EMISSIVITY

Emissivity is the relative ability of a surface to emit energy by radition. Each type of surface (metal, brick, wood, etc.) has a different emissivity level which must be accounted for when taking a measurement with an infrared thermometer.

The INF225 has a variable emissivity from 0.10 to 1.00 which allows accurate measurement of most types of materials. Shiny bright surfaces (i.e. chrome, new copper, white boards) have a much lower emissivity than flat black materials. The emissivity of the INF225 should be set manually according to the chart below in order to obtain the most accurate measurements. The chart is for guidance only, as the emissivity of objects varies depending on surface finish, measurement wavelength, field of view, temperature, and the shape of the object.

Material	Emissivity
Asphalt	0.93
Red Brick	0.93
Gray Brick	0.75
Porcelain Ceramic	0.92
Fired Clay	0.91
Rough Concrete	0.94
Cotton Cloth	0.77
Smooth Glass	0.92-0.94
Granite	0.45
Gravel	0.28
Smooth Ice	0.97
Smooth White Marble	0.56
Black Paint	0.96
Hard Rubber	0.94
Wood	0.80-0.90
Matte Copper	0.22
Commercial Sheet Aluminum	0.09
Cold Rolled Steel	0.75-0.85

ACCURACY

Ambient Temperature	Target Temperature	Accuracy
77°F	59~95°F(15~35°C)	±1.8°F (1.0°C)
68~79°F (20~26°C)	32~1400°F (0~760°C)	±4°F (2°C)
68~79°F (20~26°C)	-76~32°F (-60~0°C)	±(4°F+0.1 degree/degree) ±(2°C+0.05 degree/degree)
K type Thermocouple*	-83~2552˚F (-64~1400˚C)	±1% of Reading or 1.8˚F (1.0˚C)

** Probe accuracy not specified*

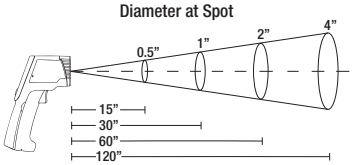
DISTANCE TO SPOT RATIO

The distance-to-spot ratio is a representation of how focused the IR sensor is on the measurement area. The closer you are to the surface you are measuring, the smaller the area of measurement is.

The INF225 has a 30:1 distance-to-spot ratio. This means that if you are 30 feet away from an air vent, the vent should be 1 foot or less in diameter in order to resolve the most accurate measurement.

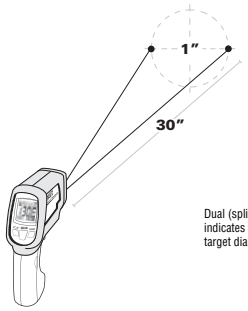
Below is an illustration of other example measurements.

Diameter at Spot



Distance to Object

DUAL LASER TARGETING



Dual (split) Laser indicates the actual target diameter.

BATTERY REPLACEMENT

1. **Open** the battery compartment by pulling the compartment lid at the indentations, away from the trigger (see *Thermometer Attributes* section).
2. **Remove** and recycle exhausted batteries.
3. **Replace** 2 x AAA alkaline batteries observing the polarity indicated on the inside markings.
4. **Return** compartment lid and make sure it locks into place.

UEi TEST INSTRUMENTS

INF225

30:1 Dual Laser Infrared Thermometer

Limited Warranty

The INF225 is warranted to be free from defects in materials and workmanship for a period of three year from the date of purchase. If within the warranty period your instrument should become inoperative from such defects, the unit will be repaired or replaced at UEi's option. This warranty covers normal use and does not cover damage which occurs in shipment or failure which results from alteration, tampering, accident, misuse, abuse, neglect or improper maintenance. Batteries and consequential damage resulting from failed batteries are not covered by warranty.

Any implied warranties, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited to the express warranty. UEi shall not be liable for loss of use of the instrument or other incidental or consequential damages, expenses, or economic loss, or for any claim or claims for such damage, expenses or economic loss.
A purchase receipt or other proof of original purchase date will be required before warranty repairs will be rendered. Instruments out of warranty will be repaired (when repairable) for a service charge.

This warranty gives you specific legal rights. You may also have other rights which vary from state to state.

PLEASE RECYCLE

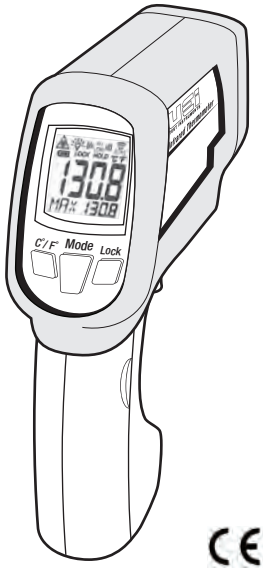
17023 12/13

UEi TEST INSTRUMENTS INF225

30:1 Dual Laser Infrared Thermometer

INSTRUCTION MANUAL

ENGLISH



CE

GENERAL SPECIFICATIONS

The UEi INF225 is a professional series infrared thermometer. It features a wide measurement range, a tight distance-to-spot ratio, a K-type thermocouple input, dual lasers, and several calculation modes to assist you in making the best possible measurements.

- **Operating Altitude:** 3000 meters
- **Relative Humidity:** 10~90%, non-condensing
- **Operating Temperature:** 32~122°F (0~50°C)
- **Storage Temperature:** 14~140°F (-10~60°C)
- **Measurement Range:** -76~1400°F (-60~760°C)
- **Emissivity:** 0.10~1.00 adjustable
- **Optical Resolution (Distance: Spot):** 30:1
- **Dimensions:** 4.7 x 1.87 x 6.76"
- **Weight:** 9.0 oz.
- **Battery Type:** 2 x AAA alkaline batteries
- **Battery Life:** 180 hours typical; 140 hours minimum with continuous use (alkaline batteries, without laser and backlight)
- **Display Resolution:** 0.1°~1.0°
- **Calibration:** Accurate for one year
- **Laser:** FDA and IEC Class II
  - **Max Output:** Less than 1mW
  - **Wavelength:** 635~660nm
  - **Compliance:** 21 CFR, Chapter 1, Subchapter J
- **Certifications:** CE and RoHS

⚠ WARNINGS

To ensure safe operation and service of the tester, follow these instructions. Failure to observe these warnings can result in severe injury or death.

- Do not direct laser beam into eyes, as this can cause permanent eye damage.
- Do not use the instrument if the case is damaged in any way.
- Replace the batteries as soon as low battery indicator appears.
- Have the instrument serviced immediately if it is acting abnormally.
- Be cautious of readings of reflective materials as they may be indicated by the instrument as cooler than they actually are (see *Emissivity* section).
- Avoid using the instrument around strong electromagnetic fields.
- Do not apply voltage to the thermocouple probe.

SAFE PRACTICES

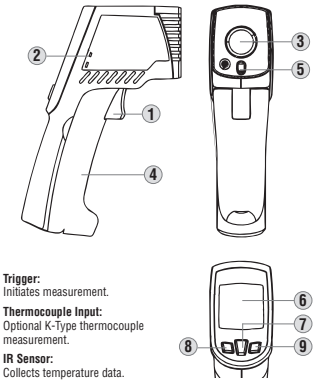
This instrument is designed for professionals who know the hazards associated with their trade. While this instrument offers no foreseeable dangers beyond its laser sight, the equipment you are servicing, as well as the environment you're working in, can be hazardous. These are a few common safety practices for those working around temperature critical environments:

- Follow the manufacturer's maintenance procedures when servicing equipment.
- Before using this instrument to determine if an area is safe to touch or enter, verify your readings are reasonably accurate by comparison with known measurements.
- Properly maintain your infrared thermometer and calibrate it regularly.

SYMBOLS

- **Laser**
- **Warning or Caution**
- **Follow safe disposal procedures**
- **Dangerous levels**
- **Battery**

THERMOMETER ATTRIBUTES



1. **Trigger:** Initiates measurement.
2. **Thermocouple Input:** Optional K-Type thermocouple measurement.
3. **IR Sensor:** Collects temperature data.
4. **Battery Compartment:** Pops forward to store 2 x AAA batteries.
5. **Dual Laser:** Provides an approximate target area for making measurements.
6. **LCD Screen:** Displays measurement and additional information.
7. **Mode Button:** Changes the mode of the secondary display.
8. **Down Button:** Changes temperature scale, decreases threshold, decreases emissivity, or toggles laser depending on the mode.
9. **Up Button:** Enters auto-scan (trigger lock) mode, increases threshold, increases emissivity, or toggles backlight depending on the mode.

OPERATING INSTRUCTIONS

Temperature Measurement

To take measurements with your INF225, aim the instrument at the object to be measured and pull the trigger. The unit has an auto off after releasing the trigger of 60 seconds.

Targeting

The INF225 features a dual laser to assist in targeting the area to be measured. The distance between the two lasers approximates the diameter of the circular spot focused on by the infrared sensor. This area will become larger as the target surface moves further away from gun (see *Distance to Spot Ratio* for more information). The approximation will be most accurate at a minimum distance of 30" from the INF225.

Selecting Temperature Scale

Press the Down Key while in display mode or any measurement mode to alternate between Fahrenheit and Celsius. You can select either scale during or after measurement, and when viewing any of the held values.

Lock Mode (Auto-Scan)

In lock mode, the INF225 will take measurements continously without holding down the trigger. The trigger can be held down to activate the laser, but is not required.

Auto Hold

The INF225 will hold the last temperature measured for 60 seconds after the trigger is released. To recall this value or associated calculations press the MODE key to activate the display and show the held temperature.In probe mode, the unit will automatically power off after 12 minutes. In auto-scan mode, the unit will automatically power off after 60 minutes.

Toggling Laser & Backlight

To toggle the laser, hold down the trigger and press the Down Key. To toggle the backlight, hold down the trigger and press the Up Key.

Thermocouple Probe Mode

The INF225 can measure the temperature from a K-Type thermocouple probe. Press the mode key to enter Probe Mode. The measured temperature will automatically be displayed. To see the minimum or maximum temperature taken by the probe, press and hold the Down Button or Up Button, respectively.

LCD SYMBOLS

- Laser is active
- The backlight is on.
- HOLD — The last measurement taken is being shown.
- SCAN — The thermometer is currently taking measurements.
- LOCK — Auto-scan mode is active.
- °C °F — Celsius or Fahrenheit temperature scale.
- Battery is OK.
- Battery is low and should be replaced.
- Battery is exhausted. Replacement necessary before use.

- H.Lo — The temperature being measured has exceeded the allowable range.
- The temperature being measured is greater than the high alarm (HAL) setting or lower than the low alarm (LAL) setting.
- Er2 — Rapid changes in ambient temperature detected. Please wait a minimum of 30 minutes between large ambient temperature changes before use.
- Er3 — The ambient temperature has exceeded the allowable range.
- Er — Any other error requires the thermometer to be reset. Turn off the thermometer, remove the batteries, wait one minute, then reinsert the batteries.

OPERATION MODES

The INF225 has several modes of operation. Press the "Mode" button to cycle through modes. The following chart shows the mode name, the screen identifier, and the function of the auxiliary buttons in the mode.

	Mode	Screen	Down Key	Up Key
A	Display	E	°F ↔ °C	Auto-scan
B	Emissivity adjust	▲E▼	Decrease emissivity	Increase emissivity
C	Maximum reading	MAX	°F ↔ °C	Auto-scan
D	Minimum reading	MIN	°F ↔ °C	Auto-scan
E	Difference	dIF	°F ↔ °C	Auto-scan
F	Average	AVG	°F ↔ °C	Auto-scan
G	High Alarm	HAL	Decrease threshold	Increase threshold
H	Low Alarm	LAL	Decrease threshold	Increase threshold
I	K-Type Probe	PRB	Show minimum	Show maximum

A. Shows the emissivity.

B. Allows adjustment of the emissivity. See *Emissivity* section..

C. Shows the maximum reading taken while the trigger is held down.

D. Shows the minimum reading taken while the trigger is held down.

E. Shows the difference between the highest and lowest measurements taken while the trigger is held down.

F. Shows the average of all readings taken while the trigger is held down.

G. Sets the threshold for an alarm that will sound whenever the measured temperature is greater than the alarm threshold.

H. Sets the threshold for an alarm that will sound and flash whenever the measured temperature is less than the alarm threshold.

I. Shows the temperature reading of an attached K-Type thermocouple.