

Industrial Temperature Sensors

Series 100/200/300



Description

Since 1960 Burns Engineering has been an industry leader in the design and manufacture of temperature sensors for the industrial marketplace. During that time, product quality and customer service — along with innovative design techniques — have been top priorities in the Burns Engineering world. That's why the same Burns quality is built into each family of Industrial Temperature Sensors: Series 100, Series 200 and Series 300.

Application

Each Series is a collection of the most frequently requested designs for industrial temperature measurement. These standard sensors look like familiar configurations on the outside, but on the inside they are uniquely different.

Series 100 Thermocouples: Type J,K,E,T

Series 200 Wire Wound RTD: Designed for high reliability and stability

Series 300 Thin Film RTD: Designed for durability and economy



Features and Benefits

Series 100	Series 200	Series 300
Proven, rugged design utilizing mineral insulated bare wire in a metal sheath and special limits thermocouple wires (per ANSI MC 96.1) • Reliable performance • High durability • Vibration resistance • Available as FM explosion-proof assemblies Based on application requirements Burns Series 100 can be classified: • Direct Immersion • Capsule Style • Spring Loaded	• The sensing element is constructed with a high purity Platinum wire that is coil wound to minimize stress and assure accurate readings • Proprietary manufacturing technique that forms the metallurgical bond between the element leads and the internal sheath leads virtually eliminates lead wire short-out • Bendable sheath to accommodate installations requiring flexibility and durability • Available as FM Explosion-proof assemblies Based on application requirements Burns Series 200 can be classified: • Direct Immersion • Capsule Style • Spring Loaded	• The thin film platinum RTD element is encapsulated with a special potting material for protection from shock, vibration, moisture and lead wire breakage • A seal around the thin film element and the lead wire junctions completely seals out moisture and adds mechanical protection for the lead wire element • Type 316L SS sheath and threaded fitting are TIG welded to resist corrosion • A second seal is used to prevent moisture and contaminants from entering the sheath Based on application requirements Burns Series 300 can be classified: • Direct Immersion • Capsule Style • Spring Loaded

Specifications

Series 100			Series 200	Series 300
ANSI T/C Type	Temperature Range	Initial Calibration Tolerances	Element Resistance: 100 ohms at 0°C nominal Temperature Coefficient of Resistance: 0.00385 ohms/ohm/°C Temperature Range: -200°C to 500°C Accuracy: Available with Accuracy of $\pm .10\%$ and $\pm .05\%$ of resistance at 0°C with typical alpha accuracy of $.00385 \pm .000005$ ohms/ohm/°C Time Constant: Four seconds maximum for 63.2% response to step change in water moving at 3 fps Insulation Resistance: Will remain greater than 500 megohms @ 500 VDC, 20°C for at least 30 days at 100% relative humidity Repeatability: Less than $\pm .04\%$ change in ice point resistance after 10 consecutive cycles between -200 and 500°C Long Term Stability: Less than $\pm .05\%$ ($\pm .13^\circ\text{C}$) ice point resistance shift after 1000 hours at 400°C Vibration Resistance: Less than $\pm .03\%$ ($\pm .075^\circ\text{C}$) ice point shift for 30 minutes at 21g peak vibration; 5-350 Hz continuous sweep, at 20°C for unsupported stem lengths of 5-1/2 inches or less Long Term Temperature Cycling: Less than $\pm .1\%$ ($\pm .25^\circ\text{C}$) change in ice point resistance after 1000 cycles from 20 to 500°C Self Heating: 18mW/°C in water moving at 3 fps. Hysteresis: .04% maximum between -200 and 500°C	Element Resistance: 100 ohms at 0°C nominal Temperature Coefficient of Resistance: 0.00385 ohms/ohm/°C Temperature Range: -50°C to 200°C Accuracy: Available with Accuracy of $\pm .10\%$ at 0°C with typical alpha accuracy of $.00385 \pm .0000135$ ohms/ohm/°C Time Constant: Six seconds maximum for 63.2% response to step change in water moving at 3 fps Insulation Resistance: Will remain greater than 500 megohms @ 250 VDC, 20°C for at least 30 days at 100% relative humidity Repeatability: Less than $\pm .04\%$ change in ice point resistance after 10 consecutive cycles between -50 and 200°C Long Term Stability: Less than $\pm .10\%$ ($\pm .26^\circ\text{C}$) ice point resistance shift after 1000 hours at 200°C Vibration Resistance: Less than $\pm .03\%$ ($\pm .075^\circ\text{C}$) ice point shift for 30 minutes at 21g peak vibration; 5-30 Hz continuous sweep, at 20°C for unsupported stem lengths of 5-1/2 inches or less. Sheath option SD25 is capable of 30g peak vibration. Long Term Temperature Cycling: Less than $\pm .1\%$ ($\pm .25^\circ\text{C}$) change in ice point resistance after 1000 cycles from 20 to 200°C Self Heating: 10mW/°C in water moving at 3 fps Hysteresis: .08% maximum between -50 and 200°C
Type A - General Purpose Direct Immersion Assembly 			Type L - Spring Loaded Hex Fitting for Thermowells 	Type C - Spring Loaded for Thermowell Assembly 
Type K - Bayonet, Twist-lock, Spring Loaded for Thermowell Assembly 			Type D - Capsule Style With Plain Sheath 	Type G - Capsule Style 

What will your next solution BE?

Durable temperature sensors that deliver accurate, stable and repeatable measurements. BE confident. Trust Burns Engineering for the most creative solutions to your most challenging temperature-sensing needs.

For current model numbers and precise ordering information, visit burnsengineering.com and search > SERIES 100
 SERIES 200
 SERIES 300



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