

# Flue gas analyzer for industry

**testo 350 – Professional measurement system for portable, industrial emission measurement**

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Application-guided operation with useful instrument pre-settings

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Large colour graphical display

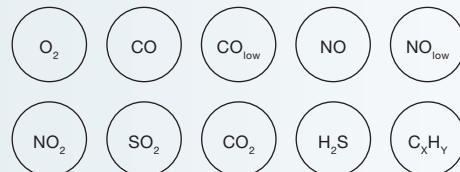
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Industrial-standard design:

- 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

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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 or via Android smartphone or tablet with the free App, as an alternative to the Control Unit. After programming, the analyzer box is able to carry out measurements and store measurement data independently.

## Ordering data

### testo 350 Control Unit

testo 350 Control Unit, displays measurement values and controls analyzer box, incl. rech. battery, measurement data store, USB interface and connection for Testo databus



Part no. 0632 3511

### testo 350 analyzer box

testo 350 analyzer box, equipped with O<sub>2</sub>, 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<sub>low</sub>, NO, NO<sub>low</sub>, NO<sub>2</sub>, SO<sub>2</sub>, CO<sub>2</sub> NDIR, C<sub>x</sub>H<sub>y</sub>, H<sub>2</sub>S, Carrying strap set for analyzer unit and control unit



Part no. 0632 3510

#### Accessories testo 350 Control Unit

#### Part no.

|                                                                                                        |           |  |
|--------------------------------------------------------------------------------------------------------|-----------|--|
| 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 |  |

**The testo 350 analyzer box must be equipped with a second gas sensor, otherwise the instrument cannot function. A maximum of five additional sensors can be fitted.**

|                                                                                                                                                                                                                                                                                                                                 |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Option O <sub>2</sub> Long Life, 0 to 25 vol.%, resolution 0.01 vol.%                                                                                                                                                                                                                                                           |  |
| Option CO sensor (H <sub>2</sub> -compensated), 0 to 10,000 ppm, resolution 1 ppm                                                                                                                                                                                                                                               |  |
| Option CO <sub>low</sub> sensor (H <sub>2</sub> -compensated), 0 to 500 ppm, resolution 0.1 ppm                                                                                                                                                                                                                                 |  |
| Option NO sensor, 0 to 4,000 ppm, resolution 1 ppm                                                                                                                                                                                                                                                                              |  |
| Option NO <sub>low</sub> sensor, 0 to 300 ppm, resolution 0.1 ppm                                                                                                                                                                                                                                                               |  |
| Option NO <sub>2</sub> sensor, 0 to 500 ppm, resolution 0.1 ppm                                                                                                                                                                                                                                                                 |  |
| Option SO <sub>2</sub> sensor, 0 to 5,000 ppm, resolution 1 ppm                                                                                                                                                                                                                                                                 |  |
| Option CO <sub>2</sub> (NDIR) sensor, 0 to 50 Vol %, resolution 0.01 Vol %, infrared measurement principle, incl. absolute pressure measurement and CO <sub>2</sub> -absorption filter with refill pack. For long-term measurements >15 minutes measurement time, the additional Peltier gas preparation option is recommended. |  |
| Option C <sub>x</sub> H <sub>y</sub> 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 <sub>2</sub> 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. 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.

|                                                                                                                                                  |           |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--|
| Exchangeable filter NO sensor (1 off), blocks cross-gas SO <sub>2</sub>                                                                          | 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 |  |
| Spare particle filter for testo 350 analyzer box (20 pcs.)                                                                                       | 0554 3381 |  |
| Cable with battery clips and adapter for connection to DC voltage input testo 350 analyzer box                                                   | 0554 1337 |  |

## Ordering data

| PC software and Testo databus                                                                                                                                                                                                                                                                                                                           |           | Part no. |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|
| Software „easyEmission“, incl. USB connection cable instrument-PC<br>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 |          |
| 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 |          |
| testo 350 Modbus adapter                                                                                                                                                                                                                                                                                                                                |           | Part no. |
| For controlling the measurements of the testo 350. Access is digital via the standardized Modbus/RTU protocol. The connection of a TCP gateway enables communication between the testo 350 and an Ethernet-based Modbus system.                                                                                                                         | 0554 3540 |          |
| Printer and Accessories                                                                                                                                                                                                                                                                                                                                 |           | Part no. |
| 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 |          |
| Calibration Certificates                                                                                                                                                                                                                                                                                                                                |           | Part no. |
| ISO calibration certificate/flue gas                                                                                                                                                                                                                                                                                                                    | 0520 0055 |          |
| ISO calibration certificate velocity; hot wire, vane anemometer, Pitot tube; calibration points 5; 10; 15; 20 m/s                                                                                                                                                                                                                                       | 0520 0034 |          |

# Gas sampling probes

| <b>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</b>                                                                                                                                                     |            | <b>Part no.</b> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------|
| Modular flue gas probe 335 mm immersion depth, incl. cone, thermocouple NiCr-Ni (TI) Tmax 500 °C and NO <sub>2</sub> /SO <sub>2</sub> 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 <sub>2</sub> /SO <sub>2</sub> 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 <sub>2</sub> /SO <sub>2</sub> special hose 2.2 m                                                                                                                                                        | 0600 8764  |                 |
| Modular flue gas probe, 700 mm immersion depth, incl. cone, thermocouple NiCr-Ni (TI) Tmax 1000 °C and NO <sub>2</sub> /SO <sub>2</sub> 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 <sub>2</sub> /SO <sub>2</sub> 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 <sub>2</sub> /SO <sub>2</sub> special hose 2.2 m                                                                                                                                 | 0600 8767  |                 |
| <b>Probe accessories modular gas sampling probes</b>                                                                                                                                                                                                                                                             |            | <b>Part no.</b> |
| Hose extension; 2.8 m; extension cable for probe                                                                                                                                                                                                                                                                 | 0554 1202  |                 |
| Probe shaft with pre-filter Ø 14 mm, length selectable up to 2500 mm, incl. cone, Ø 8 mm, thermocouple NiCr-Ni (TI) Tmax. 500 °C                                                                                                                                                                                 | On request |                 |
| Probe shaft with pre-filter Ø 14 mm, length selectable up to 2500 mm, incl. cone, Ø 8 mm, thermocouple NiCr-Ni (TI) Tmax. 1000 °C                                                                                                                                                                                | On request |                 |
| Spare probe pre-filter (sinter 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  |                 |
| <b>Gas sampling probes for industrial engines</b>                                                                                                                                                                                                                                                                |            | <b>Part no.</b> |
| Flue gas probe for industrial engines, 335 mm immersion depth incl. probe stop and heat protection plate, Tmax. +1,000 °C, special hose for NO <sub>2</sub> -/SO <sub>2</sub> measurements, length 4 m                                                                                                           | 0600 7555  |                 |
| Flue gas probe for industrial engines with probe shaft preliminary filter, 335 mm immersion depth incl. probe stop and heat protection plate, Tmax. +1,000 °C, special hose for NO <sub>2</sub> -/SO <sub>2</sub> measurements, length 4 m                                                                       | 0600 7556  |                 |
| Thermocouple for flue gas temperature measurement, NiCr-Ni, length 400 mm, Tmax +1,000 °C, with 4 m connecting cable and additional heat protection                                                                                                                                                              | 0600 8898  |                 |
| <b>SO<sub>2</sub> low probes for measurements after flue gas post-treatment systems (e.g. scrubbers)</b>                                                                                                                                                                                                         |            | <b>Part no.</b> |
| SO <sub>2</sub> low set unheated, consisting of: SO <sub>2</sub> low sensor, measuring range 0 to 200 ppm, resolution 0.1 ppm, special SO <sub>2</sub> low gas sampling probe, probe shaft length 735 mm, Tmax. probe shaft 220 °C, hose length 2.35 m, Ø probe shaft 8 mm, incl. cone, thermocouple NiCr-N (TI) | 0563 1251  |                 |
| Spare thermocouple                                                                                                                                                                                                                                                                                               | 0430 0053  |                 |
| Spare SO <sub>2</sub> sensor                                                                                                                                                                                                                                                                                     | 0393 0251  |                 |
| SO <sub>2</sub> low set heated, consisting of: SO <sub>2</sub> low sensor, measuring range 0 to 200 ppm, resolution 0.1 ppm, industrial probe set heated 0600 7630, heated probe shaft, heated gas sampling hose, thermocouple NiCr-Ni (TI)                                                                      | 0563 2251  |                 |
| Spare SO <sub>2</sub> sensor                                                                                                                                                                                                                                                                                     | 0393 0251  |                 |
| <b>Temperature probes</b>                                                                                                                                                                                                                                                                                        |            | <b>Part no.</b> |
| Combustion air temperature probe, immersion depth 60 mm                                                                                                                                                                                                                                                          | 0600 9797  |                 |
| <b>Pitot tubes</b>                                                                                                                                                                                                                                                                                               |            | <b>Part no.</b> |
| 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; length 5 m; 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  |                 |

# Gas sampling probes

| Industrial probes                                                                                                                                                                                                                                                                                                               | Details                                                                                                                                                                                                                                                                                                                                                                                    | Part no.   |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--|
| Industrial probe set 1200 °C<br>consisting of:<br>- unheated handle<br>- unheated probe shaft up to 1200 °C flue gas temperature<br>- unheated gas sampling hose incl. inline filter, length 4 m<br>- thermocouple Type K, length 1.2 m<br><br>The set can optionally come with an extension tube and probe preliminary filter. | Probe shaft: T <sub>max</sub> +1200 °C<br>Length 1.0 m, Ø 12 mm<br>Material 2.4856 alloy 625<br>Handle: T <sub>max</sub> +600 °C<br>Material: 1.4404 stainless steel<br>Gas sampling hose: 2-chamber hose with PTFE inner core; length 4.0 m<br>TC: Type K,<br>Length 1.2 m, Ø 2 mm<br>T <sub>max</sub> +1200 °C                                                                           | 0600 7610  |  |
| Industrial probe set 1800 °C<br>consisting of:<br>- unheated handle<br>- unheated probe shaft up to 1800 °C flue gas temperature<br>- unheated gas sampling hose incl. inline filter, length 4 m<br><br>For temperature measurements > +1370 °C, we recommend a thermocouple Type S.                                            | Probe shaft: T <sub>max</sub> +1800 °C<br>Material Al2O3 > 99.7%<br>Length 1.0 m, Ø 12 mm<br>Gas sampling hose: 2-chamber hose with PTFE inner core; length 4.0 m<br>Handle: T <sub>max</sub> +600 °C<br>Material: 1.4404 stainless steel                                                                                                                                                  | 0600 7620  |  |
| Heated industrial probe set<br>consisting of:<br>- heated probe shaft up to 600 °C flue gas temperature<br>- heated gas sampling hose, length 4 m<br>- thermocouple Type K, length 1.2 m<br><br>The set can optionally come with an extension tube and probe preliminary filter.                                                | Probe shaft: temperature-proof up to +600 °C<br>Voltage supply 230 V / 50 Hz<br>Length 1.0 m, Ø 25 mm<br>Heating temperature range +200 °C<br>Material stainless steel 1.4571<br>Gas sampling hose: corrugated hose with PTFE inner core<br>Length 4.0 m; outside diameter 34 mm<br>Heating temperature range > +120 °C<br>TC: Type K<br>Length 1.2 m, Ø 2 mm<br>T <sub>max</sub> +1200 °C | 0600 7630  |  |
| Extension tube 1200 °C for extending the industrial probe set 1200 °C (0600 7610) and heated industrial probe set (0600 7630)<br><br>The extension tube can be screwed directly onto the unheated probe shaft up to +1200 °C and the heated probe shaft up to +600 °C.*                                                         | Probe shaft: T <sub>max</sub> +1200 °C<br>Length 1.0 m, Ø 12 mm<br>Material 2.4856 alloy 625                                                                                                                                                                                                                                                                                               | 0600 7617  |  |
| Thermocouple Type K, length 2.2 m                                                                                                                                                                                                                                                                                               | Type K<br>Length 2.2 m, Ø 2 mm<br>T <sub>max</sub> +1200 °C                                                                                                                                                                                                                                                                                                                                | 0600 7615  |  |
| Industrial probe preliminary filter for dust-laden flue gas<br><br>The probe preliminary filter can be screwed directly onto the unheated probe shaft up to +1200 °C and the heated probe shaft up to +600 °C.*                                                                                                                 | Material porous silicon carbide<br>T <sub>max</sub> +1,000 °C,<br>Length 110 mm, Ø 30 mm<br>Filtration grade 10 µm                                                                                                                                                                                                                                                                         | 0600 7616  |  |
| Heated gas sampling hose                                                                                                                                                                                                                                                                                                        | Corrugated hose with PTFE inner core<br>Length 4.0 m; outside diameter 34 mm<br>Heating temperature range > +120 °C                                                                                                                                                                                                                                                                        | on request |  |
| Transport case for probes<br>Suitable for all probes with a total length > 335 mm.                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                            | 0516 7600  |  |
| Spare dirt filter (10 off)                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                            | 0554 3371  |  |

\*For ease of tightening and releasing, we recommend the use of ceramic paste on the thread. This is available from retailers.

# Technical data

## testo 350 Control Unit

|                       | testo 350<br>Control Unit         | Analog output box<br>(mA Out) |
|-----------------------|-----------------------------------|-------------------------------|
| Operating temperature | -5 to +45 °C                      | -5 to +45 °C                  |
| Storage temperature   | -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                              | –                             |

### 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, Ecuador, New Zealand, Bolivia, Dominican Republic, Peru, Chile, Cuba, Costa Rica, Nicaragua, Korea, Belarus.

## Technical data testo 350 analyzer box

|                                                                      | Measuring range                 | Accuracy<br>±1 digit                                                                                                                                                                   | Resolution                                                                                                                      | Reaction time t <sub>90</sub> |
|----------------------------------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| <b>O<sub>2</sub> measurement</b>                                     | 0 to +25 Vol. % O <sub>2</sub>  | ±0.8% of fsv (0 to +25 Vol. % O <sub>2</sub> )                                                                                                                                         | 0.01 Vol. % O <sub>2</sub><br>(0 to +25 Vol. % O <sub>2</sub> )                                                                 | 20 s (t <sub>95</sub> )       |
| <b>CO measurement<br/>(H<sub>2</sub> compensated)*</b>               | 0 to +10.000 ppm CO             | ±5% of m.v. (+200 to +2.000 ppm CO)<br>±10% of m.v. (+2.001 to +10.000 ppm CO)<br>±10 ppm CO (0 to +199 ppm CO)                                                                        | 1 ppm CO<br>(0 to +10.000 ppm CO)                                                                                               | 40 s                          |
| <b>CO<sub>low</sub> measurement<br/>(H<sub>2</sub> compensated)*</b> | 0 to 500 ppm CO                 | ±5% of m.v. (+40 to +500 ppm CO)<br>±2% ppm CO (0 to +39,9 ppm CO)                                                                                                                     | 0.1 ppm CO<br>(0 to +500 ppm CO)                                                                                                | 40 s                          |
| <b>NO measurement</b>                                                | 0 to +4.000 ppm NO              | ±5% of m.v. (+100 to +1.999 ppm NO)<br>±10% of m.v. (+2.000 to +4.000 ppm NO)<br>±5 ppm NO (0 to +99 ppm NO)                                                                           | ±1 ppm NO<br>(0 to +4.000 ppm NO)                                                                                               | 30 s                          |
| <b>NO<sub>low</sub> measurement</b>                                  | 0 to +300 ppm NO                | ±5% of m.v. (+40 to +300 ppm NO)<br>±2 ppm NO (0 to +39.9 ppm NO)                                                                                                                      | ±0.1 ppm NO<br>(0 to +300 ppm NO)                                                                                               | 30 s                          |
| <b>NO<sub>2</sub> measurement</b>                                    | 0 to +500 ppm NO <sub>2</sub>   | ±5% of m.v. (+100 to +500 ppm NO <sub>2</sub> )<br>±5 ppm NO <sub>2</sub> (0 to +99,9 ppm NO <sub>2</sub> )                                                                            | ±0.1 ppm NO <sub>2</sub><br>(0 to +500 ppm NO <sub>2</sub> )                                                                    | 40 s                          |
| <b>SO<sub>2</sub> measurement</b>                                    | 0 to +5.000 ppm SO <sub>2</sub> | ±5% of m.v. (+100 to +2.000 ppm SO <sub>2</sub> )<br>±10% of m.v. (+2.001 to +5.000 ppm SO <sub>2</sub> )<br>±5 ppm SO <sub>2</sub> (0 to +99 ppm SO <sub>2</sub> )                    | ±1 ppm SO <sub>2</sub><br>(0 to +5.000 ppm SO <sub>2</sub> )                                                                    | 30 s                          |
| <b>CO<sub>2</sub> measurement<br/>(IR)</b>                           | 0 to +50 Vol. % CO <sub>2</sub> | ±0.3 Vol. % CO <sub>2</sub> (0 to 25 Vol. % CO <sub>2</sub> )<br>±0.5 Vol. % CO <sub>2</sub> (>25 to 50 Vol. % CO <sub>2</sub> )<br>+ 1.5% of m.v. (>25 to 50 Vol. % CO <sub>2</sub> ) | 0.01 Vol. % CO <sub>2</sub><br>(0 to 25 Vol. % CO <sub>2</sub> )<br>0.1 Vol. % CO <sub>2</sub><br>(>25 Vol. % CO <sub>2</sub> ) | 10 s                          |
| <b>H<sub>2</sub>S measurement</b>                                    | 0 to +300 ppm H <sub>2</sub> S  | ±5% of m.v. (+40 to +300 ppm)<br>±2 ppm (0 to +39.9 ppm)                                                                                                                               | 0.1 ppm (0 to +300 ppm)                                                                                                         | 35 s                          |

\* H<sub>2</sub> only as an indicator

|                                                               | Single dilution with selectable dilution factor<br>(x2, x5, x10, x20, x40)            |                                   |                  | Dilution of all sensors (factor 5)<br>When dilution of all sensors is activated, the measurement values of O <sub>2</sub> , CO <sub>2</sub> -(IR) and C <sub>x</sub> H <sub>y</sub> are not shown in the display. |                                                                                      |            |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------|
|                                                               | Measuring range                                                                       | Accuracy<br>±1 digit              | Resolution       | Measuring range                                                                                                                                                                                                   | Accuracy<br>±1 digit                                                                 | Resolution |
| CO measurement<br>(H <sub>2</sub> compensated)                | depending on<br>selected factor                                                       | ±2% of m.v.<br>(additional error) | 1 ppm            | 2.500 to 50.000 ppm                                                                                                                                                                                               | ±5 % of m.v.<br>(additional error)<br>Press. range -100<br>to 0 mbar at probe<br>tip | 1 ppm      |
| CO <sub>low</sub> measurement<br>(H <sub>2</sub> compensated) | depending on<br>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 <sub>low</sub> measurement                                 |                                                                                       |                                   | 0.1 ppm          | 300 to 1.500 ppm                                                                                                                                                                                                  |                                                                                      | 0.1 ppm    |
| SO <sub>2</sub> measurement                                   |                                                                                       |                                   | 1 ppm            | 500 to 25.000 ppm                                                                                                                                                                                                 |                                                                                      | 1 ppm      |
| C <sub>x</sub> H <sub>y</sub> measurement                     | Methane: 100 to 40,000 ppm<br>Propane: 100 to 21,000 ppm<br>Butane: 100 to 18,000 ppm |                                   | 10 ppm           |                                                                                                                                                                                                                   |                                                                                      |            |
| NO <sub>2</sub> measurement                                   |                                                                                       |                                   | 500 to 2.500 ppm |                                                                                                                                                                                                                   | 0.1 ppm                                                                              |            |
| H <sub>2</sub> S measurement                                  |                                                                                       |                                   |                  | 200 to 1.500 ppm                                                                                                                                                                                                  |                                                                                      | 0.1 ppm    |

# Technical data

## Technical data testo 350 analyzer box

|                                                       | Measuring range                                    | Accuracy<br>±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 <sub>2</sub> calculation                           | 0 to CO <sub>2 max</sub> Vol.<br>% CO <sub>2</sub> | calculated from O <sub>2</sub> ±0.2 Vol. %                                                          | 0.01 Vol. % CO <sub>2</sub>  | 40 s                   |
| Differential pressure 1                               | -40 to +40 hPa                                     | ±1.5% of m.v. (-40 to -3 hPa)<br>±1.5% of m.v. (+3 to +40 hPa)<br>±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 m.v. (-200 to -50 hPa)<br>±1.5% of m.v. (+50 to +200 hPa)<br>±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)<br>±1 °C (-200 to -100.1 °C)<br>±1 °C (+200.1 to +1370 °C)                | 0.1 °C (-200 to +1.370 °C)   |                        |
| Type S (Pt10Rh-Pt)                                    |                                                    | ±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 | Measuring range <sup>1</sup> | Accuracy<br>±1 digit                                       | Resolution | Min. O <sub>2</sub> requirement in flue gas | Reaction time $t_{90}$ | Response factor <sup>2</sup> |
|-----------------|------------------------------|------------------------------------------------------------|------------|---------------------------------------------|------------------------|------------------------------|
| Methane         | 100 to 40.000 ppm            | < 400 ppm (100 to 4.000 ppm)<br>< 10% of m.v. (>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                            |

<sup>1</sup> Lower explosion limit (LEL) must be adhered to.

<sup>2</sup> 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<br>(rising or trailing edge) pulse width > 1 sec<br>load: 5 V/max, 5 mA, 12 V/max. 40 mA                                                                                                          |
| Weight                                                      | 4800 g                                   | Guarantee              |                                                                                                                                                                                                                        |
| Storage temperature                                         | -20 to +50 °C                            | Measuring instrument   | 2 years                                                                                                                                                                                                                |
| Operating temperature                                       | -5 to +45 °C                             | Gas sensors            | CO, NO, NO <sub>2</sub> , SO <sub>2</sub> , H <sub>2</sub> S, C <sub>x</sub> H <sub>y</sub> : 1 year<br>O <sub>2</sub> sensor: 1.5 years<br>O <sub>2</sub> -LL sensor: 4 years<br>CO <sub>2</sub> -IR sensors: 2 years |
| Housing material                                            | ABS                                      | Pumps                  | 0.5 years                                                                                                                                                                                                              |
| Memory                                                      | 250,000 readings                         | Solenoid valves        | 0.5 years                                                                                                                                                                                                              |
| Power supply                                                | AC mains unit 100V to 240V (50 to 60 Hz) | Thermocouples          | 1 year                                                                                                                                                                                                                 |
| DC voltage input                                            | 11 V to 40 V                             | Rechargeable batteries | 1 year                                                                                                                                                                                                                 |
| Max. dust load                                              | 20 g/m <sup>3</sup> dust in flue gas     | Probes                 | 2 years                                                                                                                                                                                                                |
| Dewpoint calculation                                        | 0 to 99 °Ctd                             | Guarantee conditions   | <a href="https://www.testo.com/guarantee">https://www.testo.com/guarantee</a>                                                                                                                                          |
| Max. positive pressure                                      | max. +50 mbar                            | Protection class       | IP40                                                                                                                                                                                                                   |
| Max. negative pressure                                      | min. -300 mbar                           | Battery life           | Maximum load approx. 2.5 h                                                                                                                                                                                             |
| 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              |                        |                                                                                                                                                                                                                        |

## Ordering suggestions

### Emission measurement on industrial engines

|                                                    | Part no.  |
|----------------------------------------------------|-----------|
| testo 350 control unit                             | 0632 3511 |
| Option BLUETOOTH® wireless transmission            |           |
| testo 350 analyzer unit                            | 0632 3510 |
| Option CO (H2-compensated) sensor, 0 to 10,000 ppm |           |
| Option NO sensor, 0 to 4,000 ppm                   |           |
| Option NO2 sensor, 0 to 500 ppm                    |           |
| Option Peltier gas preparation incl. hose pump     |           |
| Option BLUETOOTH® wireless transmission            |           |
| Option fresh air valve for long-term measurement   |           |
| Option measuring range extension                   |           |
| Flue gas probe for industrial engines              | 0600 7555 |
| testo BLUETOOTH® printer                           | 0554 0620 |
| easyEmission software                              | 0554 3334 |
| International mains unit for control unit          | 0554 1096 |
| Transport case                                     | 0516 3510 |

### Emission measurement on burners

|                                                    | Part no.  |
|----------------------------------------------------|-----------|
| testo 350 control unit                             | 0632 3511 |
| Option BLUETOOTH® wireless transmission            |           |
| testo 350 analyzer unit                            | 0632 3510 |
| Option CO (H2-compensated) sensor, 0 to 10,000 ppm |           |
| Option NO sensor, 0 to 4,000 ppm                   |           |
| Option NO2 sensor, 0 to 500 ppm                    |           |
| Option SO2 sensor, 0 to 5,000 ppm                  |           |
| Option Peltier gas preparation incl. hose pump     |           |
| Option BLUETOOTH® wireless transmission            |           |
| Option measuring range extension                   |           |
| Gas sampling probe, modular                        | 0600 8764 |
| testo BLUETOOTH® printer                           | 0554 0620 |
| easyEmission software                              | 0554 3334 |
| International mains unit for control unit          | 0554 1096 |
| Transport case                                     | 0516 3510 |

### Emission measurement on gas turbines

|                                                    | Part no.  |
|----------------------------------------------------|-----------|
| testo 350 control unit                             | 0632 3511 |
| Option BLUETOOTH® wireless transmission            |           |
| testo 350 analyzer unit                            | 0632 3510 |
| Option COlow (H2 compensated) sensor, 0 to 500 ppm |           |
| Option NOlow sensor, 0 to 300 ppm                  |           |
| Option NO2 sensor, 0 to 500 ppm                    |           |
| Option Peltier gas preparation incl. hose pump     |           |
| Option BLUETOOTH® wireless transmission            |           |
| Option fresh air valve for long-term measurement   |           |
| Option measuring range extension                   |           |
| Flue gas probe for industrial engines              | 0600 7555 |
| testo BLUETOOTH® printer                           | 0554 0620 |
| easyEmission software                              | 0554 3334 |
| International mains unit for control unit          | 0554 1096 |
| Transport case                                     | 0516 3510 |

### Emission measurement on thermal processes

|                                                    | Part no.  |
|----------------------------------------------------|-----------|
| testo 350 control unit                             | 0632 3511 |
| Option BLUETOOTH® wireless transmission            |           |
| testo 350 analyzer unit                            | 0632 3510 |
| Option CO (H2-compensated) sensor, 0 to 10,000 ppm |           |
| Option CO2 (NDIR) sensor, 0 to 50 Vol%             |           |
| Option NO sensor, 0 to 4,000 ppm                   |           |
| Option NO2 sensor, 0 to 500 ppm                    |           |
| Option Peltier gas preparation incl. hose pump     |           |
| Option BLUETOOTH® wireless transmission            |           |
| Industrial probe set 1200 °C                       | 0600 7610 |
| easyEmission software                              | 0554 3334 |
| International mains unit for control unit          | 0554 1096 |
| Transport case                                     | 0516 3510 |