

We measure it.



The future of flue gas analysis has arrived

testo 330 LL. The only flue gas analyser with up to 6 years' sensor lifetime.

Professional measurements on heating systems.

Highest innovative power and availability with longlife sensors.

The testo 330 LL is the professional flue gas analyser. It meets the highest requirements and is capable of fulfilling all measurement tasks on heating systems. Numerous country-specific measurement menus are stored for you in the instrument. Select from our extensive range of flue gas probes, which often replace an additional measuring instrument. Define further fuels yourself as required. You can also conduct gas pipe tests or solid fuel measurement with the testo 330 LL. However, what really makes the high-quality instrument stand out is the successful combination of excellent sensor technology, longevity and security. The testo 330 LL has three measurement cells for O₂, CO and NO, as well as a temperature sensor integrated into the flue gas probe, for the direct measurement of temperature, O₂, CO and NO. From these data, the instrument automatically calculates all relevant flue gas measurement parameters such as CO₂ value, degree of effectivity and flue gas loss.

There is a good reason why the flue gas analysers testo 330-1 LL and testo 330-2 LL have the initials "LL" in their name – they stand for "long life". The sensors of the instrument series testo 330 LL have an extended lifetime of up to 6 years. At least one O₂ and CO sensor change can be

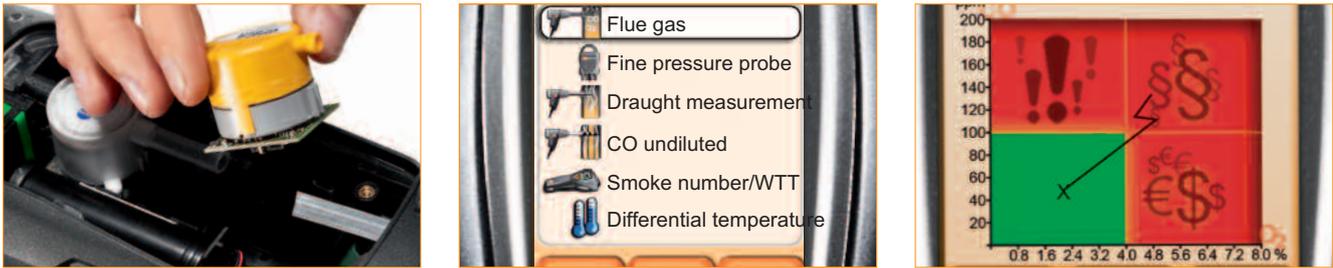
saved during the typical useful life of the instrument. Testo furthermore gives 4 years' warranty without a maintenance contract. This considerably reduces follow-on costs.

If, in the far future, the sensors do need to be replaced, you can deal with it yourself in just a few steps. The continuous sensor monitoring with a clear traffic light presentation informs you in time of an imminent need for replacement. This means you are never left standing in a boiler room with an instrument that does not work.

testo 330 LL. Next pit stop: 2018.

The professional flue gas analysers testo 330-1 LL and testo 330-2 LL support you in fully exploiting the potential of a heating system and complying with standards. And they do it visibly and understandably. The testo 330 LL processes the measurement data graphically and shows them in a high-resolution display. Self-explanatory graphic curves as well as easy symbols and clear colour design considerably ease the analysis. The flue gas matrix is the central element of this graphic measurement data processing. If the recorded values are in the green ideal range, the thumb points upwards. A thumb turned down, however, signals that the heating system is not optimally adjusted, e.g. when





The sensors of the testo 330 LL have a lifetime of up to 6 years, and can be exchanged by the user himself – an adjustment is not necessary. Its many measurement menus allow comprehensive analyses on heating systems. The flue gas matrix simplifies the analysis of the measurement values.

the CO content exceeds the defined danger threshold, the CO and O₂ concentrations do not comply with the legal norms, or the heating system is not working economically. The red warning symbols then give information on the required optimisation. Equally convenient is the function “instrument diagnosis”. It helps to conduct a comprehensive search for errors, monitors the status of the sensors and allows information on the filling level of the condensate trap and the battery status to be called up. The respective re-sults are symbolised graphically as a traffic light.

Advantages of the new testo 330 LL:

- Longlife sensors with up to 6 years' lifetime
- Many measurement menus for analyses on heating systems, including menus Solid Fuel Measurement and Gas Line Test
- Integrated sensor monitoring
- 4 years' warranty without maintenance contract
- High-resolution colour graphic display
- Robust design ideally suited even to rough and dirty surroundings.
- Zeroing in the flue possible (testo 330-2 LL)
- Dilution to 30,000 ppm CO (testo 330 -2 LL)
- Logger function (up to 2h continuous measurement value recording)
- Parallel draught and flue gas measurement
- TÜV-tested according to EN 50379, Parts 1-3



testo 330. Can do just anything on a heating system.

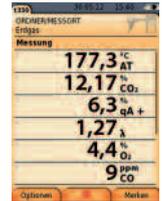
The flue gas analyser that understands your business.

The flue gas analysers testo 330-1 LL and testo 330-2 LL solve any measurement task and are professional partners in the monitoring of legal limit values, in cases of malfunction and emergency, or in daily work maintaining heating systems. Numerous measurement menus allow comprehensive analysis on heating systems. The large selection of variable probes makes the testo 330 LL even more efficient. You have everything you need for complex flue gas analysis with you in one instrument. These seven typical measurement tasks illustrate how clearly the measurement data are presented in the display:



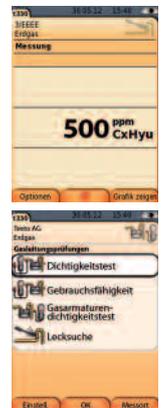
Flue gas measurement

In this central measurement of flue gas analysis, you directly determine CO and O₂ content as well as the ambient and flue gas temperatures. From these values, and dependent on fuel-specific parameters, the testo 330 LL automatically calculates all other measurement parameters such as CO₂ concentration, degree of effectivity and flue gas loss. This allows you to judge whether the heating system is working efficiently or whether there is a need for optimisation.



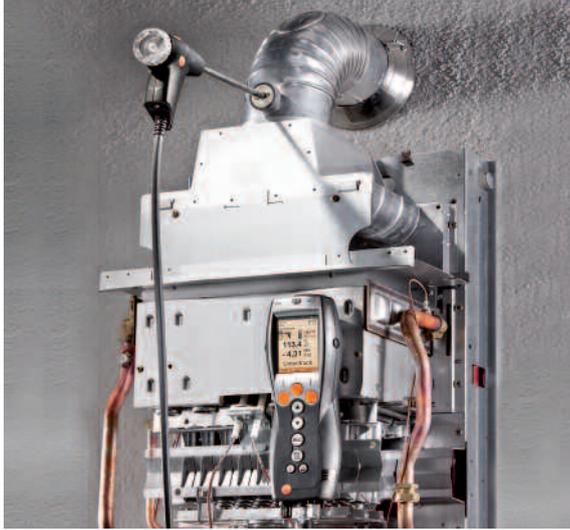
Gas leak detection and gas pipe testing

Four measurements are available to you which ensure a comprehensive test of the gas line: Tightness test, functionality test, gas fitting test and leakage detection. After selecting the desired measurement, the testo 330 LL begins directly with the respective test.



Required accessories: Gas leak probe order no. 0603 3330
Pressure set for testing gas line order no. 0554 1213





Draught measurement

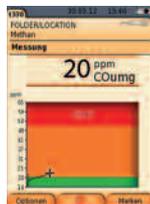
In the draught measurement, you test whether the negative pressure in the heating system is sufficient, and the flue gas is correctly drawn off through the flue. The measurement begins directly after the selection of the corresponding menu. After the zeroing of the pressure sensor, the determination of the differential pressure between the surroundings and the flue takes place. In addition to this the current and maximum flue gas temperature is displayed.



Ambient CO measurement

In this measurement, you determine the CO concentration in the ambient air using the ambient CO probe. The result is presented in a simple graph.

If the trend display is in the green area, the recorded concentration is permitted. The red danger area indicates a too high, not permitted CO content; when the adjustable alarm threshold is exceeded, you are warned optically and audibly.



Required accessories:

Ambient CO probe order no. 0603 3331



Required accessories: Hose connection set for separate gas pressure measurement order no. 0554 1203

Differential pressure measurement AP

With the measurement menu "Differential pressure", you monitor the gas supply on gas boilers. To do this, you measure the difference between the pressure in the pipeline and the ambient pressure, and compare it with the data supplied by the manufacturer for gas flow pressure and static gas pressure. With the help of the differential pressure, you also adjust the jet pressure, and thus adapt the appliance performance to the the heat requirement.



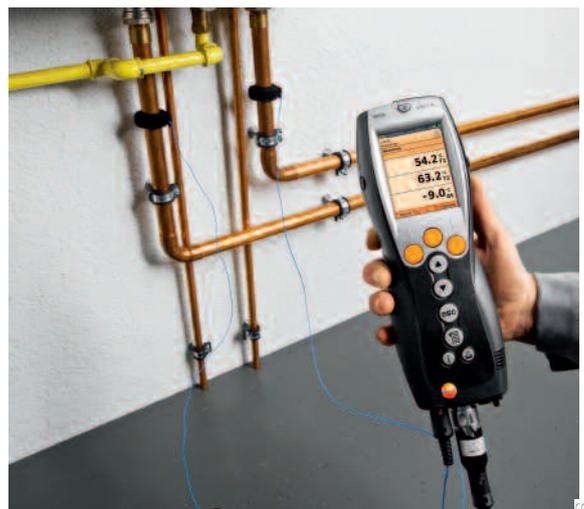
Differential temperature measurement

With the differential temperature menu, you quickly and easily measure the discrepancy between the flow and return of a heating system. How well is the system adjusted? If necessary, you immediately implement energy-saving measures on the heating system.



Required accessories:

Differential temperature set order no. 0554 1208



Product properties in detail.

Its outstanding properties make the testo 330 LL a flue gas expert.

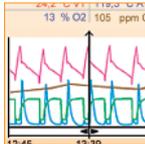
Longlife sensors

The sensors of the instrument series testo 330 LL have an extended lifetime of up to 6 years. At least one sensor replacement is saved in the course of a normal working life



Graphic processing of measurement data

Fine presentation of the measurement curves with flue gas matrix and line diagrams.



Sensor exchange by the user

Easy exchange of the sensors by the user – no adjustment necessary.



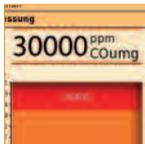
Stamp of approval

The testo 330 LL is TÜV-tested according to 1. BImSchV EN 50379, Parts 1-3; TÜV-tested solid fuel measurement for O₂ and CO.



Dilution CO

In CO measurement, from 8,000 ppm, automatic dilution is carried out up to min. 30,000 ppm CO (only for testo 330-2)



Efficient exchange of probes

Fast and easy exchange of probes via the probe coupling. All gas paths are connected to the instrument at once with the bayonet connection.



Attachment

Integrated magnets for easy fixing to burner/boiler.



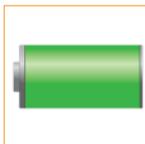
Robust design

Robust and ergonomic instrument – ideally suited even to rough and dirty surroundings.



Long battery life

Powerful Li-ion rechargeable battery – no changing battery. Up to eight hours life with pump running. Battery can be charged separately and in the instrument, no memory effect, no deep discharge.





Smoke tester **testo 308**
Information can be found under www.testo.com.



Sensor monitoring

Integrated traffic light system which continuously monitors the sensor functionality.



Memory

Up to 500,000 measurement protocols can be stored in the memory of the testo 330 LL



High-resolution graphic display

The measurement menus and measurement values are presented in detail and always well legible.



Draught and gas zeroing

Integrated gas and draught zeroing without probe removal: The probe can remain in the chimney during zeroing (only for testo 330-2)



Automatic zeroing of sensor

Automatic zeroing of the gas sensor in only 30 seconds after starting, which can be cancelled if not required.



Logger function for long-term measurements

Logger function for easy long-term recording of the measurement curve



Flexibility with modular probes

A range of probe lengths and diameters ensure a high degree of flexibility for all applications. To exchange the probe shaft, it is simply placed on the probe handle and engages.



Condensate trap

Integrated condensate trap – very easily emptied.



Probe filter

Easy exchange of probe filter.

easyheat. Data management for flue gas analysis.

The new top technology in professional flue gas measurement: The flue gas analysers testo 330-1 LL and 330-2 LL with extended sensot lifetime stand out thanks to a high level of measurement accuracy and easy operation. When working on the heating system itself, but also in all further steps. The testo 330 LL instrument series have an integrated memory in which you can save up to 500,000 measurement protocols. However, the results still need to be evaluated and processed. Profit from the high level of communication convenience of this measuring instrument: For storage, printout, readout, management. When transferring data to printers, PDAs, PCs or other end devices such as the electronic smoke tester testo 308. On site, in a boiler room or at home in the office. The software packages easyheat and easyheat.mobile give you the possibility of adapting the testo 330 LL exactly to your communication needs.

With easyheat you create individual measurement reports which you can store in PDF or Excel format. You save time and effort in the documentation of your work.

Exchange of probes in a few seconds.

The flexible probe concept supports your top service with the testo 330.

The Testo probe range allows many more measurements on a heating system. Thanks to the probe coupling of the testo 330 LL, exchanging is especially efficient. All probes are connected via a fast connection. All gas paths are connected to the instrument at once with the bayonet connection. You can change the particle filter which protects the gas paths from dirt just as quickly. Whether a multiple-hole probe, a dual wall clearance probe or a flexible flue gas probe – the wide selection allows adaptation to any application. Different lengths and diameters, which also occur in a standard flue gas pipe, mean you are never left at a heating

system without the right measurement solution. And with the help of the fine pressure probe, you can take draught and gas pressure measurements parallel to the flue gas measurement. This means you record all important values for the adjustment of the system with the testo 330 LL. Thanks to the zero-point adjustment, external temperature influences have no effect on the measurement value. With regard to accuracy, there are at present no other probes on the market which compare to the Testo fine pressure probe.



Measuring instruments, probes and accessories

Measuring instrument	Order no.
testo 330-1 LL flue gas analyser with longlife gas sensors, incl. rech. battery and calibration protocol	0632 3306
testo 330-2 LL flue gas analyser set with longlife gas sensors, BLUETOOTH® and H ₂ -compensated CO cell, integrated draught and gas zeroing, incl. rech. battery and calibration protocol	0632 3307
Measuring instrument options	Order no.
Option fine draught measurement, resolution 0.1 Pa, measuring range to 100 Pa (instead of standard draught measurement)	
Option fine differential pressure measurement	
Option NO sensor, measuring range 0 to 3000 ppm, resolution 1 ppm	
Option H ₂ -compensated CO cell	
Option CO _{low} sensor	
Option NO _{low} sensor	
Option Bluetooth	
Retrofit BLUETOOTH® interface	0450 3338
Modular flue gas probes, available in 2 lengths, incl. cone for fixing, thermocouple NiCr-Ni, hose 2.2 m and dirt filter	Order no.
 Modular flue gas probe incl. cone for fixing; thermocouple NiCr-Ni; hose 2.2 m; dirt filter; length 180 mm; Ø 6 mm; Tmax. 500 °C; TÜV-tested	0600 9760
Modular flue gas probe incl. cone for fixing; thermocouple NiCr-Ni; hose 2.2 m; dirt filter; length 300 mm; Ø 8 mm; Tmax. 500 °C; TÜV-tested	0600 9761
Modular flue gas probe incl. cone for fixing; thermocouple NiCr-Ni; hose 2.2 m; dirt filter; length 180 mm; Ø 6 mm; Tmax. 500 °C	0600 9762
Modular flue gas probe incl. cone for fixing; thermocouple NiCr-Ni; hose 2.2 m; dirt filter; length 300 mm; Ø 6 mm; Tmax. 500 °C	0600 9763
Flexible flue gas probe incl. cone for fixing; thermocouple NiCr-Ni; hose 2.2 m; dirt filter; length 330 mm; Tmax. 180 °C, short-term 200 °C; bend radius max. 90 ° for measurements in inaccessible places	0600 9764
Probe accessories	Order no.
Probe shaft modular; 180 mm; Ø 8 mm; Tmax 500 °C	0554 9760
Probe shaft modular; 180 mm; Ø 6mm; Tmax 500 °C	0554 9762
Probe shaft modular; 300 mm; Ø 8 mm; Tmax 500 °C	0554 9761
Probe shaft length 335 mm, incl. cone, Ø 8 mm, Tmax 1000 °C	0554 8764
Flexible probe shaft; length 330 mm; Ø 10 mm; Tmax. 180 °C	0554 9764
Multi-hole probe shaft; length 300 mm; Ø 8 mm; for CO mean value calculation	0554 5762
Multi-hole probe shaft; length 180 mm; Ø 8 mm; for CO mean value calculation	0554 5763
Hose extension; 2.8 m; extension line probe-instrument	0554 1202
Cone Ø 8 mm; steel; with spring clamp and grip; Tmax 500 °C	0554 3330
Cone Ø 6 mm; steel; with spring clamp and grip; Tmax 500 °C	0554 3329
Other probes	Order no.
Dual wall clearance probe for O ₂ air input measurement	0632 1260
testo 330-1/-2 LL / testo 350-S/-XL gas leak detection probe; 0 to 10000 ppm CH ₄ / C ₃ H ₈	0632 3330
Ambient CO probe; for detection of CO in buildings and rooms; 0 to 500 ppm	0632 3331
Ambient CO ₂ probe	0632 1240
Connecting cable	0430 0143
testo 330-1/-2 LL fine pressure probe; -200 to +300 °C	0638 0330
Solid fuel set incl. probe shaft, adapter, upgrade CD (compatible from V2006)	0600 9765

Accessories

Spare gas sensors	Order no.
O ₂ sensor for testo 330-1 LL/-2 LL	0393 0002
CO sensor (without H ₂ -compensation) for testo 330-1 LL/-2 LL	0393 0051
CO sensor H ₂ -compensated, 0 to 8000 ppm for testo 330-1 LL/-2 LL	0393 0101
Spare CO _{low} sensor, 0 to 500 ppm for testo 330-1 LL/-2 LL	0393 0103
Spare NO sensor, 0 to 3000 ppm für testo 330-1 LL/-2 LL	0393 0151
Retrofit NO sensor, 0 to 3000 ppm; resolution 1 ppm, für testo 330-1 LL/-2 LL	0554 2151
Spare NO _{low} sensor 0 tp 300 ppm, 0.1 ppm, ±2 ppm (0 to 39.9 ppm) ±5% of m.v.	0393 0152
Retrofit CO _{low} sensor; resolution 0.1 ppm, measuring range 0 to 500 ppm, resolution 0.1 ppm, for testo 330-1 LL/-2 LL	0554 2103

Combustion air temperature probe	Order no.
Combustion air temperature probe, immersion depth 300 mm	0600 9791
Combustion air temperature probe, immersion depth 190 mm	0600 9787
Combustion air temperature probe, immersion depth 60 mm	0600 9797

Other temperature probes	Order no.
Mini ambient air probe	0600 3692
Very fast reaction surface probe	0604 0194
Connecting cable	0430 0143

Accessories	Order no.
International mains unit 100-240 V AC / 6.3 V DC; for mains operation or battery charging in instrument	0554 1096
Spare rechargeable battery 2600 mA	0515 0107
Charger for spare rechargeable battery testo 308 / testo 330-1/-2 LL	0554 1103
Testo fast printer with wireless infrared interface, 1 roll of thermal paper and 4 AA batteries	0554 0549
Testo BLUETOOTH® printer with wireless Bluetooth interface, incl. 1 roll of thermal paper, rech. battery and mains unit	0554 0553
Spare thermal paper for printer (6 rolls), permanent	0554 0568
Readout adapter for automatic burner testo 330-1/-2 LL	0554 1206
Adhesive envelopes for storing printout, 50 off	0554 0116
Instrument cleaner; 100 ml; for fast and easy removal of dirt from housing, display, keypad, probe handle and probe cable	0554 1207
Soot pump incl. oil; soot papers, for measuring soot in flue gas	0554 0307
Hose connection set with adapter for separate gas pressure measurement testo 330-1/-2 LL	0554 1203
Pressure set for gas pipe test testo 330-1/-2 LL Version 2010	0554 1213
Differential temperature set with adapter; consisting of 2 pipe wrap probes with adapter testo 330-1/-2 LL	0554 1204
Replacement dirt filter (10 off) for probe handle; 10 off	0554 3385
PC analysis software easyheat, for presenting measurement procedures as diagrams, tabels and for customer data management. Please order USB cable 0449 0047 separately.	0554 3332
Full version easyheat and easyheat.mobile testo 330-1/-2 LL, for presenting measurement curves as diagrams, tabels, and for managing customer data. Please order USB cable 0449 0047 separately.	0554 1210
USB connection cable instrument-PC , testo 330-1/-2 LL / testo 335	0449 0047
ISO calibration certificate flue gas	0520 0003
Basis system case testo 330-1/-2 LL for instrument, probes and accessories; flat	0516 3330
Basis system case with double base testo 330-1/-2 LL for instrument, probes and accessories; high	0516 3331
Tool system case with toolbag (empty), can be clicked onto system case	0516 0329

Available in retail or online at www.testo.com/330

Technical data

	Measuring range	Accuracy ± 1 Digit	Resolution	Adjustment time t_{90}
Temperature	-40 to +1200 °C	± 0.5 °C (0.0 to +100.0 °C) $\pm 0.5\%$ of reading (remaining measuring range)	0,1 °C (-40 to +999,9 °C) 1 °C (remaining meas. range)	
Draught measurement	-9.99 to +40 hPa	± 0.02 hPa o. $\pm 5\%$ of. m.v. (-0.50 to +0.60 hPa) ± 0.03 hPa (+0,61 to +500 hPa) $\pm 1.5\%$ of reading (+3.01 to +40.00 hPa) (the greater value applies)	0.01 hPa	
Pressure measurement	0 to 300 hPa	± 0.5 hPa (0,0 - 50.0 hPa) $\pm 1\%$ of reading (50.1 to 100.0 hPa) $\pm 1.5\%$ of m.v. (remaining meas. range)	0.1 hPa	
O₂ measurement	0 to 21 vol. %	± 0.2 Vol. %	0.1 vol. %	< 20 sec
CO measurement (without H₂ compensation)	0 to 4000 ppm	± 20 ppm (0 - 400 ppm) $\pm 5\%$ of reading (401 to 2000 ppm) $\pm 10\%$ of reading (2001 to 4000 ppm)	1 ppm	< 60 sec
CO measurement (H₂-compensated)	0 to 8000 ppm Display range 8000 to 30,000 ppm (automatic dilution)	± 10 ppm or $\pm 10\%$ of m.v. (0 to 200 ppm) ± 20 ppm or $\pm 5\%$ of m.v. (201 to 2000 ppm) $\pm 10\%$ of reading (2001 to 8000 ppm)	1 ppm	< 60 sec
Only testo 330-2 LL CO measurement (H₂ compensated) solid fuel measurement	0 to 30,000 ppm	± 100 ppm (0 to 1000 ppm) $\pm 10\%$ of reading (1001 to 30,000 ppm)	1 ppm	
Efficiency testing (Eta)		0 to 120%	0.1%	
Exhaust gas loss		0 to 99.9%	0.1%	
CO₂ determination digital calculation from O ₂	Display area 0 to CO ₂ max	± 0.2 Vol. %	0.1 vol. %	< 40 sec
Option CO_{low} measurement	0 to 500 ppm	± 5 ppm (0 - 100 ppm) $\pm 5\%$ of reading (101 to 2000 ppm) $\pm 10\%$ of reading (2001 to 3000 ppm)	0.1 ppm	< 30 sec
Option NO measurement:	0 to 3000 ppm	± 5 ppm (0 - 100 ppm) $\pm 5\%$ of reading (101 to 2000 ppm) $\pm 10\%$ of reading (2001 to 3000 ppm)	1 ppm	< 30 sec
CO environment measurement (with CO probe)	0 to 500 ppm	± 5 ppm (0 to 100 ppm) $\pm 5\%$ of m.v. (>100 ppm)	1 ppm	approx. 35 sec
Gas leak measurement for combustible gases (with gas leak detector probe)	Display area 0 to 10,000 ppm CH ₄ / C ₃ H ₈	Signal Optical display (LED) Audible alarm via buzzer		< 2 sec.
Ambient CO₂ measurement (with ambient CO₂)	0 to 1 vol. % 0 to 10,000 ppm	$\pm (50 \text{ ppm} \pm 2\% \text{ of reading})$ (0 to 5000 ppm)		approx. 35 sec
NO_{low}	0 to 300 ppm	± 2 ppm (0 - 39,9 ppm) $\pm 5\%$ of reading (40 to 300 ppm)	0.1 ppm	< 30 sec

General technical data

Storage temp.	-20 to +50 °C	Display	Colour graphic display with 240 x 320 Pixel
Oper. temp.	-5 to +45 °C	Weight	600 g (excluding battery)
Power supply	Rech. batt. block 3.7 V / 2,6 Ah Mains unit 6 V / 1.2 A	Dimensions	270 x 90 x 65 mm
Memory	500,000 readings	Warranty	Instrument/probe/gas sensors (O ₂ , CO) 48 months NO-, CO _{low} sensor 24 months Thermocouple and rech. battery 12 months

Product sets.

Available in retail or online at www.testo.com/330

testo 330-1 LL  Bluetooth®

testo 330-1 LL Flue gas analyser set with longlife gas sensors and colour graphic display, BLUETOOTH® and H₂-compensated CO cell, incl. rech. battery and calibration protocol.



Order no. 0632 3306 70

testo 330-2 LL  Bluetooth®

Bluetooth testo 330-2 LL Flue gas analyser set with longlife gas sensors and colour graphic display, BLUETOOTH® and H₂-compensated CO cell, integrated draught and gas zeroing, incl. rech. battery and calibration protocol.



Order no. 0632 3307 70

The Longlife set for service technicians and inspectors with fine pressure probe  Bluetooth®

testo 330-2 LL flue gas set with fine pressure probe, incl. BLUE-TOOTH®, rech. battery and calibration protocol; mains unit 100-240V for mains operation or battery charging in instrument; combustion air temperature probe; length 190 mm; testo 330 Easyheat software for PC; USB connection cable; flue gas probe, length 300 mm, Ø 8 mm, Tmax. 500 °C; fine pressure probe; capillary hoses; surface probe 90° angle; connection cable for surface probe; straight Pitot tube; heating check retrofit CD; basic system case with double base for instrument; probes and further accessories.

Order no. 0563 3372 71

The Longlife set for customer service and maintenance technicians  Bluetooth®

testo 330-2 LL Version 2010 flue gas set H₂ inkl. BLUETOOTH®, rech. battery and calibration protocol; mains unit 100-240V for mains operation or battery charging in instrument; combustion air temperature probe; length 190 mm; hose connection set for separate gas pressure measurement; Testo Bluetooth printer with mains unit; basic system case flat; flue gas probe, length 300 mm, Ø 8 mm, Tmax. 500 °C;

Order no. 0563 3372 70

The gas pipe test is integrated in the testo 330 LL (see ill.). Please order **accessory 0554 1213**, and if not included in set **accessory 0554 1203**.



The Longlife set for inspectors  Bluetooth®

testo 330-2 LL flue gas set, incl. BLUETOOTH®, rech. battery and calibration protocol; mains unit 100-240V for mains operation or charging the battery in instrument; combustion air temperature probe, length 190 mm; testo 308 smoke tester; soot pump holder; flue gas probe, length 300 mm, Ø 8 mm, Tmax. 500 °C; basic system case with double base for instrument, probes and accessories; version 2010.

Order no. 0563 3372 72

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Subject to change without notice.