

ECOM-J2KNpro TECH

- COMPACT AND MOBILE EMISSION MEASUREMENT ANALYSER WITH PHYSICAL MEASUREMENT METHODS FOR INDUSTRIAL APPLICATIONS (REFINERIES, INCINERATION PLANTS, COGENERATION, INDUSTRIAL PROCESSES, POWER PLANTS, ETC.)

MEASUREMENT ACCURACY OUT OF 4 PRINCIPLES IN COMBINATION:

- ELECTROCHEMISTRY (EC)
O₂, CO, CO%, NO, NO₂, SO₂, H₂, H₂S
- CHEMILUMINESCENCE (CLD)
NO, NO₂, NO_x (WITH CONVERTER)
- PHOTOACOUSTIC SPECTROSCOPY (PAS) NO₂
- INFRARED (NDIR)
CO, CO₂, SO₂, C_xH_y
- ULTRAVIOLET (UV)
NO, NO₂, SO₂
- PHYSICAL MEASUREMENT METHODS COMBINABLE AT CHOICE WITH ELECTROCHEMICAL CELLS





The **ecom-J2KNpro TECH** is designed to fulfill high resp. industrial requirements in terms of gas analysis. Its focus is the **emission measurement** and the monitoring of **thermal processes** at plants with middle and high performance.

Unique is the combination capability of different measurement principles - mixed according to the application type and required accuracy. The utilisation of physical measurement methods enables to perform long-lasting measurements at industrial plants with constant quality. A selection of electrochemical sensors is available for those additional measurement parameters which can be determined with lower long-term stability and measurement accuracy.

The model can be fitted with **up to 6 electrochemical sensors** and the measurement array can be enlarged with two optional infrared benches to **10 different measurement parameters** at a total.

Due to the variety of applications and different requirements, the basic model does not cover a specific sampling system which can be selected by the user according to individual criteria and needs out of two different concepts.

The robust, hard-wearing transport case is optimally designed to withstand tough operation conditions; the mounted rolls enable effortless system motion - the top comfort alternative being the optional stable trolley. The optional top case offers storage space for the sampling system and/or required working tools.



Optional top case – for stowage of gas sampling system: heated sampling system or pistol grip probe with NOx tubing as well as else small working tools.



ecom-J2KNpro TECH with optional trolley



ecom-J2KNpro TECH and optional top case

ecom® J2KN^{pro} TECH



MODULAR DESIGN

- Aluminium-framed protection and transport case
- ecom-J2KNpro
- Physical measurement unit, covering:
 - permanently active peristaltic pump,
 - 2nd gas cooler & cooling fan and –
 - depending on selected equipment:
 - CLD with ozone generator,
 - IR measuring bench,
 - converter or PAS measuring bench
 - UV bench.



Side view

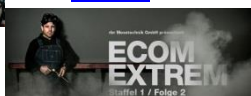
FEATURES QUICK OVERVIEW

- 1 Detachable radio-driven wireless control module with Wi-Fi antenna
- 2 PTFE and NO_x filter for IR/EC sensors
- 3 Thermal quick-printer
- 4 Foldable antenna for radio amplification
- 5 Connection heated sampling system
- 6 External gas cooler (stainless steel) and fan
- 7 Fine dust filter
- 8 Case rolls with lockable caster
- 9 Counter pieces for top case clips
- 10 Fan outlet
- 11 PTFE filter (2 µm)
- 12 Closing cap for converter cartridge (by corresponding equipment with converter)
- 13 Condensate outlet
- 14 Fresh air inlet
- 15 Sample gas outlet

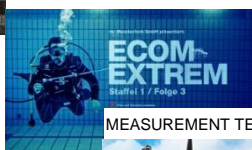
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AND EXPERIENCE UNIQUE



MEASUREMENT TECHNOLOGY!



SHORT INSIGHT INTO THE MODULAR MEASURING

ELECTROCHEMICAL PRINCIPLE (EC)

The basic principle of an electrochemical sensor is to have two electrodes **at a minimum** (sensing and counter electrode) which are in contact with each other in two ways:

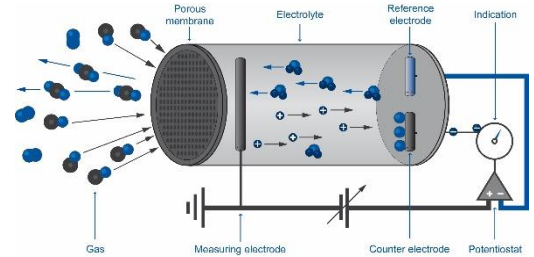
- on the one hand via an electrically conductive medium (electrolyte, i.e. liquid as an ion conductor),
- on the other hand via an external electric circuit (electron conductor).

The electrodes are made of a special material and have a catalytic effect so that certain **chemical reactions** take place at the so called 3-phase boundary where gas, catalyst and electrolyte are present.

Actually a two-electrode sensor (sensing and counter electrode), has many disadvantages. If there are higher gas concentrations, it leads to higher currents in the sensor and to a voltage drop which changes the preset voltage of the sensor. This can lead to unusable measurement signals or, in the worst case, the chemical reaction inside of the sensor stops during the measurement.

Therefore, a **third** electrode is added to the sensor which is used as a reference, situated away from the current flow.

The potential of the electrode is constant. With the reference electrode the sensor voltage is continuously measured at the measuring electrode and can be corrected by the control gain of the sensor. This leads to an enhanced measurement quality (e.g., in terms of linearity and selectivity) and a longer lifetime.



APPLICATION FIELD	PARTICULARITY	MAX. NUMBER IN PRO TECH
For quasi-continuous measurements. Automatic calibration at fresh air after 120 minutes.	Increased measurement accuracy provided by sensors alignment into calibration chamber.	6

NON-DISPERSIVE INFRARED BENCH (NDIR)

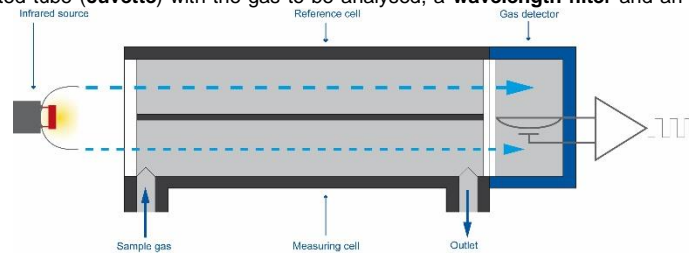
A non-dispersive infrared sensor is used in gas analysis to determine the gas concentration. NDIR analysers are particularly suitable for the determination of the concentration of carbon monoxide, carbon dioxide or hydrocarbons in a gas.

Components of this process are **a source** of infrared radiation, an irradiated tube (**cuvette**) with the gas to be analysed, a **wavelength filter** and an **infrared detector**. The gas which has to be analysed is pumped into the sample.

To ensure the sensor does not respond to all wavelengths, an upstream filter for the respective bandpass is connected for the suitable gas. The light from the infrared source irradiates the gas in the sample chamber and the filter and then meets on the IR sensor.

Ideally only the gas absorbs light of this wavelength and no other gas contained in the gas mixture.

Absorption areas can also overlay and a cross-sensitivity arise. This must be either compensated, in order not to falsify the measurement results, or be avoided by a skillful selection of the frequency bands. With NDIR sensors over 100 different gases can be detected from ppm to percentage range. In many fields of application they apply as the default method because the measurement method is non-contact and free of consumption.



APPLICATION FIELD	PARTICULARITY	MAX. NUMBER IN PRO TECH
Continuous measurements also in mobile applications. Heated sampling system recommended.	Selective measurement. Lower cross-sensitivities than EC. Verschleißarm (also by Überlast).	3 each NDIR bench type (STD / ADV.) = 6

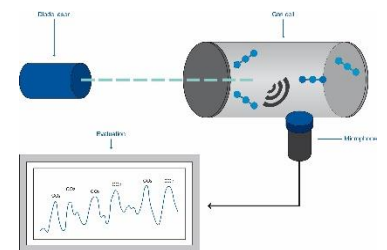
PHOTOACOUSTIC SPECTROSCOPY (PAS)

The photoacoustic spectroscopy (PAS) is a spectroscopic method which utilizes the photo-acoustic effect. For example, gas, irradiated with modulated light of a predefined wavelength. A certain part of light energy is absorbed by the sample and is converted into acoustic waves. These signals can be detected by a microphone and then evaluated.

As a light source, infrared laser diodes are frequently used because the specific wavelength (color) of the investigated material is in the infrared range in many applications. The light is modulated in an electronic or mechanical way, for example with a chopper.

Gas molecules absorb a portion of light when the light frequency corresponds with an absorption band of the gas in the cell. The higher the concentration of the gas, the more light is absorbed. This produces heat, which leads to a change of pressure in the measuring cell.

Normally, such a pressure difference balances out immediately. In case of light which is modulated by chopper it is different. The light is generating a pressure wave and therefore an acoustic signal while impinging on the molecules what can be detected with a microphone.

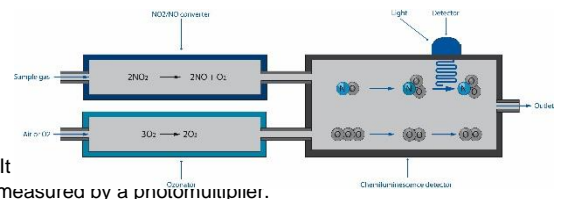


APPLICATION FIELD	PARTICULARITY	MAX. NUMBER IN PRO TECH
Continuous measurements also in mobile applications. Heated sampling system recommended.	Selective measurement. No cross-sensitivities. Low wear and tear (also by overload).	1

PRINCIPLES OF THE ECOM-J2KNpro TECH ANALYSER

CHEMOLUMINESCENCE (CLD)

A molecule can pass from the electronic initial condition to an electronic excited condition by absorption of energy. During the transition the absorbed energy can be emitted again to an energetically lower-lying condition. On the one hand it can happen in form of heat (non-radiative deactivation) and, on the other hand, by the emission of light (luminescence). Chemoluminescence means light which is emitted by excitation of a chemical reaction. It monoxide reacts with ozone to excited nitrogen dioxide. The emitted light is amplified and measured by a photomultiplier.



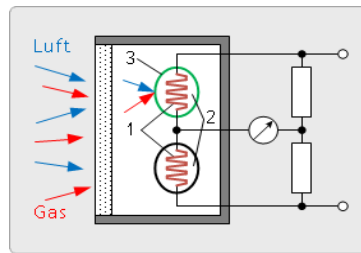
In order to analyze nitrogen dioxide, it has to be reduced with a catalyst to nitrogen monoxide. Then it can be detected as described above. If all nitrogen oxides should be measured in a sample gas stream, the content of nitrogen monoxide has to be measured first. This measurement is carried out without a catalyst. Subsequently, the gas stream will be passed through the catalyst, what will reduce the nitrogen dioxide to NO and the sum of NO and NO₂ (NO_x) will be determined.

Nitrogen oxides increase especially during the burning process so that this method of analysis is applied in the combustion gas analysis of power plants, in the automotive industry as well as in environmental technologies.

APPLICATION FIELD	PARTICULARITY	MAX. NUMBER IN PRO TECH
Continuous measurements also in mobile applications. Heated sampling system recommended.	Selective measurement. No cross-sensitivities. Low wear and tear (also by overload). Low operation temperature: 205 °C Converter efficiency ≥ 95 %. Exchangeable cartridge with converter material. High lifetime of converter material (> 1 year).	1 (NO _x measurement via converter possible)

COMBUSTIBLE GAS SENSOR (PEL)

Two platinum spirals are each embedded in a ceramic layer and electrically connected via a bridge switch. The surface of the one platinum spiral is activated by a catalyst which boosts oxidation – the other platinum spiral is inactivated. Current flows thru the spirals and heats them up to approx. 500°C. The air oxygen reacts with the flammable gas on the surface of the active platinum spiral. As a result, temperature and resistance increase in the active platinum spiral. The bridge gets out of balance and is hereby a measure for the presence of flammable substances.



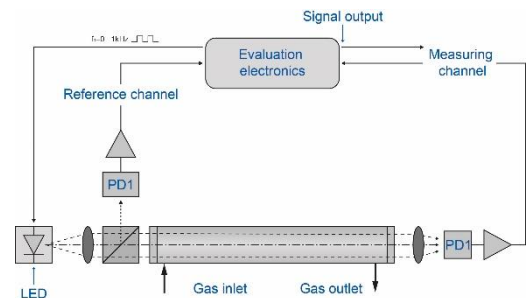
Gas / Vapour	Relative Sensitivity*	Gas / Vapour	Relative Sensitivity*
Methane	100	Carbon monoxide	120
Propane	65	Acetone	70
n-Butane	65	Methyl ethyl ketone	55
n-Pentane	55	Toluene	40
n-Hexane	55	Ethyl acetate	55
n-Heptane	45	Hydrogen	110
n-Octane	35	Ammonia **	140
Methanol	65	Cyclohexane	50
Ethanol	65	Leaded Petrol	60
Isopropyl alcohol	65	Unleaded Petrol	60
Acetylene	90	Ethylene	90
1, 3-Butadiene	60		

* Each sensitivity has been rounded to the nearest 5%
** T₉₀ for ammonia has been extended. Contact City Technology for further details.

APPLICATION FIELD	PARTICULARITY	MAX. NUMBER IN PRO TECH
Trend measurement for unburnt combustibles.		1 (requires one EC sensor position on gas channel plate)

NON-DISPERSIVE ULTRAVIOLET SENSOR (NDUV)

The NDUV measurement principle bases on the selective absorption of ultraviolet radiation in a range from 200 nm to 450 nm. Numerous important gases like sulphur dioxide (SO₂), nitrogen dioxide (NO₂), nitric oxide (NO), aromatic hydrocarbons (e.g. benzene) and ozone (O₃) can be measured within this spectral range. This kind of gas analysis is not influenced by disturbing steam concentrations. The radiation source is a special LED (light emitting diode). Using the *AlGaIn LED technology* enables to consistently cover spectral ranges from 360 nm to 230 nm. The absorption of the radiation in the sample cell bases on the Lambert-Beer law.



The physical construction consists of a photometer with two receiving detectors. The reference detector controls continuously the radiation intensity of the UV LED and serves here-with to offsetting aging effect and temperature influences.

In the photometer, the radiation of the LED is reproduced with a UV lens so that a parallel radiation beam path does form. This radiation is split in a successional radiation beam splitter in a measuring and a reference path. At the end of the measuring cuvette, the radiation is further conveyed by another UV lens to a high-sensitive UV detector which converts the radiation into a measuring voltage. The radiation absorption in the cuvette is then a measure for the gas concentration.

APPLICATION FIELD	PARTICULARITY	MAX. NUMBER IN PRO TECH
Especially suitable for SO ₂ measurement in low range.	Selective measurement. No cross-sensitivities. Low wear and tear (also by overload).	1

TECHNICAL DATA & FEATURES BASIC MODEL					✓ = Standard • = Option	
MEAS. VALUE	PRINCIPLE	RANGE	RESOLUTION	ACCURACY * = Higher value prevails		ITEM NO.
O ₂	EC	0...21 %	0,01 vol.%	± 0,3 vol. %	✓	
CO ppm (n H ₂ -c.)	EC	0...2000 ppm	1 ppm	± 20 ppm or 5% of measured value*	•	(On request)
CO ppm (H ₂ -co.)	EC	0...10.000 ppm	1 ppm	± 20 ppm or 5% of measured value*	•	(108302)
CO ppm (n H ₂ -c.)	EC	0...20.000 ppm	1 ppm	± 40 ppm or 10% of measured value*	•	(108313)
CO % (n. H ₂ -c.)	EC	0...63.000 ppm	5 ppm	± 100 ppm or 10% of meas. value*	•	(101505)
CO	NDIR (ADV)	0...1000 ppm	1 ppm	± 2% of measuring range end value	•	(105534)
CO %	NDIR (STD)	0...63.000 ppm	10 ppm	± 200 ppm or 3% of measured value*	•	(104996)
CO ₂	NDIR (ADV)	0...20%	0,01 vol.%	± 2% of measuring range end value	•	(105534)
CO ₂	NDIR (STD)	0...20%	0,01 vol.%	± 0,3 vol.% or 3% of measured value*	•	(101512)
NO	EC	0...5000 ppm	1 ppm	± 5 ppm or 5% of measured value*	•	(101500)
NO ExtraLow	EC	0...300 ppm	0,1 ppm	± 2 ppm or 5% of measured value*	•	(108505)
NO	CLD	0...1000 ppm	0,1 ppm	± 2% of measuring range end value	•	(105511)
NO	NDUV	0...300 (2000) ppm	0,1 ppm	± 3 ppm (1% of measured value)	•	(108108)
NO ₂	EC	0...1000 ppm	1 ppm	± 5 ppm or 5% of measured value*	•	(101502)
NO ₂ Low	EC	0...100 ppm	0,1 ppm	± 5 ppm or 5% of measured value*	•	(101503)
NO ₂	PAS	0...200 ppm	0,1 ppm	± 2% of measuring range end value	•	(105513)
NO ₂	NDUV	0...100 ppm	0,1 ppm	± 2 ppm or 2% of measured value*	•	(108381)
NO ₂	NDUV	0...300 (2000) ppm	0,1 ppm	± 3 ppm (1% of measured value)	•	(108108)
NO _x	CLD ⁽¹⁾	0...1000 ppm	0,1 ppm	± 2% of measuring range end value	•	(105511-105512)
NO _x	PAS ⁽²⁾	0...200 ppm	0,1 ppm	± 2% of measuring range end value	•	(105513)
NO _x	NDUV	0...300 (2000) ppm	0,1 ppm	± 3 ppm (1% of measured value)	•	(108108)
SO ₂	EC	0...5000 ppm	1 ppm	± 5 ppm or 5% of measured value*	•	(101504)
SO ₂ (Low CO)	EC	0...5000 ppm	1 ppm	± 5 ppm or 5% of measured value*	•	(108548)
SO ₂ Low	EC	0...100 ppm	0,1 ppm	± 5 ppm or 5% of measured value*	•	(107051)
SO ₂	NDIR (ADV)	0...1000 ppm	1 ppm	± 2% of measuring range end value	•	(105534)
SO ₂	NDUV	0...100 ppm	0,1 ppm	± 2 ppm or 2% of measured value*	•	(108381)
SO ₂	NDUV	0...300 (2000) ppm	0,1 ppm	± 3 ppm (1% of measured value)	•	(108108)
CxHx (methane)	catalytic	0...4 %	0,01 vol.%	---	•	(101561)
CxHx (propane)	NDIR (STD)	0...2000 ppm	1 ppm	± 4 ppm or 3% of measured value*	•	(105514)
CxHx (methane)	NDIR (STD)	0...3%	0,001%	± 0,005 vol.% or 3% of meas. value*	•	(105514)
H ₂	EC	0...20.000 ppm	1 ppm	± 100 ppm or 5 % of meas. value*	•	(107433 / 107434)
H ₂ S (with filter)	EC	0...1000 ppm	1 ppm	± 10 ppm or 5 % of measured value*	•	(103401)
T-Gas	NiCr-Ni	0...500°C	1°C	± 2°C (0-125°C) ± 3°C (125-250°C) ± 4°C (250-1100°C)	•	See page 7
T-Gas	NiCr-Ni	0...1100°C	1°C	± 2°C (0-125°C) ± 3°C (125-250°C) ± 4°C (250-1100°C)	•	See page 7
T-Air	Semi-conductor	0...99°C	1°C	± 1°C	✓	
Pressure / ΔP	DMS bridge	± 100 hPa	0,01 hPa	± 0,5 hPa or 1% or measured value*	✓	
Soot (integral)		0...9			•	

⁽¹⁾ Via converter (transformation of NO₂ into NO + measurement); no NO₂ original measurement possible via CLD.
Recommendation = combination of NO measurement (CLD) and NO₂ measurement (PAS).

⁽²⁾ In combination with CLD = perfect for an exact and continuous NO_x determination.

CALCULATION VALUES	RANGE	
CO ₂	0...CO ₂ max	✓
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	✓
GAS SAMPLING SYSTEM		
Not included, at choice (see § Gas Sampling)		✓
Connection for heated sampling system, type SBK2		✓
High-value T-Gas plug		✓
COMBUSTION AIR SENSOR		
T-Room sensor (PT 2000) L = 100 mm, cable (ca. 3 m), magnet fixation & fixation cone		✓
T-Room stick (PT 2000)		✓

T-ROOM MESUREMENT | ALTERNATIVE

T-ROOM PROBE PT 2000

- Length 260 mm, with 3 m cable

Item no. 104569



ΔT MEASUREMENT | ACCESSORIES

CONTACT SENSOR T-ROOM (PT2000)

- Range: -20 to 100°C
- Resolution: 0,1°C
- Measurement uncertainty: ± 1°C
- Suitable for pipe Ø up to 100 mm
- Cable length: 3 m



Item no. 12019

CONTACT SENSOR T-GAS (NI/CRNI)

- Range: -20 to 100°C
- Resolution: 0,1°C
- Measurement uncertainty: ± 1°C
- Suitable for pipe Ø up to 100 mm
- Cable length: 3 m



Item no. 106982

DATA INDICATION DATA INPUT	
Detachable monitoring/controlling module	✓
Frequency 868 MHz, coverage by free sight approx. 70 m (70 yds.)	✓
With magnet on the back for positioning at metal surfaces	✓
LCD colour display 78 x 58 cm, 320 x 240 dots, backlit, graphic- and zoom-capable	✓
Keypad with alphanumerical input function	✓
DATA PRINTOUT	
Integral thermal quick-printer, paper width 58 mm	✓
Matrix printer 58 mm (instead of thermal printer)	•
Address on protocol changeable by user (via keypad)	✓
DATA PROCESSING	
Slot for MM card; data logging function	✓
MM card	✓
USB data cable for data transfer to PC, length approx. 2 m	✓
Wi-Fi interface	✓
Data exchange with ecom® PC software	✓
Foldable antenna at basic unit for radio amplification	✓
CONNECTIONS	
Multi-function interface	✓
USB interface for data transfer	✓
Analog outputs	•
Analog inputs (2), 2 x 4...20 mA, or 2 x PT 2000 or 1 x 4...20 mA 1 PT 2000	•
MEASUREMENT GAS PREPARATION	
Extra-quick gas transport (quick availability of measurement data)	✓
High-performing gas pump, brushless, low-maintenance	✓
Performing peristaltic pump	✓
Stainless steel gas cooler, automatic condensate evacuation (outside)	✓
Stainless steel gas cooler, automatic condensate evacuation (inside); large cooling body	✓
Integral magnetic valve for automatic, quasi-continuous gas sampling and measurement values recording	✓
POWER SUPPLY	
Mains power supply 230 V / 50 Hz~	✓
Lithium-Ion battery 7,2 V / 11,6 Ah with long-lasting operation	✓
Helix power cord	✓
OPERATION SAFETY	
Heated gas channel plate for avoidance of moisture formation	✓
Internal air pressure sensor (range 300 to 1100 hPa)	✓
Temperature trend indication for stream core search	✓
Automatic self-test during calibration phase	✓
Automatic CO switch-off (= sensor protection & prolongation of life span)	✓
Fresh air purge after operation	✓
Pressure-compensated gas channel plate (optimized gas flow w/o. pressure fluctuation)	✓
Flow meter for optical control of pump performance	✓
Electronic condensation monitoring	✓
Longlife sensors	✓
Separate LCD display for monitoring & indication of operation stands of several elements like pump, probe heating, radio transfer quality as well as display of error messages.	✓
Electronic flow meter and monitoring.	✓
Automatic instrument switch-off by decreasing & insufficient pump performance.	✓
Toxic pollutants filter (NOx/SO ₂) for CO sensor, large size	✓
Special PTFE filter for IR bench	✓
TRANSPORT	
Robust aluminium-framed transport case with 4 rolls and lockage caster	✓
Counter parts for fixation of optional top case	✓
Top case for stowage of gas sampling system and/or other parts	•
Comfort trolley	•
DIMENSIONS WEIGHT OTHERS	
Case dimensions basic unit: approx. 525 mm x 845 mm x 270 mm (W x H x D)	
Weight: depending on selected measuring equipment & transport options: from/to approx. 23-32 kg	
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 possible	
Recommended interval for check/maintenance: 1 year	
Item no. basic instrument: 108484	

TRANSPORT | OPTIONS

TOP CASE

Stowage space for gas sampling system and/or further tools. With inner lid in case cover.

- Dimensions: approx. 525 x 570 x 255 mm
- Weight: approx. 5.1 kg



Delivery without content

Item no. 105549

COMFORT TROLLEY

For easy conveyance of analyser alone or with optional top case. With telescopic grip. Roll diameter: approx. 125 mm

- Dimensions: approx. 380 x 380 (970) x 130 mm
- Weight: approx. 1.8 kg



Item no. 105550

DATA PRINTOUT | OPTION

MATRIX PRINTER, instead of thermal quick-printer

Item no. 108172

DATA TRANSFER | OPTION

WI-FI OPTION, instead of Bluetooth Lo Energy (Item no. 108193)

ANALOG INPUTS | OPTION

- 2 analog inputs for connection of external sensors
- 2 X 4...20 mA (Item no. 108203)
- 2 X PT 2000 (Item no. 108204)
- Each 1 4 ...20 mA/PT 2000 (Item no. 108205)

GAS FILTERING | SOLID FUEL TYPES

SINTERED METAL PROBE PRE-FILTER

Universal cap for probes Ø of 8 and 10 mm. Metal filter with micro pores preventing solid particles to penetrate the probe / the gas path. Cleaning with compressed air.



Item no. 103575

FLOW VELOCITY / DYNAMIC PRESSURE

Internal hardware unit – enables the measurement (item doesn't cover any probe of random type)

- Range: 0-50 m / sec
- Accuracy: ± 0,2 m/s or ± 1% of meas. value
- Resolution: 0.1 m/s

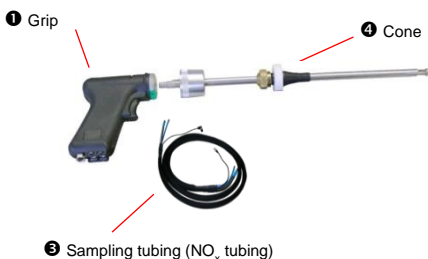
Data valid by use of Prandtl / Pitot probe (not included in package – available from specialized trade).

(Item no. 10122)

CONSUMABLES | FOR STOCK

- Fine dust filter (pack of 10) **Item no. 100568**
- Thermal printer paper roll **Item no. 50513**
- Matrix printer paper roll **Item no. 51596**
- Soot paper (pack of 200) **Item no. 50515**
- NOx/SO₂ filter cartridge **Item no. 52169**
- PTFE filter (for IR bench) **Item no. 100803**

CONCEPT SU/SB SAMPLING SYSTEM



GRIP SB, PROBE TIP Ø 10 MM, CONE

LENGTH 300 mm	(Item no. 107512)
LENGTH 350 mm	(Item no. 107513)
LENGTH 500 mm	(Item no. 107515) ⁽¹⁾
LENGTH 700 mm	(Item no. 107516) ⁽¹⁾
LENGTH 1000 mm	(Item no. 107517) ⁽¹⁾
LENGTH 1500 mm	(Item no. 107518) ⁽¹⁾

HIGH-TEMPERATURE PROBE TIP

Application range up to 1100°C, with HT cone Ø 10 mm

LENGTH 750 mm	(Item no. 101183) ⁽¹⁾
LENGTH 1000 mm	(Item no. 30001303) ⁽¹⁾
LENGTH 1500 mm	(Item no. 101608) ⁽¹⁾

NO_x TUBING, 3-CHAMBER, WITH ODU PLUG

LENGTH 3,5 m	(Item no. 106931)
LENGTH 5,0 m	(Item no. 106932) ⁽¹⁾
LENGTH 10,0 m	(Item no. 107362) ⁽¹⁾

⁽¹⁾ Because of its length this item is not storable in the standard case. For transport purposes, it must be detached and stowed separately.

HEAT-PROTECTIVE SHIELD

- For probe tips SB/SU Ø 10 mm
- Material: AlMg³. Hole Ø 10 mm, with knurled screw
- Dimensions: approx. 195 x 120 x 1.5 mm
- Weight: approx. 90 g

Item no. 101527

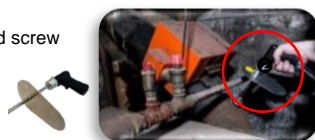
PROBE PIPE | ACCESSORY

PROTECTION BAG

For probe tips (all types) up to 750 mm

- Material: fabrics
- Dimensions: approx. 86 x 7.5 x 3 cm
- Weight: approx. 350 g

Item no. 55991



CONCEPT HEATED SAMPLING SYSTEM SBK2

- 1 Heated head with probe pipe & thermocouple and cone
- 2 Heated tubing



A **heated sampling system** is highly recommended for the accurate determination of the NO₂ and SO₂ particles **by longer-lasting measurements**.

The constructional design enables a **separated regulation** of the head and tubing heating which can amount 140°C by a 3.4 m tubing and up to 120°C by a 7 m tubing.

It consists of:

1. Heated head with probe tip and cone

Head with hot gas filter for protection against premature soiling. The thermocouple is firmly connected to the head; an exchange of the probe tip against a longer version is practically possible, but the accuracy of the temperature values is no more guaranteed. Available lengths: 300 mm to 1500 mm.

2. Heated tubing

Thanks to its heating the tubing avoids wash-out effects. Maximal operation temperature 200°C.

The SBK2 system is not suitable for 110V operation.

HEATED HEAD INCLUDING FIXATION CONE

Pipe length 300 mm ⁽²⁾	(Item no. 102950)
Pipe length 500 mm	(Item no. 102951)
Pipe length 700 mm	(Item no. 102952)
Pipe length 1000 mm	(Item no. 102953)
Pipe length 1500 mm	(Item no. 102953)

HEATED TUBING 230 VAC, 100 W/M

Length 3,4 m ⁽²⁾	Item no. 102960
Length 7,0 m	Item no. 102961

COMPLETE SYSTEM WITH TUBING 3.4 M

Head with pipe length ⁽²⁾ 300 mm	Item no. 102955
Head with pipe length 500 mm	Item no. 102956
Head with pipe length 700 mm	Item no. 102957
Head with pipe length 1000 mm	Item no. 102958
Head with pipe length 1500 mm	Item no. 102959

COMPLETE SYSTEM WITH TUBING 7.0 M

Head with pipe length 300 mm	Item no. 103040
Head with pipe length 500 mm	Item no. 103041
Head with pipe length 700 mm	Item no. 103042
Head with pipe length 1000 mm	Item no. 103043
Head with pipe length 1500 mm	Item no. 103044

⁽²⁾ Item can be stowed in optional under-case .



HEATED HEAD | ACCESSORY

HANDLE, FOR HEATED HEAD

Bracket made out of galvanized steel, with aluminium grip and NBR rubber

- Weight: ca. 310 g

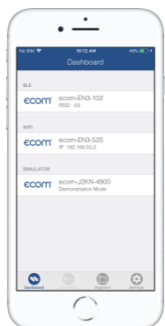
Item no. 100942



SIMPLE & MODERN DATA MONITORING & TRANSFER WITH THE APP **ECOMMANDER**

MEASURE | DISPLAY | RECORD | TRANSFER

1. Download App from App Store / Playstore free of charge



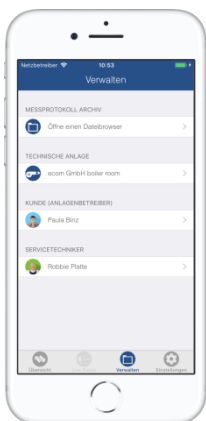
2. Activate pairing via wireless connection | Select instrument | Done!



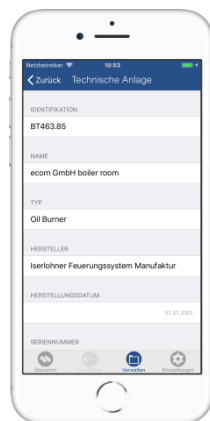
3. Live display of measurement values



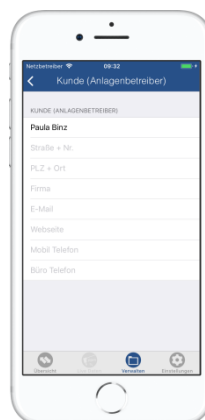
3. Spot and punctual measurements



3. Intuitive menu



3. Data of combustion plant



3. Customer data



3. Data related to service engineer



4. Creation of measurement protocols in practical PDF format

ECOMMANDER APP

- SIMPLE CONNECTION**
 - Automatic identification of ecom instrument via wireless pairing
 - Recording of last active connection
 - Use not limited to a specific instrument
- SIMPLE HANDLING**
 - Remote monitoring of measurement
 - Start / stop of CO sensor purge
 - Printout of measurement results
 - Switch to stand-by mode
- SMART DATA PROCESSING**
 - Display of all measurement parameters
 - Organisation of customer data
 - Recording and management of measurement values
 - Archiving and / or export of measurement values via PDF

Download free of charge

THE BELOW ICONS ILLUSTRATED IN ALL OUR PRODUCT INFORMATION SHEETS DO HAVE THE FOLLOWING MEANING:



EXTREMELY PRECISE - FOR EXACT MEASUREMENT ACCURACY.

After completion of the production process, the instrument is then professionally calibrated into a calibration chamber in order to eliminate possible cross-sensitivities. In order to measure in practice with the highest possible exactitude.



EXTREMELY EFFICIENT - ENHANCED CONVEYANCE CAPABILITY.

The product is fitted with a particularly performing pump which -compared to other instruments- is conveying many times over within the same period of time.



EXTREMELY BROAD REACH - WIRELESS COMMUNICATION.

Product fitted or upgradeable with radio module, Bluetooth or Wi-Fi option for wireless, unerring data transfer.



EXTREMELY SAFE – FOR MORE OPERATION SAFETY & PRODUCT LONGEVITY.

The model is or can be equipped with operation safety technique which protects its sensible components and contribute herewith to an increased life span.



EXTREMELY STABLE - SHOCK-PROOF.

Increased protection for safe transport / unintentional fall.
All-round protection provided by robust transport case resp. protective housing.



EXTREMELY COOL - DRIED SAMPLED GAS AND INCREASED READING ACCURACY.

The model is or can be equipped with a gas cooler which cools down the sampled gas and herewith makes sure that especially water-soluble gas components do not dilute but get conveyed to the sensors.



EXTREMELY LOSS-FREE – FOR SWIFT GAS TRANSPORT WITHOUT WASHOUT EFFECTS.

Special tubing either part of the standard model delivery package or available optionally provide with a quick gas transport, free of wash-out effects. Water-soluble components do not get lost but reach the measuring sensors.



EXTREMELY COMPLETE - ALL INCLUSIVE – PRODUCT READY-TO-MEASURE.

The product is completely ready to measure and does not require any further components to be operated. Respectively a kit of essential consumables is covered in the delivery package, thus avoiding being forced to quit a measurement process because of a missing spare filter or else small part.

FOCUSED APPLICATION RESPECTIVELY USER PROFILE ECOM® FLUE GAS ANALYSERS



CRAFTS
Chimney-sweep
Heating installer



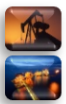
SERVICE ORGANISATIONS & FACILITY-MANAGEMENT
Maintenance & adjustment of home smaller boilers. Manufacturers of smaller boilers; Facility Management (building maintenance companies).
Service divisions with many technicians.



BURNER & BOILER MANUFACTURERS
Companies manufacturing resp. maintaining larger boiler and burner.
Service divisions with lots of technicians.



COGENERATION
Companies manufacturing resp. maintaining engines or combined heat and power plants. An exact NO_x measurement is of specific importance in this sector.



OIL & GAS
Raw material production
Transport
Processing



INDUSTRIAL APPLICATIONS
Mining
Foundries
Cement factories
Cookery plants
Chemical process heating
Waste combustion, etc.



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FLUE GAS ANALYSIS PRESSURE MEASUREMENT

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