

## Thermistors

Tech Tip #27 ©2000

Thermistor thermometry is based on the principle that metal oxides change resistance with a change in temperature. Our thermistors decrease in resistance as the temperature increases. This resistance change is detected by the meter where it is converted and displayed as a temperature reading.

### Why Choose a Thermistor?

Thermistors have the excellent accuracy over the biological or ambient temperature ranges when compared to RTDs or thermocouples. Response times are generally faster than RTD probes.

### Differences Between 400, 500, and 700 Series Probes

The 400 series thermistors have a resistance of  $2252\Omega$  at  $25^{\circ}\text{C}$  and maintain a tolerance of  $\pm 0.1^{\circ}\text{C}$  in the range of  $32$  to  $167^{\circ}\text{F}$  ( $0$  to  $75^{\circ}\text{C}$ ). See the chart below for tolerances outside this range.

The 500 series probes are recommended where small size is a requirement. A conversion chart is supplied with each 500 series probe to correct the readings for use with a 400 series meter.

The 700 series probes have dual elements and were originally designed for easy linearization with analog meters. They have an excellent tolerance of  $\pm 0.15^{\circ}\text{C}$  over their entire range of  $-22$  to  $212^{\circ}\text{F}$  ( $-30$  to  $100^{\circ}\text{C}$ ).

### Thermistor Tolerances

