Testo 552 - Digital Vacuum Gauge with Bluetooth

Instruction manual

Content

1 Safety and waste disposal

1.1 About this document

- The instruction manual is an integral part of the instrument.
- Keep this document throughout the entire operating life of the instrument.
- Always use the complete original instruction manual.
- Please read this instruction manual through carefully and familiarise yourself with the product before putting it to use.
- Pay particular attention to the safety instructions and warning advice in order to prevent injury and damage to the product.

1.2 Safety

General safety instructions

- Only operate this instrument in the proper manner, for its intended purpose and within the parameters specified in the technical data.
- Do not apply any force to open the instrument.
- Do not operate the instrument if there are signs of damage at the housing, mains unit or connected cables.
- Always comply with the locally valid safety regulations when carrying out measurements. Dangers may also arise from objects to be measured or the measuring environment.
- 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.
- 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.

- Do not use any leaky or damaged batteries.

- In the event of contact with battery acid: rinse affected areas thoroughly with water, and if necessary consult a doctor.

- Take batteries out of the instrument immediately if they are not functioning properly or if they show signs of overheating.

- Remove all batteries from the instrument if it is to remain unused for a longer period.

Warnings

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

Display	Explanation
⚠ WARNING	Indicates possible serious injury.
⚠ CAUTION	Indicates possible minor injury.
ATTENTION	Indicates possible damage to equipment.

1.3 Waste disposal

- Dispose of faulty rechargeable batteries and spent batteries in accordance with the valid legal specifications.

- At the end of its useful life, dispose of the instrument via separate collection for electro- and electronic devices. Please observe local regulations concerning waste disposal. Or alternatively return the product to Testo for disposal.

2 General technical data

Feature	Values
Vacuum measuring range	0 to 26.66 mbar / 0 to 20,000 microns
Sensor overload (relative)	5 bar / 72 psi
Vacuum resolution	1 micron (from 0 to 1,000 microns) 10 microns (from 1,000 to 2,000 microns) 100 microns (from 2,000 to 5,000 microns) 500 microns (from 5,000 to 10,000 microns) 5,000 microns (from 10,000 to 20,000 microns

Feature	Values
Vacuum accuracy	±(10% of m.v. +10 microns) (100 to 1,000 microns)
Operating temperature	-10 to 50 °C / 14 to 122 °F
Storage temperature	-20 to 50 °C / -4 to 122 °F
Temperature measuring range	-10 to 50 °C / 14 to 122 °F
Temperature resolution	0.1 °C / 0.1 °F
Battery life	50 h (without background illumination and Bluetooth)
Protection class	IP 42
Parameter	mmHG, Torr, mbar, hPa, micron, inH2O, inHg. Pa
Measuring cycle	0.5 sec
Sensor	1× Pirani sensor
Connections	- 2× 7/16" UNF - 1x MiniDIN (t570)
Warranty	2 years Warranty terms: see website www.testo.com/warranty

Setting values alarm treshold

Unit	Setting range	Resolution
mbar / hPa	0 - 7,5	0,05
micron	0 - 7500	50

2.1 Bluetooth module

The use of the wireless module is subject to the regulations and stipulations of the respective country of use, and the module may only be used in each case in countries for which a country certification has been granted.

The user and every owner undertake to adhere to these regulations and prerequisites for use, and acknowledge that the re-sale, export, import, etc. in particular in, to or from countries without wireless permits, is their responsibility.

| Feature	Value
Bluetooth	Range 20 m (free field) (Varies depending on the capability of the mobile terminal device used.)
Bluetooth type	LSD Science & Technology Co., Ltd L series BLE module (08 May 2013) based on TI CC254X chip
Qualified Design ID	D030430
Bluetooth radio class	Class 3
Bluetooth company	10274

3 Description of the instrument

3.1 Use

The testo 552 is a digital vacuum gauge for the precise measurement of extremely small pressures in the vacuum range. This allows you to monitor the evacuation (usually during commissioning) of refrigeration systems and heat pumps.

With the testo 552, you can therefore measure the current pressure in a refrigeration system, and thus gather information about the degree of dehumidification and the removal of foreign matter (oils, foreign gases, etc.).
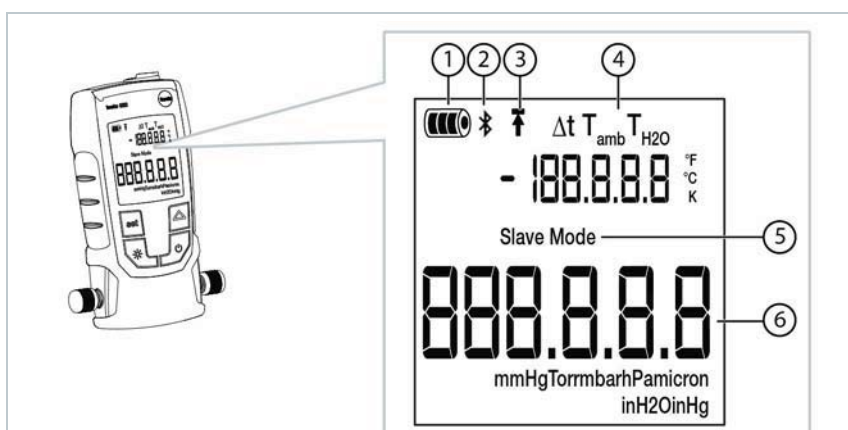
A vacuum gauge is always used in conjunction with a vacuum pump (generates the vacuum). A manifold (analogue or digital) is also often used in order to obtain controlled access to the refrigeration system.
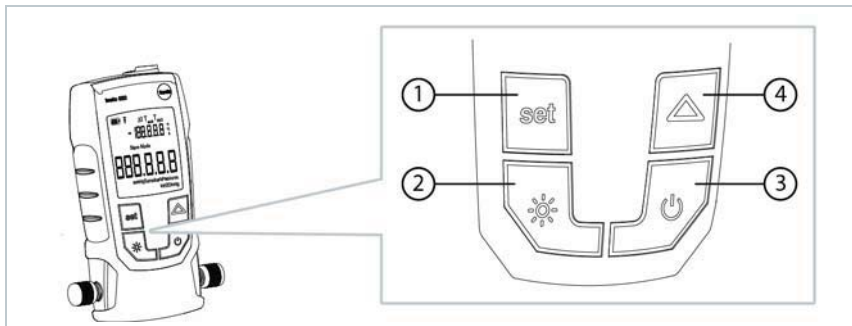
3.2 Instrument overview
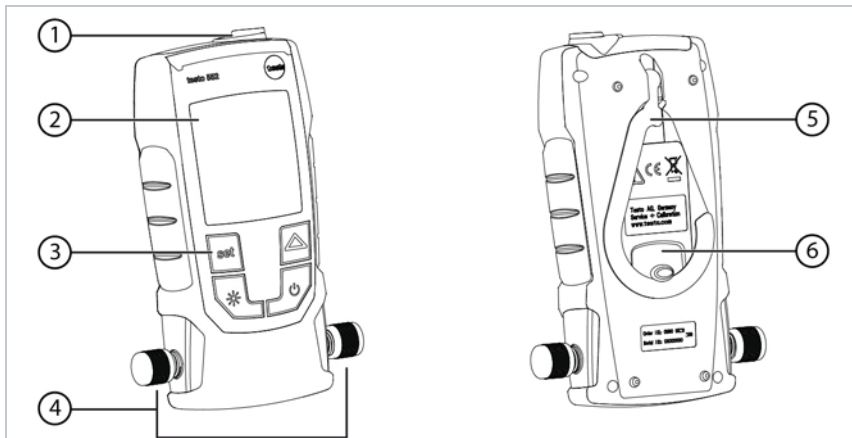
	Element	Function
1	MiniDIN probe socket	Cable connection for connecting to the testo 570.
2	Display	Displays instrument status icons, measuring units and measuring values.
3	Control keys	Instrument operation.
4	Connections 7/16" UNF, brass	Connection of refrigerant hoses, vacuum pump, manifolds, etc..
5	Hook	Suspension device
6	Battery compartment	Contains two AA batteries.

3.3 Displays overview

	Element	Function
1	Icon [🔋]	Displays the remaining battery capacity. 🔋 >75% 🔋 >50% 🔋 >25% 🔋 <10%
2	Icon [✷]	Bluetooth® appears when Bluetooth has been activated on the instrument.
3	Icon [⬆]	An alarm threshold is set.
4	Temperature display	- selected, currently measured temperature - Measurement parameter: T_{H2O} = evaporation temperature of water T_{amb} = ambient temperature Δt = temperature difference between evaporation temperature of water and ambient temperature - unit set (°C, °F)
5	Slave Mode	Appears when the testo 552 is connected to the testo 570 via a connecting cable and the testo 570 is in Evacuation mode.
6	Pressure display	Displays the currently measured pressure, the measurement parameter and the unit set (mmHG, Torr, mbar, hPa, micron, inH2O, inHg).

3.4 Control keys overview

	Element	Function
1	set	- Switches to the settings. - Switches between the set-up options. (This function is disabled, when connected to the App with BT)
2	☀	Switches the display illumination on or off.
3	⏻	Switches the instrument on or off.
4	△	- Switches between the temperature displays. - Navigates in the Set menu.
5	set + △	Switches Bluetooth® on or off (press and hold down for 3 sec.)

3.5 Connection options overview

In regard to the following connection options, the testo 570 is used to represent any manifold and can use the testo 552 as a probe via a MiniDIN connecting cable (see Option 2).

Option 1 (recommended)

ℹ️ The testo 552 is connected at the point that is furthest from the vacuum pump. This ensures that a sufficiently deep vacuum is generated throughout the system in order to remove any moisture or foreign gases that may be present.

Option 2

Option 3

Option 4

Option 5

4 Operation

4.1 Connecting

ℹ️ Always use refrigerant hoses that are specifically intended for evacuations.

| 1 | - Remove sealing caps.
- Connect the testo 552 to the circuit. | |

4.2 Switching instrument on and off

1   - Press ⏻.

▶   The instrument switches on or off.

▶   The instrument displays oooooo when ambient pressure is applied to the connections. The display indicates the applied pressure value once the applied pressure is within the measuring range. (0 to 20,000 microns).

4.3 Switching background illumination on and off

1   - Switch the instrument on.

    - Press ☼.

▶   The background illumination switches on or off.

4.4 Setting units and AutoOff

The set-up menu must always be completely navigated through, even if only one parameter needs to be changed.

1	- Switch the instrument on.	
2	- Press set to change settings.	
3	- Press △ to set the pressure unit required.	mbar
4	- Press set.	
▶	The unit is set.	
▶	The display shows the temperature unit.	
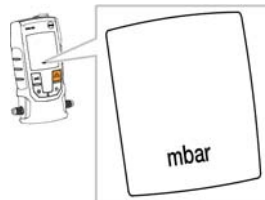
5	- Press △ to set the temperature unit required.	
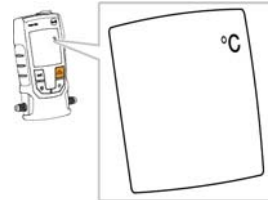
6	- Press set.	
▶	The temperature unit is set.	
▶	The display shows the setting for the alarm threshold.	

ℹ Adjusting the alarm threshold causes an alarm to be triggered when the set value is exceeded.

7	- Press △ to set the alarm threshold.	
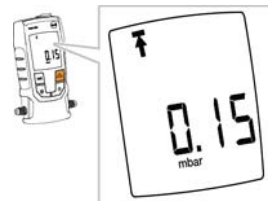
8	- Press set.	
▶	The alarm threshold is set.	
▶	The display shows the AutoOff setting.	

ℹ If AutoOff is activated, the instrument switches off after 15 minutes when ambient pressure is applied to the sensor.

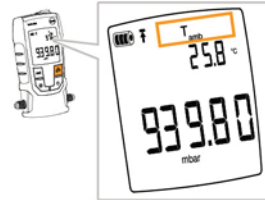| 9	- Press △ to switch AutoOff on or off.	
10	- Press set.	
▶	All settings are stored.	
▶	The display changes to the measuring mode.	
▶	The instrument can now be used.	
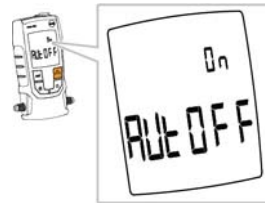
4.5 Displaying temperature values

1	- Press △ to change the temperature measurement parameter.	

▶ The temperature measurement parameter switches between TH2O, Tamb and t.

> 🛈 t is displayed in K for °C, and in °F for °F.

4.6 Establishing a Bluetooth® connection

> 🛈 You need a tablet or smartphone with the Testo Smart Probes App already installed on it to be able to establish a Bluetooth connection.
>
> You can get the App for iOS instruments in the App Store or for Android instruments in the Play Store.
>
> Compatibility:
>
> Requires iOS 8.3 or later / Android 4.3 or later
> Requires Bluetooth 4.0

1 - Press **set** and △ simultaneously and hold down for 3 seconds.

▶ - When the Bluetooth icon is shown on the display, Bluetooth is switched on.
   - Once the APP is opened, the instrument will be connected automatically if it is within range. The instrument does not have to be connected to the smartphone / tablet beforehand via settings.

2 - Press **set** and △ simultaneously and hold down for 3 seconds.

▶ - When the Bluetooth icon is no longer shown on the display, Bluetooth is switched off.

| Display	Explanation
✸ flashes	There is no Bluetooth® connection, or a potential connection is being searched for.
✸ is permanently displayed	There is a Bluetooth® connection
✸ is not displayed	Bluetooth® is disabled.

4.7 1.1. Overview of operating controls
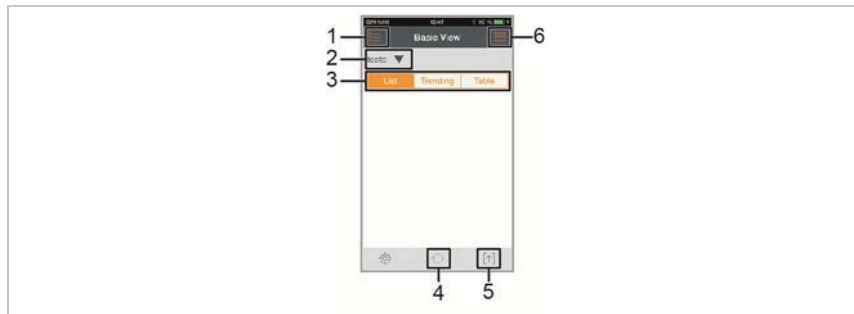
1. [icon] Choice of applications.

2. [icon] testo ▼ Display of connected testo 552.

3. Switch between the views (list, graphic diagram, table).

4. [icon] Restarts the measuring value recording in graph and table format.

5. [icon] Export the readings.

6. [icon] Options menu.

4.8 App options

4.8.1 Set "Language"

1 - Tap [icon] -> Settings -> Language

▶ A selection list is displayed.

2 - Tap the required language.

▶ The selected language receives a green check mark.

3 - Tap   several times until the measurement view is displayed.

▶ The language has been changed.

4.8.2 Display Tutorial

	The Tutorial guides you through the first steps when operating the testo Smart Probes App.

1	- Tap ▤ -> Tutorial

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

2	- Tap X to close the Tutorial.

4.8.3 Display testo website

	An internet connection is required to display the testo website.

1	- Tap ▤ -> About/Link -> Testo

▶	The page www.testo-international.com is displayed.

4.8.4 Display App Info

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

1	- Tap ▤ -> About/Link -> Info

▶	The App's version number is displayed, as well as the ID.

2	- Tap several times until the measurement view is displayed.

4.9 List, graphic diagram and table view

The available readings can be displayed in different ways in the various views.

- List view
  Displays the readings transmitted by the testo 552 in the form of a list.
  Readings from all connected testo 552 are displayed here.

- Graphic diagram view
  The graphical progression of up to four different readings can be displayed.
  Tap on a reading above the diagram to select the readings to be displayed.

- Table view
  In the Table view, all readings are displayed in sequence according to date and time. The different readings from the individual testo 552 can be selected by pressing ◄ ► .

4.10 Exporting readings

4.10.1 Excel (CSV) Export

1 | - Press ⬆ .

▶ | A selection of export options appears.

2 | - Press Export Excel (CSV).

▶ | A list of readings is displayed.

3 | - Press ⬆ .

▶ | A selection of sending/export options appears.

4 | - Select your required sending/export options.

4.10.2 PDF Export

1 | - Press ⬆ .

▶ | A selection of export options appears.

2 | - Press Export PDF.

▶ | A PDF is created and saved on your mobile terminal device (Android only) or sent via e-mail (iOS and Android).

3 | - Press Done to exit the detailed view.

4.10.3 Exporting a graph

1 | - Press ↑.

▶ | A selection of export options appears.

2 | - Press Export Graph.

▶ | An image file of the trend display is created.

3 | - Press ↑.

▶ | A selection of sending/export options is displayed.

4 | - Tap on the sending/export option you need

4.11 Operating as a probe on the testo 570

The testo 552 has no save or transmission function of its own.

By connecting the testo 552 to the testo 570, the data is transferred to the testo 570. From there the data can be saved or managed via the EasyKool software.

In combination with the testo 570, the testo 552 can be used as a high precision vacuum probe, if connected to the front of the testo 570 using the connection cable 0554 5520. The firmware version 1.09 or later must be installed for this.

Before connecting both instruments, the testo 552 must be switched on and the same pressure unit must be set on both instruments.

The testo 570 will only connect to the testo 552 once the Evacuation mode has been activated. When used as a probe, the testo 552 cannot be operated, all keys are deactivated.

In order to be able to use the readings from the testo 552 via the testo 570 in the EasyKool software, you need EasyKool software version 4.0 or later.

1	- Connect the connecting cable to the MiniDIN probe socket of the testo 552.
2	- Connect the connecting cable to the front-end MiniDIN probe socket of the testo 570.
3	- On the testo 570 set Evacuation mode.
▶	The testo 552 switches to Slave mode.
▶	The keys of the testo 552 are deactivated.
▶	The readings are transmitted to the testo 570.
4	- Remove the connecting cable.
▶	The testo 552 exits Slave mode.

5 Maintenance

5.1 Changing batteries

1	- Switch the instrument off.
2	- Flip hook up.
3	- Open the battery compartment.
4	- Remove batteries.
5	- Insert new batteries, observing the indications inside the battery compartment.
6	- Close the battery compartment.
7	- Fold hook down.

5.2 Cleaning the instrument

	Contaminants such as oil may impair the accuracy of the vacuum sensor. Complete the following steps to clean the sensor.

CAUTION
Carrying out cleaning with the instrument switched on may result in damage to the sensor!
- Before cleaning, switch the instrument off!

CAUTION
Damage to the sensor due to sharp objects!
- Do not insert any sharp objects into the connections!

1 | - Switch the instrument off.

2 | - Put a few drops of rubbing alcohol into one of the two connections.

3 | - Seal the opening by placing your finger on it or screw on the sealing caps.
  | - Shake the instrument briefly.

4 | - Remove all the alcohol from the instrument.

5 | - Repeat this process at least twice.

6 | - Leave the instrument to dry for at least 1 hour. To dry the sensor faster, you can connect the probe directly to a vacuum pump and draw vacuum.

6 Tips and assistance

6.1 Questions and answers

Question	Possible cause / solution
Readings are incorrect.	- Check that the testo 552 is connected properly. - Connect the testo 552 directly to the vacuum pump in order to check the values. - Check that all hoses are leak-tight. - Clean the sensor as described in the Cleaning the instrument section.
Instrument displays oooooo	The applied pressure is outside the specified measuring range. (0 to 20,000 microns).

If we have not been able to answer your question, please contact your dealer or Testo Customer Service. You will find contact details on the back of this document or on the website
www.testo.com/service-contact

6.2 Accessories and spare parts

Description	Item no.
Connecting cable for testo 552	0554 5520

7 EC Declaration of Conformity

ℹ The use of the wireless module is subject to the regulations and stipulations of the respective country of use, and the module may only be used in countries for which a country certification has been granted. The user and every owner has the obligation to adhere to these regulations and prerequisites for use, and acknowledges that the re-sale, export, import etc. in particular in countries without wireless permits, is his responsibility.

Country	Comments	
Australia	E1561	
Turkey	Authorized	
Canada	Product IC: 12231A-05605522 see IC Warnings	
USA	Product FCC ID: 2ACVD05605522 see FCC Warnings	
Europe + EFTA	See C€ - declaration of conformity	
Bluetooth SIG Listing	Bluetooth®	Range >20 m (free field)
	Bluetooth® type	LSD Science & Technology Co., Ltd, L Series BLE Module (08 Mai 2013) based on TI CC254X chip
	Qualified Design ID	D030430
	Bluetooth® radio class	Class 3
	Bluetooth® company ID	10274

The device has been evaluated to meet general RF exposure requirement, The device can be used in portable exposure condition without restriction

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.

NOTE: 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 connected.
-Consult the dealer or an experienced radio/TV technician for help.

This device complies with Industry Canada license-exempt RSS standard(s).
Operation is subject to the following two conditions:
    (1) this device may not cause interference, and
    (2) this device must accept any interference, including interference that may cause undesired operation of the device.
Cet appareil est conforme avec Industrie Canada RSS exemptes de licence standard(s).
Son fonctionnement est soumis aux deux conditions suivantes:
(1) cet appareil ne peut pas provoquer d'interférences, et
(2) cet appareil doit accepter toute interférence, y compris celles pouvant causer un mauvais fonctionnement de l'appareil.