McLaren ELECTRONIC SYSTEMS

ROTARY HALL SENSOR

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.

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 <50mA
- Supply power-up rate must be greater than 0.05V/ms
- Independent non-linearity <1% FS
- Resolution 0.3°
- Thermal drift 0.1%FS (20..125°C), 0.3%FS (-40..150°C)
- Half voltage position tolerance <±2°
- Output Update Rate 8kHz[1]
- Output voltage range configurable about a 2.5V half-voltage point

Viewed from the end of the shaft, clockwise rotation decreases the output voltage. Anticlockwise rotation with decreasing output voltage available on request.

[1] When crossing the 360° point in either direction, there will be a delay of approximately 10µs for the output to change between limits.

Cable and Connection Definition

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

Red wire	Supply
Green wire	Ground
White wire	Signal

Application

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

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 50g (including cable)
- Polyester cable boss for strain relief to the sensor body

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%
- Viton 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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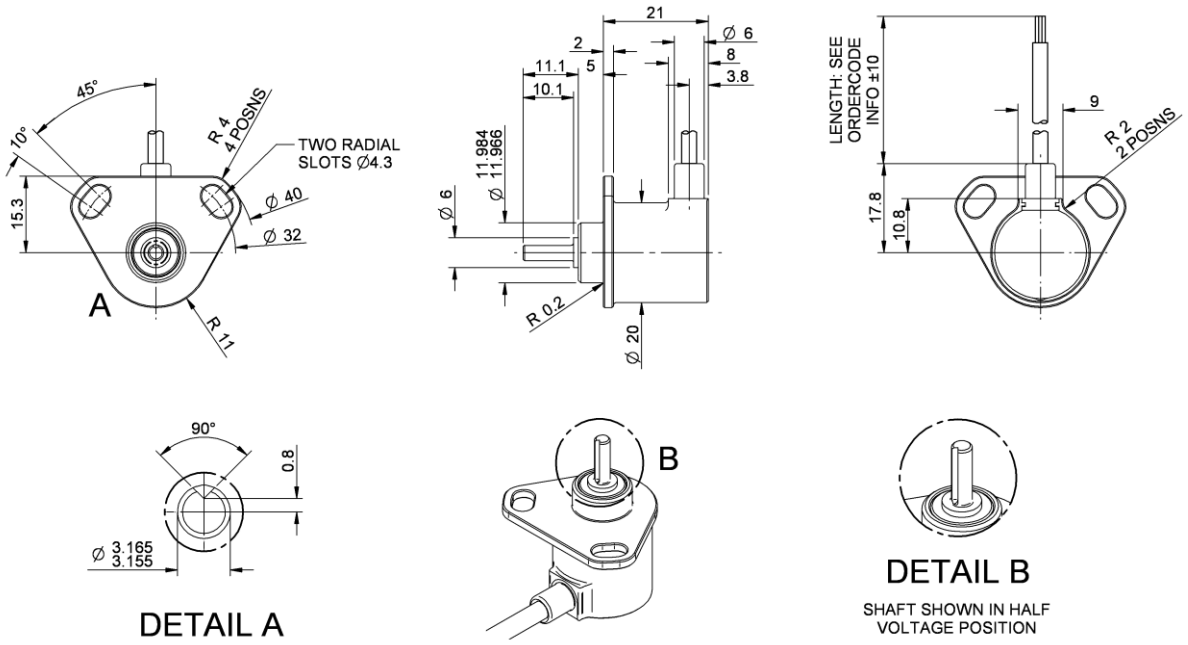

Cable Length	Electrical Angle	Order Code
1000mm	360°	O 030 370 020 001
1000mm	720°	O 030 370 020 030

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