

USER MANUAL

# KIRAY 300



## Infrared thermometer



Supplied with thermocouple K probe

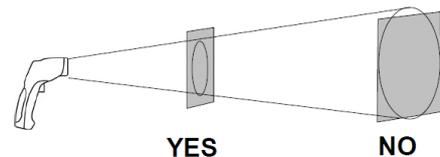
Infrared thermometer Kiray 300 is a thermometer used to diagnose, inspect and check any temperature. Thanks to its elaborated optical system with a dual laser sighting, it allows easy and accurate measurements of little distant targets. The KIRAY 300 instrument has an internal memory which can save up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

### Technical specifications

Spectral response	8 - 14 μm
Optical	D.S: 50:1 (50.8 mm at 2540 mm)
Temperature range	From -50 to +1850 °C
Accuracy*	From -50 to +20 °C: ±3 °C From +20 to +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
Response time	150 ms
Emissivity	Adjustable from 0.10 to 1.00 (pre-set at 0.95)
Over range indication	Display indication: "----"
Dual laser sighting	Wavelength: from 630 nm to 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	3 lines, 4 digits with backlit display LCD
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	95 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 -10 °C to +60 °C
Relative humidity	From 10% to 90%RH in operating mode and >80%RH in storage
Dimensions	200 x 140 x 50 mm
Weight	320 g (included battery)
Memory	100 temperature values

### Distance from the target

Distance	1270	2540	3810	mm
Diameter	25.4	50.8	76.2	mm



Please 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

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

## Description



- 1 - LCD backlighted display
- 2 - Up button
- 3 - Backlight, laser and recording button
- 4 - Down button
- 5 - Mode button



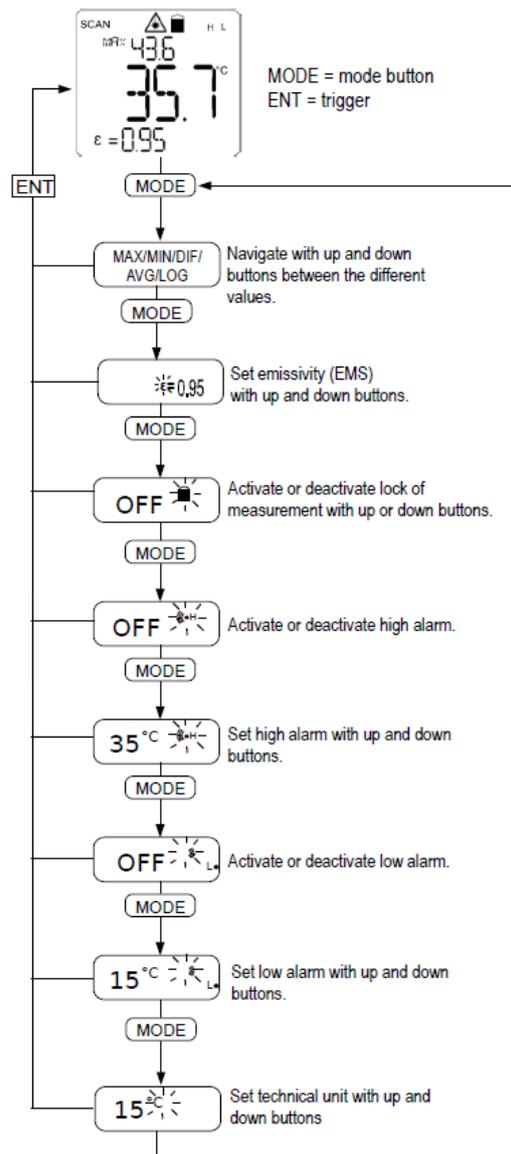
- 1 - Laser sighting output
- 2 - IR sensor (infrared)
- 3 - Laser sighting output
- 4 - Probe input
- 5 - Button to access the battery
- 6 - Trigger
- 7 - Battery compartment

## Kiray 300 buttons

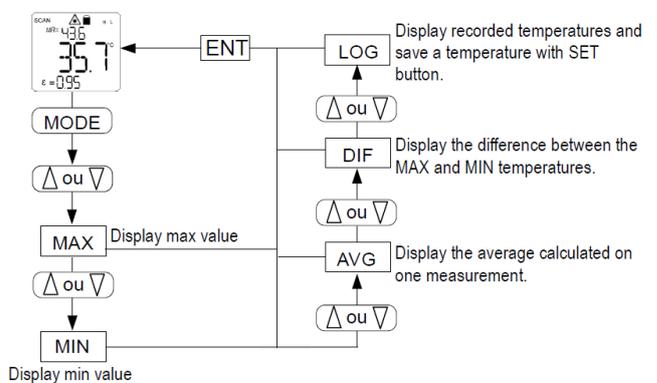
- 1 - Up button: It allows to increment emissivity and high and low alarm thresholds and to go to the following recorded value. It also allows to navigate between MAX, MIN, AVG and LOG.
- 2 - Backlight/laser button: It allows to activate or to deactivate laser backlight of the screen.
- 3 - Mode button: It allows to navigate through the modes (MAX and MIIN 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.



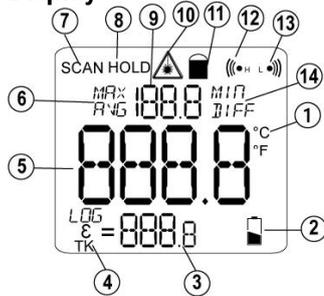
## Modes flow chart



## MAX/MIN/DIF/AVG/LOG mode 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  $\epsilon$  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 KIRAY 300 instrument takes continuous measurement.  
To cancel the lock, press once ENT.
- High alarm: when KIRAY 300 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 KIRAY 300 instrument is turned on, press MODE until L 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.
- °C / °F: when KIRAY 300 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.

## Important information

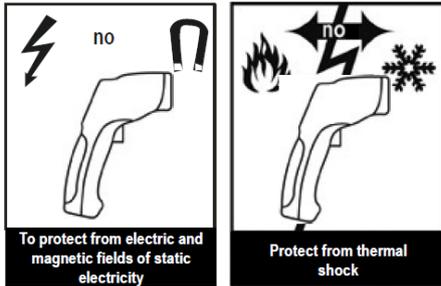
For correct measurements:

- 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

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



## 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.

## 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.

