

ENGLISH

IR5



INSTRUCTION MANUAL

Dual-laser Infrared Thermometer

- **DUAL-LASER TARGETING**
- **12:1 DISTANCE-TO-SPOT RATIO**
- **AUTO-SCAN**
- **MAX/MIN/AVG/DIFF**
- **HIGH/LOW ALARM**
- **BACKLIT DISPLAY**
- **AUTO POWER-OFF**
- **ADJUSTABLE EMISSIVITY**



-22° - 752° F
(-30° - 400° C)



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KLEIN TOOLS 

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GENERAL SPECIFICATIONS

Klein Tools IR5 is a professional dual-laser targeting infrared thermometer. It offers a wide measurement range, a tight distance-to-spot ratio, dual targeting lasers, and several calculation modes to facilitate different temperature measurement applications.

- **Operating Altitude:** 6562 ft. (2000 m)
- **Relative Humidity:** <85% non-condensing
- **Operating Temp:** 32° to 122°F (0° to 50°C)
- **Storage Temp:** -4° to 140°F (-20° to 60°C)
- **Measurement Range:** -22° to 752°F (-30° to 400°C)
- **Units:** Settable to °F or °C
- **Emissivity:** 0.10-1.00 adjustable
- **Optical Resolution (Distance-to-spot):** 12:1
- **Dimensions:** 6.83" x 4.53" x 1.85" (173 x 115 x 47 mm)
- **Weight:** 9.84 oz. (279 g) including battery
- **Battery Type:** 1 x 9V battery
- **Battery Life:** (Estimates assume 9V Zinc-Carbon Battery)
10 hours continuous use w/laser and backlight on.
- **Display:** Backlit LCD with white backlight
- **Display Resolution:** 0.1°F (0.1° C)
- **Calibration:** Accurate for one year
- **Lasers:** FDA and IEC Class II
- **Standards:** Certified to IEC EN 61326-1:2006,
EN608251:1994+A2:2001+A1:2002
- **Pollution degree:** 2
- **Drop Protection:** 6.6 ft. (2m)
- **Electromagnetic Environment:** IEC EN 61326-1. This equipment meets requirements for use in basic and controlled electromagnetic environments like residential properties, business premises, and light-industrial locations.

Specifications subject to change.

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MEASUREMENT SPECIFICATIONS

- **Response Time:** <250ms
- **Data hold:** Yes
- **MAX/MIN/Average/Differential:** Yes
- **Spectral Response:** 8000-14000nm

$\geq 32^{\circ}\text{F}$ ($\geq 0^{\circ}\text{C}$)	$\pm 4^{\circ}\text{F}$ ($\pm 2^{\circ}\text{C}$) or $\pm 2\%$ (whichever is greater)
$< 32^{\circ}\text{F}$ ($< 0^{\circ}\text{C}$)	$\pm(4^{\circ}\text{F} + 0.2^{\circ}\text{F}$ per degree below 32°F) $\pm(2.2^{\circ}\text{C} + 0.2^{\circ}\text{C}$ per degree below 0°C)

- **Repeatability:** $\pm 0.8\%$ of reading or $\pm 2^{\circ}\text{F}$ ($\pm 1^{\circ}\text{C}$) (whichever is greater).
- **Temperature Correction Coefficient:** $\pm 0.2^{\circ}\text{F}$ per $^{\circ}\text{F}$ ($\pm 0.1^{\circ}\text{C}$ per $^{\circ}\text{C}$), or $\pm 0.2\%$ of reading (whichever is greater) when ambient temperature is above or below $70 - 77^{\circ}\text{F}$ ($21 - 25^{\circ}\text{C}$).

Specifications subject to change.

WARNINGS

To ensure safe operation and service of the meter, 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 meter if the case is damaged in any way.
- Replace the battery as soon as low battery indicator appears.
- Service the meter immediately if it is acting abnormally.
- Be cautious of readings of reflective materials as the meter may indicate that these surfaces are cooler than their actual temperature (see Emissivity section).
- Avoid using the meter around strong electromagnetic fields.

SAFE PRACTICES

This meter is designed for professionals who understand the hazards associated with their trade. While this meter causes no foreseeable dangers beyond its targeting lasers; the objects being measured, as well as the environment in which they reside, can be hazardous. Common safety practices to follow when operating near temperature critical environments are:

- Follow the manufacturer's maintenance procedures when servicing equipment.
- Before using this meter to determine if an area is safe, verify correct operation by measuring a known temperature value of a comparable object.
- Properly maintain this meter and calibrate it regularly.







FEATURE DETAILS



NOTE: *There are no user-serviceable parts inside meter.*

1. **Control button** – Selects mode and moves **down** through menus
2. **SET button** – Sets selection
3. **Control button** – Turns targeting lasers on/off, turns backlight on/off, moves **up** through menus
4. **LCD Display**
5. **Trigger**
6. **Battery compartment door**
7. **IR temperature sensor**
8. **Targeting lasers**

SYMBOLS ON LCD

	Indicates active measurement
	Targeting lasers active
	Backlight active
HOLD	Data Hold
	Low battery indicator
°F °C	Indicates active temperature scale
MAX AVG DIF MIN	Indicates measurement mode
$\epsilon=0.00$	Emissivity
	High / Low temperature limit indicators
	Enable / disable audible temperature limit alarms

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OPERATING INSTRUCTIONS

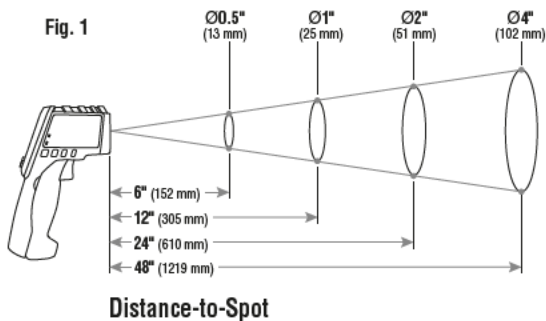
TEMPERATURE MEASUREMENT

To measure temperature with the IR5, aim the meter at the object to be measured, pull the trigger ⑤ and hold it depressed for at least 2 seconds. Releasing the trigger initiates Data Hold, "HOLD" will show on the display, and the measurement will be held on the display. If the display shows "OL" or "-OL" following a measurement, this indicates that the surface temperature of the object being measured is either above or below the measurement range of the meter.

TARGETING

The IR5 features dual lasers ⑧ to assist in targeting the measurement area. The distance between the two laser spots on the surface of the object being measured approximates the diameter of the circular measurement area from which the infrared sensor is collecting data. Measurement areas located far away from the meter will be larger than those close to the meter.

The meter is configured with 12:1 optical resolution (distance-to-spot ratio). The distance-to-spot ratio defines the size of the measurement area relative to the distance between the measurement location and the IR sensor ⑦. Typical diameters of the measurement area as a function of the distance between the meter and the target area are depicted below for 12:1 optical systems (Fig. 1).



TARGETING LASERS

The targeting lasers ⑧ may be turned on/off by long presses of control button ③. When on, the laser icon "▲" will be visible on the display.

OPERATING INSTRUCTIONS

BACKLIGHT

The backlight may be toggled on/off by short presses of control button **③**. When on, the backlight icon will be visible on the display.


MODE SELECTIONS

When measuring temperature the meter continuously samples the object being measured. Following a measurement, repeatedly press the mode control button **①** to cycle through:

- the **maximum temperature** value measured ('**MAX**').
- the **average** value measured ('**AVG**').
- the **difference** between maximum and minimum values measured ('**DIFF**').
- the **minimum** value measured ('**MIN**').
- press once more to exit the MODE menu.

SETTINGS

User adjustable settings may be defined using the SET control button **②**. Press SET **②** to enter the settings menu, subsequent presses of SET cycle through the following list of options:

- emissivity: set the numerical value of the emissivity to match the surface being measured (see **EMISSIVITY** section below). When in this setting the emissivity icon will flash on the display.
- units: Switch between °F (Fahrenheit) and °C (Celsius). When in this setting the '**°F**' or '**°C**' icon will flash on the display, indicating the temperature scale that is currently active.
- mute temperature limit alarms: (turn audible limit alarms on/off). When in this setting the audible icon  will flash on the display. When on, the high "**HI**" / low "**Lo**" icons will be visible and when off they will not be visible.
- high temperature limit setting: assign a numerical value to the high temperature limit. When in this setting, the high icon '**HI**' will flash on the display.
- low temperature limit setting: assign a numerical value to the low temperature limit. When in this setting, the low icon "**Lo**" will flash on the display.

When in any setting, control buttons **①** and **③** function as up/down to adjust settings and they may be used to select units, turn alarms on or off, or adjust the numerical values of the respective parameters up or down.

OPERATING INSTRUCTIONS

EMISSIVITY

Emissivity is a measure of the ability of a surface to emit thermal energy by radiation. Different types of surfaces (metals, masonry, wood, etc.) emit thermal energy through radiation at different efficiencies. Accordingly, these materials have different emissivity coefficients which must be considered in order to make accurate measurements with an infrared thermometer.

Emissivity on the IR5 may be adjusted from 0.10 to 1.00 to enable accurate measurement of the temperature of most types of materials. Generally speaking, shiny bright surfaces such as chrome, white boards, etc. exhibit lower emissivity than flat black materials.

For guidance only, the chart below may be used to estimate emissivity for many different types of materials. However, the emissivity of surfaces is dependent upon many parameters such as surface finish, temperature, shape of the object, etc.

This chart should be used for guidance only.

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


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MAINTENANCE

BATTERY REPLACEMENT

When  indicator is displayed on LCD, battery must be replaced.

1. Open the battery compartment  by pulling the battery compartment cover at the indentations away from the trigger.
2. Remove exhausted 9V battery and dispose of appropriately.
3. Replace 9V battery and return battery compartment cover, ensuring that it locks into place.

CLEANING

Be sure meter is turned off and wipe with a clean, dry lint-free cloth. **Do not use abrasive cleaners or solvents.** Take care to keep the sensor lens clean at all times. If required, loose debris may be removed from lens using clean compressed air. Lens may also be cleaned using a soft cloth or cotton swab with water or rubbing alcohol **only**. Lens must be allowed to completely dry prior to use.

STORAGE

Remove the battery when meter is not in use for a prolonged period of time. Do not expose to high temperatures or humidity. After a period of storage in extreme conditions exceeding the limits mentioned in the General Specifications section, allow the meter to return to normal operating conditions before using.

DISPOSAL / RECYCLE



Do not place equipment and its accessories in the trash. Items must be properly disposed of in accordance with local regulations. Please see www.epa.gov or www.ecycle.org for additional information.

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