

We measure it. **testo**



**TÜV
tested**

Trailblazer. Fine particle measurement from Testo.

testo 380: In combination with testo 330, the innovative complete solution for solid fuels, oil and gas.

Professional fine particle measurement made easy.

Convenient and intuitive operation: With the new testo 380, you can effortlessly monitor the new limit values and optimize systems efficiently.

Climate protection and reduction of emissions – these are things which should go hand in hand. However, in a desire to provide CO₂-neutral heat, the operators often resort to wood-fired systems: The result is an increase in the fine particle emissions and a climate- and health-damaging pollution of the air.

The consequences of increased fine particle pollution for the human organism are not inconsiderable:

The fine particles enter the human body via the lungs, causing various forms of respiratory, but also cardio-circulatory illnesses. According to studies by the World Health Organization, in the EU alone, 250,000 to 300,000 people die prematurely each year from the effects of air pollution by fine particles, which for this reason is classified as the "air pollutant no. 1" by leading environmental agencies (e.g. US-EPA). In addition to this, it is known that soot is the most important accelerator of climate change after CO₂.

The legislative branch reacted to the threat of a deterioration in air quality with an amendment to the "Ersten Bundesimmissionschutzverordnung" (1. BImSchV, the German Federal Immission Protection Law). It stipulates new limit values, now also for small combustion systems from 4 kW, and tightens the limit values for existing systems.

After the expiry of the transition period at the beginning of 2013, not only chimneysweeps, but also heating constructors and service technicians are facing new challenges. Your area of responsibility as a chimneysweep has increased, and you are in a position to offer a broader range of service. At the same time, this is assuming that you concern yourself with the new measurement method, and are equipped with the corresponding measurement technology. As a heating constructor and service technician, the new challenge is to optimize a variety of small solid fuel systems, so that they work optimally and efficiently, and comply with the new limit values.



The new fine particle measuring system testo 380 allows you to take effortless and uncomplicated measurements directly on site – including graphic measurement value presentation. The completely new measurement method developed by Testo enables the chimneysweep to monitor and apply the limit values. And the heating technician has a measuring system available to him which optimally supports him, and which allows combustion systems to be optimized to minimum emissions. With the testo 380, you are excellently equipped and are among the pioneers in the field of fine particle measurement.

The integration of the testo 330-2 LL into the fine particle measuring system as a "command centre" makes use of the fine particle analyzer testo 380 especially versatile.

This allows gas and oil systems to be tested with only one measuring system, in addition to solid fuel systems. And, as already familiar from the testo 330-2 LL, the presentation of the measurement values takes place in real time.

The advantages of the fine particle measuring system testo 380:

- In combination with testo 330-2 LL, the innovative complete solution for solid fuels, oil and gas systems.
- Unrestricted TÜV test for the limit value levels 1/2 and according to VDI 4206 Sheet 2
- Parallel observation of fine particle, O₂ and CO measurement
- Graphic presentation of all necessary measurement values – for an optimum overview
- Especially economic in operation and maintenance
- Effortless handling and easy transport
- High-tech in a portable case: Measurement of all relevant values with one probe

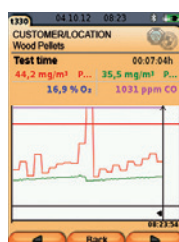
Challenge and opportunity: Be among the first to monitor the new emission limit values professionally, and expand your range of service!



testo 380: Adjust, test, decide.

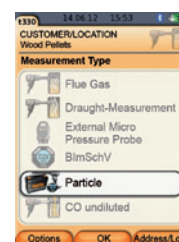
Whether as a chimneysweep, service technician or heating constructor: testo 380 supports you ideally.

Even if up to now fine particle measurement was not your field – you will not need much orientation training. The fine particle measuring system guides you through the measurement, simultaneously evaluates the relevant fine particle, O₂ and CO parameters, and visualizes them in a graph. Whether you are carrying out an acceptance inspection, or wishing to make the best possible adjustment of a combustion system: With the fine particle analyzer testo 380, you can face the new fine particle measurement challenge with confidence.



Measurement menu "Fine particles"

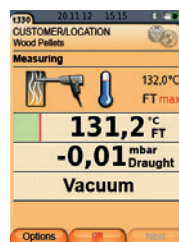
The fine particle measurement menu guides you step by step through your new measurement task. All relevant measurement values from fine particles, O₂ and CO are evaluated directly and simultaneously, and presented. In addition to this, you can trace all values at the current point in time and over the entire measurement procedure in a graph. You can now also observe additional measurement parameters such as flue gas or combustion air temperature, flue gas loss or flue gas humidity at any time. No changes regarding the heating boiler or the fine particles are hidden from you!





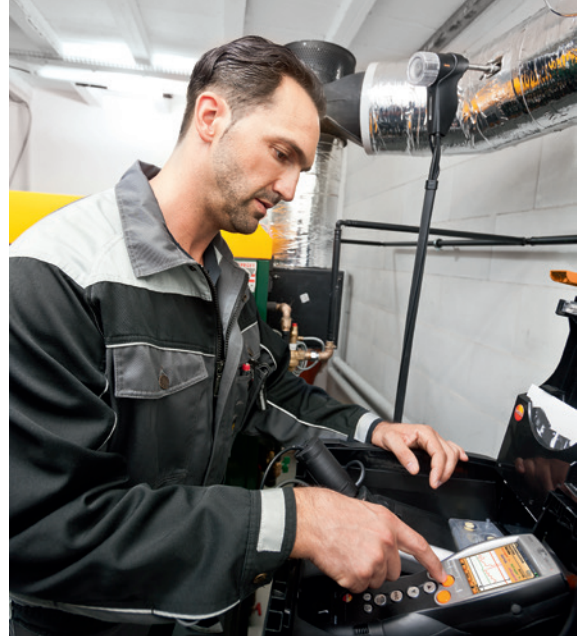
Acceptance inspection

Thanks to the testo 380, the legal guidelines and regulations regarding the procedure for an acceptance inspection are no problem: The integrated acceptance inspection in the measurement menu exactly follows the official procedure stipulated in 1. BImSchV.



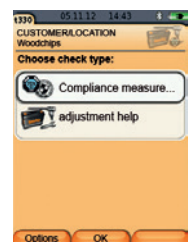
The intuitive menu structure ensures that none of the legally stipulated steps is omitted. Core flow search and draught measurement are already integrated, and you are always informed of important work steps. For an exact measurement result, you can adjust individual, non-ambient parameters such as ambient and fuel humidity and temperature. During the measurement, you can follow the current fine particle and flue gas values in real time.

The testo 380 supports chimneysweeps in their measurement tasks and when monitoring limit values.



Adjustment assistant

As a service technician and contractor in the fields of heating and plumbing, it is your demanding job to adjust solid fuel system efficiently and according to the new limit values on site. The measurement program "Adjustment assistant" provides excellent support. You can carry out your measurement especially easily, and even several measurement cycles one after the other are no problem for the testo 380. All measurement values are presented in real time – allowing you to immediately identify the respective combustion status and the results of your adjustment to the boiler.



In order to be able to test, and if necessary, re-adjust combustion systems, heating constructors and service technicians need a tool they can rely on. The testo 380 guides you through the measurement and measures all relevant parameters with only one probe.



Product properties in detail.

Well thought-out and flexible: The compact case makes high-tech practical.

The fine particle measuring system testo 380 consists of two system components: the fine particle analyzer testo 380 including a fine particle probe, and the testo 330-2 LL as the command centre and flue gas analyzer. Together, this system offers you the best possible level of compactness, ease of handling and precision in measurement.

Fine particle case

We make transporting your fine particle case easy for you – it weighs only 7.9 kg. You will be amazed how much measurement technology and practical assistance we have managed to fit into this small space for you.

testo 330-2 LL (from version 2006)

The testo 330-2 LL serves as the command centre of the system and also measures CO, O₂ and other flue gas parameters in addition to fine particles. The portable instrument can be removed from the case with one hand, and used for flue gas analysis on oil and gas systems.

Condensate trap and filters

The condensate trap and several filters prepare the raw gas for flue gas analysis in the testo 330-2 LL.

Storage compartment

Optimally used space in the case: Store various materials, e. g. the cleaning set, in this practical storage compartment.

Pre-heating stretch

The pre-heating stretch ensures the optimum gas temperature and thus an extremely precise fine particle measurement.





Fine particle probe

The fine particle probe with the rotation diluter made of technical ceramics converts part of the raw gas into measurement gas. This minimizes the contamination of the system, at the same time ensuring a highly accurate measurement. The innovative technology makes the fine particle probe compact and easy to handle.

Instruction manual compartment

So that you always have the instruction manual ready to hand when you need it, it is stored in its own compartment in the lid.

Printer (optionally available)

For documentation purposes on site, the measurement results can be printed out quickly and conveniently.

Mains unit for testo 330-2 LL

Fine particle sensor

Thanks to sophisticated sensor technology, Testo has succeeded in making fine particle measurement this easy. The fine particle values are shown in real time, so that you can directly follow the effects of all steps taken on the heating boiler.

More storage space

For the secure transport of spare sensor modules, for example, an additional storage compartment for small objects is available.

In command: **testo 330-2 LL.**

Thanks to a new menu, the testo 330-2 LL is equipped for all fine particle measurements.

In order for the fine particle measurement system testo 380 to be able to work efficiently, quickly and reliably, it requires a command centre which is as technically sophisticated as it is easy to operate. The testo 330-2 LL (from version 2006) serves as such an operating element, and guides the user through the O₂ and CO measurement parallel to the fine particle measurement. Other measurement parameters such as flue gas temperature are also determined.

The testo 330-2 LL is connected to the case by a specially designed plug connection. If required, you can fold it into the vertical in the measurement case – allowing you a view of the measurement values at all times.

If you already own a testo 330-2 LL (from version 2006), you can quickly and easily update the Firmware for fine particle measurement. Check the facing of your flue gas analyzer: If your measuring instrument's name ends in "-2 LL", you can use it for fine particle measurement.

The testo 330-2 LL can of course still be used for all applications in the gas and oil system field after integration into the measurement system testo 380. For applications on gas and oil systems, the testo 330-2 LL can be removed from the case with ease and used as a flue gas analyzer. Whether you are carrying out a flue gas analysis, a draught or differential pressure measurement, locating a gas leak or measuring ambient CO, the testo 330-2 LL is the perfect partner.



The Testo probe range allows many more measurements on a heating system. Whether a multiple-hole probe, a dual wall clearance probe or a fine pressure probe – the wide selection allows adaptation of the testo 330-2 LL to any application.

This allows the testo 330-2 LL to fulfil the highest expectations in flue gas analysis, and is able to deal with all measurement tasks on a heating system. With only one system, you can thus fulfil all your measurement tasks – whether on solid fuel, oil or gas systems!



Advantages of the new testo 330-2 LL:

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



Trailblazing technology for fine particles.

An optimum interaction of the components ensures fast and precise results.

The fine particle probe

There is only one, but it has everything: Everything you need for your professional fine particle measurement is contained in Testo's own development, the handy fine particle probe.

During the measurement procedure, the probe is responsible for a number of jobs. It samples the raw gas directly from the flue gas flow and transports it to the testo 330-2 LL for flue gas analysis. Simultaneously, the raw gas is mixed with fresh air in the rotation diluter – creating the necessary measurement gas for the fine particle measurement.. The fine particle probe is also responsible for the

measurement of the flue gas temperature and the flue draught. The probe is also equipped with a heating element which ensures a constant temperature of 120 °C, in order that the flue gas does not condense during the measurement.

In spite of its high-end technology, the testo 380's fine particle probe is extremely user-friendly and intuitive to handle. The probe can be quickly and effortlessly stored in the measurement box, and just as easily removed again. Other probes are not necessary for the measurement of fine particles.

Fine particle probe shaft

Rotation diluter

Connections to testo 380



The rotation diluter

In order to achieve an especially reliable fine particle measurement, the raw gas is passed through a rotation diluter made of technical ceramics. The particle concentration is here diluted with the help of a defined quantity of fresh air, so that the contamination of the gas paths and the entire measurement system is reduced to a minimum, and at the same time a precise fine particle measurement takes place. This means the system works without deterioration, cleaning takes place using conventional household cotton buds.



The fine particle sensor

The fine particle sensor measures the mass of the particles contained in the measurement gas. For this purpose, the measurement gas is passed on to the oscillating fine particle sensor through a jet. Depending on the mass of the particles deposited, the oscillation frequency changes, thus allowing the particle mass to be determined. Because this calculation can be carried out at very short intervals thanks to Testo technology, it is possible to follow the measurement values in the display of the testo 330-2 LL in real time during the entire duration of the measurement. This way, no smoke input is ever missed, any change in the heating boiler and its effects are immediately visible, and the system can be adjusted especially quickly and efficiently.



The testo 380 is almost completely maintenance-free – and therefore works non-stop for you.



The fine particle analyzer testo 380 can be cleaned quickly and effortlessly using conventional household materials such as cotton buds and pipecleaners.



A simple cotton bud and some distilled water: That is all you need to clean the rotation diluter.



The fine particle sensor module is also extremely low-maintenance. It can be cleaned quickly and conveniently using a cotton bud, and is then immediately ready for use again.

Ordering data **testo 380.**

testo 380, fine particle analyzer

The testo 380 fine particle analyzer incl. fine particle probe and cleaning set

A firmware update allows you to use your existing testo 330-2 LL from version 2006.



Order no. 0632 3800

EUR

testo 380, fine particle measuring system

The set for testing solid fuel, gas and oil systems

- testo 380 fine particle analyzer incl. fine particle probe and cleaning set
- Flue gas analyzer testo 330-2 LL with mains unit (incl. Bluetooth, H₂-compensated CO cell)
- Modular flue gas probe 300 mm
- Combustion air temperature probe 190 mm



Order no. 0632 3801

EUR

testo 330-2 LL: The command centre

Order no.

EUR

testo 330-2 LL (incl. Bluetooth, H₂-compensated CO-cell, integrated draught and gas zeroing, rechargeable battery and calibration protocol, graphical display)

0632 3307 70

Accessories for testo 380

Order no.

EUR

testo 606-2, wood moisture measuring instrument with integrated temperature and ambient humidity measurement

0560 6062

Combustion air temperature probe, immersion depth 190 mm

0600 9787

testo 317-3 CO monitor

0632 3173

Testo fast printer with infrared interface (IrDA)

0554 0549

Bluetooth printer

0554 0553

Spare thermal paper for printer (6 rolls), permanent

0554 0568

easyheat PC analysis software

0554 3332

USB cable 2 m

0449 0047

Spare parts for testo 380

Order no.

EUR

Spare fine particle sensor module

0394 0001

Spare jet

0394 0002

Dirt filters

0554 3381

Attachment chain for probe

0554 9356

Probe cleaning brush

0554 0228

Available online at www.testo.com/380

Technical data.

Measuring range, Accuracy, Resolution

Measuring range	0 to 300 mg/m ³
Accuracy	according to VDI 4206-2
Resolution	0,1 mg/m ³
Memory	500,000 readings

Other instrument information

Storage and transport temperature	-20 to +50 °C
Operating temperature	+5 to +40 °C
Protection class	IP40
Weight	testo 380: 7.9 kg, testo 330-2 LL: 0.65 kg
Dimensions	475 x 360 x 190 mm
Housing material	ABS
Power supply	via internal mains unit 100 V AC/0.45 A - 240 V AC/0.2 A (50–60 Hz)
Power consumption	max. 100 W
Warranty	Fine particle analyzer testo 380, 2 years (excepting wearing parts) Particle sensor, 12 months

Information fine particle probe

Probe length	270 mm
Probe shaft diameter	12 mm
Probe shaft material	Stainless steel 1,4301
Probe line length	2.2 m
Integrated elements	Draught measurement, sampling, temperature measurement, probe heating, rotation diluter
Flue gas temperature	max. 500 °C
Probe shaft heating	up to 120 °C
Rotation diluter	heated up to 80 °C
Status display	LED, shows heating-up phase and operational readiness

Available online at www.testo.com/380

Probes and accessories for testo 330-2 LL for measurements on gas and oil systems.

Retrofit/spare gas sensors	Order no.	EUR
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 8,000 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 _{low} sensor, 0 to 3,000 ppm for testo 330-1 LL/-2 LL	0393 0151	
Retrofit NO sensor, 0 to 3,000 ppm; resolution 1 ppm, for testo 330-1 LL/-2 LL	0554 2151	
Spare NO _{low} sensor, 0 to 300 ppm, 0.1 ppm, ±2 ppm (0 to 39.9 ppm) ±5% of m.v.	0393 0152	
Retrofit CO _{low} sensor, 0 to 500 ppm; resolution 0.1 ppm, for testo 330-1 LL/-2 LL	0554 2103	
Retrofit Bluetooth interface	0450 3338	



Modular flue gas probes	Order no.	EUR
Modular flue gas probe incl. cone for fixing; thermocouple NiCr-Ni; hose 2.2 m; dirt filter; length 180 mm; Ø 6 mm; T _{max.} 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; T _{max.} 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; T _{max.} 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; T _{max.} 500 °C	0600 9763	
Flue gas probe flexible, incl. cone for fixing; thermocouple NiCr-Ni; hose 2.2 m; dirt filter; length 330 mm; T _{max.} 180 °C, bending radius 90° for measurements at difficult-to-access sites	0600 9764	

Probe accessories	Order no.	EUR
Probe shaft modular; length 180 mm; Ø 8 mm; T _{max.} 500°C	0554 9760	
Probe shaft modular; length 180 mm; Ø 6 mm; T _{max.} 500°C 500 °C	0554 9762	
Probe shaft modular; length 300 mm; Ø 8 mm; T _{max.} 500°C	0554 9761	
Probe shaft modular; length 335 mm, incl. cone, Ø 8 mm; T _{max.} 1,000°C	0554 8764	
Probe shaft flexible, length 330 mm; Ø 10 mm; T _{max.} 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; T _{max.} 500 °C	0554 3330	
Cone Ø 6 mm; steel; with spring clamp and grip; T _{max.} 500 °C	0554 3329	

Other probes	Order no.	EUR
Dual wall clearance probe for O ₂ air input measurement	0632 1260	
testo 330-1 LL/-2 LL / testo 350-S/-XL gas leak detection probe, 0 to 10.000 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 LL/-2 LL fine pressure probe	0638 0330	

Available online at www.testo.com/330

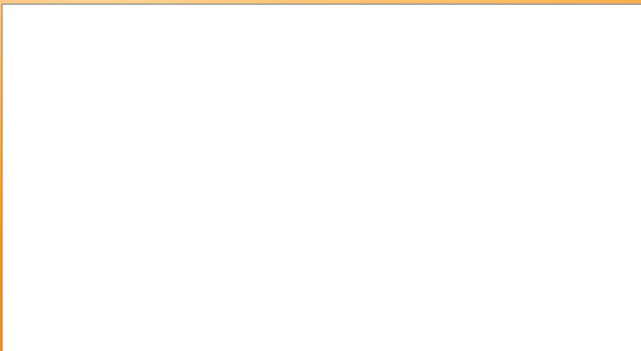
Accessories for testo 330-2 LL for measurements on gas and oil systems.

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

Accessories	Order no.	EUR
International mains unit 100 to 240 V AC / 6.3 V DC; for mains operation or battery charging in instrument	0554 1096	
Spare rechargeable battery 2,600 mA	0515 0107	
Charger for spare rechargeable battery testo 308 / testo 330-1 LL/-2 LL	0554 1103	
Readout adapter for automatic burner testo 330-1 LL/-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 LL/-2 LL	0554 1203	
Pressure set for gas pipe test testo 330-1 LL/-2 LL Version 2010	0554 1213	
Differential temperature set, consisting of 2 pipe wrap probes with adapter for testo 330-1 LL/-2 LL	0554 1208	
Spare dirt filter (10 off) for probe handle; 10 off	0554 3385	
testo easyheat configuration and analysis software for presenting measurement procedures as diagrams, tables and for customer data management. Please order USB cable 0449 0047 separately.	0554 3332	
testo easyheat and testo easyheat mobile, configuration and analysis software for presenting measurement procedures as diagrams, tables and for customer data management. Please order USB cable 0449 0047 separately.	0554 1210	
USB connection cable – PC, testo 330-1 LL/-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, vertical	0516 3331	
Tool system case with toolbag (empty), can be clicked onto system case	0516 0329	

Available online at www.testo.com/330



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All prices net plus shipping costs and VAT valid until 31.12.2011.
Valid from xx.xx.xxxx Payment 30 days net, 14 days 2% discount.
xxx xxx/oa/Q/12.2012