

| OUTPUT OPTION | OUTPUT | | SUPPLY | |
|------------------|-------------|-------------|--------|------------|
| A | 0.5 TO 4.5V | RATIOMETRIC | 5V | } BUFFERED |
| C | 0.5 TO 9.5V | | 24V | |
| G | 0.5 TO 4.5V | | 24V | |
| H | 4 TO 20mA | | 24V | |

SUPPLY CURRENT 12mA TYP. 20mA MAX. PLUS O/P CURRENT
CABLE: 0.2mm², O/A SCREEN, PUR JACKET – SUPPLIED
WITH 50cm OR REQUIRED LENGTH IN cm. e.g. 'L50'
3-CORE: JACKET Ø4mm

CABLE/CONNECTOR* CONNECTIONS;
3 CORE CONNECTOR

| | | |
|--------|----|--------|
| RED | :1 | +Ve |
| BLACK | :3 | 0V |
| WHITE | :2 | OUTPUT |
| SCREEN | :4 | BODY |

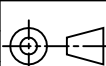

*CONNECTORS; MAXIMUM CONDUCTOR CROSS SECTION 0.25mm²
RANGE OF DISPLACEMENT FROM 0-15° TO 0-160° e.g. 76°,
IN INCREMENTS OF 1°.

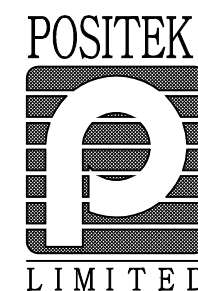
BODY MATERIAL: STAINLESS STEEL.
FLANGE BASE MATERIAL:- STAINLESS STEEL.
SERVO MOUNT MATERIAL:- STAINLESS STEEL.

| | | |
|---|---|-----|
| D | SHAFT LENGTH REDUCED 0.5 - RAN538. | PDM |
| E | SERVO MOUNT SHOWN AT MID POSITION | RDS |
| F | OPTION 'J' ADDED - RAN1068. | PDM |
| G | RANGE NOTE AMENDED ~ RAN1200 | PDM |
| H | 4 TO 20mA ADDED RAN1256 | RDS |
| J | STAINLESS FLANGE BASE & SERVO MOUNT WAS ALUMINIUM - RAN1218 | 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.

| | | | | | | |
|---|----------|---|------------|-----|------|------|
| D | 21/01/15 |  | CHECKED BY | | X | ±0.4 |
| E | 7/4/15 | | RDM | | X.X | ±0.2 |
| F | 02/12/15 | | | | X.XX | ±0.1 |
| | | | | | DIMS | mm |
| G | 12/09/17 | DESCRIPTION P505 RIPS MINIATURE ROTARY SENSOR | | | | |
| H | 12/09/18 | | | | | |
| J | 12/09/18 | | | | | |
| | | | | | | |
| | | | | | | |
| SCALE | | DRAWING NUMBER | P505-11 | REV | J | |
| 5mm | | | | | | |
|  | | SHEET 1 OF 1 | | | | |





P505 SLIM-LINE 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 P505 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 P505 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 15 and 160 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 P505 has long service life and environmental resistance with stainless steel body, shaft, flange and servo mounts. The flange or servo mounting options make the sensor easy to install, the flange has two 3.2mm by 30 degree wide slots on a 25mm pitch. The P505 also offers a range of mechanical and electrical options. Environmental sealing is to IP67.

SPECIFICATION

Dimensions

| | |
|--------------------------------|-------------|
| Body diameter | 19 mm |
| Body Length (to mounting face) | 45.4 mm |
| Shaft | 8 mm Ø 4 mm |

For full mechanical details see drawing P505-11

Independent Linearity

$\leq \pm 0.25\%$ FSO @ 20°C - up to 100°

Temperature Coefficients

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

Frequency response

Resolution

Infinite

Noise

$< 0.02\%$ FSO

Torque

< 15 mNm Static

Environmental Temperature Limits

| | |
|-----------|--------------------------|
| Operating | -40°C to +125°C standard |
| | -20°C to +85°C buffered |
| | -40°C to +125°C |

Storage

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

P505-11

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.

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.

P505-171



P505 SLIM-LINE ROTARY SENSOR

High-resolution angle 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.

Our technology 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.

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

TABLE OF OPTIONS

CALIBRATED TRAVEL: Factory-set to any angle from $\pm 8^\circ$ to $\pm 80^\circ$ in increments of 1 degree.

Full 360° Mechanical rotation.

ELECTRICAL INTERFACE OPTIONS

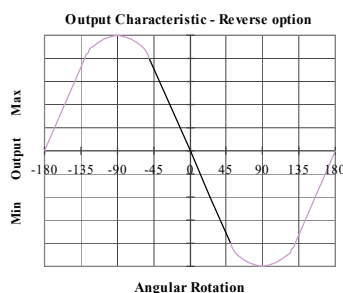
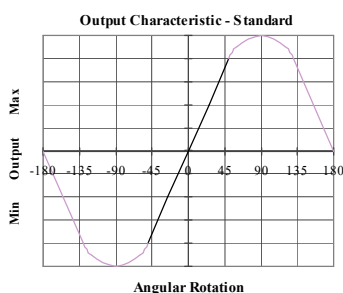
| OUTPUT SIGNAL | SUPPLY INPUT | OUTPUT LOAD |
|--------------------------------------|--|------------------|
| Standard: 0.5-4.5V dc ratiometric | +5V dc nom. $\pm 0.5V$. | 5k Ω min. |
| Buffered: 0.5-4.5V dc | +24V dc nom. + 9-28V. | 5k Ω min. |
| 0.5-9.5V dc | +24V dc nom. + 13-28V. | 5k Ω min. |
| 4-20mA | +24V dc nom. + 13-28V. | 300R Max. |
| Supply Current | 10mA typical, 20mA max. plus O/P current | |

CONNECTOR/CABLE OPTIONS

Connector - M8 IEC 60947-5-2 IP67
Cable with M8 gland IP67
Cable length >50 cm – please specify length in cm

MOUNTING OPTIONS

Flange, Servo.



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P505-171

P505 Slim-Line Rotary Sensor

| | | | | | |
|------|--------------|--------|-------------|--------|--------|
| | a | b | c | d | e |
| P505 | Displacement | Output | Connections | Option | Z-code |

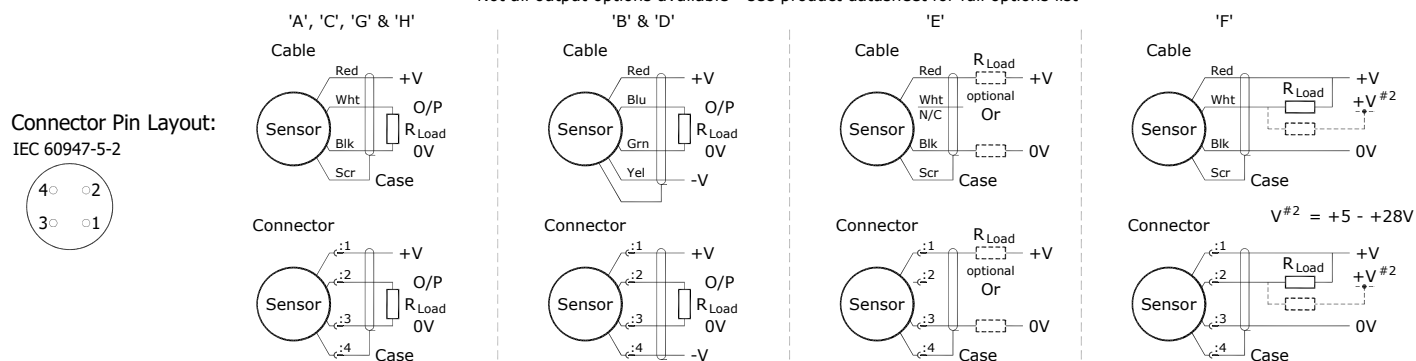
| a Displacement (degrees) | | Value |
|--|--------------------------------------|-------|
| Displacement in degrees | e.g. 0 - 54 degrees | 54 |
| b Output | | |
| Supply V dc V _s (tolerance) | Output | Code |
| +5V (4.5 - 5.5V) | 0.5 - 4.5V (ratiometric with supply) | A |
| +24V nom. (13 - 28V) | 0.5 - 9.5V | C |
| +24V nom. (9 - 28V) | 0.5 - 4.5V | G |
| +24V nom. (13 - 28V) | 4 - 20mA 3 wire Source | H |
| c Connections Cable or Connector | | Code |
| Connector | IP67 M8 IEC 60176-2-104 nylon | J |
| | pre-wired | Jxx |
| Cable Gland | IP67 nylon | Lxx |
| Specify required cable length 'xx' in cm. e.g. L2000 specifies cable gland with 20 m of cable, 50 cm supplied as standard. | | |
| d Sensor Mounting | | Code |
| Flange - default | | blank |
| Servo Mount | | P |
| e Z-code | | Code |

Installation Information

P505 SLIM-LINE ROTARY SENSOR

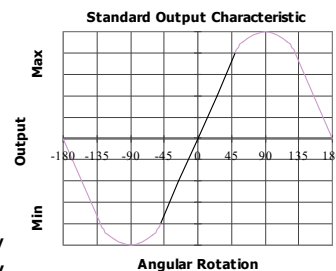
| Output Option | Output Description: | Supply Voltage: V_s (tolerance) | Load resistance: (include leads for 4 to 20mA O/Ps) |
|---------------|--------------------------------------|--------------------------------------|--|
| A | 0.5 - 4.5V (ratiometric with supply) | +5V (4.5 - 5.5V) | $\geq 5k\Omega$ |
| 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) | 300R MAX |
| | | | |
| | | | |
| | | | |
| | | | |

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



Mechanical Mounting: Flange mounted. The flange slots are 3.2mm by 30 degrees wide on a 25mm 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.

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, and the flat on the shaft is aligned with the registration mark in the base of the sensor. 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 15 and 160°.



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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