



## Specifications

Temperature Range	-200°C to 661°C
Nominal $R_{TPW}$	25.5Ω ( $\pm 0.5\Omega$ )
Specified Current	1 mA
Resistance Ratio	$W(302.9146K) \geq 1.11807$ $W(234.3156K) \leq 0.844235$
Sensitivity	0.1Ω/°C
Drift Rate	< 10 mK per year max 2–3 mK per year typical
Repeatability	< 1 mK
Diameter of Pt Sensor Wire	0.003" (0.07 mm)
Lead Wires	Four sensor wires plus grounding wire
Protective Sheath	Inconel Diameter: 0.219" $\pm 0.005$ " (5.56 mm $\pm 0.13$ mm) Length: 19" (482 mm)
Insulation Resistance	> 100 MΩ at 661°C > 1000 MΩ at 20°C

Primary Standards

## Extended Range Metal-Sheath SPRT

Model 5699

Measures temperatures as high as 661°C

Inconel and platinum sheaths guard against contamination

Less than 10 mK/year drift

Fifth wire provides shielded ground

SPRTs designed by Hart Scientific are known for their outstanding reliability and minimal long-term drift. They have been calibrated by national (and other primary) laboratories and proven repeatedly to outperform competitive models. Now Hart's new Model 5699 Extended Range Metal-Sheath SPRT combines all the advantages of a Hart-designed sensor with the protective sheathing materials that allow your SPRT to be used in virtually any furnace or bath with temperatures as high as 661°C.

Designed and manufactured by our primary standards metrologists, the strain-free sensing element in the 5699 meets all ITS-90 requirements for SPRTs and minimizes long-term drift.

After one year of regular usage, drift is less than 10 mK (2–3 mK is typical). Even lower drift rates are possible depending on care and handling. A fifth wire for grounding is added to the four-wire sensor to help reduce electrical noise, particularly for AC measurements. Finally, you can get an improved

version of an old industry-standard Inconel-sheathed SPRT.

If you choose not to calibrate the 5699 yourself, a wide variety of options is conveniently available from Hart's own primary standards laboratory, including comparison or fixed-point calibrations covering any range between -200°C and 661°C.

The 5699 is constructed with a rugged 0.219-inch-diameter Inconel sheath for high durability and fast response times. Inside the Inconel sheath, the sensing element is protected by a thin platinum housing that shields the sensor from contamination from free-floating metal ions found within metal environments at high temperatures. Reduced contamination means a low drift rate—even after hours of use in metal-block furnaces at high temperatures.

At Hart we use SPRTs every day. We design them, build them, calibrate them, use them as standards, and know what it takes to make a reliably performing instrument. Why buy from anyone else?

## Ordering Information

5699	Extended Range Metal-Sheath SPRT (includes maple protective case)
1920-4-7	Calibration by Comparison, -200°C to 661°C
1910-4-7	Calibration by Fixed Point, -200°C to 661°C

See page 157 for other calibration options.



See page 20 for triple point of water cells.