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INTELLIGENT MESSEN!
INTELLIGENT ANALYSIS!

ecom[®] ST

Gas Analysis



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EMV to EN 61326-1



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COMPACT STATIONARY ANALYZER FOR AUTONOMOUS AND CONTINUOUS MONITORING OF GAS EMISSIONS.

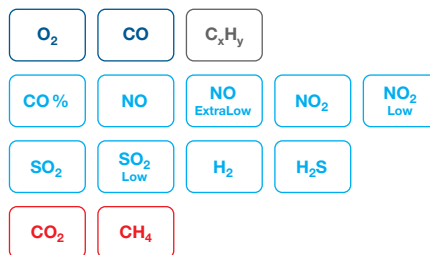
FEATURES

- 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 Long-life O₂ and CO sensors; up to six (6) sensors
- CO sensor over-range protection and fresh air purge to avoid measurement interruption
- Powerful Peltier cooler with electronically monitored condensate trap and automatic moisture removal
- Back-lit keypad and display
- High-performing gas pump for quick gas sampling
- Communication via Modbus RTU (RS485) or Modbus TCP (Ethernet)
- Robust ultra-light aluminum chassis (fits 19' rack) and optional lockable cabinet

Dimensions (W x H x D): approx 17 x 10.5 x 9.25 inches, incl. rack grips

Weight: approx 19 lbs.

MEASURABLE GASES



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



ACCURATE



ROBUST



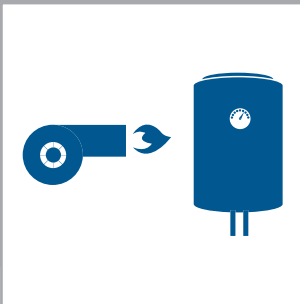
EFFICIENT



SAFE

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BASE MODULE



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BASE MODULE

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, fixations cone				✓
Data Indication / Input				
LCD color display 78 x 58 cm, 320 x 240 dots, back-lit, 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 sensor 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. 6 feet				✓
Analog output 8 x 0...20 mA				•

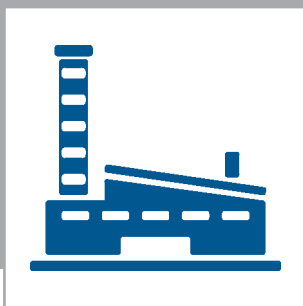
Measuring components & technical features
Power Supply
Li-ion battery for short-term mains power failure
Mains power operation 100 – 240 VAC
Mains power cord, length approx. 2,5 m
Safety
Temperature trend indication for core stream search
Automatic self-test during calibration in calibration chamber
Electronic flow measurement for control of pump performance
Dimensions Weight Others (complete incl. STCM and STGM)
Dimensions: approx. 17 x 10.5 x 9.25 inches (W x H x D), incl. rack grips
Weight: approx. 19 lbs.
Calibration certificate, issued after instrument calibration into 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 maximal 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 and fan controller. Dimensions: approx. 23 in x 14 in x 10 in (W x H x D) Weight: 33 lbs.	•

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
Large 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

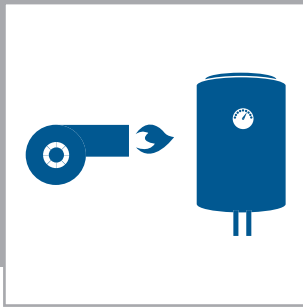
GAS COOLER – A MUST FOR LONG-TERM MEASUREMENTS

The moisture contained in the exhaust gas can cause damage (especially when SO₂ 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 shaped path through 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 thermally connected with this body and a with a heat sink. The flow through the Peltier element creates a heat transfer from WARM to COLD, drains the heat of the metal body flown by gas and conveys it to the outer cooling body.

This heat is conveyed through a vertical forced ventilation to the surrounding air. The condensation issued by the heat loss of the gas drops in 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.

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 analyzer and likely its most vital component. The analyzers base configuration consists of two electrochemical (EC) sensors that measure oxygen (O₂) and carbon monoxide (CO) in the sample stream. The analyzer allows for a total of six (6) sensors whose specification you will find with the overview below:

Sensor specifications				√ Standard	• Option
Measured	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 ₂ S	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 _x H _y	0...4 %	0,01 vol. %	± 5 vol. % measure. range end value		•

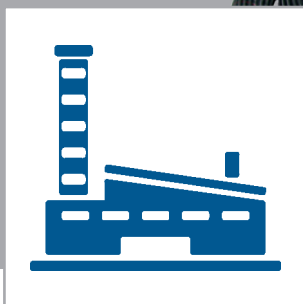
Technical data gas measuring sensors	
Calculated Values	Range
CO ₂	0...CO _{2max}
Combustion efficiency (ETA)	0...120%
Excess air (Lambda)	>1
Losses	0...100%
CO _(U) undiluted	x ppm
Dew point	x° C
mg/m ³	x mg/m ³
mg/kWh	x mg/kWh
O ₂ reference	x % O ₂

Remarks:

- (1) NO and NO₂: Either both as normal or as low version - a mix of both types is not possible.
- (2) The two sensor types (low and normal version) for the SO₂ measurement are not possible in one and the same device, as a switching to the higher range is not planned or available.

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GAS SAMPLING SYSTEM SBK2



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HEATED GAS SAMPLING SYSTEM SBK2

The use of the heated sampling system eliminates drop out of water-soluble gases like NO₂ and SO₂. 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 120 °C (tubing length 7,0 m)			
Regulation of head/tubing heating up to 140 °C (tubing length 3,4 m)			
Regulation of head/tubing heating up to 180 °C (tubing lengths 5 and 10 m)			
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			
To avoid 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, which includes a hanging hook, is underlaid with rubber to allow for a safe and easy installation of the probe assembly. For diameters: 87-92 mm Including hanging hook. Simple lock with a turnbuckle.
- Fixation chain, length 3 m, made with snap hooks 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.



Probe vertically affixed.



Probe horizontally affixed.

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 / 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. % measure. 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* (1)	•
	NO _{2_Low} (0 - 100 ppm) - electrochemical	0,1 ppm	± 5 ppm / 5% of measured value* (1)	•
SO ₂	SO ₂ (0 - 5000 ppm) - electrochemical	1 ppm	± 5 ppm / 5% of measured value* (1)	•
	SO _{2_Low} (0 - 100 ppm) - electrochemical	0,1 ppm	± 5 ppm / 5% of measured value* (1)	•
H ₂	H ₂ (0 - 20.000 ppm) - electrochemical	1 ppm	± 100 ppm or 5 % of measured value*	•
H ₂ S	H ₂ S (0 - 1000 ppm) - electrochemical	1 ppm	± 10 ppm / 5% of measured value*	•
C _x H _y	CH ₄ (0 - 5 %) - NDIR**-Sensor	0,01 vol. %	± 0,2 vol. % / 5% of measured value*	•
	C _x H _y (0 - 4 %) - catalytic	0,01 vol. %		•
Other sensors		Resolution	Accuracy	
T-Gas	0 - 332 °F			•
T-Air	0 - 210 °F			√
Pressure ΔP	± 100 hPa			√
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 measurement for control of pump performance				√
Standard sampling probe				
Heated sampling probe, type SB				•
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 log 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 sensor 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 color display 78 x 58 cm, 320 x 240 pixels, back-lit graphic-/zoom-capable				√
Keypad with alphanumerical input function				

* Higher value prevails values
 ** NDIR = nondispersive infrared technology