Data sheet
testo 380

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Fine particle measuring system

testo 380 – The innovative complete solution

- 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 measurement of fine particles, O_2 und CO
- Graphic presentation of all measurement values in real time
- Especially economic in operation and maintenance
- Effortless handling and easy transport
- High-tech in a case: Measurement of all relevant values with only one probe

mg/m³ | °C | hPa | O_2 | CO/H_2 | NO | ΔP

The constantly growing number of solid fuel systems lleads to a further increase in the emission of fine particles. The new amendment to the 1. BImSchV prescribes fine particle measurement, presenting chimneysweeps, heating constructors and service technicians with new challenges. With the new fine particle measuring system testo 380, fine particles can for the first time be measured simply on site. The completely new measurement method developed by Testo enables easy monitoring and implementation of the fine particle limit values. Combustion systems can be optimized to minimum emissions with the system.

The „command centre“ of the testo 380 is the proven emission analyzer testo 330-2 LL. When you take it out of the case, you can as usual determine, among other things, flue gas, flue draught and pressure on gas and oil systems. In connection with the testo 380, the simultaneous measurement of O_2, CO and fine particles is possible for the first time.

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Overview of the measurement system

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

Fine particle case
for easy transport of the fine particle measuring system. The entire measurement technology is contained in a convenient case with a weight of only 7.9 kg.

Fine particle probe
transforms a part of the raw gas into measurement gas. The contamination of the system is limited to a minimum, and a highly accurate measurement guaranteed at the same time. The innovative technology makes the fine particle probe compact and easy to use.

Compartment for instruction manual
The instruction manual is stored ready to hand in the lid.

Flue gas analyzer testo 330--2 LL
(from version 2006)
The command centre of the system measures not only fine particles, but simulatneously also CO, O_2 and other flue gas parameters. The portable instrument can be removed from the case easily, 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
for various materials such as the cleaning set.

Fine particle sensor
Thanks to sophisticated technology, Testo has succeeded in making fine particle measurement easy. The fine particle values are displayed in real time, so that the effect of any action taken on the boiler can be traced directly.

Pre-heating stretch
ensures optimum gas temperature, and therefore an extremely accurate fine particle measurement.

Further storage space
e.g. for spare sensor module

Printer
(optionally available) for documentation on site

Mains unit
for testo 330-2 LL


testo 380


testo 380

Innovative technology

The fine particle probe

Everything you need for your professional fine particle measurement is contained in Testo‘s own development, the handy fine particle probe. The probe 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 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. 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.

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. Thanks to the patented technology, the particle concentration is 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.

* several patents pending

Ordering data

testo 380 fine particle analyzer

- Without flue gas analyzer testo 330-2 LL (already owned testo 330-2 LL from version 2010 can be used after a Firmware update)

Part no. 0632 3800

testo 380 fine particle measuring system

- testo 380 fine particle analyzer with fine particle probe and cleaning set
- Flue gas analyzer testo 330-2 LL with mains unit (incl. Bluetooth, H_2-compensated CO cell)
- Modular flue gas probe 300 mm
- Combustion air temperature probe 190 mm

Part no. 0632 3801

Accessories

Flue gas analyzer testo 330-2 LL	**Part no.**	
Bluetooth testo 330-2 LL flue gas analyzer set with Longlife gas sensors; BLUETOOTH® and H_2-compensated CO sensor as well as integrated draught and gas zeroing, incl. rech. battery and calibration protocol; with graphic display	0632 3307 70	

Accessories testo 380	**Part no.**	
testo 606-2 wood and material humidity meter with integrated humidity measurement and NTC air thermometer incl. protection cap, batteries, belt holder and calibration protocol, TÜV permit according to VDI 4206 page 4	0560 6062	
Combustion air temperature probe, immersion depth 190 mm	0600 9787	
testo 317-3 CO monitor, incl. carrying case with belt clip, headphones, wrist strap, sampler and calibration protocol	0632 3173	
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	
Spare thermal paper for printer, permanent ink	0554 0568	
easyheat PC analysis software, shows measurement in form of diagrams, tables and manages customer data.	0554 3332	
USB connection cable instrument-PC, length 2 m	0449 0047	

Spare parts testo 380	**Part no.**	
Spare fine particle sensor module	0394 0001	
Spare jet	0394 0002	
Spare particle filter for testo 350 analyzer box (20 pcs.)	0554 3381	
Probe attachment chain	0554 9356	
Probe cleaning brush	0554 0228	

Probes and accessories testo 330-2 LL

Retrofits / 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 0061	
CO sensor, H2-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	
Upgrade NO-sensor; 0 to 3000 ppm; resolution 1 ppm	0554 2151	
NO_{low} spare sensor 0 to 300 ppm, 0.1 ppm, ±2 ppm (0 to 39.9 ppm) ±5% of m.v.	0393 0152	

Modular flue gas probes	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	
Probe stop 8 mm; steel; with spring clamp and handle; Tmax. 500 °C	0554 3330	
Probe stop 6 mm; steel; with spring clamp and handle; Tmax. 500 °C	0554 3329	

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_3H_8	0632 3330	
Ambient CO probe, for detecting CO in buildings and rooms; 0 to +500 ppm	0632 3331	
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	

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Probes and accessories testo 330-2 LL

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	0604 0194	
Connection cable	0430 0143	

Accessories testo 330-2 LL	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	
Smoke tester with oil and soot sheet, for measuring soot in flue gas, excl. cone (part no. 0554 9010)	0554 0307	
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 0055	

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Technical data

Measuring range, accuracy, resloution	
Measuring range	0 to 300 mg/m³
Accuracy	acc. VDI 4206-2
Resolution	0.1 mg/m³ (>5mg/m³)
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 to 240 V AC/0.2 A (50 to 60 Hz)
Power consumption	max. 100 W

Information fine particle probe	
Probe length	270 mm
Probe shaft diameter	12 mm
Probe shaft material	Stainless steel 1.4301
Probe cable length	2.2 m
Integrated elements	Draught measurement, sampling, temperature measurement, probe heating, rotation diluter
Flue gas temperature	max. +500 °C
Probe shaft heating	to +120 °C
Rotation diluter	heated up to +80 °C
Status display	LED, shows warm-up phase and operational readiness

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