

testo 535 – Digital CO₂ meter 0560 0535

Instruction manual



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1 About this document

- The instruction manual is an integral part of the instrument.
- Keep this documentation to hand so that you can refer to it when necessary.
- 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.

Batteries

- Improper use of batteries may cause the batteries to be destroyed, or lead to injury due to current surges, fire or escaping chemicals.
- Only use the batteries supplied in accordance with the instructions in the instruction manual.
- Do not short-circuit the batteries.
- Do not take the batteries apart and do not modify them.

- Do not expose the batteries to heavy impacts, water, fire or temperatures in excess of 60 °C.
- Do not store the batteries in the proximity of metal objects.
- In the event of contact with battery acid: rinse affected areas thoroughly with water, and if necessary consult a doctor.
- Do not use any leaky or damaged batteries.

Warnings

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

Risk of death!

Indicates possible serious injury.

A CAUTION

Indicates possible minor injury.

CAUTION

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 carry out measurements on live components.
- Do not expose handles and feed lines to temperatures in excess of 70°C unless they are expressly approved for higher temperatures. Temperature specifications on probes/sensors refer only to the measuring range of the sensor system.
- Only open the measuring instrument if this is expressly described in the documentation for the purposes of maintenance or servicing.

4 Intended use

The testo 535 is a handy, robust measuring instrument for recording ambient CO_2 values. It is used for risk prevention.

Fields of application are, for example

- Evaluation of the indoor climate
- · Heating systems with room air-dependent operation
- Ventilation systems

The product should not be used in the following areas:

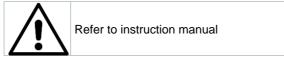
- In potentially explosive atmospheres.
- For diagnostic measurements in the medical field.

5 **Product description**

5.1 Instrument overview



Explanation of icons



6 First steps

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6.1 Inserting / changing batteries

- The instrument is switched off.
- 1 Open the battery compartment (on the back of the instrument) via the snap lock.
- 2 Insert or replace batteries (3 x AA batteries).

Observe the polarity!



3 Close the battery compartment.



When not in use for a long period: Take out the (rechargeable) batteries.

Symbol explanation

	Do not allow children under 6 years of age to play with batteries.
X	Do not throw batteries in the trash.
	Do not charge batteries.
X	Do not place batteries near fire.
	Batteries are recyclable.

6.2 Getting to know the product

6.2.1 Connecting probes

The required probes are permanently connected or integrated. It is not possible to connect any additional sensors.

6.2.2 Switching the instrument on and off

Switching on

- 1 Press and hold down (2 sec) the On/Off key.
- Measurement view is opened:

The current reading is displayed or ----- lights up if no reading is available.

Switching off

- 1 Press and hold down (2 sec) the On/Off key.
- The display turns off.

6.2.3 Switching the display illumination on and off

- The measuring instrument is switched on.
- 1 Press and hold down (2 sec) the MENU/ENTER key.
- The display illumination is switched on or off.

6.3 Establishing a Bluetooth[®] connection

The instrument can be connected to the $testo\ Smart\ App$ via Bluetooth e connection

The measuring instrument is switched on.

To enable the Bluetooth[®] connection for the first time, press and hold (approx. 2 sec) the ◀ key.

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While the instrument is trying to establish a Bluetooth[®] connection, the * icon flashes on the display.

Bluetooth[®] remains enabled until it is disabled manually by pressing and holding (approx. 2 sec) the < key.

The measuring instrument saves the Bluetooth[®] setting and, depending on the configuration, starts up with Bluetooth[®] enabled or disabled.



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6.3.1 Establishing a Bluetooth[®] connection to the testo Smart App

To establish a connection via Bluetooth[®], you need a tablet or smartphone with the Testo Smart App already installed on it.

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

Compatibility:

Requires iOS 13.0 or later/Android 8.0 or later, requires Bluetooth $^{\ensuremath{\mathbb{R}}}$ 4.2.





- \checkmark Bluetooth[®] is enabled in the measuring instrument.
- 1 Open the testo Smart App.
- The app automatically searches for Bluetooth[®] devices in the vicinity.
- 2 In the Sensors menu, check whether the required instrument is connected.
- If necessary, switch the instrument to be connected off and on again to restart the connection module.
- When the testo Smart App is connected to the measuring instrument, the icon appears on the measuring instrument display.

The measuring instrument automatically synchronizes its date and time settings with the testo Smart App.

Once connected successfully, the current measured value from the measuring instrument appears on the app screen in the Live view.

7 Using the product

7.1 Controls on the measuring instrument

The instrument is switched on.

The **testo Smart App** is installed on the smartphone and connected to the instrument via Bluetooth[®].



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Settings and controls are implemented either on the instrument or via the app.

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If the measuring instrument is connected to the **testo Smart App**, settings can only be made via the app. The measuring instrument then remains in the measurement view and other menus, e.g. Settings, cannot be opened.

1	On/Off / MODE/END key
2	Bluetooth [®] / ◀ key
3	Battery indicator
4	Display of measured CO ₂ concentration
5	Selected unit
6	Print / ► key
7	Illumination / MENU/ENTER key

7.1.1 Implementing settings

Selecting, opening and setting functions

1 Press the relevant key to select the functions

Secondary assignment (long press)

All keys with a grey corner have a secondary assignment, which can be selected by pressing and holding the key for a longer time (2 sec).

Adjustable functions

Ensure correct settings: all settings are transferred immediately. There is no Cancel function.

Function	Setting options/comments
Bluetooth [®] (long press)	Switch the Bluetooth [®] connection on or off
Arrow left	Freeze reading (HOLD function), display maximum/minimum value. In configuration mode: Decrease value, select option
On/Off (long press)	Switches the instrument on or off
MODE/END	Select or end multi-point or continuous mean calculation.
Display illumination (long press) MENU ENTER	OFF (display illumination not active) or ON (display illumination active)

Function	Setting options/comments
MENU/ENTER	Open configuration mode
	Start continuous measurement / record multi-point readings (Operation also possible directly on measuring instrument if it is connected to the app) In configuration mode: Confirm input
Print (long press)	Output readings via external printer
Arrow right	In configuration mode: Increase value, select option

7.1.2 Opening configuration mode

- The instrument is switched on and is in the measurement view.
- 1 Press MENU/ENTER until the display changes.
- The instrument is now in configuration mode.
- Press MENU/ENTER to switch to the next function. You can leave configuration mode at any time. To do this, press MODE/END until the instrument has changed to the measurement view. Any changes that have already been made in configuration mode will be saved.

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7.1.3 Setting the unit

Configuration mode is open, "UNITS" is displayed.

- Press < / ▶ to choose between metric ("METR") and imperial ("IMPER") units of measurement and confirm with MENU/ENTER.
- The currently set unit flashes.
- 2 Press ◀ / ► to set the required unit and confirm with MENU/ENTER.

7.1.4 Setting alarm thresholds

- Configuration mode is open, "횎 min" is displayed.
- 1 Press \triangleleft / \triangleright to set the lower alarm threshold value and confirm with MENU/ENTER.
 - "鷩 max" is displayed.
- 2 Press \triangleleft / \triangleright to set the upper alarm threshold value and confirm with MENU/ENTER.

7.1.5 Setting the alarm sound

- Configuration mode is open, "
 ^{••} is displayed.
- 1 Press ◀ / ► to enable/disable the alarm sound ("ON" / "OFF") and confirm with MENU/ENTER.

7.1.6 Displaying temperature and pressure

To calculate the CO_2 concentration, the measuring instrument needs the ambient temperature and the ambient air pressure.

These two parameters are measured by the measuring instrument, but are not output as separate readings; they are only displayed in the settings menu.

- Configuration mode is open.
- Press ◀ / ► to scroll through the configuration menus until "T_AMB" (ambient temperature) is displayed.
- The current ambient temperature is displayed.
- 2 Press ◀ / ► to scroll through the configuration menus until "P_ABS" (absolute pressure) is displayed.

The current ambient air pressure is displayed.

7.1.7 Carrying out a reset of the setting menus

Configuration mode is open, "M. RES" (menu reset) is displayed.

- 1 Press ◀ / ► to select the required option and confirm with MENU/ENTER:
 - NO: Do not carry out reset.
 - YES: Carry out reset. All concealed menus that were hidden via the testo Smart App are displayed again.
- The instrument returns to measurement view.

7.1.8 Carrying out a reset of the measuring instrument

Configuration mode is open, "RESET" is displayed.

- 1 Press ◀ / ► to select the required option and confirm with MENU/ENTER:
 - NO: Do not carry out reset.
 - YES: Carry out reset. The instrument is reset to the factory settings.
- The instrument returns to measurement view.

7.2 Measuring

The instrument is switched on and is in the measurement view.

1 Place the measuring instrument into the position in which the measurement is to be carried out.

IMPORTANT

- The probe contains sensitive visual components. Please handle the probe with care.
- Strong vibrations alter the factory calibration. Testing of measurement values at fresh air 350 to 450 ppm CO₂ (urban air up to 700 ppm CO₂).
- Avoid dew on the probe, otherwise long-term stability will be impaired. If there is dew on the probe, this can lead to higher CO₂ measurement values.
- If the ambient temperature changes (change of measuring location, e.g. indoors/outdoors), the sensor/probe requires an acclimatization phase of a few minutes.
- After the measuring instrument is switched on, there is a sensor warm-up phase of approx. 30 s.
- The CO₂ concentration in the sensor requires approx. 60 s to adjust to the environment. Gently waving the probe reduces the acclimatization time.
- Keep the probe as far away from your body as possible. This avoids any influences due to the CO₂ content of the air you breathe.

7.2.1 Freezing a reading, displaying the maximum/minimum value

The current reading can be frozen. The maximum and minimum values since the last time the instrument was switched on in the standard view or during a multi-point or continuous measurement can be displayed.

1 Press < several times until the desired value is displayed.

The following are displayed in turn:

- Hold: frozen measured value
- Max: Maximum value
- Min: Minimum value
- o Current measuring value

▶

7.2.2 Resetting maximum/minimum values

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

- 1 Press < several times until Max or Min lights up.
- 2 Hold down ◄ (approx. 2 s).

All maximum and minimum values are reset to the current reading.

7.2.3 Carrying out multi-point mean calculation

- 1 Press MODE/END.
- Ilashes.

▶

- The number of readings recorded is displayed in the upper line, while the current reading is displayed in the lower line.
- 2 To record readings (in the desired quantity):

Press MENU/ENTER (several times).

3 To end measurement and calculate the mean value:

Press MODE/END.

▶ 💿 and [≏]t flash.

The number of measured values and the calculated multi-point mean value are displayed.

4 To switch back to the measuring view:

Press MODE/END.

7.2.4 Carrying out continuous mean calculation

- 1 Press MODE/END twice.
- Ilashes.
- The elapsed measuring time (mm:ss) is displayed in the upper line, while the current reading is displayed in the lower line.
- 2 Start measurement:

Press MENU/ENTER.

3 To interrupt/continue measurement:

Press MENU/ENTER each time.

4 To end measurement and calculate the mean value:

Press MODE/END.

▶ ④ and [⊕] flash.

The measurement period and the calculated continuous mean value are displayed.

5 To switch back to the measuring view:

Press MODE/END.

7.3 Printing data

A testo Bluetooth $^{\ensuremath{\text{B}}\xspace/IRDA}$ printer (order no. 0554 0621) is connected via Bluetooth and switched on.



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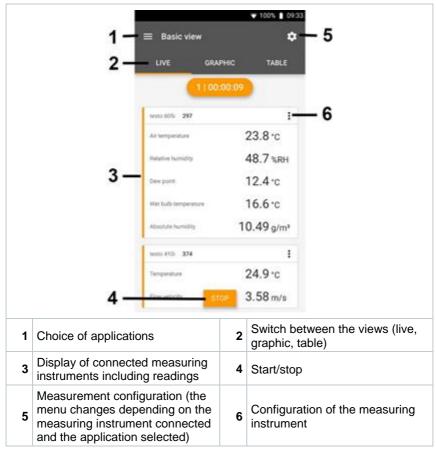
When first setting up a connection between the testo measuring instrument and the testo Bluetooth[®]/IRDA printer, the initialization phase can last up to 30 seconds.

- Press and hold \blacktriangleright to transfer the data to the printer.
- Data is printed out (LED on the printer flashes green).

8 Controls via testo Smart App

If the measuring instrument is connected to the testo Smart App, it is primarily operated via the app. The measuring instrument remains in the measurement view and settings menus cannot be opened on the measuring instrument.

8.1 Overview of operating controls



Additional	raditional of moore on the user internace of the upp (not numbered)	
←	One level back	
×	Exit view	
<	Share measurement data/report	
Q	Searching	
*	Favourite	
Î	Deleting	
\bigcirc	Further information	
E	Display report	
-	Multiple selection	

Additional symbols on the user interface of the app (not numbered)

The Main menu can be accessed via the icon at top left. To exit the main menu, select a menu or right-click on the guided menus. The last screen displayed is shown.

	Measure		💎 48% 🚺 3:40 PM
	Customer		Be sure. testo
•	Memory		be suie.
0	Sensors		Measure
\$	Settings		
•	Help and Information	÷	Customer
	Other applications		
		•	Memory
		۲	Sensors
		¢	Settings
		0	Help and Information
			Other applications

8.2 App options

8.2.1 Setting the language

- ¹ Click on **.**
- 2 Select Settings.
- 3 Select Language.
- A selection list is displayed.
- 4 Select the required language.
- The language is changed.

8.2.2 Displaying App Info

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

- Click on 📃.
- 2 Select Help and Information.
- 3 Select Instrument information.

The version number of the app and the ID are displayed.

8.2.3 Displaying the tutorial



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The tutorial guides you through the first steps in operating the testo Smart App.



2 Select Help and Information.

The tutorial is displayed. In the tutorial, swipe to display the next page.

3 Click X to quit the tutorial.

8.3 Application menus

8.3.1 Selecting an application menu

Click on 🔳.

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A selection of menus for various applications is displayed.

- 2 Select the required application.
- Your selected application is displayed.

8.3.2 Setting favourites

- Click on 📃.
- A selection of menus for various applications is displayed.
- 2 Select the application you want to set as a favourite.
- ³ Click on $\stackrel{\text{tr}}{\simeq}$.
- The star is displayed in orange: 🖈.

8.3.3 Displaying information about an application

- Click on 🔳.
- A selection of applications is displayed.
- ² Click on ⁽¹⁾.
- The information about an application is displayed.

8.4 Making measuring instrument settings

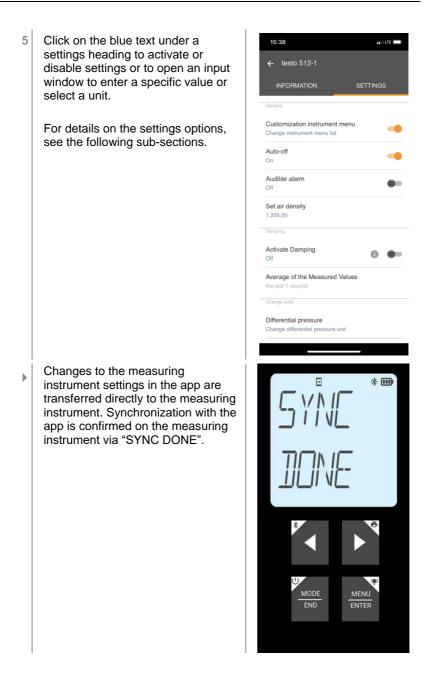
The measuring instrument is connected to the testo Smart App.



 \checkmark

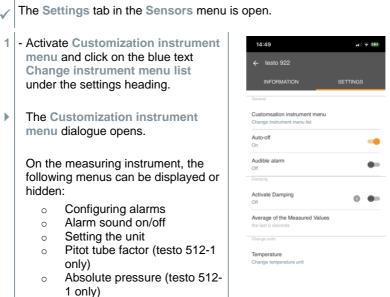
- The main menu opens.
- ² Olick on Sensors.
- The Sensors menu opens.
- 3 Click on the required measuring instrument.
- Information about the model, order number, serial number and firmware version is displayed.
- 4 Click on the Settings tab.
- A window with settings for the respective measuring instrument opens.

In addition to the settings that can be performed on the measuring instrument, additional settings can also be made.



8.4.1 Configuring the measuring instrument menu

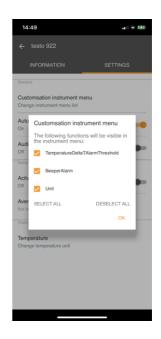
The testo Smart App can be used to set which settings menus should be available or hidden on the measuring instrument itself.



2 Deactivate the checkboxes for the measuring instrument menus that are no longer to be displayed on the measuring instrument itself.

The menus belonging to the deactivated entries will no longer be displayed in the measuring instrument menu after the next synchronization.

> These settings can be reset via the menu reset "M.RES" and then all settings menus will be displayed on the measuring instrument again.



8.4.2 Setting Auto Off

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The Settings tab is open.

- 1 Enable Activate Auto-off using the slider.
- The measuring instrument switches off automatically if no key is pressed for 10 min.

Exception: a frozen reading is shown on the display ("Hold" is displayed).

8.4.3 Activating damping

If the readings fluctuate wildly, it is advisable to damp the readings.

The Settings tab is open.

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- 1 Enable Activate damping using the slider.
- 2 Click on Average of the measured values.
- ▶ The window for Average of the measured values opens.
- 3 Enter a value between 2 and 20 measured values.
- Changes to the measuring instrument settings in the app are transferred directly to the measuring instrument. Synchronization with the app is confirmed on the measuring instrument via "SYNC DONE".

8.4.4 Configuring alarms

The standard view with the LIVE tab is open.

Click on

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- 2 Select Alarm configuration.
- ▶ The menu with the overview of alarms that can be activated opens.
- 3 Click on the checkbox to activate a specific alarm.
- 4 Click on EDIT.
- The input window for activating and defining upper and lower warning and alarm values is displayed.
- 5 Click OK to confirm the settings.
- Changes to the measuring instrument settings in the app are transferred directly to the measuring instrument. Synchronization with the app is confirmed on the measuring instrument via "SYNC DONE".

8.5 Display of the readings

The available readings can be displayed in different views.

• Live view:

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The readings transmitted by the measuring probes can be displayed in a live view. Readings from all connected measuring probes are displayed.

• Graphic view:

Up to four different readings can be displayed in graph format. Readings to be displayed can be selected by tapping on a reading above the diagram.

• Table view:

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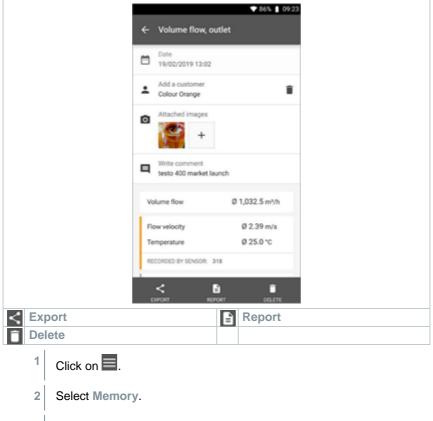
In the table view, all readings are displayed in sequence according to date and time. Different readings from the individual measuring probes can be displayed by pressing $\blacktriangleleft \triangleright$.

8.6 Adjusting the view

Click on

- 2 Select Edit view.
- An overview of all measurement channels and their measurement parameters is displayed.
- 3 Deselect the "check mark" to hide a measuring instrument's measurement channel.
- 4 Click ▼ to select the unit of a measurement channel.
- 5 Click OK to confirm the settings.

8.7 Exporting readings



3 Click on Select measurement.

8.7.1 Excel (CSV) Export

Click on ≤.

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- A selection of export options is displayed.
- 2 Click on Start export.
- A selection of sending/export options is displayed.
- 3 Select the required sending/export options.

8.7.2 PDF Export

- 1 Click on Report.
- A selection window is displayed.
- 2 If required, activate the Create PDF with all readings button.
- 3 Click on Create.

1

For measurements, please be aware that the option **Create PDF with all readings** is only possible up to 30 pages, due to the resulting file size and number of pages. In the testo DataControl software, however, PDF reports can be created for all measurements without any restrictions.

- A report containing all the information is created.
- A selection window is displayed. The report can be sent via e-mail or Bluetooth[®].
- 4 Click on E-mail or Bluetooth®.
- The report will be sent.

9 Maintaining the product

9.1 Inserting / changing batteries

The instrument is switched off.

- 1 Open the battery compartment (on the back of the instrument) via the snap lock.
- 2 Insert or replace batteries (3 x AA batteries).

Observe the polarity!



3 Close the battery compartment.



When not in use for a long period: Take out the (rechargeable) batteries.

9.2 Cleaning the instrument

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



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

10 Technical data for testo 535

Feature	Value
Measurement parameters	ppm %
Accuracy (at 22°C, ±1 digit)	±(100 ppm + 5% of measuring value)
Resolution	1 ppm
Temperature coefficient	±(2 ppm + 0.4% of measuring value) / K
Measuring range	0 to 10,000 ppm
Operating temperature	0 to +50 °C
Storage temperature	0 to +50 °C
Operating humidity	0 to 80 %RH
IP class	IP20
Level of contamination	PD2
Max. operating altitude	≤ 2000 m above sea level
Nominal output	2 W @ 4,5 V DC
Battery type	3 x 1.5 V AA battery (included in the scope of delivery)
Battery life	>30 h
Dimensions	229 x 60 x 28 mm
Weight	229 g

11 Tips and assistance

11.1 Questions and answers

Question	Possible cause	Possible solution
is displayed (top right on the display)	Instrument battery is almost spent	Replace instrument battery
Instrument switches itself off	 Auto Off function is switched on 	 Switch off Auto Off function
	 Remaining battery capacity is insufficient 	 Change the battery.
Display responds sluggishly	Ambient temperature is very low	Increase ambient temperature
Display:	Sensor error	Please contact your dealer or Testo Customer Service.
Display: OOOO	Permissible measuring range has been exceeded	Keep within the permissible measuring range
Display: UUUU	Permissible measuring range has been undershot	Keep within the permissible measuring range
Display: BT Fail	Bluetooth connection could not be established	 Check Bluetooth[®] connections.
		 Restart measuring instrument, restart testo Smart App.
Display: Print Fail	Printout could not be performed successfully	 Check Bluetooth[®] connections.
		 Switch printer off and then on again.
Display: Probe Fail	Probe damage	Please contact your dealer or Testo Customer Service.
Display: OTA Fail	The update process "over the air" of the measuring instrument could not be completed successfully.	Restart the measuring instrument and testo Smart App and check the Bluetooth [®] connection.

Question	Possible cause	Possible solution
Display: APP Lost	Connection to the testo Smart App was interrupted. Keys are locked for 3 s.	Restart the measuring instrument and testo Smart App and check the Bluetooth [®] connection.

If we have not been able to answer your question: please contact your local dealer or Testo Customer Service. See the back of this document or the www.testo.com/service-contact web page for contact details.

11.2 Accessories and spare parts

Description	Order no.
Bluetooth [®] /IRDA printer	0554 0621

For a complete list of all accessories and spare parts, please refer to the product catalogues and brochures or visit our website www.testo.com



Testo SE & Co. KGaA

Celsiusstr. 2 79822 Titisee-Neustadt Germany Phone: +49 (0)7653 681-0 E-mail: info@testo.de www.testo.com