

## Multipurpose Thermometer

- Resolution and accuracy as high as 0.01°C
- Multiple probe inputs
- Differential mode
- Three temperature ranges (.01°, 0.1°, 1°)
- NIST traceable accuracy



BAT-10 Thermometer

This versatile thermometer has a wide temperature range and can be used in applications as diverse as cryogenic measurements for blood banking and cryosurgery, skin temperature measurements in exercise experiments, liquid measurements in spectrophotometer cuvettes, melting points of plastics and all types of animal and insect temperature measurements.

BAT-10 accuracy is NIST traceable and in each temperature range accuracy is the same as the resolution. For instance, in the 0.1°C range, accuracy is 0.1°C ( $\pm 1$  least significant digit). Few digital thermometers will do this. In most instruments there is a difference of several tenths between specified accuracy and resolution. At physiological temperatures, where minute changes can be critical, the differential range allows readings to 0.01°C with 0.01°C accuracy.

### Differential Measurements

When probes are connected to inputs 2 and 3, the difference between the probes is displayed to 0.01°C. Linearization is centered at 40°C. Because the BAT-10 has such high accuracy and sensitivity, measurements accurate to 0.01°C can be made around this point. Repeatability, which is most important for this type of measurement, is 0.01°C. If a stable reference such as Physitemp's OST-6 (see page 14) is connected to input 2 of the BAT-10, the absolute temperature of probe 3 can be easily calculated, to 0.01°C, by adding the differential reading to reference temperature.

### Analog Output

BAT-10 is supplied with a non-linearized analog output suitable for most chart recording applications. This output relates to the thermocouple curve and corresponds closely to temperature over the physiological range. It can be used directly for strip chart recording in this range. In other ranges, temperature can easily be calculated. For users who need a strip chart recording which exactly reflects temperature over a wide range, an optional linearized output is available. This output is directly proportional to the reading on the display.

### SPECIFICATIONS

<b>Temperature Range and Resolution:</b>	-200°C to +400°C, 1°C res. -100°C to +199.9°C, 0.1°C res.						
<b>Differential Temperature Range:</b>	-19.99° to 19.99°C, linearization centered at 40°C, 0.01° res.						
<b>Accuracy:</b>	<table border="0"> <tr> <td><b>1° range</b></td> <td>1°C <math>\pm 1</math> least significant digit</td> </tr> <tr> <td><b>0.1° range</b></td> <td>0.1°C <math>\pm 1</math> least significant digit</td> </tr> <tr> <td><b>diff. range</b></td> <td>0.01°C <math>\pm 1</math> least significant digit</td> </tr> </table>	<b>1° range</b>	1°C $\pm 1$ least significant digit	<b>0.1° range</b>	0.1°C $\pm 1$ least significant digit	<b>diff. range</b>	0.01°C $\pm 1$ least significant digit
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<b>diff. range</b>	0.01°C $\pm 1$ least significant digit						
<b>Repeatability:</b>	$\pm$ one least significant digit						
<b>Calibration:</b>	Conforms to NIST tables (monograph 175)						
<b>Ambient Operating Range:</b>	15-45°C						
<b>Readout:</b>	3½ digits, liquid crystal						
<b>Power Supply:</b>	BAT-10: 4 alkaline "C" cells BAT-10R (rechargeable unit) 4 Ni-Cads						
<b>Analog Output: (non-linear)</b>	0mV at 0°C, 125mV at 40°C non-linearity <5% below 100°C						
<b>Linearized Output:</b>	10mV/°C with 0.1°C range selected 1mV/°C with 1°C range selected						
<b>Auxiliary Functions:</b>	via 9 pin D-Shell connector						
<b>Weight:</b>	3.5 lbs.						
<b>Dimensions:</b>	8.5"W x 9"D x 3.5"H						

For information on temperature accessories including tilt stand (shown above), thermocouple switchboxes, etc... see pages 13-15.

For ordering information see page 34.

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