testo 350-S/-XL

testo 350 S/XL, flexible flue gas measuring system

testo 350 is a flexible, portable analysis system which is basically made up of a control unit, a flue gas analyzer and a flue gas probe, depending on customer requirements.

The detachable **control unit** can control the analysis system and read out data. The testo 350 XL control unit can also be used as a separate hand-held analyzer for differential pressure (built-in) and also for temperature, humidity, flow etc. thanks to its additional probe socket. Readings are printed on the built-in printer.

The **flue gas analyzer** is the "heart" of the analysis system and is available in two different versions:

• testo 350 S Basic version

• testo 350 XL Advanced version.

The **testo 350 S flue gas analyzer** is equipped with a gas sensor for O_2 as standard. One sensor must be fitted or up to 5 additional sensors for NO (option), NO_2 (option), SO_2 (option), NO_{low} (option), CO (Option), CO_{low} (option), H_2S (option), HC (Option) or CO_2 via infrared gas sensor (option) can be fitted. Temperature and differential pressure as well as the usual parameters such as Δ, qA, etc. are also calculated.

The even more convenient **testo 350 XL flue gas analyzer** is equipped with gas sensors for O_2, CO, NO and NO_2 as standard. Additional sensors for HC (option), NO_{low} (option), CO_{low} (option), SO_2 (Option), H_2S (option) or CO_2 via infrared gas sensor (option) are available. In addition to the features of the S version, the testo 350 XL flue gas analyzer also has a Peltier gas preparation unit with a hose pump to regulate condensate disposal as well as a fresh air valve for long-term measurements lasting several hours.

Both versions of the flue gas analyzers can be equipped with up to 6 gas sensors, have a built-in rechargeable battery as standard, (for battery operation), data logger (250,000 readings) as well as a Testo data bus connection.

The testo 350 S flue gas analyzer can be retrofitted with all the features/functions of the testo 350 XL flue gas analyzer.

Tests and permits

– TÜV Bayern RgG 211

– Conforms to DIN EN 50379 Part 2

4 user defined function buttons

Integrated printer
Prints readings on site

Particle filter

Control unit

Analysis box

Integrated Peltier gas preparation unit

Integrated differential pressure probe

Data communication via PC

Testo data bus

User defined probe socket

Robust housing with impact protection

Integrated differential pressure/velocity measurement

Connection for flue gas probe + additional °C temperature probe

Tests and permits
• TÜV Bavaria RgG 211
• Conforms to DIN EN 50379 Part 2

US EPA
ETV Verified
Advanced Testing Program

S testo 350-S control unit	**XL** testo 350 XL control unit	**S** testo 350-S flue gas analyser box	**XL** testo 350 XL flue gas analyzer box
Control unit displays measurement data and controls measurement system, built-in printer, connection for Testo data bus and terminal plug included	Control unit displays measurement data and controls the measurement system, incl. built-in printer, pressure measurement 40/200 hPa, 1 user defined probe socket, programmable measurements and memory space for 250,000 readings, connection for Testo data bus, incl. terminal plug	testo 350-S flue gas analyser, equipped with: O_2, differential pressure measurement, 2 temperature probe sockets, testo data bus connection, built-in rechargeable battery, data logger, can be upgraded to max. 6 sensors (with NO, NO_2, CO, H_2S, HC, SO_2, CO_2 NDIR) A second gas sensor must be installed in testo 350-S, otherwise the instrument is unable to function. Up to 5 additional sensors can be fitted.	testo 350 XL analyzer box, equipped with O_2, CO (with switch-off and rinse function), NO, NO_2, differential pressure measurement, 2 temperature probe sockets, gas preparation, Testo data bus adapter, automatic fresh air rinse with valve (including measurement range extension with dilution factor 5 for all sensors), built-in rechargeable battery, data memory, can be upgraded to max. 6 gas sensors (with H_2S, HC, SO_2, CO_2 NDIR)
Part no. **0563 0369**	Part no. **0563 0353**	Part no. **0563 0368**	Part no. **0563 0350**

Differences between control units at a glance

	testo 350 S control unit	testo 350 XL control unit
Built-in printer	■	■
Differential pressure measurement (-40 to +40 hPa / -200 to +200 hPa)	–	■
1 user-defined probe socket (for e.g. temperature, relative humidity measurement, etc.)	–	■
Touchscreen	–	○
Connection from a flue gas analyzer to the Testo data bus	■	■
Connection of several flue gas analyzers, analog output boxes and testo 454 loggers to the Testo data bus	–	■
NiMH rechargeable battery pack	–	○
Internal memory for 250,000 readings	–	■

■ = Standard   ○ = option   –= Not possible

Differences between flue gas analysers at a glance

		testo 350 S	testo 350 XL
Maximum no. of gas sensors		**6**	**6**
O_2	0 –25 Vol.	■	■
CO (H2)	0 –10,000 ppm	○	■
CO_{low} (H2)	0 –500 ppm	○	○
NO	0 –3,000 ppm (0.1 ppm resolution)	○	■
NO_{low}	0 –300 ppm (0.1 ppm resolution)	○	○
NO_2	0 –500 ppm (0.1 ppm resolution)	○	■
SO_2	0 –5,000 ppm	○	○
HC	0 –4 Vol. % (0.001 % resolution)	○	○
H_2S	0 –300 ppm (0.1 ppm resolution)	○	○
CO_2 (NDIR)	0 –50 Vol. %	○	○
Built-in gas preparation unit (is recommended with high humidity levels in flue gas and during long-term measurements >2 hrs measuring time)		○	■
Automatic fresh air rinse with valve (incl. measurement range extension with dilution factor 5 for all sensors)		○	■
Special gas pump for long-term measurements with extended warranty		○	○
Measurement range extension for CO gas sensor (with selectable dilution factors)		○	○
CO gas sensor switch-off via adjustable switch-off threshold		■	■
Trigger input –stops and starts measurement externally		○	○
Differential pressure measurement (-40 to +40 hPa / -200 to +200 hPa)		■	■
Built-in rechargeable battery		■	■
2 temperature probe sockets (Type K NiCr-Ni)		■	■
Data logger (250,000 readings)		■	■
Testo data bus connection		■	■

■ = Standard   ○ = option

testo 350-S/-XL | Versatile exhaust gas measurement system testo 350-S/-XL

Control unit testo 350-XL

Testo databus controller with USB connection

Flue gas analyser testo 350-S/-XL

Testo databus

Logger testo 454

m/s, t/y

ΔhPa, mbar

NO_X, SO_2, O_2, CO_2, ...

mA out

Power box

m/s, m³/h   ΔhPa, Pa   °C   %RH
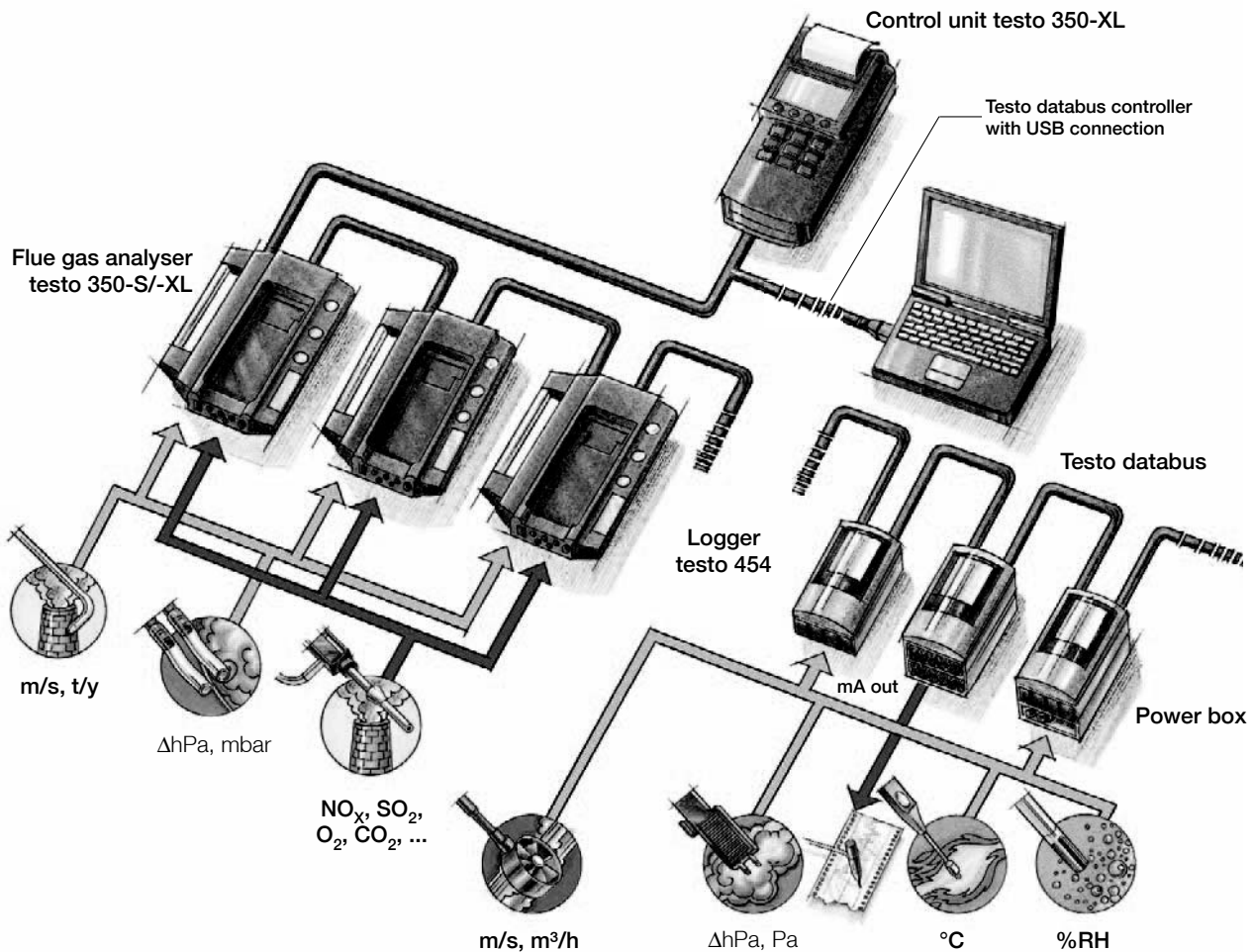
The system concept of testo 350-S/-XL

For many applications in the industrial sector, a flue gas analyser with additional features is needed to fulfill the following requirements:
• Simultaneous gas and process analysis at different measurement points without a time-consuming measurement point changeover switch
• Option of connecting additional parameters such as °C; %RH; mA/mV etc.
• Long-term measurements in order to be able to assess different system cycles
• Flexibility of system in order to be able to react to the different requirements of the different systems. The **testo 350-S/-XL** measurement system fulfills these requirements. Several flue gas analysers, equipped differently, are connected together.

If several flue gas analysers, for example, are connected to the Testo data bus, they can be controlled, read out or programmed via the following two options:
• **One flue gas analyser after the other** via the testo 350-XL Control Unit, for example, or via PC and an RS 232 cable
Alternatively:
• **Several flue gas analysers simultaneously** via PC and and the Testo data bus controller with USB connection.

Parameters
Parameters which can be measured using **testo 350-S/-XL**:
a) testo 350-S/-XL flue gas analyser
• Flue gas parameters such as O_2, CO, NO_x, SO_2, H_2S, HC, CO_2(IR)
• Differential pressure, e.g. for combustion chamber pressure measurement
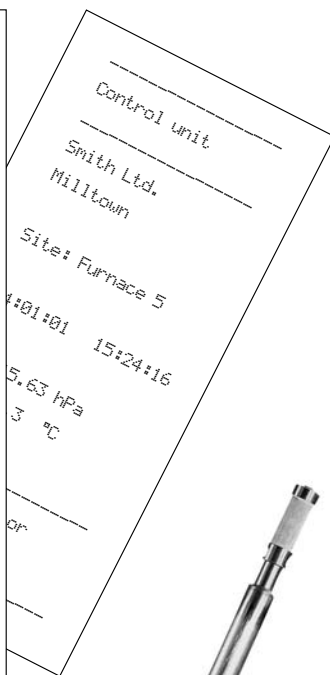• Flow measurement with Pitot tube
The testo 350-S or testo 350-XL flue gas analysers are positioned at the respective measurement point. They are operated either connected to each other via the Testo data bus or as a separate datalogger without being connected. Separate measurement programs are saved in the flue gas analysers with the help of the testo 350-XL or PC Control unit. They include, for example, start/stop criteria, measurement cycles, fresh air phases etc. **testo 350-S** and **testo 350-XL** flue box analysers, equipped differently, can be used in the network.
Likewise loggers and analog outputs (6 channels, 4-20mA) can be connected in this way (only to testo 350-XL Control Unit).

b) Logger box
• Temperature, e.g. of surfaces, liquids
• Humidity, e.g. in suction ducts or ambient air
• Pressure, e.g. with differential pressure and high pressure probes
• Flow and volume flow, e.g. with vanes, hot wire probes
• rpm etc.

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testo 350 XL
SN: 000321/D
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Smith Ltd.
Milltown


Site: Furnace 5

15:01:01   08:20:15

Fuel:  Natural gas

  10.9 %  CO2
  0.45 %  O2
  2348 ppm CO
   320 ppm NO
    15 ppm NO2
    30 ppm SO2
   120 ppm H2S
  1050 °C  Flue gas temp.
  32.5 °C  Ambient temp.
  15.2 m/s Velocity
   1.2 %   Flue gas loss
 0.150 %   HC

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Batch 25/2
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Control unit

Smith Ltd.
Milltown

Site: Furnace 5

4:01:01   15:24:16

5.63 hPa
3   °C


or
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Site

Date, Time

Readings

Status display · Site name · Selected analysis box · Page no.

	TEST 24	002	01/05
●			

11.2	324	23.6
CO$_2$ %	CO ppm	H2S ppm
522	292	193
HC %	NO$_x$ ppm	SO$_2$ ppm
PStop	Zoom	Gas	dp=0

4 user defined function buttons

Set date/time		
S Change date		23.6
E View		
Instrument	ppm	VT °C
Service		
Fuel oil	86	260
Fuel	n %	AT °C
		ESC	OK

Easy to follow menu guide and operation

Industrial probe

Standard flue gas probes

Pitot tube
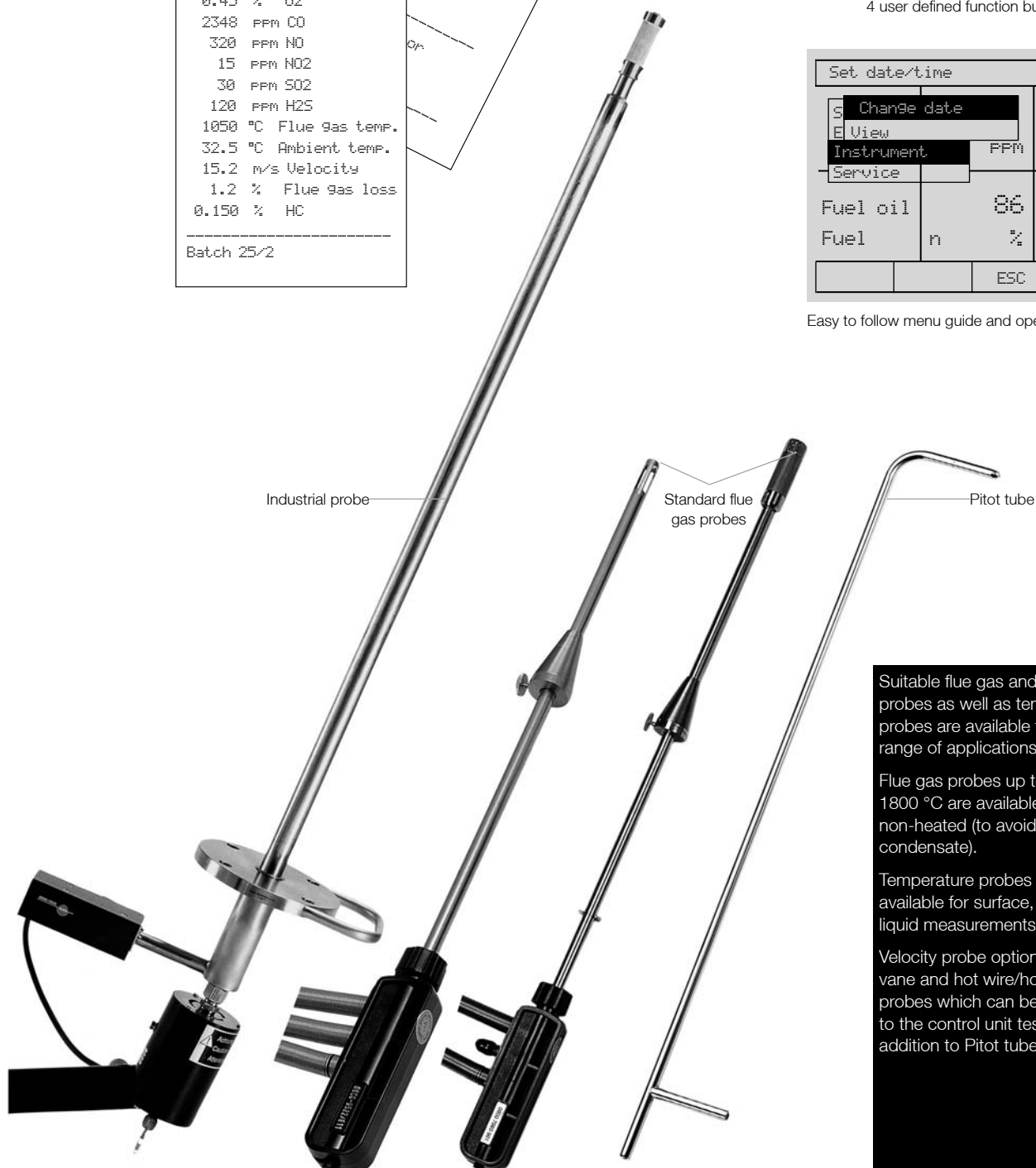
Suitable flue gas and velocity probes as well as temperature probes are available for a wide range of applications.

Flue gas probes up to 4 m long, 1800 °C are available, heated or non-heated (to avoid condensate).

Temperature probes are also available for surface, gas and liquid measurements.

Velocity probe options include vane and hot wire/hot bulb probes which can be connected to the control unit testo 350-XL in addition to Pitot tubes.

testo 350-S/-XL | Gas sampling probes

Sampling probes have to endure extreme conditions when measuring flue gases for example:

• High temperatures
• Corrosive condensate
• Dust
• Mechanical loads.

The selection of the right probe is critical for accurate and consistent measurements. Because the sampling locations are often different, it´s beneficial to have a standard probe designed for a wide variety of applications. In addition to the standard sampling probes, Testo also offers probe systems for specific industrial applications.

Standard sampling probes

Industrial probes – Options to fit every application

Standard sampling probes

The standard sampling probe is available in lengths of 335 mm and 700 mm and for different temperature ranges. The outer pipe with a sintered filter is used for dusty flue gases. The hose has a standard length of 2.2 m (5 m optional).

335/700 mm long

Ø8 mm   Tmax. +500/+1000 ℃

Material: probe pipe T_{max} +500 ℃:
Stainless steel 1.4361
Material: probe pipe T_{max} +1000 ℃:
Stainless steel 1.4841

Option: Outer pipe with filter for dusty flue gases

T_{max} 1000 ℃   Ø10 mm

Pore size: 3 µm / Material of probe pipe: Stainless steel 1.4841

Hose length:
Standard 2.2 m / 5 m optional
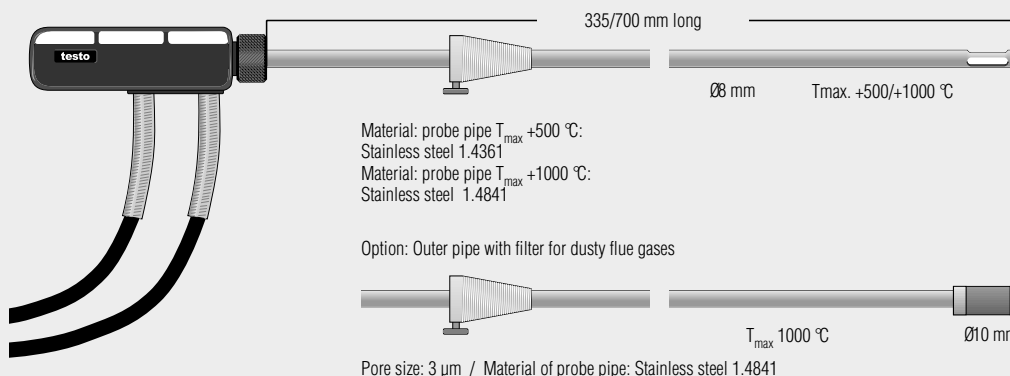
Standard probes, 335 mm long	Part no.
Basic flue gas probe, 335 mm immersion depth, with probe stop, NiCr-Ni (Tl) T/C, probe shaft: stainless steel 1.4361 (Tmax 500°C), 2.2 m hose, robust plug-in coupling	0600 7451

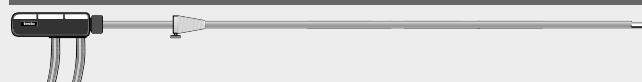| Options	Part no.
Heat-resistant probe shaft with pre-filter, Tmax. +1000 ℃, 335 mm long, for dusty flue gases, 3 µm pore size, probe shaft: stainless steel 1.4841	0440 7435
or	
Heat-resistant probe shaft without pre-filter (material: stainless steel 1.4841), Tmax + 1000 ℃, with heat-resistant plate, 335 mm long	0440 7437
[1] Special hose for NO2/SO2 measurements, 2.2 m long	0440 7442
[1] Special hose for NO2/SO2 measurements, 5 m long	0440 7445
Hose, 5 m long (not for SO2 measurements)	0440 7443
[1] Use outer pipe with filter for dusty flue gases.	

Accessories	Part no.
Spare sintered filter (2 off)	0554 3372

Standard probes, 700 mm long	Part no.
Basic flue gas probe, 700 mm immersion depth, with probe stop, NiCr-Ni (Tl) T/C, probe shaft: stainless steel 1.4361 (Tmax 500°C), 2.2 m hose, robust plug-in coupling	0600 7452

Options	Part no.
Heat-resistant probe shaft with pre-filter, Tmax. +1000℃, 700 mm long, for dusty flue gases, 3 µm pore size, probe shaft: stainless steel 1.4841	0440 7436
or	
Heat-resistant probe shaft without pre-filter (material: stainless steel 1.4841), Tmax +1000 ℃, with heat-resistant plate, 700 mm long	0440 7438
Hose, 5 m long	0440 7444
[1] Special hose for NO2/SO2 measurements, 2.2 m long	0440 7442
[1] Special hose for NO2/SO2 measurements, 5 m long	0440 7446
[1] Use outer pipe with filter for dusty flue gases.	

TÜV-tested gas sampling probes (specially for trade)	Part no.
TÜV approved flue gas probe, 180 mm immersion depth, up to +500℃, corr. to the latest instr. test guidelines, also for meas. on atmospheric gas systems, 2.2 m hose — 180 mm / Ø8 mm	0600 9556
TÜV approved flue gas probe, 335 mm immersion depth, up to +500℃, corresponding to the latest instrument test guidelines, also for atmospheric gas systems, 2.2 m hose — 335 mm / Ø8 mm	0600 9557

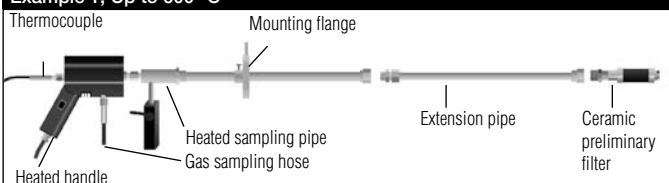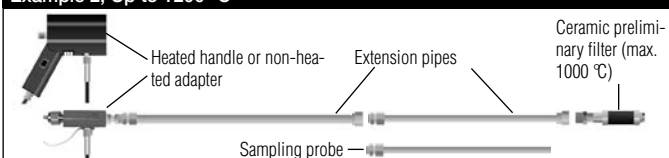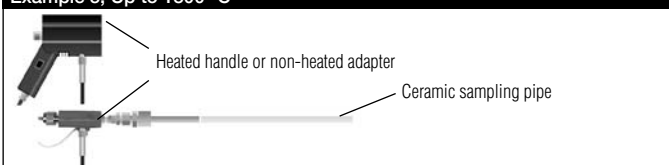**Robust sampling probes for industrial applications**

This is a modular, portable probe system. The basic part of the system is the heated handle or non-heated adapter to which the sampling hoses are attached.
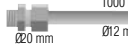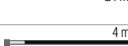
A thermocouple, connected to **testo 350 M/XL**, is used for simultaneous temperature measurements. Using extension pipes (up to max. 3 m) the probe can be used in large flue gas ducts. A preliminary filter is screwed on to protect the probe if used in dusty gases.

The heated probe (Ex. 1) is used for moist flue gases to eliminate false readings caused by the absorption of NO2 and SO2. The probes are attached to the flue gas duct using the mounting flange.

Non-heated probe pipes are used for flue gases up to 1200 °C (Ex. 2). The non-heated adapter can be used instead of a heated handle to measure O2, CO and NO or dry flue gases.

Ceramic sampling pipes (Ex. 3) which can withstand the enormous thermal load are used for measurements at more than 1200 °C.

Example 1, Up to 600 °C
Thermocouple — Mounting flange — Extension pipe — Ceramic preliminary filter — Heated sampling pipe — Gas sampling hose — Heated handle

Example 2, Up to 1200 °C
Heated handle or non-heated adapter — Extension pipes — Ceramic preliminary filter (max. 1000 °C) — Sampling probe

Example 3, Up to 1800 °C
Heated handle or non-heated adapter — Ceramic sampling pipe

Industrial probes			Part no.
Heated handle, power supply 115 to 230 V, 50/60 Hz		Power consumption: 200 watts; Temp. gas path: > 180 °C; Ready to operate: after approx. 20 min; Length of mains cable: 3 m; Protection class: IP54; Ambient temp.: -20 to +50 °C; gas inlet: G1/4"; gas outlet: M 10x1 outer thread; weight: 1.7 kg	0600 7920
Adapter, non-heated		Ambient temp.: -20 to +50 °C; Protection class: IP54; Gas inlet: G1/4"; Gas outlet: M 10x1 outer thread; Weight: 0.4 kg	0600 7911
Non-heated sampling pipe to +600 °C, stainless steel 1.4571	Connection: G1/4" 1000 mm Ø20 mm Ø12 mm	Weight 0.4 kg	0600 7801
Non-heated sampling pipe to +1200 °C, Inconel 625			0600 7803
Non-heated sampling pipe to +1800 °C, Al-Oxide	Connection: G1/4" 1000 mm Ø20 mm Ø12 mm	Weight 0.4 kg	0600 7805
Heated sampling pipe, power supply 230 V / 50 Hz, stainless steel 1.4571	1000 mm Ø25 mm	Heating: > +180 °C; power consumption: 650 watts; Connection: electr. connection to heated handle, connection adapter with thread connection/screw socket G1/4"; Max. flue gas temp.: +600 °C	0600 7820
Extension pipe to +600 °C, stainless steel 1.4571	1000 mm Ø20 mm Ø12 mm	Connection: Thread screw/screw socket G1/4"; Weight: 0.45 kg	0600 7802
Extension pipe to +1200 °C, Inconel 625			0600 7804
Preliminary filter for dusty flue gases, ceramic. Preliminary filter can only be mounted on extension pipe 0600 7802 or 0600 7804.	50 mm Ø20 mm	Dust load: max. 20 g / m3; filter fineness: 20 µm; Temperature: max. 1000 °C; Material: ceramic; Connection: G1/4" thread nipple; Weight: 0.2 kg	0554 0710
Thermocouple, NiCr-Ni, -200 to +1000 °C, Inconel 625, 1.2 m long	Ø4 mm	Connection: To analyser 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.	0430 0065
Thermocouple, NiCr-Ni, -200 to +1000 °C, Inconel 625, 2.2 m long			0430 0066
Thermocouple, NiCr-Ni, -200 to +1000 °C, Inconel 625, 3.2 m long			0430 0067
Gas sampling hose, 4 m, standard version	4 m	Weight: 0.4 kg	0554 3382
Special sampling hose for accurate NO2/SO2 measurements, 4 m long	4 m	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	0554 3384
Mounting flange, stainless steel 1.4571, adjustable quick-action fitting suitable for all sampling/extension pipes	130 mm Ø160 mm		0554 0760

Transport case for industry probes	Part no.
Transport case for industrial probes, aluminium, space for: handle, probes, flange and accessories	0516 7900

Heated handle
Part no.: 0600 7920
Power supply: 115 to 230 V 50/60 Hz
Power required: 200 watts
Temp. gas path: > 180 °C
Ready to operate: After approx. 20 min
Mains cable: 3 m long
Protection class: IP54
Ambient temp.: -20 to +50 °C
Gas input: G1/4"
Gas output: M 10x1 outer thread
Weight: 1.7 kg

Adapter, non-heated
Part no.: 0600 7911
Ambient temp.: -20 to +50 °C
Protection class: IP54
Gas input: G1/4"
Gas output:: M 10x1 outer thread
Weight: 0.4 kg

Non-heated sampling pipes
Dimensions: Length: 1 m, Ø12 mm
Connection: G1/4"
Weight: 0.4 kg
Sampling pipe up to +600 °C
Part no.: 0600 7801

Material: Stainless steel 1.4571
Sampling pipe up to +1200 °C
Part no.: 0600 7803
Material: Inconel 625
Sampling pipe up to +1800 °C
Part no.: 0600 7805
Material: Al-Oxyd

Heated sampling pipe
Part no.: 0600 7820 (230 V)
Dim.: Length: 1 m, Ø25 mm
Material: Stainless steel 1.4571
Heating: > +180 °C
Power supply: 230 V / 50 Hz
Power required: 650 watts
Connection: •Electr. connection to heated handle •Connection adapter with thread screw/ screw socket G1/4"
Max. flue gas temperature: +600 °C

Extension pipe
Dimensions: L = 1 m, Ø12 mm (pipe)
Connection: Screw socket/ thread screw G1/4"
Weight: 0.45 kg
Extension pipe Up to +600 °C
Part no.: 0600 7802

Material: Stainless steel 1.4571
Extension pipe Up to +1200 °C
Part no.: 0600 7804
Material: Inconel 625

Preliminary filter for dusty flue gases
Part no.: 0554 0710
Dust load: max. 20 g / m3
Filter fineness: 20 µm
Temperature: max. 1000 °C
Dimensions: 50 mm, Ø20 mm
Material: Ceramic
Connection: G1/4" threaded nipple
Weight: 0.2 kg

Thermocouple
Part no.: 0430 0065 (1.2 m long) 0430 0066 (2.2 m long) 0430 0067 (3.2 m long)
Sensor: NiCr-Ni
Meas. range: -200 to +1000 °C
Lengths: 1.2 / 2.2 / 3.2 m
Diameter: 4 mm
Material: Inconel 625
Connection: to analyser via 4 m connection cable with 8 pin plug
Weight: 0.15 kg

Standard sampling hose for connection to **testo 350 M/XL** ana-
lyser
Part no.: 0554 3382
Version: 1 Viton hose with robust plug
Hose material: Viton
Length: 4,0 m
Weight: 0.4 kg

Mounting flange
Part no..: 0554 0760
Material: Stainless steel 1.4571
Diameter: 160 mm
Connection: Movable quick-action fitting, suitable for all sampling and extension pipes

Special sampling hose for accurate N02/S02 measurements for connection to testo 350 M/XL analyser
Part no.: 0554 3384
Version: patented 1 way hose with robust plug
Host material/Inner: PTFE hose with 2 mm inner diameter (lowest absorption, self-cleaning effect)
Host material/Outer: Rubber
Length: 4 m
Weight: 0.45 kg

Gas sampling probes for measurements on industrial motors		Part no.
Information about instrument upgrades and prices available on request.		
Flue gas probe for industrial motors, 335 mm immersion depth, with probe stop and heat protection plate, Tmax 1000 °C, special hose for NO_2/SO_2 measurements, 2.2 m long		0600 7550
Flue gas probe for industrial motors with probe shaft prefilter, 335 mm immersion depth, with probe stop and heat protection plate, Tmax 1000 °C, special hose for NO_2/SO_2 measurements, 2.2 m long		0600 7551

Accessories for gas sampling probes for measurements on industrial engines	Part no.
Spare sintered filter (2 off)	0554 3372
Thermocouple for exhaust gas temperature measurement (NiCr-Ni, length 400 mm, Tmax. +1000 °C), with 2.4 m connection cable	0600 8894

Temperature	Illustration	Meas. range	Accuracy	t99	Part no.
Combustion air temperature probe, immersion depth 300 mm	300 mm Ø5 mm	0 to +100 °C		30 s	0600 9791
Combustion air temperature probe, immersion depth 190 mm	190 mm Ø4 mm	0 to +100 °C			0600 9787
Combustion air temperature probe, immersion depth 60 mm	60 mm Ø3 mm	0 to +100 °C		30 s	0600 9797
Mini ambient air probe, Tmax +80°C, for separate ambient air temperature measurement		0 to +80 °C			0600 3692
Pipe wrap probe for pipes with diameter of up to 2", for flow/return temp. meas. in hydronic systems	Conn.: Fixed cable	-60 to +130 °C	Class 2	5 s	0600 4593
Spare meas. head for pipe wrap probe, TC Type K	35 mm 15 mm	-60 to +130 °C	Class 2	5 s	0602 0092
Fast-action surface probe with sprung thermocouple strip, for measurements on floor heating, radiators, insulations...	150 mm Ø10 mm Conn.: Plug-in head. connection cable 0430 0143 or 0430 0145 required	-200 to +300 °C	Class 2	3 s	0604 0194

More probes	Illustration	Meas. range	Other features	t_{90}	Part no.
Gas leak probe					0632 3330
Ambient CO probe, for detecting CO in buildings and rooms	Fixed cable 1.5 m	0 to +500 ppm CO	±5% of mv (+100.1 to +500 ppm CO) ±5 ppm CO (0 to +100 ppm CO)		0632 3331
Ambient CO2 probe Conn.: Plug-in head. connection cable 0430 0143 or 0430 0145 required		0 to +1 Vol. % CO_2 0 to +10000 ppm CO_2	±(50 ppm CO_2 ±2% of mv)(0 to +5000 ppm CO_2) ±(100 ppm CO_2 ±3% of mv)(+5001 to +10000 ppm CO_2)		0632 1240
Current/voltage cable (±1 V, ±10 V, 20 mA)		0 to +1000 mV 0 to +10 V 0 to +20 mA	±1 mV (0 to +1000 mV) ±0.01 V (0 to +10 V) ±0.04 mA (0 to +20 mA)		0554 0007
Mechanical rpm probe with plug-in head Included 2 probe tips Ø8 and Ø12 mm 1 hollow cone Ø8 mm 1 surface speed disc Ø19 mm to measure rotational speed: rpm = rotational speed in mm/s	Conn.: Plug-in head. connection cable 0430 0143 or 0430 0145 required	20 to 20000 rpm	Plug-in head. connection cable 0430 0143 or 0430 0145 required		0640 0340

testo 350-S/-XL More probes

Pitot tubes for flow measurement	Illustration	Meas. range	Part no.
Pitot tube, 350 mm long, stainless steel, for measuring flow velocity in connection with 0638 1347/..1447 pressure probes	350 mm Ø7 mm	Oper. temp. 0 to +600 ℃	0635 2145
Pitot tube, 1000 mm long, stainless steel, measures flow speed with pressure probes 0638 1347/..1447	1000 mm Ø7 mm	Oper. temp. 0 to +600 ℃	0635 2345
Pitot tube, stainless steel, 500 mm long, measures flow speed with temperature, for pressure probes 0638 1347/..1447	500 mm Ø8 mm	-40 to +600 ℃	0635 2140
Pitot tube, stainless steel, 750 mm long, measures flow speed with temperature, 3x hoses (5 m long) and heat protection plate	750 mm Ø8 mm	-40 to +1000 ℃	0635 2042
Pitot tube, stainless steel, 1000 mm, measures flow speed with temperature, for pressure probes 0638 1347/..1447	1000 mm Ø8 mm	-40 to +600 ℃	0635 2240

Accessories	Part no.
Hose connection set for gas pressure measurement in heating systems, incl. silicone hoses and T-pieces, For separate gas pressure measurement	0554 0315
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

Accessories	Part no.
Cable, 1.5 m long, connects probe with plug-in head to meas. instrument, PUR coating material	0430 0143
Cable, 5 m long, connects probe with plug-in head to measuring instrument, PUR coating material	0430 0145
Extension cable, 5 m long, between plug-in head cable and instrument, PUR coating material	0409 0063
ISO calibration certificate/temperature, meas. instr. with surface probe; calibration points +60℃; +120℃; +180℃	0520 0071
ISO calibration certificate/CO2, CO2 probes; calibration points 0; 1000; 5000 ppm	0520 0033

testo 350-S control unit	Part no.
Control unit displays measurement data and controls measurement system, built-in printer, connection for Testo data bus and terminal plug included	0563 0369

testo 350 XL control unit	Part no.
Control unit displays measurement data and controls the measurement system, incl. built-in printer, pressure measurement 40/200 hPa, 1 user defined probe socket, programmable measurements and memory space for 250,000 readings, connection for Testo data bus, incl. terminal plug	0563 0353

Additional options only for control unit testo 350 XL	
Touch screen with pen (available only with original order), for easy input of text and values	0440 0559
Spare thermal paper for printer (6 rolls)	0554 0569
Testo rechargeable battery pack NiMH for control unit, logger	0515 0097
Mains unit 230 V/ 8 V/ 1 A, for instrument (European plug)	0554 1084

testo 350 S flue gas analyzer	Part no.
testo 350-S flue gas analyser, equipped with: O_2, differential pressure measurement, 2 temperature probe sockets, testo data bus connection, built-in rechargeable battery, data logger, can be upgraded to max. 6 sensors (with NO, NO_2, CO, H_2S, HC, SO_2, CO_2 NDIR)	0563 0368

A second gas sensor must be installed in testo 350-S, otherwise the instrument is unable to function. Up to 5 additional sensors can be fitted.

Option: COlow sensor	0440 3936
Option: CO sensor	0440 3988
Option: CO2 sensor (infrared meas. principle, absolute pressure meas. and CO2 absorption filter with refill pack incl.)	0440 0417
Option: HC sensor (nonburned hydrocarbons)	0440 3929
Option: H2S sensor	0440 3930
Option: NO sensor	0440 3935
Option: NOlow sensor	0440 3928
Option: NO2 sensor	0440 3926
Option: SO2 sensor	0440 3927
Option: Peltier gas preparation with hose pump to empty condensate automatically	0440 0355
Fresh air valve for long-term measurement (measurement range extension with dilution factor 5 for all sensors included)	0440 0557
Measuring range extension for CO sensor (dilution), built into analyser box, selectable dilution factors: 0, 2, 5, 10, 20, 40	0440 0555
Event trigger socket, for starting and stopping measurement externally, built into analyser box	0440 3932
Special gas pump for long-term measurements with extended warranty (For continuous measurements >2 h measurement time, the option Peltier gas praparation 0440 0355 is additionally recommended).	0440 0378

testo 350 XL flue gas analyzer box	Part no.
testo 350 XL analyzer box, equipped with O_2, CO (with switch-off and rinse function), NO, NO_2, differential pressure measurement, 2 temperature probe sockets, gas preparation, Testo data bus adapter, automatic fresh air rinse with valve (including measurement range extension with dilution factor 5 for all sensors), built-in rechargeable battery, data memory, can be upgraded to max. 6 gas sensors (with H_2S, HC, SO_2, CO_2 NDIR)	0563 0350
Option: COlow gas sensor	0440 3925
Option: CO2 sensor (infrared meas. principle, absolute pressure meas. and CO2 absorption filter with refill pack incl.)	0440 0417
Option: NOlow gas sensor	0440 3934
Option: SO2 sensor	0440 3927
Option: HC sensor (nonburned hydrocarbons)	0440 3929
Option: H2S sensor	0440 3930
Measuring range extension for CO sensor (dilution), built into analyser box, selectable dilution factors: 0, 2, 5, 10, 20, 40	0440 0555
Event trigger socket, for starting and stopping measurement externally, built into analyser box	0440 3932
Special gas pump for long-term measurements with extended warranty	0440 0378

Information about instrument upgrades and prices available on request.

Transport case and accessories for analyser boxes	Part no.
Robust protective case with trolley function for operating the testo 350 in the case in dusty and tough surroundings	0516 0355
Wall holder for analyzer box incl. heat protection plate, can be locked	0554 0203
Protective cover for analyser box (can also be used with wall holder)	0554 0199
Carrying belt set for analyser box and control unit	0554 0434
Transport case for analyser, probes and accessories	0516 0351
System case (aluminium), with drawer for accessories, for transport and protection during measurement	0516 0352
Transport case for industrial probes, aluminium; space for: handle, probes, flange and accessories	0516 7900
Calculation of fuel-specific factors to accurately display calculated variables in deviating fuels (calculation for one fuel)	0991 0030
Spare particle filter, pack of 20	0554 3381
Hose set to convey flue gas from analyzer box, 5 m long	0554 0451
Refill pack of filter pellets for CO2 absorption filter	0554 0369
ISO calibration certificate/flue gas, calibration points 2.5% O2; 100 and 1000 ppm CO; 800 ppm NO; 80 ppm NO2; 1000 ppm SO2	0520 0003

testo 454 logger and accessories	Part no.
Logger, measures and saves (max. 250,000 readings), incl. 4 user defined probe sockets, alarm output/event trigger socket, stand/wall holder	0577 4540
Alarm/trigger cable	0554 0012
Holding unit/Theft-proof with lock for logger wall holder	0554 1782
Power box, connected to control unit to increase operating life, for a battery-operated measuring system	0554 1045
Desk-top power supply with international connection options	0554 1143
Analog output box, 6 channels, 4 to 20 mA, for output on an analog recorder, (please also order mains unit 0554 1084)	0554 0845
Testo rechargeable battery pack NiMH for control unit, logger	0515 0097

Accessories for Testo data bus	Part no.
Mains unit (110/230 V; 50/60 Hz, 12 V, 3 A) supplies power to Testo data bus, when using the Testo plug-in card	0554 1145
Terminal plug for Testo data bus, for loggers and special lengths	0554 0119
Connection cable, 2 m, for Testo data bus	0449 0042
Connection cable, 5 m, for Testo data bus	0449 0043
Connection cable, 20 m, for Testo data bus	0449 0044
	Additional cable lengths up to 1000 m on request

PC software	Part no.
"easyEmission" software for testo 350-S/-XL, RS232 cable for connecting instrument to PC included	0554 3335
"easyEmission" software for testo 350 S/XL, Testo data bus controller included, with USB to connect instrument to PC, cable for Testo data bus and terminal plug	0554 3336
Software upgrade of "easyEmission" testo 350-S/-XL to "easyEmission" testo 335	0450 3334
Software upgrade of "easyEmission" testo 335 to "easyEmission" testo 350-S/-XL	0450 3335
Multiple licence software "easyEmission" for testo 350-S/-XL	0554 3337

Accessories exhaust gas analysis instrument	Part no.
Cable to connect measuring instrument to pulse counter for gas flow measurement	0554 0536
Cable with adapter for cigarette lighter and adapter for connection to testo 350-S/-XL	0554 1336
Cable with battery clamps and adapter for connection to testo 350-S/-XL	0554 1337

testo 350 M: Set for fast emission monitoring on industrial burners (O_2, CO, NO)

- testo 350-S control unit (Part no. 0563 0369)
- testo 350-S flue gas analyser box (Part no. 0563 0368)
- Option: NO sensor (Part no. 0440 3935)
- Option: CO sensor (Part no. 0440 3988)
- Flue gas probe, 335 mm immersion depth, Thermocouple NiCr-Ni (TI), Hose 2.2 m (Part no. 0600 7451)
- Heat-proof probe pipe, 335 mm long, Tmax. +1000℃ (Part no. 0440 7437)
- Connection cable, 2 m, for Testo data bus (Part no. 0449 0042)
- Protective cover for analyzer box (Part no. 0554 0199)
- Carrying belt set for analyser box (Part no. 0554 0434)
- Transport case for analyzer, probes and accessories (Part no. 0516 0351)
- Spare particle filter, pack of 20 (Part no. 0554 3381)
- Spare thermal paper for printer (6 rolls) (Part no. 0554 0569)

testo 350 XL: Standard set for measurements on process systems (O_2, CO, NO, NO_2)

- testo 350 XL control unit (Part no. 0563 0353)
- Testo rechargeable pack for control unit (Part no. 0515 0097)
- testo 350 XL flue gas analyzer box (Part no. 0563 0350)
- Flue gas probe, 335 mm immersion depth, Thermocouple NiCr-Ni (TI), Hose 2.2 m (Part no. 0600 7451)
- Heat-proof probe pipe, 335 mm long, Tmax. +1000℃ (Part no. 0440 7437)
- Special hose for NO2/SO2 measurements, 2.2 m long (Part no. 0440 7442)
- Connection cable, 2 m, for Testo data bus (Part no. 0449 0042)
- "easyEmission" software for testo 350 S/XL (Part no. 0554 3335)
- Protective cover for analyzer box (Part no. 0554 0199)
- Carrying belt set for analyser box (Part no. 0554 0434)
- Transport case for analyser, probes and accessories (Part no. 0516 0351)
- Spare particle filter, pack of 20 (Part no. 0554 3381)
- Spare thermal paper for printer (6 rolls) (Part no. 0554 0569)

testo 350 XL: Portable measurements on motors (O_2, CO, NO, NO_2)

- testo 350 XL control unit (Part no. 0563 0353)
- Testo rechargeable pack for control unit (Part no. 0515 0097)
- testo 350 XL flue gas analyzer box (Part no. 0563 0350)
- Measurement range extension for CO sensor (dilution) (Part no. 0440 0555)
- Flue gas probe for industrial motors (Part no. 0600 7550)
- Connection cable, 5 m, for Testo data bus (Part no. 0449 0043)
- "easyEmission" software for testo 350 S/XL (Part no. 0554 3335)
- Protective cover for analyzer box (Part no. 0554 0199)
- Carrying belt set for analyser box (Part no. 0554 0434)
- System case (aluminium), incl. drawer (Part no. 0516 0352)
- Spare particle filter, pack of 20 (Part no. 0554 3381)
- Spare thermal paper for printer (6 rolls) (Part no. 0554 0569)

testo 350 XL: Portable measurements on gas turbines (O_2, CO_{low}, NO_{low}, NO_2)

- testo 350 XL control unit (Part no. 0563 0353)
- Testo rechargeable pack for control unit (Part no. 0515 0097)
- Touchscreen with reader (Part no. 0440 0559)
- testo 350 XL flue gas analyzer box (Part no. 0563 0350)
- COlow sensor, 0 to 500 ppm, built into analyser box (Part no. 0440 3925)
- NOlow sensor, 0 to 300 ppm, built-in in analyser box (Part no. 0440 3934)
- Measurement range extension for CO sensor (dilution) (Part no. 0440 0555)
- Flue gas probe, 335 mm immersion depth, Thermocouple NiCr-Ni (TI), Hose 2.2 m (Part no. 0600 7451)
- Heat-proof probe pipe, 335 mm long, Tmax. +1000℃ (Part no. 0440 7437)
- Special hose for NO2/SO2 measurements, 5 m long (Part no. 0440 7445)
- Connection cable, 5 m, for Testo data bus (Part no. 0449 0043)
- "easyEmission" software for testo 350 S/XL (Part no. 0554 3335)
- Protective cover for analyzer box (Part no. 0554 0199)
- Carrying belt set for analyser box (Part no. 0554 0434)
- System case (aluminium), incl. drawer (Part no. 0516 0352)
- Spare particle filter, pack of 20 (Part no. 0554 3381)
- Spare thermal paper for printer (6 rolls) (Part no. 0554 0569)

Technical Data for Control unit testo 350-S/-XL and testo 454 logger box

	testo 350-S control unit	testo 350 XL control unit		Logger, measures and saves readings		Analog output box (mA out)
Oper. temp.	-5 to +45 ℃	-5 to +45 ℃		-10 to +50 ℃		-10 to +50 ℃
Storage temp.	-20 to +50 ℃	-20 to +50 ℃		-25 to +60 ℃		-25 to +60 ℃
Battery type	4 AA batteries	4 AA batteries		Alkali manganese		–
Battery life	8 h	8 h		24 h		–
Memory	–	250000 readings		250000 readings		–
Weight	850 g	850 g		450 g		305 g
Dimensions	252 x 115 x 58 mm	252 x 115 x 58 mm		200 x 89 x 37 mm		200 x 89 x 37 mm
Warranty	2 years	2 years		3 years		3 years

Technical data control unit testo 350-XL and testo 454 logger box

Probe type	Vane	Thermal	Testo humid. sensor, cap.	Pressure	
Meas. range	0 to +60 m/s	0 to +20 m/s	0 to +100 %RH	10 to 30000 hPa	
Accuracy ±1 digit	See probe data for system accuracy	±0.01 m/s (0 to +1.99 m/s) ±0.02 m/s (+2 to +4.99 m/s) ±0.04 m/s (+5 to +20 m/s)	See probe data	Probe 0638 1345 Probe 0638 1445 Probe 0638 1545 Probe 0638 1645 ±0.1% of m.v.	
Resolution	0.01 m/s (for Ø60/100 mm), 0.1 m/s (for remaining probes)	0.01 m/s (0 to +20 m/s)	0.1 %RH (0 to +100 %RH)	0.001 hPa (probe 0638 1345) 0.001 hPa (probe 0638 1445) 0.01 hPa (probe 0638 1545)	

Probe type	Pt100	Type K (NiCr-Ni)	Type S (Pt10Rh-Pt)	Type J (Fe-CuNi)	Type T (Cu-CuNi)
Meas. range	-200 to +800 ℃	-200 to +1370 ℃	0 to +1760 ℃	-200 to +1000 ℃	-40 to +350 ℃
Accuracy ±1 digit	±0.1 ℃ (-49.9 to +99.9 ℃) ±0.4 ℃ (-99.9 to -50 ℃) ±0.4 ℃ (+100 to +199.9 ℃) ±1 ℃ (-200 to -100 ℃) ±1 ℃ (+200 to +800 ℃)	±0.4 ℃ (-100 to +200 ℃) ±1 ℃ (-200 to -100.1 ℃) ±1 ℃ (+200.1 to +1370 ℃)	±1 ℃ (0 to +1760 ℃)	±0.4 ℃ (-150 to +150 ℃) ±1 ℃ (-200 to -150.1 ℃) ±1 ℃ (+150.1 to +199.9 ℃)	±0.4 ℃ (-40 to +200 ℃) ±1 ℃ (+200.1 to +350 ℃)
Resolution	0.001 ℃ (-9.999 to +300 ℃) 0.1 ℃ (-200 to -100 ℃) 0.1 ℃ (+301 to +800 ℃)	0.1 ℃ (-200 to +1370 ℃)	1 ℃ (0 to +1760 ℃)	0.1 ℃ (-200 to +1000 ℃)	0.1 ℃ (-40 to +350 ℃)

Probe type	NTC	CO probe	CO2 probe	CO2 probe	
Meas. range	-40 to +150 ℃	0 to +500 ppm CO	0 to +1 Vol. % CO_2	0 to +10000 ppm CO_2	
Accuracy ±1 digit	±0.2 ℃ (-10 to +50 ℃) ±0.4 ℃ (-40 to -11 ℃) ±0.4 ℃ (+51 to +150 ℃)	±5% of mv (0 to +500 ppm CO)	See probe data	See probe data	
Resolution	0.1 ℃ (-40 to +150 ℃)				

	Mechanical	Current/voltage measurement	Current/voltage measurement	Control unit, integ. press. sensor	
Meas. range	20 to 20000 rpm	0 to +20 mA	0 to +10 V	-200 to +200 hPa	-40 to +40 hPa
Accuracy ±1 digit	±1 digit	±0.04 mA (0 to +20 mA)	±0.01 V (0 to +10 V)	±1.5% of mv (-50 to -200 hPa) ±1.5% of mv (+50 to +200 hPa) ±0.5 hPa (-49.9 to +49.9 hPa)	±1.5% of mv (-3 to -40 hPa) ±1.5% of mv (+3 to +40 hPa) ±0.03 hPa (-2.99 to +2.99 hPa)
Resolution	1 rpm	0.01 mA (0 to+20 mA)	0.01 V (0 to +10 V)	0.1 hPa (-200 to +200 hPa)	0.01 hPa (-40 to +40 hPa)

Technical data/testo analyser box, testo 350-S XL

Parameters	℃ measurement (Type K NiCr-Ni)	O₂ measurement	CO measurement (H2 compensated)	COlow meas. (H2 compensated)	CO₂ measurement	NO measurement	NOlow measurement	NO₂ measurement	SO2 measurement
Meas. range	-40 to +1200 ℃	0 to +25 Vol. % O₂	0 to +10000 ppm CO	0 to +500 ppm CO	0 to CO₂ max Vol. % CO₂	0 to +3000 ppm NO	0 to +300 ppm NO	0 to +500 ppm NO₂	0 to +5000 ppm SO₂
Accuracy ±1 digit	±0.5% of mv (+100 to +1200 ℃) ±0.5 ℃ (-40 to +99.9 ℃)	±0.8% of fsv (0 to +25 Vol. % O₂)	±5% of mv (+200 to +2000 ppm CO) ±10% of mv (+2001 to +10000 ppm CO) ±10 ppm CO (0 to +199 ppm CO)	±5% of mv (+40 to +500 ppm CO) ±2 ppm CO (0 to +39.9 ppm CO)	Calculated from O₂	±5% of mv (+100 to +1999.9 ppm NO) ±10% of mv (+2000 to +3000 ppm NO) ±5 ppm NO (0 to +99 ppm NO)	±5% of mv (+40 to +300 ppm NO) ±2 ppm NO (0 to +39.9 ppm NO)	±5% of mv (+100 to +500 ppm NO₂) ±5 ppm NO₂ (0 to +99.9 ppm NO₂)	±5% of mv (+100 to +2000 ppm SO₂) ±10% of mv (+2001 to +5000 ppm SO₂) ±5 ppm SO₂ (0 to +99 ppm SO₂)
Resolution	0.1 ℃ (-40 to +1200 ℃)	0.01 Vol. % O₂ (0 to +25 Vol. % O₂)	1 ppm CO (0 to +10000 ppm CO)	0.1 ppm CO (0 to +500 ppm CO)	0.01 Vol. % CO₂	1 ppm NO (0 to +3000 ppm NO)	0.1 ppm NO (0 to +300 ppm NO)	0.1 ppm NO₂ (0 to +500 ppm NO₂)	1 ppm SO₂ (0 to +5000 ppm SO₂)
Reaction time		20 s	40 s	40 s	20 s	30 s	30 s	40 s	30 s
Reaction type		t_{95}	t_{90}	t_{90}	t_{95}	t_{90}	t_{90}	t_{90}	t_{90}

Parameters	Efficiency	Flue gas loss	Differential pressure 1	Differential pressure 2	Velocity	CO₂ meas. (IR)	H2S measurement
Meas. range	0 to +120 %	-20 to +99.9 % qA	-200 to +200 hPa	-40 to +40 hPa	0 to +40 m/s	0 to +50 Vol. % CO₂	0 to +300 ppm H₂S
Accuracy ±1 digit			±1.5% of mv (-50 to -200 hPa) ±1.5% of mv (+50 to +200 hPa) ±0.5 hPa (-49.9 to +49.9 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)		±0.3 Vol. % CO₂ + 1% of mv (0 to 25 Vol. % CO₂) ±0.5 Vol. % CO₂ + 1.5% of mv (>25 to 50 Vol. % CO₂)	±5% of mv (+40 +300 ppm) ±2 ppm (0 to +39.9 ppm)
Resolution	0.1 % (0 to +120 %)	0.1 % qA (-20 to +99.9 % qA)	0.1 hPa (-200 to +200 hPa)	0.01 hPa (-40 to +40 hPa)	0.1 m/s (0 to +40 m/s)	0.01 Vol. % CO₂ (0 to 25 Vol. % CO₂) 0.1 Vol. % CO₂ (>25 Vol. % CO₂)	0.1 ppm (0 to +300 ppm)
Reaction time						<10 s	35 s
Reaction type						t_{90}	t_{90}

Measurement range extension

Single dilution with selectable dilution factor (option)

CO measurement (H₂ compensated) CO_low meas. (H₂ compensated)	Meas. range Accuracy Resolution	depending on factor selected ±2 % of mv (additional error) 1 ppm or 0.1 ppm at CO_low

Dilution of all sensors by factor 5 (standard testo 350 XL)

O₂ measurement	Reading is not shown in display
HC measurement	Reading is not shown in display
CO₂(IR) meas.	Reading is not shown in display

CO measurement (H₂ compensated)	Meas. range Accuracy Resolution	2500 to 50000 ppm ±5 % of mv (additional error) Pressure range -150 to 0 mbar at probe tip 1 ppm
CO_low meas. (H₂ compensated)	Meas. range Accuracy Resolution	500 to 2500 ppm ±5 % of mv (additional error) Pressure range -100 to 0 mbar at probe tip 0.1 ppm
NO measurement	Meas. range Accuracy Resolution	1500 to 15000 ppm ±5 % of mv (additional error) Pressure range -100 to 0 mbar at probe tip 1 ppm
NO_low measurement	Meas. range Accuracy Resolution	300 to 1500 ppm ±5 % of mv (additional error) Pressure range -150 to 0 mbar at probe tip 0.1 ppm
NO₂ measurement	Meas. range Accuracy Resolution	500 to 2500 ppm ±5 % of mv (additional error) Pressure range -50 to 0 mbar at probe tip) 0.1 ppm
SO₂ measurement	Meas. range Accuracy Resolution	500 to 25000 ppm ±5 % of mv (additional error) Pressure range -100 to 0 mbar at probe tip 1 ppm
H₂S measurement	Meas. range Accuracy Resolution	200 to 1500 ppm ±5 % of mv (additional error) Pressure range -100 to 0 mbar at probe tip 0.1 ppm

Technical data for HC gas sensor

Parameter	Methane	Propane	Butane
Meas. range [1]	100 to 40,000 ppm	100 to 21,000 ppm	100 to 18,000 ppm
Accuracy	less than 400 ppm (100 to 4000 ppm less than 10 % of m.v. (greater than 4000 ppm)	less than 400 ppm (100 to 4000 ppm less than 10 % of m.v. (greater than 4000 ppm)	less than 400 ppm (100 to 4000 ppm less than 10 % of m.v. (greater than 4000 ppm)
Resolution	10 ppm	10 ppm	10 ppm
Min. 02 req. in flue gas	2% + (2 x methane reading)	2% + (5 x propane reading)	2% + (6.5 x butane reading)
Reaction time t90	less than 40 s	less than 40 s	less than 40 s
Response factor [2]	1	1.5	2

[1] Lower explosion limit must be adhered to.

[2] The HC gas sensor is adjusted to methane in the factory. It can be adjusted to another gas by the user.

Additional Technical data

Dimensions: 395 x 275 x 95 mm
Weight: 3200 g
Storage temperature: -20 to +50 ℃
Operating temperature: -5 to +45 ℃
Housing material: ABS
Memory: 250 000 readings
Power supply: Via built-in mains unit (90 V to 260 V, 47 to 63 Hz) or exchangeable rechargeable batteries
Electrial power consumption: 0.5 A (110 V AC), 0.3 A (230 V AC)
Dewpoint calculation: 0 to 99 ℃ td
Maximum positive pressure/flue gas: 50 hPa (500 mm water column)
Maximum negative pressure: 200 hPa (2000 mm water column)

Pump flow: 1 l/min. with flow monitoring
Max. dust load: 20 g/m³ dust in flue gas
Max. humidity load: +70 ℃
Dewpoint temperature at sample gas inlet of analyzer box
Trigger input: Voltage 5 to 12 Volt (rising or falling edge)
Pulse width > 1 s
Load: 5 V/max, 5 mA, 12 V/max. 40 mA
Warranty: Analyzers 2 years (excluding working parts, e.g. gas sensors...); CO/NO/NO2/SO2/H2C/HC 1 year; O2 gas sensor 1 1/2 years; CO2 IR gas sensor 2 years, special gas pump for long term measurements 2 years