

Thermocouple Junctions and Response Time

The Thermocouple Junction is located in the tip of the sensor. This is where the temperature sensing takes place. In mineral insulated sheathed thermocouples, there are three thermocouple junction styles available:

Grounded junctions are common to the sensor sheath, providing no electrical isolation and fast response time.



Ungrounded junctions are isolated from the sensor sheath, providing electrical isolation from the sheath and reasonable response time.



Exposed junctions are created outside the sensor sheath, providing the fastest response time with no isolation.



Thermocouple size and response time (seconds) Based on the time to indicate 63.2% of value from room temperature to boiling water.

Probe OD (Inches)	Conductor Size (AWG)	Response Time	
		Grounded	Ungrounded
0.4	33	0.1	0.3
0.0625	29	0.2	0.5
0.0625 Dual	31	0.2	0.5
0.125	23	0.6	1.5
0.125 Dual	25	0.6	1.5
0.187	19	1.1	2.2
0.187 Dual	21	1.1	2.2
0.250	17	2.0	4.5
0.250 Dual	19	2.0	4.5
0.375	14	2.9	8.2
0.375 Dual	15	3.9	8.2