

ELECTRICAL OPTIONS/ SPECIFICATIONS

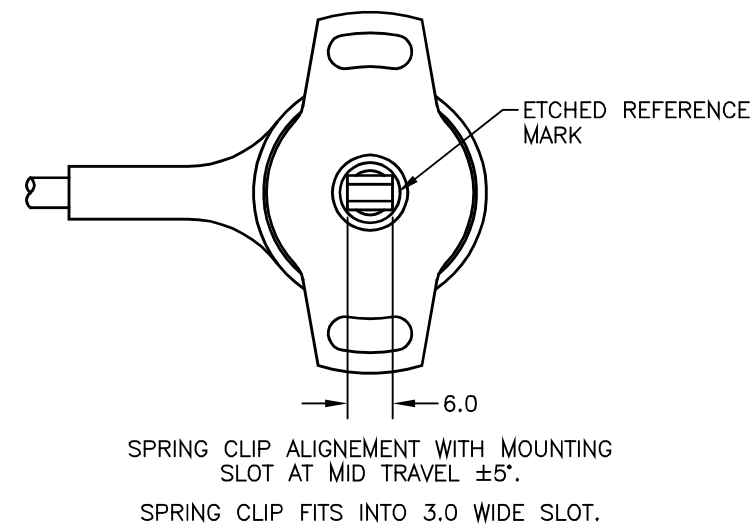
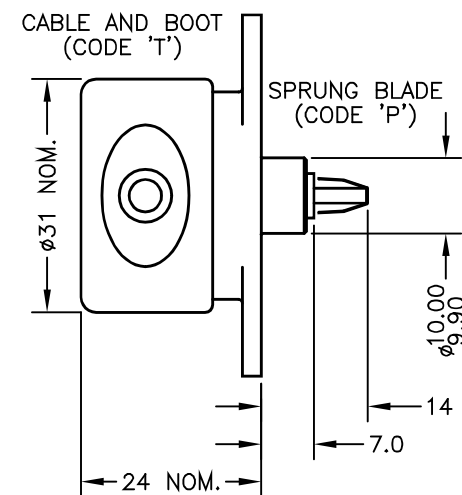
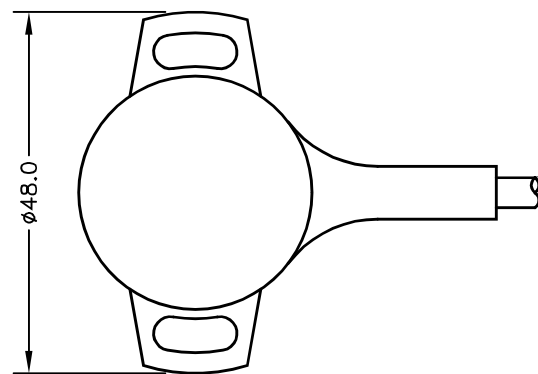
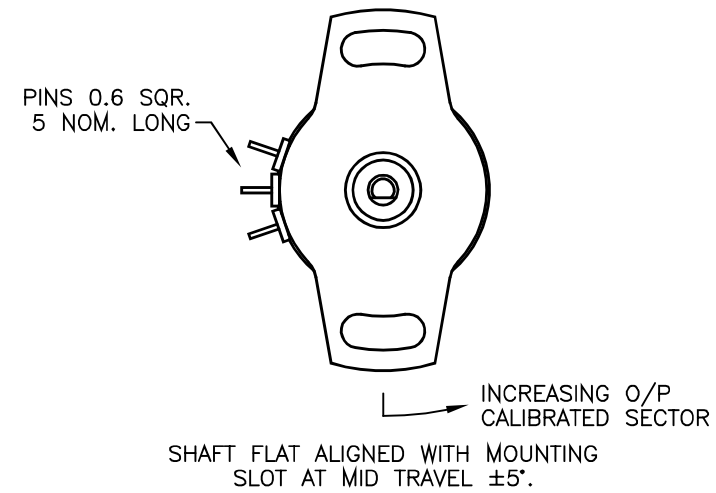
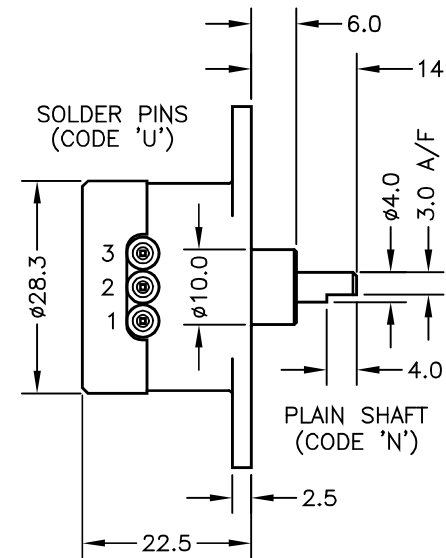
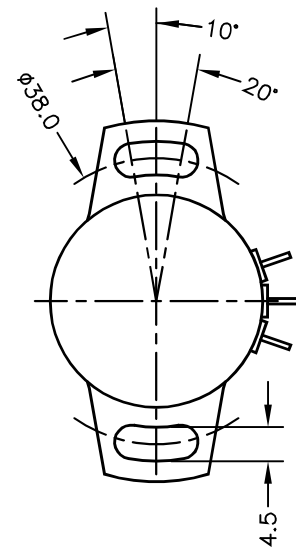
OUTPUT SUPPLY  
 CODE 'A' 0.5 TO 4.5V RATIO METRIC 5V  
 SUPPLY CURRENT 12mA TYP. 20mA MAX.

CABLE: 3 CORE 0.2mm<sup>2</sup>, O/A SCREEN, Ø4mm PUR JACKET  
 - SUPPLIED WITH 50cm OR REQUIRED LENGTH IN cm.  
 e.g. 'L50'

CONNECTIONS;  
 3 CORE PINS  
 RED '1' +Ve  
 BLACK '2' 0V  
 WHITE '3' OUTPUT  
 SCREEN BODY

RANGE OF DISPLACEMENT FROM 0-30° TO 0-140° e.g. 76°,  
 IN INCREMENTS OF 1°.

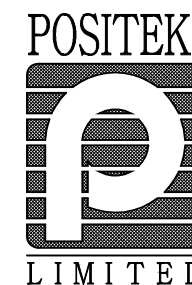
BODY MATERIAL:- ALUMINIUM ALLOY.



H	REDRAWN	PDM
I	BOSS Ø10.00 ADDED	PDM
J	ADDITIONAL DIMS/VIEWS ADDED.	PDM
K	RANGE NOTE AMENDED ~ RAN1200	PDM



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.



H	19/10/06		CHECKED BY	X	±0.4
I	15/01/09		RDS	X.X	±0.2
J	06/07/11			X.XX	±0.1
K	11/09/17	DESCRIPTION			
		P501 RIPS MINIATURE ROTARY SENSOR			
		SCALE	DRAWING NUMBER	P501-11	REV <b>K</b>
		10mm			SHEET <b>1</b> OF <b>1</b>

# RIPS® P501 MINIATURE ROTARY SENSOR

High-resolution angle feedback for industrial and scientific applications

- Non-contacting inductive technology to eliminate wear
- Angle set to customer's requirement
- Compact, durable and reliable
- 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 P501 RIPS® (Rotary Inductive Position Sensor) is an affordable, durable, high-accuracy rotary sensor designed for industrial and scientific feedback applications, but requires a smaller footprint than the P500.

Like all Positek® sensors, the P501 provides a linear output proportional with input shaft rotation. Each unit is supplied with the output calibrated to the angle required by the customer, between 30 and 140 degrees and with full EMC protection built in.

It is particularly suitable for OEMs seeking good sensor performance for applications where space is important.

Overall performance, repeatability and stability are outstanding over a wide temperature range. The sensor has a rugged nickel plated aluminium body and integrated mounting flange. The flange has two 4.3mm by 20 degree wide slots on a 48mm pitch to simplify mounting and position adjustment. Environmental sealing is to IP67 on the cable version.

## SPECIFICATION

<b>Dimensions</b>	
Body diameter	28.3 mm (solder pins) 30.8 mm (with cable boot)
Body Length (to seal face)	23.2 mm
Shaft	8.5 mm Ø 4 mm
For full mechanical details see drawing P501-11	
<b>Power Supply</b>	+5V dc nom. ± 0.5V, 10mA typ 20mA max
<b>Output Signal</b>	0.5-4.5V dc ratiometric, Load: 5kΩ min.
<b>Independent Linearity</b>	≤ ± 0.31% FSO @ 20°C - up to 80° ≤ ± 0.1% FSO @ 20°C* available upon request.
*Sensors with calibrated travel up to 80°.	
<b>Temperature Coefficients</b>	< ± 0.01%/°C Gain & < ± 0.01%FS/°C Offset > 10 kHz (-3dB)
<b>Frequency response</b>	> 10 kHz (-3dB)
<b>Resolution</b>	Infinite
<b>Noise</b>	< 0.02% FSO
<b>Torque</b>	< 20 mNm Static
<b>Environmental Temperature Limits</b>	
Operating	-40°C to +125°C
Storage	-40°C to +125°C
<b>Sealing</b>	IP67
<b>EMC Performance</b>	EN 61000-6-2, EN 61000-6-3
<b>Vibration</b>	IEC 68-2-6: 10 g
<b>Shock</b>	IEC 68-2-29: 40 g
<b>MTBF</b>	350,000 hrs 40°C Gf
<b>Drawing List</b>	
P501-11	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.

# RIPS® P501 MINIATURE ROTARY SENSOR

High-resolution angle feedback for industrial and scientific applications

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

Positek's PIPS® technology (Positek Inductive Position Sensor) is a major advance in displacement sensor design. PIPS®-based displacement transducers have the simplicity of a potentiometer with the life of an LVDT/RVDT.

PIPS® technology combines the best in fundamental inductive principles with advanced micro-electronic integrated circuit technology. A PIPS® 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.

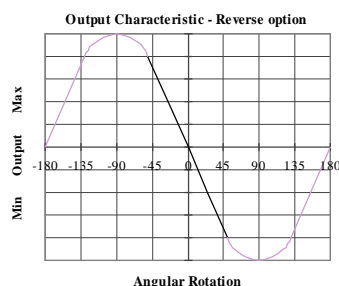
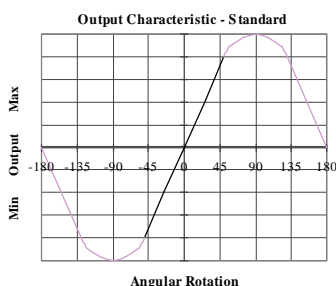
PIPS® overcomes the drawbacks of LVDT technology – bulky coils, poor length-to-stroke ratio and the need for special magnetic materials. It requires no separate signal conditioning.

Our LIPS® range are linear sensors, while RIPS® are rotary units and TIPS® are for detecting tilt position. Ask us for a full technical explanation of PIPS® technology.

We also offer a range of ATEX-qualified intrinsically-safe sensors.

## TABLE OF OPTIONS

<b>CALIBRATED TRAVEL:</b>		Factory-set to any angle from $\pm 15^\circ$ to $\pm 70^\circ$ in increments of 1 degree.
Full 360° Mechanical rotation.		
<b>ELECTRICAL INTERFACE</b>		
<b>OUTPUT SIGNAL</b>	<b>SUPPLY INPUT</b>	<b>OUTPUT LOAD</b>
0.5-4.5V dc ratiometric	+5V dc nom. $\pm 0.5V$ .	5k $\Omega$ min.
<b>CONNECTOR/CABLE OPTIONS</b>		
Solder pins		
Cable with boot	IP67	
Cable length >50 cm – please specify length in cm		
<b>MOUNTING OPTIONS</b>		
Plain 4 mm diameter shaft with flat or tongue with spring clip .		



For further information please contact:  
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 Tel: +44(0)1242 820027 fax: +44(0)1242 820615  
 Positek Ltd, Andoversford Industrial Estate, Cheltenham GL54 4LB U.K.

# RIPS® SERIES P501 Miniature Rotary Sensor

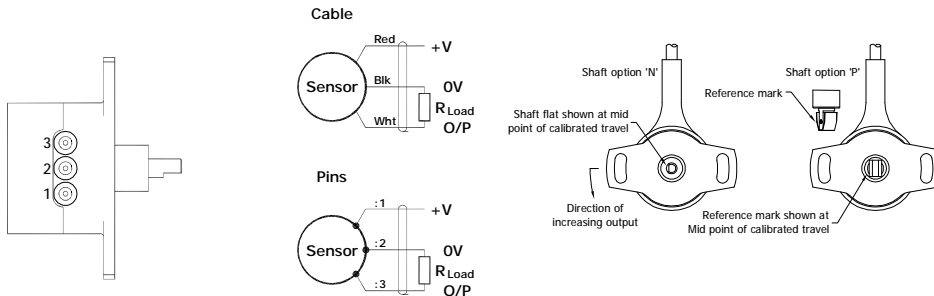
a	b	c	d	e	f		
P501	.	Displacement	A	Connections	Option	Option	Z-code

a Displacement (degrees)		Value
Displacement in degrees	e.g. 0 - 54 degrees	54
b Output		
Supply V dc V <sub>s</sub> (tolerance)	Output	Code
+5V (4.5 - 5.5v)	0.5 - 4.5V (ratiometric with supply)	A
c Connections Cable* or Connector		Code
Solder Pins	requires option 'U'	LO
Cable	requires option 'T'	Lxx
*Supplied with 50 cm as standard, specify required cable length specified in cm. e.g. L2000 specifies cable gland with 20 metres of cable. Nb: restricted cable pull strength.		
d Shaft Option		Code
Plain Shaft		N
Sprung Blade		P
e Housing Options		Code
Heatshink Boot	IP67 requires option 'Lxx'	T
None	requires option 'L0'	U
f Z-code		Code
≤± 0.1% @20°C Independent Linearity displacement up to 80 degrees only!		Z650

# Installation Information

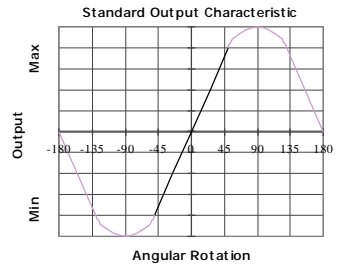
## RIPS<sup>®</sup> P501 MINIATURE ROTARY SENSOR

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)	$\geq 5k\Omega$



**Mechanical Mounting:** Flange mounted. The flange slots are 4.5mm by 20 degrees wide, 48mm pitch. The sensor should be mounted with minimal axial and radial loading on the shaft for optimum life. It is recommended that the shaft is coupled to the drive using a flexible coupling.  
 Option 'N' shaft:  $\varnothing$  4 mm x 8 mm long, flat 3 mm A/F x 4 mm. Option 'P' shaft: fits 6 x 3 mm slot.

**Output Characteristic:** The sensor has full rotational freedom and two sectors, 180° apart, over which linear response can be achieved. At the mid point of the calibrated range the output signal will be half full scale deflection, shaft alignment as sketch above. In the calibrated range the output increases as the shaft is rotated in an anti-clockwise direction viewed from the shaft. The calibrated output is factory set to be between 30 and 140°.



**Incorrect Connection Protection levels:** **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.