ecom

INTELLIGENT MESSEN!
INTELLIGENT ANALYSIS!

ecom® ST

Gas Analysis

AM GROSSEN TEICH 2
D-58640 ISERLOHN

TEL. +49 2371 945-5
FAX +49 2371 40305

info@ecom.de
www.ecom.de

www.ecom-service.com
www.shop.ecom.de

ecom GmbH

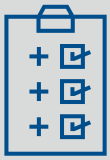
ecom PRODUCTS OFFER YOU MANY BENEFITS ...

EXTREMELY EFFICIENT.

The high output level (up to 2.6 liters/minute) not only enables ecom analyzers to provide a fast reading: It also makes it possible to bridge long distances during sampling, or negative pressure in the application.
Manometers also provide readings in record time.

EXTREMELY ACCURATE.

The reading accuracy of gas sensors (CO, NO, SO_2) is determined and adjusted at 5, 20 and 40 °C in the climatic test chamber using standarized test gases. High-quality sensors provide a perfect reading for pressure measurements.



EXTREMELY COMPLETE.

ecom analyzers are sold and designed as an entity (device, probe, probe hose, case). In addition: Printer paper and filter, a solid shoulder strap, PC software and Apps.

EXTREMELY COOL.

The drier, the better: The gas to be measured is continually cooled to 5 °C using a gas cooler. This way, the drying processis controlled. Collected condensate can be easily emptied in some cases this occurs in automatic mode.

EXTREMELY FAR-REACHING.

ecom analyzers communicate wirelessly: Via Bluetooth as well as radio (highest range with the most stable connection). This way instruments can be remotecontrolled via e.g. smartphones or ecom remote control unit.

EXTREMELY ROBUST.

Hard on the outside – even harder on the inside! Almost all ecom measuring devices are housed in an ultra-light aluminium casing. Its durability pays off in its daily use – especially in rougher conditions.

EXTREMELY SAFE.

The condensation control protects from moisture. An automatic CO shut-off (flushing of the CO sensor) without interruption of the measuring process ensures the long lifespan of the CO sensor. Each ecom instrument has its own “safety equipment”.

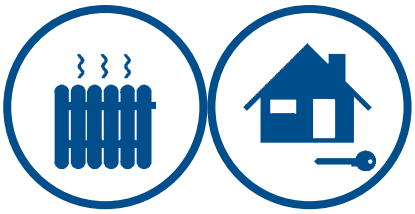
EXTREMELY LOSS-FREE.

To measure the full concentration of extremly water soluble gases an inner PTFE coated hose or a heated sampling system are available. This guarantees the fast and condensate free flue gas transport.

... FOR YOUR APPLICATION.

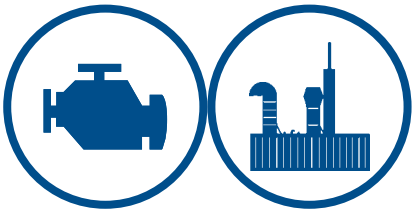
HEATING

Combustion gas analysers, pressure meters, leak detectors and more for the HVAC handicraft, chimney-sweep and heating after-sales service. For control and adjustment works in order to reduce emissions and to optimize the efficiency of heating plants.



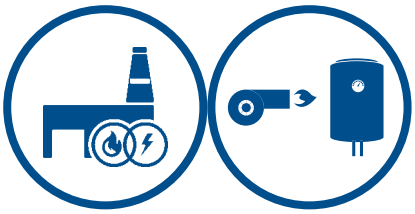
ENGINES

For control and adjustment works among all by commissioning of gas engines, thermal power blocks, etc. as well for the perfect measurement of water-soluble gases like nitrogen oxide – especially recommended for the NO_x measurement.



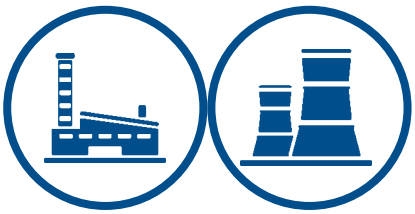
COMBUSTION

Combustion gas analysers, pressure meters, leak detectors and more for control and adjustment works at burners and large-scale firing plants in order to reduce emissions, to arrange for a more efficient combustion process and to optimize the thermal process.



INDUSTRY

High-quality devices for exhaust gas analysis, pressure measurement and leak detection – for optimal use in industrial applications (such as aluminum processing, coke oven plants, cement processing, power plants, refineries, waste incineration ...).



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EMV CERTIFIED ACC. TO EN 61326-1

Illus. with optional lockable cabinet

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COMPACT STATIONARY ANALYSER FOR AUTONOMOUS AND QUASI-CONTINUOUS MONITORING OF GAS EMISSIONS

FEATURES

- **Modular construction**
- **Programmable measuring cycles per day ranging from 22 measurements (every 65 minutes) up to 144 measurements (every 10 minutes)**
- **Gas sampling / fresh air purge monitoring via integrated magnetic valve**
- **Standard configuration includes Longlife O_2 and CO sensors, Analyser allows for up to six (6) sensors**
- **CO sensor over-range protection and fresh air purge to avoid measurement interruption**
- **High-performing gas pump for quick gas sampling**
- **Powerful Peltier cooler with electronically monitored condensate trap and automatic moisture removal**
- **Backlit keypad and display**
- **Communication via Modbus RTU (RS485) or Modbus TCP (Ethernet)**
- **Robust ultra-light aluminium chassis (fits 19" rack) and optional lockable cabinet with glass front door**

Dimensions (W x H x D): approx 436 x 265 x 235 mm, incl. rack grips

Weight: approx 8.6 kg

MEASURABLE GASES

O_2 | CO | C_xH_y

CO % | NO | NO ExtraLow | NO_2 | NO_2 Low

SO_2 | SO_2 Low | H_2 | H_2S

CO_2 | CH_4

● = Base EC ● = Optional Pellistor ● = Optional EC ● = Optional NDIR

ACCURATE ROBUST EFFICIENT SAFE

LONG-TERM GAS ANALYSIS FOR INDUSTRIAL APPLICATIONS

KEY ADVANTAGES

- Remote gas analysis
- Real time data alert of potential equipment issues
- Efficiency increase
- Reduction of fuel consumption
- Reduction of maintenance costs
- Minimized labour costs
- Equipment safety increase
- Robust modular design

COMMON COMBUSTION SOURCES

EMISSIONS MONITORING ON A VARIETY OF EQUIPMENT:

- Boilers
- Engines
- Gas Turbines
- Ovens
- Furnaces
- Kilns
- Incinerators

USED FOR DIVERSE INDUSTRIAL APPLICATIONS

- Power Generation
- Facility Management
- Food Production
- Pulp & Paper
- Mining
- Oil & Gas

Suitable for
19" rack system

FAR-REACHING

COMPLETE

COOL

LOSS-FREE

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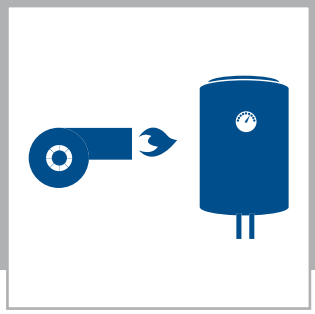
BASE MODULE STB



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BASE MODULE STB

Measuring components & technical features			√ Standard • Option
Measured values	**Range**	**Resolution**	**Accuracy**	
T-Air	0…99°C	0,1°C	± 1°C	√
Pressure / ΔP	± 100 hPa	0,01 hPa	± 2%	√
Combustion Air Sensor				
T-room sensor (PT 2000) length 10 cm, cable ca. 3 m, magnet, fixation cone				√
Data Indication / Input				
LCD colour display 78 x 58 cm, 320 x 240 dots, backlit, graphic-/zoom-capable				√
Keypad with alphanumerical input function				√
Data Processing / Transfer				
Slot for MM card; data logger function				√
Data exchange with ecom® PC software				√
MODBUS RTU via RS485 or Modbus TCP via Ethernet				√
Programmable measurement cycles per day ranging from 22 measurements (every 65 minutes) up to 144 measurements (every 10 minutes)				√
User Friendliness				
Remote access to sensors and operating hours				√
Easy on-site maintenance for consumables				√
Allows for on-site calibration				√
Auto-zero feature for sensors via magnetic fresh air purge valve				√
Optical control of filters condition to secure timely change				√
Interfaces				
Network connection COM module, Modbus TCP				√
RS485 for COM module protocol, Modbus RTU				√
USB interface for data transfer to ecom DAS software via USB cable, length approx. 2 m				√
Analog output 8 x 0…20 mA				•

Measuring components & technical features
Power Supply
Li-ion battery for short-term mains power failure
Mains power operation 100 – 240 VAC
Mains power cord, length approx. 2,5 m
Safety
Temperature trend indication for core stream search
Automatic self-test during calibration phase
Electronic flow measurement for control of pump performance
Dimensions | Weight | Others (complete incl. STCM and STGM)
Dimensions: approx. 440 x 265 x 235 mm (W x H x D), incl. rack grips
Weight: approx. 8,6 kg
Calibration certificate, issued after instrument calibration in calibration chamber
Aluminium housing with 10 years guarantee
Admissible ambient temperature: +5… +40°C; max. 90 % rH, non-condensing
Admissible storage temperature: -20… +50°C
Fuel types: up to 16
Recommended interval for check/maintenance: 1 year

Optional	
Protective housing made out of aluminium for wall fixation; with glass front door, lockable, including ventilation fan. Dimensions: approx. 600 x 350 mm x 260 mm (W x H x D) Weight: approx. 15,2 kg	•

Interfaces (option)	
Analog outputs 8 x 0…20 mA	•

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GAS PROCESSING MODULE STCM

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GAS PROCESSING MODULE STCM

Mechanical main components
Electric gas cooler with automatic condensation evacuation and fine dust filter
Peristaltic condensate evacuation pump 12V
Gas sampling pump 12V, brushless, with low maintenance. Extra-quick gas transport (fast availability of measurement values)
Fresh air pump
Integral magnetic valve for automatic, quasi-continuous gas sampling and recording of measurement values
Ventilation fan 12V
Particle Filtering
Soot filter for additional dust filtering, with optical pollution level control
Lage toxic pollutants filtering cartridge for CO sensor, with optical pollution level control
PTFE filter, with optical pollution level control
Gas Sampling
Connection for heated sampling system SBK2
Connection for sampling tubing (type NOx) with pistol grip probe type SU and high-value T-Gas plug (ODU)
Operation Safety Features
Pressure-compensated gas channel plate (optimized gas flow w/o. pressure fluctuation)
Electronic condensation monitoring
Automatic CO switch-off (= sensor protection and lengthened life span), fresh air purge w/o. measurement interruption (= other values measured w/o. time loss)
Fresh air purge after operation
User Friendliness
Filter attached to the front and easy access for quick replacement
Module easily detachable and removable for exchange / service purposes

GAS COOLER – A MUST FOR LONG-TERM MEASUREMENTS

The moisture contained in the exhaust gas can cause damage (especially when SO_2 is present) to the instrument and falsify the measurement results (up to 3 % smaller values). An industrial gas cooler is utilized to remove as much moisture as possible.

The exhaust gas flows through a spiral shaped path thru a surface coated metal body with good thermal conductivity. The gas radiates its heat to this metal body. A Peltier element (semiconductor cooling element) that carries a continuous current is thermally connected with this body and with a heat sink with cooling ribs and ventilation slots. The flow thru the Peltier element creates a heat transfer from WARM to COLD, drains the heat of the metal body and conveys it to the heat sink.

This heat is conveyed thru a vertical forced ventilation to the surrounding air. The condensation issued by the heat loss of the gas drops into a condensate trap. At the cooler outlet the gas has a temperature of ca. 5 °C with a relative saturation of nearly 100 % relative humidity (corresponds to a water steam content < 7 g/m³). The almost complete dehumidification of the sample gas is particularly important for long-term measurements and with large combustion sources.

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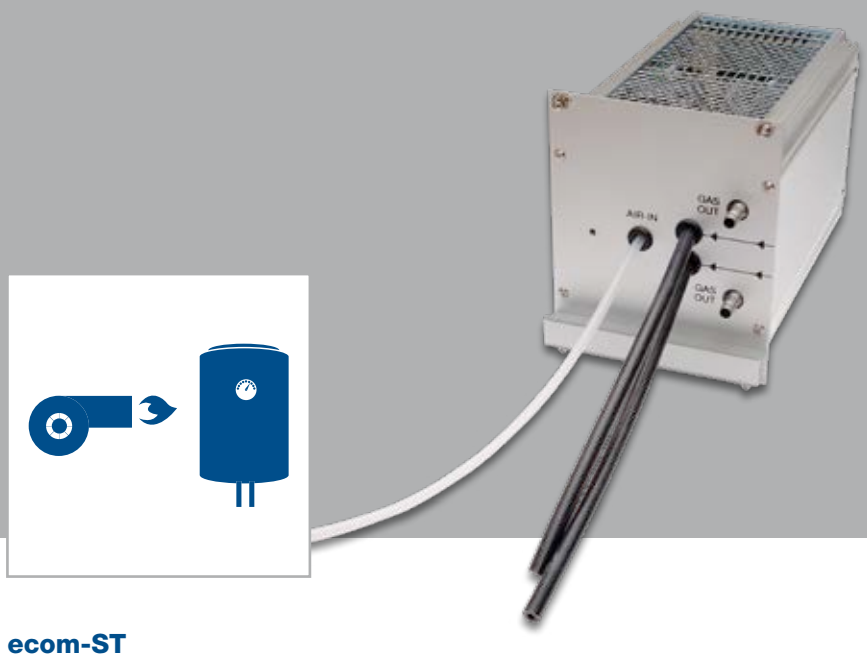
GAS MEASURING MODULE STGM



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GAS MEASURING MODULE STGM – WITH LONGLIFE GAS SENSORS

Housing the gas sensors, the gas measuring module is considered the “heart” of the analyser and likely its most vital component. The analysers base configuration consists of two electro-chemical (EC) sensors that measure oxygen (O_2) and carbon monoxide (CO) in the sample stream. The analyser allows for a total of six (6) sensors with specifications as per below overview:

Sensor specifications			√ Standard • Option	
Measured values	**Range**	**Resolution**	**Accuracy**	*= Higher value prevails
Maximal amount of gas sensors				6
O_2	0...21 %	0,01 vol. %	± 0,3 vol. %	√
CO (H_2-komp.)	0…10.000 ppm	1 ppm	± 20 ppm/5% of measured value*	√
CO %	0…63.000 ppm	5 ppm	± 100 ppm /10% of measured value*	•
CO_2	0…20 %	0,1 vol. %	± 0,5 %/5% of measured value*	•
CO_2	0…100 %	0,1 vol. %	± 5 % measurement range end value	•
NO	0…5000 ppm	1 ppm	± 5 ppm/5% of measured value* (1)	•
$NO_{ExtraLow}$	0…300 ppm	0,1 ppm	± 2 ppm/5% of measured value* (1)	•
NO_2	0…1000 ppm	1 ppm	± 5 ppm/5% of measured value* (1)	•
$NO_{2\ Low}$	0…100 ppm	0,1 ppm	± 5 ppm/5% of measured value* (1)	•
SO_2	0…5000 ppm	1 ppm	± 5 ppm/5% of measured value* (2)	•
$SO_{2\ Low}$	0…100 ppm	0,1 ppm	± 5 ppm/5% of measured value* (2)	•
H_2	0…20.000 ppm	1 ppm	± 100 ppm or 5 % of measured value*	•
H_2S	0… 1000 ppm	1 ppm	± 10 ppm/5% of measured value*	•
CH_4	0…5 %	0,01 vol. %	± 0,2 vol. %/5% of measured value*	•
C_xH_y	0...4 %	0,01 vol. %	± 5 vol. % measure. range end value	•

Technical data gas measuring sensors	
Calculated Values	**Range**
CO_2	0...CO_{2max}
Combustion efficiency (ETA)	0…120 %
Excess air (Lambda)	>1
Losses	0…100 %
$CO_{(U)}$ undiluted	x ppm
Dew point	x° C
mg/m³	x mg/m³
mg/kWh	x mg/kWh
O_2 reference	x % O_2

Remarks:
(1) NO and NO_2: sensors must either both be low or regular version.
(2) Other than for CO, two sensors measuring the same gas cannot be added

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GAS SAMPLING SYSTEM SBK2

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HEATED GAS SAMPLING SYSTEM SBK2

The use of a heated sampling system eliminates drop out of water-soluble gases like NO_2 and SO_2. A hot gas filter (PTFE) integrated in the probe head protects the device from premature contamination, especially during long-term measurements.

Technical data heated sampling system SBK2			
Measured value	**Range**	**Resolution**	**Accuracy**
T-Gas	0…500 °C	0,1°C	± 2 °C (0-125 °C) ± 3 °C (125-250 °C) ± 4 °C (250-500 °C)
Temperature regulation			
Regulation of head/tubing heating up to 180 °C			
Heated head with probe tip and fixation cone			
Head with hot gas filter (PTFE, 2µm) for protection against early soiling			
Probe pipe Ø 8 mm with NiCr-Ni thermocouple 0-500 °C			
Fixation cone for probe Ø 8 mm, material stainless steel			
All conductive components insulated by Sellotape®			
Gas adapter square for heated tubing connection			
7-pin plug connection 250 V and 5-pin plug 270° NiCr-Ni for T-Gas			
Heated tubing			
Avoidance of NO_2 and SO_2 drop out			
Maximal temperature range of application 200°C			
Available head tip & tubing lengths			
Heated head inc. fixation cone – available tip lengths: 300 mm – 1500 mm			
Heated tubing 230 VAC, 100 W/M: 3,4 m – 10 m			
Complete system with tubing 3,4 m – head with tip length: 300 mm – 1500 mm			
Complete system with tubing 7 m – head with tip length: 300 mm – 1500 mm			

PROBE MOUNTING KIT

The kit for mounting the probe vertically or horizontally consists of:

- Probe head tension set including a hanging hook, underlaid with rubber to allow for a safe and easy installation of the probe assembly. For diameters: 87-92 mm. Simple lock with a turnbuckle.
- Fixation chain, length 3 m, made with snap hooks made out of stainless steel (DIN 5299) for tensioning / fixing the head strap. Individually adjustable length.
- Tension band underlaid with Inseal® tape (resistant to temperature -30 °C / + 70 °C) for attachment to pipes with Ø up to 95 cm.

Example of vertical fixation

Example of horizontal fixation

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GAS SAMPLING SYSTEM SU PROBE

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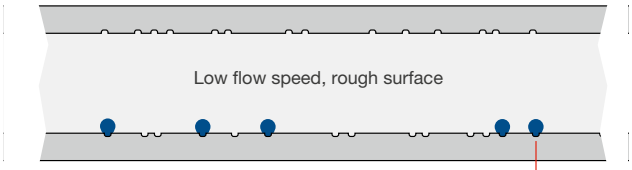
PISTOL GRIP PROBE WITH EXCHANGEABLE TIP AND 3-CHAMBER NO_X TUBING

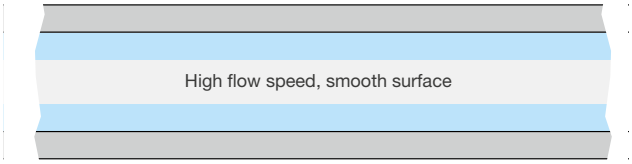
The use of NOx tubing minimizes the drop out of water-soluble gases like NO_2 and SO_2. The smooth inner surface of the tubing, which also increases the gas' flow rate, reduces the formation of subsequent drop out.

Sampling system SU probe			
Measured value	**Range**	**Resolution**	**Accuracy**
T-Gas	0…500 °C	0,1°C	± 2 °C (0-125 °C) ± 3 °C (125-250 °C) ± 4 °C (250-500 °C)
Components			
Ergonomic holding grip with thread for simple exchange of probe tip against another length in case of needs and easy slip-on and detachable tubing connections			
2-pipe probe tip (gas, pressure) Ø 10 mm with NiCr-Ni thermocouple, measuring range 0-500 °C. Various lengths at choice according to below list.			
Fixation cone for probe pipe Ø 10 mm, with Teflon protective ring and stainless-steel tip			
3-chamber (gas, pressure, electric cable) NO_x tubing with Teflon sleeve, for avoidance of washout effects. With high-value and robust ODU plug at T-Gas connection.			
Available probe tips and tubing lengths			
Probe tip length: 300 mm to 1500 mm			
Tubing length: 3,5 m – 10 m			

Standard tubing



Tubing with Teflon core (NO_x tubing)



OVERVIEW OF TECHNICAL DATA

ecom-ST			√ Standard • Option
Gas Sensors	**Resolution**	**Accuracy**	
Available sensors			6
O_2	O_2 (0 - 21 %) - electrochemical	0,01 vol.%	± 0,3 vol. %	√
CO	CO (H_2-komp. 0 - 10.000 ppm) - electrochemical	1 ppm	± 20 ppm / 5 % of measured value*	√
	CO % (0 - 63.000 ppm) - electrochemical	5 ppm	± 100 ppm or 10 % of measured value*	•
CO_2	CO_2 (0 - 20 %) - NDIR** sensor	0,1 vol. %	± 0,5 vol. % / 5 % of measured value*	•
	CO_2 (0 - 100 %) - NDIR** sensor	0,1 vol. %	± 5 vol. % measurement range end value	•
NO_x	NO (0 - 5000 ppm) - electrochemical	1 ppm	± 5 ppm / 5 % of measured value*	•
	$NO_{ExtraLow}$ (0 - 300 ppm) - electrochemical	0,1 ppm	± 2 ppm / 5 % of measured value*	•
	NO_2 (0 - 1000 ppm) - electrochemical	1 ppm	± 5 ppm / 5 % of measured value*	•
	$NO_{2\ Low}$ (0 - 100 ppm) - electrochemical	0,1 ppm	± 5 ppm / 5 % of measured value*	•
SO_2	SO_2 (0 - 5000 ppm) - electrochemical	1 ppm	± 5 ppm / 5 % of measured value*	•
	$SO_{2\ Low}$ (0 - 100 ppm) - electrochemical	0,1 ppm	± 5 ppm / 5 % of measured value*	•
H_2	H_2 (0 - 20.000 ppm) - electrochemical	1 ppm	± 100 ppm or 5 % of measured value*	•
H_2S	H_2S (0 - 1000 ppm) - electrochemical	1 ppm	± 10 ppm / 5 % of measured value*	•
C_xH_y	CH_4 (0 - 5 %) - NDIR**-Sensor	0,01 vol. %	± 0,2 vol. % / 5 % of measured value*	•
	C_xH_y (0 - 4 %) - catalytic	0,01 vol. %		•
Other Sensors | Indication possibilities		**Resolution**	**Accuracy**	
T-Gas	0 - 500 °C	0,1 °C	± 2° C (0-125 °C) / ± 3 °C (125-250 °C) / ± 4 °C (250-500 °C)	•
T-Air	0 - 99 °C	0,1 °C	± 1° C	√
Pressure | ΔP	± 100 hPa	0,01 hPa	± 2 %	√
Calculated Values				
CO_2 - 0...$CO_{2\ max}$				√
Combustion efficiency (ETA) - 0…120 %				√
Excess air (Lambda) - >1				√
Losses - 0…100%				√
$CO_{(U)}$ undiluted - x ppm				√
Dew point - x° C				√
mg/m³ - x mg/m³				√
mg/KWh - x mg/KWh				√
O_2 - reference - x % O_2				√
Gas Preparation				
Electronic condensation monitoring, automatic condensation evacuation, electric gas cooler				√
Safety				
Temperature trend indication for stream core search				√
Automatic self-test during calibration phase				√
Integrated flow meter for control of pump performance				√
Sampling System (probe)				
Unheated sampling probe, type SU				•
Heated sampling system incl. PTFE filter and thermocouple (for heated sampling system)				•
Gas Transport (tubing)				
Silicone multi-chamber tubing				•
NO_x special tubing with PTFE inner sleeve				•
Heated tubing (in connection with heated sampling system)				•
Data Indication / Transfer				
Slot for MM card; data logging function				√
Data transfer with free ecom PC based software				√
MODBUS RTU via RS485 or Modbus TCP via Ethernet				√
Programmable measurement cycles per day ranging from 22 measurements (every 65 minutes) up to 144 measurements (every 10 minutes)				√
User Friendliness				
Remote access to sensors and operating hours				√
Easy on-site maintenance for consumables				√
Allows for on-site calibration				√
Auto-zero feature for sensors via magnetic fresh air purge valve				√
Interfaces				
Network connection COM module, Modbus TCP				√
RS485 for COM module protocol, Modbus RTU				√
USB interface for data transfer to ecom DAS software via USB cable with length 2 m				√
Analog output 8 x 0… 20 mA				•
Data Indication / Input				
TFT colour display 78 x 58 cm, 320 x 240 pixels, backlit, graphic-/zoom-capable				√
Keypad with alphanumerical input function				√

* Higher value prevails
** NDIR = nondispersive infrared technology