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P530 Rotary Sensor

FEATURES

- Non-contacting inductive technology to eliminate wear
- Angle set to customer's requirement
- Compact, durable and reliable
- High accuracy and stability
- Sealing to IP67

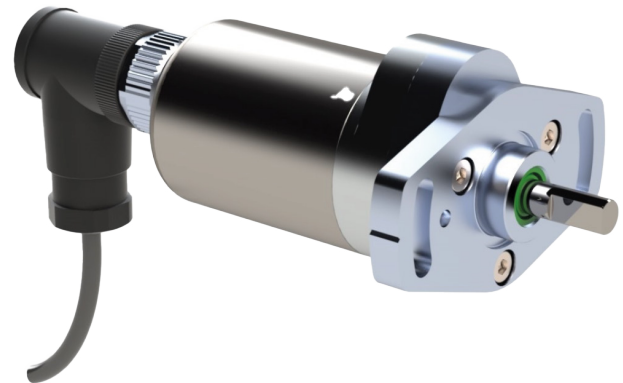
As a leading designer and manufacturer of linear, rotary, tilt and intrinsically safe position sensors, we have the expertise to supply a sensor to suit a wide variety of applications. Our P530 is an affordable, durable, high accuracy rotary sensor designed for industrial and scientific feedback applications.

The P530 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.

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.



SPECIFICATION

Dimensions

Body diameter 35 mm

For full mechanical details see drawing P530-11

Independent Linearity $\leq \pm 0.25\%$ FSO @ 20°C

Temperature Coefficients $< \pm 0.01\%/^{\circ}\text{C}$ Gain &
 $< \pm 0.01\%\text{FS}/^{\circ}\text{C}$ Offset

Frequency response $> 10\text{ kHz}$ (-3dB)
 $> 300\text{ Hz}$ (-3dB) 2 wire 4 to 20 mA

Resolution Infinite

Noise $< 0.02\%$ FSO

Torque $< 20\text{ mNm}$ 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, step or .igs format, available on request



High-resolution angle feedback for industrial and scientific applications

LONGER SERVICE LIFE THANKS TO TECHNOLOGY

Our displacement transducers Displacement transducers have the simplicity of a potentiometer with the durability of an LVDT/RVDT.

Our technology combines the best of basic inductive inductive principles with advanced microelectronic integrated integrated circuit technology. The sensor, which is based on simple inductive coils with ASIC control technology, directly measures the absolute position and provides a DC analogue output signal. As there is no contact between moving electrical components, reliability is high and wear and tear is and wear is eliminated, resulting in an exceptionally long service life.

Our technology overcomes the disadvantages of LVDT technology - bulky coils, poor length-to-stroke ratio and the need for the need for special magnetic materials. It does not require separate signal conditioning. We also offer a range of ATEX-qualified, intrinsically safe sensors. sensors. We also offer a range of ATEX-qualified intrinsically-safe sensors.

TABLE OF OPTIONS

CALIBRATED TRAVEL: Factory-set to any angle from $\pm 50^\circ$ to $\pm 180^\circ$ 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! min.
Buffered: 0.5-4.5V dc	+24V dc nom. + 9-28V.	5k! min.
$\pm 5V$ dc	$\pm 15V$ dc nom. $\pm 9-28V$.	5k! min.
0.5-9.5V dc	+24V dc nom. + 13-28V.	5k! min.
$\pm 10V$ dc	$\pm 15V$ dc nom. $\pm 13.5-28V$.	5k! min.
Supply Current	10mA typical, 20mA maximum.	
4-20mA (2 wire)	+24 V dc nom. + 18-28V.	300! @ 24V.
(3 wire sink)	+24 V dc nom. + 13-28V.	950! @ 24V.
(3 wire source)	+24 V dc nom. + 13-28V.	300! 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

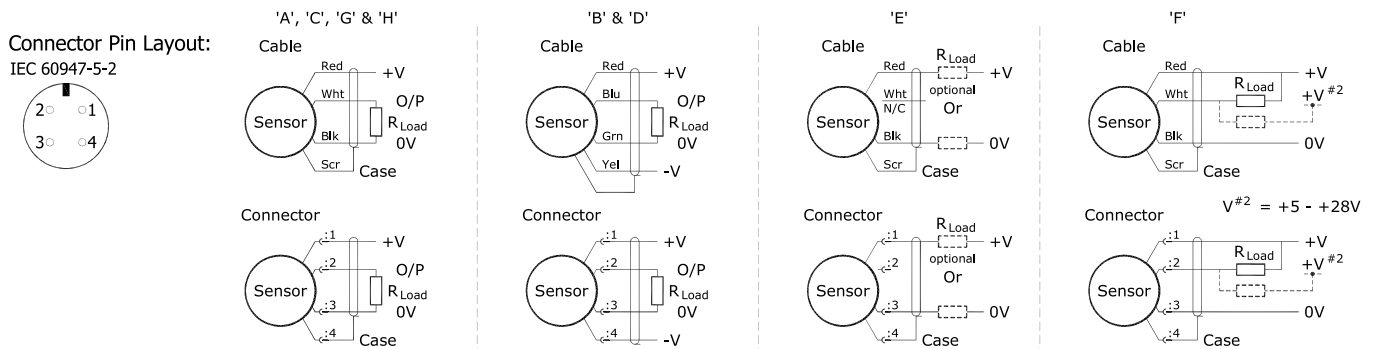
ORDERING OPTIONS

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

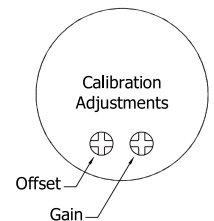
a Displacement (degrees)		Value
Displacement in degrees e.g. 0 - 270 degrees		270
b Output		
Supply V dc V_s (tolerance)	Output	Code
+5V (4.5 - 5.5V)	0.5 - 4.5V (ratiometric with supply)	A
$\pm 15V$ nom. ($\pm 9 - 28V$)	$\pm 5V$	B
+24V nom. (13 - 28V)	0.5 - 9.5V	C
$\pm 15V$ nom. ($\pm 13.5 - 28V$)	$\pm 10V$	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

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

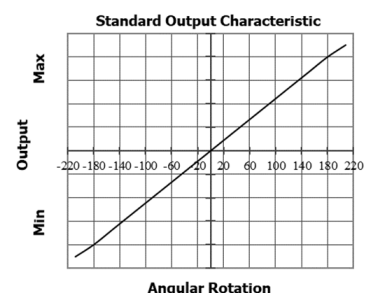


GAIN AND OFFSET ADJUSTMENT: (Where accessible - Typically $\pm 10\%$ Min available) To adjust the gain or offset use a small potentiometer adjuster or screwdriver 2mm across. Do not apply too much force on the potentiometers. The offset is set at mid span at the mid point, within $\pm 5^\circ$, of rotation.



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 $\pm 220^\circ$ 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 $\pm 5^\circ$. In the ut 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 $\pm 12V$.
- 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.

