



**TEL-TRU MANUFACTURING COMPANY**

# **SANITARY AND INDUSTRIAL RTDs**

*Probe Assemblies • Transmitters • Optional Programmable Built-in Compact Transmitters*



**www.teltru.com**

|                                |                       |
|--------------------------------|-----------------------|
| <i>World-Class Instruments</i> | <i>Since<br/>1916</i> |
|--------------------------------|-----------------------|



## Sanitary and Industrial RTDs

Tel-Tru, your source for high quality, precision temperature and pressure monitoring instruments, offers RTD probe assemblies, including hazardous environment approved models. They are designed with the most demanding sanitary and industrial applications in mind. In addition, they are configurable with many options to meet the needs of the dairy, beverage, food, pharmaceutical, and chemical processing markets.

### Specifications

|                     |                                                                                        |
|---------------------|----------------------------------------------------------------------------------------|
| Sensor:             | Thin film Pt 100 RTD,<br>TCR .00385<br>Class A +/- .06% at 0°C,<br>Conforms to IEC 751 |
| Lead wires:         | Teflon insulated, 3 lead wires                                                         |
| Termination:        | Options available                                                                      |
| Transmitter output: | 4 to 20 mA, scaled to factory configured range or user programmable                    |
| Probe lengths:      | From 1.25" to 12"                                                                      |
| Probe diameters:    | .187" or .250"                                                                         |
| Power Supply:       | 10 to 35Vdc                                                                            |
| Transmitter:        | See <a href="http://www.teltru.com/rtd_trans.asp">www.teltru.com/rtd_trans.asp</a>     |

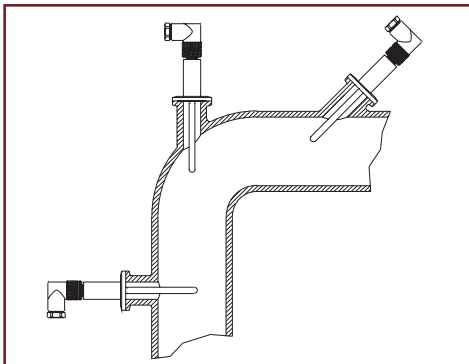
### Features and Options

- High accuracy, long term stability, consistent repeatability
- Fast response time
- All welded construction
- Direct installation into process piping
- Models can be configured with connection heads and various transmitter modules
- Several connection heads available, including 316SS, White Polypropylene, and Explosion Proof
- High-gloss polished finish to 2µin. available on Sanitary models
- Kit available for user programmable temperature range scaling of transmitters
- Additional software capabilities include data readout and tools for data storage, management, and analysis

### RTD Installation

Shown below are examples of mounting locations for various pipe sizes and configurations.

Minimum recommended insertion length = 1"



## How to Order

**Ordering Example:** *Model ISPAA3, .187" probe diameter, 4" probe length, 2-1/2" Tri-Clamp connection, 0/220°F temp. range, 316SS conn. head, IS Universal transmitter.*

| A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|
| I | S | P | A | A | 3 |   |
| 1 | 0 | 4 | 2 | 5 | 5 | 6 |
| - | D | 0 | 2 | C | 1 |   |

### Range Chart

#### Code Range

Ranges avail. with no transmitter

01 -60/500°F (-50/260°C)

Ranges avail. with all transmitters - Factory Configured

| Code | Range°F | Code | Range°C | SPAA3<br>NPAA3 | STAA3<br>NTAA3 | ISPAA3<br>INPAA3 |
|------|---------|------|---------|----------------|----------------|------------------|
| 52   | -50/120 | 71   | -50/100 | ✓              | ✓              | ✓                |
| 53   | -40/160 | 72   | -50/25  | ✓              | ✓              | ✓                |
| 54   | 0/140   | 73   | -50/50  | ✓              | ✓              | ✓                |
| 55   | 0/180   | 84   | -40/70  | ✓              | ✓              | ✓                |
| 50   | 0/200   | 86   | -20/120 | ✓              | ✓              | ✓                |
| 56   | 0/220   | 74   | -10/110 | ✓              | ✓              | ✓                |
| 67   | 0/250   | 75   | 0/50    | ✓              | ✓              | ✓                |
| 57   | 0/300   | 95   | 0/60    | ✓              | ✓              | ✓                |
| 59   | 20/240  | EI   | 0/80    | ✓              | ✓              | ✓                |
| 60   | 25/125  | 76   | 0/100   | ✓              | ✓              | ✓                |
| 61   | 50/250  | 77   | 0/150   | ✓              | ✓              | ✓                |
| 62   | 50/300  |      |         | ✓              | ✓              | ✓                |

Additional Ranges avail. with B1 and B2 transmitters

|    |        |    |       |   |  |   |
|----|--------|----|-------|---|--|---|
| 58 | 0/500  | 78 | 0/200 | ✓ |  | ✓ |
| 63 | 50/400 | 79 | 0/250 | ✓ |  | ✓ |
| 64 | 50/500 |    |       | ✓ |  | ✓ |

### Tel-Tru Thermowells

We recommend Thermowells for pressure, corrosive fluid, and high velocity applications. Tel-Tru Thermowells are machined from solid bar stock for standard or high velocity requirements in a large selection of materials and coatings. They are designed and manufactured to assure perfect alignment with the sensor stem.



For complete dimensions, sizes, available materials, optional features and configurations, see the Thermowell catalog at [www.teltru.com/catalogs.asp](http://www.teltru.com/catalogs.asp)

Technical data on pressure and temperature ratings and maximum fluid velocity can also be found at [www.teltru.com/thermowells\\_technical.asp](http://www.teltru.com/thermowells_technical.asp)



## Sanitary RTD Series

### SPAA3



**Sanitary RTD probe assembly** with single element thin film Pt100 3-wire RTD, Accuracy Class A +/- .06% at 0°C (coefficient 0.00385)

**Probe:** 316L SS with Tri-Clamp® CIP fitting

**Surface finish:** Wetted parts <16µin.

**Temperature Range:** -60/500°F (-50/260°C)

### STAA3



**Sanitary RTD probe assembly** with built-in compact transmitter, 4 to 20 mA 2-wire loop powered output, with single element thin film Pt100 3-wire RTD, Accuracy Class A +/- .06% at 0°C (coefficient 0.00385)

**PC programmable**

**Probe:** 316L SS with Tri-Clamp CIP fitting

**Surface finish:** Wetted parts <16µin.

**Temperature Range:** -60/320°F (-50/160°C)

### ISPAA3

*Intrinsically Safe\**



**Intrinsically Safe Sanitary RTD probe assembly**, 4-20mA 2-wire loop powered output, with single element thin film Pt100 3-wire RTD, Accuracy Class A +/- .06% at 0°C (coefficient 0.00385)

**PC programmable**

**Probe:** 316L SS with Tri-Clamp® CIP fitting

**Temperature Range:** -60/500°F (-50/260°C)

| A | MODEL                                          | CODE  | MODEL                                     | CODE  | MODEL                              | CODE   |
|---|------------------------------------------------|-------|-------------------------------------------|-------|------------------------------------|--------|
|   | SPAA3                                          | SPAA3 | STAA3                                     | STAA3 | ISPAA3                             | ISPAA3 |
| B | PROBE DIAMETER                                 |       | PROBE DIAMETER                            |       | PROBE DIAMETER                     |        |
|   | 0.187"                                         | 1     | 0.187"                                    | 1     | 0.187"                             | 1      |
| C | PROBE LENGTH                                   |       | PROBE LENGTH                              |       | PROBE LENGTH                       |        |
|   | 1-1/4"                                         | RZ    | 1-1/4"                                    | RZ    | 1-1/4"                             | RZ     |
| D | PROCESS CONNECTION                             |       | PROCESS CONNECTION                        |       | PROCESS CONNECTION                 |        |
|   | Tri-Clamp 1/2" and 3/4"                        | 05    | Tri-Clamp 1/2" and 3/4"                   | 05    | Tri-Clamp 1/2" and 3/4"            | 05     |
| E | TEMPERATURE RANGE                              |       | TEMPERATURE RANGE                         |       | TEMPERATURE RANGE                  |        |
|   | See Range Chart                                |       | See Range Chart                           |       | See Range Chart                    |        |
| F | TERMINATION                                    |       | TERMINATION                               |       | TERMINATION                        |        |
|   | 1/2" NPT with 6" leads                         | C06   | 1/2" NPT with 6" leads                    | C06   | Conn. Head - White                 | D01    |
| G | TERM. BLOCK/TRANSMITTER                        |       | TRANSMITTER                               |       | TRANSMITTER                        |        |
|   | None                                           | 00    | Programmable built-in compact transmitter | Z1    | Intr. Safe Trans., Univ.           | C1     |
|   |                                                |       |                                           |       |                                    |        |
|   | Terminal block - ceramic, 3-pole w/center hole | A1    |                                           |       | Intr. Safe Trans., prog., Profibus | C2     |
|   |                                                |       |                                           |       |                                    |        |
|   | Trans, program. - Universal                    | B1    |                                           |       | Intr. Safe Trans., Fount. Field.   | C3     |
|   |                                                |       |                                           |       |                                    |        |
|   | Trans, program. - Hart                         | B2    |                                           |       | Other as specified                 | XX     |
|   |                                                |       |                                           |       |                                    |        |
|   | Other as specified                             | XX    |                                           |       |                                    |        |

\* Intrinsically Safe models are cCSAus approved for use in Class I, Div. 1, Groups A,B,C,D when used with approved zener barrier systems, per applicable control drawing.

Specifications subject to change without notice.



## Industrial RTD Series

### NPAA3



**Industrial RTD probe assembly** with single element thin film Pt100 3-wire RTD, Accuracy Class A +/- .06% at 0°C (coefficient 0.00385)

**Probe:** 316SS with threaded fitting

**Temperature Range:**  
-60/500°F (-50/260°C)

### NTAA3



**Industrial RTD probe assembly with built-in compact transmitter**, 4 to 20 mA 2-wire loop powered output, with single element thin film Pt100 3-wire RTD, Accuracy Class A +/- .06% at 0°C (coefficient 0.00385)

**PC programmable**

**Probe:** 316SS with threaded fitting

**Temperature Range:**  
-60/320°F (-50/160°C)

### INPAA3

*Intrinsically Safe\**



**Industrial RTD probe assembly**, 4-20mA 2-wire loop powered output, with single element thin film Pt100 3-wire RTD, Accuracy Class A +/- .06% at 0°C (coefficient 0.00385)

**PC programmable**

**Probe:** 316SS with threaded fitting

**Temperature Range:**  
-60/500°F (-50/260°C)

| A | MODEL                                          | CODE  | MODEL                                     | COD   | MODEL                              | CODE   |
|---|------------------------------------------------|-------|-------------------------------------------|-------|------------------------------------|--------|
|   | NPAA3                                          | NPAA3 | NTAA3                                     | NTAA3 | INPAA3                             | INPAA3 |
| B | PROBE DIAMETER                                 |       | PROBE DIAMETER                            |       | PROBE DIAMETER                     |        |
|   | 0.187"                                         | 1     | 0.187"                                    | 1     | 0.187"                             | 1      |
|   | 0.250"                                         | 2     | 0.250"                                    | 2     | 0.250"                             | 2      |
| C | PROBE LENGTH                                   |       | PROBE LENGTH                              |       | PROBE LENGTH                       |        |
|   | 2-1/2"                                         | 02    | 2-1/2"                                    | 02    | 2-1/2"                             | 02     |
|   | 4"                                             | 04    | 4"                                        | 04    | 4"                                 | 04     |
|   | 6"                                             | 06    | 6"                                        | 06    | 6"                                 | 06     |
|   | 9"                                             | 09    | 9"                                        | 09    | 9"                                 | 09     |
|   | 12"                                            | 12    | 12"                                       | 12    | 12"                                | 12     |
|   | Other as specified                             | XX    | Other as specified                        | XX    | Other as specified                 | XX     |
| D | PROCESS CONNECTION                             |       | PROCESS CONNECTION                        |       | PROCESS CONNECTION                 |        |
|   | 1/2" NPT                                       | A1    | 1/2" NPT                                  | A1    | 1/2" NPT                           | A1     |
|   | 1/4" NPT                                       | A2    | 1/4" NPT                                  | A2    | 1/4" NPT                           | A2     |
|   | 3/8" NPT                                       | A3    | 3/8" NPT                                  | A3    | 3/8" NPT                           | A3     |
|   | Other as specified                             | XX    | Other as specified                        | XX    | Other as specified                 | XX     |
| E | TEMPERATURE RANGE                              |       | TEMPERATURE RANGE                         |       | TEMPERATURE RANGE                  |        |
|   | See Range Chart                                |       | See Range Chart                           |       | See Range Chart 1/2" NPT           |        |
| F | TERMINATION                                    |       | TERMINATION                               |       | TERMINATION                        |        |
|   | 1/2" NPT with 6" leads                         | C06   | M-12 conn. w/o mate                       | E00   | Conn. Head - White                 | D01    |
|   | M-12 conn. w/o mate                            | E00   | M-12 w/mating conn. and XX feet cable     | AXX   | Polypropylene (FDA approved)       | D02    |
|   | M-12 w/mating conn. and XX feet cable          | AXX   |                                           |       | Conn. Head - 316 SS                | D03    |
|   | Strain relief w/XX feet cable                  | BXX   |                                           |       | Other as specified                 | GXX    |
|   | Conn. Head - White                             | D01   |                                           |       |                                    |        |
|   | Polypropylene (FDA approved)                   |       |                                           |       |                                    |        |
|   | Conn. Head - 316 SS                            | D02   |                                           |       |                                    |        |
|   | Conn. Head - Cast Aluminum                     | D03   |                                           |       |                                    |        |
|   | Other as specified                             | XXX   |                                           |       |                                    |        |
| G | TERM. BLOCK/TRANSMITTER                        |       | TRANSMITTER                               |       | TRANSMITTER                        |        |
|   | None                                           | 00    |                                           |       | Transmitter, prog. IS - HART®      | B2     |
|   | Terminal block - ceramic, 3-pole w/center hole | A1    | Programmable built-in compact transmitter | Z1    | Intr. Safe Trans., Univ.           | C1     |
|   | Trans, program. - Universal                    | B1    |                                           |       | Intr. Safe Trans., prog., Profibus | C2     |
|   | Trans, program. - Hart                         | B2    |                                           |       | Intr. Safe Trans., Fount. Field.   | C3     |
|   | Other as specified                             | XX    |                                           |       | Other as specified                 | XX     |

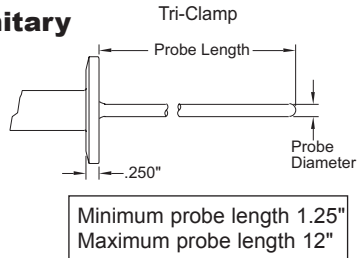
\* Intrinsically Safe models are cCSAus approved for use in Class I, Div. 1, Groups A,B,C,D when used with approved zener barrier systems, per applicable control drawing.

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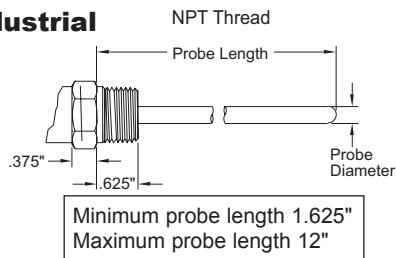
# TEL-TRU Sanitary and Industrial RTDs

## Process Connection Options

### Sanitary



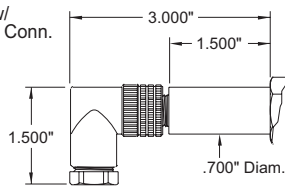
### Industrial



## Termination Options - SP, NP, ISP, and INP

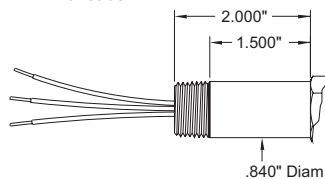
### AXX

M-12 w/  
Mating Conn.



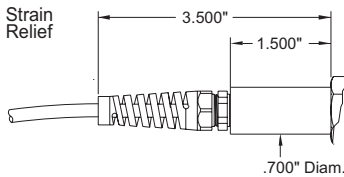
### C06

1/2\" NPT w/Leads

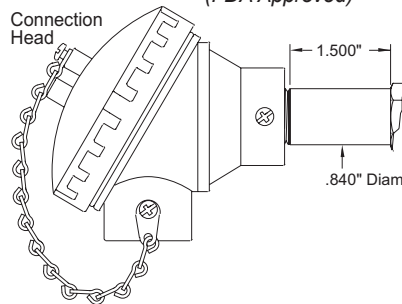


### BXX

Strain  
Relief



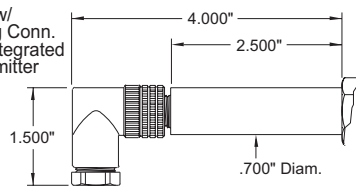
### D01, D02, D03 White Polypropylene (FDA Approved)



## Termination Option - ST and NT

### AXX

M-12 w/  
Mating Conn.  
and Integrated  
Transmitter



## Transmitter Specifications

Specifications for the RTD transmitters can be found online at [www.teltru.com/rtd\\_trans.asp](http://www.teltru.com/rtd_trans.asp)

HART® is a registered trademark of the HART Communication Foundation.  
ReadWin® is a registered trademark of Endress+Hauser.

## Optional Range Configuration Kit

For users wishing to change range settings of programmable transmitters.

Configuration kit for PC-programmable transmitters - ReadWin® 2000 setup program and interface cable (4 pin plug) for PCs with USB port; with adapter for compact thermometers with M12 thread. Order code: **4903301**



For instruction on ReadWin software, go to [www.readwin2000.com/en\\_readwin2000.htm](http://www.readwin2000.com/en_readwin2000.htm)

## Additional Products available from Tel-Tru



### Temperature

Bimetal Thermometers  
Sanitary Bimetal Thermometers  
Check-Temp Temperature Calibrators  
Glow Dial Thermometers  
Non-Contact Thermometers  
Digi-Tel Thermometers  
Digi-Tel Temperature Transmitter  
Electronic Calibration Instruments  
Thermowells  
Gas Actuated Thermometers  
Vapor Tension Thermometers  
Glass Industrial Thermometers  
Surface Thermometers

### Pressure

Pressure Transmitters  
Pressure Gauges  
Sanitary Pressure Gauges  
Digital Pressure Gauges

## Tel-Tru Product Warranty

Please see our limited product warranty at [www.teltru.com/t-warranty.aspx](http://www.teltru.com/t-warranty.aspx).



## Tel-Tru Manufacturing Company

408 St. Paul St., Rochester, New York 14605 USA

Phone: 585.232.1440 • 800.232.5335 • Fax: 585.232.3857 • E-mail: [info@teltru.com](mailto:info@teltru.com) • Web: [www.teltru.com](http://www.teltru.com)

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