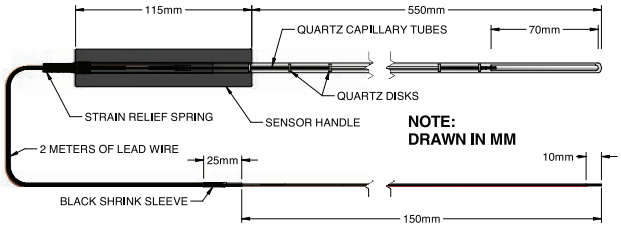
LABORATORY THERMOMETERS

STANDARD PLATINUM RESISTANCE THERMOMETERS

The first and most accurate of the laboratory probes is the SPRT. It has the tightest specifications and is also the most fragile and expensive. Typical drift rates are about 0.001°K annually or about 0.002°C after 100 hours at 660°C.

The SPRT allows the user to realize ITS 90. Our most common unit is the 4ZP model which allows the realization from the boiling point of nitrogen (-195.798°C) to the zinc freezing point (419.527°C). The JMS 4AP unit allows the user to realize ITS 90 from 0°C to the freezing point of aluminum (660.323°C).



(Dimensions are in MM)

* Calibration report will document the exact numbers along with the TPW/MPG ratios. ** The "C" in the part number indicates we will provide calibration. If you intend to send the probe to NIST or some other lab for calibration certificate, omit the "C"

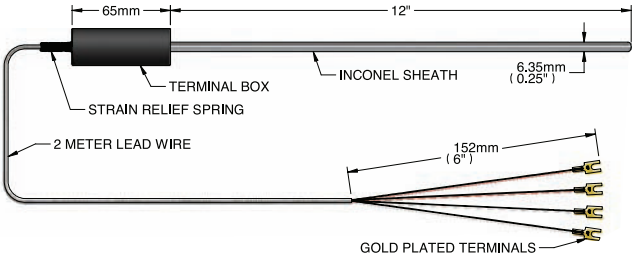
Note: ITS 90 says that an SPRT should have a resistance at melting point of gallium greater than 1.11807 times its water triple point resistance. That means that you should not use an RTD with a 0.00385 alpha coefficient as an SPRT. However the experience of JMS Southeast indicates that they are great as secondary standards and are described on the following pages.

SECONDARY STANDARD RTDS

These sensors are intended to be used as the standard for a working laboratory. For instance, JMS uses these types of probes as the reference for our day to day comparison calibrations done on the sensors you use in your processes. We use the SPRT mentioned on the previous page to calibrate and validate this secondary standard.

The secondary standard covers the full range from -200°C to 660°C. It is only slightly more drift prone than the SPRT. (<0.003°C per year or <0.005°C after 500 hours @ 600°C (estimated)) It is much more rugged than the SPRT it has an Inconel 600 sheath, which might not break if dropped on a laboratory floor.

* Indicates a standard calibration will be done using 5 points between -200°C and 600°C. Omit "C" if sent to another lab for calibration

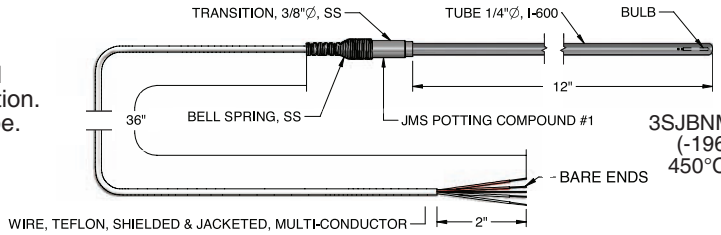


It can be manufactured to any length using the following part numbers:

4SS (length in inches)	25.5°C*(25.5Ω@0°C)
4SS (length in inches)	100°C* (100Ω@0°C)

PRECISION INDUSTRIAL RTD

Our Precision Industrial RTD can be specified by using the pages from the regular RTD section. They can be made in almost any size or shape.



3SJBNM12DZZ336JWTA6
(-196°C, 0°C, 200°C,
450°C @1°C intervals)

JMS STANDARDS THERMOCOUPLE

IPTS 68 allowed the use of type S thermocouples as a method to realize the temperatures above the range of an RTD. ITS 90 does not speak to the use of thermocouples, but they are recognized by many labs as a secondary standard and are great for comparison calibrations. ASTM and NIST still and will continue to recognize the use of Pt/Au and Pt/PtRh in laboratories, and NIST has defined the millivolt tables (Seebeck Coefficients) which are included in section 1 of this catalog. These tables are taken from ASTM E-1751 and ASTM E-230. Use the appropriate drawing number to order.

These two referenced sensors are an excellent choice for comparing calibration equations in an industrial facility. An accurate and traceable millivolt meter plus one of these probes is all you need to do a totally accurate and effective standards traceable calibration. Order by JMS Part#

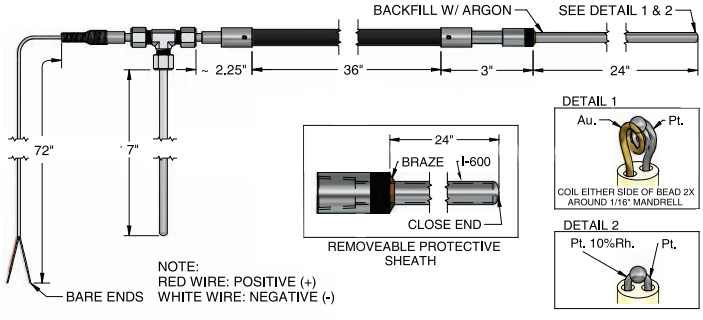
JMS Part #4PTAUC*

Pt/Au
0 - 1000°C
Non alloyed metals
Calibration close to standard
±0.2°C or better

JMS Part #4PTRHC*

Pt/PtRh
0 - 1450°C
Higher range

±1.0°C or better



REMOVABLE INCONEL 600
PROTECTIVE SHEATH

* A calibration is supplied with any probe. For no calibration, omit the C in the part #. See [1-22] through [1-53] for temperature / EMF Tables.