McLaren ELECTRONIC SYSTEMS

ROTARY HALL SENSOR

TWIN OUTPUT

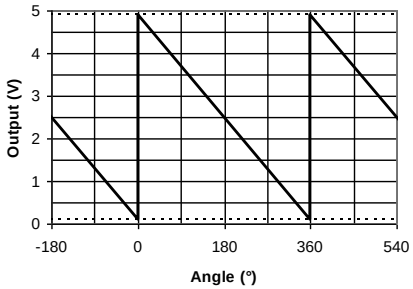
The output of a rotary hall sensor is a voltage which changes in direct proportion to the shaft angle. A constant voltage is required across the supply and ground wires of the sensor. No internal end stops are fitted, so continuous rotation is possible. The sensor consists of a Hall Effect element, a shaft and a magnet. When the angular position of the sensor changes relative to the magnet, the change In magnetic field in the sensor results in a change in output voltage. The twin output sensor has an independent electrical circuit for each channel therefore allowing redundancy.

Electrical

- Electrical angle configurable up to 720°
- Continuous rotation with no end stops
- Supply voltage 6 to 16V DC
- Supply transient over-voltage protected
- Supply reverse polarity protected
- Supply current 35mA max per channel
- Supply power-up rate must be greater than 0.05V/ms
- Independent non-linearity <0.5% FS typ, 1.0%FS max
- Thermal drift 0.1%FS (20..150°C)
- 180° position tolerance <±2°
- Output Update Rate >8kHz[1]
- Resolution 0.3° on both channels
- Output voltage range 4.9V @ 0° to 0.1V @ 360°

Viewed from the end of the shaft, clockwise rotation decreases the output voltage.

Output of 360° Sensor



[1] When crossing the 360°/720° point in either direction, there will be a delay of approximately 100µs for the output to change between limits.

Application

- Non contact rotary position measurement of steering wheel angle, gear drum position, accelerator pedal position, clutch pedal/paddle position.

Cable and Connection Definition

- 26 AWG un-screened cable
- Cable length is shown on the order details but any length is available on request
- Various automotive and military connectors are available
- Connection

Red wire	Supply A	Orange wire	Supply B
White wire	Signal A	Yellow wire	Signal B
Blue wire	Ground A	Green wire	Ground B

Mechanical

- Body Aluminium alloy, anodised and dyed black with stainless steel shaft
- 360° continuous rotation – no internal shaft end stops
- Maximum operational speed 3000rpm
- Life expectancy 100 x 10^6 cycles
- 'O' ring shaft seal
- Weight less than 60g (including cable)

Design and manufacture is in-house, so if our existing designs do not suit your application, we can provide cost effective customised parts to suit even the most demanding application. No engineering charges are made for simple modifications such as customer specific connectors, cable protection and cable lengths. Please contact our technical consultancy service who will be pleased to help.

Environmental

- Vibration 50Hz to 2500Hz @ 40g 8hrs per axis
- Resistant to standard motorsport fluids
- Maximum humidity 100%
- DR25 jacketed cable
- Operating temperature -40 to +150°C

The sensor may be permanently damaged if the shaft is exposed to strong magnetic fields. During operation, the sensor should be kept clear of stray magnetic fields and ferro-magnetic materials.

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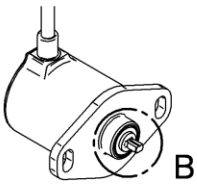
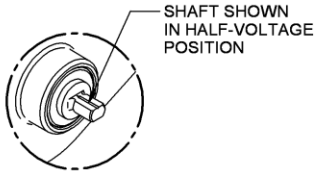
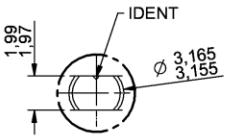
ROTARY HALL SENSOR
TWIN OUTPUT



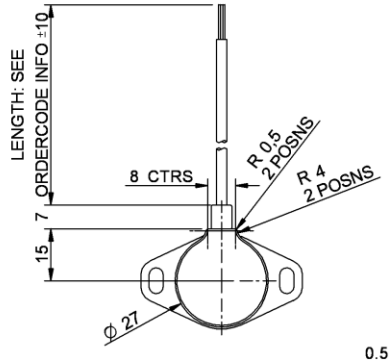
ISOMETRIC VIEW

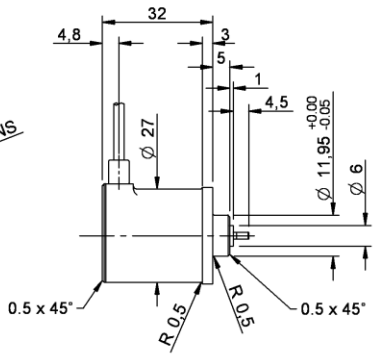


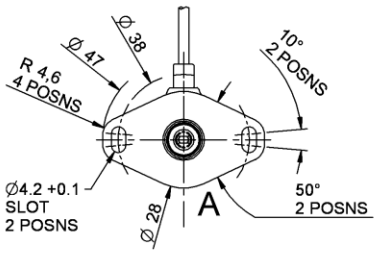
DETAIL B



DETAIL A







Cable Length	Electrical Angle	Order Code
1000mm	360°	O 030 370 020 010
1000mm	720°	O 030 370 020 031

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