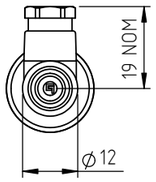
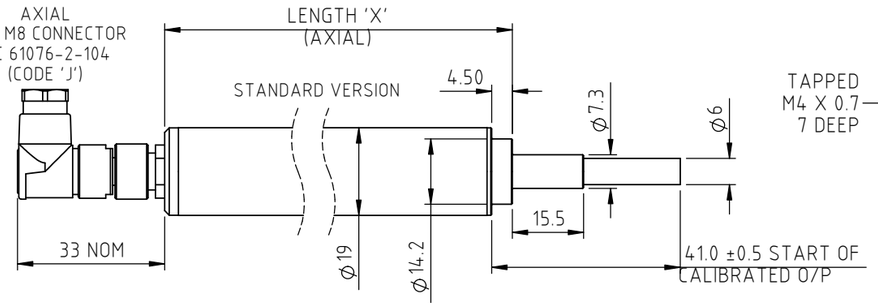
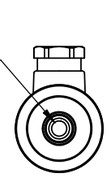
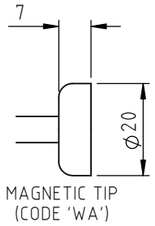








ELECTRICAL OPTIONS/ SPECIFICATIONS

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

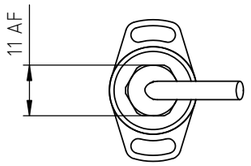
SUPPLY CURRENT 12mA TYP. 20mA MAX. PLUS O/P CURRENT

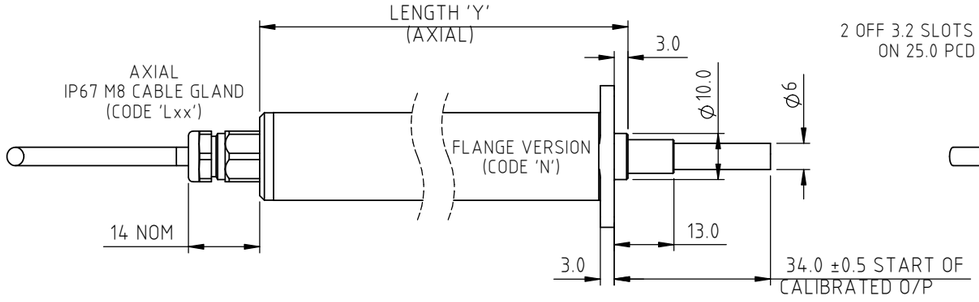
CONNECTIONS;	CABLE	CONNECTOR
+Ve	RED	:1
0V	BLACK	:3
OUTPUT	WHITE	:2
BODY	SCREEN	:4

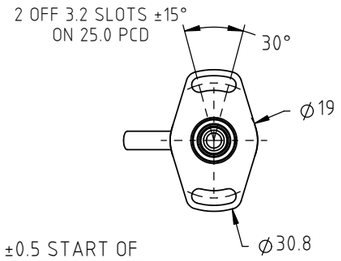
CABLE; 3-CORE 0.2mm², O/A SCREEN, PUR JACKET Ø4mm
SUPPLIED WITH 50cm OR REQUIRED LENGTH IN cm. e.g. 'L50'
CONNECTORS; MAXIMUM CONDUCTOR CROSS SECTION 0.25mm²

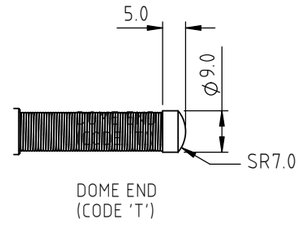
RANGE OF DISPLACEMENT FROM 0-51mm TO 0-100mm IN INCREMENTS OF 1mm e.g.76.
BODY MATERIAL:- STAINLESS STEEL.
FLANGE BASE MATERIAL:- STAINLESS STEEL (CODE 'N')

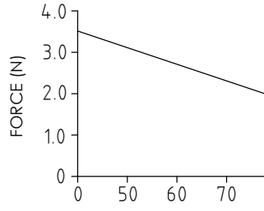
FURTHER OPTIONS:
SINGLE PAIR OF BODY CLAMPS (CODE 'P')
SPRUNG PLUNGER, TO EXTENDED POSITION (CODE 'R')
DOME END (CODE 'T') IN CONJUNCTION WITH SPRUNG PLUNGER (CODE 'R')
PLUNGER FREE (CODE 'V') NOT AVAILABLE WITH SPRUNG OPTION
MAGNETIC TIP (CODE 'WA')





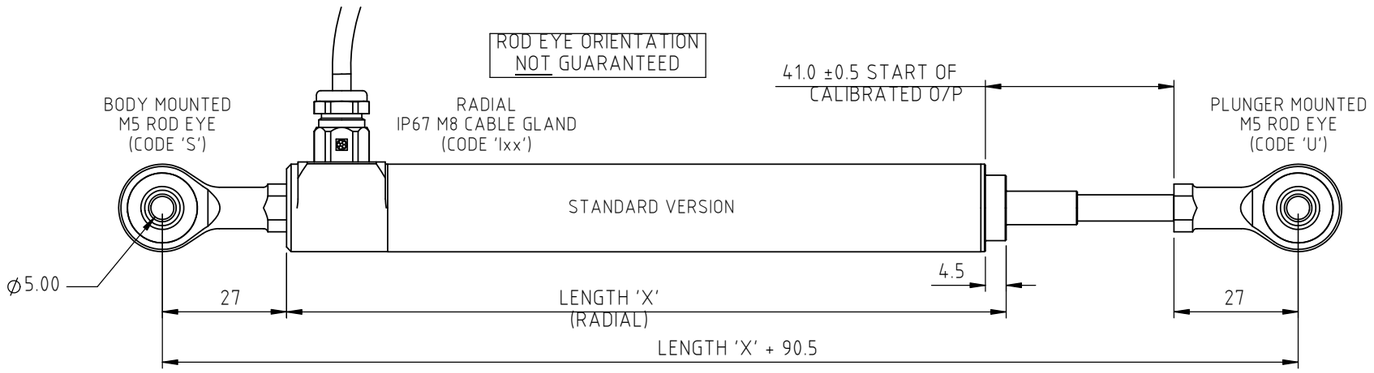


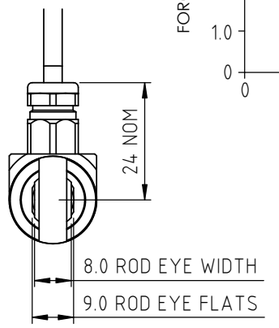


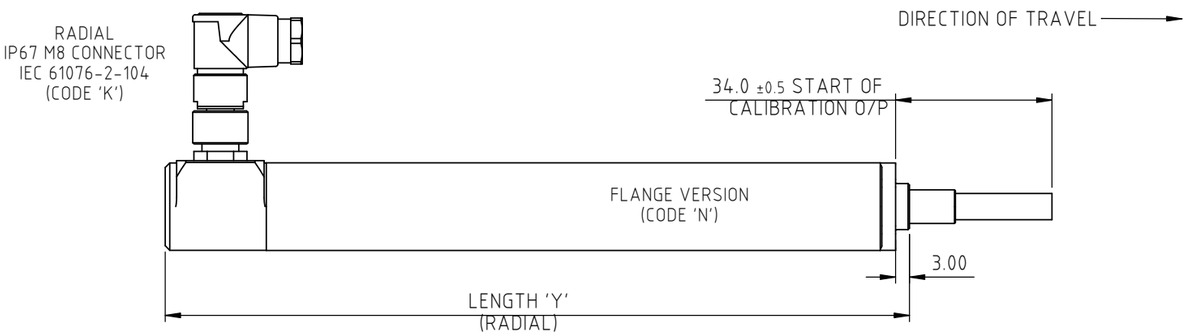


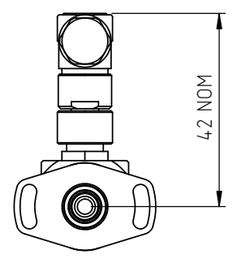
SPRING FORCE VS STROKE
(CODE 'R')

ROD EYE ORIENTATION
NOT GUARANTEED









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
D	MAG TIP & RADIAL END CAP/ROD EYES RAN1311/1312	ASC	31/03/2021	PDM

NOTE: SENSORS WITH TRAVEL UP TO 50mm ARE MADE IN STANDARD LENGTHS					
		BODY LENGTH (mm)			
TRAVEL (mm)		'X' STANDARD		'Y' FLANGE	
CALIBRATED	MECHANICAL	AXIAL	RADIAL	AXIAL	RADIAL
0-51 TO 0-70	70	137.5	156.5	143.0	162.0
0-71 TO 0-100	100	167.5	186.5	173.0	192.0

THE PLUNGER RETRACTS 8mm FROM START OF CALIBRATED TRAVEL (2mm FOR SPRUNG VERSIONS) AND EXTENDS 11mm* BEYOND END OF MECHANICAL TRAVEL.
*DOES NOT INCLUDE DIFFERENCE BETWEEN CALIBRATED AND MECHANICAL TRAVEL.
DIMENSIONS ARE NOMINAL.
'V' CODED PLUNGER WILL DEPART SENSOR BODY.

Positek

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

DESCRIPTION
P138 MID STROKE SLIM-LINE LINEAR POSITION SENSOR

SCALE	DRAWING NUMBER
3:4	P138-11
A3	SHEET 1 OF 1

P138 MID STROKE 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 durability and reliability**
- **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 P138 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 Positek® 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 flange, M5 rod eye bearings and body clamps. The plunger can be supplied free or captive, with a female M4 thread, an M5 rod eye, magnetic tip, or spring-loaded with a dome 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 options		
Calibrated Travel	Axial	Radial
(Standard)		
51 mm to 70 mm	137.5 mm	156.5mm
71 mm to 100 mm	167.5 mm	186.5 mm
(Flange)		
51 mm to 70 mm	143 mm	162 mm
71 mm to 100 mm	173 mm	192 mm
Plunger	Ø 6mm	
For full mechanical details see drawing P138-11		
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		
P138-11	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.

P138 MID STROKE 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.

P138 .	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 0-51 mm to 0-100 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 10mA typicaSupply Current 'A', 'C', 'G' 10mA typical, 12mA max. 'H' 30mA typical, 35mA max.

c **Connections**	**Code**
Cable gland radial IP67 M8, metal	**Ixx**
Connector axial IP67 4 pin M8 IEC 61076-2-104, nylon	**J**
Connector axial IP67 4 pin M8 IEC 61076-2-104, nylon, pre-wired	**Jxx**
Connector radial IP67 4 pin M8 IEC 61076-2-104, nylon	**K**
Connector radial IP67 4 pin M8 IEC 61076-2-104, nylon, pre-wired	**Kxx**
Cable gland axial IP67 M8, 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 **Housing**	**Code**
Standard default	blank
Flange Mount 2 off 3.2 mm x 30 degree wide slots, 25 mm P.C.D.	**N**
M5 Rod-eye bearing radial version only	**S**

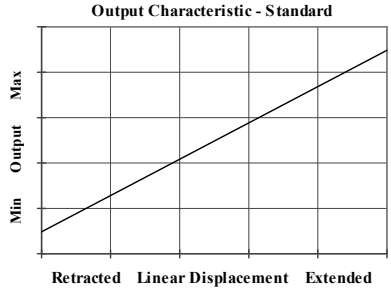
e **Body Fittings**	**Code**
None default	blank
Body Clamps 1 pair	**P**

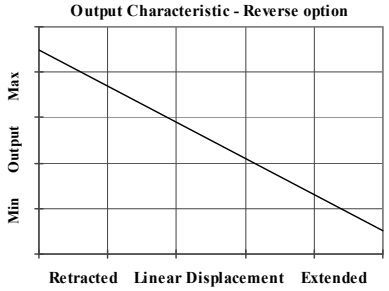
f **Sprung Plunger**	**Code**
Not sprung default	blank
Spring extend captive plunger only. Note! Supplied loose without option 'T'	**R**

g **Plunger Fittings**	**Code**
Female thread M4x0.7x7 deep default	blank
Dome end with spring extend option 'R'	**T**
M5 Rod-eye Bearing	**U**
Magnetic Tip	**WA**

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

j **Z-code (optional)**	**Code**
≤± 0.1% FSO @20°C Independent Linearity	**Z650**





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.

Installation Information

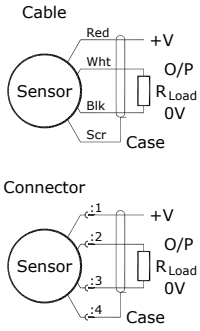
P138 MID STROKE SLIM-LINE LINEAR POSITION SENSOR

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)	300Ω max.

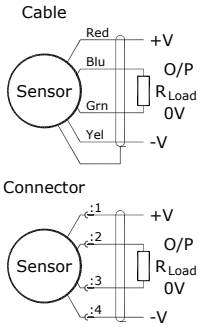
Not all output options available - see product datasheet for full options list

Connector Pinout
(Front View)
M8 IEC

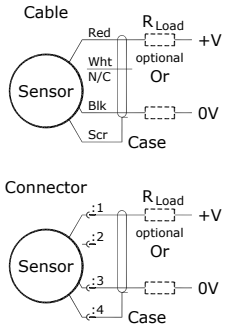
'A', 'C', 'G' & 'H'



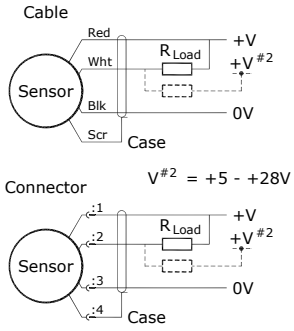
'B' & 'D'



'E'

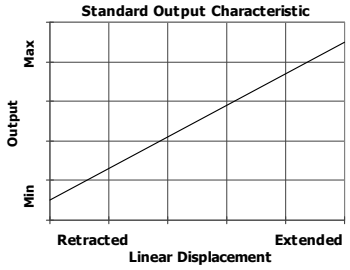


'F'



Mechanical Mounting: Depending on options, body can be mounted by flange, rod eye bearing or clamping the sensor body - body clamps are available, if not already ordered. Plunger mounted by M4x0.7 female thread, rod-eye bearing or magnetic tip - see drawing P138-11.

Output Characteristic: Plunger extended, at start of normal travel:
Standard: 41 mm* from Ø19 mm face
Flange Mount: 34 mm* from flange face
*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.

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.