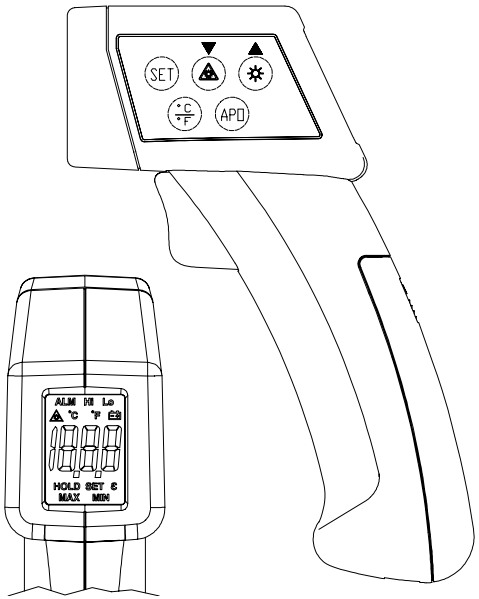
OPERATING INSTRUCTIONS

BK PRECISION® 636 CE

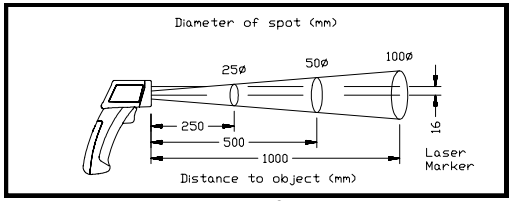
INFRARED THERMOMETER WITH LASER SIGHTING



ELECTRICAL

Temperature Range: -22°F to 1022°F / -30°C to 550°C
Display Resolution: 1°F, 0.5/1°C (Auto)
Accuracy:
±(4°F/2°C) for -22°F to 212°F, -30°C to 100°C
±(2% reading) for 213°F to 1022°F, 101°C to 550°C
Temperature Coefficient: ±0.2% of reading or ±0.36°F/0.2°C, whichever is greater, change in accuracy per °F/°C change in ambient operating temperature above 82.4°F/28°C or below 64.4°F/18°C.

Response Time: 0.25 second
Spectral Response: 6 to 14µm nominal
Adjustable emissivity (ε): 0.1 to 1.0
Detection Element: Thermopile
Optical Lens: Fresnel Lens
Sighting: 1-beam laser marker < 1mW (class 2)
Field of View: 100mmØ at 1000mm (3.9"Ø at 39.0")



Spot size increases with distance from the probe tip as shown (Spot Diameter measured at 90 % Energy)

INTRODUCTION

This instrument is a portable easy to use 3½digit, 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 (10 seconds approx.) after releasing Trigger to extend battery life.

SAFETY INFORMATION

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

⚠ DANGER

Pressing the Trigger 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.

EMC/RFI

Readings may be affected if the unit is operated within a radio frequency electromagnetic field strength of approximately 9 volts per meter, but the performance of the instrument will not be permanently affected.

CAUTION

- Do not use the unit near any device which generates strong electromagnetic radiation or near a static electrical charge, as these may cause errors.
- Do not use the unit where it may be exposed to corrosive or explosive gases. The unit may be damaged, or explosion may occur.
- Do not keep or use this unit in an environment where it will be directly illuminated by sunshine, or where it will be exposed to high temperatures, high humidity or condensation. If you do, it may be deformed, its insulation may be damaged, or it may no longer function according to specification.
- Do not point the lens at the sun or at any other source of strong light. If you do, the sensor may be damaged.
- Do not contact the lens against the object whose temperature is to be measured, or get it dirty, allow it to be scratched, or allow any foreign material to adhere to it. Doing so may cause errors.
- Do not touch or hold by the front case. Temperature reading can be affected by heat from hand.
- Do not place the meter on or around hot objects (70°C/158°F). It may cause damage to the case.
- If the meter is exposed to significant changes in ambient temperature (hot to cold or cold to hot). Allow 20 minutes for temperature stabilization, before taking measurement.
- Condensation may form on the lens when going from a cold to hot environment-wait 10 minutes for condensation to dissipate before taking measurements.
- This unit is not constructed to be water proof or dustproof, so do not use it in a very dusty environment or in one where it will get wet.

SPECIFICATIONS

GENERAL

Display:
3½ digit liquid crystal display (LCD) with maximum reading of 1999
Low battery indication: the " " is displayed when the battery voltage drops below the operating level
Measurement rate: 0.25 second, nominal.
Operating Environment: 32°F to 122°F (0°C to 50°C) at < 70% R.H.
Storage Temperature:
-4°F to 140°F (-20°C to 60°C) , 0 to 80% R.H. with battery removed from meter
Auto power off: 10 seconds.
Standby consuming current: < 5µA
Battery: Standard 9V battery (NEDA 1604, IEC 6F22 006P)
Battery Life: 9 hours (continuity) typical
(contain Laser and Backlit)
Dimensions(HxWxD): 5.8x4.1x1.65"(148 x 105 x 42mm).
Weight: approx. 157g (including battery.)

Laser Specifications

Laser safety classification of Class 2
Wave Length: Red (630 ~ 670nm).
Power out: < 1mW, class 2 laser product.

OPERATING INSTRUCTIONS

Trigger

Pull the trigger to turn on the meter for measuring temperature. Releasing trigger to stop measuring temperature and automatically hold the display reading, the meter power down automatically after 10 seconds.

Button function:

1. Set button

SET MODE & Numeric input key

"SET" annunciator appears when a numerical value can be set (during setting of ε, ALM Hi and ALM 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 region while after completing settings. In this mode the automatic power -off feature is disable.

Press SET button switches the mode around the cycle ε → ALM Hi → ALM Lo → MAX → MIN → HOLD.

HOLD :Releasing the trigger to stop measurement of temperature, the HOLD indication appears, and the measured temperature is held.

ε :The thermal emissivity of the object set using the ▲ and ▼ keys. (refer to Table 1)

ALM Hi :The upper limit alarm temperature is set using the ▲ and ▼ keys. When the measured temperature is exceeded the Hi setpoint, the beeper emits a discontinuous pulse tone and "ALM Hi" is displayed.

ALM Lo :The lower limit alarm temperature is set using the ▲ and ▼ keys. When the measured temperature is below the Lo setpoint, the beeper emits a continuous pulse tone and "ALM Lo" is displayed.

MAX :The maximum temperature during measurement is displayed.

MIN :The minimum temperature during measurement is displayed.

2. "⚠" button

Press "⚠" button to on the "⚠" annunciator. If "⚠" annunciator is on, press trigger and the laser beam will turn on and "⚠" annunciator will blink. Releasing trigger to turn off the laser beam.

3. "☼" button

Use "☼" button to select turn on or off the Back-Light function.

4. °C/°F button

Readings are displayed in either degrees Celsius(°C) or degrees Fahrenheit(°F). When the thermometer is turned on. To change the temperature scale by pressing °C/°F button .

5. APO button

It will auto power off for about 10 seconds.
Press "APO" button to disable . Auto Power-Off function that HOLD indication disappears and press again to enable APO function.

OPERATION

1. Take the protective cap off and then pull the trigger to turn on the meter.
2. Point the lens at the object whose temperature is to be measured.
3. Pull the trigger. Measurement is performed as long as trigger is kept.
4. Referring to the spot size figure ,aim the laser beam at the object whose temperature is to be measured.
5. Put the cap on to extend life of the sensor and to avoid danger caused by wrong way to use laser.

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 (electromagnectic 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 tempeature 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.
5. If the surface to the measured is covered by frost or other material, clean it to expose the surface.
6. If the surface to be measured is highly reflective, apply masking tape or matt finish black paint to the surface.
7. If the meter seems to be giving incorrect readings check the front cone. There may be condensation or debris obstructing the sensor; clean per instructions in the maintenance section.

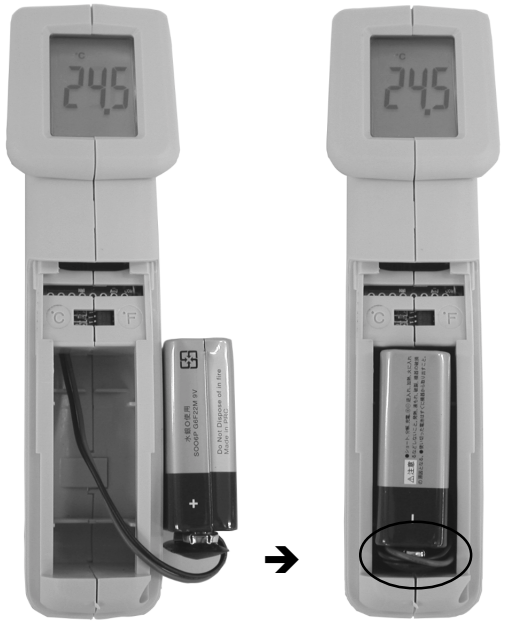
MAINTENANCE

Battery Replacement

1. Power is supplied by a 9 volt "transistor" battery. (NEDA 1604, IEC 6F22).
2. Pull off battery cover " ".
3. Remove the battery cover by gently sliding it towards the bottom of the meter.
4. Remove and disconnect the old battery from the meter and replace with a new unit. Wind the excess lead length and put the top of battery beneath the battery chamber. Install the battery and put the battery cover.

Cleaning

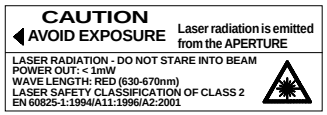
Periodically wipe the case with a damp cloth and detergent, do not use abrasives or solvents.



Please Attention

(Table 1)

Substance	Thermal emissivity	Substance	Thermal emissivity
Asphalt	0.90 to 0.98	Cloth (black)	0.98
Concrete	0.94	Human skin	0.98
Cement	0.96	Lather	0.75 to 0.80
Sand	0.90	Charcoal (powder)	0.96
Earth	0.92 to 0.96	Lacquer	0.80 to 0.95
Water	0.92 to 0.96	Lacquer (matt)	0.97
Ice	0.96 to 0.98	Rubber (black)	0.94
Snow	0.83	Plastic	0.85 to 0.95
Glass	0.90 to 0.95	Timber	0.90
Ceramic	0.90 to 0.94	Paper	0.70 to 0.94
Marble	0.94	chromium oxides	0.81
Plaster	0.80 to 0.90	Copper oxides	0.78
Mortar	0.89 to 0.91	Iron oxides	0.78 to 0.82
Brick (red)	0.93 to 0.96	Textiles	0.90



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.

BK PRECISION shall not be liable for any consequential damages, including without limitation damages resulting from loss of use. Some states do not allow limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.
This warranty gives you specific rights and you may have other rights which vary from state-to-state.

For your convenience, we suggest you contact your *BK PRECISION* distributor, who may be authorized to make repairs or can refer you to the nearest service contractor.

If warranty cannot be obtained locally, please send the unit to *BK PRECISION* Service Department, 22820 Savi Ranch Parkway Yorba Linda, CA 92887, properly packaged to avoid damage in shipment.

BK PRECISION Test Instruments only warrants products sold in the U.S.A. and its overseas territories. In other countries each distributor warrants the *BK PRECISION* products which it sells.

CUSTOMER SUPPORT **1-800-462-9832**

Precision offers courteous, professional technical support before and after the sale of their test instruments. The following services are typical of those available from our toll-free telephone number:

- Technical advice on the use of your instrument.
- Technical advice on special applications of your instrument.
- Technical advice on selecting the best instrument for a given task.
- Instrument for information on optional accessories for your instrument.
- Information on instrument repair and recalibration services.
- Replacement parts ordering.
- Information on other *BK PRECISION* instruments.
- Requests for a new *BK PRECISION* catalog.
- The name of your nearest *BK PRECISION* distributor.

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

BK PRECISION®
22820 Savi Ranch Parkway Yorba Linda, CA 92887

481-544-9-001 Printed in Taiwan