

59140 Series

Miniature Flange Mount Sensor



Description

The 59140 is a miniature flange mounting reed sensor occupying only 3.22cm² (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



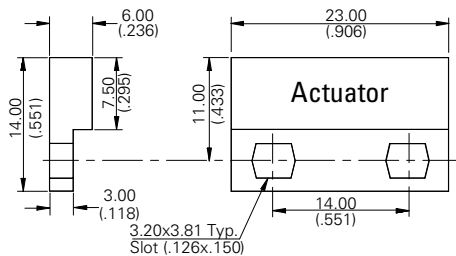
Samples

Dimensions

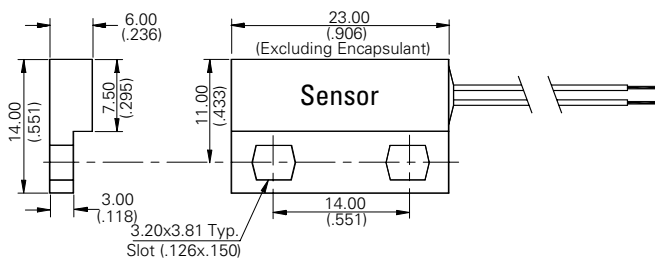
Dimensions in mm (inch)

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 |
|------------------------|-------------|
| Black Black | 1 and 2 |
| Black Blue White | 3 |
| Black Black | 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 ¹ | | VA/Watt - max. | 10 | 10 | 5 | 5 |
| Voltage ⁴ | Switching ² | Vdc - max. | 200 | 200 | 175 | 175 |
| | | Vac - max. | 140 | 265 | 120 | 120 |
| | Breakdown ³ | Vdc - min. | 250 | 400 | 200 | 200 |
| Current ⁴ | Switching ² | 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 ⁵ | Contact, Initial Insulation | Ω - max. | 0.2 | 0.2 | 0.2 | 0.2 |
| | | Ω - min. | 10 ¹⁰ | 10 ¹⁰ | 10 ⁹ | 10 ⁹ |
| 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 ⁶ | | ms - max. | 1.0 | 1.0 | 3.0 | 3.0 |
| Release Time ⁶ | | ms - max. | 1.0 | 1.0 | 3.0 | 3.0 |
| Shock ⁷ | 11ms ½ sine | G - max. | 100 | 100 | 50 | 50 |
| Vibration ⁷ | 50-2000 Hz | G - max. | 30 | 30 | 30 | 30 |

Notes:

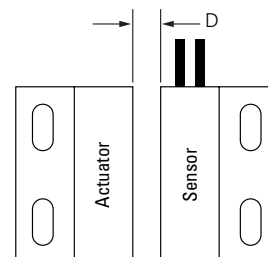
- Contact rating - Product of the switching voltage and current should never exceed the wattage rating. Contact Littelfuse for additional load/life information.
- When switching inductive and/or capacitive loads, the effects of transient voltages and/or currents should be considered. Refer to Application 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 | Switch Type | S | | | T | | | U | | | V | | |
|---------------|-----------------|------------------|-------------------------------|---------------------------------|------------------|-------------------------------|---------------------------------|------------------|-------------------------------|---------------------------------|------------------|-------------------------------|---------------------------------|
| | | 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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Cable Length Specification

| Cable Type: 24 AWG 7/32 PVC 105°C UL1430/UL1569 | |
|---|--------------------------------|
| Select Option | Cable Length 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 (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

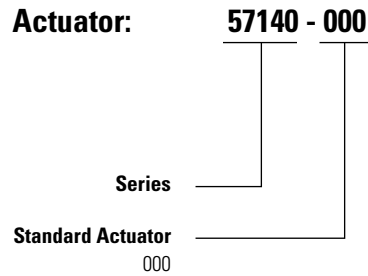
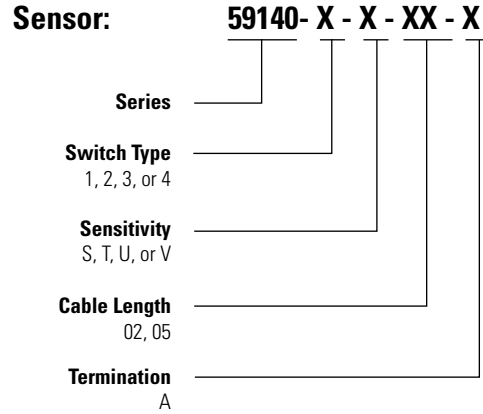
| Cable Length | Packaging Option | Quantity |
|--------------|------------------|----------|
| 02 | Bulk | 500 |
| 05 | Bulk | 500 |

Recommended Fastener for Sensor¹

| 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.