ELECTRICAL OPTIONS/ SPECIFICATIONS

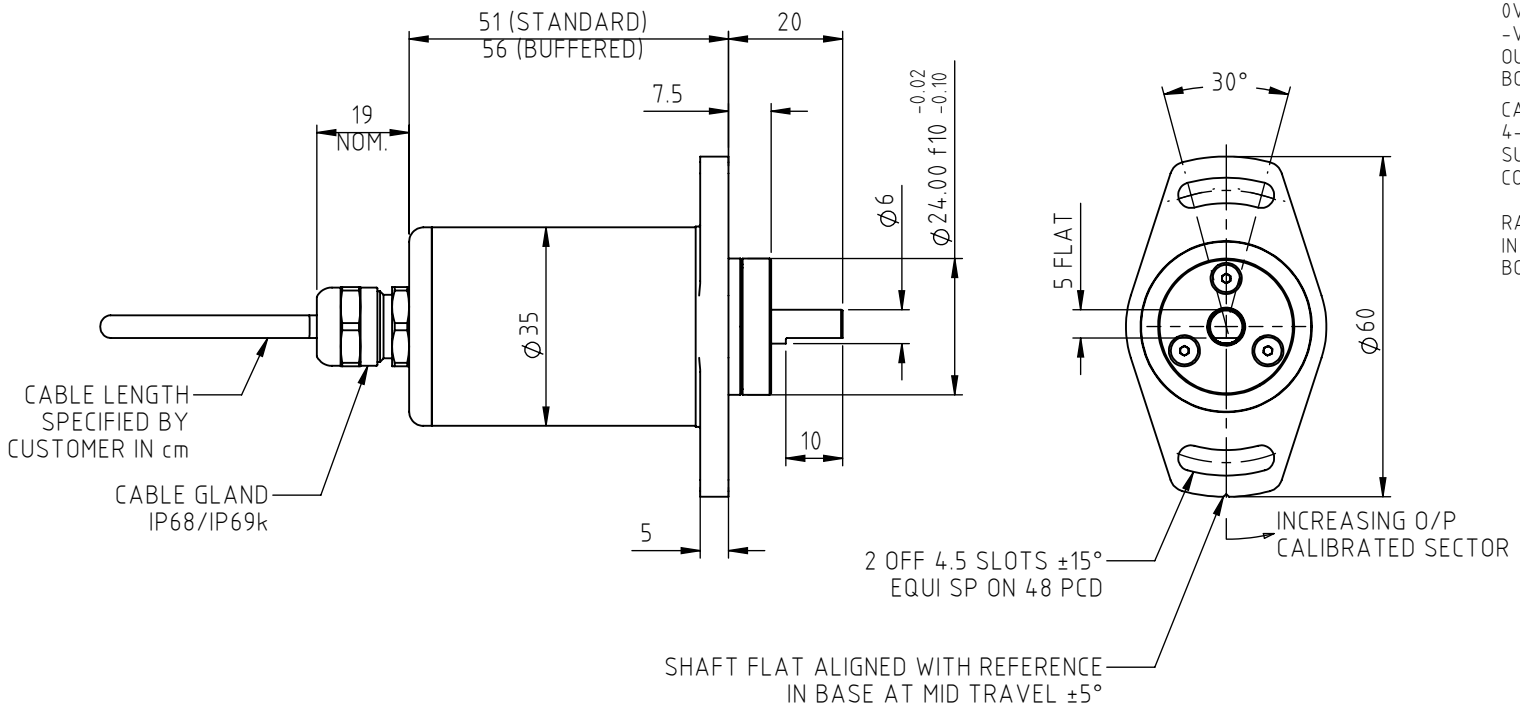
OUTPUT	SUPPLY (NOM.)	
'A' 0.5 – 4.5V RATIOMETRIC	5V	STANDARD
'B' ±5V	±15V	BUFFERED
'C' 0.5 – 9.5V	24V	BUFFERED
'D' ±10V	±15V	BUFFERED
'G' 0.5 – 4.5V	24V	BUFFERED
SUPPLY CURRENT 12mA TYP. 20mA MAX.		
'E' 4 TO 20mA 2-WIRE	24V (18V MIN.)	
'F' 4 TO 20mA SINK[1]	24V	
'H' 4 TO 20mA SOURCE[2]	24V	

[1] OUTPUT COMPLIANCE 5-28V
[2] DRIVE 300Ω MAXIMUM TO 0V

CONNECTIONS;	CABLE 3-CORE	CABLE 4-CORE
+Ve	RED	RED
0V	BLACK	GREEN
-Ve	-	YELLOW
OUTPUT	WHITE	BLUE
BODY	SCREEN	SCREEN

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 0-5° TO 0-160° e.g.76°
IN INCREMENTS OF 1°.
BODY MATERIAL:- STAINLESS STEEL.



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
A	FIRST RELEASE	ASC	15/09/2021	ASC

CE

POSITEK LIMITED

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

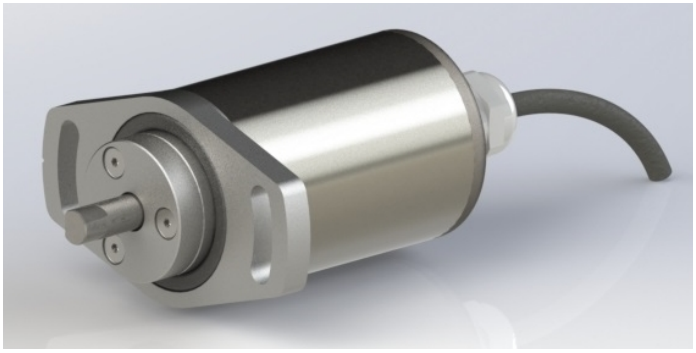
DESCRIPTION
10bar Submersible Rotary Position Sensor

SCALE	DRAWING NUMBER
3:4	S508-11
A4	SHEET 1 OF 1

S508 SUBMERSIBLE ROTARY SENSOR

High-resolution angle feedback for industrial, vehicle, marine and offshore applications

- **Non-contacting inductive technology to eliminate wear**
- **Angle set to customer's requirement**
- **Compact, durable and reliable**
- **High accuracy and stability**
- **Sealing to IP68 10 Bar and IP69K**
- **316 stainless construction**



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 S508 is an affordable, durable, high-accuracy rotary sensor designed for industrial, vehicle, marine and offshore applications where sealing from water jets and submersion are complimented with a 316 stainless construction.
The S508, like all Positek® sensors, is supplied with the output calibrated to the angle required by the customer up to a maximum of 160 degrees and 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 S508 has long service life and environmental resistance with a rugged stainless steel body. It also offers a range of mechanical and electrical options.

SPECIFICATION

Dimensions	
Body diameter	35 mm
Body Length (to seal face)	51 mm standard, 56 mm buffered
Shaft	12.5 mm Ø 6 mm
For full mechanical details see drawing S508-11	
Independent Linearity	≤ ± 0.25% FSO @ 20°C - up to 100°
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	IP68 10Bar IP69K
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	
S508-11	Sensor Outline

3D models, 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.

S508 SUBMERSIBLE ROTARY SENSOR

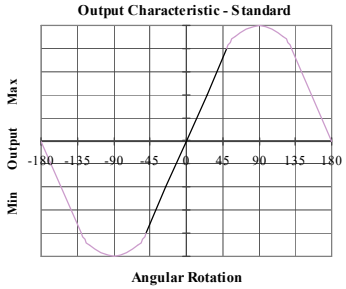
High-resolution angle feedback for industrial, vehicle, marine and offshore applications

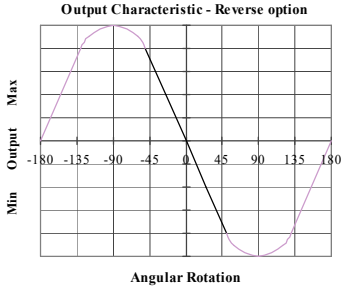
How Positek's technology eliminates wear for longer life

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.
It also overcomes the drawbacks of LVDT technology – bulky coils, poor length-to-stroke ratio and the need for special magnetic materials, no requirement for separate signal conditioning.
We also offer a range of ATEX-qualified intrinsically-safe sensors.

S508	.	a	b	c	d
		Displacement	Output	Connections	Z-code

a **Displacement**		**Value**
Factory set to any angle from 0-16° (±8°) to 0-160° (±80°) (e.g. 0-54°)		**54**
b **Output**		
Supply V_{dc} (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**
Supply Current: 'A' 10mA nominal, 12mA max. 'B', 'D' & 'G' 12mA nominal, 15mA max. 'E' 26mA max. 'F' & 'H' 32mA nominal, 35mA max.		
c **Connections**		**Code**
Cable gland IP68 10Bar/IP69K Pg7		**Lxx**
Specify required cable length **'xx'** in cm. e.g. L2000 specifies axial cable gland with 20 m of cable, 50 cm supplied as standard.		
d **Z-code** (optional)		**Code**
≤± 0.1% FSO @20°C Independent Linearity 0 - 16° min. to 0 - 100° max.		**Z650**





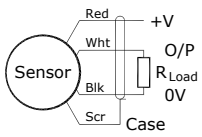
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Installation Information

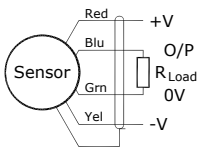
S508 10 BAR SUBMERSIBLE ROTARY SENSOR

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

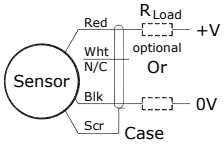
'A', 'C', 'G' & 'H'



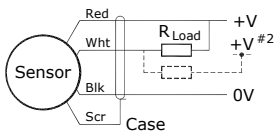
'B' & 'D'



'E'



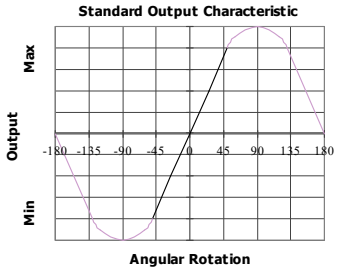
'F'



$V^{\#2}$ = +5 - +28V

Mechanical Mounting: Flange mounted - see drawing S508-11. Sensor is supplied with a 24x2 N70 O-ring face seal. 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. Tests indicate that life in excess of 16 million cycles can be achieved with 1kg side and end load.

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 16 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.

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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