

THERMOCOUPLES

Thermocouples operate on the principle that when two dissimilar metals are joined at both ends and one of the ends is a different temperature, a measurable and repeatable EMF is produced.

The preferred design for JMS thermocouples is mineral insulated sheath. The high purity, hard packed magnesium oxide provides excellent insulation of the positive and negative wire conductors in relation to each other and to the outer metal material. Among the outstanding features of sheath are: (A) flexibility to bend or form to a radius = to 2x sheath diameter, (B) its rigidity to maintain size and shape after bending or straightening, (C) vibration nor shock has little affect on the sensor, (D) sheath withstands pressures upwards to 50,000 psi, and (E) sheath may be used in applications where temperatures may range from -400° to 3000°F depending on requirements and selection of materials.

COMPONENTS OF THERMOCOUPLES

HOT END

Outside Diameter

Thermocouples range in outside diameters from .010" to .500". A general rule of thumb is the smaller the diameter, the quicker the response time. For additional information see page 1-13.

Sheath Material

JMS offers thermocouples in a wide variety of sheath materials, with 304 and 316 stainless steel being the most popular. Both temperature and environment should be taken into consideration when selecting your sheath material. See pages 1-1, 1-11 and 4-17 for temperature ratings of various materials. See page 2-8 for insulation characteristics.

Measuring Junction

The measuring junction is the sensitive portion of the thermocouple. Grounded junctions are the most frequently requested junctions. For a complete description of measuring junctions available and their advantages and disadvantages see page 1-12, 1-13.

TRANSITION AREA

This area is between the points when the sheath or tube ends and the cold end begins. The area includes the **actual transition point** (see pg. 1-16) and any process fitting or connections within these two points. Process connection **fittings** include compression fittings and 1/2" x 1/2" N.P.T. welded or spring loaded fittings. See page 1-2 for full selection of process connections. Metal parts and process connections can either be welded or brazed (silver solder), depending on the wall size of the material to which the parts are being attached.

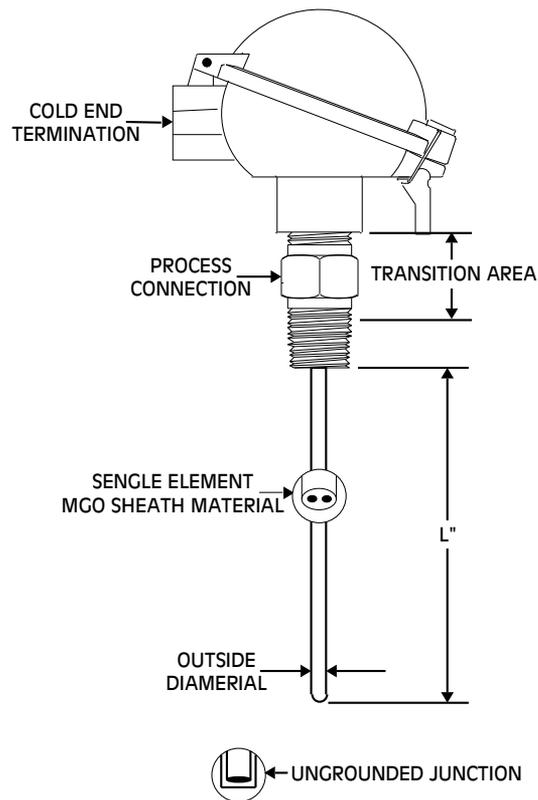
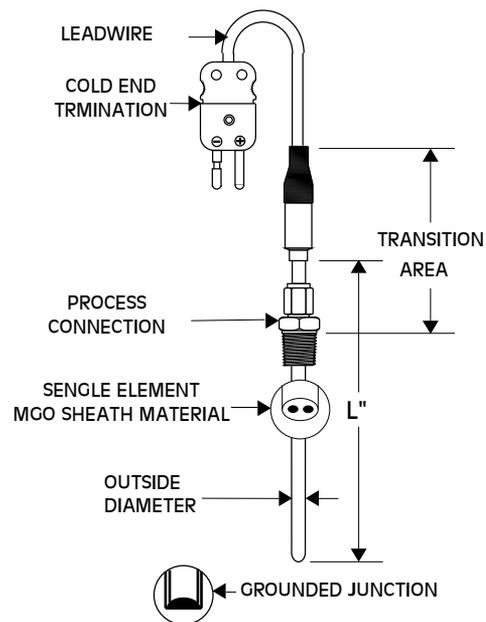
COLD END

Leadwire Insulation

JMS offers a large selection of thermocouple leadwire. Insulations include fiberglass, PVC, teflon, kapton, high temperature fiberglass, and fiberglass with stainless steel overbraid or flexible armor. Additional information can be found in the "Thermocouple and RTD Wire" section. (Section 7)

Cold End Termination

This may be in the form of wires, plugs, or terminal heads. A partial list is given on page 1-2. See section 6.



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