mm **S119**

APPLICATION

- 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, Althen 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 Althen 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.

SPECIFICATIONS

Dimensions[1] **Body diameter** **Body length (Axial version)** sprung < 150mm stroke sprung ≥ 150mm stroke (Radial version) sprung < 150mm stroke sprung ≥ 150mm stroke **Push rod extension**	 19 mm calibrated travel + 109.7 mm calibrated travel + 147.7 mm calibrated travel + 192.7 mm calibrated travel + 125 mm calibrated travel + 163 mm calibrated travel + 208 mm calibrated travel + 2 mm, OD 9.5 mm
Independent Linearity	≤ ± 0.25% FSO @ 20°C ≤ ± 0.5% FSO @ 20°C[2] 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** **Storage**	 -40°C to +125°C standard -20°C to +85°C all output options -40°C to +125°C
Sealing	IP68 10bar/IP69K
EMC Performance	EN 61000-6-2, EN 61000-6-3
Vibration	IEC 68-2-6: 10 g
Shock	IEC 68-2-29: 40 g

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SPECIFICATIONS (CONTINUED)

MTBF	350,000 hrs 40°C Gf
Drawing List[3] **S119-11**	Sensor Outline

[1] *For full mechanical details see drawings S119-11*
[2] *Sensors with calibrated travel of 10 mm and above.*
[3] *3D models, step or .igs format, available on request*

HOW ALTHEN'S TECHNOLOGY ELIMINATES WEAR FOR LONGER LIFE

Althen'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. An Althen sensor, based on simple inductive coils using Althen'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)	**66**
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 gland radial IP68 10bar / IP69K Pg7, metal	**Ixx**
Cable gland axial IP68 10bar / IP69K Pg7, 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 default	**blank**
M5 Rod-eye bearing radial version only	**N**
e Body Clamps	**Code**
Body Clamps 1 pair	**P**

f Sprung Push Rod	**Code**
Not sprung default	**blank**
Spring extend captive push-rod.	**R**
Spring retract captive push-rod.	**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 is 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**

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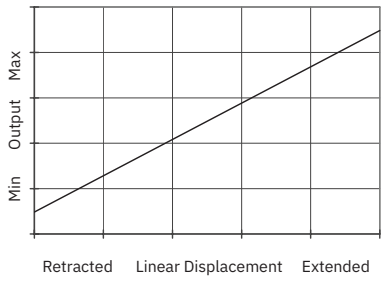
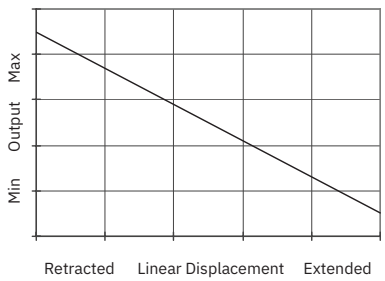
Output Characteristic - Standard



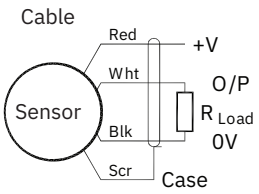
Output Characteristic - Reverse option



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)	300Ω max.

'A', 'C' , 'G' & 'H'



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.

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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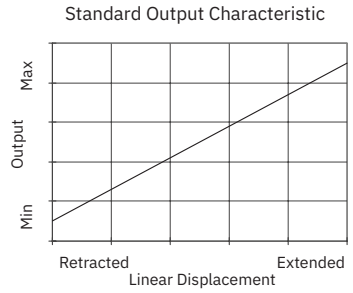
OUTPUT CHARACTERISTIC

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.



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The information provided herein is to the best of our knowledge true and accurate, it is provided for guidance only. All specifications are subject to change without prior notification.

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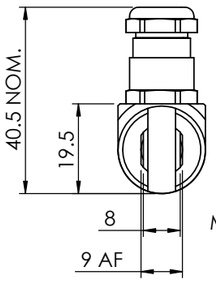
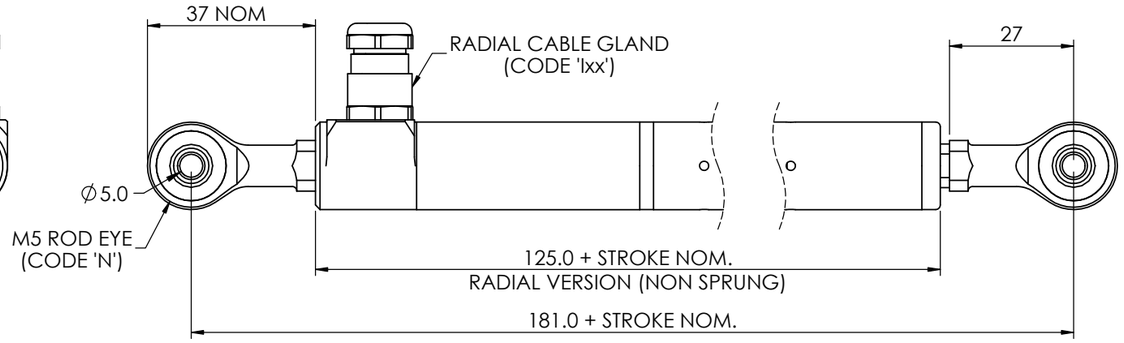
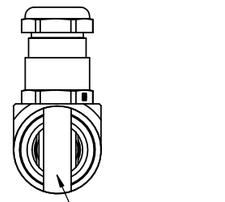
We create integrated sensor and measurement solutions. In addition we offer services such as calibration, repairs, design & engineering, training and renting of measurement equipment.

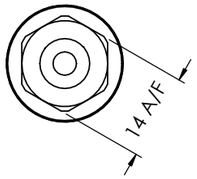
Benelux	Germany/Austria/Switzerland	France	Sweden	USA/Canada	Other countries
sales@althen.nl	info@althen.de	info@althensensors.fr	info@althensensors.se	info@althensensors.com	info@althensensors.com

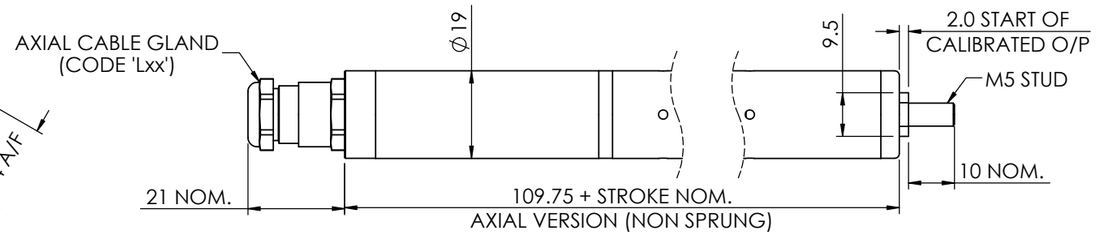






DIRECTION OF TRAVEL →





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

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

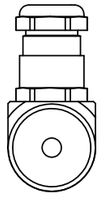
FURTHER OPTIONS:
SINGLE PAIR OF BODY CLAMPS (CODE 'P')
TWO PAIRS OF BODY CLAMPS (CODE 'P2')

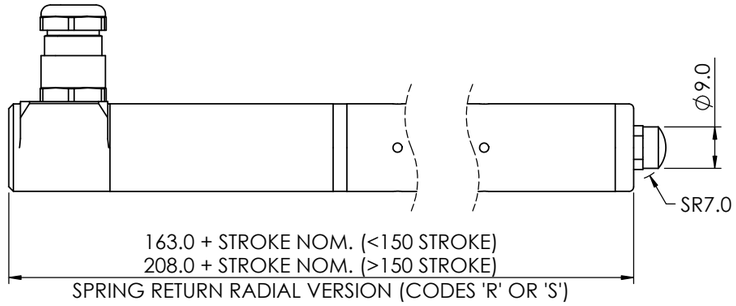
SPRING RETURN PUSH-ROD, TRAVEL ≤ 300mm
RETURN TO EXTENDED POSITION (CODE 'R')
RETURN TO RETRACTED POSITION (CODE 'S')

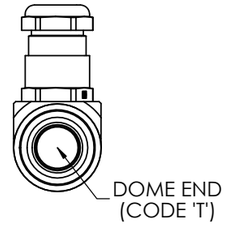
DOME END* (CODE 'T') IN CONJUNCTION WITH SPRUNG PUSH-ROD (CODE 'R')
PUSH-ROD FREE (CODE 'V') N.b. NOT AVAILABLE WITH SPRUNG OPTION.
MAGNETIC TIP (CODE 'WA')

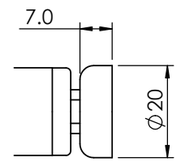
NOTE: ROD-EYE ORIENTATION RELATIVE TO GLAND/CONNECTOR NOT GUARANTEED.
THE PUSH-ROD RETRACTS AND EXTENDS 2mm NOM. AT EITHER END OF CALIBRATED TRAVEL.
'V' CODED PUSH-ROD WILL DEPART SENSOR BODY

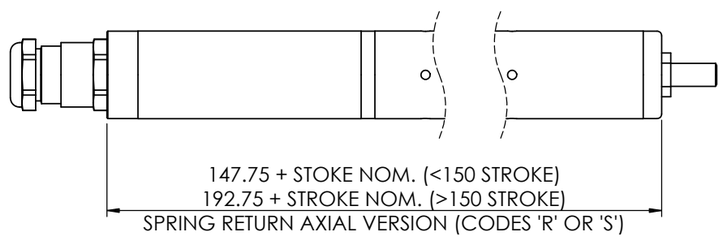
MAXIMUM WORKING DEPTH: 100m/325ft.
WHERE THR FREE END OF THE CABLE IS TO BE TERMINATED IN A SUBMERGED POSITION, ADEQUATE SEALING MUST BE PROVIDED TO PROTECT CONNECTIONS.

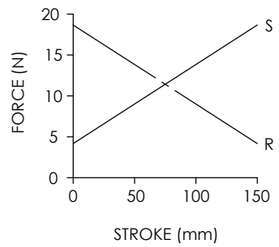




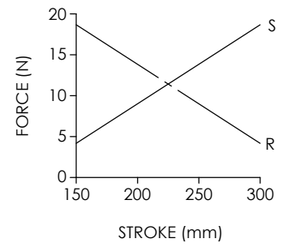








SPRING FORCE VS STROKE
(CODE 'R' OR 'S' <150mm STROKE)



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

APPROVED BY	REV		X ±0.4 X.X ±0.2 X.XX ±0.1 DIMS mm
RDM	B		

DESCRIPTION
10BAR SLIM-LINE SUBMERSIBLE LINEAR POSITION SENSOR

SCALE 3:4	DRAWING NUMBER
A3	S119-11 SHEET 1 OF 1