

FLUKE®

Biomedical

Nuclear Associates 07-402

Portable Digital Thermometer

Operators Manual

August 2007
Manual No. 07-402-1 Rev. 3
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Section 1

Introduction

1.1 Introduction

The Portable Digital Thermometer provides a rapid and reliable means of checking solution temperatures in x-ray film processors. It features a detachable temperature-sensing probe with a 3-foot coiled cord, and an LCD digital display. When the tip of the immersion probe is placed in a solution, accurate temperature readings appear within seconds. The digital display eliminates the possibility of error that can result from the misreading of stem-type dial thermometers. Detachable immersion probes are time-savers for the busy x-ray department that has several film processors. A permanently positioned probe eliminates the need for removing the cover of the processor. Simply leave one probe in each processor and plug it into the instrument. The use of multiple probes, each remaining in a specific tank, also eliminates possible cross-contamination of chemicals from tank to tank. When mounting the probe permanently to the processor, the probe tip should be positioned so it is approximately 2" beneath the liquid's surface. Make sure the probe housing is out of the solution.

This battery-operated, shock-resistant read-out unit has solid-state electronics and needs no adjustments to maintain high accuracy. Calibration is traceable to the National Institute of Standards and Technology.

This instrument comes with a high-impact plastic storage case with room for additional probes.

NOTE

This unit is calibrated to standards traceable to the National Institute of Standard and Technology (NIST)

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Section 2

Operating Instructions

2.1 Measure Temperature



Press the ON button. The unit will display "888.8" for 2 to 3 seconds, then display the temperature. If there is no probe in the probe jack, the unit will display "LO". Install the temperature probe into the probe jack (located above the display) to measure temperature.

2.2 Display Min/Max Readings



The Portable Digital Thermometer will display the lowest and highest temperature readings measured by the temperature probe since the unit was turned on. For example, while the unit is on, the temperature being measured changes from 40° F to 100° F (4.4° C to 37.8° C), then drops to 60° F (15.6° C). The display now shows 60° F (15.6° C). Press the MIN/MAX button. Dashes will appear, then the MIN value 40° F (4.4° C) for a few seconds, then the MAX value 100° F (37.8° C) for a few seconds, then back to the current probe temperature, 60° F (15.6° C). Note also that while the MIN/MAX values are being displayed, the small characters on the right-hand side of the display will blank out to indicate the MIN/MAX function. These characters will reappear when the actual probe reading is back on the display.

2.3 Clear Min/Max Memory

Press the MIN/MAX button to display MIN/MAX values. While the MIN/MAX are showing on the display, press the MIN/MAX button again. The display will show the letters "CL" to indicate that the memory has been cleared. The Portable Digital Thermometer will then resume displaying the current probe temperature on the display, and begin to store a new set of MIN/MAX values. If the unit is turned off, MIN/MAX values will be cleared.

2.4 The "Hold" Function



To "freeze" the current temperature reading on the display, press the HOLD button once. The temperature displayed will not change while the hold function is active. The display will alternate showing the temperature, and the word HOLD to indicate the hold function is still active. To return to normal mode, press the HOLD button once again.

2.5 Select Degrees C Display



The temperature scale is normally in degrees Fahrenheit. To display the temperature reading in degrees Celsius, press the °F/°C button. A small letter "C" will appear at the right side of the display to indicate readings in degrees Celsius.

2.6 Backlight the Display



When used in dark locations, the display of the Portable Digital Thermometer can be illuminated by pressing the LIGHT/OC button. The backlight will turn off automatically after approximately 30 seconds, or may be turned off manually by pressing the LIGHT/OC button a second time.

2.7 Disable the Auto-Shutoff

The Portable Digital Thermometer will normally turn itself off after 15 minutes. Pressing any of the buttons will delay the automatic shutoff for another 15 minutes. The technician can disable this auto-off feature by pressing the LIGHT/OC button three times within 5 seconds. The small ° F (or ° C if in Celsius scale) at the right side of the display will blink on and off to indicate that the unit is in “ON CONTINUOUS” mode and will not turn itself off. This function is useful for MIN/MAX data collection over extended time periods.

NOTE

You may wish to use the optional AC power adapter when in “ON CONTINUOUS” mode to prevent possible data loss due to battery failure.

2.8 Battery Replacement

When the battery in the Portable Digital Thermometer needs to be replaced, the display will show “LO P”. Replace the battery with a 9-volt alkaline or equivalent NEDA type 1604A battery.

CAUTION

This unit is not waterproof. Do not immerse for cleaning. If unit becomes wet inside because of cleaning, rain or condensation, unstable readings may occur. NOT INTENDED FOR HUMAN MEDICAL USE.

2.9 Specifications

Accuracy: $\pm 0.3^{\circ}\text{F}/0.2^{\circ}\text{C}$ or $\pm 0.5\%$ of reading, which ever is greater

Optional Accessories

07-403 -- Extra Immersion Probe

07-401 -- Waterproof Probe; will not be damaged in chemistry or water

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6045 Cochran Road
Cleveland, Ohio 44139
440.498.2564

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