testo 315-3 · CO/CO2 measuring instrument

Instruction manual

1 Contents

2 Safety and the environment

2.1. About this document

Use

> Please read this documentation through carefully and familiarize yourself with the product before putting it to use. Pay particular attention to the safety instructions and warning advice in order to prevent injuries and damage to the products.

> Keep this document to hand so that you can refer to it when necessary.

> Hand this documentation on to any subsequent users of the product.

Symbols and writing standards

Representation	Explanation
	Note: Basic or further information.
1. ... 2. ...	Action: more steps, the sequence must be followed.
> ...	Action: a step or an optional step.
- ...	Result of an action.
Menu	Elements of the instrument, the instrument displays or the program interface.
[OK]	Control keys of the instrument or buttons of the program interface.
✓ ...	Handling prerequisite

2.2. Ensure safety

> Only operate the product properly, for its intended purpose and within the parameters specified in the technical data. Do not use any force.

> Dangers may also arise from the systems being measured or the measuring environment: Note the safety regulations valid in your area when performing the measurements.

> Do not perform contact measurements on non-insulated, live parts.

> Do not store the product together with solvents. Do not use any desiccants. These substances may impair the operation and reliability of the instrument.

> Carry out only the maintenance and repair work on this instrument that is described in the documentation. Follow the prescribed steps exactly. Use only original spare parts from Testo.

> Temperatures given on probes/sensors relate only to the measuring range of the sensors. Do not expose handles and feed lines to any temperatures in excess of 70 °C unless they are expressly permitted for higher temperatures.

For products with Bluetooth® (optional)

Changes or modifications that have been made without the explicit consent of the responsible approval authority, may cause the retraction of the type approval. Data transfer may be disturbed by equipment that uses the same ISM band, e.g. WLAN, microwave ovens, ZigBee.

The use of radio communication links is not permitted in aeroplanes and hospitals, among others. For this reason the following points must be ensured before entering:

The data transfer function must not be active.

2.3. Protecting the environment

> Dispose of faulty rechargeable batteries/spent batteries in accordance with the valid legal specifications.

> At the end of its useful life, send the product to the separate collection for electric and electronic devices (observe local regulations) or return the product to Testo for disposal.

3 Specifications

3.1. Use

The testo 315-3 is a convenient and robust measuring instrument for recording ambient CO/CO_2 values. It is used to avoid risks.

Fields of application are, for example

- Heating systems with operation dependent on ambient air
- Ventilation systems
- Storage in the food and drinks industry

The Bluetooth® option may only be operated in countries in which it is type approved.

3.2. Technical data

3.2.1. Measurement ranges and resolution

Measurement parameter	Measuring range	Resolution
CO	0 to 100 ppm	0.5 ppm
CO_2	0 to 10,000 ppm	10 ppm
Humidity [11]	5 to 95 %RH	0.1 %RH
Temperature[1]	-10 to +60 °C/ 14 to 140 °F	0.1 °C/°F

3.2.2. Accuracy and response time

Measurement parameter	Accuracy	Response time
CO	± 3 ppm to 20 ppm ± 5 ppm from 20 ppm	< 120 s (t90)

[1] Only when the humidity/temperature sensor is connected (optional)

Measurement parameter	Accuracy	Response time
CO_2	±300 ppm (0 to 4,000 ppm) ±8 % of meas. val. (4,000 to 6,000 ppm) ±500 ppm. (6,000 to 10,000 ppm)	< 120 s (t90)
Humidity[1]	±2.5 %RH (5 to 95 %RH)	
Temperature[1]	±0.5 °C (+ 1 digit)	

3.2.3. Other instrument data

Feature	Values
Storage/transportation conditions	-20 to 60 °C/-4 to 140°F 0 to 95 %RH
Operating conditions	0 to 40 °C/32 to 104 °F/0 to 95 %RH
Weight incl. holster	Approx. 382 g
Housing material	ABS
Dimensions (L x W x H)	190 x 65 x 40 mm
Protection class	IP 40 acc. to EN 60529
Operating time	Min 10 h measuring time (at 20 °C/68 °F), mains operation possible
Display	Segment display
Supported printer	0554 0549/0554 0547
License acc. to	EN 50543
Warranty	Instrument: 24 months Battery: 12 months CO sensor: 12 months CO_2 sensor: 12 months Warranty conditions: see website www.testo.com/warranty
EC Directive	2014/30/EC

3.2.4. Bluetooth® module (option)

- Bluetooth® type: BlueNiceCom IV
- Bluetooth® product note: BNC4_HW2x_SW2xx

- Bluetooth® identification: B013784
- Bluetooth® company: 10274
- Coverage: < 10 m

Certification

Belgium (BE), Bulgaria (BG), Denmark (DK), Germany (DE), Estonia (EE), Finland (FI), France (FR), Greece (GR), Ireland (IE), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Sweden (SE), Slovakia (SK), Slovenia (SI), Spain (ES), Czech Republic (CZ), Hungary (HU), United Kingdom (GB), Republic of Cyprus (CY).

Iceland (IS), Liechtenstein (LI), Norway (NO) and Switzerland (CH).

Turkey (TR), El Salvador (SV), Columbia (CO)

4 Product description

4.1. Overview

4.1.1. Control elements and connections

1 Connection for temperature/humidity module (optional)
2 IR interface, record printer
3 CO sensor module
4 CO_2 sensor module (back)
5 Display
6 Keyboard
7 Reset button (back)
8 USB mains unit socket

Temperature/humidity module option

9 Temperature/humidity sensor

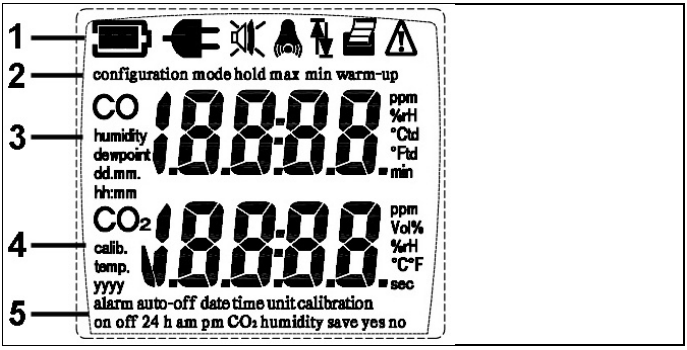
10 Connection for temperature/humidity module to the testo 315-3

Key functions

Button	Duration	Status	Function
	Short	Reading display	• Holds measuring values • Displays maximum values • Displays minimum values • Displays current values
		Configuration mode	Confirms entry, next setting
	Long	Reading display (current value)	Opens configuration mode
		Reading display (maximum value/minimum value/hold value)	Resets maximum value, minimum value, hold value
		Configuration mode	Exits configuration mode (changes are stored)
	Short	Instrument is off	Switches instrument on
		Instrument is on	Switches on display illumination/switches off display illumination The display illumination switches off after 3 minutes if no keys are pressed.
	Long	Instrument is on	Switches instrument off

Button	Duration	Status	Function
	Short	Reading display, only if humidity module is connected	• Displays humidity and temperature • Displays dew point/temperature • Displays CO/CO_2
		Configuration mode	Changes option/increases value
	Long	Reading display	Sets zero point/deletes zero point
		Configuration mode	Increases value quickly
	Short	Reading display	Prints data
		Configuration mode	Changes option/decreases value
	Long	Reading display	Switches on data transfer mode via IrDa or Bluetooth® (optional) / switches off data transfer mode via IrDa or Bluetooth® (optional)
		Configuration mode	Decreases value quickly

4.1.2. Display



1 Status information

Icon	Function
	Battery capacity: 100% / 66% / 33%, <10%
	Micro USB mains unit is connected.
	Alarm off, alarm on
	Flashes: the alarm threshold is exceeded
	Data transfer
	Data transfer enabled
	Lights up: information Flashes: error message
	Differential measurement
calibration	Flashes: adjust CO_2 sensor in fresh air. CO_2 sensor should be adjusted in fresh air after 120 operating hours.

2 Measuring functions

3 Display of CO measuring value, humidity, dew point, date (day and month), hours and minutes, measurement parameter

4 Display of CO_2 measuring value, adjustment value, temperature, year, measurement parameter.

5 Settings

4.2. Basic properties

Power supply

Power is supplied to the testo 315-3 via:

- Rech. batt., type: Li-Po rechargeable battery pack, 3.7 V/1,500 mAh (can be replaced via Testo Service)
- USB mains unit inc. cable (0554 1105), 5,0 V/1.000 mAh

With an attached mains unit, power is supplied automatically via the mains unit and the instrument's rechargeable battery is charged. To avoid destroying the rechargeable battery, only charge it at an ambient temperature of 0 to 45 °C/32 to 113 °F.

5 First steps

Switching on

Connect the humidity/temperature module (0636 9725) before switching the instrument on (option).

1. Switch the instrument on: press [⏻] briefly.

- All segments of the display light up for around 1 s.
- The warm-up phase then occurs for 30 s. (information in display: **warm-up**).

During first commissioning, the configuration menu is opened automatically, see Settings.

- The current measurement values are displayed. The instrument is operational.

The measurement value of the CO sensor is displayed in the upper line.

The measurement value of the CO_2 sensor is displayed in the lower line.

Switching off

2. Switch off the instrument: press and hold down [⏻].

6 Using the product

6.1. Performing settings

Opening the configuration menu

✓ The instrument is in measurement view.

> Open configuration menu: press and hold down [Hold Max/Min] until **configuration mode** appears.

Selecting, opening and setting functions

> To select the next function: press [△] / [▽] briefly.

> To enable the selected function: press [Hold Max/Min] briefly.

> To adjust the open function: press [△] / [▽] briefly.

> To cancel the function: press [Hold Max/Min] briefly until the display changes.

Adjustable functions

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

Settings and display of temperature and humidity are only possible if the humidity module was connected before switching on.

Function	Setting options/comments
alarm	**off** or **on** **on** selected: • Enables/disables acoustic signal • Sets CO limiting value • Sets CO_2 limiting value
auto-off	**off** or **on** **on** selected: Sets value
date	Sets year, month, day
time	**off** or **on** selected Selects 24h or am or pm format, sets hours and minutes
unit	**CO2**: **Vol%** or **ppm** **temp.**/**dewpoint**: **°F**, **°C**/**°Ftd**, **°Ctd**

Function	Setting options/comments
calibration CO2	**yes** (adjust) or **no** (do not adjust) **yes** selected: CO_2 value is adjusted to the nominal value and stored (only possible with a current CO_2 value < 650 ppm) The calibration/adjustment must be carried out in fresh air that has a normal CO_2 concentration of approx. 400 ppm. To avoid incorrect calibration/adjustment values, calibration should, for example, not be carried out on busy roads or in closed rooms. Ensure that, before and during the calibration/adjustment, no exhaled air reaches the instrument. Before completing the adjustment, the instrument should be left in the fresh air for 3-4 minutes.
calibration humidity	**yes** or **no** **yes** selected: Humidity values are aligned to the alignment points 11.3 % RH and 75.3 % RH and saved. To adjust to the alignment points, use the testo **Control and alignment set for humidity sensors** (0554 0660).

> Cancel configuration menu: press and hold down [ ] until **configuration mode** display switches to the measurement view.

6.2. Measuring

✓ testo 315-3 is on.

- Display of the current CO and CO2 measuring values.

Switching to humidity, temperature and dew point value is only possible if a humidity/temperature module is connected.

> Display humidity and temperature value: press [ ] briefly.

> Display dew point: press [ ] briefly.

Delta measurement

✓ testo 315-3 for CO and CO_2 is in the measurement view.

> Call up Delta measurement menu: press [ ] until the display changes.

- Delta measurement is carried out ([ ] lights up). The current measuring values are zeroed as a reference.

> To cancel the function: press and hold down [ ] until the display switches to the measurement view.

Hold/Max/Min

✓ testo 315-3 is in measurement view.

The measuring values for Hold/Max/Min can be called up for:

- CO and CO_2
- Temperature and humidity (if temperature and humidity module is connected)
- Dew point (if temperature and humidity module is connected)

> Call up **Hold** function: press [ ] briefly.
- The current measuring values are held.

> Call up **Max** function: press [ ] briefly.
- The maximum measuring values are displayed.

> Call up **Min** function: press [ ] briefly.
- The minimum measuring values are displayed.

> Set **Hold/Max/Min** values to the current value: press and hold down [ ].
- Measuring values flash several times and are updated.

6.3. Printing the measurement results

✓ testo 315-3 is on.

> Call up Print function: press [ ] briefly.
- The data is transferred to the printer via the IrDA interface.
- [ ] lights up.

6.4. Bluetooth® and IrDA data transfer

Data is transferred via Bluetooth® if both instruments have this interface. Otherwise, data is transferred via the IrDA interface.

Data can currently be transferred to the following testo measuring instruments:

- testo 330 (0632 3306 / 0632 3307) from firmware version V1.11
- testo 330 (0632 3304 / 0632 3305) from firmware version V1.63

✓ testo 315-3 is on and a measurement has been carried out.

> Switch on data transfer: press and hold down [ ].

- [ ] lights up. Data is transferred.

Please refer to the operating instructions for the relevant testo measuring instrument.

7 Maintaining the product

Charging the rechargeable battery

1. Connect the mains unit connector to the instrument's micro USB socket.
2. Connect the mains plug to the mains socket.

The charging process will start automatically. Charging is indicated by a change in the battery icon segments. lights up when the battery is fully charged.

Cleaning the instrument

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

8 Tips and assistance

8.1. Questions and answers

Question	Possible causes/solutions
⚠ flashes and **E145** lights up	The instrument temperature is outside the permissible range: > Let the instrument warm up or cool down.
⚠ flashes and **E161** lights up or ⚠ flashes and **E419** lights up or ⚠ flashes and **E999** lights up	A serious error has occurred: > Contact your dealer or the Testo Customer Service.
⚠ flashes and **E290** lights up	The current CO_2 measuring value is too high for an adjustment: Acknowledge the error message with **[Hold/Max/Min]** and carry out the adjustment again in fresh air (CO_2 measuring value < 650 ppm).
⚠ flashes and **E420** lights up	Fan is blocked > Please check if any item sticks in the ventilation slot on the back of the instrument. After 90 seconds, the fan is started again. > If there is nothing directly visible, please contact your dealer or the Testo Customer Service.
⚠, **calibration** and **CO_2** flash	CO_2 sensor must be adjusted > Adjust CO_2 sensor in fresh air.
flashes	Battery capacity too low > Connect the mains unit.

Question	Possible causes/solutions
⚠ and 🔋 flash, **E401** lights up	Rechargeable battery is empty, instrument will soon switch off automatically. > Connect the mains unit (the warning can be deleted with **[Hold/Max/Min]**).
⚠ and 🔋 flash	Recharging the battery is impossible: > Contact your dealer or the Testo Customer Service.
Can the battery be replaced?	The battery cannot be replaced. > Contact your dealer or the Testo Customer Service.
Can the battery be charged via the USB port of a laptop or PC?	The battery cannot be charged.
Can Bluetooth® be retrofitted?	Bluetooth® functionality cannot be retrofitted.
Can humidity, temperature and dew point measurements be carried out?	Humidity, temperature and dew point measurements are possible with the temperature/humidity module (accessory).
The display is illuminated also after the testo 315 - 3 is switched off	The display illumination goes out as soon as the instrument has shut down. While the display is illuminated, the instrument cannot be switched on.
The CO_2 measuring value is displayed as **0000**	The current measuring value is over 10,000 ppm.
The CO2 reading is implausible.	The gas opening on the back of the instrument might be covered. This means that a correct CO2 measurement is not possible.

If we could not answer your question or the solutions given during troubleshooting did not help: please contact your dealer or Testo Customer Service. Contact data see back of this document or website www.testo.com/service-contact.

8.2. Calibration interval

Testo recommends that calibration of the measuring instrument is carried out once a year by Testo Customer Service or a service centre authorised by Testo.

8.3. Accessories and spare parts

Description	Article no.
testo 315-3 without Bluetooth® (incl. micro USB mains unit, cable USB A - USB micro B)	0632 3153
testo 315-3 with Bluetooth® (incl. micro USB mains unit, cable USB A - USB micro B)	0632 3154
Temperature/humidity module	0636 9725
Topsafe	0516 0223
USB mains unit inc. cable	0554 1105
Basic printer	0554 0549
Spare printer paper (6 rolls)	0554 0568
Control and calibration set for humidity sensors (11.3 %RH and 75.3 %RH)	0554 0660

0970 3153 en 04