

# Professional flue gas analyzer

testo 330-LL – Up to 6 years' sensor lifetime

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Many measurement menus for analyses on heating systems, incl. solid fuel and gas pipe test menus

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Integrated sensor monitoring

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4 years' warranty without maintenance contract

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Dilution up to 30,000 ppm CO (testo 330-2 LL)

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Zeroing in flue possible (testo 320-2 LL)

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High-resolution colour graphic display

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Logger function (up to 2h continuous measurement value recording)

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TÜV-tested according to EN50379, Parts 1-3

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The testo 330 LL is the professional flue gas analyzer. It fulfils the highest demands and can cope with all measurement tasks on heating systems. Multiple country-specific measurement menus are stored in the instrument. It is possible to select from an extensive program of flue gas probes, which often replaces an additional measuring instrument. Other fuels can be defined by the user as desired. Apart from this, gas pipe tests or solid fuel measurement can also be carried out with the testo 330 LL.

The high-quality instrument is especially excellent thanks to the successful combination of outstanding sensor technology, long life and security. It has three high-quality measuring cells for O<sub>2</sub>, CO and NO (optional) as well as a temperature probe integrated into the flue gas probe for the direct measurement of temperature, O<sub>2</sub>, CO and NO. The abbreviation „LL“ stands for „Longlife“. The sensors of the instrument series testo 330 LL have an extended lifetime of up to 6 years. At least one O<sub>2</sub> and CO sensor replacement can be saved in the course of the typical working life.

# Product properties

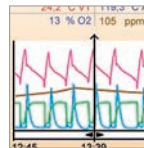
**Longlife sensors**

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



**Graphic presentation of the measurement data**

Fine presentation of the measurement procedures as a flue gas matrix and line diagram



**Sensors exchangeable by the user**

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



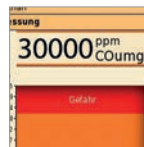
**Stamp of approval**

The testo 330 LL is TÜV-tested according to 1. BImSchV EN 50379, Parts 1-3, TÜV-tested solid fuel measurement for O<sub>2</sub> and CO.



**CO dilution**

In CO measurement, the automatic dilution to min. 30,000 ppm CO takes place from 8,000 ppm (only for testo 330-2 LL).



**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 fast attachment to burner/boiler.



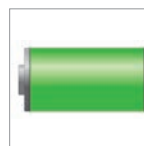
**Robust design**

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



**Long battery life**

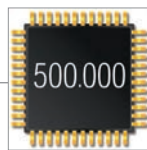
Powerful Li-ion rechargeable battery – no battery replacement. Up to eight hours' lifetime with pump running. Battery chargeable separately in instrument, no memory effect, no deep discharge.





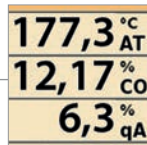
**Sensor monitoring**

Integrated traffic light system which continuously monitors the sensor functionality.



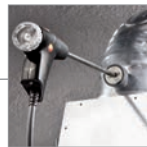
**Memory**

Up to 500,000 measurement values can be saved in the memory of the testo 330 LL.



**High-resolution colour graphic display**

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



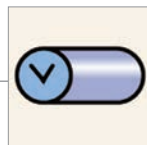
**Draught and gas zeroing**

Integrated draught and gas zeroing with probe removal: the probe can remain in the flue during zeroing (only for testo 330-2 LL).



**Fast sensor zeroing**

Automatic zeroing of the sensor in only 30 seconds after start-up, and 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.


## Ordering data

**Order suggestion  Bluetooth®**  
**testo 330-1 LL**

testo 330-1 LL flue gas analyzer with longlife gas sensors, incl. rechargeable battery and calibration protocol


testo 330-1 LL	0632 3306
Option: H <sub>2</sub> -compensated CO sensor	✓
Option: Bluetooth	✓




**Order suggestion  Bluetooth®**  
**testo 330-2 LL**


testo 330-2 LL flue gas analyzer with longlife gas sensors and integrated draught and gas zeroing, incl. rechargeable battery and calibration protocol

testo 330-2 LL	0632 3307
Option: H <sub>2</sub> -compensated CO sensor	✓
Option: Bluetooth	✓




**Order suggestion  Bluetooth®**  
**longlife set for service technicians and assessors with the fine pressure probe**


testo 330-2 LL	0632 3307
Option: H <sub>2</sub> -compensated CO sensor	✓
Option: Bluetooth	✓
International mains unit 100-240 V AC / 6.3 V DC	0554 1096
flue gas probe modular 300 mm, Ø 6 mm	0600 9763
Combustion air temperature probe 190 mm	0600 9787
testo BLUETOOTH® printer	0554 0620
PC analysis software easyheat	0554 3332
USB connection cable instrument-PC	0449 0047
Fine pressure probe	0638 0330

**Order suggestion  Bluetooth®**  
**longlife set for customer service and maintenance engineers**

testo 330-2 LL	0632 3307
Option: H <sub>2</sub> -compensated CO cell	✓
Option: Bluetooth	✓
International mains unit 100-240 V AC / 6.3 V DC	0554 1096
Flue gas probe modular 300 mm, Ø 6 mm	0600 9763
Combustion air temperature probe 190 mm	0600 9787
testo BLUETOOTH® printer	0554 0620
Hose connection set	0554 1203
System case (height: 130 mm)	0516 3300

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



**Order suggestion  Bluetooth®**  
**longlife set for assessors**

testo 330-2 LL	0632 3307
Option: H <sub>2</sub> -compensated CO sensor	✓
Option: Bluetooth	✓
International mains unit 100-240 V AC / 6.3 V DC	0554 1096
Flue gas probe modular 300 mm, Ø 6 mm	0600 9763
Combustion air temperature probe 190 mm	0600 9787
testo 308 smoke count measuring instrument	0632 0309
Probe attachment for testo 308	0554 0616
System case with double base (height: 180 mm)	0516 3301

Measuring instrument	Part no.
testo 330-1 LL flue gas analyzer with long life gas sensors, inkl. O <sub>2</sub> -/CO-sensor; without H <sub>2</sub> -compensation, incl. rech. battery and calibration protocol; with graphic display	0632 3306
testo 330-2 LL flue gas analyzer with long-life gas sensors and built-in draught and gas zeroing; incl. O <sub>2</sub> -/CO-sensor; without H <sub>2</sub> -compensation, rech. battery and calibration protocol; with graphic display	0632 3307

Spare gas sensors	Part no.
Option: Fine draught measurement, Resolution 0.1 Pa, measurement range to 100 Pa (instead of the standard draught measurement)	
Option fine differential pressure measurement	
Option: NO sensor, meas. range 0 to 3000 ppm, 1 ppm resolution	
Option H <sub>2</sub> -compensated CO cell	
Option CO <sub>low</sub> sensor	
Option NO <sub>low</sub> sensor	
Option Bluetooth	

## Accessories

Spare gas sensors	Part no.
O <sub>2</sub> sensor for testo 330-1 LL/-2 LL	0393 0002
CO sensor (without H <sub>2</sub> -compensation) for testo 330-1 LL/-2 LL	0393 0051
CO sensor, H <sub>2</sub> -compensated, 0 to 8000 ppm for testo 330-1 LL/-2 LL	0393 0101
Spare CO <sub>low</sub> sensor for testo 330-1 LL/-2 LL	0393 0103
Spare NO sensor, 0 to 3000 ppm for testo 330-1 LL/-2 LL	0393 0151
NO <sub>low</sub> spare sensor 0 to 300 ppm, 0.1 ppm, ±2 ppm (0 to 39.9 ppm) ±5% of m.v.	0393 0152
Upgrade NO-sensor; 0 to 3000 ppm; resolution 1 ppm	0554 2151

Accessories	Part no.
Mains unit international 100-240 V AC / 6.3 V DC for mains operation or battery charging in instrument	0554 1096
Spare battery 2600 mA	0515 5107
Charger for spare battery testo 308 / testo 338 / testo 330-1/-2 LL	0554 1103
Testo fast printer IrDA with wireless infrared interface; 1 roll thermal paper; 4 AA batteries	0554 0549
testo Bluetooth®/IRDA printer incl. 1 roll of printer paper, rechargeable battery and mains unit	0554 0620
testo 330i Bluetooth®/IRDA printer incl. 1 roll of printer paper, rechargeable battery and mains unit	0554 0621
Spare thermal paper for printer, permanent ink	0554 0568
Smoke tester with oil and soot sheet, for measuring soot in flue gas, excl. cone (part no. 0554 9010)	0554 0307
Filter paper for determining smoke count, 40 measurement strips for approx. 200 measurements	0554 0308
Hose connection set with adapter for separate gas pressure measurement	0554 1203
Pressure set for testing gas line testo 330-1/-2 LL version 2010	0554 1213
Differential temperature set; consisting of 2 Velcro probes and temperature adapter	0554 1208
Spare dirt filter, modular probe; 10 off	0554 3385
easyheat PC analysis software, shows measurement in form of diagrams, tables and manages customer data.	0554 3332
USB connection cable instrument to PC testo 330-1/-2 LL / testo 335	0449 0047
ISO calibration certificate/flue gas	0520 0003
Instrument case (height: 130 mm) for instrument, probes and accessories	0516 3300
Instrument case with double base (height: 180 mm) for instrument, probes and accessories	0516 3301

# Probes



<b>Modular flue gas probes, available in 2 lengths, incl. positioning cone, NiCr-Ni thermocouple, 2.2 m hose and particle filter</b>	<b>Part no.</b>	
Flue gas probe modular, incl. cone for attachment; thermocouple NiCr-Ni; hose 2.2 m; particle filter; length 180 mm; Ø 8 mm; Tmax. 500 °C; TÜV-tested	0600 9760	
Flue gas probe; length 300 mm; Ø 8 mm; Tmax. 500 °C; TÜV approval; probe stop; NiCr-Ni thermocouple; 2.2 m hose and particle filter included	0600 9761	
Flue gas probe; length 180 mm; Ø 6 mm; Tmax. 500 °C; probe stop; NiCr-Ni thermocouple; 2.2 m hose and particle filter included	0600 9762	
Flue gas probe; length 300 mm; Ø 6 mm; Tmax. 500 °C; probe stop; NiCr-Ni thermocouple; 2.2 m hose and particle filter included	0600 9763	
Flue gas probe flexible; thermocouple NiCr-Ni; hose 2.2. m; dirt filter; length 330 mm; Ø 9 mm; Tmax. 180 °C; short-term 200 °C; ideal for measuring at inaccessible points	0600 9770	
<b>Probe accessories</b>		
		<b>Part no.</b>
Probe shaft; length 180 mm; 8 mm; Tmax. 500 °C	0554 9760	
Probe shaft; length 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	
Probe shaft flexible; length 330 mm; Ø 9 mm; Tmax. 180 °C	0554 9770	
Probe shaft multi-hole; length 300 mm; Ø 8 mm; for mean CO calculation	0554 5762	
Probe shaft multi-hole; length 180 mm; Ø 8 mm; for mean CO calculation	0554 5763	
Hose extension; 2.8 m; extension cable for probe	0554 1202	
<b>Additional probes</b>		
		<b>Part no.</b>
Dual wall clearance probe for O <sub>2</sub> supply air measurement	0632 1260	
Gas leak detection probe; 0 to 10000 ppm CH <sub>4</sub> /C <sub>3</sub> H <sub>8</sub>	0632 3330	
Ambient CO probe, for detecting CO in buildings and rooms; 0 to +500 ppm	0632 3331	
Ambient CO <sub>2</sub> probe (requires connection cable 0430 0143)	0632 1240	
Connection cable for ambient CO <sub>2</sub> probe	0430 0143	
Fine pressure probe: highly accurate probe for the measurement of differential pressure and temperature, as well as Pitot tube measurement of flow velocities (see technical data)	0638 0330	
Capillary hose set for 4 Pa measurement (fine pressure probe 0638 0330 is additionally required)	0554 1215	
Solid fuel set (probe shaft, adapter, upgrade CD)	0600 9765	
<b>Combustion air temperature probes</b>		
		<b>Part no.</b>
Combustion air temperature probe, immersion depth 190 mm	0600 9787	
Combustion air temperature probe, immersion depth 60 mm	0600 9797	
<b>Additional temperature probes</b>		
		<b>Part no.</b>
Mini ambient air probe; for separate ambient air temperature measurement; 0 to +80 °C	0600 3692	
Very fast-reaction surface probe, connection cable 0403 0143 required	0604 0194	
Connection cable for surface probe 0604 0194	0430 0143	

# Technical data

	Measuring range	Accuracy $\pm 1$ digit	Resolution	Adjustment time $t_{90}$
<b>Temperature</b>	-40 to +1.200 °C	$\pm 0.5$ °C (0.0 to +100.0 °C) $\pm 0.5$ % of m.v. (remaining range)	0.1 °C (-40 to 999.9 °C) 1 °C (remaining range)	
<b>Draught measurement</b>	-9.99 to +40 hPa	$\pm 0.02$ hPa or $\pm 5\%$ of m.v. (-0.50 to +0.60 hPa) $\pm 0.03$ hPa (+0.61 to +3.00 hPa) $\pm 1.5\%$ of m.v. (+3.01 to +40.00 hPa)	0.01 hPa	
<b>Pressure measurement</b>	0 to 300 hPa	$\pm 0.5$ hPa (0.0 to 50.0 hPa) $\pm 1\%$ of m.v. (50.1 to 100.0 hPa) $\pm 1.5\%$ of m.v. (remaining range)	0.1 hPa	
<b>O<sub>2</sub> measurement</b>	0 to 21 Vol. %	$\pm 0.2$ Vol. %	0.1 Vol. %	< 20 s
<b>CO measurement (without H<sub>2</sub> compensation)</b>	0 to 4.000 ppm	$\pm 20$ ppm (0 to 400 ppm) $\pm 5\%$ of m.v. (401 to 2.000 ppm) $\pm 10\%$ of m.v. (2.001 to 4.000 ppm)	1 ppm	< 60 s
<b>CO measurement (H<sub>2</sub>-compensated)</b>	0 to 8.000 ppm	$\pm 10$ ppm or $\pm 10\%$ of m.v. (0 to 200 ppm) $\pm 20$ ppm or $\pm 5\%$ of m.v. (201 to 2.000 ppm) $\pm 10\%$ of m.v. (2.001 to 8.000 ppm)	1 ppm	< 60 s
automatic dilution in testo 320-2 LL <b>CO determination (H<sub>2</sub>-compensated)</b>	0 to 30000 ppm	$\pm 100$ ppm (0 to 1000 ppm) $\pm 10\%$ of m.v. (1001 to 30000 ppm)	1 ppm	
<b>Efficiency (ETA)</b>	0 to 120%		0.1%	
<b>Flue gas loss</b>	0 to 99.9%		0.1%	
<b>CO<sub>2</sub> determination</b> Digital calculation from O <sub>2</sub>	Display range 0 to CO <sub>2</sub> max	$\pm 0.2$ Vol. %	0.1 Vol. %	< 40 s
<b>Option: CO<sub>low</sub> measurement</b>	0 to 500 ppm	$\pm 2$ ppm (0 to 39.9 ppm) $\pm 5\%$ of m.v. (remaining range)	0.1 ppm	< 40 s
<b>Option: NO measurement</b>	0 to 3.000 ppm	$\pm 5$ ppm (0 to 100 ppm) $\pm 5\%$ of m.v. (101 to 2.000 ppm) $\pm 10\%$ of m.v. (2.001 to 3.000 ppm)	1 ppm	< 30 s
<b>Ambient CO measurement (with CO probe)</b>	0 to 500 ppm	$\pm 5$ ppm (0 to 100 ppm) $\pm 5\%$ of m.v. (>100 ppm)	1 ppm	Approx. 35 s
<b>Gas leak measurement for combustible gases (with gas leak detection probe)</b>	Display range 0 to 10.000 ppm CH <sub>4</sub> /C <sub>3</sub> H <sub>8</sub>	Signal      Optical display (LED) Audible alarm via buzzer		< 2 sec.
<b>Ambient CO<sub>2</sub> measurement (with ambient CO<sub>2</sub> probe)</b>	0 to 1 Vol. % 0 to 10.000 ppm	$\pm 50$ ppm or $\pm 2\%$ of m.v. (0 to 5.000 ppm) $\pm 100$ ppm or $\pm 3\%$ of m.v. (5.001 to 10.000 ppm)		Approx. 35 s
<b>NO<sub>low</sub></b>	0 to 300 ppm	$\pm 2$ ppm (0 to 39.9 ppm) $\pm 5\%$ of m.v. (40 to 300 ppm)	0.1 ppm	< 30 s
<b>Differential pressure, flow velocity and temperature via the fine pressure probe</b>	$\pm 10.000$ Pa  0.15 to 3 m/s max. -40 to +1,200 °C (dependent on probe)	$\pm 0.3$ Pa (0 to 9.99 Pa) plus $\pm 1$ digit $\pm 3\%$ of m.v. (10 to 10.000 Pa) plus $\pm 1$ digit  $\pm 0.5$ °C (-40 to 100 °C) $\pm 0.5$ % of m.v. (rem. meas. range) plus probe accuracy	0.1 m/s 0.1 °C	

## General technical data

Storage temperature	-20 to +50 °C	Display	Colour graphic display with 240 x 320 pixels
Operating temperature	-5 to +45 °C	Weight	600 g (without rechargeable battery)
Power supply	Rechargeable battery pack 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 <sub>2</sub> , CO) 48 months NO, CO <sub>low</sub> sensor 24 months Thermocouple and rech. battery 12 months

