

ELECTRICAL OPTIONS/ SPECIFICATIONS

OUTPUT	SUPPLY (NOM.)
'A' 0.5 - 4.5V RATIOMETRIC	5V
'C' 0.5 - 9.5V	24V
'G' 0.5 - 4.5V	24V
SUPPLY CURRENT 12mA TYP. 20mA MAX.	
'H' 4 TO 20mA SOURCE†	24V
† DRIVE 300Ω MAXIMUM TO 0V	
CONNECTIONS; CABLE 3-CORE	
+Ve	RED
0V	BLACK
OUTPUT	WHITE
BODY	SCREEN

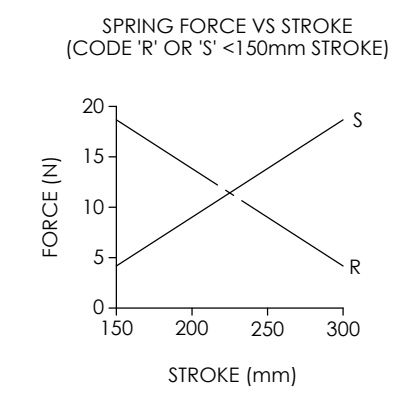
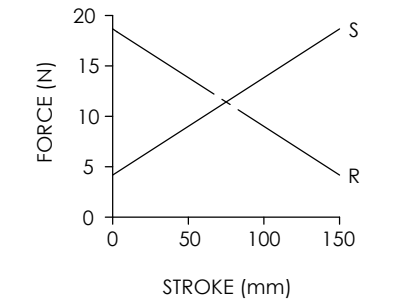
Pg7 CABLE GLAND: IP68 10BAR/IP69K  
 CABLE: 0.2mm<sup>2</sup>, O/A SCREEN, PUR JACKET, SUPPLIED WITH 50cm  
 OR REQUIRED LENGTH IN cm (15000cm MAX).  
 STANDARD 3-CORE: BLACK Ø4mm JACKET e.g. L50

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')

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

MAXIMUM WORKING DEPTH: 100m/325ft.  
 WHERE THR FREE END OF THE CABLE IS TO BE TERMINATED IN A SUBMERGED POSITION, ADEQUATE SEALING MUST BE PROVIDED TO PROTECT CONNECTIONS.



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
B	RAN1366 IP69K RATING ADDED, VIEWS MODIFIED	PDM	05/04/2024	PDM
A	FIRST RELEASE	ASC	14/07/2021	-



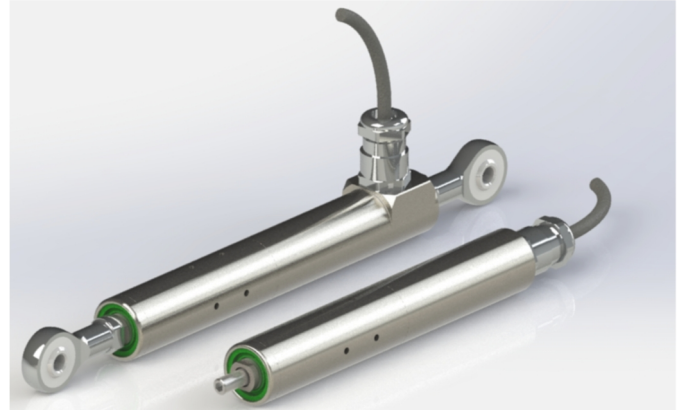
APPROVED BY RDM	REV B		X ±0.4 X.X ±0.2 X.XX ±0.1 DIMs mm
DESCRIPTION 10BAR SLIM-LINE SUBMERSIBLE LINEAR POSITION SENSOR			
SCALE 3:4	DRAWING NUMBER S119-11		
A3	SHEET 1 OF 1		



## S119 SUBMERSIBLE SLIM-LINE LINEAR POSITION SENSOR

Position feedback for industrial, marine, mobile and harsh environmental applications

- **Sealing to IP68 10 bar / IP69K**
- **Stainless steel 316 construction**
- **Travel set to customer's requirement**
- **Compact 19 mm diameter body,**
- **High accuracy and stability**
- **Non-contacting inductive technology to eliminate wear**



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 S119 is an affordable, durable, high-accuracy position sensor designed for industrial, marine, mobile and harsh environmental applications. It is particularly suitable for OEMs seeking good sensor performance for arduous applications such as wash down, marine, agricultural, mobile and industrial machinery. 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 and has a complete 316 stainless steel construction. 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 or M5 rod eye or dome end. Captive push rods can be sprung loaded in either direction. Like all Positek® sensors, the S119 provides a linear output proportional to travel. Each unit is supplied with the output calibrated to the travel required by the customer, up to 350mm and with full EMC protection built in. The S119 offers a range of mechanical and electrical options, environmental sealing is IP68 10 bar / IP69K.

### 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 + 125 mm
sprung < 150mm stroke	calibrated travel + 163 mm
sprung ≥ 150mm stroke	calibrated travel + 208 mm
Push rod extension	calibrated travel + 2 mm, OD 9.5 mm

*For full mechanical details see drawing S119-11*

#### Independent Linearity

≤ ± 0.25% FSO @ 20°C
≤ ± 0.1% FSO @ 20°C* available upon request.

\*Sensors with calibrated travel of 10 mm and above.

#### Temperature Coefficients

< ± 0.01%/°C Gain &
< ± 0.01%FS/°C Offset
> 10 kHz (-3dB)

#### Frequency Response

Infinite
< 0.02% FSO

#### 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

IP68 10 bar/IP69K

#### EMC Performance

EN 61000-6-2, EN 61000-6-3

#### Vibration

IEC 68-2-6: 10 g

IEC 68-2-29: 40 g

#### Shock

350,000 hrs 40°C Gf

#### MTBF

#### Drawing List

S119-11

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](http://www.positek.com) [sales@positek.com](mailto:sales@positek.com)

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

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

S119-17b

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# S119 SUBMERSIBLE SLIM-LINE LINEAR POSITION SENSOR

Position feedback for industrial, marine, mobile and harsh environmental applications

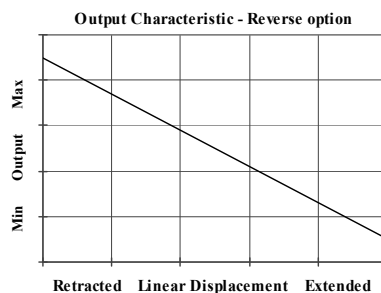
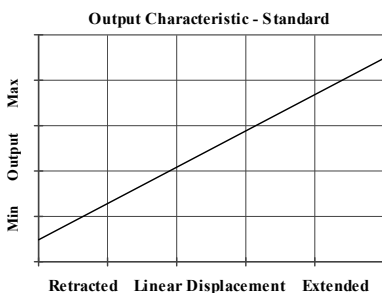
## How Positek's technology eliminates wear for longer life

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.

S119	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. 0-66 mm)	<b>66</b>
b Output	Code
Supply $V_{dc}$ (tolerance)	Output
+5V (4.5 - 5.5V)	0.5 - 4.5V (ratiometric with supply)
+24V nom. (13 - 28V)	0.5 - 9.5V
+24V nom. (9 - 28V)	0.5 - 4.5V
+24V nom. (13 - 28V)	4 - 20mA 3 wire Source
Supply Current 'A', 'C', 'G' 10mA typical, 12mA max. 'H' 30mA typical, 35mA max.	
c Connections	Code
Cable gland radial IP68 10bar / IP69K Pg7, metal	<b>Ixx</b>
Cable gland axial IP68 10bar / IP69K Pg7, metal	<b>Lxx</b>
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 default	blank
M5 Rod-eye bearing radial version only.	<b>N</b>
e Body Clamps	Code
Body Clamps 1 pair	<b>P</b>
f Sprung Push Rod	Code
Not sprung default	blank
Spring extend captive push-rod.	<b>R</b>
Spring retract captive push-rod.	<b>S</b>
g Push Rod Fittings	Code
Male thread M5x0.8x10 long default	blank
Dome end with spring extend option 'R'	<b>T</b>

g Push Rod Fittings	Code
M5 Rod-eye Bearing	<b>U</b>
Magnetic Tip	<b>WA</b>
h Push Rod	Code
Captive Push rod is retained default	blank
Non-captive push rod can depart body	<b>V</b>
j Z-code	Code
$\leq \pm 0.1\%$ FSO @20°C Independent Linearity 0 - 10 mm min.	<b>Z650</b>
1/4" Rod eyes with options 'N' and/or 'U'	<b>Z827</b>



For further information please contact:

[www.positek.com](http://www.positek.com) [sales@positek.com](mailto:sales@positek.com)

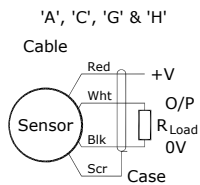
Tel: +44(0)1242 820027 fax: +44(0)1242 820615  
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# Installation Information

## S119 SUBMERSIBLE SLIM-LINE LINEAR POSITION SENSOR

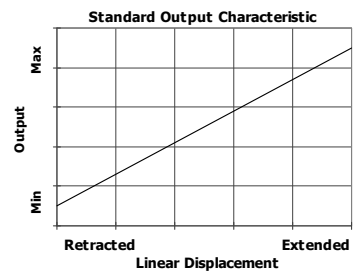
Output Option	Output Description:	Supply Voltage: $V_s$ (tolerance)	Load resistance: (include leads for 4 to 20mA O/Ps)
A	0.5 - 4.5V (ratiometric with supply)	+5V (4.5 - 5.5V)	$\geq 5k\Omega$
C	0.5 - 9.5V	+24V nom. (13 - 28V)	$\geq 5k\Omega$
G	0.5 - 4.5V	+24V nom. (9 - 28V)	$\geq 5k\Omega$
H	4 - 20mA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



**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.

Where the free end of the cable is to be terminated in a submerged position, adequate sealing must be provided to protect connections.

**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.



**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.