

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 |

Maintenance

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

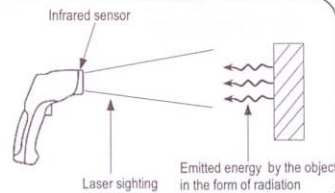
CE certification

This device meets with following standards' requirements.

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

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.



www.kimo.fr

EXPORT DEPARTMENT
Boulevard de Beaubourg - Emerainville - BP 48
77312 MARNE LA VALLEE CEDEX 2
Tel : + 33.1.60.06.69.25 - Fax : + 33.1.60.06.69.29



Important information

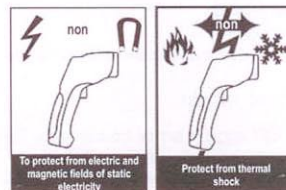
For correct measurements :

- 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 aiming point of laser.

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 :



Accessories

- Transport case
- User manual
- Thermocouple K probe
- Tripod



KIMO[®]
INSTRUMENTS

User Manual

Pressure • Temperature • Humidity • Air Velocity • Airflow • Sound level

KIRAY 300 Infrared thermometer

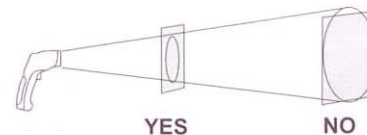
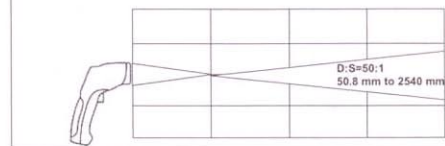
New
CE



Supplied with thermocouple K probe

Distance from the target

| | | | | |
|----------|------|------|------|----|
| Distance | 1270 | 2540 | 3810 | mm |
| Diameter | 25.4 | 50.8 | 76.2 | mm |



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

Infrared thermometer **KIRAY 300** is a thermometer used to diagnose, inspect and check any temperature. Thanks to its elaborated optical system with a dual laser sighting, it allows easy and accurate measurements of little distant targets. The **KIRAY 300** instrument has an internal memory which can save up to 100 measurements. Compatible with thermocouple K probe.

Technical features

• Device features

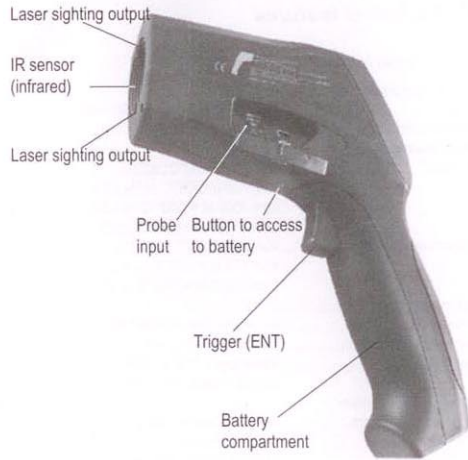
| | |
|---|--|
| Spectral response..... | 8 -14 μm |
| Optical..... | D.S : 50:1 (50.8 mm at 2540 mm) |
| Response time..... | 150 ms |
| Temperature range..... | from -50 to +1850°C |
| Accuracy*..... | from -50 to +20°C : ±3°C from +20 à +500°C : ±1% ±1°C from +500 to +1000 °C : ±1.5% from +1000 to +1850°C : ±2% |
| Infrared repeatability..... | from -50 to +20°C : ±1.5°C from +20 to +1000°C : ±0.5% or ±0.5°C from +1000 to +1850°C : ±1% |
| Display resolution..... | 0.1 C° |
| Emissivity..... | Adjustable from 0.10 to 1.00 |
| Over range indication..... | LCD will show : « --- » |
| Laser sighting..... | Wavelength : 630-670 nm Output < 1mW, Class 2 (II) |
| Indication of positive or negative temperature..... | Automatic (no indication for a positive temperature) (-) sign for a negative temperature |
| Screen..... | 3 lines, 4 digits LCD backlighted screen |
| Auto-extinction..... | Automatic after 7 seconds of inactivity |
| High/low alarm..... | Flashing signal on the screen and beep with adjustable thresholds |
| Power supply..... | Alkaline 9V battery |
| Use temperature..... | from 0 to +50°C |
| Storage temperature..... | from -10°C to +60°C |
| Relative humidity..... | from 10% to 90%RH in operating mode and lower than 80%RH in storage |
| Dimensions..... | 200 x 140 x 50 mm |
| Weight..... | 320 g (included battery) |
| Memory..... | 100 temperature values |

*Accuracy for an ambient temperature from 23 to 25°C (with a relative humidity lower than 80% RH)

• 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 |

KIRAY 300 instrument description



KIRAY 300 instrument buttons



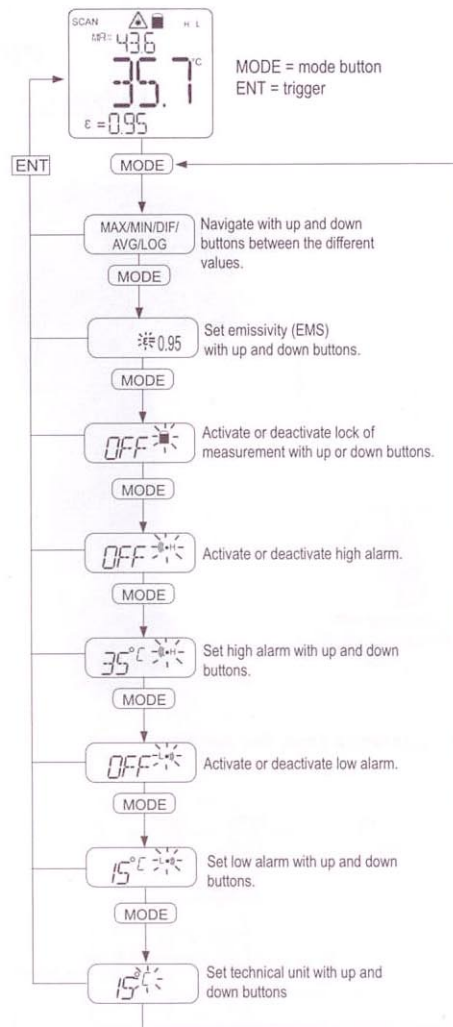
1 - Up button. It allows to increment emissivity and high and low alarm thresholds and to go to the following recorded value. It also allows to navigate between MAX, MIN, AVG and LOG.

2 - Backlight/laser button. It allows to activate or to deactivate laser backlight of the screen. You can also save a value.

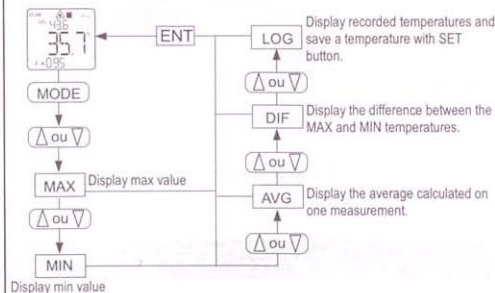
3 - Mode button. It allows to navigate through the modes (MAX and MIN values, DIF and AVG, emissivity, high and low alarms, unit of measurement).

4 - Down button. It allows to decrement emissivity and high and low alarm thresholds and to go to the following recorded value. It also allows to navigate between MAX, MIN, AVG and LOG.

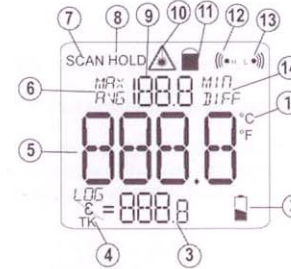
Modes flow chart



Mode MAX/MIN/DIF/AVG/LOG flow chart



Display



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

Operating mode

- Push on the ENT trigger to turn on the instrument. The backlit screen, indicating temperature and laser, turn on.
- Keep ENT pressed. Put the laser sighting at the middle of the area you want to measure.
- Release ENT.
- Read the displayed temperature. (Display stays activated during 7 seconds after the last manipulation).
- HOLD appears at the top left of the screen ; measurement stays displayed.
- Press UP or DOWN button to change technical unit.



During a measurement, the emissivity value is automatically displayed at the bottom left of the screen. But if the thermocouple K probe is connected, the measured value by the probe will be displayed at the bottom left of the screen.

Command buttons

ENT Trigger

- Turning on the instrument.
- ENT pressed : activation of the laser sighting and of the temperature measurement. While maintaining ENT key, it is possible to change the value of the emissivity by pressing UP or DOWN. Still maintaining ENT key, it is possible to visualize the MAX, MIN, DIF, AVG values by pressing the MODE button.
- ENT released : Display is on HOLD (fixed HOLD), and gives the last measurement. The screen stays on 7 seconds. If no buttons are activated and if continuous measurement is inactive, the instrument turns off after 7 seconds.

MODE Mode button

It allows to set measurement type : emissivity, lock, high alarm, low alarm, record values, etc ... by pressing as many times on this button.

- **EMS** : when KIRAY300 instrument is turned on, press MODE until **EMS** flashes. Set emissivity pressing UP button to increment it or DOWN button to decrement it. Emissivity is pre-set on 0.95. To return on measurement, press ENT ; press MODE to switch to next mode.

- **Lock** : when KIRAY300 instrument is turned on, press MODE until the lock at the top of the screen flashes and OFF displays. Press UP or DOWN button to put the lock ON. Press MODE to switch to the next mode, or press once ENT : the KIRAY300 instrument takes continuous measurement. To cancel the lock, press once ENT.

- **High alarm** : when KIRAY300 instrument is turned on, press MODE until H flashes at the top of the screen to the right. Press UP or DOWN button to activate or deactivate the alarm, then press MODE to adjust the alarm threshold. Increment threshold with UP button and decrement threshold with DOWN button. To return on measurement, press ENT ; press MODE to switch to next mode.

- **Low alarm** : when KIRAY300 instrument is turned on, press MODE until L flashes at the top of the screen to the left. Press UP or DOWN button to activate or deactivate the alarm, then press MODE to adjust the alarm threshold. Increment threshold with UP button and decrement threshold with DOWN button. To return on measurement, press ENT ; press MODE to switch to next mode.

- **°C / °F** : when KIRAY300 instrument is turned on, press MODE until technical unit flashes at the right of the displayed value. Press UP or DOWN button to change unit : °C or °F degree. To return on measurement, press ENT ; press MODE to switch to next mode.

- **LOG** : while a measurement (ENT pressed or lock activated), press MODE until LOG appears at the bottom of the screen to the left. At the top of the screen, a number between 1 and 100 is also shown ; it is the LOG location. If nothing has been recorded 4 dashed line «---» appears while the temperature corresponding to the number appears if a temperature has been recorded. To save a temperature, you have to be on LOG mode, then choose an empty location (--- visible) and press laser/backlight button during measurement or the measurement is fixed (HOLD). From this mode, you can also clear all the recorded temperatures : press and hold the trigger and press DOWN button at the same time until reach zero recording, then press laser/backlight button while keep ENT pressed. A beep is emitted and LOG location will automatically change to "1", signifying that all data locations have been cleared.