

- **Non-contact – Hall-effect technology**
- **Ø22.4mm through-shaft design**
- **Integrated shaft seal**
- **Ratiometric 0.5-4.5Vdc output**
- **120° measurement angle**
- **Dual Hall-effect sensors**
- **5Vdc regulated independent supplies**
- **IP67 sealing**
- **Metri-Pack 150.2 connector**



The TRH402 is a non-contact, Hall-effect rotary position sensors that offers the optimal combination of performance, safety and cost for applications where the operating shaft needs to pass through the sensor.

Designed with a Ø22.4mm through-hole including an integrated seal to prevent ingress between the shaft and the sensor housing, the TRH402 provides a ratiometric (0.5-4.5Vdc) output over a maximum 120° angle. Positional information is determined by the relative angle of the magnet (integrated into the rotor) as it is rotated by the through-shaft.

Two physically independent, Hall-effect sensing signals are sent to allow for system error checking of the

positional data meaning high-performing, safety-critical applications can easily be addressed. Each channel can be powered independently using 5Vdc regulated power supplies for true dual redundancy of the output signal.

The fully-sealed, IP67 design offers exceptional levels of performance with respect to water and dust and the robust design protects against shock, vibration and temperature effects, meaning the sensor is ideal for use in hostile, on- and off-highway vehicle environments.

The electrical connections are made using an integrated, industry standard, 6-way Metri-Pack 150.2 pull-to-seat connector.

SPECIFICATIONS

ELECTRICAL

MEASUREMENT RANGE	120° maximum
RESOLUTION	12-bit (0.025% of measurement range)
SUPPLY VOLTAGE	5Vdc regulated (± 0.5 Vdc)
SUPPLY CURRENT	<12.5mA per channel
SHORT-CIRCUIT PROTECTION TO GND	Yes
SHORT-CIRCUIT PROTECTION TO SUPPLY	Yes
REVERSE POLARITY PROTECTION	Yes
POWER-ON SETTLEMENT	<1s
LINEARITY (PER CHANNEL)	< $\pm 2\%$
TEMPERATURE COEFFICIENT	< ± 50 ppm/ $^{\circ}$ C

OUTPUT

VOLTAGE OUTPUT RANGE	Ratiometric 0.5-4.5Vdc over measurement range
MONOTONIC RANGE	0.5Vdc (10%) and 4.5Vdc (90%) nominal
LOAD RESISTANCE	10k Ω minimum (resistive to GND)
OUTPUT NOISE	≤ 1 mVrms
INPUT/OUTPUT DELAY (MAX.)	2.0ms

MECHANICAL

MECHANICAL ANGLE	360° continuous
WEIGHT	<40g
CONNECTOR	Metri-Pack 150.2 pull-to-seat connector 2x 3.4 \varnothing holes provided
MOUNTING	2x $\varnothing 5.33$ mm holes provided
MAXIMUM SCREW TORQUE	3.4Nm

ENVIRONMENTAL

OPERATING TEMPERATURE	-40 $^{\circ}$ C to +125 $^{\circ}$ C
SEALING	IP67
ELECTROMAGNETIC INTERFERENCE	Directive 2014/30/EU, EN 61000-4-3 to 100V/m 80-1000MHz & 1.4-2.7GHz