

100mm Linear Position Sensor

Quantum TMR 100mm Linear Position Sensor

The Quantum TMR 100mm Linear Position Sensor is a robust, lightweight, programmable device with a 100mm measurement range. Leveraging the latest advancements in Tunneling MagnetoResistive technology, this non-contact sensor provides extremely accurate position measurement in harsh environmental applications.

Boasting advanced accuracies of $\pm 0.5\%$ of reading, the sensor is thermally stable across a wide temperature range. The sensor outputs via a digital CAN or analog voltage output. Capable of measuring through 20mm air gaps from sensor to target, this solid-state sensor can detect accurately through plastics, aluminium or road debris.

Standard motorsport measurement applications include: hydraulic piston travel, suspension component monitoring, steering position and throttle position sensing.



Sealed electronics rated IP67.



Typical magnetic target with linear sensor.

Key Features

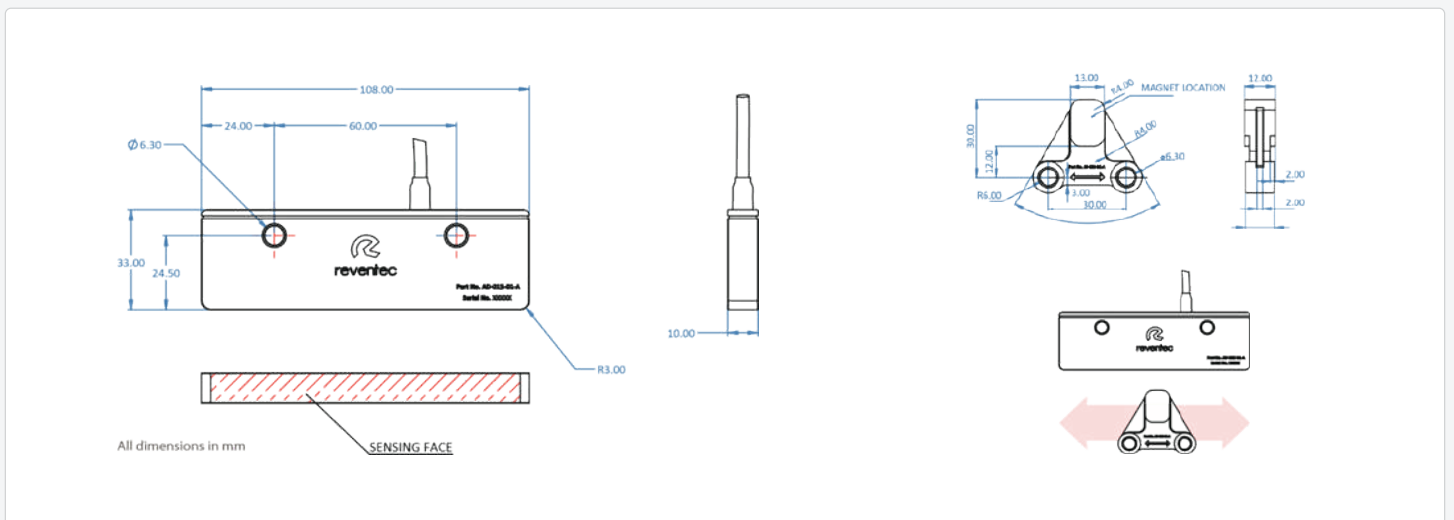
- Solid-state, non-contact alternative to potentiometers
- Rapid response rate of 5kHz
- Extremely accurate; $\pm 0.5\%$ of reading
- 100mm of programmable linear measurement sensing range
- 12bit Analog VDC output resolution
- Accurate position sensing over a wide temperature range -40°C to $+125^{\circ}\text{C}$

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 component movement. Full customisation for specialist projects available.

*Subject to target

Example Sensor Dimensions



Measurement

Type	Linear Displacement
Typical Accuracy	±0.5% of reading
Measurement Rate	5kHz
Measurement Range	±50mm

Electrical

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

Analog Output

Type	Voltage
Output Range	0.25 VDC to 4.75 VDC (Configurable) Ratiometric
Resolution	12 bit
Stability	±0.1% over full temperature range

CAN Output

Type	CAN 2.0A
Baud Rate	500 kbit/sec or 1 MegB/s
Message Output Rate	1 kHz, 100 Hz or 10 Hz
Message Format	Please contact us for more detail.

Mechanical

Construction Material	Anodised Aluminium, Stainless Steel, Titanium, PEEK or a combination
Mass	From 15g
Recommended Target	P/N: CH-057-01

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

Wiring Specification

Harness	Flying lead Custom connector on request
Sleeve Elastomer	RW-200E
Boot Elastomer	Viton FEP
Wire Type	5 core, Type 55, 26 AWG

Wiring Definition

Description	Wire Colour	PIN Out
Supply (+)	● Red	Flying lead
Ground Channel (GND)	● Black	Flying lead
Signal Channel (0.25-4.75V)	● Yellow	Flying lead
Tx Comms (Configuration only)	○ White	Flying lead
Rx Comms (Configuration only)	● Green	Flying lead

Configuration Interface

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

Accessories

USB Calibration Cable	P/N: HO-040-12
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Specifications may be subject to change without prior notice.