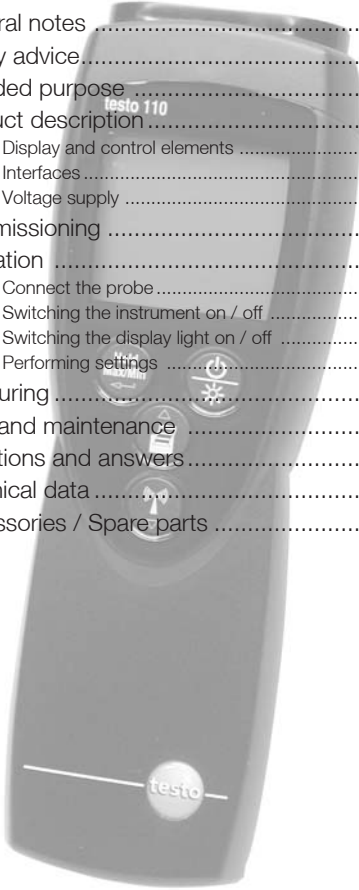




testo 110
Temperature measuring instrument

Instruction manual

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General notes

This chapter provides important advice on using this documentation.

The documentation contains information that must be applied if the product is to be used safely and efficiently.

Please read this documentation through carefully and familiarise 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.

Identification

Representation Meaning		Comments
f	Note	Offers helpful tips and information.
➤, 1, 2	Objective	Denotes the objective that is to be achieved via the steps described. Where steps are numbered, you must always follow the order given!
✓	Condition	A condition that must be met if an action is to be carried out as described.
➤, 1, 2, ...	Step	Carry out steps. Where steps are numbered, you must always follow the order given!
Text	Display text	Text appears on the instrument display.
Button	Control button	Press the button.
-	Result	Denotes the result of a previous step.
↔	Cross-reference	Refers to more extensive or detailed information.

1. Safety advice

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This chapter gives the general rules which must be followed and observed if the product is to be handled safely.

Avoid personal injury/damage to equipment

- › Do not use the instrument and probes to measure on or near live parts.
- › Never store the instrument/probes together with solvents and do not use any dessicants.

Product safety/preserving warranty claims

- › Operate the instrument only within the parameters specified in the Technical data.
- › Always use the instrument properly and for its intended purpose. Do not use force.
- › Do not expose handles and feed lines to temperatures in excess of 70 °C unless they are expressly permitted for higher temperatures.
Temperatures given on probes/sensors relate only to the measuring range of the sensors.
- › Open the instrument only when this is expressly described in the documentation for maintenance and repair purposes.
Carry out only the maintenance and repair work that is described in the documentation. Follow the prescribed steps when doing so. For safety reasons, use only original spare parts from Testo.

Ensure correct disposal

- › Take faulty rechargeable batteries/spent batteries to the collection points provided for them.
- › Send the product back to Testo at the end of its useful life. We will ensure that it is disposed of in an environmentally friendly manner.

Instruments with radio module 915.00MHz FSK

Warning: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is needed.
- Consult the dealer or an experienced radio/TV technician for help.

Operation is subject to the following two conditions:

- this device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation.

2. Intended purpose

This chapter gives the areas of application for which the product is intended.

Use the product only for those applications for which it was designed. Ask Testo if you are in any doubt.

testo 110 is a compact measuring instrument for measuring temperatures.

The product was designed for the following tasks/applications:

- Food industry
- Laboratories

The product should **not** be used in the following areas:

- Areas at risk of explosion
- Diagnostic measurements for medical purposes



The following components of the product are designed for continuous contact with foodstuffs in accordance with the regulation (EC) 1935/2004:

The measurement probe up to 1 cm before the probe handle or the plastic housing. If provided, the information about penetration depths in the instruction manual or the mark(s) on the measurement probes should be noted.

3. Product description

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This chapter provides an overview of the components of the product and their functions.

3.1 Display and control elements

Overview








- ① Infrared interface, probe socket(s)
- ② Display
- ③ Control buttons
- ④ Radio module compartment, battery compartment (rear)

Key functions

Key	Functions
	Switch instrument on; switch instrument off (press and hold)
	Switch display light on / off
	Keep reading, display maximum/minimum value
	Open/leave configuration mode (press and hold) In configuration mode: Confirm input
	In configuration mode: Select option, increase value (press and hold to increase values rapidly)
	Print data
	Change between displaying connected probe and radio probe (lit)
	In configuration mode: Select option, decrease value (press and hold to decrease values rapidly)

Important displays

Display	Meaning
	Battery capacity (bottom left in display): 4 segments in the battery symbol are lit: Instrument battery is fully charged · No segments in the battery symbol are lit: Battery is almost spent
	Print function: Readings are sent to the printer
	Upper alarm limit: Lit if exceeded
	Lower alarm limit: Lit if undershot
	Measurement channel: Radio probe (the number of "radio wave" segments shown indicates the strength of the signal)

3.2 Interfaces

Infrared interface

Measurement data can be sent to a Testo printer via the infrared interface on the head of the instrument.

Sensor socket(s)

Plug-in measuring probes can be connected via the probe socket(s) on the head of the instrument.

Radio module (accessory part)

i Radio probes may only be used in countries in which they have been Type Approved (see application information of the radio probe).

A radio measuring probe can be connected via the radio module.

3.3 Voltage supply

Voltage is supplied by means of a 9 V monobloc battery (included in delivery) or rechargeable battery. It is not possible to run the instrument from the mains supply or charge a rechargeable battery in the instrument.

4. Commissioning

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This chapter describes the steps required to commission the product.

➤ **Removing the protective film on the display:**

- Pull the protective film off carefully.

➤ **Inserting a battery/rechargeable battery:**

- 1 To open the battery compartment on the rear of the instrument, push the lid of the battery compartment in the direction of the arrow and remove.
- 2 Insert a battery/rechargeable battery (9 V monobloc). Observe the polarity!
- 3 To close the battery compartment, replace the lid of the battery compartment and push it against the direction of the arrow.
 - The instrument switches itself on and configuration mode is opened.
- 4 Set the date, time and unit of measurement.
 - ➔ See the chapter PERFORMING SETTINGS, objectives SETTING THE DATE/TIME and following.

➤ **Inserting a radio module (accessory part):**

- i** Radio probes may only be used in countries in which they have been Type Approved (see application information of the radio probe).
- ✓ The instrument is switched off.
- 1 To open the radio module compartment on the rear of the instrument, push the clip lock downwards and remove the lid of the radio module compartment.
 - 2 Insert the radio module.
 - 3 To close the radio module compartment, replace the radio module compartment and close it.

5. Operation

This chapter describes the steps that have to be executed frequently when using the product.

5.1 Connect the probe

Plug-in probes

Plug-in probes must be connected before the measuring instrument is switched on so that they are recognised by the instrument.

- Insert the connector of the probe into the probe socket.

Radio probes

i Radio probes may only be used in countries in which they have been Type Approved (see application information of the radio probe).


A radio module (accessory part) is required for the use of radio probes. The radio module must be connected before the measuring instrument is switched on so that it is recognised by the instrument.

Each radio probe has a probe ID (identification number). This must be set in configuration mode.


➔ See the chapter PERFORMING SETTINGS.

5.2 Switching the instrument on / off

➤ Switching the instrument on:


- Press .
- Measurement view is opened: The current reading is displayed, or ---- lights up if no reading is available.

➤ **Switching the instrument off:**

- Press and hold  (for approx. 2s) until the display goes out


5.3 Switching the display light on / off



➤ **Switching the display light on / off:**

- ✓ The instrument is switched on.
- Press .

5.4 Performing settings

1 To open configuration mode:

- ✓ The instrument is switched on and is in measurement view. **Hold**, **Max** or **Min** are not activated.
- Press and hold  (for approx. 2s) until the display changes.

- i** You can change to the next function with .
You can leave configuration mode at any time. To do so, press and hold  (for approx. 2s) until the instrument has changed to measurement view. Any changes that have already been made in configuration mode will be saved.

2 To set the alarm function:

- ✓ Configuration mode is opened, **Alarm** is displayed.




1 Select the desired option with  and confirm with :




- **OFF**: Switches the alarm function off.
- **On**: Switches the alarm function on.

OFF was selected:

⇒ Continue with objective TO REGISTER THE RADIO PROBE.

On was selected:

2 Use  /  to set the value for the upper alarm threshold (↑) and confirm with .

3 Use  /  to set the value for the lower alarm threshold (↓) and confirm with .

3 To register the radio probe:

i Radio probes may only be used in countries in which they have been Type Approved (see application information of the radio probe).

i The setting function for radio probes is only available if a radio module (accessory part) is inserted into the measuring instrument.

⇒ See the chapter COMMISSIONING.

If no radio module is inserted:

⇒ Continue with objective TO SET AUTO OFF.

Each radio probe has a probe ID (RF ID). This consists of the last 3 digits of the serial no. and the position of the slide switch in the radio probe (H or L).

✓ Configuration mode is opened and RF ID and Auto are lit.




✓ The radio probe is switched on.

1 Select the desired option with  and confirm with .

· YES: Switches automatic probe detection on (recommended).

· no: Switches automatic probe detection off.




no was selected:

2 Use  /  to set the probe ID manually and confirm with .



YES was selected:

- Automatic probe detection is started. **Auto** flashes while the instrument looks for a radio probe that is switched on.
- Once a radio probe is found, the probe ID is displayed. If no probe is found, **NONE** lights up.

Possible reasons why probes are not found:

- The radio probe is not switched on or the battery of the radio probe is spent.
 - The radio probe is outside the range of the measuring instrument.
 - Sources of interference are influencing the radio transmission (e.g. reinforced concrete, metal objects, walls or other barriers between transmitter and receiver, other transmitters of the same frequency, strong electromagnetic fields).
- If necessary, rectify the possible causes for the disruption to the radio transmission and start automatic probe detection again with .
- If further wireless probes are within reception range, the probe ID of a different wireless probe may be displayed.
 - If necessary: switch off other wireless probes or remove from the reception range, and start automatic probe detection again with .
- 2 Press  to change to the next function.

4 To set Auto Off:

- ✓ Configuration mode is opened, **Auto Off** is lit.
- Select the desired option with  and confirm with :
 - **On**: The measuring instrument switches off automatically if no button is pressed for 10 min. Exception: A recorded reading is shown on the display (**Hold** or **Auto Hold** is lit).
 - **OFF**: The measuring instrument does not switch itself off automatically.

5 To set Auto Hold:

i The Auto Hold function is only active on plug-in measuring probes.

✓ Configuration mode is opened, **Auto Hold** is lit.

1 Select the desired option (5, 10, 15, 20s) with $\boxed{\Delta}$ and confirm with $\boxed{\leftarrow}$:

· **OFF**: Readings are not recorded automatically.

· **On**: Once a stable reading is obtained (change in reading $<0.2\text{ }^{\circ}\text{C}/0.4\text{ }^{\circ}\text{F}$ in the set evaluation time), it is recorded automatically.

OFF was selected:

⇒ Continue with objective TO SET THE MAX./MIN. PRINT FUNCTION.

On was selected:

2 Use $\boxed{\Delta}$ / $\boxed{\nabla}$ to set the value for the evaluation time (in s) and confirm with $\boxed{\leftarrow}$.

6 To set the max./min.print function:

✓ Configuration mode is opened, **MaxMin** and $\boxed{\text{M}}$ are lit.

➤ Select the desired option with $\boxed{\Delta}$ and confirm with $\boxed{\leftarrow}$.

· **On**: Maximum and minimum values are printed out as well when current or recorded readings are printed.

· **OFF**: Maximum and minimum values are not printed out as well when current or recorded readings are printed.



7 To set the date/time:

✓ Configuration mode is opened, **Year** is lit.



1 Use $\boxed{\Delta}$ / $\boxed{\nabla}$ to set the current year and confirm with $\boxed{\leftarrow}$.

2 Use $\boxed{\Delta}$ / $\boxed{\nabla}$ to set the other values for the month (**Month**), day (**Day**) and time (**Time**) and confirm each one with $\boxed{\leftarrow}$.

8 To set the unit of measurement:

- ✓ Configuration mode is opened, °C or °F flashes.
- › Select the desired unit of measurement with  and confirm with .

9 To reset:

- ✓ Configuration mode is opened, **RESET** is lit.
- › Select the desired option with  and confirm with :
 - **no**: Instrument is not reset.
 - **Yes**: Instrument is reset. The instrument is reset to the factory settings. The setting of the probe ID for the radio probe is not reset.
- The instrument returns to measurement view.

6. Measuring

This chapter describes the steps that are required to perform measurements with the product.

- ✓ The instrument is switched on and is in measurement view.

➤ **Taking a measurement:**

- Put the probe in position and read off the readings.

With the Auto Hold function on:

i The Auto Hold function is only active on plug-in measuring probes.

- **Auto Hold** flashes during measurement.
- If the reading is stable within the set evaluation time, a signal tone is given and the reading is recorded.

- Start measurement again with .

With the alarm function on and if the alarm threshold is exceeded or not undershot:

- **Alarm** lights up and a signal tone is given.
- The alarm goes out if the reading goes below the upper or above the lower threshold again.


➤ **Changing the measurement channel display:**

You can change between displaying plugged-in probes and radio probes (, ).

- To change the display: Press .

➤ **Holding the reading, displaying the maximum/minimum value:**

The current reading can be recorded. The maximum and minimum values (since the instrument was last switched on) can be displayed.

- Press  several times until the desired value is displayed.
 - The following are displayed in turn:
 - **Hold**: the recorded reading
 - **Max**: Maximum value
 - **Min**: Minimum value
 - The current reading
 - In addition to the recorded, maximum or minimum readings, the 2nd reading line shows the current reading

➤ Resetting the maximum/minimum values:

The maximum/minimum values of all channels can be reset to the current reading.

i This function is not available if the Auto Hold function is switched on.

- 1 Press  several times until **Max** or **Min** lights up.
- 2 Press and hold .
 - The displayed value flashes twice. All maximum and minimum values are reset to the current reading


➤ Printing readings:

The readings shown on the display (current reading, recorded reading or max./min. reading) can be printed out.

A Testo printer is required (accessory part).

i With the Max./Min. print function switched on, the maximum and minimum values are printed out as well as the current reading or recorded reading.

➡ See the chapter PERFORMING SETTINGS.

- 1 Configure the instrument so that the value to be printed is shown on the display.
- 2 Press .

7. Care and maintenance

This chapter describes the steps that help to maintain the functionality of the product and extend its service life.

> **Cleaning the housing:**

- Clean the housing with a moist cloth (soap suds) if it is dirty. Do not use aggressive cleaning agents or solvents!

> **Changing the battery/rechargeable battery:**

- ✓ The instrument is switched off.
- 1 To open the battery compartment on the rear of the instrument, push the lid of the compartment in the direction of the arrow and remove it.
- 2 Remove the spent battery/rechargeable battery and insert a new battery/rechargeable battery (9 V mono-bloc). Observe the polarity!
- 3 To close the battery compartment, replace the lid of the compartment in position and push it against the direction of the arrow.




If the voltage supply had been interrupted for a long period, the date/time and unit of measurement will have to be reset:

- The instrument switches itself on and configuration mode is opened.
- Set the date/time and unit of measurement.
 - ⇒ See the chapter PERFORMING SETTINGS, objectives SETTING THE DATE/TIME and following.

8. Questions and answers

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This chapter gives answers to frequently asked questions.

Question	Possible causes	Possible solution
<ul style="list-style-type: none">  is lit (bottom left in display).  is lit (above  symbol). 	<ul style="list-style-type: none"> · Instrument battery is almost spent. · Radio probe battery is almost spent. 	<ul style="list-style-type: none"> · Replace instrument battery. · Replace radio probe battery.
Instrument switches itself off.	<ul style="list-style-type: none"> · Auto Off function is switched on. · Residual capacity of battery is too low. 	<ul style="list-style-type: none"> Switch function off. · Replace battery
Display: -----	<ul style="list-style-type: none"> · Sensor is not plugged in. · Sensor break. 	<ul style="list-style-type: none"> · Switch instrument off, connect probe and switch instrument back on again. · Please contact your dealer or Testo Customer Service.
Display: uuuu	<ul style="list-style-type: none"> · Permitted measuring range was undershot. 	<ul style="list-style-type: none"> · Keep to permitted measuring range.
Display: 0000·	<ul style="list-style-type: none"> Permitted measuring range was exceeded. 	<ul style="list-style-type: none"> · Keep to permitted measuring range.
Display: no Signal	<ul style="list-style-type: none"> · Registered probe was not found. 	<ul style="list-style-type: none"> · Switch on probe. · Bring probe into reception range. · Register radio probe again, see chapter Performing settings, objective To register the radio probe.
Date/time are no longer correct	<ul style="list-style-type: none"> · Voltage supply was interrupted for a longer time 	<ul style="list-style-type: none"> · Reset date and time.

9. Technical data

Characteristic	Value
Parameters	Temperature (°C/°F)
Measuring range	NTC probe: -50.0...+150.0°C / -58.0...+302.0°F NTC high-temperature probe: 0.0...+275°C / 32.0...+527°F
Resolution	0.1°C / 0.1°F
Accuracy (± 1 Digit)	NTC probe: ±0.2°C / ±0.4°F (-20.0...+80.0°C / -4.0...+176.0°F) ±0.3°C / ±0.6°F (rest of range) NTC high-temperature probe: ±0.2°C / ±0.4°F (0.0...+80.0°C / 32.0...+176.0°F) ±0.3°C / ±0.6°F (rest of range)
Sensor connections	1x Mini-DIN socket for NTC temperature probe, radio module (accessory part)
Measuring rate	2/s
Operating temperature range	-20 ... +50°C / -4 ... +122°F
Storage temperature	-40 ... +70°C / -40 ... +158°F
Voltage supply	1x 9 V monobloc battery/rech. battery
Running time (display lighting off / on)	with probe connected: approx. 200 h / approx. 68 h, with radio probe: approx. 45 h / 33 h
Protection class	with TopSafe (accessory part) and probe connected: IP65
EC Directive	89/336/EEC
Warranty	2 years

With TopSafe and the following probes, this product complies with guidelines in accordance with the EN 13485 standard:

Part no.	Measuring range
0613 1001	-50...+275°C / -58.0...+527°F
0613 1212	-50...+150°C / -58.0...+302°F
0613 1712	-50...+150°C / -58.0...+302°F
0613 2211	-50...+150°C / -58.0...+302°F
0613 2411	-50...+150°C / -58.0...+302°F
0613 3211	-50...+140°C / -58.0...+284°F

Suitability: S, T (storage, transport)
Environment: E (transportable thermometer)
Accuracy class: 0.5
Measurement range: see table above

According to EN 13485, the measuring instruments should be checked and calibrated regularly under the terms of EN 13486 (Recommended: Yearly).

10. Accessories / Spare parts

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Name	Part no.
Radio modules ¹	
Radio module 869.85MHz, authorisation for e. g. DE, ES, IT, FR, GB	0554 0188
Radio module 915.00MHz, authorisation for e. g. USA	0554 0190
Radio probes ¹	
Radio immersion/penetration probe, NTC, authorisation for e. g. DE, ES, IT, FR, GB	0613 1001
Radio immersion/penetration probe, NTC, authorisation for e. g. USA	0613 1002
Universal radio handles	
Radio handle for plug-in probeheads incl. TC adapter, authorisation for e. g. DE, ES, IT, FR, GB	0554 0189
Radio handle for plug-in probeheads incl. TC adapter, authorisation for e. g. USA	0554 0191
Adapter for connection to TC probes on radio handle	0554 0222
TC -probehead for air/immersion tip, attachable to radio handle	0602 0293
NTC probes	
Water-proof NTC immersion/penetration probe	0613 1212
Water-proof NTC surface probe for smooth surfaces	0613 1912
Efficient, robust air probe, NTC	0613 1712
Miscellaneous	
TopSafe testo 110, protects from impact and dirt particles	0516 0221
Testo printer with IRDA and infrared interface, 1 roll thermal paper and 4 round cell batteries	0554 0547

¹ Radio probes may only be used in countries in which they have been Type Approved (see application information of the radio probe).



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99 Washington Street, Melrose, MA 02176
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