



testo 860i – Thermal imager for Smartphones

0560 0860 01 / 0563 0860 01

Instruction manual



Contents

1	About this document	3
2	Safety and disposal.....	3
2.1	Security	3
2.2	Disposal	4
3	Product-specific information.....	5
4	Intended use	5
5	Product description	6
5.1	Instrument overview	6
6	First steps	7
6.1	Charging the battery.....	7
6.2	LED Status	8
6.3	Establishing a Smart App connection	8
6.4	Main menu	9
6.5	Thermography application area.....	10
6.6	Overview of Thermography programs	11
6.7	Thermography measurement view	13
6.8	DeltaHeat measurement view	15
6.9	DeltaCool measurement view	16
6.10	Humidity measurement view	17
6.11	Setting the measuring range and target distance	19
6.12	App options	21
6.12.1	Set language	21
6.12.2	Display tutorial.....	21
6.12.3	Display App Info	21
7	Maintaining the product.....	22
7.1	Removing/ changing the permanently installed battery	22
7.2	Cleaning the instrument	22
8	Technical data testo 860i.....	23
9	Tips and assistance	24
9.1	Questions and answers.....	24
10	Support	24

1 About this document

- The instruction manual is an integral part of the instrument.
- Please keep this documentation available for future reference.
- Always use the complete original instruction manual.
- Please read this instruction manual through carefully and familiarize yourself with the product before putting it to use.
- Hand this instruction manual on to any subsequent users of the product.
- Pay particular attention to the safety instructions and warning advice in order to prevent injury and damage to the product.

2 Safety and disposal

2.1 Security

General safety instructions

- Only operate the product properly, for its intended purpose, and within the parameters specified in the technical data.
- Do not apply any force.
- Do not operate the instrument if there are signs of damage to the housing or connected cables.
- Dangers may also arise from objects to be measured or the measuring environment. Always comply with the locally valid safety regulations when carrying out measurements.
- Do not store the product together with solvents.
- Do not use any desiccants.
- Only perform maintenance and repair work on this instrument that is described in this documentation. Follow the prescribed steps exactly when doing the work.
- Use only original spare parts from Testo.

Built-in batteries

DANGER

Risk of death!

The built-in battery can explode if it gets too hot.

- Do not expose the product to ambient temperatures above 70°C / 158 °F.
- Do not heat batteries above the permitted temperature or burn them. If a battery is heated, this may lead to the leakage of battery acid and/or to an explosion. Lithium batteries can, for instance, react very strongly in combination with fire. This may involve battery components being emitted with considerable power.
- Do not consume the battery; risk of burns due to hazardous substances. Keep new and used batteries away from children.
- Lithium batteries must be transported and shipped in accordance with the local and country-specific regulations.

Warnings

Always pay attention to any information denoted by the following warnings. Implement the precautionary measures specified!

DANGER

Risk of death!

WARNING

Indicates possible serious injury.

CAUTION

Indicates possible minor injury.

ATTENTION

Indicates possible damage to equipment.

2.2 Disposal

- Dispose of faulty rechargeable batteries and spent batteries in accordance with the valid legal specifications.
- At the end of its useful life, deliver the product to the separate collection point for electric and electronic devices (observe local regulations) or return the product to Testo for disposal.



■ WEEE Reg. No. DE 75334352

3 Product-specific information

- Do not use in areas with live parts!
- Do not use in areas where the camera may come into contact with moving parts.
- Do not operate the device in environments above 95 %rh (non-condensing).
- Do not use the device outdoors when it is raining or in similar situations. The device is recommended to be used indoors.
- Observe the permissible storage and transport temperature as well as the permissible operating temperature (e.g. protect the measuring device from direct sunlight)!
- Improper handling or use of force will invalidate the warranty!

4 Intended use

The testo 860i is a handy and robust thermal imager. In conjunction with the testo Smart App, it enables non-contact determination and display of the temperature distribution of surfaces.

Areas of application

- Preventive maintenance / servicing: Electrical and mechanical inspection of systems and machines
- Building inspection: Energy assessment of buildings (heating, ventilation and air conditioning trades, building technicians, engineering offices, experts)

ATTENTION

Restrictions on the field of use

- Do not use the instrument in potentially explosive atmospheres!
 - Do not use the device on or near live parts!
 - The device is not a medical device and must not be used on humans or animals.
-

5 Product description

5.1 Instrument overview



1	Infrared camera	2	Integrated digital camera
3	On/off button	4	Status LED
5	Adjustable clip for attachment to smartphone	6	USB-C connection
7	Fixed clip for attachment to smartphone	8	Thread for mounting on tripod (on the underside)

6 First steps

6.1 Charging the battery

⚠ DANGER

- Do not charge the battery in potentially explosive atmospheres!
- The device may only be charged outside a potentially explosive atmosphere in an ambient temperature range of +3 °C ... +47 °C / +37 ... +117 °F (± 3 °C / ± 5 °F tolerance) using the appropriate charger.

⚠ WARNING**Risk of injury! Damage to the device!****Deformation in the battery area!**

Check the device regularly for deformations in the battery area. If you notice any deformation, the device must no longer be used. Switch it off to avoid physical injury or damage to the device. Dispose of the device properly (observe local regulations) or return it to Testo for disposal.



Only charge the battery with the USB cable supplied by Testo.

Charging current: 5 V DC, 2 A

1

Connect the device to the mains via the mains adapter. To do this, insert the plug of the power supply unit into the charging socket on the right-hand side of the device.



The device can become very warm when charging and should not be held in the hand.



The battery level can be checked via the testo Smart App.

6.2 LED Status

LED display when charging the battery

LED status	Meaning
Flashing red	Battery is charging
Fast flashing red	Error charging the battery
Flashing green	Battery is charged

LED display when using the device

LED status	Meaning
Fast flashing red	Device error
Flashing yellow	testo 860i is switched on, searches for connection to testo Smart App, but is not connected.
Green	testo 860i is switched on and connected to testo Smart App.
Flashing green red	Update in progress

6.3 Establishing a Smart App connection



To establish a connection, you need a tablet or smartphone with the Testo Smart App already installed on it. Bluetooth® and WLAN must be activated.

You can get the App for iOS instruments in the App Store or for Android instruments in the Play Store.

Compatibility:

Requires iOS 17.0 or later/Android 14 or later, requires a mobile device with Bluetooth® 4.0 for fast connection establishment.

Bluetooth data interface: peer-to-peer advertising for fast connection establishment



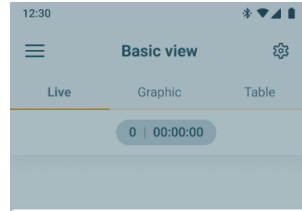
After installing the testo Smart App, the location data must be released so that the connection to the testo 860i can be established.

- 1 Open the testo Smart App.
 - ▶ The app automatically searches for Bluetooth® devices in the vicinity.
- 2 If several devices are found, select the testo 860i and select **Connect**.

The connection is established via WLAN.

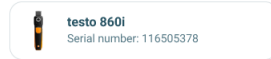
If applicable, also confirm the pairing request of the operating system (Android / iOS).

- ▶ If the connection is successful, the yellow LED stops flashing, the device is visible on the app in the **Device list** menu item and the LED turns green.



Instrument detected


The following instrument is detected as available for connection. Do you want to connect?


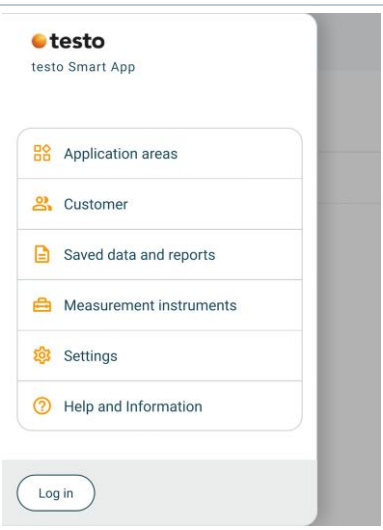







Remember my choice




6.4 Main menu

The **Main menu** can be accessed via the  icon at top left.

	Application areas	
	Customers	
	Saved data and reports	
	Measurement instruments	
	Settings	
	Help and Information	
	Log in	

6.5 Thermography application area


The **Thermography** application area combines all the functions required for thermal imaging.

1 Click on  in the testo Smart App.

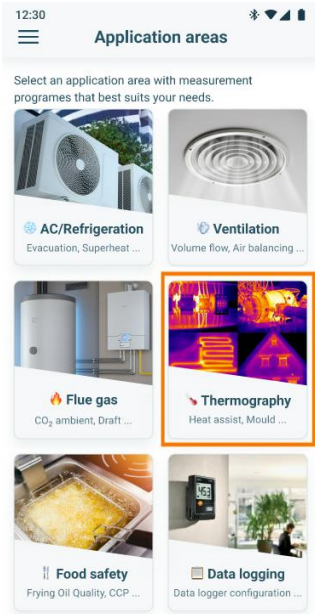
2 Select  **Application areas**.

3 Select **Thermography**.

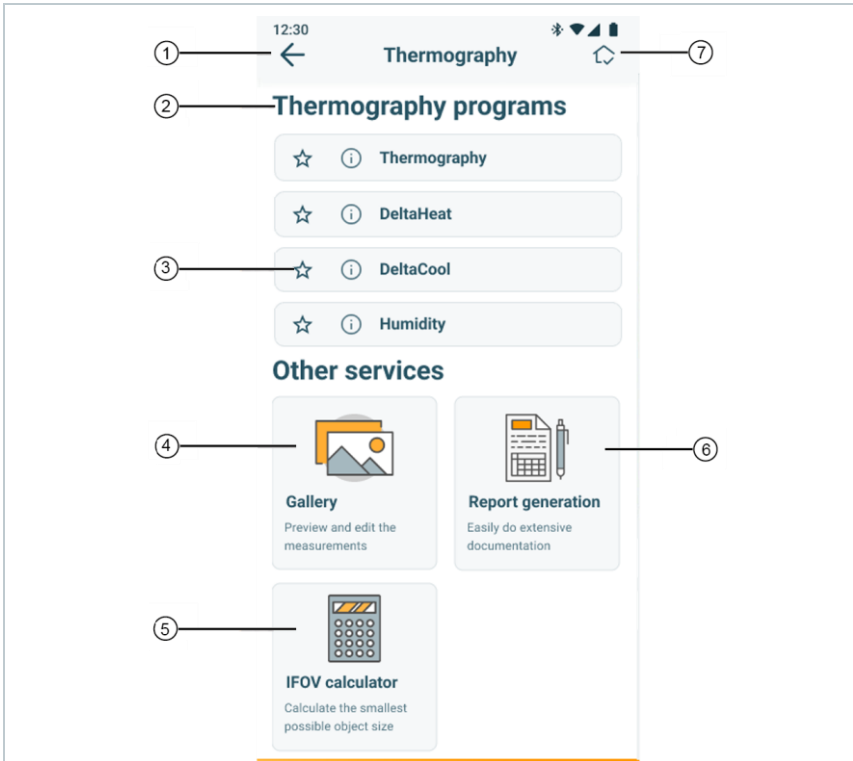



The **Thermography** menu can be selected as default page of the app by clicking on .

▶ When the **Thermography** menu is called up for the first time, a tutorial with an introduction to the functions starts automatically.



6.6 Overview of Thermography programs



1	Back to Applications areas	2	List of thermography programs
3	Define certain measurement programs as favourites	4	Call up measurements saved in the gallery
5	IFOV calculation	6	Generate reports
7	Define the actual view as default site		Information about application

6 First steps

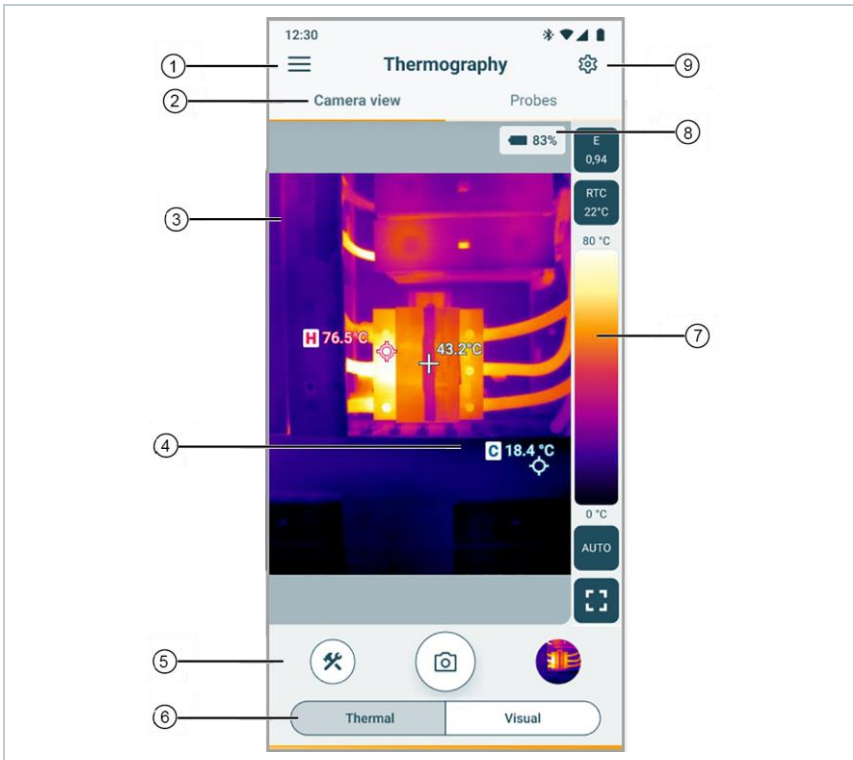
The testo Smart App offers the following thermography programs:

Measurement program	Usage
Thermography	Universal measuring program for every thermal application
DeltaHeat	Quick determination of the spread of flow and return temperatures on radiators.
DeltaCool	Quick determination of the differential temperature on refrigeration and air conditioning systems.
Humidity	Helps to assess the risk of mold indoors

The following **Other Service** are also available:








Service	Usage
Gallery	Quick access to and editing of previously recorded measurements
Report generation	Documentation as a PDF file and quick sending of the recorded measurements in a report
IFOV calculator	Simple checking of the smallest possible object that can be measured with the thermal imaging camera.

6.7 Thermography measurement view

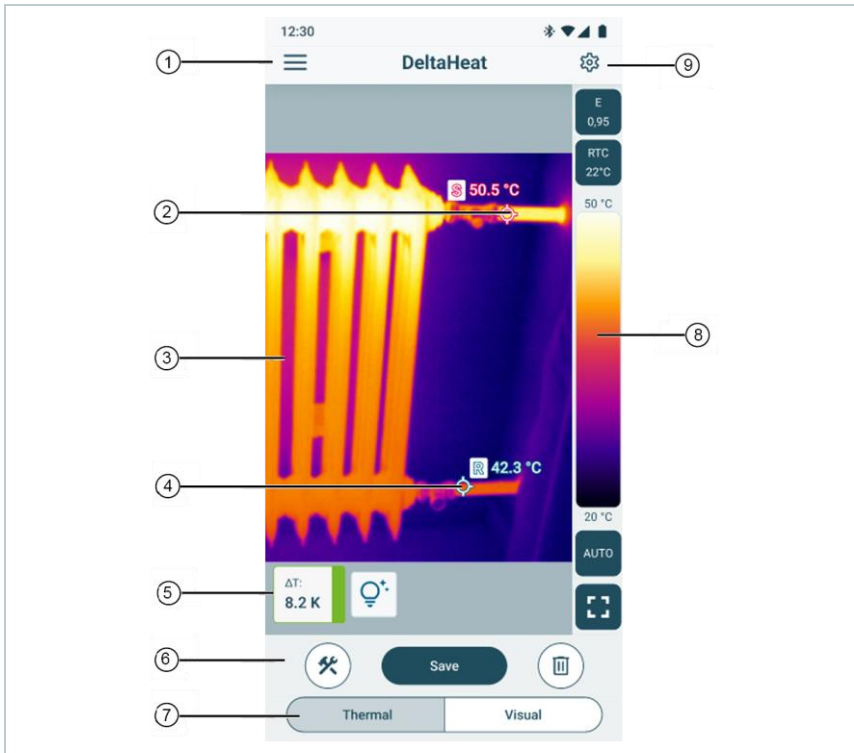


1	Main menu	2	Switch between Camera view and view of connected probes
3	Camera image	4	Display of the activated measuring point
5	Buttons with additional functions	6	Switch between the views: - Thermal = Image of the thermal imaging camera - Visual = image of the digital camera
7	Temperature distribution scale and function buttons	8	Battery status of testo 860i
9	Configuration of the measurement		

Additional icons:

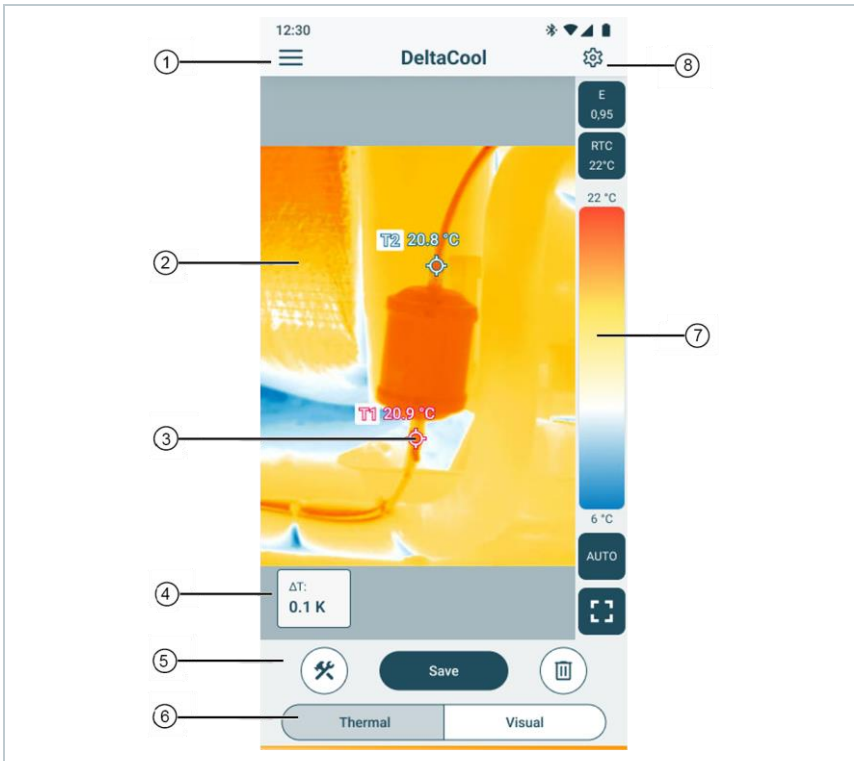
	Emissivity value		RTC value (Reflected Temperature Compensation)
	Scale Mode (Auto / Manual/ SA – ScaleAssist)		Tools (Add measurement functions, change colour palette, assign action button)
	Snapshot		Summary view
	Configurable action button: e. g. switch between full screen and window		

6.8 DeltaHeat measurement view



1	Main menu	2	Supply measuring point
3	Camera image	4	Return measuring point
5	Display of the determined temperature difference with status display and info text with notes and suggested solutions	6	Buttons with additional functions, e.g. for saving the camera image
7	Switch between the views: - Thermal = Image of the thermal imaging camera - Visual = image of the digital camera	8	Temperature distribution scale and function buttons
9	Configuration of the measurement		

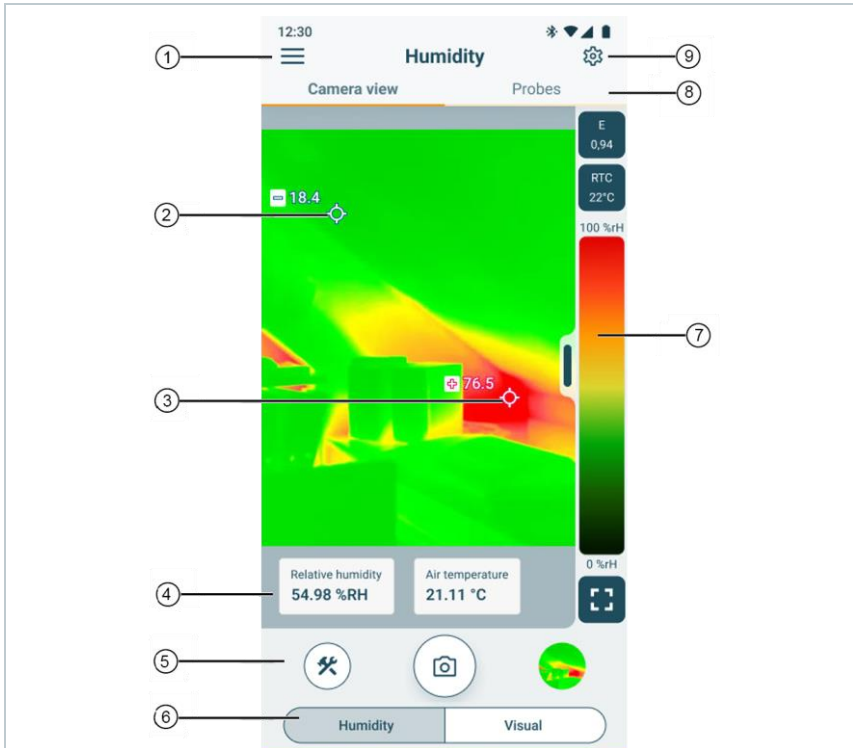
6.9 DeltaCool measurement view



1	Main menu	2	Camera image
3	Display of the T1 / T2 measuring points	4	Display of detected temperature difference
5	Buttons with additional functions, e.g. for saving the camera image	6	Switch between the views: - Thermal = Image of the thermal imaging camera - Visual = image of the digital camera
7	Temperature distribution scale and function buttons	8	Configuration of the measurement

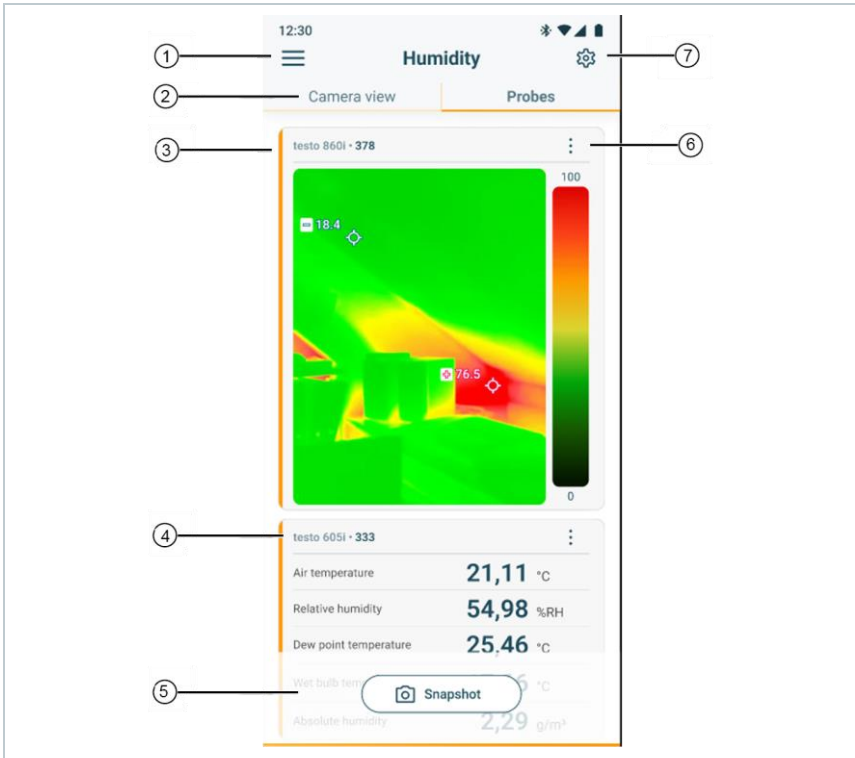
6.10 Humidity measurement view

Camera view



1	Main menu	2	Display of the spot with the lowest room humidity
3	Display of the spot with the highest room humidity	4	Display of relative humidity and air temperature
5	Buttons with additional functions	6	Switch between the views: - Humidity = Image of the thermal imaging camera - Visual = image of the digital camera
7	Humidity distribution scale and function buttons	8	Switch between Camera view and view of connected probes
9	Configuration of the measurement		

Smart Probes view

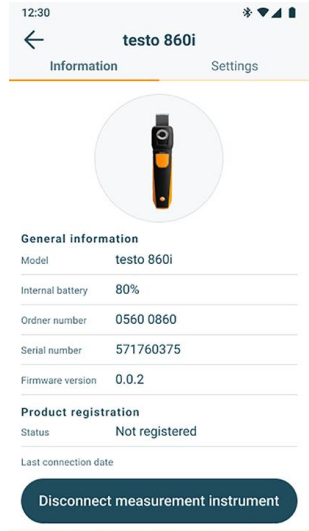
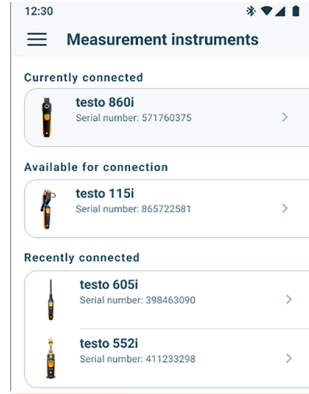


1	Main menu	2	Switch between Camera view and view of connected probes
3	Display of the camera image of testo 860i	4	Display of measurement values of further connected probes
5	Possibility to create a recording	6	Configuration of probes
7	Configuration of the measurement		

6.11 Setting the measuring range and target distance

In order to obtain reliable measurement results, the settings for the measuring range and target distance must be checked and adjusted if necessary..

- 1 Click  in the testo Smart App.
- 2 Select  **Measurement instruments**.
- 3 Select **testo 860i**.
- 4 In the detailed view for the testo 860i, select the **Settings** tab.



- 5 Check the settings for the **Measurement range** and the **Target Distance** and, if necessary, adjust them.




In most cases, **Automatic** is the best choice.

The screenshot shows the settings menu for the testo 860i device. The top bar displays the time 12:30, a back arrow, the device name 'testo 860i', and status icons for Bluetooth, signal strength, and battery. Below the bar are two tabs: 'Information' and 'Settings', with 'Settings' being the active tab. The settings are organized into several sections:

- Default connectivity action:** A dropdown menu set to 'Connect automatically'.
- Auto-off:** A toggle switch set to 'On'.
- Measurement range:** A section with a dropdown menu currently set to '0°C to 350°C'. Below the dropdown are three options: 'Automatic', '0°C to 350°C', and '-20°C to 150°C'. The 'Automatic' option is highlighted with an orange border.
- Target distance:** A section with two input fields: 'Distance to object' set to '1.5' and 'Unit' set to 'm'.
- Reflected temperature:** A section with two input fields: 'Reflected temperature' set to '25.0' and 'Unit' set to '°C'.
- Set emissivity:** A section with one input field: 'Emissivity' set to 'Soot (0.95)'.

6.12 App options


6.12.1 Set language

- 1 Click  -> **Settings** -> **Language and location**.
 - ▶ A selection list **App language** is displayed.
- 2 Tap the required language.
- 3 Click **Save changes**.
 - ▶ The language has been changed.

6.12.2 Display tutorial




The **Tutorial** guides you through the first steps when operating the Testo Smart App.

- 1 Click  -> **Help and Information** -> **Tutorial**.
 - ▶ The **Tutorial** is displayed.
In **Tutorial**, swipe to display the next page.
- 2 Tap **X** to close the **Tutorial**.

6.12.3 Display App Info



In App Info you can find the version number of the installed App.

- 1 Click  -> **Help und Information** -> **Instrument information**.
 - ▶ Various device information is displayed, e.g. the app version.

7 Maintaining the product

7.1 Removing/ changing the permanently installed battery

Instructions for removing the permanently installed battery are available from Testo on request or on the Testo website.



The steps shown there should only be carried out if the device is defective and is to be disposed of.

Any necessary replacement of the permanently installed battery should be carried out only by Testo customer service

7.2 Cleaning the instrument



Do not use any aggressive cleaning agents or solvents! Mild household cleaning agents and soap suds may be used.

- > If the instrument housing is dirty, clean it with a damp cloth.

Cleaning the camera

- > If the camera housing is dirty, clean it with a damp cloth

Cleaning the camera lens

- > Larger dust particles can be removed with a clean optical cleaning brush (available from specialist photo shops).
 - > Use the lens cleaning cloth for light soiling.
-



Do not use cleaning alcohol!

8 Technical data testo 860i

Feature	Value
Infrared resolution	256 x 192 Pixel
Thermal sensitivity (NETD)	50 mK
Field of view	48° x 36 min. Focus distance 0.3 m / 11.8 in
Geometric resolution (IFOV)	3.3 mrad
Refresh rate	9 Hz
Focus	fix
Spectral range	8 ... 14 μ m
Measuring range	-20 ... +350 °C / -4 ... +662 °F
Accuracy	± 3 °C / ± 5.4 °F / ± 3 % of measured value (at -10° ... 40° / +14 ... 104 °F ambient temperature and scene temperature 0 ... 150 °C resp. 100 ... 350 °C / 32 ... 302 °F resp. 212 ... 662 °F)
Emissivity (E)	0.01 ... 1 / manually (via testo Smart App)
Reflected temperature (RTC)	-73.3 ... 1000 °C / -163.9 ... 1832 °F (via testo Smart App)
Operating temperature	-10 ... +50 °C / +14 ... +122 °F
Operating humidity	5 ... 95 % RH non-condensing
Storage temperature	-20 ... +70 °C / -4 ... +158 °F
Drop resistance test	from a height of 1.5 m / 59.1 in
Vibration (IEC 60068-2-6)	2G
Battery	Integrated Lithium-ion battery
Lifetime	2 hrs
Charging current	5 V DC, 2 A
Charging time	90 min for complete charging
IP class	IP 54
Dimensions	165 x 45 x 38 mm / 6.5 x 1.8 x 1.5 in
Mobile device attachment	Clip span: min. 120 mm / 4.7 in, max. 170 mm / 6.7 in and device depth up to max. 12 mm / 0.5 in

Feature	Value
Weight	195 g / 6.9 oz
Directives	EMV: 2014/30/EU RED: 2014/53/EU WEEE: 2012/19/EU RoHS: 2011/65/EU + 2015/863 REACH: 1907/2006

9 Tips and assistance

9.1 Questions and answers

Question	Possible cause	Possible solution
LED flashes red quickly when charging	The charging process was aborted due to an error.	Ensure that the device does not get too hot or too cold when charging.
The device switches off automatically	The remaining battery capacity is too low.	Charge the battery.
The app cannot be found in the store	No correct search term was entered.	Enter a unique search term, e.g. "testo Smart App" or use the link on the Testo website.
Connection to the testo Smart App is not established	testo 860i is not in connection mode.	Ensure that Bluetooth and WLAN are activated. Switch the testo 860i off and on again to restart the connection module.

10 Support

You can find up-to-date information on products, downloads and links to contact addresses for support queries on the Testo website at: www.testo.com.

If you have any questions please contact your local dealer or the Testo Customer Service. You can find contact details on the back of this document or online at www.testo.com/service-contact.



Testo SE & Co. KGaA

Celsiusstr. 1

79822 Titisee-Neustadt

Germany

Phone: +49 (0)7653 681-0

Email: info@testo.de

www.testo.com