PRODUCT SUMMARY | SCR 2955 | REV 12 | LAST UPDATE: 20/02/26

Linear Hall Effect Position Sensor

O 030 320 009 XXX

The output of a Linear Hall Effect (LHE) sensor is a voltage which changes in proportion to the linear displacement of a magnet. A constant voltage is required across the supply and ground wires of the sensor.

The sensor consists of a Hall Effect element and a cylindrical magnet. The magnet may optionally be housed within a non-captive, wiper sealed, shaft, integrated with the sensor body. When the magnet moves relative to the body of the sensor, the change in magnetic field changes the output voltage. The gain, offset and thermal drift of each output is digitally compensated to minimise errors, and can be factory configured.

Various stroke lengths are available.

EXAMPLE APPLICATIONS

- Clutch and Gear selector drum position
- Brake servo position

ELECTRICAL

- Electrical stroke:
  - 5 to 50 mm* for linear output
- Supply Voltage:
  - Precision 5.0 V ±0.5 V† (Typ.), 8.5 V (Max.)‡
- Supply Current:
  - 11 mA (Max.)
- Output is proportional to supply voltage
- Output voltage range§:
  - Zero offset (magnet at low voltage position): 0.2 V to 0.75 V ±0.05 V (at 25 °C)
  - Full Scale (magnet at high voltage position): 4.25 V to 4.8 V ±0.05 V (at 25 °C)
- Output Current: ±1.2 mA (recommended max.)
- Independent non-linearity:
  - ±1 % (typ.), ±2 % (max)
- Thermal shift:
  - <±0.05 % FS/K
- Insulation Resistance:
  - >100 MΩ @ 500 Vdc
- Hysteresis due to shaft and magnet rotation:
  - ±4 % FS (typ.)
- The output can either decrease or increase as the magnet passes the sensor**

Typical LHE sensors, for illustrative purposes only

CABLE AND CONNECTION

- 24 - 28 AWG unscreened cable, length and wire gauge as required
- Various motorsport connectors are available

Wire Colour	Connector Pin ID	Function
Red	A / 1	Supply
White	B / 2	Ground
Green	C / 3	Signal

MECHANICAL

- Aluminium alloy body, hard anodised and dyed black
- Mechanical stroke specified in product specification drawing
- Weight specified in product specification
- Optional Shaft - Stainless steel
  - Shaft is sealed by wiper seal but is not captive
- Integrated cable boss for strain relief to the sensor body
- Viton jacketed cable

ENVIRONMENTAL

- Resistant to standard motorsport fluids
- Relative Humidity: 100% (max)
- Operating Temperature Range:
  - -40 °C to +170 °C††
- Compensated Temperature Range:
  - +20 °C to +150 °C
- Vibration 50 to 2500 Hz at 40 g 8hrs per axis

To avoid permanent damage during operation, the sensor should be kept clear of magnetic fields and ferro-magnetic materials.

* Stroke ranges outside this range are possible, please contact us to discuss requirements.
† 4.5 V to 5.5 V sensor operates within stated specification. Outside this range sensor is still functional but performance may be degraded.
‡ A 12 V LHE is available, please contact us to discuss requirements.
§ Output voltage range is typically symmetrical about a 2.5 V mid-point.
** Factory configured.
†† 1000 h operation at 170 °C, 8000 h operation at 125 °C.

Get in touch
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