

Tech Notes

Title: Stem Conduction Error

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Last Revised:

Applies To: Temperature Sensing Probes

Problem Description:

A difference in temperature between the heat source and the handle or cable end of a temperature probe can cause heat to be conducted along the length of the probe's shaft causing a difference in the sensor's reading versus the actual temperature.

Resolution/Work Around:

There are several factors that impact the stem conduction error, however, a suggested rule-of-thumb to overcome stem conduction errors is to immerse the probe to a minimum depth equal to 20 times the diameter of the probe plus the length of the sensing element contained in the probe.

For example, a probe that is 3/16 inch in diameter with a shaft length of 9 inches and has a sensing element that is 3/4 inch long which is located approximately at the tip of the shaft would have a minimum immersion depth of: $(20 \times 3/16") + 3/4" = 4 \frac{1}{2}$ inches.

Other Information: