

# Mil-Spec Dual Channel Rotary Position Sensor

## 360° Dual Channel Rotary Position Sensor

The IU-020-03 is a military specification, programmable Dual Channel Rotary Position Sensor leveraging the latest advancements in non-contact Tunnel Magnetoresistance sensing. With a 360° sensing range, the device offers precise measurement by detecting the position of the supplied magnet target relative to the sensor.

Featuring Quantum TMR technology, the sensor is a robust, solid-state measurement instrument with integrated CPU processing for a ratiometric analogue VDC or CAN output. Boasting advanced accuracies of  $\pm 0.5\%$  of reading, the sensor is capable of achieving measurement across 40mm air gaps from sensor to target\* and through up to 20mm of non-ferrous material\* such as aluminium or stainless steel. With an IP rating of IP69K, the sensor is submersible and suitable for extreme conditions with a high operating temperature range of  $-40^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$ . This ruggedised, vibration-tolerant device is an ideal choice for Defence, Rail, Industrial and Off-Highway vehicles applications.

### EMC APPROVALS

MIL STD 461F Army Ground Limits: CS114, CS115, CS116, RE102, RS103, RS101, CE102, CS101  
RTCA DO160F: Section 25 ESD Cat. A



Sealed electronics rated IP69K.



### Key Features

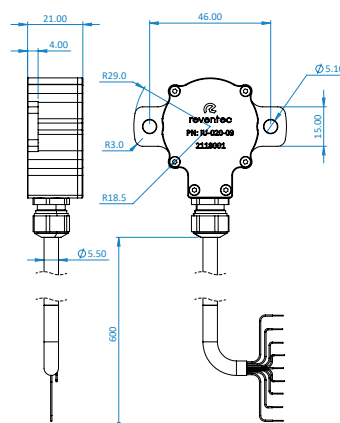
- Solid-state, non-contact alternative to potentiometers
- Rapid response rate of 5kHz
- Extremely accurate;  $\pm 0.5\%$  of reading
- Configurable dual channel output for reliability and redundancy
- 0 - 359 degrees of measurement sensing range (Fully configurable)
- 12bit Analogue VDC output resolution
- Accurate position sensing over a wide temperature range  $-40^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Fully sealed and IP69K rated

### Benefits

- Avoids wear and degradation as seen in potentiometers.
- Capable of measuring through up to 20mm of non-ferrous material.\*
- Provides real-time measurement of components movement.
- Full customisation for specialist projects available.

\*Subject to target

### Example Sensor Dimensions



## Measurement

Type	Angular Displacement
Typical Accuracy	±0.5% of reading
Measurement Rate	5kHz
Measurement Range	0-359 degrees (Configurable)

## Electrical

Supply Voltage	4.5 VDC - 40 VDC (nom 24V supply)
Typical Operating Current	<45mA per channel at +5 VDC

## Analogue Output

Type	Voltage
Channel 1 Output Range	0.5 VDC to 4.5 VDC (Configurable)
Channel 2 Output Range	4.5 VDC to 0.5 VDC (Configurable)
Resolution	12 bit
Stability	±0.1% over full temperature range

## Environmental

Environmental Protection	IP69K
Vibration	Designed to meet: 10Hz to 2000Hz sine sweep @10G (24hrs per each axis)
Shock	Designed to meet: 50G half sine wave for 11ms, 10 times each axis
Operating Temperature Range	-40°C to +150°C

## Mechanical

Construction Material	Hard Anodised Aluminium to DEF STAN 03-26
Mass	From 45g

## Wiring Specification

Harness	Flying lead. Integrated D38999 connector or custom on request.
Sleeve Elastomer	RW-200E
Boot Elastomer	Viton FEP
Wire Type	Flying lead - 600mm, Type 55, 24 AWG

## Wiring Definition

Description	Wire Colour	PIN Out
Supply Channel 1 (+)	● Red	Flying lead
Ground Channel 1 (GND)	● Black	Flying lead
Signal Channel 1 (0.5-4.5V)	● Yellow	Flying lead
Signal Channel 2 (4.5-0.5V)	● Orange	Flying lead
Tx Comms 1 (Configuration only)	○ White	Flying lead
Rx Comms 1 (Configuration only)	● Green	Flying lead
Supply Channel 2 (+)	● Blue	Flying lead
Tx Comms 2 (Configuration only)	● Grey	Flying lead
Rx Comms 2 (Configuration only)	● Violet	Flying lead

## Configuration Interface

Type	RS-232 via FTDI USB cable. See Accessories.
GUI	Available on request

Specifications may be subject to change without prior notice.