sauermann®

Supplied with thermocouple K probe

USER MANUAL

KIRAY 200

°C
°F

Infrared thermometer

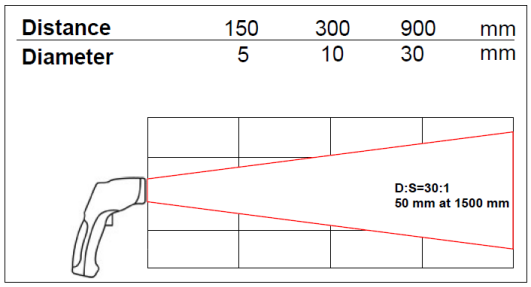
Infrared thermometer KIRAY 200 is an infrared thermometer used to diagnose, inspect and check any temperature. Thanks to its elaborated optical system, it allows an easy and accurate measurement of little distant targets. KIRAY 200 instrument has an internal memory which can save up to 20 measurements.

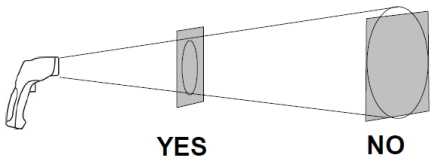
Technical specifications

Spectral response	8 - 14 µm
Optical	D.S: 30:1 (50 mm at 1500 mm)
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
Response time	Less than 1 second
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 9 V battery
Autonomy	38 h (inactive laser and backlight) 15 h (active laser and backlight)
Operating temperature	From 0 to +10 °C for a short period From 11 to +50 °C for a long period
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)

Distance from target





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

Thermocouple K 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

Description

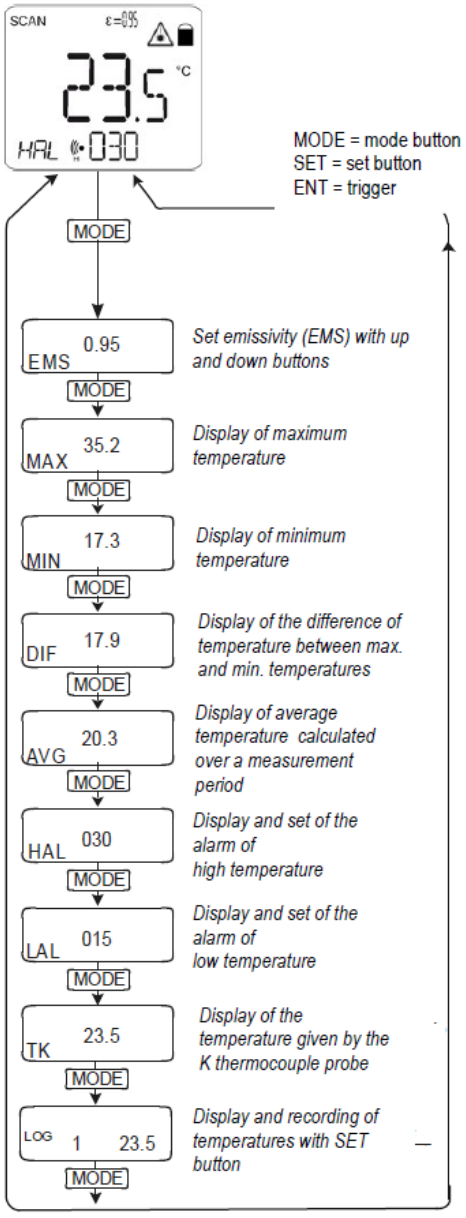
1 - LCD backlighted display
2 - Up button
3 - Laser and backlight button
4 - Down button
5 - Mode button

1 - Laser sighting output
2 - IR sensor (infrared)
3 - Trigger
4 - Set technical Unit (°C/°F)
5 - Set continuous measurement (On/Off)
6 - Set alarm (On/Off)
7 - Battery compartment
8 - External probe input

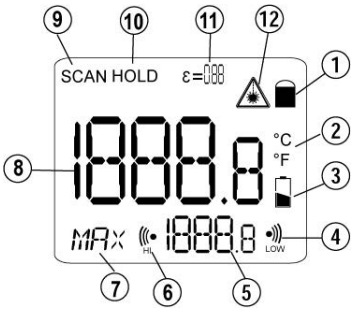
Kiray 200 buttons

1 – Up button: It allows to increment emissivity and high/low alarm thresholds and to move to the next recorded value.
2 – Set button: It allows to activate or deactivate laser and display backlight. It allows also 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 high/low alarm thresholds and to move to the previous recorded value.

Modes flow chart



Display



1 – Continuous measurement indicator
2 – Technical unit (°C / °F)
3 – Low battery indicator
4 – Low alarm symbol
5 – MAX, MIN, DIF (difference between MAX and MIN values), AVG (average), HAL (high alarm), LAL (low alarm), TK (TK temperature) and LOG (recorded value)
6 – High alarm symbol
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 Kiray 200 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 KIRAY 200 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 KIRAY 200 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 KIRAY 200 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 KIRAY 200 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 KIRAY 200 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 KIRAY 200 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 KIRAY 200 instrument and the LOG location moves automatically to 1, signifying that all data have been cleared.

Important information

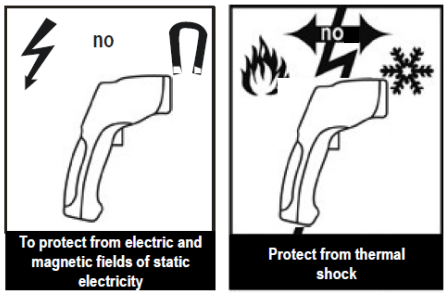
For correct measurements:

- 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 optical of the instrument.
- Make sure that the target is larger than the size of the laser sighting.
- Change the batteries when the low battery indicator blinks.

To avoid any inconvenience:

- Do not aim directly or indirectly (reflection on reflective surfaces) the laser in the eyes.
- 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:



CE certification

This device meets with following standards' requirements: EN 61326-1: 2013 and EN 61326-2: 2013

Accessories

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

Infrared thermometer, how does it work?

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.

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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:

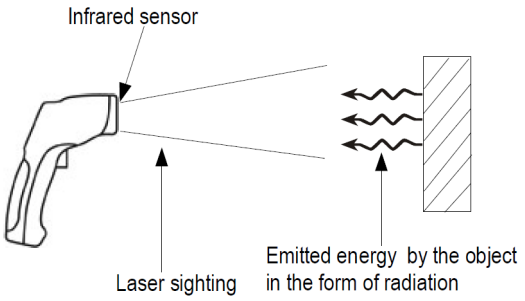
Aluminum	0.30	Ice	0.98
Asbestos	0.95	Iron	0.70
Asphalt	0.95	Lead	0.50
Basalt	0.70	Limestone	0.98
Brass	0.50	Oil	0.94
Brick	0.90	Paint	0.93
Carbon	0.85	Paper	0.95
Ceramic	0.95	Plastic	0.95
Concrete	0.95	Rubber	0.95
Copper	0.95	Sand	0.90
Dirt	0.94	Skin	0.98
Frozen food	0.90	Snow	0.90
Hot food	0.93	Steel	0.80
Glass	0.85	Textile	0.94
Water	0.93	Wood	0.94
Fresh foodstuffs between 0 and 5 °C			0.90

Maintenance

As battery power is not sufficient, LCD will display low battery indicator.

Replacement with one new battery type 9 V is required.

To install or change the 9 V battery, open the battery cover next to the trigger and put it in the battery compartment.



CE