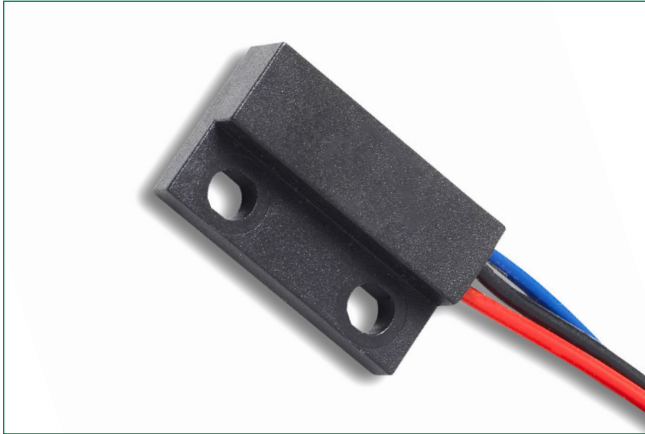


# 55140 Sensor

## Miniature Flange Mounting

RoHS



### Description

The 55140 is a small flange mounting hall effect sensor occupying only 3.22cm<sup>2</sup> (0.500"²) board space with a choice of digital, or programmable analog outputs. It is available as three-wire (voltage output) or two-wire (current output) versions. Its case design enables screw or adhesive mounting and the sensor is capable of switching up to 24Vdc and 20mA. It comes with a range of sensitivity and cable length options.

### Features & Benefits

- Magnetically operated position sensor
- Digital and programmable analog types available
- Medium, high or programmable sensitivities
- Three-wire (voltage output) or two-wire (current output) versions
- Vibration 50g max. @ 50-2,000Hz
- Shock 150g max. @ 11ms ½ Sine
- Reverse/Over voltage protection
- Built in temperature compensation
- High switching speed up to 12kHz
- Long life; up to 20 billion operations
- Operates in static or dynamic magnetic field
- RoHS Compliant
- IP67 rated

### Additional Information



Resources



Accessories



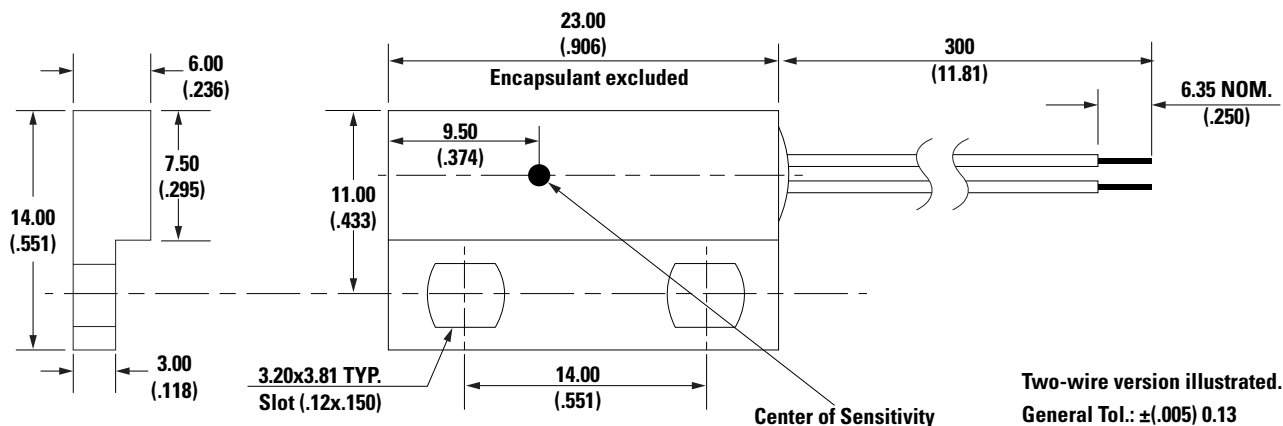
Samples

### Applications

- Position and limit sensing
- RPM measurement
- Commutation of brushless DC motors
- Flow metering
- Angle sensing
- Magnetic encoders

### Dimensions

Dimensions in mm (inch)

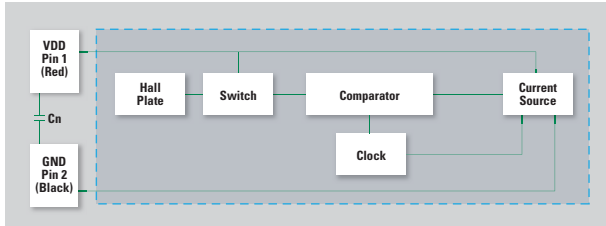


# 55140 Sensor

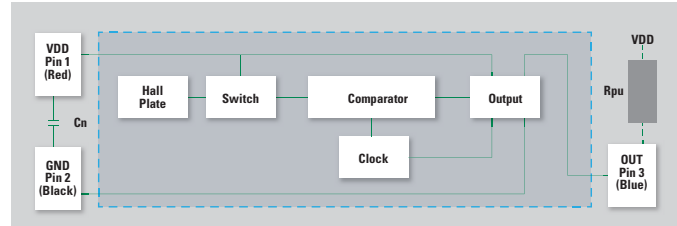
## Miniature Flange Mounting

### Block Diagram

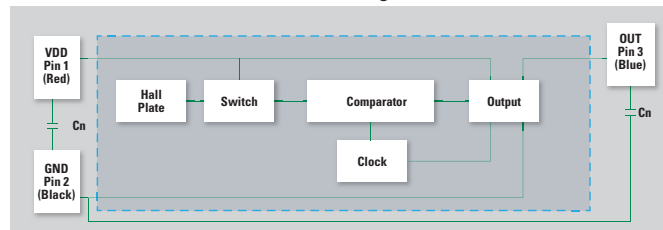
Two-wire Version



Three-wire Version



Three-wire Analog Version



#### Notes:

1. Add capacitor Cn as shown, close to the sensor, for transient suppression if required.
2. Add pull-up resistor Rpu as shown for sinking output. The Rpu value should be calculated using your supply voltage while keeping the ON state current at a level below the maximum.  
 $R_{pu} = V_{DD}/I_o$ ;  $R_{pu} = 12V_{dc}/10mA = 1.2k\Omega$

### T1 - Electrical Ratings

2-Wire Hall Switch (2M)

| Hall Type                   |                        |           | Digital Switch 2-Wire (Current Output) |
|-----------------------------|------------------------|-----------|----------------------------------------|
| Supply Voltage <sup>1</sup> | Absolute Ratings       | Vdc       | -18 to +28                             |
|                             | Operate                | Vdc       | +3 to +24                              |
|                             | Overvoltage Protection | Vdc - max | 32                                     |
| Current Consumption         | Hall OFF               | mA        | 5.0 to 6.9                             |
|                             | Hall ON                | mA        | 12.0 to 17.0                           |
| Switching Speed             | -                      | kHz       | 12                                     |
| Temperature                 | Operating              | C         | -40 to +100                            |

#### Notes:

1. It is assumed the product will operate within the normal Supply Voltage of +24Vdc maximum.

### T2 - Electrical Ratings

3-Wire Hall Switch &amp; Analog Programmable (3H, 3M, &amp; AP)

| Hall Type                         |                        |           | Digital Switch 3 - Wire (Voltage Output) | AP - Analog (Programmable Only) <sup>2</sup> |
|-----------------------------------|------------------------|-----------|------------------------------------------|----------------------------------------------|
| Supply Voltage <sup>1</sup>       | Absolute Ratings       | Vdc       | -18 to +28                               | 8.5                                          |
|                                   | Operate                | Vdc       | 2.7 to 24                                | 4.5 - 5.5                                    |
|                                   | Overvoltage Protection | Vdc - max | 32                                       | 16.0                                         |
| Output High Voltage               | Min                    | Vdc       | Sinking Output                           | 0.2                                          |
| Output Low Voltage                | Max                    | Vdc       | 0.4 @ 20mA                               | 4.80                                         |
| Output Current (continuously on)  | Max                    | mA        | 25                                       | -1.0 to +1.0                                 |
| Current Consumption (from Supply) | -                      | mA        | 1.1 to 2.4                               | 5.0 to 10.0                                  |
| Switching Speed                   | -                      | kHz       | 12                                       | 2                                            |
| Temperature                       | Operating              | C         | -40 to +100                              | -40 to +100                                  |

#### Notes:

1. It is assumed the product will operate within the normal Supply Voltage of +24Vdc maximum.
2. Sensor Voltage Output can be reprogrammed to best fit customer application (see LF Application Note)

# 55140 Sensor

## Miniature Flange Mounting

### Hall Sensitivity Options

| Select Option | Hall Type     | Sensitivity (Gauss)                | Activate - D <sup>1</sup> mm (inch) |
|---------------|---------------|------------------------------------|-------------------------------------|
| 2M            | 2-Wire Switch | 94                                 | 15.0                                |
| 3M            | 3-Wire Switch | 120                                | 13.0                                |
| 3H            | 3-Wire Switch | 55                                 | 19.0                                |
| AP            | Analog        | Programmable Response <sup>2</sup> |                                     |

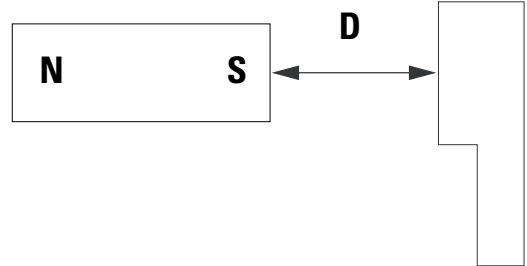
**Notes:**

1. Activation distances are approximate using NeFeB Magnet 21 x 7 x 4.7 (.827 x .276W x .185H)

Littelfuse P/N H-58

2. Sensor Voltage Output can be reprogrammed to best fit customer application (see LF Application Note)

### Activation Detail



### Cable Length Specification

| Cable<br>24 AWG 7/32 PVC 105°C UL1430/UL1569 |                        |
|----------------------------------------------|------------------------|
| Select Option                                | Cable Length mm (inch) |
| 02                                           | 300 (11.81)            |
| 05                                           | 1000 (39.37)           |

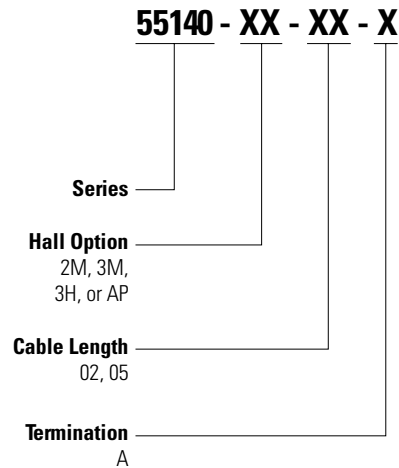
### Termination Detail

| Select Option | Description<br>(Two-wire versions illustrated) |
|---------------|------------------------------------------------|
| A             | Tinned leads (6.4±0.76)mm                      |

### Packaging Options

| Packaging Option | Packaging Specification | Quantity | Quantity & Packaging Code | Taping Width |
|------------------|-------------------------|----------|---------------------------|--------------|
| Bulk             | Bulk                    | 500      | N/A                       | N/A          |

### Part Numbering System



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