

Dual Redundant 100° Arc Position Sensor

Quantum TMR Dual Redundant 100° Arc Non-Contacting Rotary Position Sensor

The KU-020-01 Dual Redundant 100° Arc Position Sensor is a robust, non-contact position sensing solution designed for applications where reliability and redundancy are essential. Utilising advanced Tunnel Magneto Resistance (TMR) technology, the sensor provides accurate position measurement across a calibrated $\pm 50^\circ$ (100° total) sensing arc while eliminating the wear and reliability concerns associated with traditional contact-based sensors. Its compact arc-shaped design allows installation around a rotating target magnet, making it ideal for steering, suspension, actuator, transmission, mast sensing, and control system position feedback in demanding environments.

The sensor features two fully independent measurement channels with inverse analogue outputs, enabling continuous cross-checking and fault detection within redundant control architectures. Offering a fast 5kHz update rate, the KU-020-01 delivers precise, repeatable position data even in high vibration and high shock environments. Housed in hard anodised aluminium and sealed to IP67, the sensor is engineered to withstand harsh operating conditions from -40°C to $+125^\circ\text{C}$ while maintaining excellent linearity and long-term performance.



Key Features

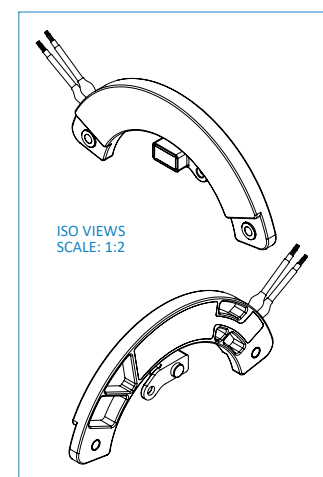
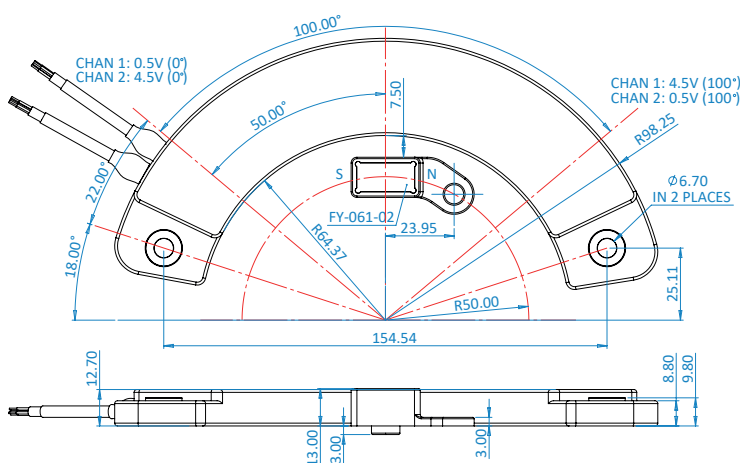
- Solid-state, non-contact alternative to potentiometers
- Rapid response rate of 5kHz
- Extremely accurate; $\pm 0.5\%$ of reading
- ± 50 degrees of shallow arc measurement range
- 12bit analogue output resolution
- Programmable to different arc sensing ranges
- Up to 40mm air gap to target*
- Accurate position sensing over a wide temperature range -40°C to $+125^\circ\text{C}$

*Subject to target

Benefits

- Avoids wear and degradation as seen in potentiometers.
- Capable of measuring through up to 40mm of non-ferrous material.
- Provides real-time measurement of components movement.
- Full customisation for specialist projects available.

Example Sensor Dimensions



Measurement

Type	Angular Displacement
Typical Accuracy	±0.5% of reading
Measurement Rate	5kHz
Measurement Range	±50 degrees

Electrical

Supply Voltage	+6 VDC to +31 VDC
Typical Operating Current	<25mA at +12 VDC
Overvoltage Protection	+45 VDC continuous
Reverse Polarity Protection	-45 VDC continuous

Analogue Output

Type	Voltage
Typical Output Range	0-5 VDC 0-10 VDC only on 12V supply options
Typical Output Calibration	+0.50 VDC to +4.50 VDC (Configurable)
Resolution	12 bit
Stability	±0.1% over full temperature range

Dimensions

Sensor	Custom designs available. Contact us for standard drawings or step files.
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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 +125°C

Mechanical

Construction Material	AL 6082T6 (Hard anodised)
Mass	From 239g

Wiring Specification

Harness	Flying lead Custom on request
Sleeve Elastomer	Typically DR-25 or RW-200E
Boot Elastomer	Viton FEP
Wire Type	1m, 5 core, Type 55, 24 AWG

Wiring Definition

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

Accessories

USB Calibration Cable	P/N: HO-040-12
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Configuration Interface

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

Specifications may be subject to change without prior notice.