

Bees Industrial Services

Experience Versatility Solutions

Heating Elements - Sensors - Controls - Auxiliary Equipment - Process Heating Systems



Grounded vs. Ungrounded Thermocouples

More often than not, when a customer is asked if their Thermocouple is “grounded or ungrounded”, we hear a slight pause on the other end of the phone line. More often than not the real answer is “I don’t know”, but by the very fact that we asked the question makes the customer feel like they should know, or at least need to know.

While the terms “Grounded” and “Ungrounded” does have some electrical implications, this is not really what is being asked. Forget the common electrical-circuit notion of a “grounded-circuit”: *First and foremost, whether or not a thermocouple is “grounded” or “ungrounded”, it still only has two-wires.* You can’t LOOK at a thermocouple and tell if it is “grounded” or “ungrounded”

You can, however, use a meter to do a continuity test between the lead ends and the sheathing of the probe. If the thermocouple is **“grounded” you will have a closed circuit; “ungrounded” will result in an open circuit**

Most Thermocouples are “GROUNDED”. Usually, if a thermocouple is ungrounded it is stated in the description of there is a “U” in the part number, or you are aware of it due to some reason existing for that feature to be present. More often than not if you are not sure and can find no indication one way or the other, either in the part number or description, the unit is more than likely “grounded”.

***** Please note, “ungrounded” thermocouples typically add \$2.00 or \$3.00 over the cost of a “grounded” unit.**

Technically speaking:

Grounded Thermocouples

A grounded thermocouple is one where the sensing junction is wired directly to the probe wall. The result is very good heat transfer from the target and a quicker response time.

Ungrounded Thermocouples

The sensing junction of an ungrounded thermocouple is electrically isolated from the probe wall. This results in a slower response time, but the electrical isolation of ungrounded thermocouples gives them some important advantages over grounded versions: They last longer, they interface more easily with instrumentation and they eliminate ground loop problems.

BEES INDUSTRIAL SERVICES, LLC
11301 West 47th Street Minnetonka MN 55343-8849
952-988-8562 800-338-1612 Fax 952-988-0100

www.beesindustrial.com