**ON/OFF BUTTON**

Press the \( \text{ON/OFF} \) button to turn on or off the LCD Back-Light.

**Display Back-Light Button**

Press the \( \text{Display Back-Light} \) button to on the \( \text{Back-Light} \) annunciator will blink. Releasing MEAS button to extend battery life.

**SAFETY INFORMATION**

It is recommended that you read the safety and operation instructions before using the infrared thermometer.

**WARNING**

Pressing the \( \text{ON/OFF} \) button turns the laser beam on and off. Exercise extreme care and do not allow the laser beam to enter your eye or those of any other person or animal.

- Do not look directly into the laser light from the optical system.
- When measuring the temperature of an object which has a mirror finish, be careful not to allow the laser light beam to be reflected off the surface into your eyes or those of another person.
- Do not allow the laser light beam to impinge upon any gas which can explode.

**OPERATING INSTRUCTIONS**

This instrument is a portable easy to use 3 digit, compact-sized digital infrared thermometer with laser sighting designed for simple one hand operation. Meter comes with Backlit LCD display, Auto-hold function and auto power down (15 seconds approx.) after releasing MEAS button to extend battery life.

**Detection Element:** Thermopile

**Laser Safety Classification:** Class 2

**Response Time:** 1 second

**Spectral Response:** 8 to 14um nominal

**Sensitivity:** 0.10 to 1.00 by step of 0.01

**Measurement Rate:** 1 times per second, nominal

**Measurement Range:** -4°F to 1022°F (-20°C to 550°C)

**Display:** 3½ digit liquid crystal display (LCD) with maximum reading of 1999

**Low Battery Indicator:** The " \( \text{Low Battery} \) " is displayed when the battery voltage drops below the operating level.

**Battery Life:** 100 hours (continuous) typical with carbon-zinc battery (laser marker and Back-Light not illuminated)

**Standby Current:** 100 hours (continuity) typical with carbon-zinc battery (laser marker and Back-Light not illuminated)

**Dimensions:**

- 100mm(H) \times 65.5mm(W) \times 35mm(D)

**Weight:** 195g (including probe and batteries)

**Laser Specifications:**

- Laser Class: Class 2
- Laser Wave Length: Red (630nm~670nm)
- Eye Protection: 1 class 2

**Auto Power-down Function**

If unused for about 15 seconds, the meter will power-down automatically. Press MEAS button switches to resume power-on mode.

**Turning the Power on**

When the power is down, press MEAS less than 1 sec button to to turn on the meter. The values and settings on the LCD return to what they were before the power was last turned off.

When the power is down, press MEAS more than 1 sec, the last record of MAX/MIN was erased.

**Display Back-Light Button**

Press the \( \text{Display Back-Light} \) button to turn on or off the LCD Back-Light during measurement, or while the display shows HOLD, MAX or MIN.

**Laser Sighting**

Press the \( \text{Laser Sighting} \) button to on the \( \text{Annunciator} \) will blink. Releasing MEAS button turns off the laser beam.

**Selecting the Temperature Scale \( ^\circ \text{C} \) or \( ^\circ \text{F} \)**

Readings are displayed in either degrees Celsius \( (^\circ \text{C}) \) or degrees Fahrenheit \( (^\circ \text{F}) \). When the thermometer is turned on, the scale is set to the temperature scale that was in use when the thermometer was last turned off. To change the temperature scale, in power down mode hold the \( ^\circ \text{F} \) \( \text{MAX} \) button \( 1 \text{sec} \) and then press \( \text{MEAS} \) button until the \( ^\circ \text{C} \) annunciator appear.

**Continuous Measurement**

1. In the power down mode, holding the MODE key down and then pressing the MEAS key will put the meter into the continuous measurement mode. If HOLD was show, please press MEAS button again into to the continuous measurement.

2. When the MEAS key is pressed again to stop measuring temperature and automatically hold the display reading, the meter power down automatically after 15 seconds.

**Mode Selection and Operation**

Press MODE button switches the mode around the cycle \( \text{HOLD} \rightarrow \text{ALM Hi} \rightarrow \text{ALM Lo} \rightarrow \text{MAX} \rightarrow \text{MIN} \rightarrow \text{HOLD} \).

- \( \text{HOLD} \): Releasing MEAS button stops measuring temperature, the \( \text{HOLD} \) indication appears, and the measured temperature is held.

- \( \text{ALM Hi} \): The upper limit alarm temperature is set using the \( \text{H} \) and \( \text{V} \) keys. When the measured temperature is exceed the Hi setpoint, the beeper emits a discontinuous pulse tone and "\( \text{ALM Hi} \)" is displayed.

- \( \text{ALM Lo} \): The lower limit alarm temperature is set using the \( \text{H} \) and \( \text{V} \) keys. When the measured temperature is below the Lo setpoint, the beeper emits a continuous pulse tone and "\( \text{ALM Lo} \)" is displayed.

**Display Back-Light Button**

Press the \( \text{Display Back-Light} \) button to turn on or off the LCD Back-Light during measurement, or while the display shows HOLD, MAX or MIN.

**Laser Sighting**

Press the \( \text{Laser Sighting} \) button to on the \( \text{Annunciator} \) will blink. Releasing MEAS button and the laser beam will turn on and the \( \text{Annunciator} \) will blink. Release MEAS button turns off the laser beam.
NOTE: When the power is down, press the MEAS key more than 1 sec the last record of MAX/MIN was erased.

SET MODE & Numeric input key

*SET* annunciator appears when a numerical value can be set (during setting of ε, A L M Hi and A L M Lo).

▲ key: The numerical value is increased.

▼ key: The numerical value is reduced.

If either of these numerical value keys is held down, the numerical value changes rapidly in the appropriate direction.

The data will store in nonvolatile storage while after completing settings will store in volatile storage.

How to specify the thermal emissivity (ε)

1. Stick black body tape on the object whose temperature is to be measured, or spray it with black body spray.
2. Set the thermal emissivity value (ε) on the LCD to 0.95.
3. Press the MEAS key, so as to measure the temperature (Treal) of the part on which body tape (or black body spray) is applied.
4. Measure the temperature (T) of the parts to which body tape (or black body spray) is not applied.
5. Change the thermal emissivity value (ε).
6. The value of the thermal emissivity (ε) at which T comes out is equal to Treal is the correct value for the inherent thermal emissivity of the body whose temperature is to be measured.

MAINTENANCE

Battery Replacement

Power is supplied by a 9 volt “transistor” battery. (NEDA 1604, IEC 6F22). The "on/off " button to select turn on or turn off the display.

Cleaning

Periodically wipe the case with a damp cloth and detergent, do not use abrasives or solvents.

LIMITED ONE YEAR WARRANTY

BK PRECISION warrants to the original purchaser that its product, and the component parts thereof, will be free from defects in workmanship and materials for a period of one year from the date of purchase.

BK PRECISION will, without charge, repair or replace, at its option, defective product or component parts upon delivery to an authorized BK PRECISION service contractor or to the factory service department, accompanied by proof of the purchase date in the form of a sales receipt.

Exclusions: This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs. It is void if the serial number is altered, defaced or removed.

OPERATION

1. When the power is down, pressing MEAS button turns on the power.
2. Use “▲” button to select turn on or turn off the display.
3. Use “▼” button to select turn on or turn off the Laser beam.
4. Press the MODE button, if necessary to set the thermal emissivity value (ε).
5. Point the lens at the object whose temperature is to be measured.
6. Press the MEAS button. Measurement is performed as long as the MEAS button is kept pressed.
7. Refering to the spot size figure, aim the laser beam at the object whose temperature is to be measured.

NOTE: Although the field of measurement (or Field of View) and the spot almost coincide, actually the field of measurement corresponds to the diameter for 90% optical response. The object whose temperature is to be measured needs to be larger than the measurement diameter (spot of size) by an adequate margin at least 1.5 to 2 times larger.

MEASUREMENT CONSIDERATIONS

1. Theory of Measurement

Every object emits infrared energy in accordance with its temperature. By measuring the amount of this radiant energy, it is possible to determine the temperature of the emitting object.

2. About Infrared

Infrared radiation is a form of light (electromagnetic radiation), and has the property that it passes easily through air while it is easily absorbed by solid matter. With an emission thermometer which operates by detecting infrared radiation accurate measurement is possible, irrespective of the air temperature or the measurement distance.

3. Emission Thermometer Structure

Infrared radiation which has been emitted from the object is focused upon an infrared radiation sensor, via an optical system. This includes a lens which is transparent to infrared radiation, and 5.3μm cut off filter. The output signal from the infrared radiation sensor is input to an electronic circuit along with the output signal from a standard temperature sensor (Thermopile).

4. Emissivity

All objects emit invisible infrared energy. The amount of energy emitted is proportional to the object’s temperature and its ability to emit IR energy. This ability, called emissivity, is based upon the material that the object is made of and its surface finish. Emissivity values range from 0.10 for a very reflective object to 1.00 for a black body. Factory set emissivity value of 0.95, which cover 90% of typical applications.

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CUSTOMER SUPPORT

Call toll-free 1-800-462-9832
Monday through Friday, 8:00 A.M. to 5:00 P.M.
Pacific Standard Time

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