P138
Mid Stroke Slim-Line Linear Position Sensor

P138-17d

Position feedback for industrial and scientific applications

FEATURES

- Non-contacting inductive technology to eliminate wear
- Travel set to customer's requirement
- Compact 19 mm diameter body
- High durability and reliability
- High accuracy and stability
- Sealing to IP67

Our P138 LIPS® (Linear Inductive Position Sensor) is an affordable, durable, accurate position sensor designed for a wide range of industrial applications. It is particularly suitable for OEMs seeking good sensor performance in situations where a small diameter, short-bodied sensor is needed and cost is important. The unit is compact and space-efficient, being responsive along almost its entire length, and like all sensors provides a linear output proportional to travel. Each unit is supplied with the output calibrated to the travel required by the customer, from 51 to 100mm and with full EMC protection built in.

Overall performance, repeatability and stability are outstanding over a wide temperature range. The sensor has a compact 19 mm diameter stainless steel body, is easy to install and set up. Mounting options include body clamps or a stainless steel mounting flange with two 3.2 mm by 30 degree wide slots on a 25 mm pitch. The stainless steel plunger can be supplied free or captive, with female M4 thread, or spring-loaded with a ball end. The P138 also offers a range of mechanical options, environmental sealing is to IP67.

SPECIFICATION

Dimensions		
Body diameter	19 mm	
Body Length:	Dependant on calibrated travel & mounting option	
Calibrated Travel	Standard	Flange mounted
51 mm to 70 mm	132.5 mm	138 mm
71 mm to 100 mm	162.5 mm	168 mm
Plunger	Ø 6mm	
For full mechanical details see drawing P138-11		
Independent Linearity	≤ ± 0.25% FSO @ 20°C ≤ ± 0.1 % FSO @ 20°C available upon request.	
Temperature Coefficients	< ± 0.01 %/°C Gain & < ± 0.01 %FS/°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	
Storage	-40°C to +125°C	
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		
P138-11	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.

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HowPositek's PIPS® technology eliminates wear for longer life

PIPS® technology is a major advance in displacement sensor design. PIPS®-based displacement transducers have the simplicity of a potentiometer with the life of an LVDT/RVDT.

PIPS® technology combines the best in fundamental inductive principles with advanced micro-electronic integrated circuit technology. A PIPS® sensor, based on simple inductive coils using 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.

PIPS® 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.

Our LIPS® range are linear sensors, while RIPS® are rotary units and TIPS® are for detecting tilt position. Ask us for a full technical explanation of PIPS® technology.

We also offer a range of ATEX-qualified intrinsicallysafe sensors.

TABLE OF OPTIONS

CALIBRATED TRAVEL: Factory set to any length from 0-51mm to 0-100mm (e.g. 76mm).

ELECTRICAL INTERFACE OPTIONS

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

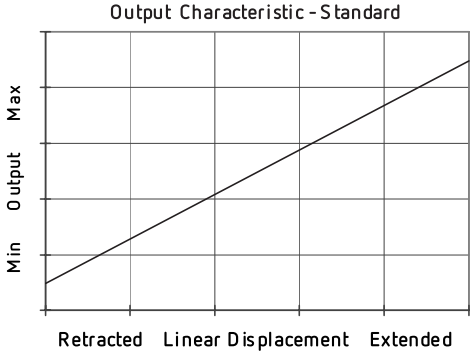
CONNECTOR/CABLE OPTIONS

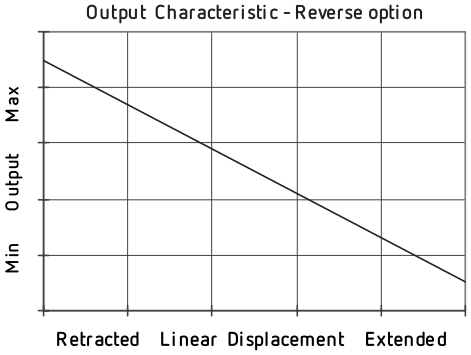
Connector - M8 IEC 60947-5-2	IP67
Cable with M8 gland	IP67

Cable length >50 cm – please specify length in cm

MOUNTING OPTIONS
Flange, Body Tube Clamp.

PUSH ROD OPTIONS – standard retained with M4x0.7 female thread
Sprung loaded (spring supplied loose), Dome end (sprung loaded) or Free.





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HOW TO ORDER

	a	b	c	d	e	f	g	h	j
P138 .	Displacement	Output	Connections	Option	Option	Option	Option	Option	Z-code

a **Displacement** (mm)		**Value**
Displacement in mm	e.g. 0 - 66 mm	**66**

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**
Connector	IP67 M8 IEC 60947-5-2	**J**
Cable Gland	IP67 M8	**Lxx**

*Supplied with 50 cm as standard, specify required cable length specified in cm. e.g. L2000 specifies cable gland with 20 metres of cable. Nb: restricted cable pull strength.

d **Housing**		**Code**
Standard - default		blank
Flange Mount		**N**

e **Body Fittings**		**Code**
None - default		blank
Body Clamps - 1 pair		**P**

f **Sprung Plunger**		**Code**
None - default		blank
Spring Extend	Captive plunger only.	**R**

g **Plunger Fittings**		**Code**
None - default	Female Thread M4x0.7x7 deep	blank
Dome end	Required for option 'R'	**T**

h **Plunger Options**		**Code**
Captive - default	Plunger is retained	blank
Non-captive	Plunger can depart body	**V**

j **Z-code**	**Code**
≤± 0.1 % @20°C Independent Linearity displacement between 10mm & 50mm only!	**Z650**
Connector with cable option 'J' with length required in cm i.e. J100 specifies connector with 100cm of cable.	**Z999**

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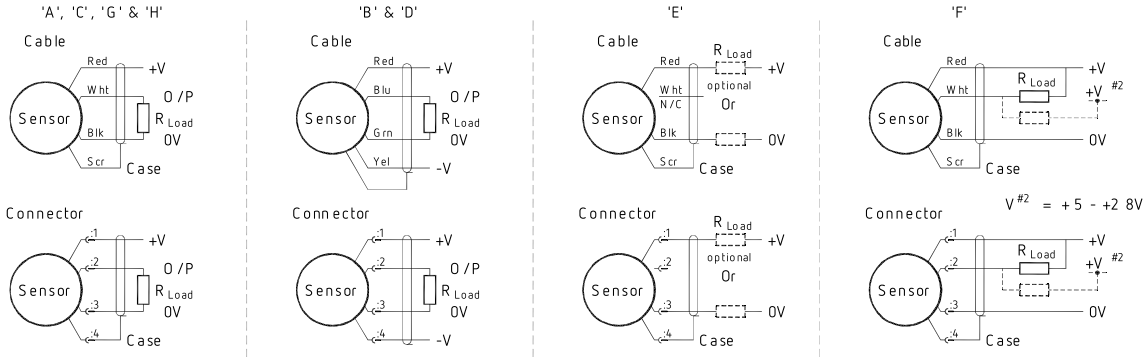
INSTALLATION INFORMATION

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)	≥ 5kΩ
C	0.5 - 9.5V	+24V nom. (13 - 28V)	≥ 5kΩ
G	0.5 - 4.5V	+24V nom. (9 - 28V)	≥ 5kΩ
H	4–20mA	+24V nom. (13 - 28V)	300R MAX

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

Connector Pin Layout:
IEC 60947-5-2



Gain and Offset Adjustment: Not available.

Mechanical Mounting: Flange mounted or by clamping the sensor body - body clamps are available, if not already ordered. The flange slots are 3.2 mm by 30 degrees wide on a 25 mm pitch.

Output Characteristic: Plunger extended, at start of normal travel, from mounting face by:

Standard body : 36.5 mm*

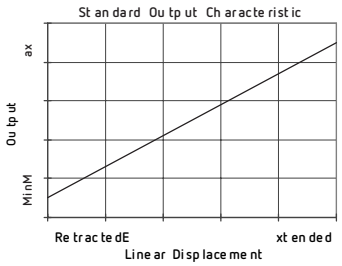
Flanged body : 34 mm*

*Note: where ball end option is fitted add 5 mm.

The output increases as the plunger extends from the sensor body, the calibrated stroke is between 51 mm and 100 mm.

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 take output negative of 0 volts.



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ELECTRICAL OPTIONS / SPECIFICATIONS