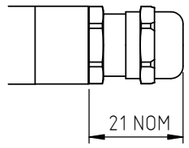
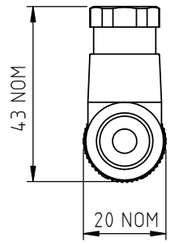
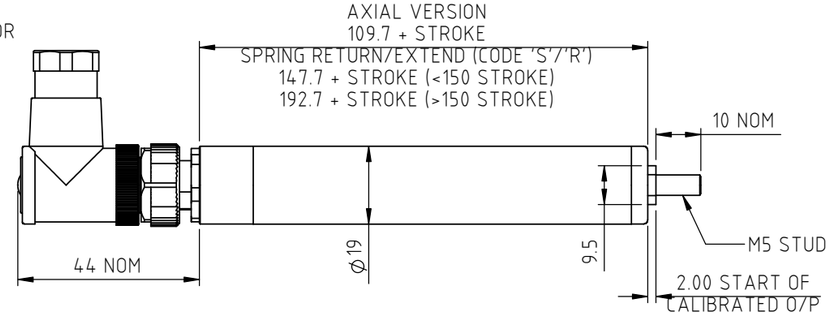
AXIAL
IP67 CABLE GLAND
(CODE 'Lxx'/'LQxx')

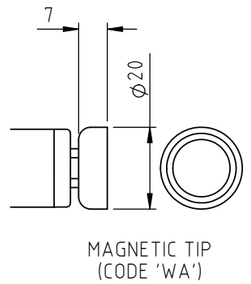


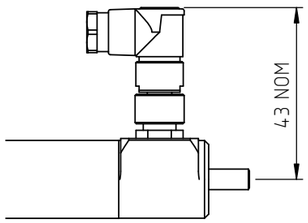
AXIAL
IP67 M12 CONNECTOR
IEC 61076-2-101
(CODE 'J')



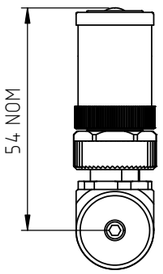
AXIAL VERSION
109.7 + STROKE
SPRING RETURN/EXTEND (CODE 'S'/'R')
147.7 + STROKE (<150 STROKE)
192.7 + STROKE (>150 STROKE)



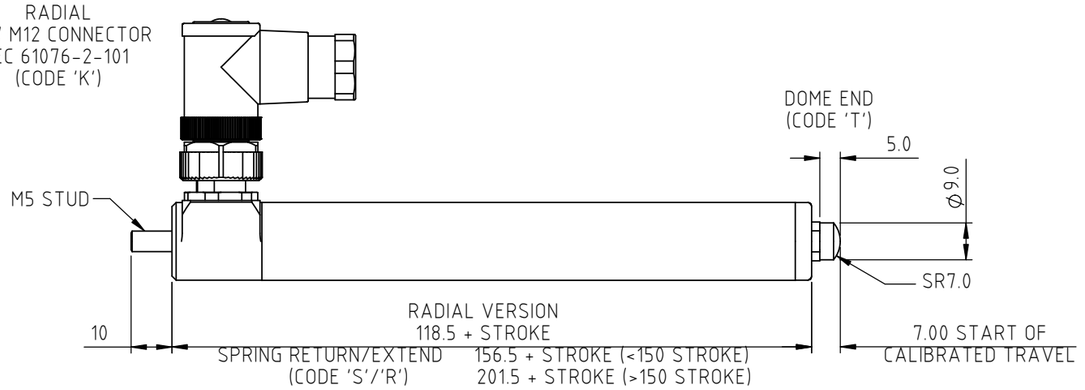




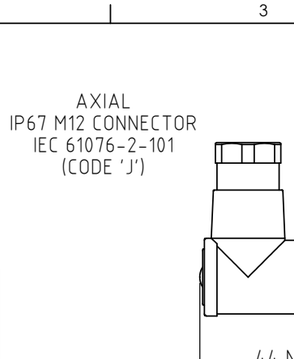
RADIAL
IP67 M8 CONNECTOR
IEC 61076-2-104
(CODE 'KA')

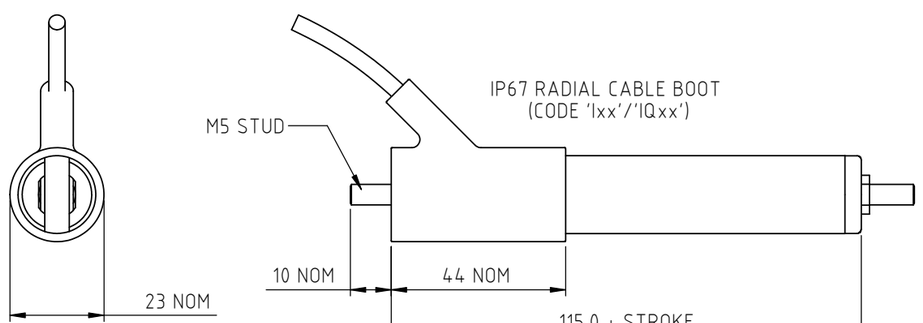


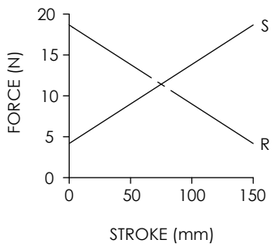
RADIAL
IP67 M12 CONNECTOR
IEC 61076-2-101
(CODE 'K')



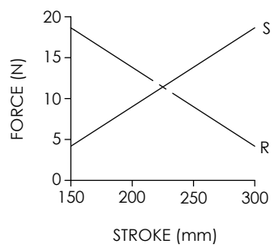
RADIAL
IP67 (M8) CABLE GLAND
(CODE 'IBxx'/'IBQxx')







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



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

ELECTRICAL OPTIONS/ SPECIFICATIONS

OUTPUT	SUPPLY
A 0.5 - 4.5V RATIOMETRIC	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')

DOME 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

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

Positek

APPROVED BY	REV		X ±0.4 X.X ±0.2 X.XX ±0.1 DIMS mm
PDM	L		

DESCRIPTION
P117 SLIM LINE LINEAR POSITION SENSOR

SCALE 2:3
A3

DRAWING NUMBER
P117-11
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. Captive push rods can be sprung loaded in either direction. 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
sprung < 150mm stroke	calibrated travel + 147.7 mm
sprung ≥ 150mm stroke	calibrated travel + 192.7 mm
(Radial version)	calibrated travel + 118.5 mm
sprung < 150mm stroke	calibrated travel + 156.5 mm
sprung ≥ 150mm stroke	calibrated travel + 201.5 mm
Push rod extension	calibrated travel + 2 mm, OD 9.5 mm
For full mechanical details see drawing P117-11	
Independent Linearity	≤ ± 0.25% FSO @ 20°C
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	
P117-11	Sensor Outline

3D models, step or .igs 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 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.
It also overcomes the drawbacks of LVDT technology – bulky coils, poor length-to-stroke ratio and the need for special magnetic materials, no requirement for separate signal conditioning.
We also offer a range of ATEX-qualified intrinsically-safe sensors.

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

a **Displacement**	**Value**
Factory set to any length from 0-5 mm to 0-350 mm (e.g. 0-76 mm)	**76**

b **Output**

Supply V_{dc} (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**

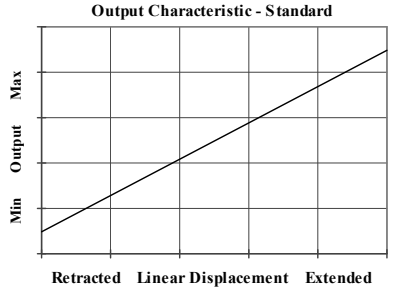
Supply Current 'A', 'C', 'G' 10mA typical, 12mA max. 'H' 30mA typical, 35mA max.

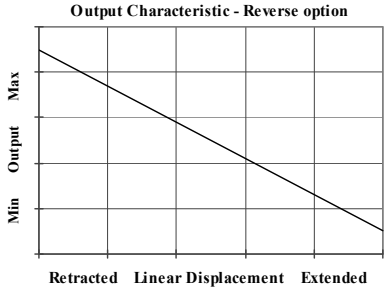
c **Connections**	**Code**
Cable boot radial IP67	**Ixx**
Cable gland radial IP67 Pg9, metal	**IAxx**
Cable gland radial IP67 M8, metal	**IBxx**
Connector axial IP67 4 pin M12 IEC 61076-2-101, nylon	**J**
Connector axial IP67 4 pin M12 IEC 61076-2-101, nylon pre-wired	**Jxx**
Connector radial IP67 4 pin M12 IEC 61076-2-101, nylon	**K**
Connector radial IP67 4 pin M12 IEC 61076-2-101, nylon pre-wired	**Kxx**
Connector radial IP67 4 pin M8 IEC 61076-2-104, nylon	**KA**
Connector radial IP67 4 pin M8 IEC 61076-2-104, nylon pre-wired	**KAxx**
Cable gland axial IP67 Pg9, metal	**Lxx**

Specify required cable length **'xx'** in cm. e.g. L2000 specifies axial cable gland with 20 m of cable, 50 cm supplied as standard.

d **Body Fittings**	**Code**
None axial version or Male Thread M5x0.8x10 long radial version default	blank
M5 Rod-eye bearing radial version only	**N**

e **Body Clamps**		**Code**
None default		blank
Body Clamps 1 pair		**P**
f **Sprung Push Rod**		**Code**
Not sprung default		blank
Spring extend	Captive push rod only. **Note!** sensor length change.	**R**
Spring retract		**S**
g **Push Rod Fittings**		**Code**
Male thread M5x0.8x10 long default		blank
Dome end with spring extend option 'R'		**T**
M5 Rod-eye Bearing		**U**
Magnetic Tip		**WA**
h **Push Rod**		**Code**
Captive push rod retained default		blank
Non-captive push rod can depart body		**V**
j **Z-code (optional)**		**Code**
≤± 0.1% FSO @20°C Independent Linearity 0 - 10 mm min.		**Z650**
¼" Rod eyes with options 'N' and/or 'U'		**Z827**





For further information please contact:
www.positek.com sales@positek.com
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Positek, Andoversford Industrial Estate, Cheltenham GL54 4LB. U.K.

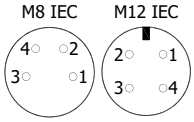
Installation Information

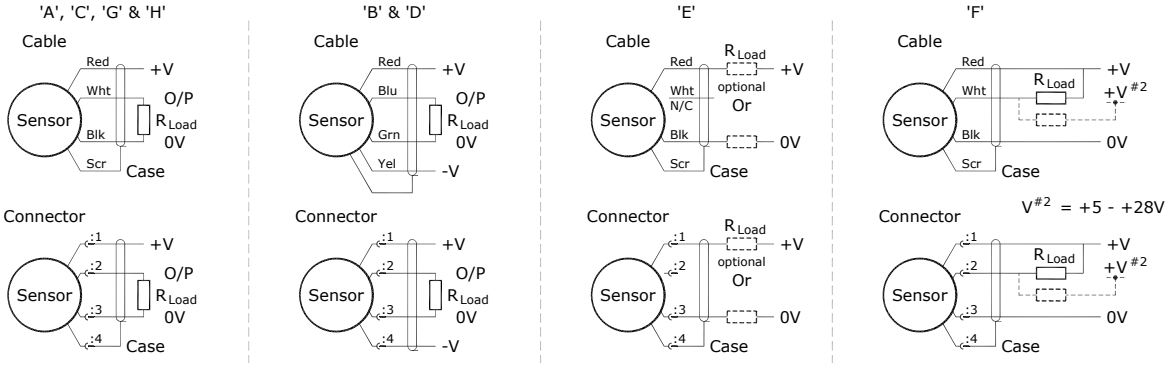
P117 SLIM-LINE LINEAR POSITION SENSOR

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)	≥ 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

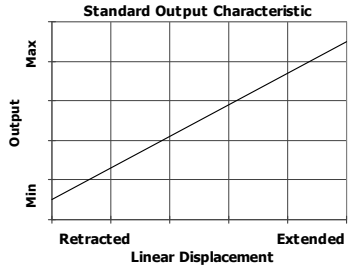
Connector Pinout
(Front View)





Mechanical Mounting: Depending on options; Body can be mounted by M5x0.8 male thread, rod eye or by clamping the sensor body - body clamps are available, if not already ordered. Target by M5x0.8 male thread, rod eye or magnetic tip. 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 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:
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