

ELECTRICAL OPTIONS/ SPECIFICATIONS

OUTPUT		SUPPLY
A 0.5 - 4.5V RATIO METRIC		5V
C 0.5 - 9.5V		24V
G 0.5 - 4.5V		24V
H 4 - 20mA		24V
SUPPLY CURRENT 12mA TYP. 20mA MAX. PLUS O/P CURRENT		
CONNECTIONS;	CABLE	CONNECTOR
+Ve	RED	:1
0V	BLACK	:3
OUTPUT	WHITE	:2
BODY	SCREEN	:4

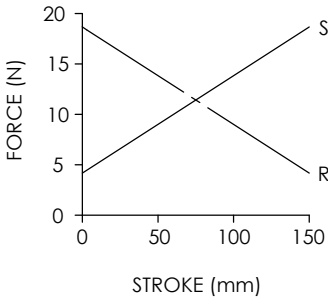
CABLE; 0.2mm², O/A SCREEN, PUR JACKET, SUPPLIED WITH 50cm OR REQUIRED LENGTH IN cm (15000cm MAX).
STANDARD 3-CORE: BLACK Ø4mm JACKET e.g. L50
CONNECTORS; MAXIMUM CONDUCTOR CROSS SECTION 0.25mm²

RANGE OF DISPLACEMENT FROM 0-2mm TO 0-350mm
IN INCREMENTS OF 1mm e.g.36.
BODY MATERIAL:- STAINLESS STEEL.

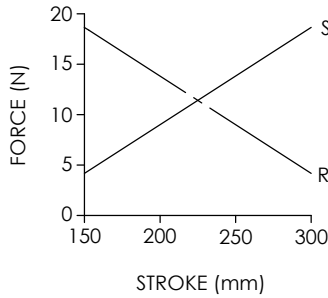
FURTHER OPTIONS:
SINGLE PAIR OF BODY CLAMPS (CODE 'P')
TWO PAIRS OF BODY CLAMPS (CODE 'P2')
SPRING RETURN PUSH-ROD, TRAVEL ≤ 300mm
RETURN TO EXTENDED POSITION (CODE 'R')
RETURN TO RETRACTED POSITION (CODE 'S')

DOMES END* (CODE 'T') IN CONJUNCTION WITH SPRUNG PUSH-ROD (CODE 'R')
PUSH-ROD FREE (CODE 'V') N.b. NOT AVAILABLE WITH SPRUNG OPTION.
MAGNETIC TIP (CODE 'WA')

NOTE: ROD-EYE ORIENTATION RELATIVE TO GLAND/CONNECTOR NOT GUARANTEED.
THE PUSH-ROD RETRACTS AND EXTENDS 2mm NOM. AT EITHER END OF CALIBRATED TRAVEL.
'V' CODED PUSH-ROD WILL DEPART SENSOR BODY




SPRING FORCE VS STROKE
(CODE 'R' OR 'S' <150mm STROKE)

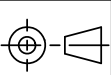


SPRING FORCE VS STROKE
(CODE 'R' OR 'S' >150mm STROKE)

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
L	ADDED SPRING RETURN/RADIAL END CAP/MAG TIP	ASC	23/09/2021	ASC



APPROVED BY PDM	REV L		X ±0.4 X.X ±0.2 X.XX ±0.1 DIMS mm
DESCRIPTION P117 SLIM LINE LINEAR POSITION SENSOR			
SCALE 2:3	DRAWING NUMBER P117-11		
A3 SHEET 1 OF 1			



P117 SLIM-LINE LINEAR POSITION SENSOR

Position feedback for industrial and scientific applications

- **Non-contacting inductive technology to eliminate wear**
- **Travel set to customer's requirement**
- **Compact 19 mm diameter body,**
- **High accuracy and stability**
- **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 P117 is an affordable, durable, high-accuracy position sensor designed for industrial and scientific feedback applications.

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 unit is very compact and space-efficient with a small 19mm diameter body. The sensor is very robust, the body and push rod being made of stainless steel. The sensor is easy to install with mounting options including M5 male stud and M5 rod eye bearing. The push rod can be supplied free or captive, with male M5 thread, M5 rod eye or magnetic tip. 1/4" rod eye option available. Like all Positek® sensors, the P117 provides a linear output proportional to travel. Each unit is supplied with the output calibrated to the travel required by the customer, from 5 to 350mm and with full EMC protection built in. The P117 offers a range of mechanical and electrical options, environmental sealing is IP67.

SPECIFICATION

Dimensions

Body diameter	19 mm
Body Length	
(Axial version)	calibrated travel + 109.7 mm
(Radial version)	calibrated travel + 115 mm - cable
(Radial version)	calibrated travel + 118.5 mm - connector

For full mechanical details see drawing P117-11

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 &
	$< \pm 0.01\%$ FS/°C Offset
	> 10 kHz (-3dB)

Frequency Response

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

P117-11

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:

www.positek.com sales@positek.com

Tel: +44(0)1242 820027 fax: +44(0)1242 820615

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

P117-17j

1 of 2



P117 SLIM-LINE LINEAR 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 0-350mm (e.g. 76mm).

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

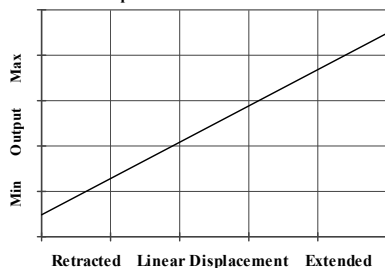
Connector - Hirschmann ELWIK 4102 Axial or Radial, IP67
Cable with Pg 9 gland Axial, IP67
Cable with boot. Radial, IP67
Cable length >50 cm – please specify length in cm

MOUNTING OPTIONS

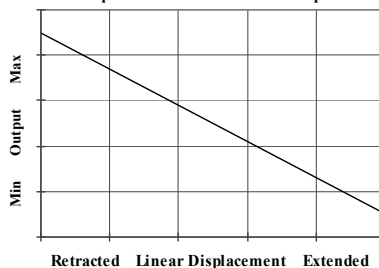
M5 rod eye bearing or M5x0.8 male thread (radial versions), Body Tube Clamp/s (axial or radial versions). 1/4" rod eye option available.

PUSH ROD OPTIONS – Retained[†] or Free with M5x0.8 male thread, M5 rod eye bearing or Magnetic tip.
[†] standard, retained with male thread.

Output Characteristic - Standard



Output Characteristic - Reverse option



For further information please contact:

www.positek.com sales@positek.com

Tel: +44(0)1242 820027 fax: +44(0)1242 820615
Positek, Andoversford Industrial Estate, Cheltenham GL54 4LB. U.K.

P117 Slim-Line Linear Position Sensor

	a	b	c	d	e	f	g	h	
P117	.	Displacement	Output	Connections	Option	Option	Option	Option	Z-code

a Displacement (mm)		Value
Displacement in mm	e.g. 0 - 254 mm	254
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
Cable Gland - Radial	IP67 metal	IBxx
Connector - Axial	IP67 M12 IEC 60176-2-101 nylon	J
	pre-wired	Jxx
	IP67 M12 IEC 60176-2-101 nylon	K
Connector - Radial	pre-wired	Kxx
	IP67 M8 IEC 60176-2-104 nylon	KA
	pre-wired	KAxx
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 Body Fittings		Code
None - default	Male Thread M5x0.8x10 long - Radial body style only.	blank
M5 Rod-eye Bearing	Radial body style only	N
e Body Clamps		Code
None - default		blank
Body Clamps - 1 pair		P
f Push Rod Fittings		Code
None - default	Male Thread M5x0.8x10 long	blank
M5 Rod-eye Bearing		U
Magnetic Tip		WA
g Push Rod Options		Code
Captive - default	Push rod is retained	blank
Non-captive	Push rod can depart body	V

h Z-code	Code
≤± 0.1% @20°C Independent Linearity displacement between	Z650
Connector IP67 M12 IEC 60947-5-2 must have option 'J'	Z601
≤± 0.1% @20°C Independent Linearity displacement between 10mm & 400mm only!	Z650
1/4" Rod eye options available	Z827

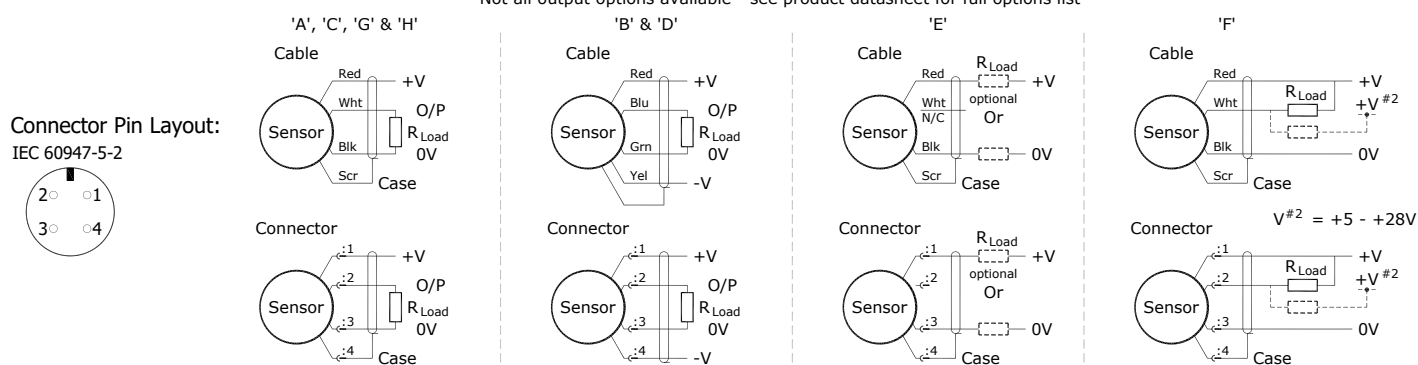


Installation Information

P117 SLIM-LINE LINEAR 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

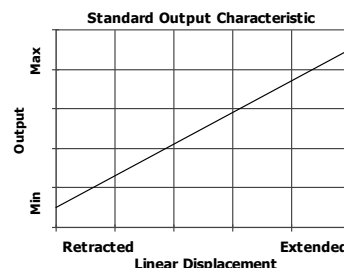


Mechanical Mounting:

Depending on options;
Body can be mounted by M5x0.8 male thread, M5 rod eye or by clamping the sensor body - body clamps are available, if not already ordered. Target by M5x0.8 male thread or M5 rod eye. It is assumed that the sensor and target mounting points share a common earth.

Output Characteristic:

Target is extended 2 mm from end of body at start of normal travel. The output increases as the target extends from the sensor body, the calibrated stroke is between 5 mm and 350 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 take output negative of 0 volts.

For further information please contact:

www.positek.com sales@positek.com

Tel: +44(0)1242 820027 fax: +44(0)1242 820615

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

P117-19h

1 of 1