

Professional flue gas analyzer

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

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

Integrated sensor monitoring

4 years' warranty without maintenance contract

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

Zeroing in flue possible (testo 320-2 LL)

High-resolution colour graphic display

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

TÜV-tested according to EN50379, Parts 1-3



°C

HPA

O₂

CO/H₂

NO

ΔP

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 O₂, CO and NO (optional) as well as a temperature probe integrated into the flue gas probe for the direct measurement of temperature, O₂, 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 O₂ and CO sensor replacement can be saved in the course of the typical working life.

Product properties

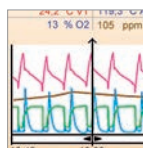
Longlife sensors

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



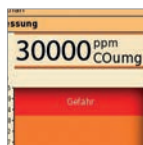
Stamp of approval

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



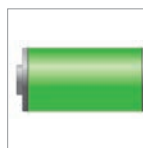
Robust design

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



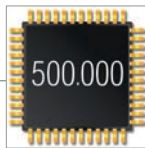
Long battery life

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.

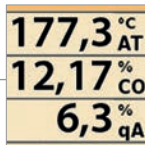


**Sensor monitoring**

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 ₂ -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 ₂ -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 ₂ -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 ₂ -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 ₂ -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, incl. O ₂ -/CO-sensor; without H ₂ -compensation, incl. rech. battery and calibration protocol; with graphic display	0632 3306
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testo 330-2 LL flue gas analyzer with long-life gas sensors and built-in draught and gas zeroing; incl. O ₂ -/CO-sensor; without H ₂ -compensation, rech. battery and calibration protocol; with graphic display	0632 3307
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Spare gas sensors

Part no.

Option: Fine draught measurement, Resolution 0.1 Pa, measurement range to 100 Pa (instead of the standard draught measurement)	
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Option fine differential pressure measurement	
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Option: NO sensor, meas. range 0 to 3000 ppm, 1 ppm resolution	
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Option H ₂ -compensated CO cell	
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Option CO _{low} sensor	
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Option NO _{low} sensor	
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Option Bluetooth	
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Accessories

Spare gas sensors	Part 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 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 _{low} 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

Modular flue gas probes, available in 2 lengths, incl. positioning cone, NiCr-Ni thermocouple, 2.2 m hose and particle filter				Part no.
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
Probe accessories				Part no.
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
Additional probes				Part no.
Dual wall clearance probe for O ₂ supply air measurement				0632 1260
Gas leak detection probe; 0 to 10000 ppm CH ₄ /C ₃ H ₈				0632 3330
Ambient CO probe, for detecting CO in buildings and rooms; 0 to +500 ppm				0632 3331
Ambient CO ₂ probe (requires connection cable 0430 0143)				0632 1240
Connection cable for ambient CO ₂ 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
Combustion air temperature probes				Part no.
Combustion air temperature probe, immersion depth 190 mm				0600 9787
Combustion air temperature probe, immersion depth 60 mm				0600 9797
Additional temperature probes				Part no.
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 ± 1 digit	Resolution	Adjustment time t_{90}
Temperature	-40 to +1.200 °C	± 0.5 °C (0.0 to +100.0 °C) ± 0.5 % of m.v. (remaining range)	0.1 °C (-40 to 999.9 °C) 1 °C (remaining range)	
Draught measurement	-9.99 to +40 hPa	± 0.02 hPa or $\pm 5\%$ of m.v. (-0.50 to +0.60 hPa) ± 0.03 hPa (+0.61 to +3.00 hPa) $\pm 1.5\%$ of m.v. (+3.01 to +40.00 hPa)	0.01 hPa	
Pressure measurement	0 to 300 hPa	± 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	
O₂ measurement	0 to 21 Vol. %	± 0.2 Vol. %	0.1 Vol. %	< 20 s
CO measurement (without H₂ compensation)	0 to 4.000 ppm	± 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
CO measurement (H₂-compensated)	0 to 8.000 ppm	± 10 ppm or $\pm 10\%$ of m.v. (0 to 200 ppm) ± 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 CO determination (H₂-compensated)	0 to 30000 ppm	± 100 ppm (0 to 1000 ppm) $\pm 10\%$ of m.v. (1001 to 30000 ppm)	1 ppm	
Efficiency (ETA)	0 to 120%		0.1%	
Flue gas loss	0 to 99.9%		0.1%	
CO₂ determination Digital calculation from O ₂	Display range 0 to CO ₂ max	± 0.2 Vol. %	0.1 Vol. %	< 40 s
Option: CO_{low} measurement	0 to 500 ppm	± 2 ppm (0 to 39.9 ppm) $\pm 5\%$ of m.v. (remaining range)	0.1 ppm	< 40 s
Option: NO measurement	0 to 3.000 ppm	± 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
Ambient CO 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 s
Gas leak measurement for combustible gases (with gas leak detection probe)	Display range 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 probe)	0 to 1 Vol. % 0 to 10.000 ppm	± 50 ppm or $\pm 2\%$ of m.v. (0 to 5.000 ppm) ± 100 ppm or $\pm 3\%$ of m.v. (5.001 to 10.000 ppm)		Approx. 35 s
NO_{low}	0 to 300 ppm	± 2 ppm (0 to 39.9 ppm) $\pm 5\%$ of m.v. (40 to 300 ppm)	0.1 ppm	< 30 s
Differential pressure, flow velocity and temperature via the fine pressure probe	± 10.000 Pa 0.15 to 3 m/s max. -40 to +1,200 °C (dependent on probe)	± 0.3 Pa (0 to 9.99 Pa) plus ± 1 digit $\pm 3\%$ of m.v. (10 to 10.000 Pa) plus ± 1 digit ± 0.5 °C (-40 to 100 °C) ± 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
Operating temperature	-5 to +45 °C
Power supply	Rechargeable battery pack 3.7 V / 2.6 Ah Mains unit 6 V / 1.2 A
Memory	500.000 readings

Display	Colour graphic display with 240 x 320 pixels
Weight	600 g (without rechargeable battery)
Dimensions	270 x 90 x 65 mm
Warranty	Instrument/probe/gas sensors (O ₂ , CO) 48 months NO, CO _{low} sensor 24 months Thermocouple and rech. battery 12 months



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