KIRAY 200
Infrared thermometer

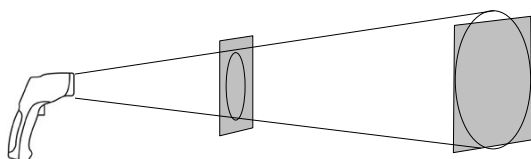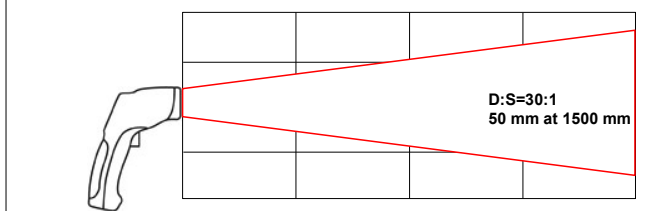*New*

CE
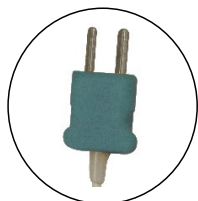
Supplied with thermocouple K probe

Infrared thermometer **KIRAY 200** is an infrared thermometer used to diagnose, inspect and check any temperature. Thanks to its elaborated optical system, it allows an easy and accurate measurement of little distant targets. **KIRAY 200** instrument has an internal memory which can save up to 20 measurements.
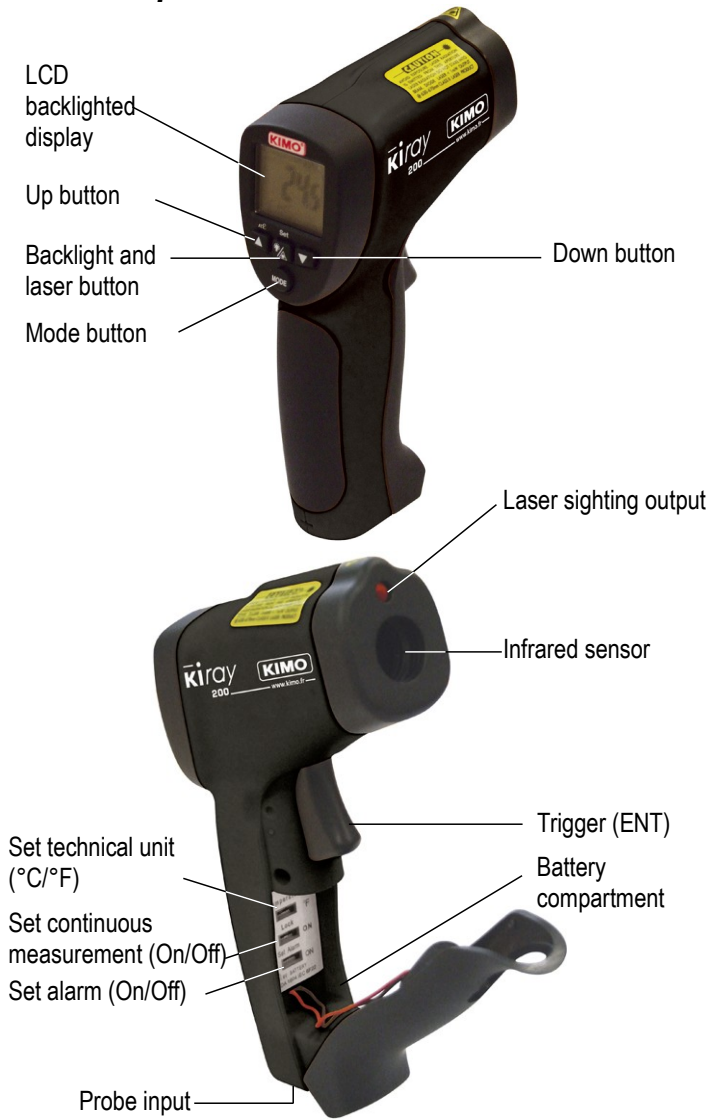
■ *Technical features*

• *Instrument features*

Spectral response.......................8 -14 µm
Optical...D.S : 30:1 (50 mm at 1500 mm)
Response time............................Less than 1 second
Temperature range.....................From -50 to +850°C
Accuracy*...................................From -50 to -20°C : ±5°C
From -20 to +200°C : ±1.5% of reading ±2°C
From +200 to +538 °C : ±2% of reading ±2°C
From +538 to +850°C : ±3.5% of reading ±5°C
Display resolution.......................0.1 C°
Emissivity...................................Adjustable from 0.10 to 1.00
(pre-set at 0.95)
Over range indication.................Display indication : « -0L » for a negative
over range, « 0L » for a positive over range.
Laser sighting............................Wavelength : 630-670 nm
Output < 1mW, Class 2 (II)
Positive or negative
temperature indication...............Automatic (no indication for a positive
temperature)
(-) sign for a negative temperature
Display..4 ½ digits with LCD backlighted display
Auto-extinction...........................Automatic after 7 seconds of inactivity
High/low alarm...........................Flashing signal on display and beep signal
with adjustable thresholds
Power supply..............................Alkaline 9V battery
Autonomy....................................38 h (inactive laser and backlight)
15 h (active laser and backlight)
Use temperature.........................From 0 to +50°C
Storage temperature...................From -20°C to +60°C
Relative humidity........................From 10% to 90%RH in operating mode and
>80%RH in storage
Dimensions.................................175 x 110 x 45 mm
Weight...230 g (included battery)
Memory.......................................20 temperature values with unit of measurement
(°C or °F)

*Accuracy for an ambient temperature from 18 to 28°C (with a relative humidity lower than 80% RH)

• *K thermocouple probe features*

Temperature range.......................From -40 to +400°C
Display range...............................From -50 to +1370°C
Resolution...................................0.1°C
Accuracy......................................±1.5% of reading ±3°C
Cable length................................1 m

■ *Distance from the target*

Distance	150	300	900	mm
Diameter	5	10	30	mm

D:S=30:1
50 mm at 1500 mm

YES   **NO**

Make sure that the target is larger than the size of the laser sighting.

■ *Description*

LCD backlighted display

Up button

Backlight and laser button

Mode button

Down button

Laser sighting output

Infrared sensor

Set technical unit (°C/°F)

Set continuous measurement (On/Off)

Set alarm (On/Off)
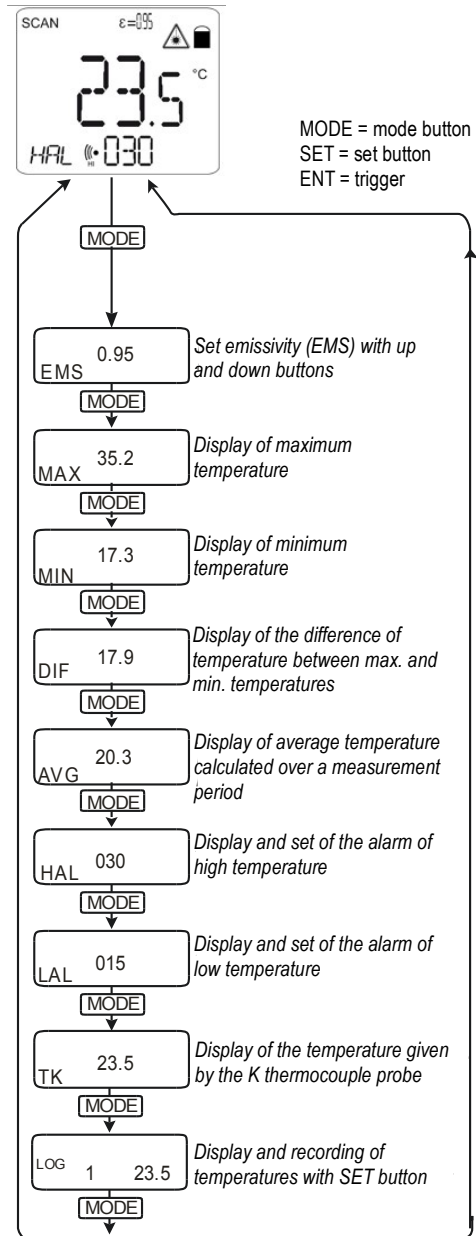
Trigger (ENT)
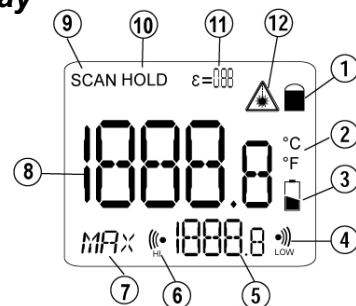
Battery compartment

Probe input

■ *KIRAY 200 buttons*

1 – Up button. It allows to increment emissivity and the thresholds of high and low alarm and to move to the next recorded value.

2 – Set button. It allows to activate or deactivate laser and backlight of the screen. It also allows to record a temperature.

3 – Mode button. It allows to navigate through the modes (emissivity, max. value, min. value, difference, average, high alarm, low alarm, TK value and recorded values).

4 – Down button. It allows to decrement emissivity and the thresholds of high and low alarm and to move to the previous recorded value.

■ *Modes flow chart*

MODE = mode button
SET = set button
ENT = trigger

EMS	0.95	*Set emissivity (EMS) with up and down buttons*
MAX	35.2	*Display of maximum temperature*
MIN	17.3	*Display of minimum temperature*
DIF	17.9	*Display of the difference of temperature between max. and min. temperatures*
AVG	20.3	*Display of average temperature calculated over a measurement period*
HAL	030	*Display and set of the alarm of high temperature*
LAL	015	*Display and set of the alarm of low temperature*
TK	23.5	*Display of the temperature given by the K thermocouple probe*
LOG	1 23.5	*Display and recording of temperatures with SET button*

■ *Display*

1 - Continuous measurement indicator
2 - Unit of measurement (°C / °F)
3 - Low battery indicator
4 - Low alarm indicator
5 - Temperature value : MAX, MIN, DIF (difference between MAX and MIN values), AVG (average), HAL (high alarm), LAL (low alarm),TK (K thermocouple probe temperature) and LOG (recorded value)
6 - High alarm indicator
7 - EMS, MAX, MIN, DIF, AVG, HAL, LAL, TK and LOG indicator
8 - Temperature value
9 - Current measurement indicator
10 - HOLD indicator (fixed measurement)
11 - Emissivity value
12 - Laser in operation indicator

## ■ *Settings before measurement*

Before measuring temperature, it is recommended to make some settings:
- Set technical unit (**°C** or **°F**)
- Set the continuous measurement (**On** or **Off**)
- Set the alarm (**On** or **Off**)

To set these **3** parameters, open the battery door by pushing on both sides of the trigger. It is not necessary to disconnect the battery to make these settings.
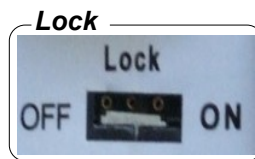
• Set technical unit (°C or °F)
Set the selector unit to **°C** or **°F** with a screwdriver.

Unit
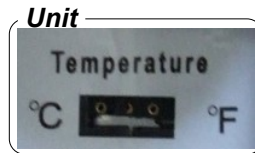
• Set the continuous measurement
This setting allows to let the **Kiray200** instrument in measurement. It does not shut off after 7 seconds.
Set the selector on **On** (continuous measurement is active) or on **Off** (continuous measurement is inactive) with a screwdriver.

Lock

• Set the alarm
This setting allows to **activate** or **deactivate** high and low alarm.
Set the selector on **On** (alarms are active) or on **Off** (alarms are inactive) with a screwdriver.

Alarm

■ *Operating mode*

- Press ENT trigger to turn on the instrument. The backlighted screen, indicating the temperature, and the laser turn on.
- Keep ENT pressed. Place the laser sighting at the center of the area to be measured.
- Release ENT.
- Read the displayed temperature. (The display stays on for 7 seconds after the last manipulation).
- HOLD appears at the top left of the screen ; measurement stays displayed.
- The **KIRAY200** instrument keeps in memory the last function used.

■ *Command buttons*

ENT Trigger

- Turning on the device.
- **ENT** pressed : activation of the laser sighting and temperature measurement.
- **ENT** released : display is on HOLD (**HOLD** fixed), and give the last measurement. Display stays on for 7 seconds. If no buttons are activated and continuous measurement is inactive, the instrument turns off after 7 seconds.

MODE Mode button

Allows to define the required measurement : Max, Min, AVG, DIF, etc. ... pressing as many times on this button.

- EMS : when **KIRAY200** instrument is turned on, press **MODE** button until **EMS** appears at the bottom left of the screen. Set emissivity by pressing on **UP** button to increment it or **DOWN** button to decrement it. By default, the emissivity is set to 0.95.

- MIN ou MAX : select the Min or Max. temperature.
During a measurement period, keep ENT pressed : the **KIRAY200** instrument displays the temperature of the area sighted by the laser. Press **MODE** button until **MAX** or **MIN** is displayed at the bottom of the screen. These values relate to the temperatures taken by the instrument and the thermocouple probe.

- DIF : during a measurement period, press **MODE** button until **DIF** appears at the bottom left of the screen. The displayed value corresponds to the difference between **MAX** value and **MIN** value.

-AVG : during a measurement period, press **MODE** button until **AVG** appears at the bottom left of the screen. The displayed value corresponds to the average temperature calculated during a measurement period.

- HAL : when **KIRAY200** instrument is turned on, press **MODE** button until **HAL** appears at the bottom left of the screen. The displayed value corresponds to the alarm of **high temperature**. Set this alarm by **incrementing** it with up button or by **decrementing** it with down button.

- LAL : when **KIRAY200** instrument is turned on, press **MODE** button until **LAL** appears at the bottom left of the screen. The displayed value corresponds to the alarm of **low temperature**. Set this alarm by **incrementing** it with up button or by **decrementing** it with down button.

⚠ ***Alarms must be activated (see paragraph Settings before measurement)***

- TK : when **KIRAY200** instrument is turned on, press **MODE** button until **TK** appears at the bottom left of the screen. The displayed value corresponds to the measured temperature by the K thermocouple probe.

- LOG : when **KIRAY200** instrument is turned on, press **MODE** button until **LOG** appears at the bottom left of the screen.
Next to **LOG**, a number between 1 and 20 also appears ; it corresponds to LOG location. If no temperature has been recorded in the shown LOG location, 4 dashes will appear in the lower right corner. To record a temperature, you have to be on **LOG** mode, then choose an empty LOG location (---- visible) and press **SET** button during the measurement or when the measurement is fixed (**HOLD**).
From this mode, you can also clear all the recorded temperatures : press and keep the trigger pressed and press **down** button at the same time until reaching the zero recording, then press **SET** button while keeping **ENT** pressed. A beep is emitted by **KIRAY200** instrument and the **LOG** location moves automatically to 1, signifying that all data have been cleared.

■ *Emissivity*

Emissivity is a term used to describe the energy-emitting characteristics of materials.
Most (90% of typical applications) organic materials and painted or oxidized surfaces have an emissivity of 0.95 (pre-set in the unit). Inaccurate readings will result from measuring shiny or polished metal surfaces. To compensate; cover the surface to be measured with masking tape or flat black paint. Allow time for the tape to reach the same temperature as the material underneath it. Measure the temperature of the tape or painted surface.
See table below for values of emissivity of specific materials :

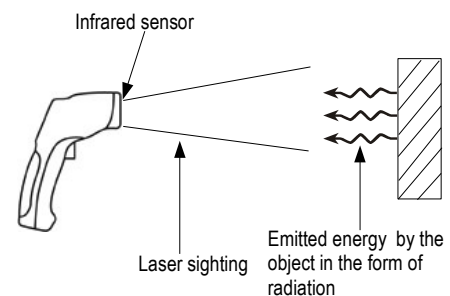| Aluminium	0.30	Ice	0.98
Asbestos	0.95	Iron	0.70
Asphalt	0.95	Lead	0.50
Basalt	0.70	Limestone	0.98
Brass	0.50	Oil	0.94
Brick	0.90	Paint	0.93
Carbon	0.85	Paper	0.95
Ceramic	0.95	Plastic	0.95
Concrete	0.95	Rubber	0.95
Copper	0.95	Sand	0.90
Dirt	0.94	Skin	0.98
Frozen food	0.90	Snow	0.90
Hot food	0.93	Steel	0.80
Glass	0.85	Textile	0.94
Water	0.93	Wood	0.94

■ *Important information*

For correct measurements :

• Do not take any measurement on metal or shiny or reflective surfaces.
• Do not measure through transparent surfaces such as glass, for example.
• Water vapor, dust, smoke, etc ... may prevent correct measurements because they obstruct the optic of the instrument.
• Make sure that the target is larger than the size of the laser sighting.

To avoid any inconvenience:

• Do not aim directly or indirectly (reflection on reflective surfaces) the laser in the eyes.
• Change the batteries when the indicator blinks.
• Do not use the thermometer around explosive gas, vapor or dust
• Do not leave the device with the lock on (lock at the top right of the screen) because in this configuration, the instrument does not turn off automatically.

To prevent damage on your instrument or equipment please carefully respect these conditions :

To protect from electric and magnetic fields of static electricity

Protect from thermal shock

■ *CE certification*

This device meets with following standards' requirements.

• EN 50081-1 : 1992, Electromagnetic compatibility, Part 1
• EN 50082-1 : 1992, Electromagnetic compatibility, Part 2

■ *Maintenance*

To install or change the 9V battery, open the part near the trigger and put it in the battery compartment.

■ *Accessories*

• Case holster with passer-by belt
• User manual
• K thermocouple probe

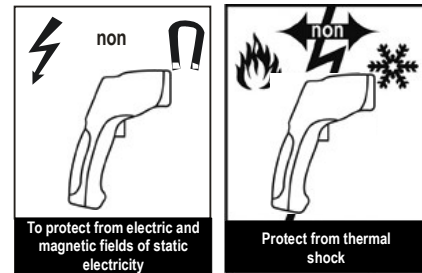### *Infrared thermometer, how it works?*

Infrared thermometers can measure the surface temperature of an object. Its optic lens catches the energy emitted and reflected by the object. This energy is collected and focused onto a detector. This information is displayed as temperature. The laser pointer is only used to aim at the target.

Infrared sensor

Laser sighting

Emitted energy by the object in the form of radiation

Once returned to KIMO, required waste collection will be assured in the respect of the environment in accordance to 2002/96/CE guidelines relating to WEEE.

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