

testo 350 – The **NEW** testo 350



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- **Intuitive operation**
- **Fast and easy analysis**
- **Operation under the toughest conditions**
- **Cost and time savings**
 due to the very easy access
 to all relevant service parts,
 wearing parts and gas sensors



testo 350 – The control unit

- Connection to PC / Laptop via Bluetooth or USB
- Connection to analyzer box via Testo data bus cable, Bluetooth or connected on the analyzer box
- Internal memory (250,000 measurements)



testo 350 – The analyzer box

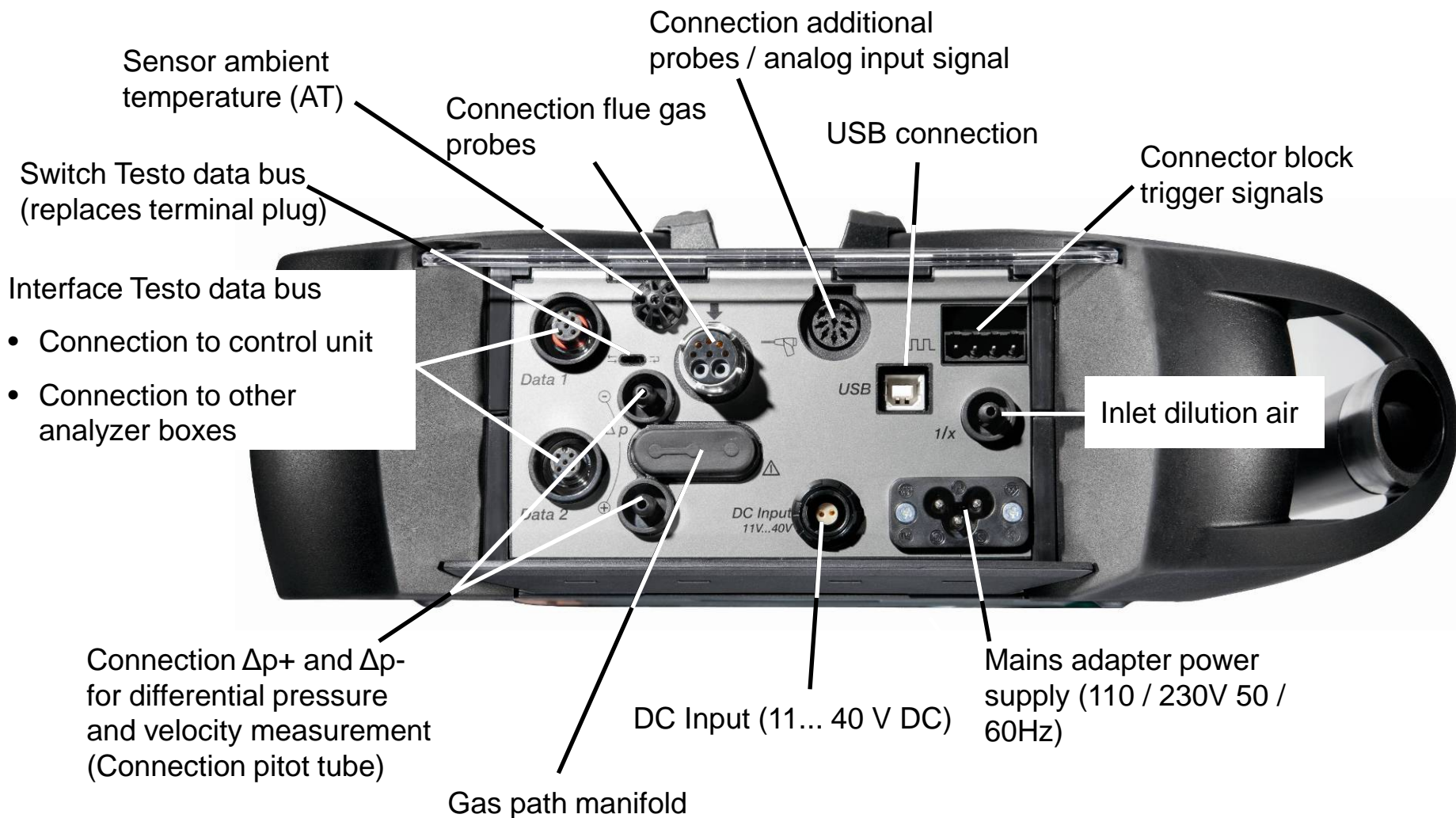
- Includes the whole sensor- and measurement technology, e.g.
 - Gas sensors
 - Option peltier gas preparation unit
 - Gas and rinsing pumps
 - condensate container
-

Benefits

- The analyzer box is able to carry out measurement programs without control unit



testo 350 – The analyzer box connections



testo 350 – Easily accessible service opening

NEW

The service opening in the underside of the instrument allows very easy access to all relevant service and wearing parts such as pumps and filters, which can then be quickly cleaned and/or exchanged on site.

Benefits

- Reduction of instrument unavailability due to service times
- Cost savings due to instrument maintenance and/or exchange and cleaning of wearing parts by the user
- Immediate access to all relevant wearing parts



testo 350 – Simple removable condensate container

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testo 350 – Closed cooling loops



testo 350 – Thermally separated sensor chamber

NEW

The sensor chamber is thermally separated from the other instrument components.

Benefits

- The self-heating of the instrument parts does not influence the gas sensors
- Reduction of possible sensor drifts caused by thermal influences



testo 350 – Replaceable cross-sensitivity filter

NEW Replaceable filters for NO sensors

High gas concentrations have in many applications, e.g. stationary gas engines, a big influence on the sensor lifetime

- The filter of the NO-sensor avoids cross sensitivity to SO₂

Benefits

- Display of the filter lifetime in ppm-hours
- Only the consumed filters have to be replaced, not the sensor
- The filter can be changed by the user
- The SO₂-concentration is also calculated without an SO₂ measurement based on the sulfur content of the fuel!



testo 350 – Selection out of 10 digital gas sensors

- | | |
|---------------------|-----------------------------|
| – CO | - H ₂ S |
| – CO _{low} | - CxHy |
| – NO | - CO ₂ - IR |
| – NO _{low} | - O ₂ (standard) |
| – SO ₂ | |
| – NO ₂ | |

Benefits

- Flexible reaction to changing measurement demands
- True NOx-measurement (e.g. O₂+CO+NO+NO₂)
- High flexibility in the selection of slots due to digital sensors
- The digital sensor signal is generated directly on the sensor board → reduction of possible interferences during the signal transfer to the main board



testo 350 – Configuration of slots for gas sensors

slot 1	slot 2	slot 3	slot 4	slot 5	slot 6
CO	CO	CO	O ₂	CO	CO
CO _{low}	CO _{low}	CO _{low}		CO _{low}	CO _{low}
NO	NO	NO		NO	NO
NO _{low}	NO _{low}	NO _{low}		NO _{low}	NO _{low}
NO ₂	NO ₂	NO ₂			
SO ₂	SO ₂	SO ₂		SO ₂	SO ₂
H ₂ S	H ₂ S	H ₂ S			
		CO ₂ -IR		HC	HC
Option dilution for all sensors (factor 5)					

Option single dilution (factor selectable)

testo 350 – The application specific menu navigation

NEW

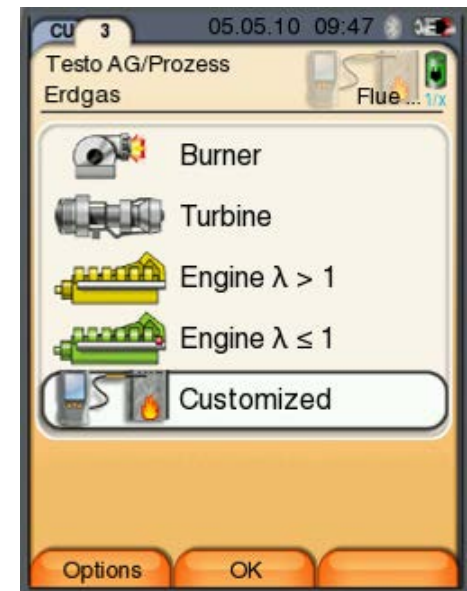
- The testo 350 provides five different applications with pre-settings

For every choice are

- typical fuels
- a practicable order of the exhaust gas parameters in the display
- useful instrument pre-settings

stored under each of these measurement objects.

- Advices in the display are guiding the user through the measurement

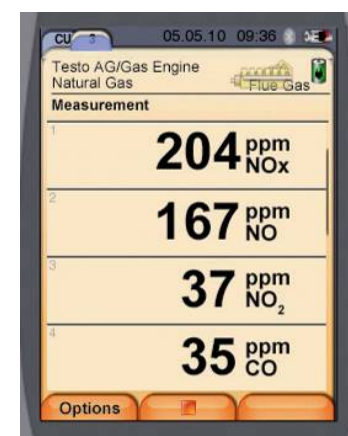
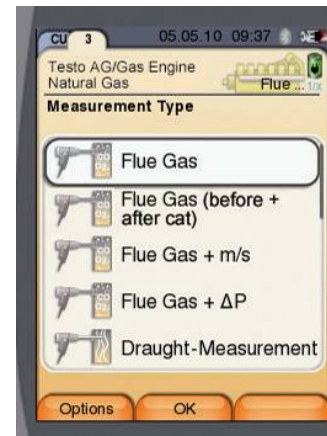
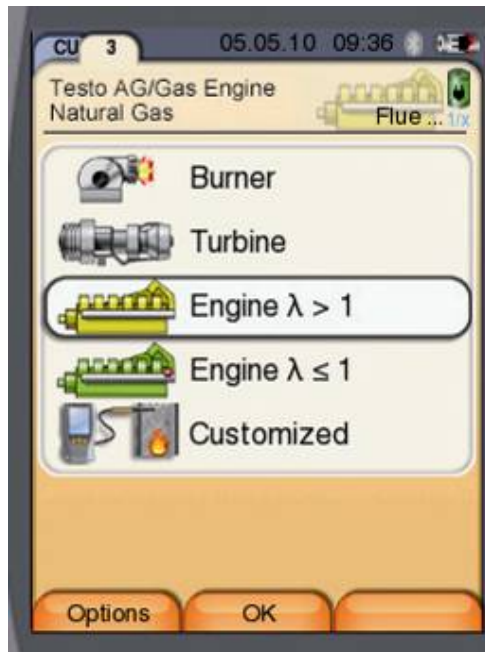


Benefits

- Easy operation without previous knowledge of the instrument
- Reduction of the work steps before the start of the measurement

testo 350 – The application specific menu navigation

NEU Application „Engines“



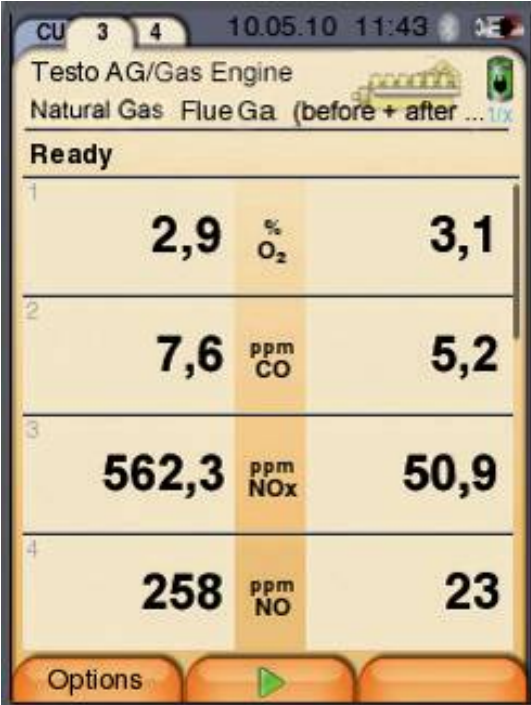
testo 350 – The application specific menu navigation

NEW Menu „before and after catalyst“

This exhaust gas menu allows the simultaneous measurement of exhaust gas concentrations before and after the catalytic converter. For this purpose, two analyzer boxes are connected to each other with the Testo data bus cable.

Benefits

- The measurement values of the two analyzer boxes are shown parallel to each other in the control unit's display
- Fast and easy overview of the status of the catalyst
- The fuel and location setting is automatically used for both boxes



CU	3	4	10.05.10	11:43
Testo AG/Gas Engine				
Natural Gas Flue Ga (before + after ... 10x)				
Ready				
1	2,9	% O ₂	3,1	
2	7,6	ppm CO	5,2	
3	562,3	ppm NOx	50,9	
4	258	ppm NO	23	
Options				

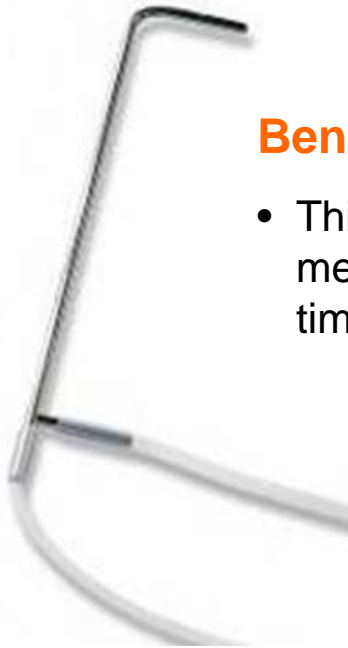
testo 350 – Automatic pressure sensor zeroing

NEW

The pressure sensor is automatically zeroed at regular (60s) intervals. This avoids the typical drift of the pressure sensor when ambient conditions change.

Benefit

- This option allows volume and mass flow velocity to be measured without supervision over a longer period of time and parallel to the emission measurement



testo 350 – Economical on a long-term basis

The economical use of the testo 350 on a long-term base is warranted because:

- Gas sensors are pre-calibrated easy to change by the user
- The analyzer gives information when main parts have to be changed
- Re-calibrations can be easily done by the user

Benefit

- Less down-times of the measuring instrument than with standardised maintenance cycles (e.g. rbr Ecom recommends a service every 80h)
- Better and easier planning of measurement work



testo 350 – Sensor specifications

Parameter	Measurement range		
	Standard meas. range	Single slot dilution	Over-all dilution
O ₂	0 ... 25 Vol %	---	reading is not shown in display
CO (H ₂ -compensated)	0 ... 10.000 ppm	Depending on dilution factor 2, 5, 10, 20 or 40 times of the standard measurement range	2500 ... 50000 ppm
CO _{low} (H ₂ -compensated)	0 ... 500 ppm	Depending on dilution factor 2, 5, 10, 20 or 40 times of the standard measurement range	500 ... 2500 ppm
NO NEW with replaceable cross sensitivity filter	0 ... 4.000 ppm	Depending on dilution factor 2, 5, 10, 20 or 40 times of the standard measurement range	1500 ... 20000 ppm
NO _{low}	0 ... 300 ppm	Depending on dilution factor 2, 5, 10, 20 or 40 times of the standard measurement range	300 ... 1500 ppm
NO ₂	0 ... 500 ppm	---	500 ... 2500 ppm
SO ₂	0 ... 5.000 ppm	Depending on dilution factor 2, 5, 10, 20 or 40 times of the standard measurement range	500 ... 25000 ppm
H ₂ S	0 ... 300 ppm	---	200 ... 1500 ppm
CO ₂ (IR)	0 ... 50 Vol %	---	reading is not shown in display

testo 350 – Sensor specifications

Parameter	Measurement range		
	Standard meas. range	Single slot dilution	Over-all dilution
CxHy (Pellistor)	100 ... 40000 ppm (Methan) 100 ... 21000 ppm (Propan) 100 ... 18000 ppm (Butan)	100 ... 40000 ppm (Methan) 100 ... 21000 ppm (Propan) 100 ... 18000 ppm (Butan)	reading is not shown in display
	Standard measurement range		
Δp – measurement	-40 hPa ... 40 hPa (resolution 0,01hPa) -200 hPa ... 200 hPa (resolution 0,1 hPa)		
Velocity	0 ... 40 m/s (resolution 0,1 m/s)		
Absolut pressure (only with CO2-IR-sensor option)	600 ... 1150 hPa (resolution 1 hPa)		
Temperatur	Typ K (NiCr-Ni) -40° C ... 1.200° C Typ S (Pt10Rh-Pt) 0° C ... 1760° C Ambient temperatur (NTC – integrated) -20° C ... 50° C		

testo 350 – Modulare standard probes (like testo 340)

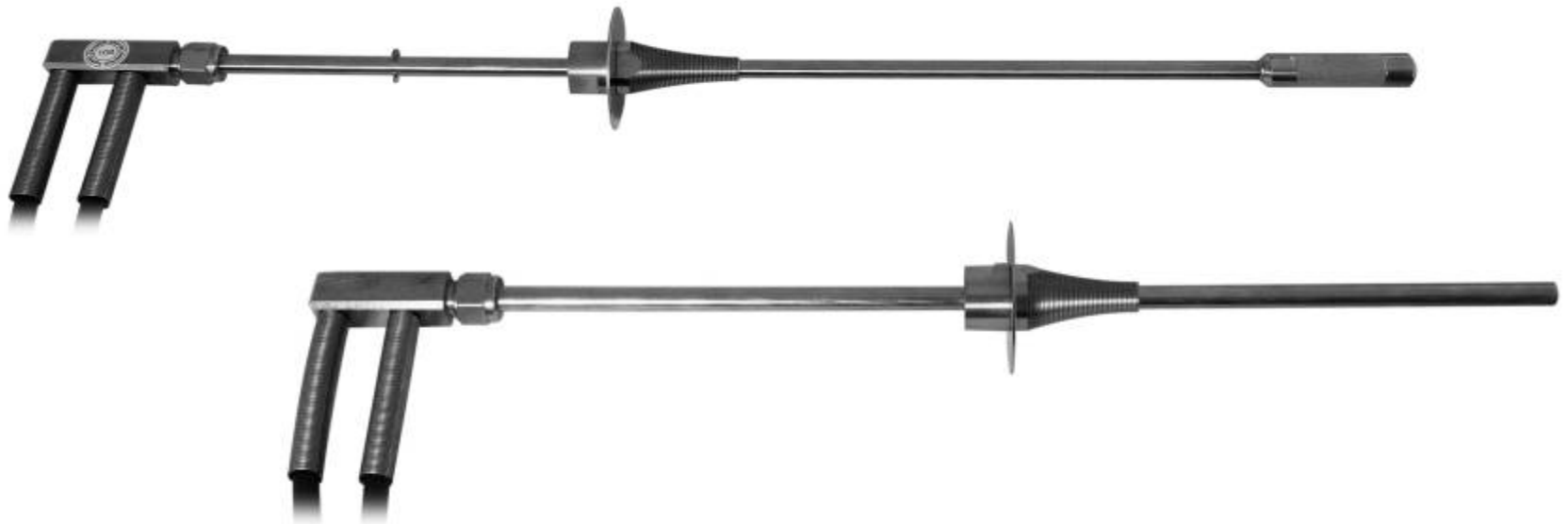
Benefit

- Easy removeable filter in the probe handle
- All-in-one-connection: flue gas and temperature input (very safe)
- Connections are completely sealed
- Fast probe exchange



testo 350 – Gas sampling probes for stationary engines

- Full metal probe (rugged, no plastic handle)
- Specially for stationary engine applications
- Adjustable overpressure outlet
- Probe with prefilter e.g. for stationary diesel engines
- Optional: Thermocouple for exhaust gas temperature measurement (NiCr-Ni, T_{max.} +1000 ° C), with additional temperature protection



Thank you for your attention.

Questions ?



Acknowledgements

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