# testo 104-IR BT

Combined infrared and penetration thermometer with Bluetooth®

preliminary

Instruction manual en

en

# 1. General information

Please read this document through carefully and familiarize yourself with the operation of the product before putting it to use. Keep this document to hand so that you can refer to it when necessary.

# 2. Safety information

**Avoid electrical hazards:**

- Do not conduct measurements on or near live parts!

**Adhere to the product safety/warranty requirements:**

- Always operate the instrument properly and according to its intended purpose and within the parameters specified. Do not use force.
- Do not store with solvents (e.g. acetone).
- Only open the instrument if this is expressly described in the documentation for the purpose of maintenance or repair work.

**Ensure correct disposal:**

- Dispose of defective rechargeable batteries and spent batteries at the collection points provided.
- Send the instrument directly to us at the end of its life cycle. We will ensure that it is disposed of in an environmentally friendly manner.

# 3. Intended use

The testo 104-IR BT is a robust food thermometer.
The product is designed for the following tasks/areas:

- Food sector: production, food service, spot check measurement, incoming goods.
- Measuring liquids, pastes and semi-solid materials

The following product components are designed for continuous contact with foodstuffs in accordance with Regulation (EC) 1935/2004:
The immersion/penetration probe from the tip up to 2 cm before the probe handle or the plastic housing. If provided, information about penetration depths in the instruction manual or the mark(s) on the immersion/penetration probe should be observed.

The product should not be used in the following areas:

- Potentially explosive areas
- For diagnostic measurements in the medical sector

# 4. Technical data

## 4.1 Bluetooth Modul

! The Bluetooth® option may only be operated in countries in which it is type approved.

| Feature | Values |
|---|---|
| Bluetooth | Range >20 m (free field) |
| Iuetooth type | LSD Science & Technology Co., Ltd<br>L Series BLE Module (08 Mai 2013) based on TI CC254X chip |
| Qualified Design ID | B016552 |
| Bluetooth radio class | Class 3 |
| Bluetooth company | 10274 |

### Certification

Belgium (BE), Bulgaria (BG), Denmark (DK), Germany (DE), Estonia (EE), Finland (FI), France (FR), Greece (GR), Ireland (IE), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Sweden (SE), Slovakia (SK), Slovenia (SI), Spain (ES), Czech Republic (CZ), Hungary (HU), United Kingdom (GB), Republic of Cyprus (CY).

### EFTA countries

Norway and Switzerland.

### Other countries

USA, Canada, Turkey, Australia, New Zealand, South Korea, India, Russia, Japan





## 4.2 General Technical data

| Feature | Values |
|---|---|
| **Penetration probe** | |
| Sensor type | NTC |
| Measuring range | –50 to +250 °C / –58 to +482 °F |
| Resolution | 0.1 °C/°F/°R |
| Accuracy (±1 digit) | ±1.0 °C / ±1.8 °F (-50,0 to-30,1°C / –58.0 to –22.1 °F)<br>±0.5 °C / ±0.9 °F (-30,0 to +99,9°C / –22.0 to +211.9 °F)<br>±1 % of the measuring range (+100.0 to +250.0 °C / +212.0 to +482.0 °F) |
| Response time t99 | 10 s (measured in moving liquid) |
| Measuring rate | 0.5 s |
| **Infrared measurement** | |
| Lens | 10:1 + opening diameter of the sensor (12 mm / 0.47") |
| Spectral range | 8 to 14 µm |
| Laser type | 2–point laser |
| Output / wavelength | < 1 mW / 650nm |
| Class / standard | 2 / DIN EN 60825–1:2007 |
| Measuring range | –30 – +250 °C / –22 – +482 °F |
| Resolution | 0.1 °C/°F/°R |
| Accuracy (at 23°C, ±1 digit) | ±2.5 °C / ±4.5 °F (–30.0 to –20.1 °C / –22.0 to –4.2 °F)<br>±2.0 °C / ±3.6 °F (–20.0 to –0.1 °C / –4.1 to 31.9 °F)<br>±1.5 °C / ±2.7 °F or ±1.5 % of the measuring value (0.0 to +250.0 °C / +32.0 to +482.0 °F) |
| Measuring rate | 0.5 s |
| **General** | |
| Operating temperature | –20 to +50 °C / –4 to +122 °F |
| Transportation/ storage temperature | –30...+70 °C / –22 to +158 °F (without batteries) |
| Power supply | 2 x AAA batteries |
| Battery life | 10 h (typical at 25°C / 77°F) |
| Housing | ABS/TPE/PC and die–cast zinc/stainless steel |
| Protection class | IP65 |
| Dimensions | 281 x 48 x 21 mm / 11.06 x 1.89 x 0.83“ (immersion/ penetration probe folded out)<br>178 x 48 x 21 mm / 7.01 x 1.89 x 0.83” (immersion/penetration probe folded up) |
| Weight | 210g / 0.433lbs (incl. batteries) |
| Standards | EN 13485 |
| EC Directive | 2004/108/EC |
| Warranty | 2 years, warranty terms: see www.testo.com/warranty |

### Information on standards


This product complies with the EN 13485 standard for penetration measurement.
Suitability: S, T (storage, transportation)
Environment: E (transportable thermometer)
Accuracy class: 0.5
Measuring range: -50...+250 °C
According to EN 13485, the measuring instrument should be checked and calibrated regularly under the terms of EN 13486 (recommended frequency: yearly).
Contact us for more information.

# 5. Product description


1 Infrared sensor
2 2-point laser
3 Display
4 Control keys:
   · [ON]: switches the instrument on
   · [OFF]: switches the instrument off (hold button down)
   · [▲]: switches to IR measurement, carry out IR measurement (hold button down)
   · [▼]: switches to contact measurement
   · [HOLD/MIN/MAX]: holds measuring value, displays minimum/maximum value, sends data to mobile device (Bluetooth)
5 Fold-out immersion/penetration probe, folding out the probe switches the instrument on
6 Battery compartment (at the back)

# 6. Commissioning

**Inserting batteries**

1 Use a slotted screwdriver to undo the screw on the battery compartment.
2 Open the battery compartment.
3 Insert batteries (2x type AAA). Observe the polarity!
4 Close the battery compartment.
5 Tighten the screw.



en

# 7. Operation

## 7.1 Switching on/off

**Switching on via fold-out probe**

▶ Fold out the probe.
- All display segments light up briefly. Contact measurement is enabled (▼ lights up).

**Switching on/off via control keys**

▶ Switch the instrument on: press [ON].
- All display segments light up briefly. IR measurement is enabled (▲ lights up).

▶ Switch off the instrument: press and hold down [OFF] until the display goes off.

! The instrument switches off automatically if no key is pressed: for 10 minutes when the probe is folded out, or for 1 minute when the probe is folded up.

## 7.2 Changing the measuring mode

▶ Contact measurement —> IR measurement: press [▲].
▶ IR measurement —> contact measurement: press [▼].

## 7.3 Measuring

! Observe the information on IR measurement/contact measurement (see chapter below).

! Bluetooth mode Cnl1 (Controlled Mode) is enabled: Display shows bLE, all buttons are locked, instrument can be controlled by external mobile device only.

**IR measurement**

- Instrument is on, IR measurement is enabled, Bluetooth mode Cnl2 (Autonomous Mode) is enabled.
1 Start measurement: press and hold down [▲].
2 Lock in on measurement object using the laser points: laser points mark the edges of the measuring range.
- The current measuring value is displayed.
3 End measurement: release the key.
- Hold lights up. The last measuring value and min./max. value are saved until the next measurement, or until the instrument is switched off.
4 Send data to mobile device: press [HOLD / MIN / MAX].
▶ Switch between min., max. and recorded value: press [HOLD / MIN / MAX].

! The min./max. values can be reset:
· press [▲] or switch the instrument off.

▶ Restart measurement: press and hold down [▲].

▶ Setting the emission level:
· When IR measurement is enabled, press and hold down[▲] and [▼] at the same time ( lights up).
· Emission level is displayed.
· Use [▲] or [▼] to change the value and wait for 3 s.

**Contact measurement**

- Instrument is on, contact measurement is enabled ( lights up), Bluetooth mode Cnl2 (Autonomous Mode) is enabled.

1 Position the contact thermometer in the measurement object and initiate the measurement: press [▼].

2 End measurement: press [HOLD / MIN / MAX].

- Hold lights up. The last measuring value and min./max. value are saved until the next measurement, or until the instrument is switched off.

! AutoHold function: if this function is enabled, the measurement is ended automatically as soon as the measuring value is stable, AutoHold lights up.

4 Send data to mobile device: press [HOLD / MIN / MAX].

▶ Switch between min., max. and recorded value: press [HOLD / MIN / MAX].

! The min./max. values can be reset:
· switch the instrument off, switch to IR measurement or, while the held measuring value is displayed (Hold lights up), press and hold down [HOLD / MIN / MAX] until Clr lights up.

▶ Restart measurement: press [▼].

# 8. Settings

- The instrument is switched off.

! If no button is pressed for 3 s in settings mode, the instrument switches to the next view.

1 Press and hold down [▲] and [▼] until AutoHold or Hold flashes.

2 Switch the AutoHold function on (AutoHold) or off (Hold): press [▲] or [▼].

- °C, °F or °R flashes.

3 Set measurement unit to degrees Celsius (°C), degrees Fahrenheit (°F) or degrees Réaumur (°R): press [▲] or [▼].

- flashes.

4 Switch the laser on (on) or off (oFF): press [▲] or [▼].



5 Select Bluetooth mode Cnl1 (Controlled Mode) oder Cnl2 (Autonomous Mode): press [▲] or [▼].

- The instrument switches to IR measurement.



# 9. Service and maintenance

## 9.1 Changing the batteries

1 Use a slotted screwdriver to undo the screw on the battery compartment.

2 Open the battery compartment.

3 Insert batteries (2x type AAA). Observe the polarity!

4 Close the battery compartment.

5 Tighten the screw.

## 9.2 Cleaning the instrument

Only use weak, commercially available neutral/household cleaning agents (e.g. washing-up liquid) to clean the instrument. Do not use aggressive cleaning agents or solvent!

The housing and probe can be disinfected using an alcohol-based spray. In doing so, always follow the manufacturer's instructions.

▶ Clean the housing and probe under running water and rub dry with a towel.

▶ Clean the lens carefully with a cotton bud dipped in water or medical alcohol.

# 10. Questions and answers

| Question | Possible causes | Possible solution |
|---|---|---|
| lights up | Low battery | ▶ Change batteries. |
| IR measurement: - - - lights up. | Measuring values outside measuring range | ▶ Keep to permissible measuring range. |
| Contact measurement: - - - lights. | Valores de medición outside permissible range | ▶ Keep to measuring range. |
| Instrument cannot be switched on | Batteries dead. | ▶ Change batteries. |
| Instrument switches itself off. | Instrument switches off automatically after 10 min in contact measurement mode and after 1 min after switching on in IR measurement mode. | ▶ Switch the instrument on again |

If we have not been able to answer your question, please contact your local dealer or Testo Customer Service. For contact details, please visit www.testo.com/service-contact.

# 11. Information on infrared (IR) measurement

## 11.1 Measuring method

**IR measurement is a visual measurement**

- Keep lens clean.
- Do not carry out measurement with a foggy lens.
- Keep the measuring range (the range between the instrument and the measurement object) free of obstacles. There must be no particles of dust or dirt, no humidity (rain, steam) and no gases.

**IR measurement is a surface measurement**

If there is dirt, dust, frost, etc. on the surface, only the outermost layer is measured, i.e. the dirt.

- For vacuum-packed food, do not measure at air pockets. Where the values are critical, always measure separately with a contact thermometer. Particularly in the food sector: measure core temperature with a penetration/immersion thermometer.

**Adjustment time**

- If the ambient temperature changes (change of location, e.g. measurement indoors/outdoors), the instrument must be allowed to equalise for 15 minutes for infrared measurement.

## 11.2 Emissivity

Materials have different emission levels. This means they emit various amounts of electromagnetic radiation. The emission level of the instrument has a default setting of 0.95. This is ideal for the measurement of food, non-metals (paper, ceramic, gypsum, wood, paints and varnishes) and plastics.





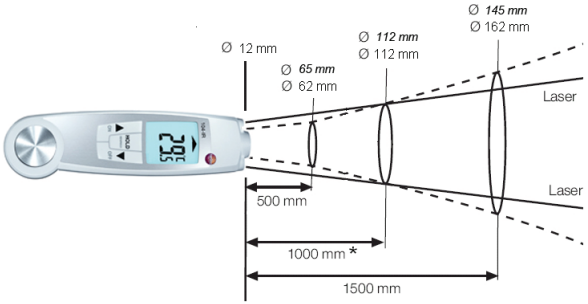
## 11.3 Measuring range, distance

Depending on the distance of the measuring instrument from the measurement object, a specific measuring range is recorded.

**Measuring lens (ratio of distance : measuring range)**

In italics = laser

Not in italics = measuring range




* Optimised measuring distance

# 12. Information on contact measurement

- Observe the minimum penetration depth for immersion/ penetration probes:
  10x probe diameter
- Avoid using in aggressive acids or alkalis.

preliminary

**testo** AG
Postfach 11 40, 79849 Lenzkirch
Testo-Straße 1, 79853 Lenzkirch
Telefon: (0 76 53) 6 81 - 0
Fax: (0 76 53) 6 81 - 1 00
E-Mail: info@testo.de
Internet: http://www.testo.com

www.testo.com

0977 1042 en 01a

FCC statements:

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications or changes to this equipment. Such modifications or changes could void the user's authority to operate the equipment.

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Power is so low that no RF exposure calculation is needed.