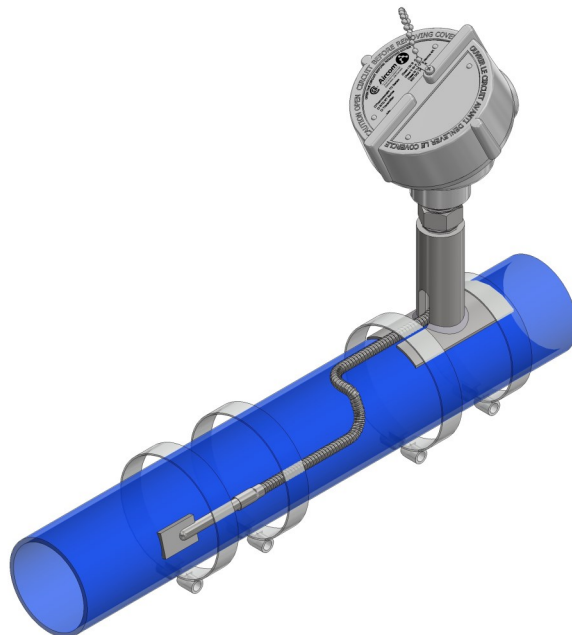


# SM2 Pipe Shoe Riser Assembly

Class I, Division 2, Groups A, B, C, D; Class I, Zone 2, Group IIC (Note 2); T6...T1



## Overview

### Description:

The SM2 Pipe Shoe Riser is a surface mount temperature sensor designed for use in hazardous locations. The SM2 is a customizable product that is model number configured and made to order.

The SM2 consists of a thermocouple or RTD sensor probe with a surface mount pad that can come curved for a pipe or flat. Flexible armour connects the sensor probe to a connection head (enclosure) that may be provided with a terminal block, DIN rail, wire splice connectors, or internal transmitter. The flexible armor is routed through the custom pipe shoe riser assembly.

### Application:

- Hazardous location temperature measurement
- Surface mount industrial temperature measurement
- Process control
- Outdoor / indoor use

## Specifications

|                               |  |
|-------------------------------|--|
| Accuracy RTD                  | Tolerance per IEC 60751 (DIN EN 60751) |
| Accuracy TC                   | Tolerance per ASTM E230                |
| T-Code                        | T6...T1                                |
| Electrical rating             | 30 Vdc, 1.0 A max                      |
| Ambient temperature           | -50°C to +50°C (-58°F to +122°F)       |
| Process temperature           | -50°C to +450°C (-58°F to +842°F)      |
| CSA Certificate of Compliance | 1526478                                |

### Note:

1. Specifications will depend on model code variants, and the values shown are the full rated model ranges.
2. Class I, Zone 2, Group IIC is US only.

# SM2 Pipe Shoe Riser Model Code

SM2 - T1 - T2 - T3 - T4 - T5 - T6 - T7

## SM2 Pipe Shoe Riser Assembly

| T1    | Connection Head  | Color | Material              | Conduit Connection | Terminal Block | Type Rating |
|-------|--|-------|-----------------------|--------------------|----------------|-------------|
| 2ALT  | Standard style   | Blue  | Aluminum epoxy coated | 1x 3/4" NPT        | Bakelite       | Type 4X     |
| 1ALT  | Standard style   | Blue  | Aluminum epoxy coated | 1x 1/2" NPT        | Bakelite       | Type 4X     |
| 2ALTC | Standard style   | Blue  | Aluminum epoxy coated | 1x 3/4" NPT        | Ceramic        | Type 4X     |
| 2ALW  | Mounting holes   | Grey  | Aluminum epoxy coated | 1x 3/4" NPT        | Bakelite       | Type 4X     |
| 2ALM  | Multi connection   | Blue  | Aluminum epoxy coated | 2x 3/4" NPT        | Bakelite       | Type 4X     |
| 2AL   | Standard style   | Grey  | Aluminum              | 1x 3/4" NPT        | Bakelite       | Type 4      |
| 2SS   | Standard style   | Steel | Stainless steel       | 1x 3/4" NPT        | Bakelite       | Type 4X     |
| Note  | Refer to page 4 for additional options, details and other styles |       |                       |                    |                |             |

| T2       | Pipe Shoe Riser Height "X" Length (inches) <sup>5</sup> | CSA Process Temperature Rating <sup>5</sup> |
|----------|---|---|
| 2.5      | 2.5 inches  | -50°C to +230°C (-58°F to +446°F), T3C      |
| 7.5      | 7.5 inches  | -50°C to +450°C (-58°F to +842°F), T2       |
| "inches" | Specify custom height in inches                         | Consult factory                             |

| T3       | Flex Armor Extension "A" length (inches) <sup>5</sup>                                      |
|----------|--|
| "inches" | Specify length in inches and allow for pipe shoe riser height "X" length (T2) <sup>5</sup> |

| T4    | Sensor Type   |
|-------|---|
| K     | Type K Thermocouple ungrounded  |
| J     | Type J Thermocouple ungrounded  |
| R3    | 3-wire RTD 100Ω Pt. 385 Class A (Class A tolerance ≤ +300°C(+572°F), Class B tolerance typically applies >+300°C(+572°F)) |
| R4    | 4-wire RTD 100Ω Pt. 385 Class A (Class A tolerance ≤ +300°C(+572°F), Class B tolerance typically applies >+300°C(+572°F)) |
| Other | Consult factory   |

| T5       | Sensor Probe "L" Length (inches) |
|----------|----------------------------------|
| "inches" | Specify length in inches         |

| T6  | Sensor Probe Construction                                |
|---|--|
| LT  | Low temperature (-50 to 260°C) (-58°F to +500°F)         |
| HT  | High temperature (-50 to 482°C) (-58°F to +899°F)        |
| ET  | Extreme temperature (-50 to 850°C) (-58°F to +1562°F)    |
| VT  | Vibration construction (-50 to 482°C) (-58°F to +899°F)  |
| CT  | Cryogenic temperature (-200 to 260°C) (-328°F to +500°F) |
| Temperature values are for the temperature sensor probe construction only. The CSA process and ambient temperature assembly ratings are dependant on connection head (T1) and distance from the head to contact with the process piping (T3) <sup>5</sup> . |  |

| T7    | Pipe OD               |
|-------|-----------------------|
| "NPS" | Specify NPS pipe size |
| X     | Not applicable (flat) |

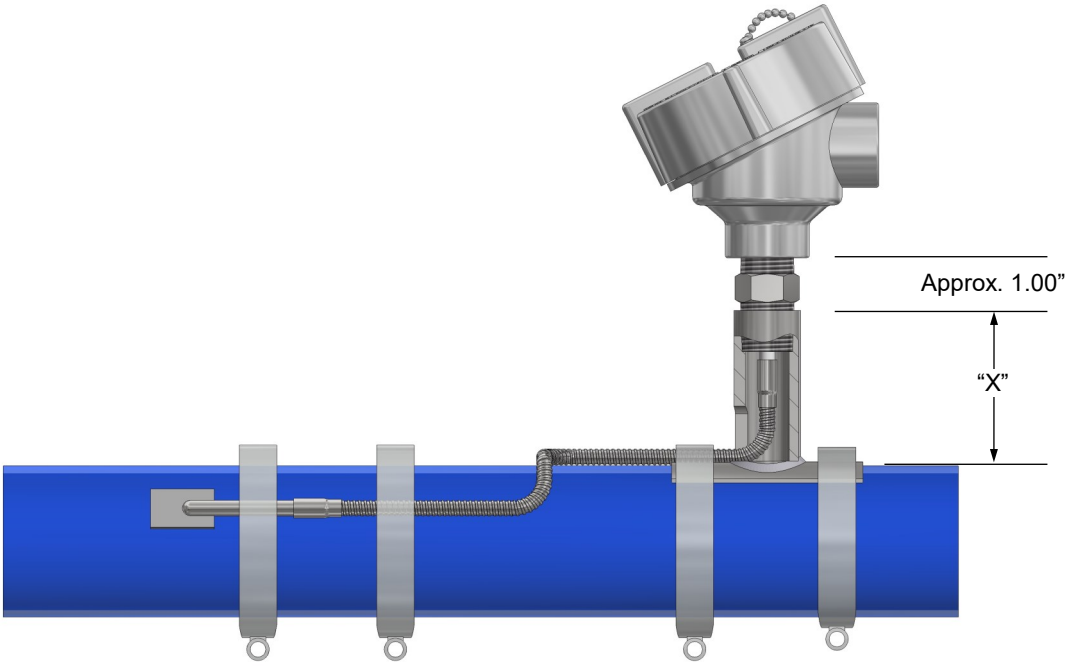
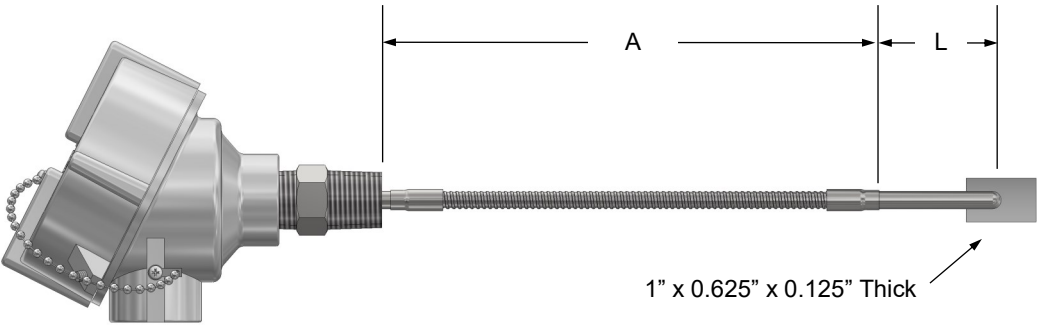
**Sensor Probe Sheath and Pipe Shoe Riser Material**  
Standard default material is 316/316L stainless steel. Other alloys are available on request.

**NOTES:**

1. Part number example: SM2-2ALT-2.5-24-R3-12-LT-X
2. Type J thermocouple not suitable for cryogenic sensor probe construction (T4)
3. Pipe shoe riser base and surface mount pad is curved to pipe OD
4. Pipe attachment bands are available as a separate item upon request
5. The sensor temperature rating is based on the length not directly in contact with the process at its maximum temperature

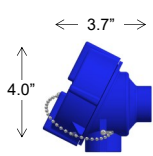
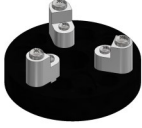
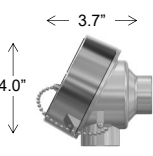

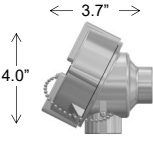
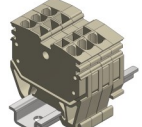
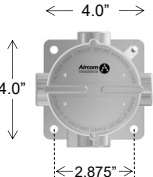

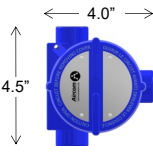


# SM2 Pipe Shoe Riser Outline & Dimensions



# SM2 Connection Heads

## Model, Outline, and Dimensions

| Outline & Dimensions  | Model | Connection (NPT)  |                      | Material & Type   | Ambient Temperature   | Terminal Block Options   |
|---|-------|-------------------|----------------------|---|---|--|
|   |       | Instrument        | Conduit              |   |   |  |
|    | 1ALT  | 1/2"              | 1x 1/2" <sup>2</sup> | Cast aluminum<br>epoxy coated<br>Buna O-ring<br>Type 4X |   | <br>Bakelite - <u>standard</u><br>Screw terminals to suit sensor configuration.   |
|   | 2ALT  | 1/2"              | 1x 3/4"              |   |   |  |
|   | 3ALT  | 3/4"              | 1x 3/4"              |   |   |  |
|    | 1SS   | 1/2"              | 1x 1/2" <sup>2</sup> | 316 stainless steel<br>Buna O-ring<br>Type 4X           | -50°C to +85°C<br>(-58°F to +185°F)<br>(+125°C (+257°F)<br>Canada only) | <br>Ceramic - optional<br>Screw terminals to suit sensor configuration<br>Add suffix "C" to connection head model number.                                   |
|   | 2SS   | 1/2"              | 1x 3/4"              |   |   |  |
|   | 3SS   | 3/4"              | 1x 3/4"              |   |   |  |
|   | 1AL   | 1/2"              | 1x 1/2" <sup>2</sup> | Cast aluminum<br>Buna O-ring<br>Type 4                  |   | <br>Clamp technology - optional<br>DIN mounted clamp technology terminals to suit sensor configuration<br>Add suffix "D" to connection head model number. |
|   | 2AL   | 1/2"              | 1x 3/4"              |   |   |  |
|   | 3AL   | 3/4"              | 1x 3/4"              |   |   |  |
|  | 1ALW  | 1/2" <sup>2</sup> | 1x 1/2" <sup>2</sup> | Cast aluminum<br>epoxy coated<br>Buna O-ring<br>Type 4X | -40°C to +85°C<br>(-40°F to +185°F)                                     | <br>Splice technology - optional<br>Wire splicing connectors contained loosely within connection head.<br>Add suffix "S" to connection head model number. |
|   | 2ALW  | 1/2" <sup>2</sup> | 1x 3/4"              |   |   |  |
|   | 3ALW  | 3/4"              | 1x 3/4"              |   |   |  |
|   | 4ALW  | 3/4"              | 2x 3/4"              |   |   |  |
|  | 1ALM  | 1/2"              | 2x 1/2"              |   |   |  |
|   | 2ALM  | 1/2"              | 2x 3/4"              |   |   |  |
|   | 3ALM  | 3/4"              | 2x 3/4"              |   |   |  |

### NOTES:

1. Ambient ratings are of the connection head only, temperature assembly ambient rating is typically -50°C to +50°C (-58°F to +122°F)
2. May be supplied with an approved 3/4" x 1/2" NPT reducer bushing
3. Type ratings are for enclosure component of assembly ONLY and not full assembly