

# 59140 Series

## Miniature Flange Mount Sensor



### Description

The 59140 is a miniature flange mounting reed sensor occupying only 3.22cm<sup>2</sup> (0.500"²) board space with a choice of normally open, normally open high voltage, normally closed or changeover contacts. The wires exit from the right-hand side, see Drawing 2. It is also available with left-hand exit, see 59141 series. The 59140 is capable of switching up to 265Vac/300Vdc at 10VA.

It is well suited for use in a wide range of industrial, appliances, or IoT proximity sensing applications.

The 59140 series functions best with the matching actuator 57140-000.

### Additional Information



Resources



Accessories



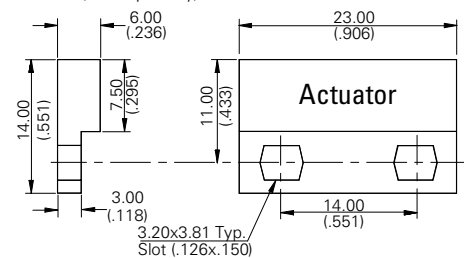
Samples

### Dimensions

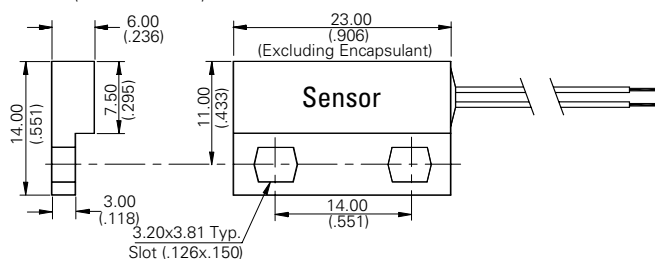
Dimensions in mm (inch)

Tolerances are +/- 0.25 (0.010) unless otherwise noted.

**Actuator** (sold separately)



**Sensor** (Two-wire version)



### Features & Benefits

- Non-contact switching solution for wet & harsh environments
- Housing design for optimum adjustability
- Available in select sensitivities (operating distances)
- Standard cable configurations; customization options available
- Hermetically sealed, IP67 rated; UL and REACH compliant
- No leakage current in 'open' state—ideal for battery-powered IoT applications
- Can operate through non-ferrous materials (for example, wood, plastic or aluminium)
- Helps implement efficient proximity/access and energy management systems
- Compact size and easy installation and effective concealment in many applications
- UL Recognized per UL 508 and CSA C22.2 No. 14.

### Applications

- Security and access control
- Factory automation
- Process equipment
- Major appliances
- Small appliances
- Proximity and limit sensing

### Agency Approvals

| Agency | Agency File Number |
|--------|--------------------|
|        | E61760             |

**Note:** Contact Littelfuse for specific agency approval ratings.

| Schematics | Switch Type |
|------------|-------------|
|            | 1 and 2     |
|            | 3           |
|            | 4           |

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### Electrical Ratings

| Contact Type                |                             |                 | Normally Open    | Normally Open High Voltage | Change Over     | Normally Closed |
|-----------------------------|-----------------------------|-----------------|------------------|----------------------------|-----------------|-----------------|
| Switch Type                 |                             |                 | 1                | 2                          | 3               | 4               |
| Contact Rating <sup>1</sup> |                             | VA/Watt - max.  | 10               | 10                         | 5               | 5               |
| Voltage <sup>4</sup>        | Switching <sup>2</sup>      | Vdc - max.      | 200              | 200                        | 175             | 175             |
|                             |                             | Vac - max.      | 140              | 265                        | 120             | 120             |
|                             | Breakdown <sup>3</sup>      | Vdc - min.      | 250              | 400                        | 200             | 200             |
| Current <sup>4</sup>        | Switching <sup>2</sup>      | Adc - max.      | 0.5              | 0.4                        | 0.25            | 0.25            |
|                             |                             | Aac - max.      | 0.35             | 0.30                       | 0.18            | 0.18            |
|                             | Carry                       | Adc - max.      | 1.2              | 1.4                        | 1.5             | 1.5             |
| Resistance <sup>5</sup>     | Contact, Initial Insulation | $\Omega$ - max. | 0.2              | 0.2                        | 0.2             | 0.2             |
|                             |                             | $\Omega$ - min. | 10 <sup>10</sup> | 10 <sup>10</sup>           | 10 <sup>9</sup> | 10 <sup>9</sup> |
| Capacitance                 | Contact                     | pF - typ.       | 0.3              | 0.2                        | 0.3             | 0.3             |
| Temperature                 | Operating                   | °C              | -40 to +105      | -20 to +105                | -40 to +105     | -40 to +105     |

### Product Characteristics

|                           |             |           |     |     |     |     |
|---------------------------|-------------|-----------|-----|-----|-----|-----|
| Operate Time <sup>6</sup> |             | ms - max. | 1.0 | 1.0 | 3.0 | 3.0 |
| Release Time <sup>6</sup> |             | ms - max. | 1.0 | 1.0 | 3.0 | 3.0 |
| Shock <sup>7</sup>        | 11ms ½ sine | G - max.  | 100 | 100 | 50  | 50  |
| Vibration <sup>7</sup>    | 50-2000 Hz  | G - max.  | 30  | 30  | 30  | 30  |

#### Notes:

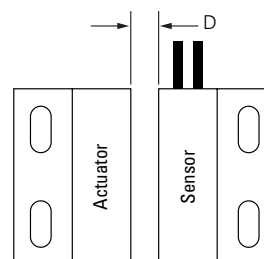
- Contact rating - Product of the switching voltage and current should never exceed the wattage rating. Contact Littelfuse for additional load/life information.
- When switching inductive and/or capacitive loads, the effects of transient voltages and/or currents should be considered. Refer to Application Notes AN108A and AN107 for details.
- Breakdown Voltage - per MIL-STD-202, Method 301.
- Electrical Load Life Expectancy - Contact Littelfuse with voltage, current values along with type of load.
- This resistance value is for 300 mm wire length. Resistance changes when wire lengthens.
- Operate (including bounce)/Release Time - per EIA/NARM RS-421-A, diode suppressed coil (Coil II).
- Shock and Vibration - per EIA/NARM RS-421-A and MIL-STD-202.
- For custom modifications to the wire length or size, or adding a special connector, please contact Littelfuse.

### Sensitivity Options (Using 57140 Actuator)

| Select Option |                 | S                |                               |                                 | T                |                               |                                 | U                |                               |                                 | V                |                               |                                 |
|---------------|-----------------|------------------|-------------------------------|---------------------------------|------------------|-------------------------------|---------------------------------|------------------|-------------------------------|---------------------------------|------------------|-------------------------------|---------------------------------|
| Switch Type   |                 | Pull-In AT Range | Activation Distance (mm) Min. | Deactivation Distance (mm) Max. | Pull-In AT Range | Activation Distance (mm) Min. | Deactivation Distance (mm) Max. | Pull-In AT Range | Activation Distance (mm) Min. | Deactivation Distance (mm) Max. | Pull-In AT Range | Activation Distance (mm) Min. | Deactivation Distance (mm) Max. |
|               |                 |                  |                               |                                 |                  |                               |                                 |                  |                               |                                 |                  |                               |                                 |
| 1             | Normally Open   | 12-18            | 6.8                           | 19                              | 17-23            | 5.8                           | 17.8                            | 22-28            | 5                             | 16.5                            | 27-33            | 4.2                           | 16.5                            |
| 2             | High Voltage    | -                | 6.8                           | 19                              | 17-23            | 5.8                           | 17.8                            | 22-28            | -                             | -                               | 27-33            | -                             | -                               |
| 3             | Change Over     | 15-20            | 6.5                           | 15.2                            | 20-25            | 5.5                           | 14                              | 25-30            | -                             | -                               | -                | -                             | -                               |
| 4             | Normally Closed | 15-20            | 6.5                           | 15.2                            | 20-25            | 5.5                           | 14                              | 25-30            | 5                             | 14                              | -                | -                             | -                               |

#### Notes:

- Pull-In AT Range: These AT values are the bare reed switch AT before modification.
- The activation distance is average value on the final sensor assembly.



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## Miniature Flange Mount Sensor

### Cable Length Specification

| Cable Type: 24 AWG 7/32 PVC 105°C UL1430/UL1569 |                                |
|-------------------------------------------------|--------------------------------|
| Select Option                                   | Cable Length<br>mm (inch)      |
| 02                                              | 300 +/-10.00 (11.81 +/- 0.394) |
| 05                                              | 1000+/-10.00 (39.37+/- 0.394)  |

### Termination Specification

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

### Material Specification

|                | Housing Material | Color | Sealing Component |
|----------------|------------------|-------|-------------------|
| 57140 Actuator | 20% GF P.B.T     | Black | Epoxy             |
| 59140 Sensor   | 20% GF P.B.T     | Black | Epoxy             |

### Packaging

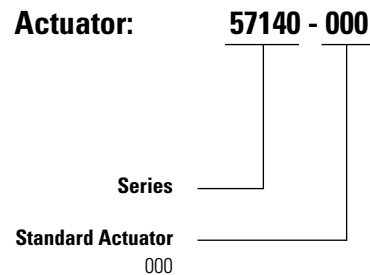
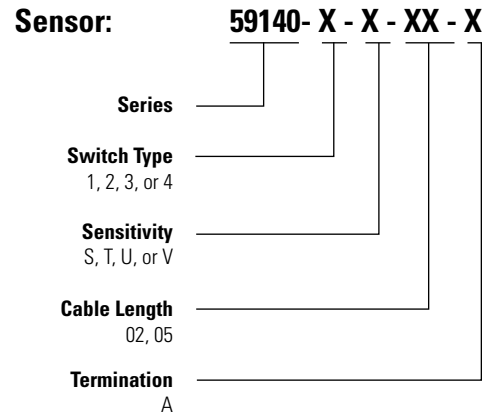
| Cable Length | Packaging Option | Quantity |
|--------------|------------------|----------|
| 02           | Bulk             | 500      |
| 05           | Bulk             | 500      |

### Recommended Fastener for Sensor<sup>1</sup>

| Series   | Fastener   | Type              | Torque      |
|----------|------------|-------------------|-------------|
| Metric   | M3         | Screw with washer | 1.0 N-m     |
| Standard | #4 (7/64") | Screw with washer | 8.85 in-lbf |

**Note: 1.** Sensor Housing may be secured using mechanical fasteners, M3 or #4 Screws (Torque to 1 N-m (8.9 in-lbf)), or suitable adhesive tape material. Please note that you must use a suitable washer with the mechanical fastener. Fastener material should be non-magnetic stainless steel or brass.

### Part Numbering System



**Note:** The 57140 Actuator is sold separately.