Daily Thermetrics’ Model 190 Protection Tubes are constructed from ceramic or metal/ceramic composites and offer much higher temperature limits and better chemical resistance than metal alternatives. They are designed to be in direct contact with process and can be built with either threaded or flanged connection types. Designed for use with thermocouples, RTDs, and other instrumentation devices (see Daily Thermetrics’ Sensor Catalog).

<table>
<thead>
<tr>
<th>B</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL</td>
<td>Plain</td>
</tr>
<tr>
<td>TF</td>
<td>Threaded Fitting</td>
</tr>
<tr>
<td>FF</td>
<td>Fitting &amp; Flange</td>
</tr>
</tbody>
</table>

**Model 190 Protection Tube**

**B**

**Type**

**PL**

Plain

**TF**

Threaded Fitting

**FF**

Fitting & Flange
# Model 190 How to Order

**EXAMPLE:**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>190</td>
<td>PL</td>
<td>L12</td>
<td>U12</td>
<td>P75</td>
<td>AL</td>
<td>1RF</td>
</tr>
<tr>
<td>190</td>
<td>TF</td>
<td>L18</td>
<td>U18</td>
<td>P1.00</td>
<td>ML</td>
<td>1-1/2&quot; RF</td>
</tr>
<tr>
<td>190</td>
<td>FF</td>
<td>L24</td>
<td>U24</td>
<td>P1.50</td>
<td>HX</td>
<td>2RF</td>
</tr>
<tr>
<td>190</td>
<td></td>
<td>L36</td>
<td>U30</td>
<td>NA</td>
<td></td>
<td>1.5RF</td>
</tr>
<tr>
<td>190</td>
<td></td>
<td>L48</td>
<td>U36</td>
<td></td>
<td></td>
<td>3RF</td>
</tr>
<tr>
<td>190</td>
<td></td>
<td>L72</td>
<td>U48</td>
<td></td>
<td></td>
<td>1-1/2&quot; RTJ</td>
</tr>
<tr>
<td>190</td>
<td></td>
<td>LXX</td>
<td>U60</td>
<td></td>
<td></td>
<td>2RTJ</td>
</tr>
<tr>
<td>190</td>
<td></td>
<td></td>
<td>U72</td>
<td></td>
<td></td>
<td>XRF</td>
</tr>
<tr>
<td>190</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Custom RF</td>
</tr>
<tr>
<td>190</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Custom RTJ</td>
</tr>
<tr>
<td>190</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No Flange</td>
</tr>
</tbody>
</table>

- INDICATES COMMON SELECTION

## Model Protection Tube

<table>
<thead>
<tr>
<th>Type</th>
<th>Protection Tube</th>
<th>Threaded Fitting</th>
<th>Fitting &amp; Flange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plain</td>
<td>(Flange is threaded and shipped separately)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## L Dimension (Overall Length)

- L12: 12"
- L18: 18"
- L24: 24"
- L36: 36"
- L48: 48"
- L72: 72"
- LXX: Custom

**Metal Ceramic Tubes have 48" max length**

## U Dimension (Insertion Length)

- U12: 12"
- U18: 18"
- U24: 24"
- U30: 30"
- U36: 36"
- U48: 48"
- U60: 60"
- U72: 72"
- UXX: Custom

**Metal Ceramic Tubes have 48" max length**

## P Size (Process Connection)

- P75: 3/4" NPT
- P1.00: 1" NPT
- P1.50: 1-1/2" NPT
- NA: Non-Threaded Connection (Plain or Fitting & Flange)

**Metal Ceramic Tubes only come in 1" or greater**

## Ceramic Material Code

- AL: Alumina
- ML: Mullite
- HX: Hexoloy®
- MC: Metal Ceramic

## Flange Size and Type

- 1" RF
- 1-1/2" RF
- 2" RF
- 3" RF
- 1-1/2" RTJ
- 2" RTJ
- XRF
- Custom RF
- Custom RTJ
- NA: No Flange

## Flange Rating

- 150#
- 300#
- 600#
- 900#
- 1500#
- 2500#
- No Flange or Fitting

## Flange or Fitting Material Code

- 316/316L SS
- 347/347H SS
- Monel® 400
- Inconel® 600
- Incoloy® 800
- NA: No Flange

See Page 19 for Additional Materials

## OD/ID

- OD = 3/8" ; ID = 1/4"
- OD = 1/2" ; ID = 3/8"
- OD = 3/4" ; ID = 1/2"
- OD = 1-1/2" ; ID = 1"
- OD = 2" ; ID = 5/8"

**Metal Ceramic**

Contact Sales for Other Options

## Optional Test Reports (String Numbers Together for Multiple)

- 1: Positive Material Identification Report
- 2: Positive Material Identification Certificate
- 4: Material Test Reports
- 5: Ultrasonic Test Report (Full Penetration Welds Only)
- NA: No Additional Reports

---

1. See Page 25 for more information on testing and reports.
2. Unique and simplified item number will be generated and issued to every customized thermowell for ease of reordering.
3. The majority of options are customizable. Please contact sales if your requirements are not met by this catalog.
4. Flange face finish is 125-250 RMS for raised face and 63 AARH for RTJ sealing surface.
5. Positive Material Identification for flange and fitting only.
6. Per ASME B16.5, 900# flanges have the same dimensions as 1500# flanges for flanges 2-1/2" and smaller. For those sizes, 1500# will be provided.