0.02\%$ FSO

Environmental Temperature Limits

Operating -40°C to +125°C standard
-20°C to +85°C buffered
-40°C to +125°C

Storage

Sealing IP67

EMC Performance EN 61000-6-2, EN 61000-6-3

Vibration IEC 68-2-6: 10 g

Shock IEC 68-2-29: 40 g

MTBF 350,000 hrs 40°C Gf

Drawing List

P112-11 Sensor Outline

Drawings, in AutoCAD® dwg or dxf format, available on request.

Do you need a position sensor made to order to suit a particular installation requirement or specification? We'll be happy to modify any of our designs to suit your needs - please contact us with your requirements.

For further information please contact:

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Positek, Andoversford Industrial Estate, Cheltenham GL54 4LB. U.K.



P112 GAUGE HEAD POSITION SENSOR

Position feedback for industrial and scientific applications

How Positek's technology eliminates wear for longer life

Positek's Inductive technology is a major advance in displacement sensor design. Our displacement transducers have the simplicity of a potentiometer with the life of an LVDT/RVDT.

Our technology combines the best in fundamental inductive principles with advanced micro-electronic integrated circuit technology. A Positek sensor, based on simple inductive coils using Positek's ASIC control technology, directly measures absolute position giving a DC analogue output signal. Because there is no contact between moving electrical components, reliability is high and wear is eliminated for an exceptionally long life.

Our technology overcomes the drawbacks of LVDT technology – bulky coils, poor length-to-stroke ratio and the need for special magnetic materials. It requires no separate signal conditioning.

We also offer a range of ATEX-qualified intrinsically-safe sensors.

TABLE OF OPTIONS

CALIBRATED TRAVEL: Factory set to any length from 0-5mm to 0-50mm (e.g. 36mm).

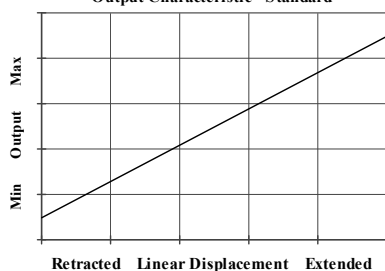
ELECTRICAL INTERFACE OPTIONS

OUTPUT SIGNAL	SUPPLY INPUT	OUTPUT LOAD
Standard:		
0.5-4.5V dc ratiometric	+5V dc nom. \pm 0.5V.	5k Ω min.
Buffered:		
0.5-4.5V dc	+24V dc nom. + 9-28V.	5k Ω min.
0.5-9.5V dc	+24V dc nom. + 13-28V.	5k Ω min.
4-20mA	+24V dc nom. + 13-28V.	300R Max.
Supply Current	10mA typical, 20mA max. plus O/P current	

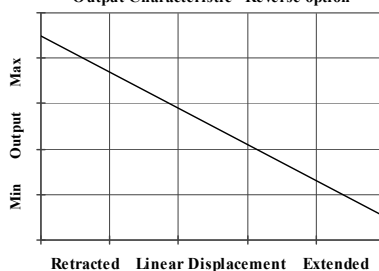
CONNECTOR/CABLE OPTIONS

Connector - Hirschmann ELWIK 4102 Axial, IP67
Connector - Hirschmann ELWIK 4102 Radial, IP67
Cable with Pg 9 gland Axial, IP67
Cable with boot. Radial, IP67
Cable length >50 cm – please specify length in cm

Output Characteristic - Standard



Output Characteristic - Reverse option



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P112 Gauge Head Position Sensor

	a	b	c	d
P112	. Displacement	Output	Connections	Z-code

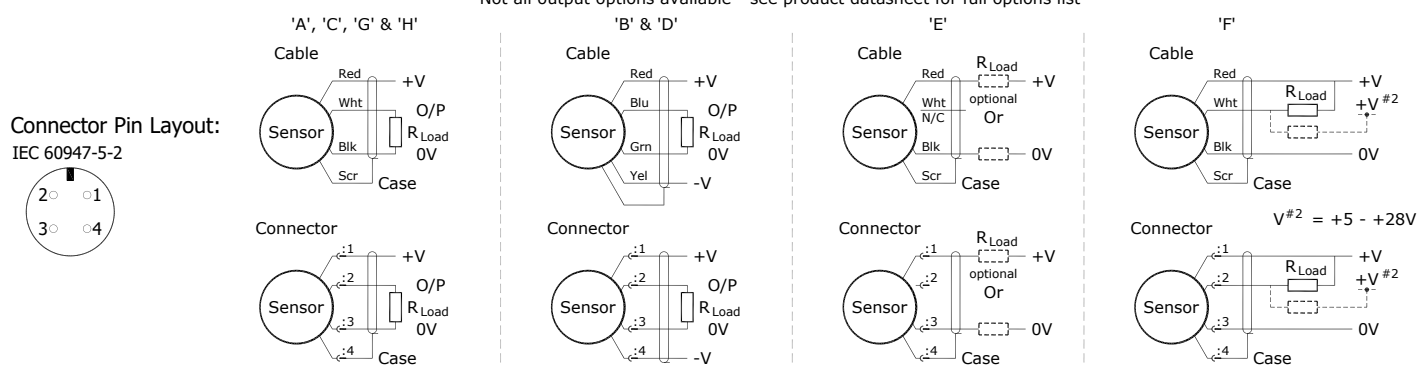
a Displacement (mm)		Value
Displacement in mm	e.g. 0 - 34 mm	34
b Output		
Supply V dc V _s (tolerance)	Output	Code
+5V (4.5 - 5.5V)	0.5 - 4.5V (ratiometric with supply)	A
+24V nom. (13 - 28V)	0.5 - 9.5V	C
+24V nom. (9 - 28V)	0.5 - 4.5V	G
+24V nom. (13 - 28V)	4 - 20mA 3 wire Source	H
c Connections Cable or Connector		Code
Cable Boot - Radial	IP67	Ixx
Cable Gland - Radial	IP67 metal	IAxx
Connector - Axial	IP67 M12 IEC 60176-2-101 nylon	J
	pre-wired	Jxx
Connector - Radial	IP67 M12 IEC 60176-2-101 nylon	K
	pre-wired	Kxx
Cable Gland - Axial	IP67 metal	Lxx
Specify required cable length 'xx' in cm. e.g. L2000 specifies cable gland with 20 m of cable, 50 cm supplied as standard.		
d Z-code		Code
≤± 0.1% @20°C Independent Linearity displacement between 10mm & 50mm only!		Z650

Installation Information

P112 GAUGE HEAD POSITION SENSOR

Output Option	Output Description:	Supply Voltage: V_s (tolerance)	Load resistance: (include leads for 4 to 20mA O/Ps)
A	0.5 - 4.5V (ratiometric with supply)	+5V (4.5 - 5.5V)	$\geq 5k\Omega$
C	0.5 - 9.5V	+24V nom. (13 - 28V)	$\geq 5k\Omega$
G	0.5 - 4.5V	+24V nom. (9 - 28V)	$\geq 5k\Omega$
H	4 - 20mA	+24V nom. (13 - 28V)	300R MAX

Not all output options available - see product datasheet for full options list



Mechanical Mounting: Via $\frac{1}{2}$ "x20 UNF mounting thread, adjust sensor position and lock in place using lock nuts provided. Maximum tightening torque: 10Nm.

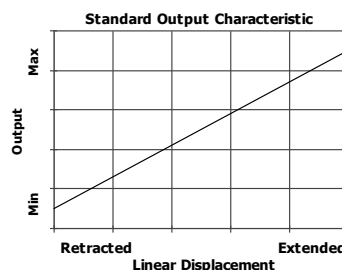
Output Characteristic: Plunger is extended 3.3 mm from end of body at start of normal travel. The output increases as the plunger extends from the sensor body, the calibrated stroke is between 5 mm and 50 mm.

Warning - The M12 IEC 60947 connector may be rotated for purposes of convenient orientation of the connector and cable, however rotating the connector more than one complete revolution is not recommended.

Repeated rotation of the connector will damage the internal wiring!

Incorrect Connection Protection levels:-

- A **Not protected** – the sensor is **not** protected against either reverse polarity or over-voltage. The risk of damage should be minimal where the supply current is limited to less than 50mA.
- C & G Supply leads diode protected. Output must not be taken outside 0 to 12V.
- H Supply and output lead diode protected. Do not take output negative of 0 volts.



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