



THERMOCOUPLE INSTALLATION AND MAINTENANCE INSTRUCTIONS

Thermocouples are installed by means of spring-loaded, compression, welded or bayonet fittings.

Follow these instructions for installation of a thermocouple with a spring-loaded fitting:

1. Insert the thermocouple into the process hole or opening.
2. Tighten the thermocouple into place by turning the thermocouple into the threaded connection

Caution should be taken to disconnect the wires from the terminal block to prevent twisting or shorting.

INSTALLATION:

Vertical installation is preferred in very high temperatures to avoid protection tube or element sagging.

Install thermocouples away from AC power lines to prevent electrical noise.

Do not run thermocouple wires in the same conduit with electrical wires.

Do not run a single thermocouple to two different instruments. This will result in instrument imbalance. A dual thermocouple should be used instead.

ELECTRICAL:

Connect the positive thermocouple extension wire to the positive thermocouple wire and the negative extension wire to the negative thermocouple wire. Wires are color coded for identification as follow, notice that the negative leg is always red.

CALIBRATION	THERMOCOUPLE TYPE			EXTENSION WIRE		
	JACKET	POS	NEG	JACKET	POS	NEG
J	Brown	White	Red	Black	White	Red
K	Brown	Yellow	Red	Yellow	Yellow	Red
E	Brown	Purple	Red	Purple	Purple	Red
T	Brown	Blue	Red	Blue	Blue	Red
S	-----	White	Red	Green	Black	Red
R	-----	White	Red	Green	Green	Red
B	-----	Gray	Red	Gray	Gray	Red
N	Brown	Orange	Red	Orange	Orange	Red

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TYPE J - The positive element is magnetic. It has a lower resistance in ohms per foot than the negative element in the same wire gauge.

TYPE K - The negative element is slightly magnetic. It has a lower resistance in ohms per foot than the positive element in the same wire gauge.

TYPE E - The negative element has a lower resistance in ohms per foot than the positive element for the same wire gauge.

TYPE T - The positive element is copper in appearance. It has a lower resistance per foot in ohms than the negative element of the same wire gauge.

TYPE R or S - The negative element is softer. The positive element has a lower resistance in ohms per foot than the negative element of the same wire gauge.

TYPE N - The positive element has a higher resistance in ohms per foot than the negative element of the same wire gauge.

OPERATION:

The temperature of the connection head should be kept at ambient temperature if possible to avoid errors due to temperature gradient. The maximum recommended temperature at the terminal block is 400°F.

MAINTENANCE:

Thermocouples will deteriorate due to contamination from their environments. The quality and frequency of calibration checks must be determined for each individual application by noting the drift rate of each thermocouple at individual installations. Calibration is usually made by comparison to a primary standard. The thermocouple may be removed from its installation and checked in a tube furnace against the primary standard.

Return thermocouples that were removed for tests to the same location and immersion depth for reliable and repeatable readings.

Do not use a thermocouple to measure a very low temperature if it has been used to measure very high temperatures previously.

Make sure the protection tubes and thermowells are in good condition when protecting thermocouples with them.

STORAGE:

Store in a clean, dry place.