

- Ⓓ IRT-350 IR-Thermometer
- ⒼⒷ IRT-350 IR thermometer
- Ⓕ IRT-350 Thermomètre IR
- ⒹⒻ IRT-350 IR-thermometer

Best.-Nr. / Item no. / N° de commande / Bestelnr. 1010133

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1. Introduction

Dear Customer,

Thank you for purchasing this product.

This product complies with the statutory national and European requirements.

We kindly request the user to follow the operating instructions, to preserve this condition and to ensure safe operation!



These operating instructions relate to this product. They contain important notices on commissioning and handling. Please take this into consideration when you pass the product on to third parties.

Please keep these instructions for further reference!

All company names and product names are trademarks of their respective owners. All rights reserved.

If there are any technical questions, contact:

Germany: Phone: +49 9604 / 40 88 80

Fax: +49 9604 / 40 88 48

E-mail: tkb@conrad.de

Mon. to Thur. 8.00am to 4.30pm, Fri 8.00am to 2.00pm

2. Intended use

The product is designed for use as a non-contact temperature measurement instrument. The temperature is measured using the infrared energy an object emits. The product is especially suited for measuring the temperature of hot, difficult to reach or moving objects. The product measures the surface temperature of the object. It cannot measure through transparent surfaces (e.g. glass, water). The product features a target laser. Power is supplied via a 9 V block battery.

Diagnostic use in the field of medicine is not permitted.

For safety and approval purposes (CE), you must not rebuild and/or modify this product. Using the product other than for its intended purpose as described above can damage the product or pose a risk of injury. Read the instructions carefully and keep them. Make this product available to third parties only together with its operating instructions.

3. Delivery content

- Infrared thermometer
- 9 V block battery
- Operating instructions

4. Explanation of symbols



A triangle containing an exclamation point marks important instructions in this manual that must be followed.



The “arrow” symbol marks special tips and notes on operation.

5. Safety instructions



Read the operating instructions carefully and especially observe the safety information. If you do not follow the safety instructions and information on proper handling in this manual, we assume no liability for any resulting personal injury or damage to property. Such cases will invalidate the warranty/guarantee.

- The device is not a toy. Keep it out of the reach of children and pets.
- Do not leave packaging material lying around carelessly. These may become dangerous playing material for children.
- Protect the product from extreme temperatures, direct sunlight, strong jolts, high humidity, moisture, flammable gases, vapours and solvents.
- Do not place the product under any mechanical stress.
- If it is no longer possible to operate the product safely, take it out of operation and protect it from any accidental use. Safe operation can no longer be guaranteed if the product:
 - is visibly damaged,
 - is no longer working properly,
 - has been stored for extended periods in poor ambient conditions or
 - has been subjected to any serious transport-related stresses.



- Please handle the product carefully. Jolts, impacts or a fall even from a low height can damage the product.
- The product is suitable for use in dry areas only. Should you wish to use the product outdoors, first make sure that the weather conditions allow use of the product. Use suitable safeguards to shield the product from moisture if necessary.
- Steam, dust, smoke and vapors may impair the optics and result in falsified readings.
- Avoid use in the direct vicinity of strong magnetic or electromagnetic fields or transmitting antennas. Failure to do so may falsify readings.
- Never turn the product on immediately after it has been brought from a cold room into a warm one. The condensation generated could destroy the product. Condensation on the lens may falsify readings. Leave the device turned off until it has reached room temperature.
- The use of electrical devices must be supervised by trained staff in schools, training centers, hobby and do-it-yourself workshops.
- In industrial facilities, heed all applicable accident prevention regulations for electrical installations and equipment.
- Consult an expert when in doubt about operation, safety or connection of the device.
- Maintenance, modifications and repairs are to be performed exclusively by an expert or at a qualified shop.
- If you have questions which remain unanswered by these operating instructions, contact our technical support service or other technical personnel.

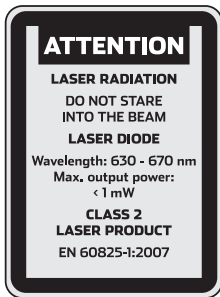
6. Notes on (rechargeable) batteries

- Correct polarity must be observed while inserting the (rechargeable) battery.
- The (rechargeable) battery should be removed from the device if it is not used for a long period of time to avoid damage through leaking. Leaking or damaged (rechargeable) batteries might cause acid burns when in contact with skin, Therefore use suitable protective gloves to handle corrupted (rechargeable) batteries.
- (Rechargeable) batteries must be kept out of reach of children. Do not leave (rechargeable) batteries lying around, as there is risk, that children or pets swallow them.
- (Rechargeable) batteries must not be dismantled, short-circuited or thrown into fire. Never recharge non-rechargeable batteries. There is a risk of explosion!

7. Notes on lasers

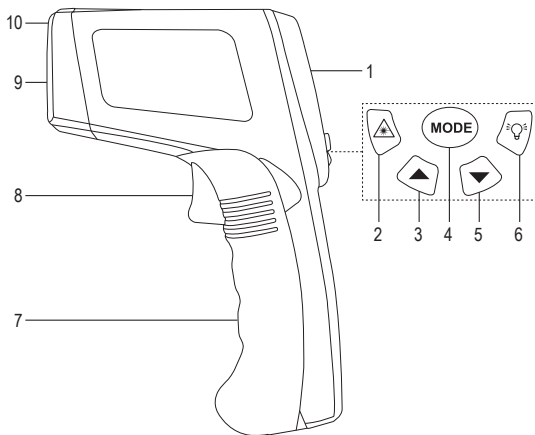
- When operating the laser equipment, always make sure that the laser beam is directed so that no one is in the projection area and that unintentionally reflected beams (e.g. from reflective objects) cannot be directed into areas where people are present.
- Laser radiation can be dangerous, if the laser beam or its reflection enters unprotected eyes. Therefore, before using the laser equipment, familiarise yourself with the statutory regulations and instructions for operating such a laser device.
- Never look into the laser beam and never point it at people or animals. Laser radiation can seriously damage your eyes.
- If laser radiation enters your eyes, close your eyes immediately and move your head away from the beam.
- If your eyes have been irritated by laser radiation, do not continue to carry out tasks with safety implications, such as working with machines, working from great heights or close to high voltage. Also, do not operate any vehicles until the irritation has completely subsided.



- Do not point the laser beam at mirrors or other reflective surfaces. The uncontrolled, reflected beam may strike people or animals.
- Never open the device. Setting or maintenance tasks must only be executed by a trained specialist familiar with potential hazards. Improperly executed adjustments might result in dangerous laser radiation.
- The product is equipped with a class 2 laser. Laser signs in different languages are included in the package. If the sign on the laser is not written in the language of your country, please affix the appropriate sign onto the laser.



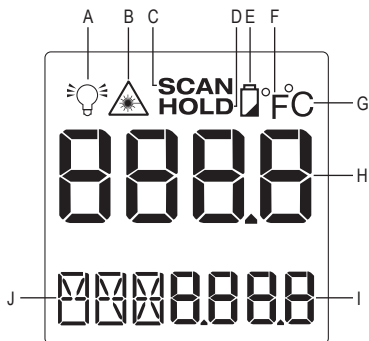
- Caution: if operation settings or procedures other than those described in these instructions are used, it could lead to exposure to dangerous radiation.

8. Operating elements



- 1 Display
- 2 Button  (target laser)
- 3 Button 
- 4 Button **MODE**
- 5 Button 
- 6 Button  (backlight)
- 7 Battery compartment lid
- 8 Trigger button
- 9 IR sensor
- 10 Laser aperture

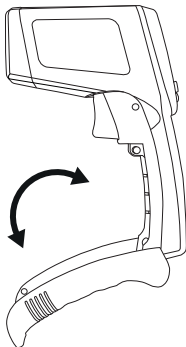
9. Display elements



- A Backlight indicator
- B Laser indicator
- C Indicator **SCAN** (active measuring operation)
- D Indicator **HOLD** (measurement interrupted, display frozen)
- E Battery symbol
- F Temperature unit Fahrenheit
- G Temperature unit Celsius
- H Real-time reading
- I Maximum reading / minimum reading / temperature unit
- J Indicator **MAX** (maximum reading) / **MIN** (minimum reading) / **SET** (when setting temperature unit)

10. Inserting / replacing the battery

- Open up the battery compartment lid (7).



- Connect a 9 V block battery to the corresponding connection inside the battery compartment. The battery can be connected only one way. Do not use any force.
- Store the battery and the cable inside the battery compartment.
- Close the battery compartment. Make sure that the cable is not pinched.



Change the battery as soon as the battery symbol (E) appears in the upper right corner of the display or if the product no longer turns on.

11. Notes on measuring

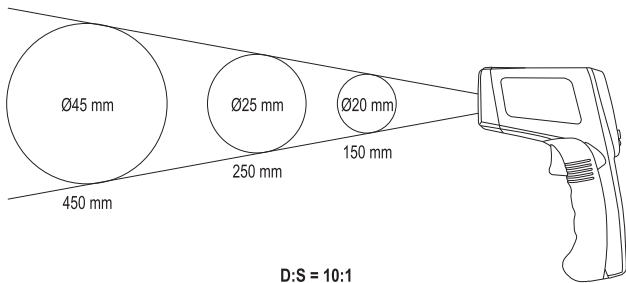
a) Mode of operation

- Infrared thermometers measure the surface temperature of a given object. The product's sensor registers the thermal radiation the object emits, reflects and lets through and uses this information to calculate the temperature.

- Emissivity is a value that quantifies a material's ability to emit energy via radiation. The higher this value, the higher the material's ability to radiate energy. Many organic materials and surfaces have an emissivity of approx. 0.95. Metallic or reflective materials have a lower emissivity and therefore give less reliable readings. It is therefore recommended to apply a layer of matt black paint or matt tape to metallic or reflective surfaces.

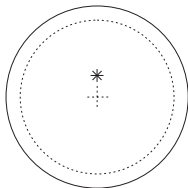
b) Distance-to-spot ratio (D:S)

- In order to achieve reliable readings, the entire measuring object must be larger than the thermometer's measuring surface (IR measuring spot). The calculated temperature is the average temperature of the measured surface.
- The smaller the measuring object is, the lesser the distance between the thermometer and the measuring object should be.
- For exact readings, the measuring object should be at least twice as large as the IR measuring spot.
- The ratio distance to IR measuring spot size is 10:1. At a distance of 10 cm from the measuring object, the IR measuring spot has a size of 1 cm.
- Review the following diagram for the exact size of the IR measuring spot:



c) Target laser

- The product features a target laser (10) that helps determine the measurement range. You can manually activate/deactivate the target laser.
- The middle of the measuring spot is 20.5 mm beneath the laser spot.



- = Measuring object
- (dashed) = Measuring spot
- ✱ = Laser spot
- ⊕ (dashed) = Middle of the measuring spot

d) Miscellaneous

- If you wish to determine the warmest and coldest points of the measuring object, scan the object from left to right and from top to bottom (or from front to back). The maximum and minimum readings will be temporarily saved.
- The device cannot measure through transparent surfaces (e.g. glass). Instead, it will measure the surface temperature of the transparent surface.
- The product must adjust to the ambient temperature before it can give an accurate reading. If you have just moved to a new area, wait until the product has adjusted to the ambient temperature.
- Using the product to measure high temperatures at a short distance for an extended period of time causes the product itself to heat up which may falsify readings. Adhere to the following rule of thumb to achieve the most exact readings possible: The higher the temperature is, the higher the distance to the measuring surface and the shorter the measuring time should be.

12. Operation

a) Turning on/off

- Push the trigger button (8) to turn on the product.
- The product turns off automatically after approx. 7 seconds of inactivity.

b) Activating/deactivating the target laser

- Push the button \triangle (2) to activate the target laser. The laser indicator (B) appears in the upper left corner of the display.
- Push the button \triangle to deactivate the target laser. The laser indicator goes out.

c) Conducting measurements

- Push and hold the trigger button (8) and slowly scan the surface of the object. Point the IR sensor (9) as vertically as possible at the measuring surface.
- While measuring the indicator **SCAN** (C) blinks in the upper half of the display. The middle of the display shows the real-time reading (H). At the lower edge of the display, the maximum reading (I) of the current measurement process is shown.
- Once you release the trigger button, the indicator **HOLD** (D) is shown in the upper half of the display. The last registered reading is frozen on the display. The current measurement process is now ended.
- If you start measuring again now, a new maximum reading will be calculated. The same applies to the minimum reading.

d) Showing the minimum reading

Push the button **MODE** (4) once to show the minimum reading (I) of the current measurement process at the lower edge of the display.

e) Changing the temperature unit

- Push the button **MODE** (4) three times. At the lower edge of the display, **SET** (J) and the currently selected temperature unit (I) appear.
- Push the button **▲** (3) or **▼** (5) to change the temperature unit.
- You can choose between Celsius (°C) and Fahrenheit (°F).
- While measuring, the indicator °F for Fahrenheit (F) or °C for Celsius (G) is shown in the upper right corner of the display.

f) Backlight

- Push the button **°C** (6) to activate/deactivate the display backlight.
- If the backlight is activated, the backlight indicator (A) appears in the upper left corner of the display.

13. Troubleshooting

| Problem | Cause | Solution |
|---|---|--|
| The display shows - - - -. | The measurement was not completed. | Repeat measurement. |
| The display shows OL . | The temperature of the measuring object exceeds the measurement range. | Observe the correct measurement range. |
| The display shows _OL . | The temperature of the measuring object is below the measurement range. | Observe the correct measurement range. |
| The display shows the battery symbol (E). | The battery is low. | Replace the battery. |
| Empty display. | The product is off. | Push the trigger key (8) to turn on the product. |
| | The battery is low. | Replace the battery. |
| The target laser (10) is not working. | Ambient temperature >40 °C. | Observe the operating conditions. |
| | The battery is low. | Replace the battery. |
| The display shows ERR . | Malfunction. | Release the trigger button briefly and start measurement over. |

14. Maintenance and cleaning

a) General

- Do not use any abrasive or chemical cleaners.
- Never submerge the product in water to clean it.
- Apart from occasional cleaning, the device is maintenance-free.

b) Cleaning the lens

- Remove loose particles using clean compressed air and wipe away any excess debris using a fine lens brush.
- Clean the surface with a lens cleaning cloth or a clean, soft and lint-free cloth.
- To remove fingerprints and other grease deposits, you can slightly dampen the cloth with water or a lens cleaning liquid.
- Avoid applying excessive force while cleaning.

c) Cleaning the housing

- Use a dry, clean, soft and lint-free cloth to clean the housing.
- To remove tougher stains, slightly dampen the cloth with lukewarm water. You may use a little soap or a mild cleaning agent.

15. Disposal

a) Product



Electronic devices are recyclable waste and must not be disposed of in the household waste.

At the end of its service life, dispose of the product according to the relevant statutory regulations.

Remove any inserted (rechargeable) batteries and dispose of them separately from the product.

b) (Rechargeable) batteries

You as the end user are required by law (Battery Ordinance) to return all used batteries/rechargeable batteries. Disposing of them in the household waste is prohibited.



Contaminated (rechargeable) batteries are labelled with this symbol to indicate that disposal in the domestic waste is forbidden. The designations for the heavy metals involved are: Cd = Cadmium, Hg = Mercury, Pb = Lead (name on (rechargeable) batteries, e.g. below the trash icon on the left).

Used (rechargeable) batteries can be returned to collection points in your municipality, our stores or wherever (rechargeable) batteries are sold.

You thus fulfil your statutory obligations and contribute to the protection of the environment.

16. Technical data

| | |
|------------------------------|---------------------------------|
| Operating voltage | 9 V block battery |
| Measurement range | -32 to +350 °C (-26 to +662 °F) |
| Resolution..... | 0.1 °C (°F) |
| Optics | 10:1 |
| Response time..... | 500 ms |
| Spectrum | 8 – 14 μm |
| Laser output power..... | <1 mW |
| Laser class | 2 |
| Laser wavelength | 630 – 670 nm |
| Emissivity..... | 0.95 (non-adjustable) |
| Automatic shut-off..... | 7 seconds |
| Operating conditions..... | 0 to +40 °C, 10 – 90 % RH |
| Storage conditions..... | -10 to +50 °C, <80 % RH |
| Dimensions (W x H x D) | 100 x 170 x 30 mm |
| Weight | 250 g (incl. battery) |

| Measurement range | Accuracy |
|----------------------------------|-----------------------|
| -32 to 0 °C (-26 to +32 °F) | ±5.8 °C (10.4 °F) |
| 0 °C to +350 °C (+32 to +662 °F) | ±2.5 % ±2 °C (3.6 °F) |

The emissivity values listed in the following table are approximate values. Various factors such as geometric shape and surface quality may affect an object's emissivity.

| Surface | Emissivity |
|------------------|-------------|
| Aluminum (bare) | 0.04 |
| Asphalt | 0.90 – 0.98 |
| Cement | 0.94 |
| Ice | 0.96 – 0.98 |
| Iron oxide | 0.78 – 0.82 |
| Plaster | 0.80 – 0.90 |
| Glass, porcelain | 0.92 – 0.94 |
| Rubber (black) | 0.94 |
| Wood | 0.94 |
| Plastic | 0.94 |
| Paint (matt) | 0.97 |
| Foods | 0.93 – 0.98 |
| Human skin | 0.98 |
| Paper | 0.97 |
| Sand | 0.90 |
| Textiles | 0.90 |
| Water | 0.92 – 0.96 |
| Brick, grout | 0.93 – 0.96 |

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