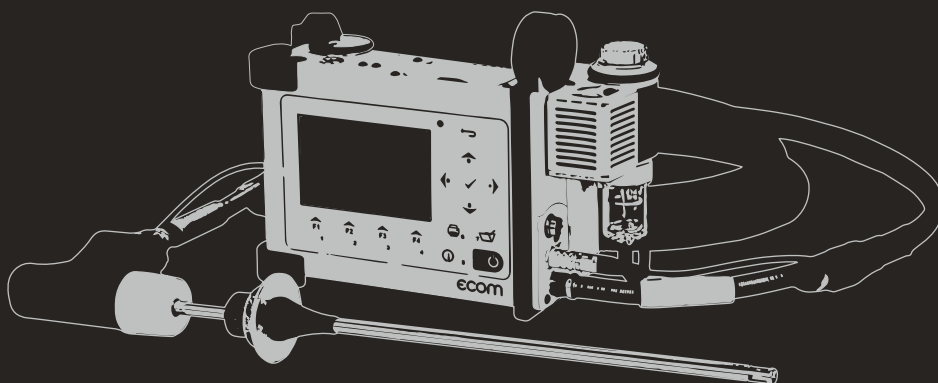


ecom

**INTELLIGENT MESSEN!**  
*MEASURE WITH INTELLIGENCE!*

**ecom<sup>®</sup>D**  
*Flue Gas Analysis*



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**ecom GMBH**

# ecom PRODUCTS OFFER YOU MANY BENEFITS...



## EXTREM 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.



## EXTREM ACCURATE.

The reading accuracy of gas sensors (CO, NO, SO<sub>2</sub>) is determined and adjusted at 5, 20 and 40°C in the climatic test chamber using standardized test gases. High-quality sensors provide a perfect reading for pressure measurements.



## EXTREM COMPLETE.

The reading accuracy of gas sensors (CO, NO, SO<sub>2</sub>) is determined and adjusted at 5, 20 and 40°C in the climatic test chamber using standardized test gases. High-quality sensors provide a perfect reading for pressure measurements.



## EXTREM COOL.

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



## EXTREM FAR-REACHING.

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



## EXTREM 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.



## EXTREM 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.“



## EXTREM LOSS-FREE.

To measure the full concentration of extremely 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.

## ...BY EVERY 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<sub>x</sub> 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

Combustion gas analysers, pressure meters, leak detectors and more for the perfect preparation of water-soluble gases (i.a. NO<sub>2</sub> and SO<sub>2</sub>) by industrial applications (like e.g. aluminium process, coke oven plants, cement processing, power plants, refineries, waste incineration...).

# Overview of technical data

Flue gas analyser model				D
Gas Components		Resolution	Accuracy	max. 6
O <sub>2</sub>	O <sub>2</sub> (0 - 21 vol.%) - electrochemical	0,01 vol.%	± 0,3 vol.%	✓
CO	CO (H <sub>2</sub> -komp. 0 -10.000 ppm) - electrochemical	1 ppm	± 20 ppm or 5 % of reading**	✓
	CO (n. H <sub>2</sub> -komp. 0 -20.000 ppm) - electrochemical	1 ppm	± 40 ppm or 10 % of reading**	•
	CO% (0 -63.000 ppm) - electrochemical	5 ppm	± 100 ppm or 10 % of reading**	•
CO <sub>2</sub>	CO <sub>2</sub> (0 - 20 vol.%) - NDIR* sensor	0,01 vol.%	± 0,5 vol.% or 5 % of reading**	•
	CO <sub>2</sub> (0 - 100 vol.%) - NDIR* sensor	0,01 vol.%	up to ± 5 % of measur range endvalue	•
NO <sub>x</sub>	NO (0 - 5.000 ppm) - electrochemical	1 ppm	± 5 ppm or 5 % of reading**	•
	NO <sub>Low</sub> (0 - 300 ppm) - electrochemical	0,1 ppm	± 2 ppm or 5 % of reading**	•
	NO <sub>2</sub> (0 - 1.000 ppm) - electrochemical	1 ppm	± 5 ppm or 5 % of reading**	•
	NO <sub>2Low</sub> (0 - 100 ppm) - electrochemical	0,1 ppm	± 5 ppm or 5 % of reading**	•
	NO <sub>x</sub> - measuring - electrochemical			via NO/NO <sub>2</sub>
SO <sub>2</sub>	SO <sub>2</sub> (0 - 5.000 ppm) - electrochemical	1 ppm	± 10 ppm or 5 % of reading**	•
	SO <sub>2</sub> (0 - 5.000 ppm) - electrochemical Low CO	1 ppm	± 10 ppm or 5 % of reading**	•
H <sub>2</sub>	H <sub>2</sub> (0 - 2.000 ppm) - electrochemical	1 ppm	± 10 ppm or 5 % of reading**	•
	H <sub>2</sub> (0 - 20.000 ppm) - electrochemical	1 ppm	± 100 ppm or 5 % of reading**	•
H <sub>2</sub> S	H <sub>2</sub> S (0 - 1.000 ppm) - electrochemical	1 ppm	± 10 ppm or 5 % of reading**	•
	H <sub>2</sub> S (0 - 5.000 ppm) - electrochemical	1 ppm	± 50 ppm or 5 % of reading**	•
C <sub>x</sub> H <sub>y</sub>	CH <sub>4</sub> (0 - 5 vol.%) - NDIR* sensor	0,01 vol.%	± 0,2 vol.% or 5 % of reading**	•
	CH <sub>4</sub> (0 - 100 vol.%) - NDIR* sensor	0,1 vol.%	up to ± 5 % measur range endvalue	•
Additional Measurements   Display Options		Resolution	Accuracy	
T-Gas	0 - 500 °C	1 °C	± 2 °C or 1,5 % of the reading**	✓
	0 - 1.100 °C	1 °C	± 2 °C or 1,5 % of the reading**	•
T-Air	0 - 99 °C	1 °C	± 1 °C	✓
Pressure   ΔP	± 100 hPa	0,01 hPa	± 0,5 hPa or 1 % of the reading**	✓
Calculated values				
CO <sub>2</sub> - 0 - CO <sub>2</sub> max				✓
Combustion efficiency (ETA)				✓
Excess air (Lambda) - > 1				✓
Losses qA - 0 - 100 %				✓
Dew point - x °C				✓
mg/m <sup>3</sup> - x mg/m <sup>3</sup>				✓
mg/KWh - x mg/KWh				✓
O <sub>2</sub> - reference- x % O <sub>2</sub>				✓
Gas processing				
Condensation trap with moisture-absorbing pad				•
Electronic condensation monitoring				•
Electronic gas cooler				•
Operation safety				
Temperature trend indication for core stream search				✓
CO switch-off				✓
Fresh air purge by CO exceeding				✓
Fresh air purge after operation				✓
Sampling system				
Unheated probe, type SU				✓
Gas transportation (tubing)				
Multi-chamber silicone tubing				✓
NO <sub>x</sub> / SO <sub>x</sub> special tubing with PTFE inner coating				•
Printer				
Infrared interface for external printer				✓
Thermal quick-printer, integral				•
Data processing				
Serial interface for data transfer				✓
USB interface for data transfer				✓
Wireless data interface (e.g. for connection to a smartphone or tablet)				✓
Data recording on multimedia card				•
Reception possibility for diagnosis data from ecom-AK				✓
Remote control				
via backlit keypad				✓
via smartphone/tablet (free iOS + Android app)				✓
Transport				
Carrying bag				•
Hardtop transport case				•

# ecom<sup>®</sup> D

## FLUE GAS ANALYSIS



### ecom-D EASY

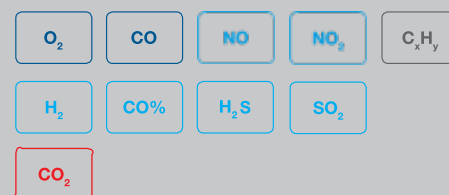
HANDHELD FLUE GAS ANALYZER FOR INDUSTRIAL APPLICATIONS

- O<sub>2</sub> / CO (H<sub>2</sub>-comp.) Longlife sensors
- Up to 6 sensors (Longlife sensors)
- Direct CO<sub>2</sub> measurement via IR sensor
- Measuring of hydrocarbons via IR sensor
- CO sensor overload protection without measurement interruption
- Condensate trap or sample gas cooler including electronic condensate monitoring (depends on equipment package)
- Sampling probe (250 mm) incl. thermocouple, cone and 3-chamber sampling tubing (2.6 m)
- T-Room stick
- Powerful Lithium-Ion battery
- Backlit display and keypad
- Aluminum housing (ultralight)
- Calibration certificate
- Wireless data interface (e.g. for connection to a smartphone or tablet)

### ADDITIONAL OPTIONS

- Additional sensor options (SO<sub>2</sub>, H<sub>2</sub>S, H<sub>2</sub>, CO%, NO, NO<sub>2</sub>)
- NO<sub>x</sub> calculation via NO sensor NO<sub>x</sub> measurement
- Higher resolution and accuracy in the NO<sub>Low</sub> (0-300 ppm) or NO<sub>2 Low</sub> (0-100 ppm) range
- NO<sub>x</sub> tubing in length 3,5 m or 5 m
- Replaceable probe attachments in different lengths

### Measurable Gases



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

**Dimensions (W x H x D)** 220 x 125 x 85 mm (without case)

**Weight** approx 2 kg (includes probe and sample line without case)



ACCURATE



ROBUST



EFFICIENT



SAFE



Testing according to DIN EN 50379-2 and 1st. BlmSchV.



### ecom-D EXPERT

FOR PERFECT NO<sub>x</sub> /SO<sub>2</sub> MEASUREMENTS  
E.G. AT INDUSTRIAL APPLICATIONS

- NO<sub>x</sub> version (equipped with O<sub>2</sub> / CO / NO / NO<sub>2</sub> sensor)
- Automatic CO shut-off and flushing (without interruption of the measurement)
- Sample gas cooler including electronic condensate monitoring
- With sampling probe including thermocouple (300 mm), cone and 3-chamber NO<sub>x</sub> tubing (3.5 m)
- Integrated thermal fast printer
- Fitted in hardtop transport case

### ecom-D ENGINE

FOR MEASUREMENTS AT CHPS AND ENGINES

- NO<sub>x</sub> version (equipped with O<sub>2</sub> / CO / NO / NO<sub>2</sub> sensor)
- Up to a total of 6 gas sensors (including SO<sub>2</sub> or IR CO<sub>2</sub> or CH<sub>4</sub> sensors)
- Electronically monitored sample gas cooler
- Preset for NO<sub>x</sub> measurements, with mg/m<sup>3</sup> at 5% O<sub>2</sub> reference (freely adjustable)
- With sampling probe (360 mm) including miniature heat shield on the probe cone, cone and 2-chamber NO<sub>x</sub> tubing (3.5 m)
- Integrated thermal fast printer
- Fitted in hardtop transport case



#### Measureable Gases

O <sub>2</sub>	CO	NO	NO <sub>2</sub>	C <sub>x</sub> H <sub>y</sub>
H <sub>2</sub>	CO%	H <sub>2</sub> S	SO <sub>2</sub>	
CO <sub>2</sub>				

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

#### Measureable Gases

O <sub>2</sub>	CO	NO	NO <sub>2</sub>	C <sub>x</sub> H <sub>y</sub>
H <sub>2</sub>	CO%	H <sub>2</sub> S	SO <sub>2</sub>	
CO <sub>2</sub>	CH <sub>4</sub>			

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



FAR-REACHING



COMPLETE



COOL



LOSS-FREE

# USEFUL

## ecom-AK

READOUT UNIT FOR DIGITAL AUTOMATIC BURNER CONTROLLERS

- Automatic identification of automatic burner controller type
- Readout feature for errors and operating conditions
- Built-in display
- Data transfer via cable to PC or ecom-EN3 analyzer
- Data transfer via radio to the ecom-J2KNpro control panel (display + printing via flue gas analyzer)

Displayed data:

- Display of recent and past failures
- Display of burner operating conditions
- Measurement of the flame signal/comparison with minimum value
- Checks of delayed flame development
- Detection of the number of burner starts
- Display of all relevant operating times (safety time, etc.)

**Dimensions (W x H x D)** approx. 88 x 41 x 32 mm

**Weight** approx. 322 g - incl. belt pouch



ROBUST



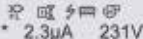
COMPLETE



EFFICIENT



ecom-AK will show the following display messages:

Automat DKO 972 / 22	Identification of burner controller (Honeywell-Satronic DKG, DKO, DKW, DMO, DMG, DLG, DVI, DIO, SH, SG incl. N versions as well as Siemens-Landis & Staefa LMG, LMO).
 * 2.3µA 231V	Indication of burner operating mode.
* 2.2µA IS * 1.2µA MIN	Measurement of flame signal and comparison with minimal value.
Rest time TSA 3.9 sec	Check if flame occurs immediately or with delays.
Current error Flame signal during straight check	Indication of current disturbance source as well as of 5 past disturbances.
Start-ups counter 664	Determination of burner starts.



## ecom-UNO

FOR THE ADJUSTMENT OF GAS BURNERS /GAS HEATINGS

- Device connection pressure (flow pressure)
- Nozzle pressure (flow pressure)
- Gas operating pressure (system pressure)
- Static pressure
- Switchable units: hPa / mbar, mmH<sub>2</sub>O, psi, mmHg
- Measurement range: ± 200 hPa, ± 2038 mmH<sub>2</sub>O, ± 2.9 psi, ± 150 mmHg
- Resolution: 0.01 hPa / 0.01 mmH<sub>2</sub>O / 0.01 psi / 0.01 mmHg
- Accuracy: approx. 1%
- Overload: 300 hPa / 3060 mmH<sub>2</sub>O / 4.35 psi / 225 mmHg

**Dimensions (W x H x D)** approx. 106 x 64 x 28 mm

**Weight** approx. 150 g



## ecom-LSG

DETECTION OF FLAMMABLE GASES

- Three sensitivity levels adjustable
- Acoustic signal on/off at choice
- Display range up to 0.5% vol. CH<sub>4</sub>, Response time: < 2 seconds
- Backlit bargraph
- Display approx. 20 x 7 mm
- 1-14 bars (10 bars = approx. 1000 ppm CH<sub>4</sub>)
- Warm-up time: approx. 3 minutes
- Sensor temperature compensation (-5°C to 40°C)

**Dimensions housing (W x H x D)** approx. 155 x 35 x 22 mm

**Swan-neck:** approx. 355 mm

**Weight:** approx. 200 g

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## ACCESSORIES

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### Filter plate

Multi-level processing: water separation in condensate trap; pre filtering via fine particulate filter; silica gel drying; removal of sensor-damaging, organic compounds in the hydrocarbon filter.



### Probe prefilter

Metal filter with the smallest filter pores; ideal for preventing that solid exhaust gas components enter into the probe/the flue gas tract.



### Thermal printer

ecom-P thermal printer with infrared interface for wireless data transmission.



### CO multi-hole probe

For the CO measurement of the CO concentration according to KÜO (sweeping and monitoring system) extendable from 80 to 280 mm.



### Ring slot multi-hole probe

For measurement on concentric exhaust systems. Continuously extendable (80 to 280 mm) - with three easily replaceable sealing plugs for measuring openings from  $\varnothing$  5 to 25 mm.



### Contact sensor

Forerun and backrun temperature measurement.



### T-Room-probe (PT 2000)

For measuring the room or intake air temperature - for example for concentric flue gas systems.



### Soot pump set

Consisting of soot pump, soot comparison scale, piston lubricant oil, socket wrench and 200 soot test strips.



### Transport bag

Textile bag with foam inlay.

**Other accessories on demand.**

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