



NONCONTACT THERMOMETER

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Introduction

Thank you for choosing the infrared thermometer INFROS 201.

Infrared thermometers measure the object surface temperature without touching it. They determine the temperature on the basis of the emitted infrared radiation from an object. Because of their ability to measure the surface temperature contactless, these thermometers enable the user to detect the temperature of inaccessible or moving objects without difficulties.

The INFROS 201 can follow you wherever you are as it is lightweight and fits easily into your shirt pocket.

The infrared thermometers combine a convenient operation with precise measurement and an informative display. They can be used in ambient temperatures ranging from 0 up to 50°C. Laser sighting helps to aim at objects.

The INFROS 201 has various measurement functions like minimum and maximum value, hold function, high and low alarm provide you with all necessary information on a three-line backlit display.

Please read the manual completely before the initial operation.

OPERATION

Temperature Measurement:

Aim the thermometer at a target and touch the trigger. On the basis of all carried out settings the display shows the current temperature value.

Hold-Function:

If you release the trigger, the hold mode will show the temperature value for 7 seconds

Shut down:

The temperature data will be kept for 7 seconds before the instrument shut down automatically.

Measuring Mode Setting:

You may choose between the following mode settings: maximum/minimum temperature value, display backlight on/off, laser on/off.

Each time you release the trigger button, the hold function will enable you to switch the display between showing either minimum or maximum value of the present scanning.

If you have not activated any button for 7 seconds, the instrument will shut down.

Functions

Setting the MIN-/MAX- function

While activating the trigger and pressing the Mode-button simultaneously you may switch between displaying minimum (MIN) or maximum (MAX) value of the current measurement.

Setting the °C/°F function:

You may choose to read the temperature either with Celsius or Fahrenheit.

"Off-Mode": Simultaneously press the laser/Up-button and the trigger to switch to °C mode

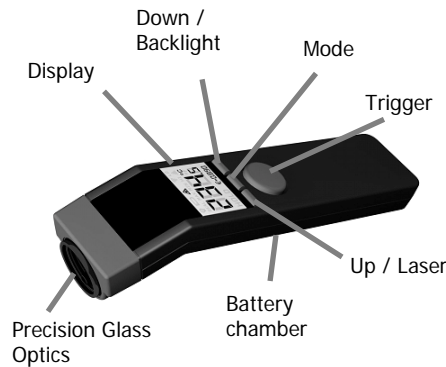
"Off-Mode": Simultaneously press Backlight /down-button and the trigger to switch to °F mode.



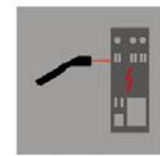
Especifications

Temperature range	-32 a 420°C (-20 to 780°F)
System accuracy	± 1% or ±1°C from 0°C up to 420°C
Repeatability	± 1°C ± 0.07°C/°C from 0°C up to -32°C ± 0.5% or ±0.7°C from 0°C up to 420°C ± 0.7°C ± 0.05°C/°C from 0°C up to -32°C
Optical resolution (D:S)	20:1
Display resolution	0.2°C (0.5°F)
Response time (95%)	300ms
Ambient temperature	0 - 50°C
Storage temperature	-20 - 60°C (without battery)
Spectral range	8 - 14 µm
Emissivity	0.950
Configuration	Min / Max / Scan / Hold/ °C / °F
Display Backlight	Yes
Laser	<1mW laser class IIa, laser beam with 9 mm offset
Weight / Dimensions	150 g - 190 x 38 x 45 mm
Battery	9 V alkaline battery
Battery life	20 hours with laser and backlight on 50% 40 hours with laser and backlight off
Relative humidity	10 - 95 % RH non condensing with <30°C ambient temperature

Product picture and description



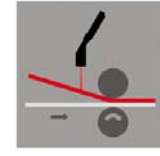
Some noncontact thermometer applications



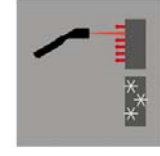
Maintenance of electrical equipment



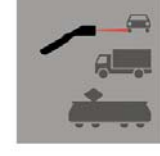
Hot spot detection on bearings, transmissions and motors



Temperature measurement of moving objects/products in the manufacturing process



Detection of energy losses on heat insulations



Inspection of critical components on vehicles

Emissivity

The intensity of infrared radiation, which is emitted by each body, depends on the temperature as well as on the radiation features of the surface material of the measuring object.

The emissivity (ε = epsilon) is used as a stable factor of the material, with which to describe the ability of the body to emit infrared energy. If the emissivity chosen is too high, the infrared thermometer may display a temperature value much lower than the real temperature assuming the measuring object is warmer than its surroundings. The infrared thermometer will be delivered with a pre-set fixed emissivity of 0,95.

The emissivity of 0,95 is very common for most organic materials and painted or oxidized surfaces. Shiny or metallic surfaces may result in inaccurate readings. To prevent this, cover the measuring surface with either flat black paint or with tape. As soon as he covered surface has reached the temperature of the ambient surface, you may start the temperature measurement. The measurement of metallic surfaces, in particular, requires a treatment of the surface: cover it with black, flat paint or a sticker.

Important Reminders

- 1) Shiny or polished metallic surfaces may result in inaccurate reading results. Please see "Emissivity" for measuring surfaces.
- 2) Infrared thermometers measure the surface temperature of objects, only. They cannot measure through transparent material such as glass or plastic.
- 3) Kepp the optics clean of steam, dust, smoke or other particles to prevent inaccurate measurement.

WARNING.

Laser Class 2
Do not point the laser Directly at the eye or indirectly off reflective surfaces as this may cause serious damage!



All instruments should be protected from the following conditions:

- 1) Electromagnetic fields (EMF).
- 2) Static electricity.
- 3) Thermal shock (caused by large or abrupt ambient temperature changes).

Troubleshooting

Code	Problem	Action
HHHH (displayed temperature value)	Beyond MAX measuring limit	Choose target within measuring specifications
LLL (displayed temperature value)	Beyond MIN measuring limit	Choose target within measuring specifications
Blank display	Battery may be empty	Check/replace battery
Laser does not work	(1) battery empty (2) laser deactivated	(1) replace battery (2) Activate laser

Accesories

Included:

- 1) Manual/Warranty
- 2) 9V alkaline battery

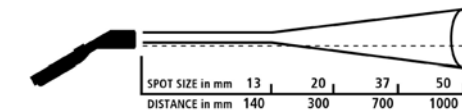
Make sure, that do not activate the trigger in order to avoid unintended operation.

Distance and spot size

Due to the precision glass optics and its focusing, the measuring bean of the instrument has a diameter of 13mm at any distance within 140mm. The spot size grows with increasing distance. At the distance of 1 m the spot size achieves a diameter of 5 cm. The ratio of distance to spot size, also called optical resolution, is 20:1 within the close focus point at a distance of 1 m.

The spot size of longer distances can be calculated by dividing the distance by factor 20.

Optical Diagram



Spot size

The target area must be at least as large as the spot size. The INFROS 201 enables you to measure objects as small as 13mm.

Warranty

Each product passes through a quality process. Nevertheless, if failures occur please contact the customer service at once.

The warranty period covers 36 months on the delivery date.

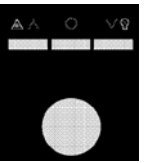
Warranty does not apply to electrical circuit breakers, primary batteries and damages, which result from misuse or neglect. The warranty also expires if you open the product. The manufacturer offers a 3 months warranty to rechargeable batteries.

If a failure occurs during the warranty period, the product will be replaced, calibrated or repaired without further charges. The freight costs will be paid by the sender. The manufacturer reserves the right to exchange components of the product instead of repairing it. If the failure results from misuse or neglect the user has to pay for the repair. In that case you may ask a cost estimate beforehand.

Buttons

Trigger:

The round button is the trigger for the temperature measurement. By activating it you start the temperature measurement. As soon as you release the trigger, the temperature value will be held for 7 seconds. The MAX- or - MIN value of the measurement is displayed.



Mode-button:

The centre button - marked with a circle - is the mode button. By activating the Mode-button when simultaneously pressing the trigger, you will be able to switch between displayed minimum or maximum temperature value.

Up / Laser

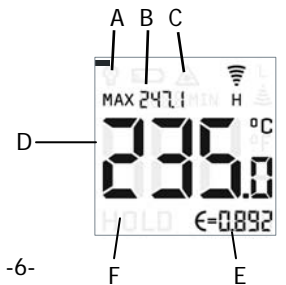
With this button you set the laser

Down / Display Backlight

Use this button to activate the backlight

Display

- A.- Symbol for the display backlight
- B.- MAX/MIN: current & las value
- C.- Laser symbol
- D.- Current temperature value
- E.- Emissivity
- F.- Hold-function



CE - Conformity

The product conforms to the following standards:

- EMC: EN 61326-1
- Safety standards: EN 61010-1
EN 60825-1

The product accomplishes the requirements of the EMC directive 89/336/EEC and of the low voltage directive 73/23/EEC

The instrument complies with the standards of the European Union.



DISEÑOS Y TECNOLOGIA, S.A.

Polígono Industrial Les Guixeres
C/ Xarol 8 C
08915 BADALONA-SPAIN
Tel : +34 - 93 339 47 58
Fax : +34 - 93 490 31 45
E-mail : dtl@ditel.es
www.ditel.es

