

Flue gas analyzer for industry

testo 350 - Professional measurement system for portable, industrial emission measurement

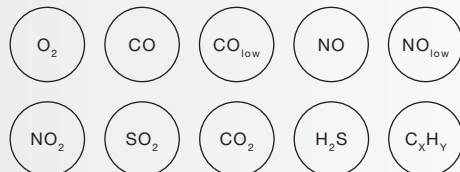
Application-guided operation with useful instrument pre-settings

Large colour graphical display

Industrial-standard design:

- insensitive to impact and dirt thanks to integrated impact protection
 - robust plug-in connections
 - closed chambers protect the interior of the instrument from dirt
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Easy exchange of gas sensors and quick access to wearing parts



The portable flue gas analyzer testo 350 is the ideal tool for professional flue gas analysis. The Control Unit is the removable operation and display unit of the testo 350. The presentation of the measurement values takes place via the colour graphic display. Thanks to the internal memory, measurement data can be transferred from the analyzer box to the Control Unit. If required, several analyzer boxes can be operated and controlled with one Control Unit. The measurement technology is situated in the analyzer box. The robust housing has integrated impact protection.

Downtimes due to contamination of the instrument are almost completely eliminated. Inherently closed chambers protect the interior of the instrument from dirt from the surroundings. Operation can also be carried out in direct connection to a PC or notebook, as an alternative to the Control Unit. After programming, the analyzer box is able to carry out measurements and store measurement data independently.

Product properties

Control Unit

The Control Unit is the operating and display unit of the testo 350. It is removable and equipped as standard with a **Li-Ion rechargeable battery**. All settings are made via the cursor button. The presentation of the measurement values takes place in the **colour graphical display**. Thanks to the **internal memory**, measurement data can be transferred from the analyzer box to the Control Unit. If required by the measurement, several analyzer boxes can be simultaneously and conveniently operated and controlled by one Control Unit.

The **status display** shows the operational status, and is easily visible from a distance.

The **connections** are industrial-standard thanks to new, mechanically robust plug-in connections (the connections for probes and databus cable are fixed with a bayonet connection, and thus securely connected to the analyzer box. This prevents unintentional removal, avoiding incorrect measurements).



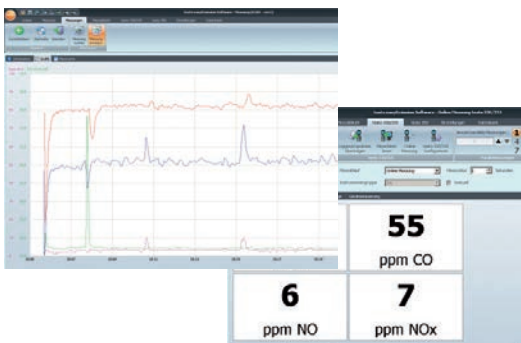
The **particle filters** are easily accessible and can be exchanged without tools.

Analyzer box

In the testo 350 analyzer box are the gas sensors, the measurement gas and rinsing pumps, the Peltier gas preparation (optional), the gas paths, filters, analysis and storage electronics as well as the mains unit and Li-ion rechargeable batteries. The robust housing has an integrated impact protection for use in tough surroundings. Inherently closed chambers protect the interior of the instrument from dirt from the surroundings. Operation can be carried out either with the Control Unit or in direct connection to a PC or laptop (USB, Bluetooth® 2.0 or CANCase). After programming, the analyzer box can automatically carry out measurements and store measurement data.

Using the "easyEmission" software, data can be read out, conveniently processed, archived and managed.

- Presentation of measurement values as a table or graph
- User-defined measurement intervals
- Online measurements via BLUETOOTH® wireless transfer or by USB connection
- Customer- and application specific measurement protocols
- All instrument configurations and settings are easily carried out with easyEmission
- Direct transfer to Excel and PDF formats
- Easy implementation of individual formulae for customized calculations
- Calculation of fuel factors when using customer-specific fuels
- Conduction of individual cross-sensitivity adjustments of the gas sensors



Large colour graphic display with application-specific menu



The following measurement objects are available:

- Burner
- Gas turbine
- Engines (selection between $\lambda > 1$ and $\lambda \leq 1$ regulated industrial engines)
- User-defined

Behind each of these measurement objects, typical fuels, a practicable order of the flue gas parameters in the display, corresponding calculations and useful instrument pre-settings are stored. These include, for example, the activation of the dilution in measurements on $\lambda \leq 1$ regulated industrial engines or the testing of the relevant gas sensor on the dilution slot.

The advantages of application-specific menus:

- Information in the display guides the user through the measurement.
- Easy operation without previous knowledge of instrument.
- Reduction of work steps before the start of the measurement.



Flexible data interfaces

These data interfaces are available for easy communication and data transfer:

- Bluetooth® 2.0 (up to 100 m without obstruction)
- USB
- Infrared interface (communication with the Testo printer)
- Testo databus (up to 800 m cable length) for the simultaneous operation of up to 16 analyzer boxes. Control optional via PC, Testo databus controller or Control Unit.



Ordering suggestions

Emission measurement on industrial engines	
	Part no.
testo 350 Control Unit	0632 3511
Option BLUETOOTH® wireless transmission	
testo 350 analyzer box	0632 3510
Option CO sensor (H ₂ -compensated), 0 to 10,000 ppm, resolution 1 ppm	
Option NO sensor, 0 to 4,000 ppm, resolution 1 ppm	
Option NO ₂ sensor, 0 to 500 ppm, resolution 0.1 ppm	
Option C ₂ H ₆ sensor, methane 100 to 40,000 ppm, propane 100 to 21,000 ppm, butane 100 to 18,000 ppm, resolution 10 ppm. Pellistor is adjusted to methane ex-works.	
Option Peltier gas preparation incl. peristaltic pump for automatic condensate trap evacuation	
Option BLUETOOTH® wireless transmission	
Option fresh air valve for long-term measurement, incl. measuring range extension with dilution factor 5 for all sensors. For long-term measurements >2 hours measurement time, the additional Peltier gas preparation option is recommended.	
Option measuring range extension for single slot with the following selectable dilution factors: 0, 2, 5, 10, 20, 40	
Flue gas probe for industrial engines, immersion depth 335 mm, incl. cone and heat shield, Tmax. probe shaft +1000 °C, special hose for NO ₂ -/SO ₂ measurement, length 5 m	0600 7552
BLUETOOTH printer set with wireless BLUETOOTH interface; incl. 1 roll thermal paper, rechargeable battery and mains unit	0554 0553
Software "easyEmission", incl. USB connection cable instrument-PC	0554 3334
Mains unit international 100-240 V AC / 6.3 V DC for mains operation or battery charging in instrument	0554 1096
Transport case for secure and tidy storage of testo 350 flue gas analyzer, flue gas probe and accessories, dimensions 570 x 470 x 210 mm (LxWxH)	0516 3510

Emission measurement on burners	
	Part no.
testo 350 Control Unit	0632 3511
Option BLUETOOTH® wireless transmission	
testo 350 analyzer box	0632 3510
Option CO sensor (H ₂ -compensated), 0 to 10,000 ppm, resolution 1 ppm	
Option NO sensor, 0 to 4,000 ppm, resolution 1 ppm	
Option NO ₂ sensor, 0 to 500 ppm, resolution 0.1 ppm	
Option SO ₂ sensor, 0 to 5,000 ppm, resolution 1 ppm	
Option Peltier gas preparation incl. peristaltic pump for automatic condensate trap evacuation	
Option BLUETOOTH® wireless transmission	
Option measuring range extension for single slot with the following selectable dilution factors: 0, 2, 5, 10, 20, 40	
Modular gas sampling probe, incl. special hose for NO ₂ -/SO ₂ -measurement, cone, thermocouple NiCr-Ni (Ti), probe shaft length 335 mm, Tmax. probe shaft 1000 °C, hose length 2.2 m	0600 8764
Mains unit international 100-240 V AC / 6.3 V DC for mains operation or battery charging in instrument	0554 1096
Transport case for secure and tidy storage of testo 350 flue gas analyzer, flue gas probe and accessories, dimensions 570 x 470 x 210 mm (LxWxH)	0516 3510

Highly accurate NOx measurement

The new testo 350 allows the separate measurement of NO and NO₂. The high and fluctuating NO and NO₂-components of engine exhaust gas make this measurement necessary in order to be able to display the real NOx value of the engine. In addition to this, the integrated gas preparation and the special flue gas probe for industrial engines with a special hose offer protection from NO₂-/ and SO₂ absorption.

Automatic measuring range extension for unexpectedly high CO concentrations

For measurements on unfamiliar systems or in a less than ideal operational status of the engine, unexpectedly high emission values can occur (e.g. CO concentrations up to 50,000 ppm). In these cases, the automatic measuring range extension is activated. This means maximum sensor lifetime. These helpful pre-settings are already stored application-specifically in the instrument.

Special instrument menu for testing flue gas post-preparation systems

This flue gas menu allows the simultaneous measurement of flue gas concentrations before and after the catalytic converter. For this purpose, two analyzer boxes are shown parallel in the display of the Control Unit, allowing a fast overview of the status of the catalytic converter.

Spatial distances

At greater distances between the gas sampling site and the adjustment site, the Control Unit can be connected to the analyzer box via the testo databus cable or by Bluetooth®.

High availability even under difficult circumstances

The instrument diagnosis as well as warning reports in clear text inform you of the current status of the flue gas analyzer. The large service aperture of the testo 350 offers easy access to all relevant wearing parts such as sensors, filters and pumps. This allows these parts to be easily and quickly cleaned or exchanged on site. The pre-calibrated gas sensors enable sensor exchange without testo gas.

High measurement accuracy even in unsupervised long-term measurements

The integrated gas preparation prevents condensate from entering and damaging the measuring instrument. Any condensate occurring is automatically pumped off by a peristaltic pump. In addition to this, the gas preparation and the PTFE hose in the gas sampling probe avoid NO₂ and SO₂ absorption – allowing highly accurate measurement results.

Useful instrument pre-settings which save time

Typical fuels, a practicable order of the flue gas parameters and useful instrument settings are pre-programmed in the instrument behind each application (selection list in display). Information in the display guides the user through the measurement, instrument-specific previous knowledge is not necessary. The testo 350 is ready to use in minutes.

Unrestricted measurement at high concentrations

In the commissioning of burners and during measurements on unfamiliar systems, very high concentrations can occur unexpectedly. In these cases, the measuring range extension is automatically activated.

Emission measurement on gas turbines

	Part no.
testo 350 Control Unit	0632 3511
Option BLUETOOTH® wireless transmission	
testo 350 analyzer box	0632 3510
Option CO _{low} sensor (H ₂ -compensated), 0 to 500 ppm, resolution 0.1 ppm	
Option NO _{low} sensor, 0 to 300 ppm, resolution 0.1 ppm	
Option NO ₂ sensor, 0 to 500 ppm, resolution 0.1 ppm	
Option Peltier gas preparation incl. peristaltic pump for automatic condensate trap evacuation	
Option BLUETOOTH® wireless transmission	
Option fresh air valve for long-term measurement, incl. measuring range extension with dilution factor 5 for all sensors. For long-term measurements >2 hours measurement time, the additional Peltier gas preparation option is recommended.	
Option measuring range extension for single slot with the following selectable dilution factors: 0, 2, 5, 10, 20, 40	
Flue gas probe for industrial engines, immersion depth 335 mm, incl. cone and heat shield, Tmax. probe shaft +1000 °C, special hose for NO ₂ -/SO ₂ measurement, length 5 m	0600 7552
BLUETOOTH printer set with wireless BLUETOOTH interface; incl. 1 roll thermal paper, rechargeable battery and mains unit	0554 0553
Mains unit international 100-240 V AC / 6.3 V DC for mains operation or battery charging in instrument	0554 1096
Transport case for secure and tidy storage of testo 350 flue gas analyzer, flue gas probe and accessories, dimensions 570 x 470 x 210 mm (LxWxH)	0516 3510

Emission measurement on thermal processes

	Part no.
testo 350 Control Unit	0632 3511
Option BLUETOOTH® wireless transmission	
testo 350 analyzer box	0632 3510
Option CO sensor (H ₂ -compensated), 0 to 10,000 ppm, resolution 1 ppm	
Option CO ₂ (NDIR) sensor, 0 to 50 Vol %, resolution 0.01 Vol %, infrared measurement principle, incl. absolute pressure measurement and CO ₂ -absorption filter with refill pack. For long-term measurements >15 minutes measurement time, the additional Peltier gas preparation option is recommended.	
Option NO sensor, 0 to 4,000 ppm, resolution 1 ppm	
Option NO ₂ sensor, 0 to 500 ppm, resolution 0.1 ppm	
Option Peltier gas preparation incl. peristaltic pump for automatic condensate trap evacuation	
Option BLUETOOTH® wireless transmission	
Modular gas sampling probe, incl. special hose for NO ₂ -/SO ₂ -measurement, cone, thermocouple NiCr-Ni (Ti); probe shaft length 335 mm, Tmax. probe shaft 1000 °C, hose length 2.2 m	0600 8764
Software "easyEmission", incl. USB connection cable instrument-PC	0554 3334
Mains unit international 100-240 V AC / 6.3 V DC for mains operation or battery charging in instrument	0554 1096
Transport case for secure and tidy storage of testo 350 flue gas analyzer, flue gas probe and accessories, dimensions 570 x 470 x 210 mm (LxWxH)	0516 3510

Easy, accurate test gas adjustment by the user

In order to fulfil the highest accuracy and comparability requirements, the testo 350 can if necessary be adjusted with test gas on site.

Use in rough conditions

Special chambers and inherently closed cooling loops isolate the instrument electronics and the sensors from the ambient air. This means that the sensor chamber is thermally separated from other instrument components, reducing possible drifts caused by thermal influences.

Highly accurate NO_x measurements at low concentrations

Emission measurement during test and adjustment work on LowNO_x gas turbines requires a very high level of measurement accuracy because of the low NO concentrations. Thanks to the combination of an NO₂ sensor and the special NO_{low} sensor with a resolution of 0.1 ppm, exactly these requirements are fulfilled. The integrated gas preparation and the special flue gas probe for industrial engines with a special hose additionally offer protection from NO₂ absorption.

Combination of measuring range extension and CO_{low} sensor

Thanks to the freely selectable dilution stages of the measuring range extension, measurement of concentrations of up to max. 20,000 ppm are no problem with the CO_{low} sensor.

Excellently suited to long-term measurements

Processes and furnace cycles can be monitored and analyzed over several days, controlled by defined measurement procedures. The testo 350 carries out the measurements automatically, and stores the data in the internal memory. Control can also take place directly via the PC and software.

Simultaneous flue gas analysis of different measurement points

In order to create a simultaneous profile of the furnace atmosphere or the combustion zones, up to 16 analyzer boxes can be connected to each other into a measurement system via the Testo databus. Control takes place either via the Control Unit or directly via a PC/notebook.

Ideal for measurements at high concentrations

Especially when recording extreme concentrations in the % range, the measuring range extension is automatically activated. The gas sensor is placed under no greater burden than at low gas concentrations, a maximum sensor lifetime is achieved – without additional costs for other gas sensors.

Industrial-standard instrument functions for more security

Inherently closed cooling loops isolate the instrument electronics and the sensors from the ambient air. This means that the testo 350 can also be used without restrictions in dirty and dusty atmospheres. The impact protection integrated into the housing protects the testo 350 from knocks and jars on the way to the measurement site.

Ordering data

testo 350 Control Unit	Part no.
testo 350 Control Unit, displays measurement values and controls analyzer box, incl. rech. battery, measurement data store, USB interface and connection for Testo databus	0632 3511
Option BLUETOOTH® wireless transmission	
Mains unit international 100-240 V AC / 6.3 V DC for mains operation or battery charging in instrument	0554 1096

testo 350 analyzer box	Part no.
testo 350 analyzer box, equipped with O ₂ , incl. differential pressure sensor, temperature probe input Type K NiCr-Ni and Type S Pt10Rh-Pt, connection Testo databus, rech. battery, integrated combustion air probe (NTC), trigger input, measurement data store, USB interface, updatable to max. 6 gas sensors selected from CO, CO _{low} , NO, NO _{low} , NO ₂ , SO ₂ , CO ₂ NDIR, C _x H _y , H ₂ S	0632 3510
The testo 350 must be equipped with a second gas sensor, otherwise the instrument cannot function. A maximum of five additional sensors can be fitted.	
Option CO sensor (H ₂ -compensated), 0 to 10,000 ppm, resolution 1 ppm	
Option CO _{low} sensor (H ₂ -compensated), 0 to 500 ppm, resolution 0.1 ppm	
Option NO sensor, 0 to 4,000 ppm, resolution 1 ppm	
Option NO _{low} sensor, 0 to 300 ppm, resolution 0.1 ppm	
Option NO ₂ sensor, 0 to 500 ppm, resolution 0.1 ppm	
Option SO ₂ sensor, 0 to 5,000 ppm, resolution 1 ppm	
Option CO ₂ (NDIR) sensor, 0 to 50 Vol %, resolution 0.01 Vol %, infrared measurement principle, incl. absolute pressure measurement and CO ₂ -absorption filter with refill pack. For long-term measurements >15 minutes measurement time, the additional Peltier gas preparation option is recommended.	
Option C _x H _y sensor, methane 100 to 40,000 ppm, propane 100 to 21,000 ppm, butane 100 to 18,000 ppm, resolution 10 ppm. Pellistor is adjusted to methane ex-works.	
Option H ₂ S sensor, 0 to 300 ppm, resolution 0.1 ppm	
Option BLUETOOTH® wireless transmission	
Option Peltier gas preparation incl. peristaltic pump for automatic condensate trap evacuation	
Option fresh air valve for long-term measurement, incl. measuring range extension with dilution factor 5 for all sensors. For long-term measurements >2 hours measurement time, the additional Peltier gas preparation option is recommended.	
Option measuring range extension for single slot with the following selectable dilution factors: 0, 2, 5, 10, 20, 40	
Option DC voltage input 11 V to 40 V	
Option special gas pump for long-term measurements with extended warranty. For long-term measurements >2 hours measurement time, the additional Peltier gas preparation option is recommended.	
Option automatic zeroing of pressure sensor for continuous flow velocity/differential pressure measurement	

Accessories testo 350 analyzer box	Part no.
Cable with battery clips and adapter for connection to DC voltage input testo 350 analyzer box	0554 1337
Exchangeable filter NO sensor (1 off), blocks cross-gas SO ₂	0554 4150
Transport case for secure and tidy storage of testo 350 flue gas analyzer, flue gas probe and accessories, dimensions 570 x 470 x 210 mm (LxWxH)	0516 3510
Transport backpack for testo 350	0516 3511
Carrying belt set for flue gas analyzer testo 350	0554 0434
Spare particle filter for testo 350 analyzer box (20 pcs.)	0554 3381
Hose set to transport flue gas from testo 350 analyzer box, length 5 m	0554 0451
Wall holder for analyzer box testo 350, can be locked	0554 0203
Current/voltage cable (±1 V, ±10 V, 20 mA)	0554 0007

Ordering data

PC software and Testo databus	Part no.	
Software "easyEmission", incl. USB connection cable instrument-PC Functions: user-defined measurement intervals, transfer of measurement values to Microsoft EXCEL in seconds, user-defined fuels, presentation of measurement values as a table or graph, easy configuration of customer-specific reports, etc.	0554 3334	
Software "easyEmission" for testo 350 incl. Testo databus controller with USB connection instrument-PC, cable for Testo databus and terminal plug. If several testo 350 flue gas analyzers are connected to the Testo databus, they can then be controlled and read out on a PC (possible measurement interval in databus of 1 measurement per second).	0554 3336	
Connection cable for Testo databus between Control Unit and analyzer box or between several analyzer boxes, with bayonet connection, length 2 m.	0449 0075	
Connection cable for Testo databus between Control Unit and analyzer box or between several analyzer boxes, with bayonet fitting, length 5 m	0449 0076	
Connection cable for Testo databus between Control Unit and analyzer box or between several analyzer boxes, with bayonet fitting, length 20 m	0449 0077	
More cable lengths up to 800 m on request		
Set Analog output box, 6 channels, 4 to 20 mA, for output of the measurement values on for example an analog recorder, set consists of analog output box, connection cable Testo databus, length 2 m, Testo databus terminal plug	0554 3149	



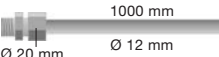
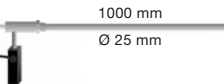

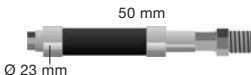

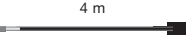
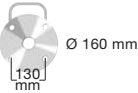
Printer and Accessories	Part no.	
Testo fast printer IRDA with wireless infrared interface; 1 roll thermal paper; 4 AA batteries	0554 0549	
BLUETOOTH printer set with wireless BLUETOOTH interface; incl. 1 roll thermal paper, rechargeable battery and mains unit	0554 0553	
Spare thermal paper for printer, permanent ink	0554 0568	

Calibration Certificates	Part no.	
ISO calibration certificate/flue gas	0520 0003	
ISO calibration certificate velocity; hot wire, vane anemometer, Pitot tube; calibration points 1; 2; 5; 10 m/s	0520 0004	
ISO calibration certificate velocity; hot wire, vane anemometer, Pitot tube; calibration points 5; 10; 15; 20 m/s	0520 0034	

Probes

Standard gas sampling probes: Modular flue gas probes, available in 2 lengths, incl. probe stop, NiCr-Ni thermocouple, 2.2 m hose and particle filter	Part no.	
Modular flue gas probe 335 mm immersion depth, incl. cone, thermocouple NiCr-Ni (TI) Tmax 500 °C and NO ₂ /SO ₂ special hose 2.2 m	0600 9766	
Modular flue gas probe 700 mm immersion depth, incl. cone, thermocouple NiCr-Ni (TI) Tmax 500 °C and NO ₂ /SO ₂ special hose 2.2 m	0600 9767	
Modular flue gas probe 335 mm immersion depth, incl. cone, thermocouple NiCr-Ni (TI) Tmax 1000 °C and NO ₂ /SO ₂ special hose 2.2 m	0600 8764	
Modular flue gas probe, 700 mm immersion depth, incl. cone, thermocouple NiCr-Ni Tmax 1000 °C and NO ₂ /SO ₂ special hose 2.2 m	0600 8765	
Modular flue gas probe with pre-filter Ø 14 mm 335 mm immersion depth, incl. cone, thermocouple NiCr-Ni (TI) Tmax 1000°C and NO ₂ /SO ₂ special hose 2.2 m	0600 8766	
Modular flue gas probe with pre-filter Ø 14 mm 700 mm immersion depth, incl. cone, thermocouple NiCr-Ni (TI) Tmax 1000°C and NO ₂ /SO ₂ special hose 2.2 m	0600 8767	
Probe accessories/standard gas sampling probes		
		Part no.
Hose extension; 2.8 m; extension cable for probe and analyzer	0554 1202	
Probe shaft with pre-filter, length 335 mm, incl. cone, Ø 8 mm, Tmax 1000 °C	0554 8766	
Probe shaft with pre-filter, length 700 mm, incl. cone, Ø 8 mm, Tmax 1000 °C	0554 8767	
Spare sintered filter, 2 off	0554 3372	
Spare dirt filter, modular probe; 10 off	0554 3385	
Probe shaft length 700 mm, incl. cone, Ø 8 mm, Tmax 500 °C	0554 9767	
Probe shaft length 335 mm, incl. cone, Ø 8 mm, Tmax 1000 °C	0554 8764	
Probe shaft length 700 mm, incl. cone, Ø 8 mm, Tmax. 1000 °C	0554 8765	
Engine probes		
		Part no.
Flue gas probe for industrial engines, immersion depth 335 mm, incl. cone and heat shield, Tmax. probe shaft +1000 °C, special hose for NO ₂ -/SO ₂ measurement, length 5 m	0600 7552	
Flue gas probe for industrial engines with probe shaft pre-filter, 335 mm immersion depth incl. cone and heat shield, Tmax +1000 °C, special hose for NO ₂ -/SO ₂ measurements, length 5 m	0600 7553	
Thermocouple for exhaust gas temperature measurement, NiCr-Ni, length 400 mm, Tmax. +1000 °C with 2.4 m connection cable and additional temperature protection	0600 8894	
Thermocouple for exhaust gas temperature measurement, NiCr-Ni, length 400 mm, Tmax. +1000 °C with 5.2 m connection cable and additional temperature protection	0600 8895	
Spare probe shaft with pre-filter for flue gas probe for industrial engines, probe shaft length 335 mm, Tmax 1000 °C	0554 7455	
Temperature probes		
		Part no.
Combustion air temperature probe, immersion depth 60 mm	0600 9797	
Pitot tubes		
		Part no.
Pitot tube, 350 mm long, stainless steel, measures flow velocity	0635 2145	
Pitot tube, 1000 mm long, stainless steel, measures flow velocity	0635 2345	
Connection hose; silicone; 5 m long; max. load 700 hPa (mbar)	0554 0440	
Pitot tube, stainless steel, 750 mm long, measures flow velocity with temperature, 3x hoses (5 m long) and heat shield	0635 2042	

Probes

Industrial probes	Part no.		
Heated handle, power supply 115 to 230 V, 50/60 Hz, temperature gas path > 180 °C, IP54, gas input G1/4", gas exit M10x1 external thread	 <p>Power consumption: 200 Watt Ready to use : after aprox. 20 min Amb. temperature.: -20 to +50 °C Weight: 1.7 kg</p>	0600 7920	
Adapter, non-heated, IP54, gas input G1/4", gas exit M10x1 external thread	 <p>Ambient temp.: -20 to +50 °C Weight: 0.4 kg</p>	0600 7911	
Non-heated sampling pipe to +600 °C, stainless steel 1.4571		0600 7801	
Non-heated sampling pipe to +1200 °C, Inconel 625	 <p>1000 mm Ø 20 mm Ø 12 mm</p>	<p>Connection: G1/4" Weight: 0.4 kg</p>	0600 7803
Non-heated sampling pipe to +1800 °C, Al-Oxide, 1 m		0600 7805	
Heated sampling pipe, power supply 230 V / 50 Hz, stainless steel 1.4571, heating > 180 °C, flue gas temperature max. +600 °C	 <p>1000 mm Ø 25 mm</p>	<p>Power consumption.: 650 Watt; connection: electr. connection in heated handle, connection adapter with screw thread/thread ring G1/4" *</p>	0600 7820
Extension pipe to +600 °C, stainless steel 1.4571, 1 m	 <p>1000 mm Ø 20 mm Ø 12 mm</p>	<p>Connection: Thread screw/screw socket G1/4"; Weight: 0.45 kg</p>	0600 7802
Extension pipe to +1200 °C, Inconel 625, 1 m		0600 7804	
Pre-filter for dusty flue gases, ceramic, dust load max. 20 g/m ³ , filter pore size 20 µm, temperature max. 1000 °C pre-filter can only be mounted on extension pipe 0600 7802 or 0600 7804.	 <p>50 mm Ø 23 mm</p>	<p>Connection: G1/4" Thread: Weight: 0.2 kg</p>	0554 0710
Thermocouple, NiCr-Ni, -200 to +1200 °C, Inconel 625, length 1.2 m	 <p>Ø 4 mm</p>	<p>Connection: To analyzer via 4 m connection cable with 8 pin plug; Weight: 0.15 kg. The length depends on the number of sampling and extension pipes used.</p>	0430 0065
Thermocouple, NiCr-Ni, -200 to +1200 °C, Inconel 625, length 2.2 m			0430 0066
Special sampling hose for precise NO ₂ /SO ₂ measurements, length 4 m	 <p>4 m</p>	<p>Hose material inside: PFFE hose with 2 mm inner diameter (lowest absorption, self-cleaning effect); Material outside: rubber; length: 4.0 m; Weight: 0.45 kg</p>	0554 3384
Extension cable, 5 m long, between plug-in head cable and instrument			0409 0063
Mounting flange, stainless steel 1.4571 adjustable quick-action fitting suitable for all sampling/extension pipes	 <p>Ø 160 mm 130 mm</p>		0554 0760
Transport case for industrial probes, aluminium, space for: handle, probes, flange and accessories, dimensions 1270 x 320 x 140 mm (LxWxH)			0516 7900

* Supply via heated handle

Technical data

testo 350 Control Unit

	testo 350 Control Unit	Analog output box (mA Out)
Oper. temp.	-5 to +45 °C	-5 to +45 °C
Storage temp.	-20 to +50 °C	-20 to +50 °C
Battery type	Lithium battery	–
Battery life	5 h (without wireless connection)	–
Memory	2 MB (250,000 meas. values)	–
Weight	440 g	305 g
Dimensions	88 x 38 x 220 mm	200 x 89 x 37 mm
Protection class	IP40	–
Warranty	2 years	3 years

Country permits BLUETOOTH® wireless transmission for testo 350

The BLUETOOTH® radio module used by Testo is permitted for the following countries and may only be used in those countries, i.e. the BLUETOOTH® wireless transmission may not be used in any other country!

Europe including all EU member states

Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and Turkey

European countries (EFTA)

Iceland, Liechtenstein, Norway, Switzerland

Non-European countries

Canada, USA, Japan, Ukraine, Australia, Columbia, El Salvador, Mexico, Venezuela

Technical data testo 350 analyzer box

	Meas. range	Accuracy ±1 digit	Resolution	Reaction time t ₉₀
O₂ measurement	0 to +25 Vol. % O ₂	±0.8% of fsv (0 to +25 Vol. % O ₂)	0.01 Vol. % O ₂ (0 to +25 Vol. % O ₂)	20 s (t ₉₅)
CO measurement (H₂ compensated)*	0 to +10.000 ppm CO	±5% of mv (+200 to +2.000 ppm CO) ±10% of mv (+2.001 to +10.000 ppm CO) ±10 ppm CO (0 to +199 ppm CO)	1 ppm CO (0 to +10.000 ppm CO)	40 s
CO_{low} measurement (H₂ compensated)*	0 to 500 ppm CO	±5% of mv (+40 to +500 ppm CO) ±2% of mv (0 to +39,9 ppm CO)	1 ppm CO (0 to +500 ppm CO)	40 s
NO measurement	0 to +4.000 ppm NO	±5% of mv (+100 to +1.999 ppm NO) ±10% of mv (+2.000 to +4.000 ppm NO) ±5 ppm CO (0 to +99 ppm CO)	±1 ppm NO (0 to +4.000 ppm NO)	30 s
NO_{low} measurement	0 to +300 ppm NO	±5% of mv (+40 to +300 ppm NO) ±2 ppm NO (0 to +39.9 ppm NO)	±0.1 ppm NO (0 to +300 ppm NO)	30 s
NO₂ measurement	0 to +500 ppm NO ₂	±5% of mv (+100 to +500 ppm NO ₂) ±5 ppm NO ₂ (0 to +9,99 ppm NO ₂)	±0.1 ppm NO ₂ (0 to +500 ppm NO ₂)	40 s
SO₂ measurement	0 to +5.000 ppm SO ₂	±5% of mv (+100 to +2.000 ppm SO ₂) ±10% of mv (+2.001 to +5.000 ppm SO ₂) ±5 ppm SO ₂ (0 to +99 ppm SO ₂)	±1 ppm SO ₂ (0 to +5.000 ppm SO ₂)	30 s
CO₂ measurement (IR)	0 to +50 Vol. % CO ₂	±0.3 Vol. % CO ₂ + 1% of mv (0 to 25 Vol. % CO ₂) ±0.5 Vol. % CO ₂ + 1.5% of mv (>25 to 50 Vol. % CO ₂)	0.01 Vol. % CO ₂ (0 to 25 Vol. % CO ₂) 0.1 Vol. % CO ₂ (>25 Vol. % CO ₂)	10 s
H₂S measurement	0 to +300 ppm H ₂ S	±5% of mv (+40 to +300 ppm) ±2 ppm (0 to +39.9 ppm)	0.1 ppm (0 to +300 ppm)	35 s

* H₂ only as an indicator

	Single dilution with selectable dilution factor (x2, x5, x10, x20, x40)			Dilution of all sensors (factor 5) When dilution of all sensors is activated, the measurement values of O ₂ , CO ₂ -(IR) and C _x H _y are not shown in the display.		
	Meas. range	Accuracy ±1 digit	Resolution	Meas. range	Accuracy ±1 digit	Resolution
CO measurement (H₂ compensated)	depending on selected factor	±2% of m.v. (additional error)	1 ppm	2.500 to 50.000 ppm	±5 % of m.v. (additional error) Press. range -100 to 0 mbar at probe tip	1 ppm
CO_{low} measurement (H₂ compensated)	depending on selected dil. factor		0.1 ppm	500 to 2.500 ppm		0.1 ppm
NO measurement			1 ppm	1.500 to 20.000 ppm		1 ppm
NO_{low} measurement	0.1 ppm		300 to 1.500 ppm	0.1 ppm		
SO₂ measurement	1 ppm		500 to 25.000 ppm	1 ppm		
C_xH_y measurement	Methane: 100 to 40,000 ppm Propane: 100 to 21,000 ppm Butane: 100 to 18,000 ppm		10 ppm			
NO₂ measurement				500 to 2.500 ppm		0.1 ppm
H₂S measurement			200 to 1.500 ppm	0.1 ppm		

Technical data

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	Meas. range	Accuracy ±1 digit	Resolution	Reaction time t_{90}
Degree of effectivity	0 to +120 %		0.1 % (0 to +120 %)	
Flue gas loss	0 to +99.9 % qA		0.1 % qA (-20 to +99.9 % qA)	
CO ₂ calculation	0 to CO _{2 max} Vol. % CO ₂	calculated from O ₂ ±0.2 Vol.%	0.01 Vol. % CO ₂	40 s
Differential pressure 1	-40 to +40 hPa	±1.5% of mv (-40 to -3 hPa) ±1.5% of mv (+3 to +40 hPa) ±0.03 hPa (-2.99 to +2.99 hPa)	0.01 hPa (-40 to +40 hPa)	
Differential pressure 2	-200 to +200 hPa	±1.5% of mv (-200 to -50 hPa) ±1.5% of mv (+50 to +200 hPa) ±0.5 hPa (-49.9 to +49.9 hPa)	0.1 hPa (-200 to +200 hPa)	
Flow velocity	0 to +40 m/s		0.1 m/s (0 to +40 m/s)	
Absolute pressure (opt. when equipped with IR sensor)	-600 to +1.150 hPa	±10 hPa	1 hPa	
Flue gas dewpoint calculation	0 to 99.9 °C td		0.1 °C td (0 to 99.9 °C td)	
Type K (NiCr-Ni)	-200 to +1.370 °C	±0.4 °C (-100 to +200 °C) ±1 °C (-200 to -100.1 °C) ±1 °C (+200.1 to +1370 °C)	0.1 °C (-200 to +1.370 °C)	
Type S (Pt10Rh-Pt)	0 to +1.760 °C	±1 °C (0 to +1.760 °C)	0.1 °C (0 to +1.760 °C)	
Ambient temperature probe (NTC)	-20 to +50 °C	±0.2 °C (-10 to +50 °C)	0.1 °C (-20 to +50 °C)	

Technical data CxHy sensor

Meas. parameter	Meas. range ¹	Accuracy ±1 digit	Resolution	Min. O ₂ requirement in flue gas	Reaction time t_{90}	Response factor ²
Methane	100 to 40.000 ppm	<400 ppm (100 to 4.000 ppm) <10% of mv (>4.000 ppm)	10 ppm	2% + (2 x m.v. methane)	<40 s	1
Propane	100 to 21.000 ppm			2% + (5 x m.v. propane)		1.5
Butane	100 to 18.000 ppm			2% + (6.5 x m.v. butane)		2

¹ Lower explosion limit (LEL) must be adhered to.

² The HC sensor is adjusted to methane ex-works. It can be adjusted to a different gas (propane or butane) by the user.

General technical data

Dimensions	330 x 128 x 438 mm	Trigger input	Voltage 5 to 12 Volt (rising or trailing edge) pulse width > 1 sec load: 5 V/max, 5 mA, 12 V/max. 40 mA
Weight	4800 g	Warranty	<i>Measuring instrument</i> 2 years (excepting wearing parts e.g. gas sensors...) <i>Gas sensors</i> CO/NO/NO ₂ /SO ₂ /H ₂ /C _x H _y : 1 year O ₂ sensor: 1 1/2 years CO ₂ -IR sensors: 2 years The warranty applies to average sensor load. Rech. battery: 1 year
Storage temperature	-20 to +50 °C	Protection class	IP40
Operating temperature	-5 to +45 °C	Battery life	Maximum load approx. 2.5 h
Housing material	ABS		
Memory	250,000 readings		
Power supply	AC mains unit 100V to 240V (50 to 60 Hz)		
DC voltage input	11 V to 40 V		
Max. dust load	20 g/m ³ dust in flue gas		
Dewpoint calculation	0 to 99 °Ctd		
Max. positive pressure	max. +50 mbar		
Max. negative pressure	min. -300 mbar		
Pump through-flow	1 l/min. with through-flow monitoring		
Hose length	16.2 m (corresponds to 5 probe hose extensions)		
Max. humidity load	+70 °C dewpoint temperature		

