Precious Metal Thermocouples

Honeywell

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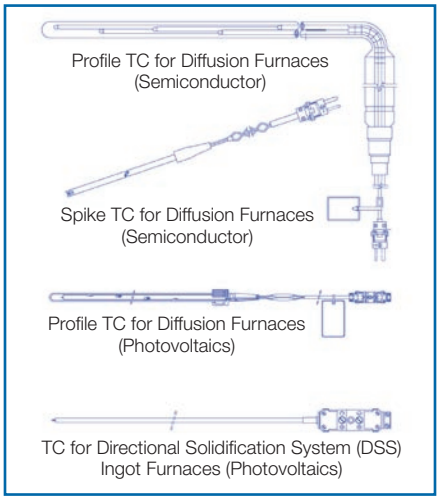
PROFILE AND SPIKE THERMOCOUPLES FOR PRECISION TEMPERATURE MEASUREMENT

BENEFITS

- Custom manufactured thermocouples
- Flexible thermocouple management programs
- Precious metal reclaim services
- High precision fixed point calibration services available
- Global manufacturing, sales and technical support
- Secure calibration data available 24 hours, 7 days a week on Internet



THERMOCOUPLE WIRE TYPES

Wire Type	Negative Wire	Positive Wire	Standard Grade*	Special Grade*	Optimal Temp. Range
B	94% Platinum 6% Rhodium	70% Platinum 30% Rhodium	±.25%	±.12%	1000–1500˚C
R	100% Platinum	87% Platinum 13% Rhodium	±.25%	±.10%	600–1000˚C
S	100% Platinum	90% Platinum 10% Rhodium	±.25%	±.10%	600–1000˚C
K	Nickel/ Aluminum Alloy	Nickel/ Chromium Alloy	±230µv @600˚C	N/A	0–600˚C

Percentage of temperature

- Manufactured to OEM certified specifications
- Calibration offsets traceable to NIST
- Calibration uncertainty = +/- 0.65˚ C (Demonstrated monthly accuracy = +/- 0.3˚ C)
- ISO9001:2000 Certified
- All wire fully annealed
- Standard wire diameters (others available upon request)
  - 0.5mm
  - 0.4mm
  - 0.3mm

OVERVIEW

Honeywell Electronic Materials is a leading supplier of thermocouple products for the electronics and PV industries. Honeywell offers profile and spike thermocouples for precision temperature measurement, manufactured in a state-of-the-art facility in Japan. All thermocouples are precision calibrated in a cutting edge NIST traceable system.

Calibration System Accuracy Test

Honeywell is the world's leader in precision thermocouple calibration. The actual accuracy of the Honeywell Electronic Materials calibration system is demonstrated by a monthly accuracy test. Thermocouples calibrated directly by the National Institute of Standards and Technology (NIST) are recalibrated in the Honeywell system to determine any calibration variance. The results are then compared, point by point, to the NIST calculated data.

Additional services offered include trade-in of used thermocouples for brand new ones (SWAP), precious metal reclaim, and in-fab educational seminars and technical service.

SWAP Program

Honeywell Electronic Materials offers a unique program for thermocouple management. The Honeywell SWAP program allows trade-in of used thermocouples for brand new ones without the need for scrap credits.

The SWAP price will not be subject to the volatility of the precious metal market as the precious metal wire is "swapped" out, thus enabling us to provide a lower fixed price for each thermocouple. A fixed price simplifies purchasing as a new quotation does not have to be generated for each order.

- Brand new thermocouple every time
- No wire homogeneity problems due to used wire
- Reduced lead times
- No exposure to volatility of precious metal market—i.e., fixed price
- Less accounting paperwork

APPLICATIONS

Profile and spike thermocouples are vital components used to measure temperature in diffusion, low-pressure chemical vapor deposition (LPCVD) and Directional Solidification System (DSS) furnaces manufactured by original equipment manufacturers (OEMs) such as TEL, Kokusai, BTI, Aviza, ASML/SVG/Thermco, ASM, Semitool, MRL, Semco, Tempress, Centrotherm, Sevenstar, SAIRUIDA, JYT and Huixiang. Calibrated thermocouples are used in conjunction with spikes for furnace characterization and control. Honeywell engineers will work with you to design and custom-manufacture thermocouples and spikes to fit every furnace type and customer requirement.

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OUR COMMITMENT TO SUSTAINABILITY

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