testo 515 Ex combination leak detector

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Instruction manual

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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 on the housing, mains unit 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.
- Only use the original mains unit from Testo.
- The substantial safety and health requirements are fulfilled in accordance with the following norms:
    - EN IEC 60079-0:2018 / UL/CSA 60079-0
    - EN 60079-1:2014 / UL/CSA 60079-1
    - EN 60079-11:2012 / UL/CSA 60079-11
- The leak detector must not be exposed to the processes that generate significant electrostatic charges.

Batteries

- Improper use of batteries may cause the batteries to be destroyed, or lead to injury due to current surges, fire or escaping chemicals.
- Do not expose the batteries to heavy impacts, water, fire or temperatures in excess of 60 °C.
- In the event of contact with battery acid: rinse affected areas thoroughly with water, and if necessary consult a doctor.
- Immediately stop the charging process if this is not completed in the given time.

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 carry out measurements on live components.
- Do not operate the instrument in environments above 80 %RH (condensing).
- Do not use in damp environments. Do not use in the rain or similar conditions. It is recommended to use indoors.
- Observe the permissible storage and transport temperatures and the permissible operating temperature (e.g. protect the measuring instrument from direct sunlight)!
- Always carry out a function test before searching for leaks.
- If the instrument is misused or subjected to force, all warranty claims will be voided!
- Do not allow the sensor to come into contact with moisture or acids, as it will react cross-sensitively.

4 Intended use

The testo 515 Ex is a leak detector for the short-term detection of leaks in gas and refrigerant systems in potentially explosive atmospheres of the class **ATEX II 3 G Ex ic dc IIC T3 Gc** according to Directive 2014/34/EU (ATEX) / UL/CAS: **Class I, Zone 2, AEx ic dc IIC T3 Gc**.

The following substances can be detected:

- With gas sensor:
  - Methane CH_4
  - Propane C_3H_8
  - Butane C_4H_{10}
  - Hydrogen H_2
- With refrigerant sensor:
  - all CFCs, HCFCs, HFCs, HFOs, mixtures (including A2Ls)

The instrument is not suitable for precise measurement of the concentration.

ATTENTION

Explosive limits of flammable substances
A flammable substance in the air has a lower explosive limit (LEL) and an upper explosive limit (UEL).
The air/gas mixture is flammable anywhere between these two limits, potentially leading to an explosion (critical range).
Below the LEL, the mixture is too lean for an explosion, and above the UEL it is too rich (non-critical range).
The explosive limits depend on the substance:

- **Methane CH_4: LEL 4.4 vol.%**
- **Propane C_3H_8: LEL 2.1 vol.%**
- **Butane C_4H_{10}: LEL 1.86 vol.%**
- **Hydrogen H_2: LEL 4.0 vol.%**
- **Refrigerant: There are flammable and non-flammable refrigerants. R290, for example, is chemically identical to propane and therefore equally flammable.**

ATTENTION

Restrictions on the field of use

- **Do not use the instrument as a monitoring instrument for personal safety! The instrument is not protective equipment!**
- **Do not use the instrument as a gas analyzer! The sensor detects almost all combustible gases alike.**

4.1 Special conditions for the usage

- The leak detector must only be used in potentially explosive atmospheres of the IIC T3 class.
- The leak detector must only be used in the ambient temperature range from -10 °C to +50 °C.
- Product intended to be used and charged only within a pollution degree 2 environment. Not intended to be transported, once deployed in a controlled Pollution degree 2 environment. Use, transport or charge outside of controlled pollution degree 2 environment shall require for the product to be serviced by the manufacturer or on behalf of the manufacturer under their responsibility.
- The leak detector must not be exposed to the processes that generate significant electrostatic charges.
- Do not open device when an explosive atmosphere is present.
- The leak detector must only be recharged using the corresponding charger outside of a potentially explosive atmosphere in the ambient temperature range from 0 °C…+35 °C. Do not replace the battery in hazardous location.
- The charging voltage must not be higher than U_m = 5.5 V.
  This voltage can be provided using one of the following measures in accordance with IEC 60079-14:
  - making sure that U_m in a SELV/PELV system can not be higher than 50 V AC or 120 V DC;
  - using a safety transformer that fulfils all requirements according to IEC 61558-2-6 or an equivalent technical standard;
  - connecting it directly to an instrument that fulfils all requirements according to IEC 62368-1 and its successors, IEC 61010-1 or an equivalent technical standard;
  - using a direct power supply source, e.g cells or batteries.
- The expected short-circuit current during the charging process must not exceed 50 A.

Use only the supplied USB-C cable to fulfil all charging requirements.

5 Product description

5.1 Instrument overview

1	Control keys	**2**	Display
3	Sensor	**4**	Flexible sensor tube
5	Sensor head	**6**	Charging socket for rechargeable battery

Symbol explanation

	Observe operating instructions
	Device may be used in potentially explosive atmospheres.
	Declaration of conformity: Products marked with this symbol comply with all applicable Community regulations of the European Economic Area.
	At the end of the product's useful life, dispose of it in accordance with local regulations for the separate collection of electrical and electronic equipment, or return it to Testo for disposal.

6 First steps

6.1 Charging the rechargeable battery

⚠ DANGER

Do not charge the rechargeable battery in potentially explosive atmospheres!

Only charge the battery using the original Testo mains unit supplied.

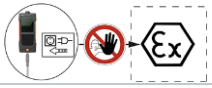
The instrument indicates that the battery needs to be charged via a red battery symbol.

1. Connect the instrument to the mains via the mains unit. To do this, insert the plug of the mains unit into the charging socket on the underside of the instrument.

When the mains unit is plugged in during operation, the instrument switches off due to ATEX regulations.

The instrument can become very warm during charging.

Symbol explanation

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

6.2 Getting to know the product

6.2.1 Switching the instrument on and off

Switching on

Only switch on the instrument in fresh air, since automatic zeroing is carried out when the instrument is switched on. The ambient temperature and ambient humidity during zeroing should correspond to the ambient conditions at the

measuring location. If necessary, zero again manually at the measuring location (switch off and on again).

If the unit is not used for a prolonged period of time, the sensor will become contaminated. Particularly if the instrument has not been in operation for a prolonged period of time (> 2 weeks), it should be left switched on for a while before being used. The longer it has not been in operation, the longer this additional warming-up phase should be. Please note that the instrument switches itself off by default after 10 min of inactivity.

1 Press and hold down (2 sec) the **On/Off** key.

Warm-up phase (HEAT)

- The instrument starts up. With regular use, the warm-up period takes approx. 30 sec (gas sensor) / approx. 60 sec (refrigerant sensor) and is symbolized by a countdown.
- Following the warm-up period, the detection view is displayed.

Switching off

⚠ CAUTION

Caution! Risk of burns due to hot sensor head after prolonged operation.

- **Before touching the sensor head or packing the instrument: switch instrument off and let the sensor head cool down.**

1 Press and hold down (2 sec) the **On/Off** key.

- The instrument is switched off.

Auto OFF

After 10 minutes of inactivity (no user input, no gas concentration above the warning threshold), the instrument switches itself off. The switch-off is signalled beforehand by an alarm sound and a 10 sec countdown.
You can prevent the instrument from switching off by pressing any key within 10 seconds.

7 Using the product

7.1 Controls

1	Sound / Gas key
2	MODE / On/Off key
3	Manual / Auto mode
4	Graphical display
5	Maximum value
6	Display for alarm signal, error codes and charge level
7	Current value
8	Detection parameter
9	SENS. (Sensitivity) / Illumination key
10	VIEW / ->0<- key (zeroing)

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 white corner have a secondary assignment, which can be selected by pressing and holding the key (2 sec).

Adjustable functions

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

	Function	Setting options/comments
MODE	On/Off (long press 2 sec)	Switches the instrument on or off
MODE	Zeroing mode	Switch between automatic and manual zeroing mode

	Function	Setting options/comments
	Detection parameter (long press 2 sec)	Cycle through CH_4 (methane), C_3H_8 (propane), C_4H_{10} (butane), H_2 (hydrogen). If a refrigerant sensor is plugged in, the key has no function.
	Alarm sound	Change alarm tone (high, low, off) The frequency of the alarm sound increases as the concentration increases. The vibration alarm cannot be deactivated.
	Display illumination (long press 2 sec)	The brightness of the display lighting is reduced or increased by 50%.
	Sensitivity	Switch sensitivity between High+ 1g/a, High 3 g/a and Low 14 g/a (only possible in automatic mode)
	Zeroing (long press 2 sec)	Zero measurement values (incl. max value) (only possible in manual mode, in automatic mode press and hold to switch the device to manual mode and perform a zeroing)
	VIEW	Switch between bar display, segment display, and diagram

7.2 Carrying out a function test

1. Apply low-concentration gas to the sensor (max. 10 sec).

▸ If the sensor does not respond (no alarm), the instrument is defective and must no longer be used. The instrument must be taken to the service centre for repair.

Due to the selectivity of the sensor, gas equivalents are not suitable for checking the function and especially not for calibrating the sensor.

Lighters or car exhaust fumes can contaminate the sensor and must therefore not be used for functional testing.

7.3 Selecting the mode

The device has two operating modes for leak detection:

- **Auto mode (Pinpoint mode)**: Quickly locate leaks with automatic zeroing
- **Manual mode**: Targeted leak detection with user-controlled zeroing

1. Press the **MODE** key to switch between modes.

▸ The active mode is shown in the display.

Pinpoint mode (Auto)

In **Pinpoint Mode (Auto)**, the device automatically adjusts the zero point to the prevailing background concentration.

Only concentrations significantly higher than this background level will cause the leak indicator to activate.

- The device performs an automatic zeroing at regular intervals.
- If the probe remains in an environment with a lower concentration for a few seconds, this new environment is adopted as the reference (zero point).
- This suppresses slow changes in the background concentration and displays only leaks with higher concentrations.

Sensitivity in Auto Mode

In **Pinpoint Mode (Auto)**, sensitivity can be adjusted using the corresponding button:

- **Low** – low sensitivity, suitable for very large leaks or high background concentrations
- **High** – standard sensitivity for most applications
- **High+** – highest sensitivity for detecting very small leaks

The currently selected sensitivity level is shown on the display.

Manual mode

In **Manual Mode**, the device operates using a fixed reference point specified by the user.

- By default, the sensitivity is set to High (3 g/a).
- The user can manually reset the zero point at any time.

Carrying out manual zeroing

1. Hold the probe in an area that represents the desired background concentration (an area with as little leakage as possible).
2. Press **[->0<-]**.

▸ The current concentration is adopted as the new zero point.
- Concentrations near this value are suppressed.
- Only higher concentrations result in a visible deflection of the leak indicator.

Manual zeroing is particularly suitable under stable environmental conditions or when a specific background concentration needs to be specifically suppressed.

Gas concentrations present at the time of zeroing are suppressed by zeroing. As a result, the displayed reading no longer corresponds to the real gas concentration.

7.4 Selecting the detection view

1 Press the [VIEW] key, to switch between the different detection views.

▸ The concentration is displayed using a bar graph that rises from the bottom to the top.

As the concentration increases, the bar graph fills up from the bottom to the top – more bars appear.

As the concentration decreases, the number of bars displayed decreases accordingly from the top to the bottom.

If five or more bars are displayed in the “High” sensitivity level bar graph, an estimated leakage rate of 5 g/a is reached. Given the metal oxide sensor technology used, this value should be considered a guideline only and may vary depending on environmental conditions and external factors.

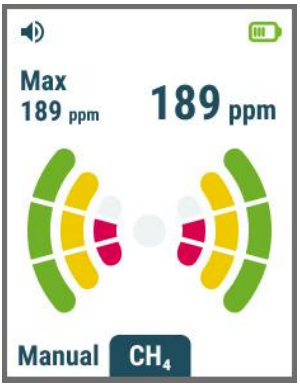
The PPM display is for guidance only and does not replace a measurement. The testo 515 Ex is an electronic gas leak detector and not a measuring instrument.

For proper and reliable leak detection, we recommend regular calibration by an authorized service provider.

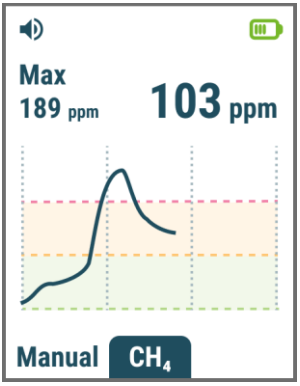
- The concentration is represented by rings arranged around a central point.

  As the concentration rises, the rings are gradually displayed from the outside in.

  As the concentration falls, the rings are gradually hidden from the inside out.



- The concentration over time is shown in a graph.



7.5 Carrying out refrigerant detection

The refrigerant loss can be output in grams/year (g/a), but the instrument only measures the concentration as an input quantity. A conversion is carried out in the instrument. For this, the leak must be scanned at a defined speed of ~2 cm/sec at a distance of ~1 cm.

Selecting the refrigerant to be detected

- The refrigerant to be detected is automatically detected when a refrigeration sensor is plugged.

Carrying out detection

1. Move the sensor head as close as possible and at low speed (approx. < 2 cm per second) over the components that are to be checked for leaks.

- The surface of the sensor must not be covered.

2 Observe the display: The more bars or rings that appear, the higher the measured refrigerant concentration.

3 Identify the area with the highest reading as a possible leak.

▸ If the acoustic alarm is enabled, a warning sound is emitted when the warning threshold is exceeded, the frequency of which increases as the concentration increases, and changes to a continuous tone when the second alarm threshold (35 ppm) is exceeded.

Changing units
By default, the display shows ppm (concentration in parts per million). From a concentration of >999 ppm, the display changes to vol% (1000 ppm=0.1 vol%). It is not possible to manually change the units.

After detection

1 Ventilate the sensor thoroughly after each use. To do this, place the instrument in fresh air for approx. 2 minutes before using it again.

7.6 Carrying out gas detection

ATTENTION

Destruction of the sensor due to external influences!

- **Do not expose the sensor to high concentrations of H_2S (hydrogen sulphide), SO_x (sulphur dioxides), Cl_2 (chlorine), or HCl (hydrogen chloride).**
- **Prevent alkaline materials or water from coming into contact with the sensor.**
- **Do not expose the sensor to moisture or frost.**

Have the instrument serviced annually by the manufacturer.

Testing natural gas lines or hydrogen lines:

Methane (main component of natural gas) or hydrogen are lighter than air, detection should be carried out above the pipe / suspected leak.

Testing propane and butane gas lines: Propane and butane are heavier than air, detection should be carried out below the pipe / suspected leak, starting from the bottom and working upwards.

7.6.1 Selecting the gas to be detected

In **Auto Mode** and **Manual Mode**, the gas type can be selected depending on the sensor used.

1 When a gas sensor is connected, gas selection is available: Select the desired gas type using the **GAS** key.

▸ The display shows the currently selected gas type.

▸ When using a refrigerant sensor, no gas selection is required. In this case, the gas type cannot be changed using the **GAS** key.

Ensure that the selected gas type matches the gas actually being detected.

Notes on the Display and Units

- The unit used is fixed and cannot be changed manually.
- The device is a detection device for leak detection, not for precise concentration measurement.
- The display is intended for orientation and locating leaks, not for providing calibrated measurement values.

Forming gas

When pressure testing with forming gas (95% N_2, 5% H_2), the instrument can detect leaks based on the hydrogen content.

1. Use the **GAS** key to set the instrument to H_2.

7.6.2 Carrying out the detection

1. Move the sensor head as close as possible and at low speed (approx. < 2 cm per second) over the components that are to be checked for leaks.

▸ The surface of the sensor must not be covered.

2. Observe the display: The more bars or rings that appear, the higher the measured gas concentration.
3. Identify the area with the highest reading as a possible leak.

▸ When the lower explosive limit is reached, ">LEL" is displayed. Higher values are not displayed.

Changing units

By default, the display shows ppm (concentration in parts per million). From a concentration of >999 ppm, the display changes to vol% (1000 ppm=0.1 vol%). It is not possible to manually change the units.

After the detection

1. Ventilate the sensor thoroughly after each use. To do this, place the instrument in fresh air for approx. 2 minutes before using it again.

8 Maintaining the product

8.1 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.

DANGER

Do not open the battery compartment in potentially explosive atmospheres!

8.2 Cleaning the instrument

DANGER

Danger from electrostatic charge!

- **Clean the instrument only outside the hazardous area.**

1. If the housing of the instrument is dirty, clean it with a soft, slightly damp, lint-free cloth.

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

Storage & transportation

To prevent contamination of the sensor, please do not store or transport the instrument in an environment where any tobacco smoke, foul air, oils, greases, silicones, evaporating liquids or gases are present. Any sensor that is contaminated as a result of storage or transportation must be cleaned before use, see Cleaning the sensor.

Regular inspection

Testo recommends having the gas leak detector inspected by an authorized service centre every year.

8.3 Cleaning the sensor

⚠DANGER

Danger from electrostatic charge!

- **Clean the sensor only outside the hazardous area.**

Tobacco smoke, dirty air, oils, greases, silicones and evaporating liquids or gases can leave deposits on the sensor surface. Possible consequences are reduced sensitivity, distorted displays of gas concentration or display of a background concentration. Clean the sensor if necessary.

1. Switch on the instrument, allow it to initialize and then switch it off. Repeat this procedure several times.
2. If the sensor head is dirty, clean it with a soft, slightly damp, lint-free cloth.

- Wipe the sensor gently; do not rub it vigorously.
- Do not use damp cloths or cleaning agents on the sensor.
- Use distilled water for moistening.

Switching on regularly

If the instrument is used infrequently, deposits may build up on the sensor. Switching the instrument on prevents these deposits from building up on the sensor. Testo recommends switching the instrument on regularly to avoid deposits building up on the sensor.

8.4 Changing the sensor

The sensor head can be unscrewed and replaced without tools.

⚠ DANGER

Do not change the sensor in potentially explosive atmospheres!

Install only sensors that are intended for use with the device; see the “Accessories and spare parts” section.

✓ Switch off the device before changing the sensor.

1 Unscrew the gooseneck on the device.

2 Remove the actual sensor.

3 Insert the new sensor.

The interchangeable sensor is pre-calibrated and can be used straight away.

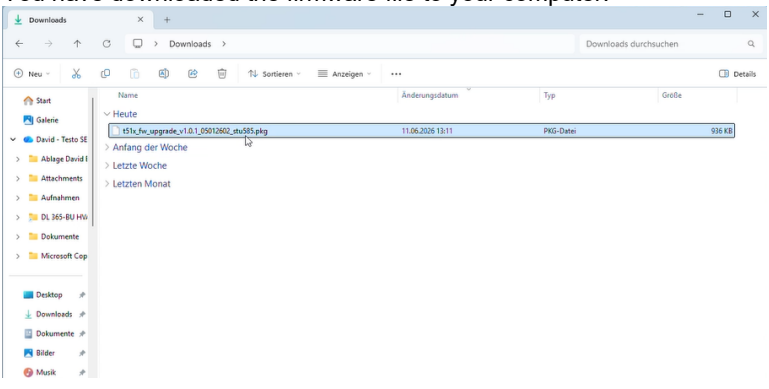
4 Screw the gooseneck back on.

If the sensor was replaced while the device was turned on, the device must be restarted afterward.

8.5 Performing a firmware update

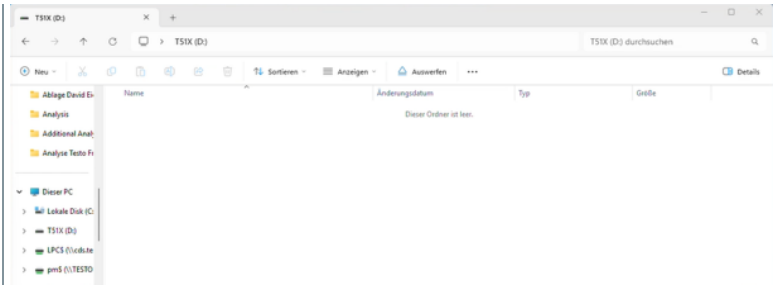
You can find information on the latest firmware for the testo 515 Ex on the product page at www.testo.com.

✓ You have downloaded the firmware file to your computer.

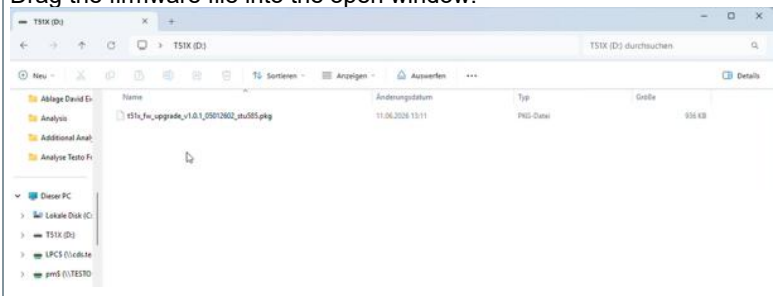


1 Connect the testo 515 Ex to your computer using a USB-C cable.

▶ The testo 515 Ex is displayed as “T51X” in Windows Explorer.



2 Drag the firmware file into the open window.



▶ The copy process is complete.

3 Disconnect the testo 515 Ex from the computer.

4 Switch the testo 515 Ex off and then on again.

▶ The firmware is installed automatically.

9 Technical data for testo 515 Ex

Feature	Value
Detection parameters	ppm Vol.% %LEL
Detectable gases (only with gas sensor)	Methane, propane, hydrogen, butane
Detectable refrigerants (only with refrigerant sensor)	All CFCs, HFCs, and F-gases, for example FX80, I12A, R11, R114, R12, R123, R1234yf, R1234ze, R124, R125, R12a, R13, R134a, R13B1, R14, R142b, R161, R22, R227, R23, R236fa, R245fa, R32, R401A, R401B, R401C, R402B, R403B, R404A, R406A, R407A, R407B, R407C, R407D, R407F, R408A, R409A, R410A, R411A, R412A, R413A, R414B, R416A, R417A, R417B, R417C, R420A, R421A, R421B, R422A, R422B, R422C, R422D, R424A, R426A, R427A, R434A, R437A, R438A, R448A, R449A, R452A, R500, R502, R503, R507, R508A, R508B, R1233zd, R450A, R455A, R513A, R407H, R444B, R452B, R453a, R454A, R454B, R454C, R458A, SP22, R290, R600, R702
Detection range	Methane (CH_4): 1 ppm to 1.0 vol.% Propane (C_3H_8): 1 ppm to 1.0 vol.% Hydrogen (H_2): 1 ppm to 1.0 vol.% Butane (C_4H_{10}): 1 ppm to 1.0 vol.%
Detection range refrigerants	1 ppm to 1000 ppm (0.1 vol.%)
Resolution	1 ppm 0.01 vol.% (> 999 ppm) 1%LEL
Sensitivity	1g/a (High+); 3g/a (High); 14g/a (Low)
Start-up time	> 30 sec (gas sensor) > 60 sec (refrigerant sensor)
Response time	Response time < 2 sec
Leak alarm	Visual, audible alarm, vibration
Operating temperature	-10 … +50 °C / +14°F ... +122°F
Operating humidity	0 … 80 %RH
Storage temperature	-20 … +60 °C / -4°F ... +140°F

Feature	Value
Battery type	Rechargeable lithium battery Manufacturer: MERRY Electronics Co. Ltd. Model: 0515 0085 Rating: 3.635V, 3400mAh, 12.4Wh Complies: IEC/EN/BS 62133-2, UL62133-2 and CSA C22.2 No. 62133-2
Charging temperature	0 … +35 °C / +32°F ... +95°F
Charging power	5V⎓3A
Battery life	8 h
Level of contamination	PD2
IP class	IP40
Dimensions	132 x 60 x 37 mm / 5.2 x 2.4 x 1.5 in (L x W x H) Probe length with sensor 330 mm / 13 in
Weight	313 g / 11 oz
EX-protection	II 3 G Ex ic dc IIC T3 Gc. U_m = 5,5 V
Regulations	DIN EN 14624, ATEX/UL/CSA 60079-0, UL/CSA 60079-11 zone 2 certification

10 Tips and assistance

10.1 Questions and answers

Question	Possible cause	Possible solution
Zero point is unstable	Contamination of the sensor after a prolonged period of non-use	Leave the instrument switched on until the zero point has stabilized.
Instrument does not switch to measuring mode (remains in warm-up phase)	Battery voltage too low	Charge the instrument.

10.2 Hard Reset

1 If you encounter any problems with the firmware, press and hold the **ON/OFF** key for a long time (4 sec.) to perform a reset.

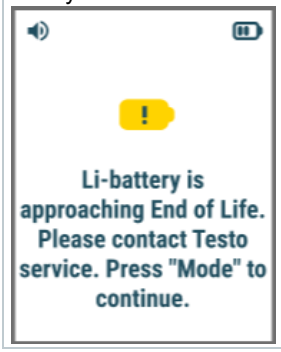
10.3 Error codes

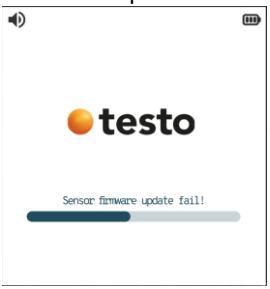
The error code is shown on the display.

Leak detector error codes

Error code / name	Display text	Possible cause / solution
E10 – No sensor detect	No sensor is detected. Please refer to the user manual.	**Possible cause, behaviour** - No sensor connected or sensor is removed during warming up process or measurement. - It's not possible to continue work, the device turns off automatically after 2 minutes. **Solution** - Switch off the device, plug in the sensor and switch on again. - Switch off the device, re-plug in the sensor module and ensure the connection quality. - If the error is still present, contact Testo Customer Service for support.

Error code / name	Display text	Possible cause / solution
E11 – Wrong sensor connected 	Wrong sensor is connected. Please refer to the user manual.	**Possible cause, behaviour** - Device connected with an incorrect sensor. - It's not possible to continue work until the sensor is replaced by a correct one. **Solution** - Switch off the device, plug out the current sensor and replace it against a correct sensor. - If the error is still present, contact Testo Customer Service for support.
E12 – Low battery 	Device battery is low. Please charge the battery first.	**Possible cause, behaviour** - The battery is very low, the device turns off again. **Solution** - Charge the battery. - Only charge in non-hazardous (ATEX) area.
E13 – Charging unavailable 	Charging is disable. Please check if battery is available or temperature is out of range.	**Possible cause, behaviour** - Battery is missing or cannot be detected. - Battery temperature is outside the operating range (-20 to +60 °C). - Battery temperature is outside the charging range (0 to +45 °C), so the it cannot be charged. **Solution** - Move the device to room temperature and wait a few minutes. - Switch the device off and on again, up to 3 times if necessary. - Go to Testo website for latest firmware and update the device

Error code / name	Display text	Possible cause / solution
		to new firmware (see Chapter 8.5) - If the error persists, contact Testo Customer Service.
E14 – No font, no pictures 	Device information is missing, please contact Testo Customer Service.	**Possible cause, behaviour** - Device type is reset. No font and picture was found on leak detector. **Solution** - Power off the device and then repower the device to recover. - If the error is still present, contact Testo Customer Service for support.
Device battery life is nearly over.  	Li-battery is approaching End of Life. Please contact Testo Customer Service. Press "Mode" to continue.	**Possible cause, behaviour** - When the battery life time is nearly over (State of health < 80%), this information is shown to remind to change the battery. **Solution** - After clicking the “Mode” button, it is possible to continue work. - The battery is near the end of lifetime. Contact Testo Customer Service to replace the lithium battery.

Error code / name	Display text	Possible cause / solution
E15 - Device battery life is over. 	Li-battery has reached End of Life. Device will be off in 10s. Please contact Testo Customer Service for replacement.	**Possible cause, behaviour** - When the battery life time is over (State of health < 75%), this information is shown to remind to change the battery. - The device turns off automatically after few seconds. **Solution** - The battery is at the end of lifetime. Contact Testo Customer Service to replace the lithium battery at once.
Sensor fw update fail  	Sensor firmware update fail!	**Possible cause, behaviour** - Update of sensor module firmware failed. **Solution** - Device will recover automatically in a few seconds. - If the error is still present, contact Testo Customer Service for support.

Sensor error codes

Error code / name	Display text	Possible cause / solution
E01 – Sensor error 	Sensor is invalid. Please refer to the user manual.	**Possible cause, behaviour** - The connected sensor module doesn't work. - It's not possible to continue work, the device turns off automatically after 2 minutes. **Solution** - Please replace with a new sensor module. If the error is still present, contact Testo Customer Service for support.

Error code / name	Display text	Possible cause / solution
E03 – Sensor overrange	Overrange! Device stabilizing	**Possible cause, behaviour** - Sensor module detects an over-range of gas. - It is possible to continue work. After the count-down time, the device automatically enters the warming up process. **Solution** - Move the device to fresh air for recovery. The device will automatically restart to recover.

10.4 Accessories and spare parts

Description	Order no.
Transport bag	0590 0018
Gas sensor	0554 3515
Refrigeration sensor	0554 4515
Mains unit from Testo	0554 1131

11 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**

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