

# SECONDARY REFERENCE THERMISTOR PROBES



## Secondary Reference Thermistor Probes

- Range 0°C to 100°C
- Short-term accuracy to  $\pm 0.015^\circ\text{C}$ ; one year drift  $< \pm 0.01^\circ\text{C}$
- Includes NIST-traceable calibration from manufacturer; accredited Hart calibration optional

Hundreds of thousands of thermistors are sold every year, but only a few have the stability necessary for use as high-accuracy thermometry standards. If you're looking for economical lab-grade thermistor probes for accurate work across a narrow temperature range, Hart's Secondary Reference Series thermistor probes are the best you can buy.

A thermistor offers several advantages over a PRT as a reference thermometer in some applications. First, there's size. A thermistor is much smaller than a PRT element, and so it can be built into a much larger variety of probe shapes and sizes. The smaller element contributes to much faster response times, too.

If your application involves frequent handling, a thermistor is less susceptible to mechanical shock than a PRT. The bottom line may be better accuracy in fieldwork.

Higher base resistance and larger resistance coefficients make it easier to achieve

precision readings. Better resolution and accuracy are possible for a lower cost.

These probes come in a complete assembly ready for use, and they make an excellent match with the uncertainties of our thermometer readouts: the 1504 Tweener, the 1521 and 1522 Handheld Thermometers, the 1529 Chub-E4, the 1560 *Black Stack*, and the 1575A and 1590 Super-Thermometers.

These probes are accurate to  $\pm 0.015^\circ\text{C}$ , and each comes with a NIST-traceable calibration and a resistance versus temperature table printed in 0.1°C increments.

The Secondary Reference Series Thermistors cover the temperature range of 0°C to 100°C. No other sensors can match the accuracy and price combination of these high-accuracy thermistor probes. Try one and you'll agree.

## Specifications - 5610, 5611, 5665

Resistance	Nominal 10,000 $\Omega$ at 25°C
Range	0°C to 100°C
Calibration	R vs. T table with 0.1°C increments, interpolation equation furnished
Calibration Uncertainty	Table and equation are accurate to $\pm 0.01^\circ\text{C}$
Drift	Better than $\pm 0.01^\circ\text{C}$ per year
Repeatability	Better than $\pm 0.005^\circ\text{C}$
Size and Construction	See table on opposite page.
Termination	Specify when ordering.

## Specifications - 5674

Resistance	Nominal 10,000 $\Omega$ at 25°C
Range	0°C to 70°C
Calibration	Optionally available from Hart. See page 156.
Drift	Better than $\pm 0.02^\circ\text{C}$ per year
Repeatability	Better than $\pm 0.07^\circ\text{C}$
Size and Construction	See table on opposite page.
Termination	Specify when ordering.

## Ordering Information

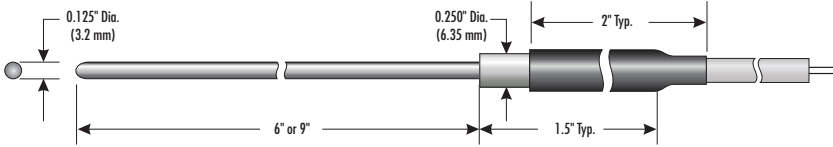
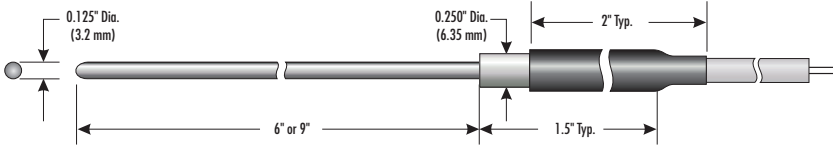
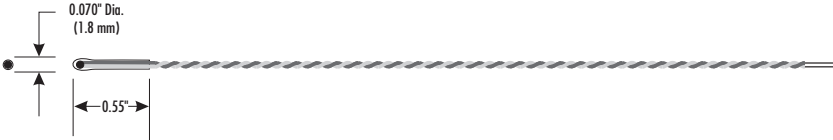
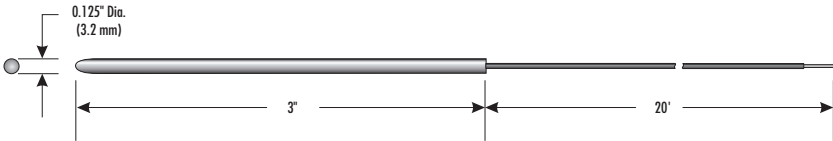
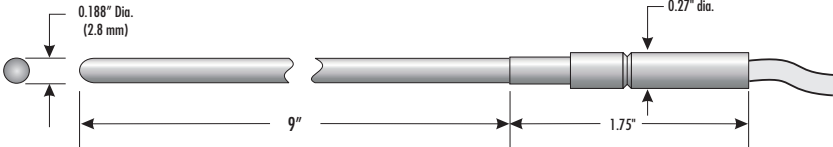
5610-6-X	6" Immersion Probe
5610-9-X	9" Immersion Probe
5611-X	Silicone-Bead Probe
5665-X	Miniature Immersion Probe
5674-X	Series 400 Thermistor
2601	Protective Case

X = termination. Specify "B" (bare wire), "D" (5-pin DIN for Tweener Thermometers), "G" (gold pins), "I" (INFO-CON for 1521 or 1522 Handheld Thermometers), "J" (banana plugs), "L" (mini spade lugs), "M" (mini banana plugs), or "S" (spade lugs).



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Model		Applications	Construction
5610-6	<p><b>Immersion Probe</b></p> 	Immersion, calibration standards	Stainless Steel Diameter: 0.125" Sheath Length: 6" Lead Length: 6'
5610-9			Stainless Steel Diameter: 0.125" Sheath Length: 9" Lead Length: 6'
5611	<p><b>Silicone-Bead Probe</b></p> 	Immersion in most liquids (except silicone oils), pharmaceutical, faster response	2-Wire Silicone Coated Diameter: 0.070" Sheath Length: 0.55" Lead Length: 6'
5665	<p><b>Miniature Immersion Probe</b></p> 	Liquid and soil immersion	Stainless Steel Diameter: 0.125" Sheath Length: 3" Lead Length: 20'
5674	<p><b>Series 400 Probe</b></p> 	Immersion, calibration standards	Stainless Steel Diameter: 0.188" Sheath Length: 9" Lead Length: 4'

Probes

## Technical Tip

### Handle Your Probe Correctly

Good thermometer handling procedures help maintain calibration accuracy. Here are a few pointers.

#### Don't

- Don't subject a PRT to physical shock or vibration.
- Don't bend a probe that is not designed for bending.
- Don't subject a thermometer to sudden extreme temperature changes.
- Don't install compression fittings on a probe sheath.
- Don't subject a thermometer to temperatures outside its range.
- Don't subject a thermometer's transition junction, handle, or lead wires to temperatures outside their ranges (which likely differ from the thermometer's range).
- Don't immerse the probe past the bottom of its handle.

#### Do

- Do immerse a probe to at least its minimum immersion depth.
- Do allow the thermometer time to stabilize before taking readings.
- Do use the proper current to prevent self-heating errors.
- Do check your probe's  $R_{TPW}$  value frequently.
- Do test the shunt resistance of your probe periodically. (Shunt resistance is the resistance between the probe sensor and the probe sheath.)



Steve (customer service) knows lighting and apertures nearly as well as he knows self-heating and immersion effects.