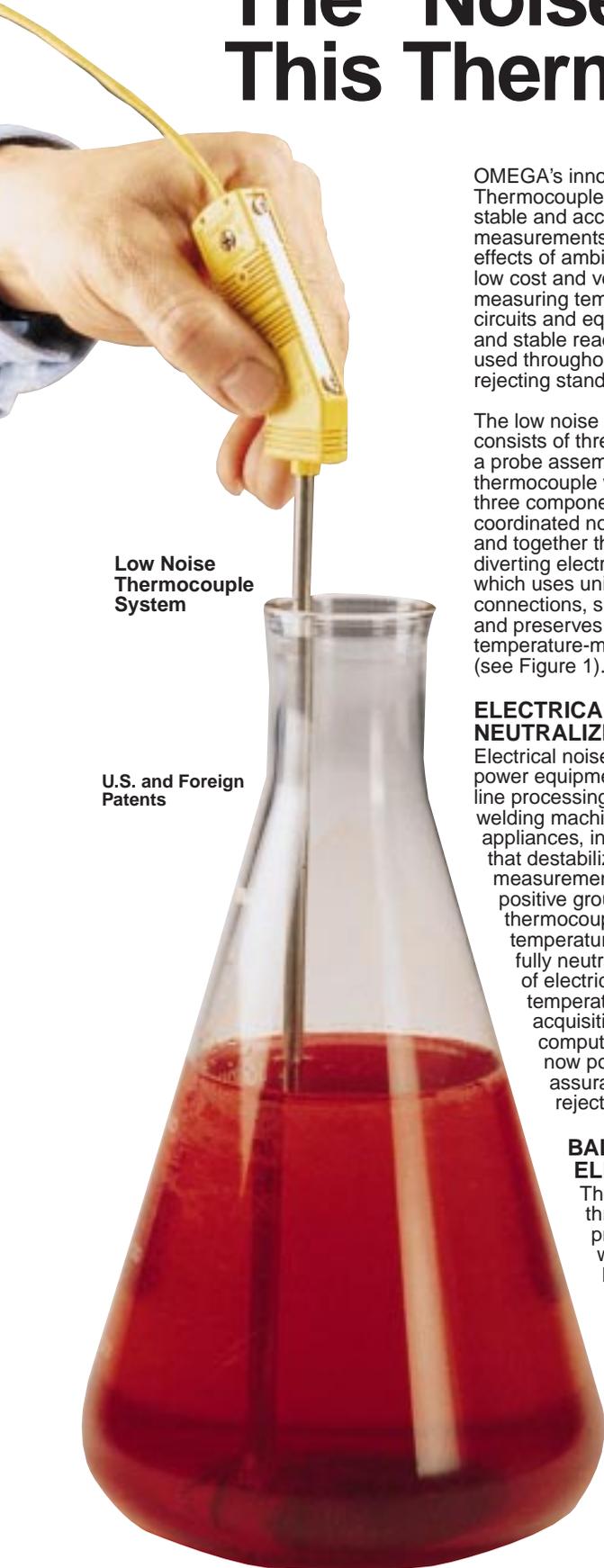


The “Noise Is Off” with This Thermocouple System



Low Noise Thermocouple System

U.S. and Foreign Patents

OMEGA's innovative Low Noise Thermocouple System provides stable and accurate temperature measurements by neutralizing the effects of ambient electrical noise. This low cost and versatile system is used for measuring temperatures of sensitive circuits and equipment where precise and stable readings are critical. It is also used throughout industry as a noise rejecting standard.

The low noise thermocouple system consists of three interrelated elements: a probe assembly, a connector and thermocouple wire. Each of these three components has distinct and coordinated noise neutralizing features and together they provide a path for diverting electrical noise. The system, which uses universal two-terminal connections, shunts noise signals and preserves the integrity of the temperature-measuring circuit (see Figure 1).

ELECTRICAL NOISE NEUTRALIZED

Electrical noise, typically generated by power equipment, rotating machinery, line processing conveyors, mobile units, welding machines and cleaning appliances, introduces spurious signals that destabilize sensitive temperature measurements. The system's unique positive ground path, from the thermocouple probe to the temperature indicating instrument, fully neutralizes the effects of electrical noise. Precise temperature control for data acquisition, data logging and computer interface circuits is now possible with the added assurance that noise is being rejected.

BALANCED SYSTEM ELEMENTS

The thermocouple system's three building blocks – probe, connector and wire – are integrated into a balanced and easily assembled unit. The probe and connector are available in both standard and miniature configurations (see Figure 2).

(1) The thermocouple probe is shaped to ease handling and improve viewing of the test object. Probe types are interchangeable to suit many applications. The probe sheath (outer jacket) connects to a ground through an internal ground strap link.

(2) The connector, which joins the probe and thermocouple wire, is a standard two-terminal quick disconnect type (miniature or standard size). The external metal ground strap, attached to the connector, provides the continued noise shunting circuit and adds mechanical strength to the assembly.

(3) The twisted/shielded thermocouple wire contains an integral drain wire which provides the noise grounding link between the probe assembly and the measuring instrument.

CONVENIENT FEATURES

The probe assembly is designed to ease handling, improve mechanical integrity and allow the user to view the subject under test without obstruction. A 30 degree profile, found only in OMEGA's patented design, allows for improved user performance (see Figure 2). The probe assemblies are color coded to identify thermocouple materials and a full selection of probe sheath diameters and lengths are available.

Probe lengths are 6", 12", 18", and 24"; diameters are from .040" to .250". The probe sheath is 304SS or Inconel.

The connector provides continuity of ground from the probe to the thermocouple wire through an external ground strap. Polarized connector pins allow for quick connection or disconnection to the probe assembly. Connectors include removable write-on pads. This feature, unique in the industry, allows positive identification of thermocouple assemblies in multiple measurement applications.

PROBLEM SOLVER

The user often cannot forecast what electrical noise sources will be present during temperature readings. Typical temperature measurements are performed in electrically noisy environments.



Figure 2. Balanced system elements include: thermocouple probe, connector, and thermocouple wire. The thermocouple probe has a 30° profile, an exclusive OMEGA feature, and comes with the mating female connector and cable clamp

In a laboratory, where processes are being controlled at precise temperature transition points, electrical noise may be introduced from sources such as mixers, ovens, heating elements and power supplies. Grounding of this noise is essential for precise temperature sensing. This thermocouple system grounds the destabilizing noise signals.

Precise control of solder bath temperatures, during an automated flow soldering process, is required to ensure that proper soldering takes place and that no damage occurs to sensitive components on a printed circuit board. Typically, the thermal sensing system is in the presence of equipment which generates electrical noise such as motors and welding equipment. The system's unique and positive noise grounding path neutralizes the effects of generated noise.

In high noise applications such as environmental control, air conditioning, heat treating and foundry operations, noise neutralization during critical temperature measurements is required for accurate and stable control. By shunting electrical noise harmlessly to ground, the OMEGA® thermocouple system provides the required stable readings.

The noisy environments encountered in industrial, mobile, field and laboratory applications are no match for this easily assembled and handy-to-use system. 

To order probes
Standard quick disconnect probes and miniature quick disconnect probes are sold in Section A of this catalog.

To order connectors
Standard connectors and miniature connectors are sold in Section G of this catalog.

U.S. AND CANADA 

For sales and service, call: **1-800-82-66342**SM
1-800-TC-OMEGA

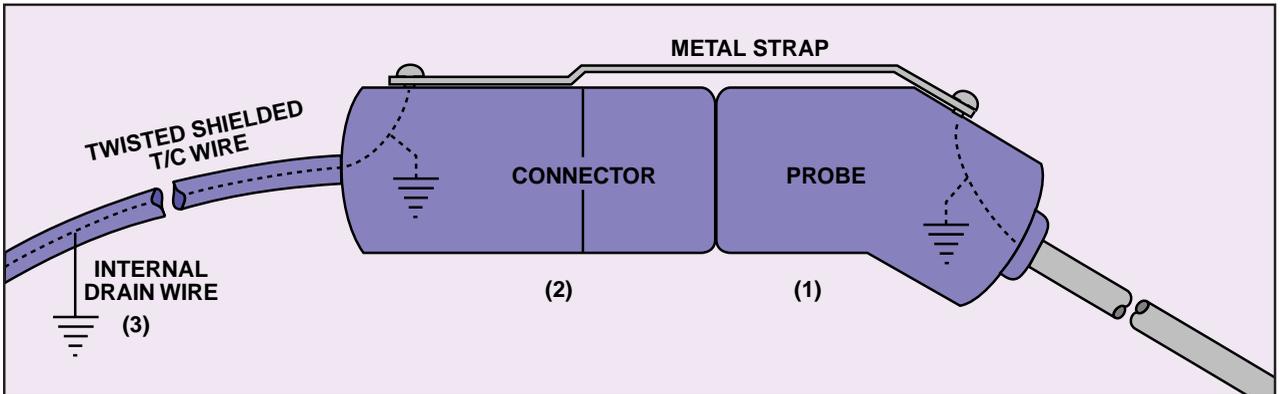


Figure 1. Continuous ground from probe to test instrument