


RIPS[®] X502 SMALL ANGLE ROTARY SENSOR

INTRINSICALLY SAFE FOR HAZARDOUS GAS/VAPOUR ATMOSPHERES

- **Intrinsically safe for Gas to:**
 **II 1G**
- **Non-contacting inductive technology to eliminate wear**
- **Angle set to customer's requirement**
- **Compact, durable and reliable**
- **High accuracy and stability**
- **Sealing to IP65/IP67 as required**

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 X502 RIPS[®] (Rotary Inductive Position Sensor) is ATEX approved for use in potentially explosive **gas/vapour** atmospheres. It is designed for industrial and scientific feedback applications, like the X500 but with better resolution at smaller angles of deflection, and is ideal for OEMs seeking good sensor performance for arduous applications in hazardous areas.

The X502, like all Positek sensors, provides a linear output proportional with angle of rotation. Each unit is supplied with the output calibrated to the angle required by the customer, between 5 and 20 degrees and with full EMC protection built in.

There is a machined registration mark to identify the calibrated mid point.

Overall performance, repeatability and stability are outstanding over a wide temperature range. The X502 has long service life and environmental resistance with a rugged stainless steel body and shaft, the flange and servo mounts are anodised aluminium. The flange or servo mounting options make the sensor easy to install, it also offers a range of mechanical options. Environmental sealing is to IP65 or IP67 depending on selected cable or connector options.



SPECIFICATION

DIMENSIONS

Body diameter	35 mm
Body Length (to seal face)	44 mm
Shaft	15mm Ø 6mm

For full mechanical details see drawing X502-11

Independent linearity

< ± 0.15 degrees for 15° travel @ 20°C

Temperature coefficients

< ± 0.01%/°C Gain &

< ± 0.01%FS/°C Offset

Typical overall accuracy

< ± 0.5%/ FSO

Frequency response

> 10 KHz (-3dB)

Resolution

Infinite

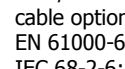
Noise

< 0.02% FSO

Torque

<20 mNm Static

Intrinsic Safety



EEx ia IIC T4 (Ta = -40°C to +80°C)

maximum limits

Ui: 11.4V, Ii: 0.46A, Pi: 0.51W.

Environmental Temperature Limits

Operating -40 to +80°C

Storage -40 to +125°C

Sealing

IP65/IP67 depending on connector /

cable option

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

EMC Performance

IEC 68-2-6: 10g

IEC 68-2-29: 40 g

350,000 hrs 40°C Gf

MTBF

350,000 hrs 40°C Gf

Drawing List

X502-11 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® X502 SMALL ANGLE ROTARY SENSOR

INTRINSICALLY SAFE FOR HAZARDOUS GAS/VAPOUR ATMOSPHERES

Intrinsically safe equipment is defined as "equipment which is incapable of releasing sufficient electrical or thermal energy under normal or abnormal conditions to cause ignition of a specific hazardous atmosphere mixture in its most easily ignited concentration."

ATEX approved to  II 1G EEx ia IIC T4 (Ta = -40°C to +80°C)

Designates the sensor as belonging to; Group II: suitable for all areas **except mining**, Category 1 G: can be used in areas with continuous, long or frequent periods of exposure to hazardous gas (Zone 0).

Protection class ia, denotes intrinsically safe for all zones
 Apparatus group IIC: suitable for IIA to IIC explosive gas.
 Temperature class T4: maximum sensor surface temperature under fault conditions 135°C.
 Ambient temperature range extended to -40°C to +80°C.

Positek intrinsically safe sensors are designed to be used with a galvanically isolated barrier with safety parameters not exceeding:-

Ui: 11.4V, Ii: 0.46A, Pi: 0.51W.

Sensor can be installed with a cable length up to 150m maximum from the barrier, capacitance and inductance can be up to:-

Capacitance: 550 nF max, Inductance: 99 µH max.

Approved barriers are available from Positek®; there is a choice of 0.5-9.5V or 4-20mA transmission outputs.

0.5-9.5V barrier option - BX002.

4-20mA barrier option - BX003.

ATEX approved sensors suitable for dust (E series) and mining (M series) applications, are also available from Positek.

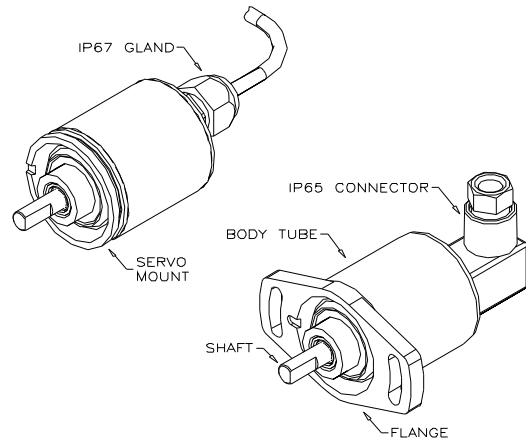


TABLE OF OPTIONS

MEASUREMENT RANGE: Factory-set to any angle from ±2.5° to ±10° in increments of 1 degree.
 Full 360° Mechanical rotation.

ELECTRICAL INTERFACE OPTIONS

A galvanic isolation barrier is required to meet IS approval - 0.5-9.5V or 4-20mA options, see barrier data sheet overleaf.

Option for output signal 'zero' and 'span' adjustment available.

CONNECTOR/CABLE OPTIONS

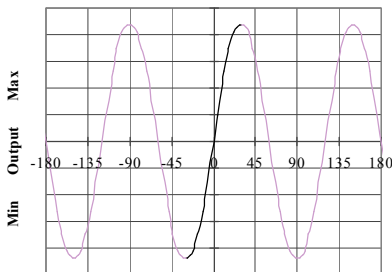
Connector - Hirschmann GD series IP65
 Cable with M12 gland or short gland IP67

Cable length >50cm – please specify length in cm up to 15000cm maximum.

MOUNTING OPTIONS

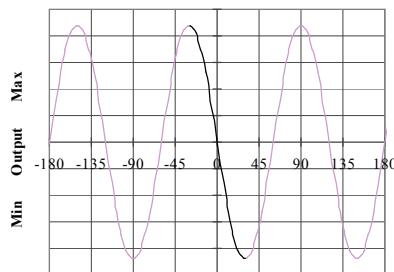
Flange 2 off 4.5 mm x 30 degree wide slots, 48 mm PCD.
 Servo 2 mm wide groove, internal diameter 31.8 mm.

Output Characteristic - Standard



Angular Rotation

Output Characteristic - Reverse option



Angular Rotation

Our policy is to improve specification of our products continuously, so technical and production details can be changed without any notice.
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