BURNS® ENGINEERING

Temperature Measurement Experts

Temperature Metrology

Secondary standards and accredited calibration services

Temperature Measurement Experts®

Since 1960, Burns Engineering has been an industry leader in the design and manufacture of temperature sensors. Accuracy, reliability and consistency are hallmarks of the Burns brand. At Burns, temperature is our language. We understand the subtleties of temperature measurement and how they can impact your processes and ultimately your success. We worry about the details so you don't have to. When you select Burns you're getting more than a sensor, you're getting your own team of Temperature Measurement Experts.

Temperature Metrology

Our complete line of Secondary Standard Thermometers coupled with our NVLAP accredited (lab code 200706-0) calibration laboratory ensure accurate, repeatable and consistent temperature measurement in the lab and in the field. Whether you need an instrument for lab calibration, field comparison or direct measurement, Burns has a product to support your flexibility. Our calibration lab provides a variety of calibration schedules with certifications to meet your most demanding needs.

Allow us to provide a quote! Call us at 800-328-3871 or configure your own quote request through our Web Quote / Product Configuration system.

Here's how:

1. Sign-in to the Web Site (Not Registered yet – Visit the Registration Page)
2. Navigate to the Model from the "View Products/Request Quote" Tab, or search for the Model using the search box (upper right).
3. From the Model, select "Configure My Part". This will open the configuration system. (This may take several seconds)
4. Make product selections that fit your needs.
5. When all selections are made, click Finish in the upper or lower left. This will return your request to the Web Site Quote Request Cart.
6. Review the Quote Request information and then select "Submit for Quote Confirmation".
7. We will return the confirmed Quote via email.

It's fast, easy and we'll get back to you within a day!

BURNS ENGINEERING
Temperature Measurement Experts

Product Index

12005 Secondary Standard

Specifications

Features

- Low uncertainty: ±0.010ºC at TPW
- Calibration: NIST traceable, NVLAP Accredited (Lab Code 200706-0) calibration report
- Compatibility: 100 ohm resistance at 0ºC makes the 12005 compatible with most readout devices
- Hermetic: Glass seal locks out moisture and contaminants to insure stability
- Durability: Fully supported and enclosed sensing element provides “walk around” durability
- Stability: Thermally conditioned to ensure excellent drift stability
- Flexibility: Improved cable – more flexible and durable

Specifications

- Nominal resistance: 100 ohms at 0ºC
- Temperature coefficient of resistance: 0.003925 ohms/ohm/ºC nominal
- Temperature range: -200ºC to 500 ºC
- Insulation resistance: 1000 megohms minimum at 20ºC, 20 megohms minimum at 400ºC, 100 VDC test voltage
- Long term stability: Resistance stability at TPW after heat soak at temperature shown below

Temperature	Drift per 100 hours
250ºC	< 0.003ºC
420ºC	< 0.005ºC
500ºC	< 0.024ºC

- Sheath material: Inconel™ 600
- Lead wire: Teflon® insulated, nickel-plated stranded copper, 22 AWG, with Viton® jacket
- Estimated calibration uncertainty: (K=2)**

Temperature	Uncertainty**
-196ºC	0.024ºC
-38ºC	0.011ºC
0.01ºC	0.010ºC
200ºC	0.018ºC
300ºC	0.029ºC
420ºC	0.029ºC
500ºC	0.029ºC

- Short term repeatability and hysteresis: Less than 0.011ºC (0.004 ohms) change at the TPW over any 5 consecutive thermal cycles from -196ºC to 420ºC
- Minimum immersion: 4.0 inches for typical liquid bath usage
- Thermoelectric voltage: When tested in an ice bath with immersion from 4 to 10 inches, the thermoelectric voltage shall not exceed 2 microvolts
- Time constant: 9 seconds typical for 63.2% response to step change in temperature in water flowing at 3 ft/sec

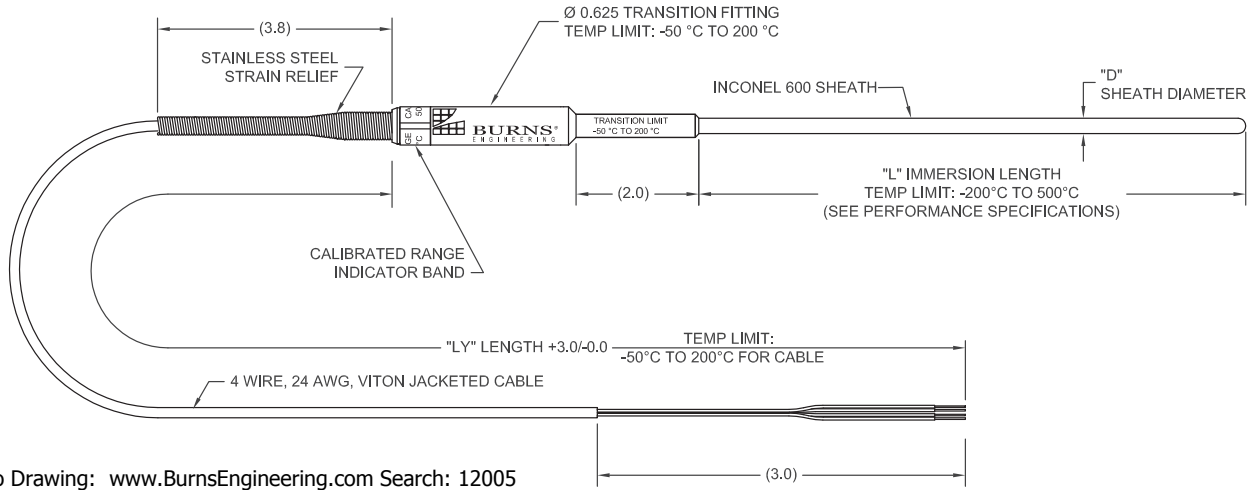
**Values listed are typical values for a 12005 and include all known sources present at the time of calibration. 1/8’ diameter sensors are limited to 420ºC maximum.

A Note About Accuracy

One method to determine accuracy is to combine the probe drift specification and calibration uncertainty with the readout accuracy for a given temperature range.

12005 Secondary Standard

Ordering Information



Link to Drawing: www.BurnsEngineering.com Search: 12005

-A	A = SHEATH DIAMETER OF 1/4"
-B	B = SHEATH DIAMETER OF 3/16"
-C	C = SHEATH DIAMETER OF 1/8" (420 °C MAXIMUM TEMPERATURE, 12" MAXIMUM "L" LENGTH)

IMMERSION LENGTH "L" IN INCHES

-7	7 = 7" IMMERSION LENGTH (MINIMUM LENGTH)
-9	9 = 9" IMMERSION LENGTH
-12	12 = 12" IMMERSION LENGTH (STANDARD LENGTH)
-18	18 = 18" IMMERSION LENGTH
-24	24 = 24" IMMERSION LENGTH
	SPECIFY "L" IN INCHES (24" MAX. FOR 3/16" AND 1/4" DIA, 12" MAX. FOR 1/8" DIA.)

CABLE LENGTH "LY" IN FEET

-6	6 = 6 FEET (STANDARD LENGTH)
-LY	LY = SPECIFY "LY" IN FEET (100' MAXIMUM)

CALIBRATION (INCLUDES TABLE IN 1°C INCREMENTS OVER CALIBRATION RANGE)

		BAND COLOR
-0	0 = NO CALIBRATION* OR CUSTOM CALIBRATION	SILVER
-1	1 = CALIBRATION AT -196, -38, 0.01, 200, 500°C	BLACK
-2	2 = CALIBRATION AT -196, -38, 0.01°C	BLUE
-3	3 = CALIBRATION AT -80, -38, 0.01, 100, 200°C	GREEN
-4	4 = CALIBRATION AT 0.01, 200, 500°C	RED
-5	5 = CALIBRATION AT -80, -38, 0.01, 200, 420°C	VIOLET
-6	6 = CALIBRATION AT -196, -38, 0.01, 200, 420°C	GOLD

TEMPERATURE SCALE

-A	A = ITS-90, CALIBRATION REPORT INCLUDES APPLICABLE ITS-90 COEFFICIENTS.
-B	B = CALLENDAR VAN-DUSEN, CALIBRATION REPORT INCLUDES APPLICABLE CVD COEFFICIENTS.

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12005							

Configuration Notes:

18332 Industrial Secondary Standard

Specifications

Features

- Low uncertainty: ±0.025ºC at TPW
- Calibration: NIST traceable, NVLAP Accredited (Lab Code 200706-0) calibration report
- Compatibility: 100 ohm resistance at 0ºC makes the 18332 compatible with most readout devices
- Stability: Epoxy seal locks out moisture and contaminants to insure stability
- Durability: Less than 0.03% shift at 21g for 30 minutes
- Flexibility: Two cable choices to meet your use conditions

Specifications

- Nominal resistance: 100 ohms at 0ºC
- Temperature coefficient of resistance: 0.00385 ohms/ohm/ºC nominal
- Temperature range: -200ºC to 500 ºC
- Insulation resistance: 500 megohms minimum at 500 VDC at 20ºC
- Long term stability: Resistance stability at TPW after heat soak at temperatures shown below

Temperature	Typical Drift per 1000 hours	Maximum Drift per 1000 hours
300ºC	0.03ºC	0.06ºC
400ºC	0.06ºC	0.13ºC
500ºC	0.19ºC	0.38ºC

- Sheath material: High purity compacted ceramic insulation with a 316 stainless steel sheath
- Lead wire: Teflon™ insulated, nickel-plated stranded copper, 22 AWG
- Estimated calibration uncertainty: (K=2)**

Temperature	Uncertainty**
-196ºC	0.025ºC
0ºC	0.025ºC
50ºC	0.025ºC
200ºC	0.025ºC
300ºC	0.050ºC
420ºC	0.050ºC

- Short term repeatability and hysteresis: ±0.04% change in ice point resistance after 10 cycles from -200ºC to 500ºC
- Minimum immersion: 6.0 inches for typical liquid bath usage
- Time constant: 4 seconds typical for 63.2% response to step change in temperature in water flowing at 3 ft/sec

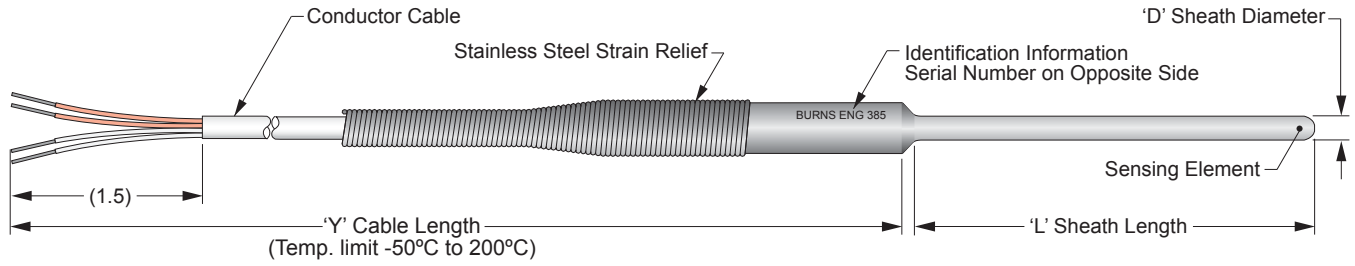
**Values listed are typical values for a 18332 and include all known sources present at the time of calibration. Sheath lengths less than 9 inches are limited to 300ºC maximum.

A Note About Stability

Use the Industrial Secondary Standard PRT in field calibration applications where a rugged, stable and precise reference standard is required. The instrument is made with the same robust construction as our 200 Series industrial RTDs.

18332 Industrial Secondary Standard

Ordering Information



Link to drawing: www.BurnsEngineering.com search:18332

'D' Sheath Diameter, in inches	Min Sheath Length	Max Sheath Length	Sheath Length Tolerance
-A 1/4" Diameter -B 3/16" Diameter	6.0"	24.0"	+/- 0.125"

'L' Sheath Length, in inches

-120 Standard length, 12.0 inches
Specify 'L' sheath length in inches

'Y' Cable Length, in feet

-6 Standard cable length, 6 feet
Specify 'Y' cable length in feet

Cable Style

-W White teflon® jacket cable, 22 awg
-B Black flexible jacket cable, 24 awg

Calibration

-0 No Calibration
-1 Calibrate at 0.01ºC, 200ºC and 420ºC, Table from 0ºC to 500ºC in 1ºC increments (requires 9.0" minimum sheath length)
-2 Calibrate at -196ºC, -38ºC, 0.01ºC, 200ºC and 300ºC, Table from -200ºC to 300ºC in 1ºC increments (requires 6.0" minimum sheath length)

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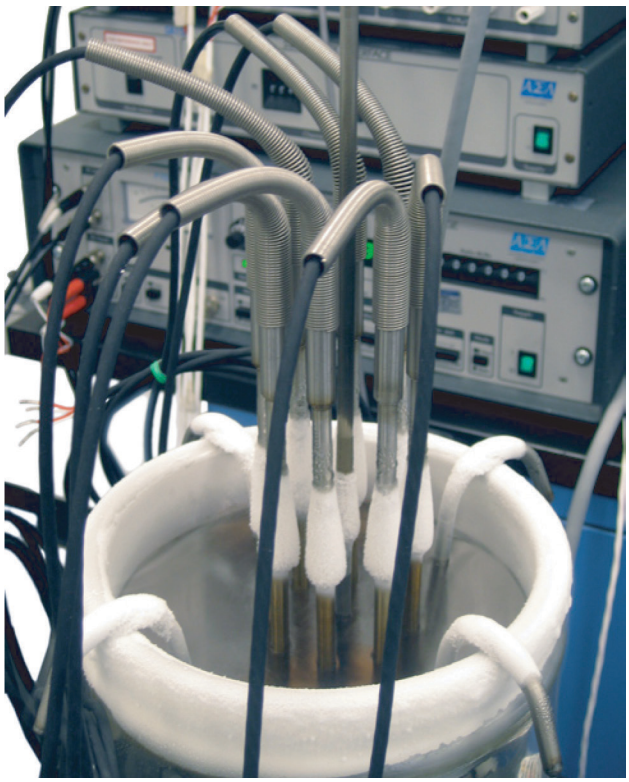
Options see page 8

18332 [ ] [ ] [ ] [ ] [ ]

Basic Order Codes

Configuration Notes:



20948 Cryogenic Secondary Standard

Specifications

Features

- Low uncertainty: ±0.010ºC at TPW
- Calibration: NIST traceable, NVLAP Accredited (Lab Code 200706-0) calibration report
- Compatibility: 100 ohm resistance at 0ºC make the 20948 compatible with most readout devices
- Stability: Proprietary seal locks out moisture and contaminants to insure stability
- Durability: Not for use in vibration service, more durable than an SPRT
- Flexibility: Cable is formable for “stay in position” capability

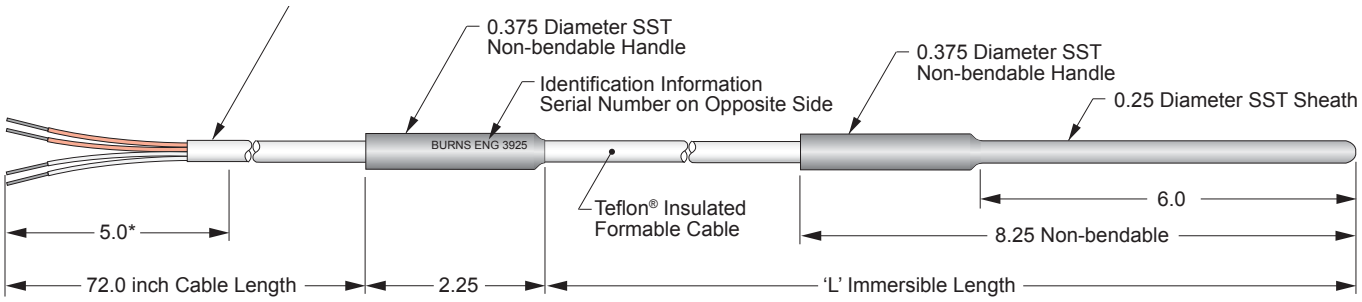
Specifications

- Nominal resistance: 100 ohms at 0ºC
- Temperature coefficient of resistance: 0.003925 ohms/ohm/ºC nominal
- Temperature range: -196ºC to 200ºC
- Insulation resistance: 500 megohms minimum at 20ºC
- Sheath material: 316L stainless steel
- Lead wire: Teflon® insulated, nickel-plated stranded copper, 22 AWG
- Short term repeatability and hysteresis: ±0.013ºC (0.0051 ohms) maximum change at TPW over any 5 consecutive thermal cycles from -196ºC to 200ºC
- Minimum immersion: 6.0 inches
- Includes calibration from -196ºC to 200ºC

20948 Cryogenic Secondary Standard

Ordering Information

Link to drawing: www.BurnsEngineering.com Search 20948



*Cable end must remain outside of freezer to maintain moisture seal

‘L’ Immersible Length, in inches		Min Length	Max Length
-24	24.0 inches		
-36	36.0 inches		
	Specify ‘L’ Immersible Length in inches	12.0”	36.0”

20948		(Leave blank if not required)
Basic Order Codes		Options, see page 8

A Note About Formable Cable

The formable section of this sensor allows for repeatable depth measurements to minimize effects from temperature gradients. Just form the cable over the edge of the freezer or storage rack and it holds the shape in between calibrations

Common Options

Sheath Bending

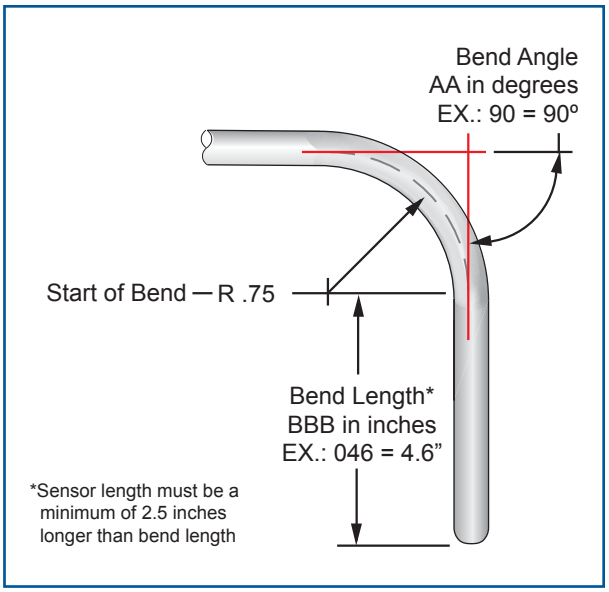
Available on sheath diameter codes ‘A’ and ‘B’ only, sensors with bent sheaths may not be capable of recalibration

S Sheath Options

Sheath Bending Options ('B' option)

B _ _ _ _ _	Specify bend angle (AA) and location (BBB) Bending angles should be specified to the nearest degree. Accuracy of bends are +/-5º Bend locations should be specified in 0.1 inch increments and are defined as the distance from the tip of the sensor. Example: for a 45º bend, starting 4.0 inches from the tip of the sensor, specify B45040

Note: Contact factory for complete bend criteria and constraints.

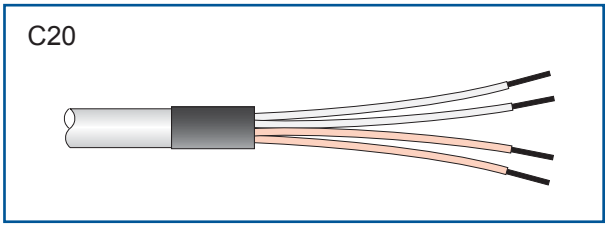


Lead Wire Configurations

L Lead Wire Options

Lead Wire Configuration Options ('C' option)

C20	Shielded cable, stainless steel braid

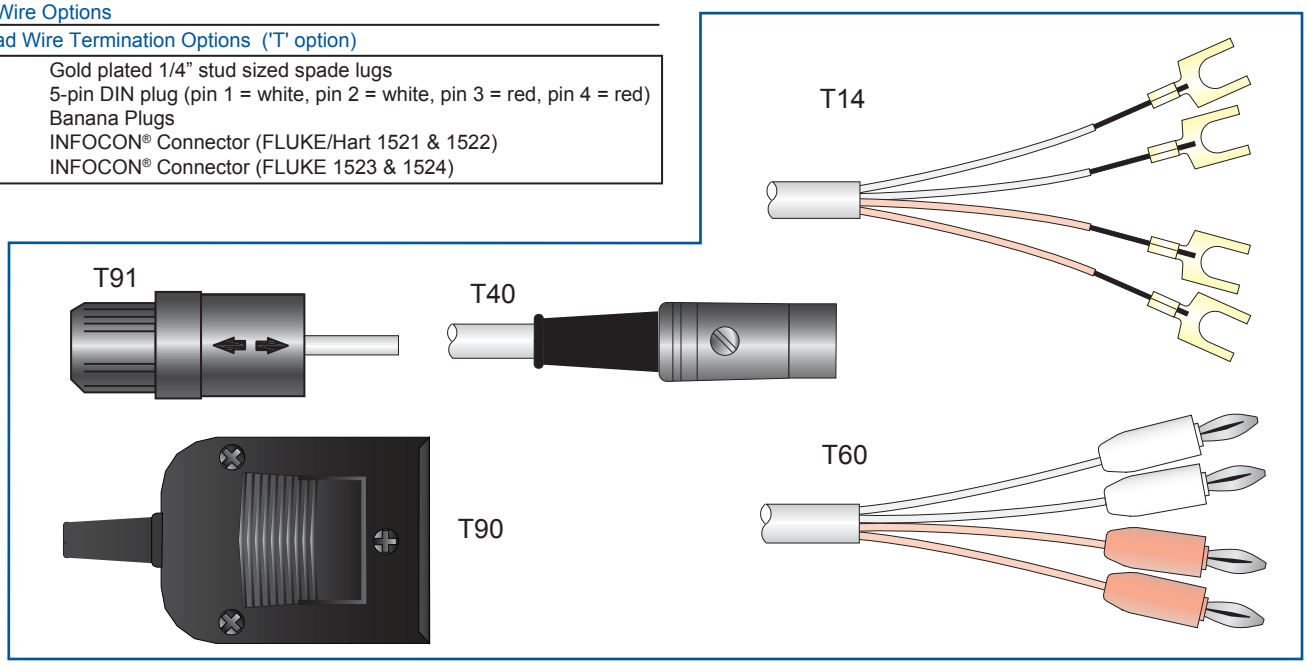


Lead Wire Terminations

L Lead Wire Options

Lead Wire Termination Options ('T' option)

T14	Gold plated 1/4” stud sized spade lugs
T40	5-pin DIN plug (pin 1 = white, pin 2 = white, pin 3 = red, pin 4 = red)
T60	Banana Plugs
T90	INFOCON® Connector (FLUKE/Hart 1521 & 1522)
T91	INFOCON® Connector (FLUKE 1523 & 1524)



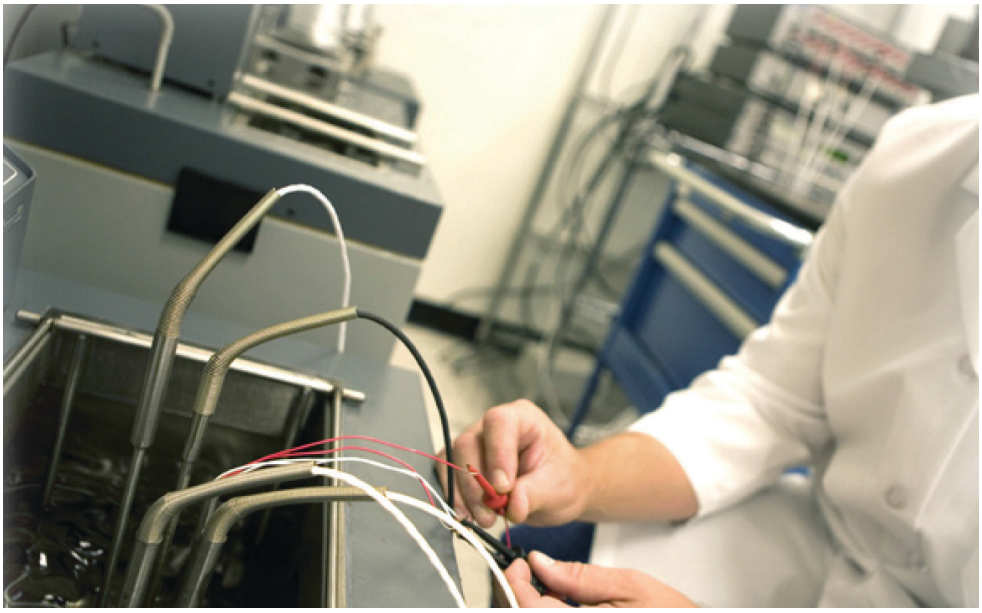
Temperature Calibration Service

Specifications

The Burns Engineering NVLAP accredited metrology laboratory (lab code 200706-0) performs NIST traceable calibrations that conform to ISO/IEC 17025 and ANSI/NCSL Z540-1 Part 1 requirements. Our highly trained calibration specialists utilize precision calibration baths and measurement electronics to ensure the highest standards are met on every calibration. Our laboratory personnel are dedicated to excellence in all phases of professional practice and are committed to continual self-analysis and ongoing improvement.

Features and Benefits

- Our NVLAP accreditation ensures consistent and repeatable measurement practices
- NIST traceability ensures alignment with national standards
- Five-point and three-point calibrations between temperatures of -196°C and 500°C
- Secondary standard PRT and industrial PRT calibrations are performed by comparison to a SPRT
- “As Found” and “As left” test data reported for all instrument calibrations
- Lab-to-Lab scheduled calibration service - *Our Promise! 5 Business Days*
- Resistance vs. Temperature reports with coefficients for ITS-90 and Callender-Van Dusen equations
- Calibration records are kept for each instrument and certificates are available online



See pages 11 and 12 for ordering information. For our fastest service call our Customer Service Department at 800-328-3871 or visit our website at www.burnsengineering.com, Keyword “calibration” to schedule your calibration.

Temperature Calibration Service

Definitions

NIST traceable

This is the minimum temperature calibration lab capability. The statement “NIST Traceable” indicates there is an unbroken chain of comparisons to stated standards, from the lab instrumentation to NIST. Calibration performance reported this way is only required to include the uncertainty of the calibration equipment and process. It does not require the inclusion of the uncertainty (short term behavior) attributed to the sensor being calibrated.

ISO 17025

This ISO standard titled: **General requirements for the competence of testing and calibration laboratories**, like many ISO systems focuses on the quality system related to the calibration function. A Calibration Lab that states compliance with ISO 17025 insures traceability to the primary standard as well as broader system confidence as it addresses practices beyond the specific process related to calibration. ISO 17025 also addresses the management of the process and lab including training, document control, contract review and management oversight. The other very important difference is the inclusive analysis of the calibration uncertainty. ISO 17025 requires labs to include the sensor being calibrated as a component of the stated uncertainty.

Accredited

Certificate of Accreditation Scope of Accreditation

There are various organizations that issue accredited status of metrology labs in accordance with ISO 17025. Burns, (lab code: 200706-0) selected NVLAP, established by NIST in 1976 as the **National Voluntary Laboratory Accreditation Program**. The NVLAP accreditation requirements are described in NIST Handbook 150. NVLAP also includes the general requirements of ANSI/NCSL Z540, Part 1. Uncertainties reported are inclusive of the sensor being calibrated, and validated through proficiency testing.

Burns Best Uncertainties*
(by comparison to SPRT)

Range in ºC	High Quality PRT (±)in mK	PRT with meter system with (±)in mK	Any other PRT (±)in mK
-196	5.2	5.2	25
-80 to 20	5.1	5.1	25
0 / 0.01	3.4	3.4	25
20 to 250	6.9	6.9	25
250 to 500	17	17	25

* Notes: 1. SPRT at the TWP 1.6mK
2. Uncertainties are subject to change. For the most current values visit the Burns Website at www.burnsengineering.com, Keyword “Accredited”.
3. Represents an expanded uncertainty using a coverage factor, k = 2, at a 95% confidence level..

Temperature Calibration Service

Ordering Information

For your Platinum Resistance Thermometer (PRT), select the calibration range that best covers the temperature range of intended use in your laboratory or process. Burns offers calibration ranges from 700ºC span down to 100ºC span. Contact our Customer Service Department at 800-328-3871 for other non-standard calibration options.

Our most common calibration options:

12005/12001 Secondary Standard PRT by Comparison to SPRT*

5 Point Calibration								6 Point Calib.		3 Point Calibration			
Part No. 18629-15		Part No. 18629-16		Part No. 18629-17		Part No. 18629-18		Part No. 18629-19		Part No. 18629-37		Part No. 18629-38	
Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)
-196	.024	-196	.024	-196	.024	-196	.024	-196	.024	0.01	.010	0.01	.010
-38	.011	-38	.011	-38	.011	-38	.011	-38	.011	200	.018	200	.018
0.01	.010	0.01	.010	0.01	.010	0.01	.010	0.01	.010	300	.029	420	.029
50	.018	100	.018	200	.018	200	.018	100	.018	-	-	-	-
100	.018	200	.018	300	.029	420	.029	300	.029	-	-	-	-
-	-	-	-	-	-	-	-	500	.029	-	-	-	-

Any Industrial PRT by Comparison to SPRT*

4 Point Calibration

Part No. 18630-15		Part No. 18630-16		Part No. 18630-17		Part No. 18630-18	
Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)
-196	.025	-196	.025	-196	.025	-196	.025
0	.025	0	.025	0	.025	0	.025
50	.025	100	.025	200	.025	200	.025
100	.025	200	.025	300	.025	420	.025

4 Point Calibration

Part No. 18630-25		Part No. 18630-26		Part No. 18630-27		Part No. 18630-28	
Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)
-38	.025	-38	.025	-38	.025	-38	.025
0	.025	0	.025	0	.025	0	.025
50	.025	100	.025	200	.025	200	.025
100	.025	200	.025	300	.025	420	.025

3 Point Calibration

Part No. 18630-35		Part No. 18630-36		Part No. 18630-37		Part No. 18630-38	
Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)
0	.025	0	.025	0	.025	0	.025
50	.025	100	.025	200	.025	200	.025
100	.025	200	.025	300	.025	420	.025

* Notes: 1. SPRT at the TWP 1.6mK
2. Uncertainties are subject to change. For the most current values visit the Burns Website at www.burnsengineering.com, Keyword “Accredited”.
3. Represents an expanded uncertainty using a coverage factor, k = 2, at a 95% confidence level..

System Calibration Service

Specifications

At Burns, we understand the importance and value of your sensor/meter system to your process and temperature instrument validation. Our accredited lab services include a variety of system calibrations covering many of the most common handheld and digital readout devices.

Features and Benefits

- Accredited PRT calibrations and completed system verifications
- Meter calibration to ensure system accuracy
- “As Found” and “As Left” data on your PRT, meter and complete system
- Calibration certifications and R vs. T tables provided and available online
- Lab-to-Lab scheduled calibration service – *Our Promise! 5 Business Days*

** For more details contact our Customer Service Department at 800-328-3871 or visit the Burns website at www.burnsengineering.com, Keyword “Lab-to-Lab”

System Calibration Service

Ordering Information

Our most common calibration options:

Digital Thermometer with PRT System by Comparison to SPRT*

5 Point Calibration

Part No. 21330-15		Part No. 21330-16		Part No. 21330-17		Part No. 21330-18	
Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)
-196	.024	-196	.024	-196	.024	-196	.024
-38	.011	-38	.011	-38	.011	-38	.011
0.01	.010	0.01	.010	0.01	.010	0.01	.010
50	.018	100	.018	200	.018	200	.018
100	.018	200	.018	300	.029	420	.029

3 Point Calibration

Part No. 21330-35		Part No. 21330-36		Part No. 21330-37		Part No. 21330-38	
Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)	Calibration Points Taken (ºC)	Expected Uncertainty k=2 (ºC)
0.01	.010	0.01	.010	0.01	.010	0.01	.010
50	.018	100	.018	200	.018	200	.018
100	.018	200	.018	300	.029	420	.029

* Notes: 1. SPRT at the TWP 1.6mK
2. Uncertainties are subject to change. For the most current values visit the Burns Website at www.burnsengineering.com, Keyword “Accredited”.
3. Represents an expanded uncertainty using a coverage factor, k = 2, at a 95% confidence level..

Glossary

Accuracy: Degree of agreement between an actual measurement and its reference standard.

Alpha: The temperature coefficient of resistance of a PRT over the range 0º to 100ºC. For example the alpha value for a standard platinum resistance thermometer (SPRTs) is 0.003925.

Ambient Temperature: Temperature surrounding any electrical part or device.

ANSI Standards: Technical standards defined and maintained by the American National Standards Institute.

Callendar-Van Dusen: An interpolation equation which provides the resistance/temperature values for RTDs.

Calibrate: To check, adjust or determine an RTDs accuracy by comparing it to a standard.

Calibration, comparison: A calibration technique commonly used with industrial PRTs. The PRT and a temperature standard are both measured at a stable temperature, then compared.

Calibration, fixed point: A calibration technique that uses the triple point, freezing point or melting point of pure substances to generate a known and repeatable temperature. The sensor's resistance is measured at one of these reference points.

Celsius: Of or relating to a temperature scale that registers the freezing point of waters as 0º and the boiling point at 100º under normal atmospheric pressure.

Cryogenic: The product of low temperatures or the study of low-temperature phenomenon, usually below -328ºF (-200ºC).

Defining Fixed Points: Specific temperatures that create the basis for the International Practical Temperature Scale, including the freezing point, boiling point or triple point of 11 selected substances.

Error: The difference between a correct value and the actual reading taken.

Error, random: Errors with an indeterminate sign, assessed by combining, using the RSS technique.

Fahrenheit: Of or relating to a temperature scale that registers the freezing point of water as 32º and the boiling point as 212ºF at one atmosphere of pressure.

Fixed Point: A reproducible temperature of equilibrium between the phase changes in a material. (see defining fixed point)

Freezing point: The fixed temperature point of a material where it changes from a liquid to a solid. For Pure materials, this is also known as the melting point. (see defining fixed point)

Hermetic Seal: A moisture-resistance, gas-resistance closure that protects the parts inside.

Ice Point: The temperature at which pure water changes from a liquid to a solid (32ºF or 0ºC).

Interchangeability: The ability to interchange one sensor for another, without effecting the overall accuracy of the system.

Glossary

Precision:	The scatter between individual values of test data within the subset, normally computed with respect to the mean of the subset.
Primary Standard:	(or Standard PRT) A platinum resistance thermometer which meets the requirements for establishing calibrations according to the ITS-90. This highly accurate instrument is intended for laboratory environments and is accurate to 0.001ºC.
Reliability:	Used to designate precision for measurements made within a very restricted set of conditions.
Repeatability:	The ability to give the same measurement under repeated, matching conditions.
Response Time (Time Constant):	The time required for the output of the sensor to change by 63.2 percent of the step change in temperature.
Root-Sum-Square (RSS) Technique:	A method used to evaluate random errors. Calculate the square root of the sum of the square of the errors.
RTD:	Resistance Temperature Detector
Secondary Standard PRT:	A PRT that has had its temperature resistance relationship determined by reference to a primary standard of temperature (SPRT).
Self-heating:	Increases in temperature of the element caused by power dissipated in the element.
Stability:	The state of being resistant to change or deterioration.
Stem Conduction Error:	Heat transfer along the sheath or leadwires of a probe, or along the length of a thermowell. This results in the sensor being at a different temperature than the medium.
Time Constant:	See response time
Triple Point (water):	The temperature point at which water, ice and vapor coexist (0.01ºC).
Uncertainty:	The estimated amount or percentage by which an observation or calculated value may differ from the true value.
Verification:	The process of testing a thermometer for compliance with specifications

Custom solutions designed for your specific needs.

Burns Engineering has a long history of designing and building temperature sensors to meet the measurement needs of unique and varied applications. The products in this catalog were specifically developed to meet field requirements and allow for configured-to-order flexibility. Not sure what product is right for your application? Our application engineering group is here to help you select, configure, and/or custom design the right product for your specific needs.

Burns Engineering is a leading supplier of temperature measurement solutions for all your process and metrology applications.

Your processes require advanced temperature measurement solutions that you can depend on. We understand that measurement accuracy, reliability and consistency are important to your success.

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TEMPERATURE METROLOGY

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