

Triple Channel Rotary Position Sensor

Quantum TMR 360° Triple Channel Rotary Position Sensor

The JD-050-02 is a non-contact, programmable Triple Channel Rotary Position Sensor leveraging the latest advancements in Tunnel Magnetoresistance sensing. With a 360 degree 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 IP67, the sensor is submersible and suitable for extreme conditions with a high operating temperature range of -40°C to $+150^{\circ}\text{C}$. This lightweight, vibration-tolerant device is an ideal choice for Motorsport, Defence, UAV, Industrial and Off-Highway Vehicles.



Sealed electronics rated IP67.



Supplied with flying lead and connector.

Key Features

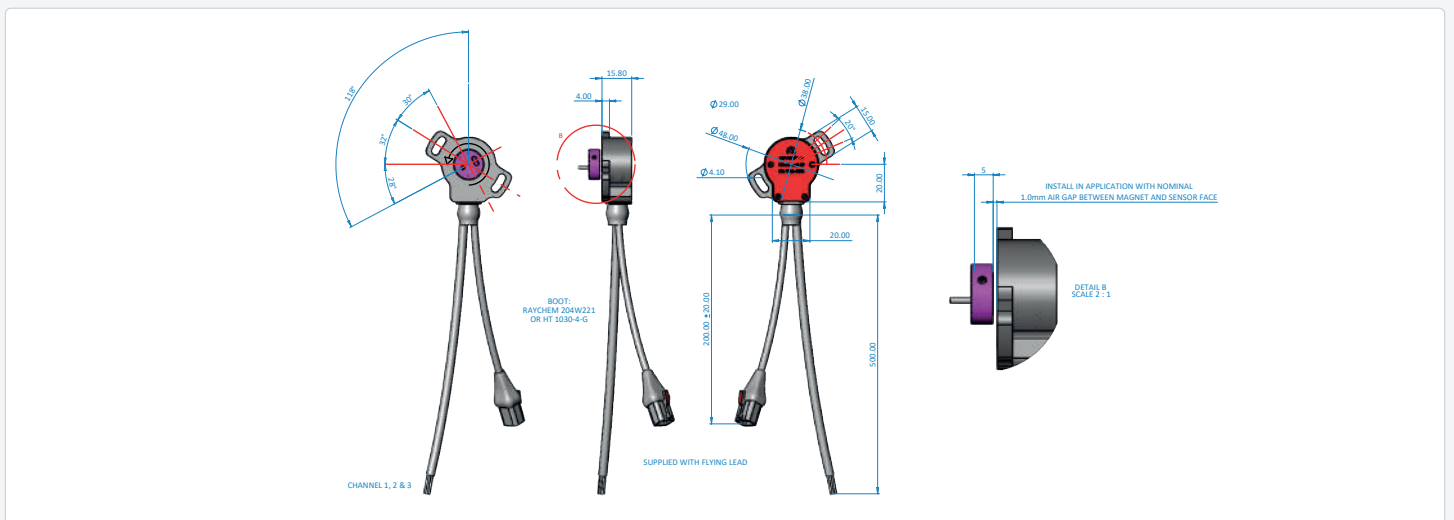
- Solid-state, non-contact alternative to potentiometers
- Rapid response rate of 5kHz
- Extremely accurate; $\pm 0.5\%$ of reading
- Configurable triple channel output for reliability and redundancy
- 0 - 359 degrees of measurement sensing range
- 12bit Analogue VDC output resolution
- Accurate position sensing over a wide temperature range -40°C to $+150^{\circ}\text{C}$
- IP67 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

Electrical

Supply Voltage	+5 VDC ± 0.25VDC regulated
Typical Operating Current	<25mA per channel at +5 VDC

Analogue Output

Type	Voltage
Channel 1 Output Range	0.50 VDC to 4.50 VDC (Configurable)
Channel 2 Output Range	0.25 VDC to 2.25 VDC (Configurable)
Channel 3 Output Range	0.50 VDC to 4.50 VDC (Configurable)
Resolution	12 bit
Stability	±0.1% over full temperature range

Environmental

Environmental Protection	IP67
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	Anodised Aluminium
Mass	From 45g

Wiring Specification

Harness	Flying lead & Deutsch ASC605-06PN Custom on request
Sleeve Elastomer	RW-200E
Boot Elastomer	Viton FEP
Wire Type	Flying lead - 500mm, Type 55, 26 AWG ASC605-06PN - 200mm, Comms

Wiring Definition

Description	Wire Colour	PIN Out
Supply Channel 1 (+)	● Red	Flying lead
Ground Channel 1 (GND)	● Black	Flying lead
Signal Channel 1 (0.50-4.50V)	● Yellow	Flying lead
Supply Channel 2 (+)	● Green	Flying lead
Ground Channel 2 (GND)	○ White	Flying lead
Signal Channel 2 (0.25-2.25V)	● Violet	Flying lead
Supply Channel 3 (+)	● Red	Flying lead
Ground Channel 3 (GND)	● Grey	Flying lead
Signal Channel 3 (0.50-4.50V)	● Orange	Flying lead
Tx Comms 1 (Configuration only)	○ White	1 - ASC
Rx Comms 1 (Configuration only)	● Green	2 - ASC
Tx Comms 2 (Configuration only)	● Violet	3 - ASC
Rx Comms 2 (Configuration only)	● Blue	4 - ASC
Tx Comms 3 (Configuration only)	● Black	5 - ASC
Rx Comms 3 (Configuration only)	● Red	6 - ASC

Configuration Interface

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

Specifications may be subject to change without prior notice.