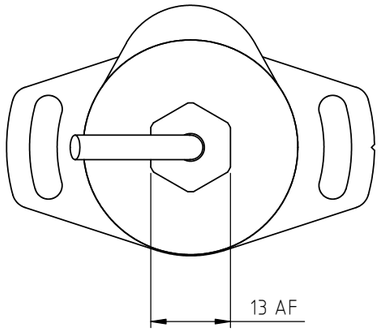
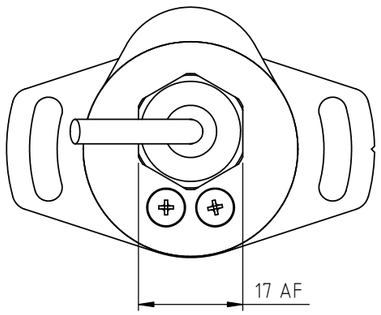
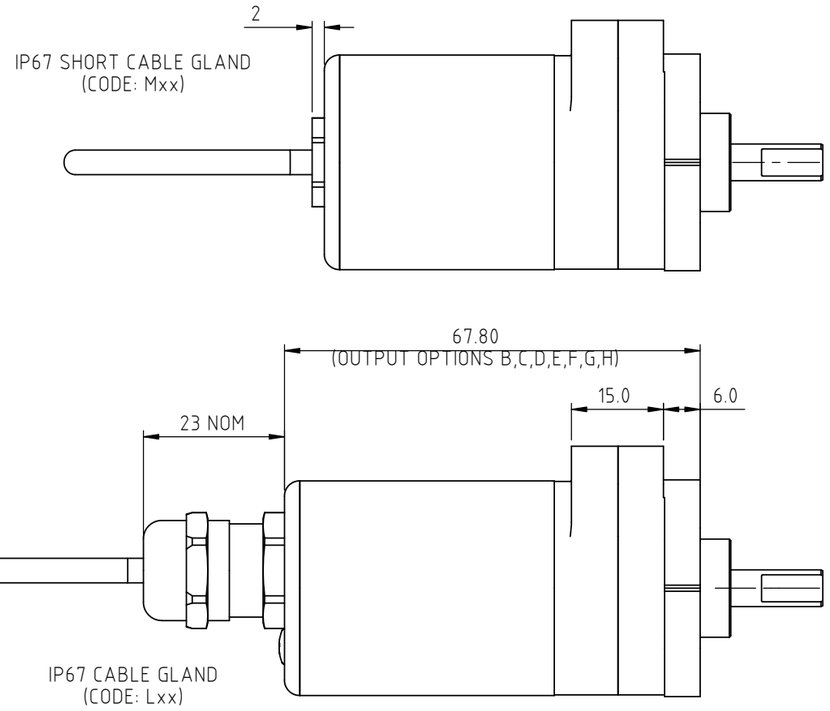
GAIN AND OFFSET ADJUSTMENTS
SEALED (CODE: Y)







ELECTRICAL OPTIONS/ SPECIFICATIONS

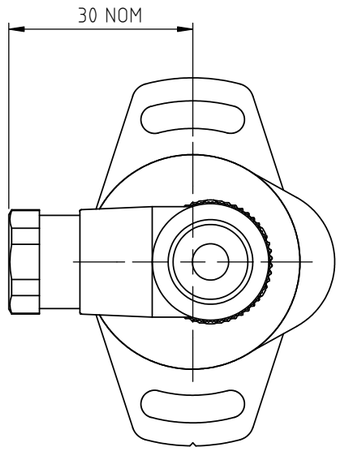
OUTPUT	SUPPLY (NOM)
'A' 0.5 - 4.5V RATIOMETRIC	5V
'B' ±5V	±15V
'C' 0.5 - 9.5V	24V
'D' ±10V	±15V
'G' 0.5 - 4.5V	24V
SUPPLY CURRENT 12mA TYP. 20mA MAX.	
'E' 4 TO 20MA 2-WIRE	24V (18V MIN.)
'F' 4 TO 20MA SINK†	24V
'H' 4 TO 20MA SOURCE‡	24V

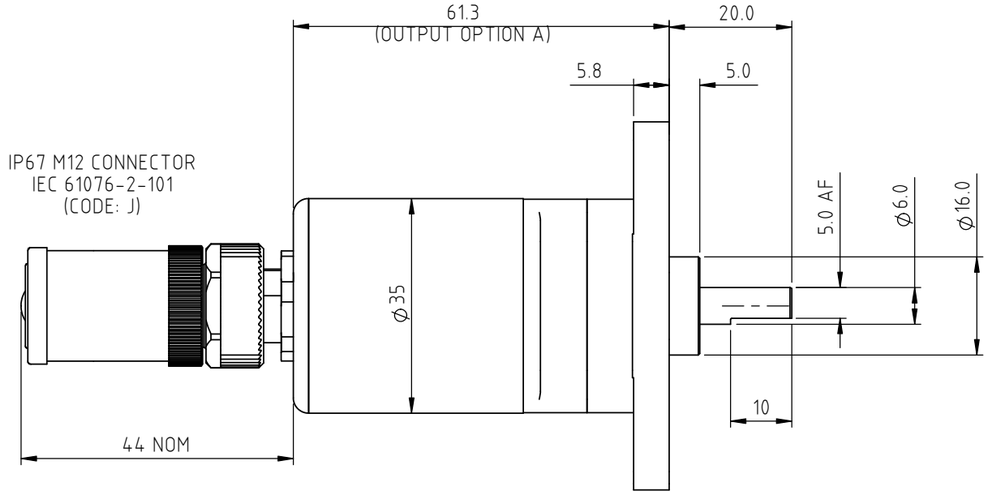
† OUTPUT COMPLIANCE 5-28V
‡ DRIVE 300Ω MAXIMUM TO 0V

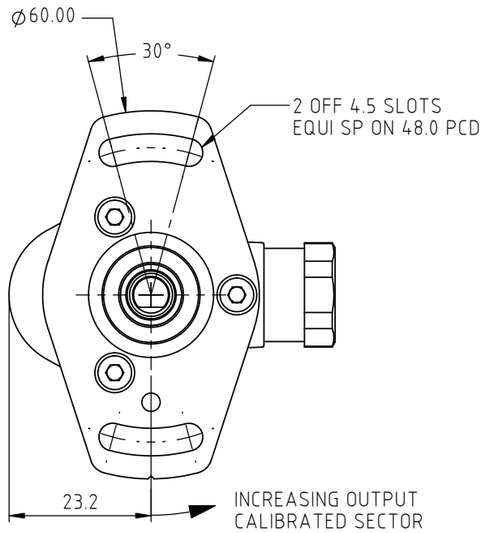
CONNECTIONS:	CABLE		CONNECTOR
	3-CORE	4-CORE	
+VE	RED	RED	:1
0V	BLACK	GREEN	:3
-VE	-	YELLOW	:4 O/P 'B' & 'D'
OUTPUT	WHITE	BLUE	:2
BODY	SCREEN	SCREEN	:4 NOT O/P 'B' & 'D'

CABLE; 0.2mm², O/A SCREEN, PUR JACKET. O/D; 3-CORE: Ø4mm,
4-CORE: Ø4.6mm,
SUPPLIED WITH 50cm OR REQUIRED LENGTH IN cm. e.g. 'L50'
CONNECTORS; MAXIMUM CONDUCTOR CROSS SECTION 0.25mm²

RANGE OF DISPLACEMENT FROM 0-100° TO 0-360° e.g.150°.
CONSTRUCTION:- STAINLESS STEEL.
PHYSICAL STOPS @ ± 220°







SHAFT FLAT ALIGNED WITH REFERENCE
MARK IN BASE AT MID TRAVEL ±5

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	ADD'N DIMS & J END CAP UPDATED	ASC	18/10/2022	ASC
A	FIRST RELEASE	ASC	22/08/2022	ASC

Positek

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

DESCRIPTION
P530 ROTARY SENSOR

SCALE 1:1	DRAWING NUMBER
A3	P530-11 SHEET 1 OF 1

P530 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 P530 is an affordable, durable, high-accuracy rotary sensor designed for industrial and scientific feedback applications.

The P530, like all Positek® sensors, is supplied with the output calibrated to the angle required by the customer, up to 360 degrees, with full EMC protection built in. The sensor provides a linear output proportional with input shaft rotation. There is a machined registration mark to identify the calibrated mid point.

It is particularly suitable for OEMs seeking good sensor performance for arduous applications such as industrial machinery where cost is important.

Overall performance, repeatability and stability are outstanding over a wide temperature range. The P530 has long service life and environmental resistance with a rugged stainless steel body and shaft, it also offers a range of mechanical and electrical options. The flange mount makes the sensor easy to install. Environmental sealing is to IP67.

SPECIFICATION

Dimensions	
Body diameter	35 mm
For full mechanical details see drawing P530-11	
Independent Linearity	≤ ± 0.25% FSO @ 20°C
Temperature Coefficients	< ± 0.01%/°C Gain &
	< ± 0.01%FS/°C Offset
Frequency response	> 10 kHz (-3dB)
	> 300 Hz (-3dB) 2 wire 4 to 20 mA
Resolution	Infinite
Noise	< 0.02% FSO
Torque	< 20 mNm Static
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	
P530-11	Sensor Outline

3D models, in 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.

P530 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 ±50° to ±180° 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. ± 0.5V.	5kΩ min.
Buffered:		
0.5-4.5V dc	+24V dc nom. + 9-28V.	5kΩ min.
±5V dc	±15V dc nom. ± 9-28V.	5kΩ min.
0.5-9.5V dc	+24V dc nom. + 13-28V.	5kΩ min.
±10V dc	±15 V dc nom. ± 13.5-28V.	5kΩ min.
Supply Current	10mA typical, 20mA maximum.	
4-20mA (2 wire)	+24 V dc nom. + 18-28V.	300Ω @ 24V.
(3 wire sink)	+24 V dc nom. + 13-28V.	950Ω @ 24V.
(3 wire source)	+24 V dc nom. + 13-28V.	300Ω max.

Sensors supplied with access to output 'zero' and 'span' calibration adjustments as standard. No access option available.

CONNECTOR/CABLE OPTIONS

Connector - M12 4 pin IP67

Cable with M12 gland or short gland IP67

Cable length >50 cm – please specify length in cm

For further information please contact:
www.positek.com sales@positek.com
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Positek, Andoversford Industrial Estate, Cheltenham GL54 4LB. U.K.

P530 Rotary Sensor

	a	b	c	d	e
P530	. Displacement	Output	Adjustments	Connections	Z-code

a **Displacement** (degrees)		**Value**
Displacement in degrees	e.g. 0 - 270 degrees	**270**

b **Output**		
Supply V dc V_s (tolerance)	**Output**	**Code**
+5V (4.5 - 5.5V)	0.5 - 4.5V (ratiometric with supply)	**A**
±15V nom. (±9 - 28V)	±5V	**B**
+24V nom. (13 - 28V)	0.5 - 9.5V	**C**
±15V nom. (±13.5 - 28V)	±10V	**D**
+24V nom. (18 - 28V)	4 - 20mA 2 wire	**E**
+24V nom. (13 - 28V)	4 - 20mA 3 wire Sink	**F**
+24V nom. (9 - 28V)	0.5 - 4.5V	**G**
+24V nom. (13 - 28V)	4 - 20mA 3 wire Source	**H**

c **Calibration Adjustments**	**Code**
Accessible - default	blank
Sealed	**Y**

d **Connections** Cable or Connector		**Code**
Connector	IP67 M12 IEC 60176-2-101 plastic	**J**
	pre-wired	**Jxx**
Cable Gland	IP67	**Lxx**
Cable Gland†	IP67 Short	**Mxx**

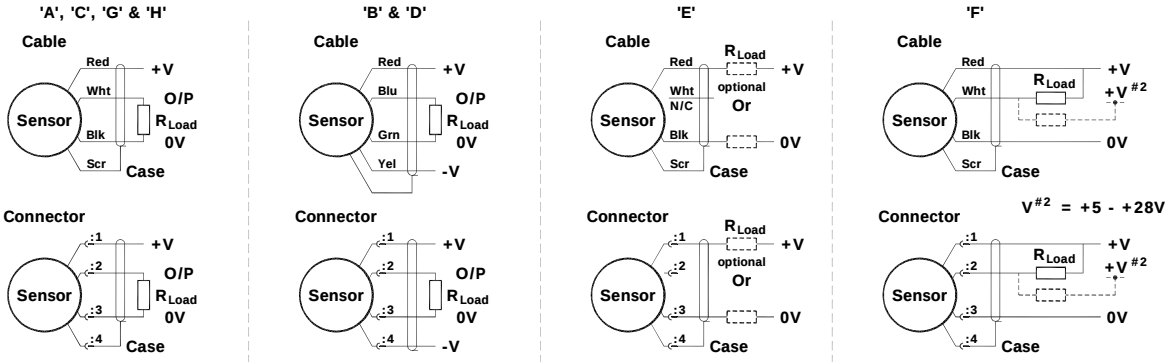
Specify required cable length **'xx'** in cm. e.g. L2000 specifies cable gland with 20 m of cable, 50 cm supplied as standard. †Nb: restricted cable pull strength.

e **Z-code**	**Code**

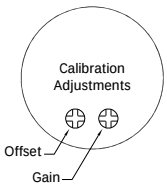
Installation Information
P530 ROTARY SENSOR

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)	≥ 5kΩ
B	±5V	±15V nom. (±9 - 28V)	≥ 5kΩ
C	0.5 - 9.5V	+24V nom. (13 - 28V)	≥ 5kΩ
D	±10V	±15V nom. (±13.5 - 28V)	≥ 5kΩ
E	4 - 20mA 2 wire Current Loop	+24V nom. (18 - 28V)	≈ 0 - 300Ω max. @24V ~ 1.2 to 6V across 300Ω {R_L max. = (V_s - 18) / 20^{-3}}
F	4 - 20mA 3 wire Sink	+24V nom. (13 - 28V)	≈ 0 - 950Ω max. @24V ~ 3.8 to 19V across 950Ω {R_L max. = (V_s - 5) / 20^{-3}}
G	0.5 - 4.5V	+24V nom. (9 - 28V)	≥ 5kΩ
H	4 - 20mA 3 wire Source	+24V nom. (13 - 28V)	≈ 0 - 300Ω max. ~ 1.2 to 6V across 300Ω

Connector Pin Layout:
IEC 60947-5-2

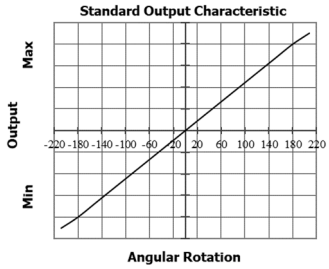


Gain and Offset Adjustment: (Where accessible - Typically ± 10% Min available)
To adjust the gain or offset use a small potentiometer adjuster or screwdriver 2mm across. Do not apply too much force on the potentiometers. The offset is set at mid span at the mid point, within ±5°, of rotation.



Mechanical Mounting: Flange mounted, via two slots 4.5mm by 30 degrees wide on a 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, recommended maximum axial load 1kg. Tests indicate that life in excess of 16 million cycles can be achieved with 1kg side and end load.

Output Characteristic: The sensor has ±220° mechanical rotation around the mid point. At the mid point the output signal will be half full scale deflection, the shaft flat will be aligned with the registration mark in the base of the sensor ±5° . In the calibrated range the output increases as the shaft is rotated in an anti-clockwise direction viewed from the shaft. The calibrated range is factory set, to between 100 and 360°.



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.
B & D	Supply leads diode protected. Output must not be taken outside ± 12V.
C & G	Supply leads diode protected. Output must not be taken outside 0 to 12V.
E, F & H	Protected against any misconnection within the rated voltage.

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