100% Calibration

Super-Efficiency

Shock-Proof

Safety First

Wireless Communication

All Inclusive

Cool but Dry

Lotus Effect

ecom-J2KN$_{pro}$

A Series Name Standing for High-grade and Evolutionary Models for Professionals

The ecom-J2KNpro is a further development of the popular J-series (covering the predecessor models ecom-J, ecom-JN, ecom-J2K as well as J2KN). This is more than one instrument an ecom-J2KNpro user gets: the basic module can be operated independently from the control module.The basic module covers a small display outlining the operation stand of the most important functions. A further incentive is featured by the various interfaces the ecom-J2KNpro offers..

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ecom-J2KN^{pro}

ecom-J2KN^{pro} Easy: The starter model

Product Features

- Detachable control module for wireless radio transfer, up to 50 m at free sight. Command function for remote data storage and printout. Powerful rear magnet for easy positioning on metal surface and free hands for work
- Up to 6 gas sensors (Longlife)
- ± 100 hPa differential pressure measurement
- Integral thermal quick-printer
- Integral soot measurement
- Backlit display (daylight-capable)
- Electronic condensate monitoring
- Professional gas preparation thru Peltier cooler (option) with automatic condensate evacuation
- Sampling probe pistol style 300 mm with 3-chamber tubing 3 m
- Special tubing with Teflon sleeve e.g. for NO_x and SO_2 measurements (optional)
- T-Room sensor with magnet for easy fixation on metal surfaces
- Emission, temperature and draught measurement without plug connection change
- Instrument inner heating (heated gas channel plate)
- Integral module for data storage on MM card (card optional)
- Wireless Bleutooth or WiFi data transfer module (option)
- ecom PC software free of charge
- Large accessory program

Measured values

- O_2 (0-21%)
- CO (0-4000 ppm)
- Gas temperature (0-500°C)
- Air temperature (0-99°C)
- Pressure (± 100 hPa)
- Differential pressure (± 100 hPa)
- Internal air pressure sensor (300-1100 hPa)
- Internal flow measurement

Options:

- NO measurement (0-5000 ppm)
- NO_2 measurement (0-1000 ppm)
- SO_2 measurement (0-5000 ppm)
- CO extended range (0-10.000 ppm)
- CO% measurement (0-63.000 ppm)
- C_xH_y measurement (0-4 vol.% catalytic)
- H_2S measurement (0-1000 ppm)
- Differential temperature

Calculated Values

CO_2, $CO_{(undiluted)}$, NO_x, losses, efficiency (0-120%), dew point, mg/kWh, mg/m^3, adjustable O_2 ref.

Display

- LC display, 78 x 58 mm, 320 x 240 dots
- Graphic-capable; daylight-capable
- Backlit for optimal reading also in the dark

Sampling Probe

- Heated sampling soot probe pistol style 300 mm
- 3-chamber tubing 3 m
- Fixation cone with Teflon heat-protective part

Measurement Gas Preparation

- Quick gas transport (measurement values available promptly)
- Heated gas channel plate for prevention of condensation formation
- Condensate trap with fine dust filter for soot and dust particles capture
- Soot filter for enhanced particle capture
- Electric Peltier cooler (option)

NEW: Wireless data transfer via W-LAN

For the perfect measurement of NO_x, SO_2 and other water-soluble gases:

- 100% calibration (climatic chamber)
- lotus effekt (special PTFE tubing for gas transport)
- super efficiency (quick gas conveyance thru performing pump)
- drying cooling (perfect gas preparation via mini Peltier cooler)

Operation Safety Features

- Mini display for monitoring and follow up of pump performance, probe heating, wireless transfer quality and indication of error messages
- Temperature trend indication for core stream search
- CO switch off without measurement interruption by exceeding of preset limit value
- Automatic fresh air purging by CO exceeding
- Automatic fresh air purging after measurement
- Integral electronic flow meter for indication and control of pump performance
- Automatic instrument switch-off by insufficient pump performance
- Electronic condensate level monitoring
- Longlife sensors

Data Processing

- Data logging function
- Data storage on optional MM card (card optional)
- Control module with alphanumerical entry function
- Bluetooth inter face (option)
- Wi-Fi interface (option)
- Storage and illustration of disturbance diagnosis data provided wireless by ecom-AK read-out head
- Data exchange with ecom PC software

Power Supply

- Battery/Mains power
- External power supply box (option)

Printer

- Thermal quick-printer 58 mm
- Matrix printer (option)

Connections

- Connection for external alphanumerical keypad
- USB interface at detachable control module for data transfer

Transport

- Aluminium-framed transport case with length-adjustable shoulder carrying strap, fitted with counter-part for instantaneous docking of optional under-case
- Under-case for extra storage (optional). On request additionally with trolley bar.
- Flight protection case (option)

Dimensions / Weight

- Approx. 440 x 300 x 250 mm (L x H x W)
- Approx. 12 kg (complete)

EN 50379-2 and 1st BImSchV approved

ecom-J2KN$_{pro}$

ecom-J2KNpro Expert: Special Package For The Burner Service Professional

The **ecom-J2KNpro Expert** is a packaged set configuration of all technical features a burner service engineer requires at a price-attractive rate vs. standard. It covers all basic features of the Easy plus NO and NO_2 sensors, Peltier cooler and special sampling tubing for NO_x and SO_2 measurements and is fitted in a larger-sized transport case. It offers the same options and accessories the Easy variant does for upgrade and customizing.

ecom-J2KNpro Engine: Special Package For the Cogeneration Sector

This ecom-J2KNpro Engine is a variant perfectly packaged for the requirements in the cogeneration sector (heat and power plants, gas engines…). More information upon request.

ecom-J2KNpro Expert

	Item no.	Description
	101280	**ecom-J2KNpro Easy**, flue gas analyser with O_2 and CO (H_2-compensated) Longlife sensors, radio remote control and soot measurement feature. Fitted in aluminium-housing with heated pistol style sampling probe 300 mm incl. thermocouple with fixation cone, 3-chamber tubing (3 m), T-Room sensor with cable incl. fixing cone with magnet, integral thermal quick-printer, integral power pack with mains power cord approx. 3.4 m , automatic CO switch off and fresh air purge (without measurement interruption), electronic condensate level monitoring, consumables kit, operation manual on USB drive, calibration certificate –issued after 100% calibration into calibration chamber. PC software for data management downloadable free of charge from www.rbr.de
	101386	**ecom-J2KNpro Easy -** as above but with Peltier cooler instead of condensation trap
	101281	**ecom-J2KNpro Expert**, flue gas analyser with O_2, CO (H_2-compensated), NO, NO_2 Longlife sensors, Peltier cooler, special 3-chamber tubing for NO_x/SO_2 measurement, large-sized transport case with counter parts for instantaneous docking of optional under-case – otherwise same specs as Easy.
	102714	**ecom-J2KNpro Engine**, special variant for the professional NO_x measurement at engines, cogeneration plants: application-specific pre-settings, special filter and features; further information upon request.
	Options & Accessories	
	101500	**NO measurement (0 - 5.000 ppm)** at choice with or without NO_x calculation
	101502	**NO_2 measurement (0 - 1.000 ppm)** Note: NO_x measurement requires each a NO and a NO_2 sensor.
	101504	**SO_2 measurement (0 – 5.000 ppm)**
	101505	**CO% measurement (0-63.000 ppm)** **CO enhanced ppm measurement range (0-10.000 ppm)**
	101561	**C_xH_y measurement (catalytic) 0-4 % vol**.
	101655	**H_2 measurement (0 - 2.000 ppm)**
	101656	**H_2-measurement (0 - 20.000 ppm)**
	101272	**Under-case for extra storage, model Easy,** height 100 mm
	30001057	**Special 3-chamber tubing** for NO_x and SO_2 measurement, 3.5 m (standard by Expert)
	101381	**Under-case for extra storage**, model Expert, height 130 mm
	30001057	**Special 3-chamber tubing** for NO_x and SO_2 measurement, 3.5 m (standard by Expert)
	102469	**MM card, 2 GB** - pre-formatted for use with ecom analysers
	1040025	**Connection cable basic** <> control module - for radio-independent data transfer, 20 m
	100653	**Bluetooth module**, for wireless data transfer to PC
	103450	**Wi-Fi module**, for wireless data transfer to PC resp. mobile end units – more info on www.rbr.de
	101769	**8-channel analogue output box** for external logging/recording units (V / mA), incl. mains power pack, cable to analyser, RS 232 cable and software (download from www.rbr.de)
	50010074	**Foldable antenna** for radio amplification by difficult or disturbed radio transfer conditions
	100222	**T-Room stick** – H 28 x ø 11 mm
	10166	**T-Room probe** – L 260 mm with 3 m cable
	12019	**Contact sensor, room temperature (PT 2000)**, for differential temperature measurement. Range: -20 to 100°C; resolution: 0,1°C measurement uncertainty: ± 1°C; pipe diameter up to: 100 mm; cable length: 3 m
	12020	**Contact sensor, gas temperature (Ni/CrNi),** for differential temperature measurement. Range: -20 to 100°C; resolution: 0,1°C measurement uncertainty: ± 1°C; pipe diameter up to: 100 mm; cable length: 3 m
	100815	**Gas washing bottle** for solid combustibles measurement - For pre-filtering of the dust-soiled gas, gas surface widening thru bubble formation and dilution of sensor-damaging organic compounds (Peltier cooler compulsory; non-suitable for NO_x resp. SO_2 measurement)
	100944	**Mini filtering plate** for J2KNpro range consisting of water trap, filtering wool cartridge, silica beads cartridge and activated carbon cartridge. Gets hooked at instrument case (item can be stowed in under-case). Incl. connection hoses.
	20011620	**Filtering case** consisting of water trap, large filtering wool cartridge, large silica beads cartridge, large activated carbon cartridge. Incl. connection hoses.

J2KN^{pro} special variants for NO_x measurement at large combustion plants, engines, cogeneration plants… etc.

Further tubing resp. probe lengths as well as flexible probe tips are additional items in the delivery program. Additional features see page 38. Further specifications/features also available on request.

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ecom-J2KN$_{pro}$ IN and INS

Flue gas Analysis for Industrial and Semi-industrial Applications

Product Features

- Detachable control module for wireless radio transfer, up to 50 m at free sight. Command function for remote data storage and printout. Powerful rear magnet for easy positioning on metal surfaceand free hands for work
- Up to 8 gas parameters (electrochemical sensors/IR bench)
- ± 100 hPa differential pressure measurement
- Integral thermal quick-printer
- Backlit display (daylight-capable)
- Electronic condensate monitoring
- Professional gas preparation thru Peltier cooler with automatic condensate evacuation
- Sampling system customizable acc. to needs (3-chamber silicone tubing, special NO_x/SO_2 tubing with Teflon sleeve or heated sampling system)
- T-Room sensor with magnet for easy fixation on metal surfaces
- Suitable for quasi-continuous emission measurement
- Instrument inner heating (heated gas channel plate)
- Integral module for data storage on MM card (card optional)
- Wireless Bluetooth or Wi-Fi data transfer module (each optional)
- ecom PC software free of charge
- Comprehensive accessory program

Measured values

- O_2 (0-21%)
- CO (0-4000 ppm)
- Air temperature (0-99°C)
- Gas temperature (0-500°C)
- Pressure (± 100 hPa)
- Differential pressure (± 100 hPa)
- Internal air pressure sensor (300-1100 hPa)
- Internal flow measurement

Options:

Electrochemical sensors:

- NO measurement (0-5000 ppm)
- NO_2 measurement (0-1000 ppm)
- SO_2 measurement (0-5000 ppm)
- CO extended range (0-10.000 ppm)
- CO% measurement (0-63.000 ppm)
- C_xH_y measurement (0-4 vol.% catalytic)
- H_2 measurement (0-2000 or 0-20.000 ppm)
- H_2S measurement (0-1000 ppm)
- NH_3 (model INS only) (0-1000 ppm)
- HCl (model INS only) (0-100 ppm)

Infrared bench:

- CO% (0-63.000 ppm)
- CO_2 (0-20%)
- C_3H_8 (0-2000 ppm)
- CH_4 (0-30.000 ppm)
- Differential temperature
- Soot measurement

Calculated Values

CO_2, $CO_{(undiluted)}$, losses, efficiency (0-120%), dew point, mg/kWh, mg/m³, adjustable O_2 ref.

Display

- LC display, 78 x 58 mm, 320 x 240 dots
- Graphic-capable, daylight-capable
- Backlit for optimal reading also in the dark

Battery box

Heated sampling system

Sampling System Options (depending on application)

- Sampling soot probe pistol style, unheated, 300 mm with 3-chamber tubing 3 m
- Sampling soot probe pistol style, heated for soot measurement, 300 mm with 3-chamber tubing 3 m
- Special 3-chamber tubing for NO_x/SO_2 measurement, 3.5 m
- High-temperature probe tips for range up to 1100°C
- Heated sampling system (for top accuracy by e.g. NO_x, SO_2, etc.)

Measurement Gas Preparation

- Quick gas transport (measurement values available promptly)
- Heated gas channel plate for prevention of condensation formation
- Soot filter for enhanced particle capture
- Electric Peltier cooler with automatic condensate evacuation (model INS: made out of stainless steel)

Operation Safety Features

- Mini display for monitoring and follow up of pump performance, probe heating, wireless transfer quality and indication of error messages
- Toxic particles filter for CO sensor protection
- Temperature trend indication for core stream search
- CO switch off without measurement interruption by exceeding of preset limit value
- Automatic fresh air purging by CO exceeding

Connections

- Connection for external alphanumerical keypad
- USB interface at detachable control module for data transfer
- 2 analogue inputs (option)

Data Processing

- Data logging function
- Data storage on optional MM card
- Control module with alphanumerical entry function
- Bluetooth interface (option)
- WiFi interface (option)
- Storage and illustration of disturbance diagnosis data provided wireless by ecom-AK read-out head
- External keypad for alphanumerical data entry (option)
- Data exchange with ecom PC software

Power Supply

- Battery/Mains power
- External power supply box (option)

Transport

- Aluminium-framed transport case with length-adjustable shoulder carrying strap, fitted with counter-part forins-tantaneous docking of optional under-case
- Under-case for extra storage (optional). On request additionally with trolley bar.
- Further alternative and special transport cases, see next page.

Dimensions / Weight

- Approx. 500 x 330 x 250 mm (L x H x W)
- Approx. 14 kg (with standard sampling system)

EN 50379-2 and 1st BImSchV approved

ecom-J2KNpro Versatile - just the way the applications it is dedicated to.

Which components can be measured by which principle?

The following parameters can be measured by **infrared bench** (max. recommended measurement time 15 min.)

One parameter	Two parameters	Three parameters
CO_2 0-20 %	CO% 0-63.000 ppm / CO_2 - 0-20 %	CO% 0-63.000 ppm / CO_2 - 0-20 % / C_xH_y 0-2.000 ppm (C_3H_8 propane)
C_xH_y 0-2.000 ppm (C_3H_8 propane)	CO% 0-63.000 ppm / C_xH_y 0-2.000 ppm (C_3H_8 propane)	CO% 0-63.000 ppm / CO_2 - 0-20 % / C_xH_y 0-30.000 ppm (CH_4 methane)
C_xH_y 0-30.000 ppm (CH_4 methane)	CO_2 0-20 % / C_xH_y 0-2.000 ppm (C_3H_8 propane)	
	CO_2 0-20 % / C_xH_y 0-30.000 ppm (CH_4 methane)	

The C_xH_y Pellistor sensor measures the concentration by catalytic principle (0-4% vol.) As for the electrochemical sensors (O_2, CO, NO, NO_2, SO_2, H_2S, H_2) the calibration in climatic chamber, a well-adapted sampling system as well as a perfect gas processing (gas cooler, heated sensor plate) provides with the highest possible measurement accuracy.

The reliable measurement of NH_3 and HCl particles usually requires the use of special measurement tools. Because of their high water-solubility, determining these components is only possible at the very beginning of the measurement and this only for a short time. Further factors for a successful measurement are the equipment of the instrument with a special stainless steel gas cooler, with a special tubing for NO_x/SO_2 measurements (PTFE inner tubing) and a dust-free probe.

How to customize the sampling system?

a) Sampling tubing

Length (approx.)	3-chamber silicone tubing	3-chamber special tubing (for NO_x and SO_2 measurement)	Heated tubing (in combination with heated head only)
3,0 m	100295		
3,5 m		30001057	102960
5,0 m	30001183	100477	
7,0 m		30001241	102961
10,0 m	100477	100411	

b) The grip for standard/flexible probes is either heated (30001073) or non-heated (101243)

c) Probe tips (incl. thermocouple)

Length	Standard (coaxial, Ø 10 mm, up to 500°C)	Standard (Ø 8 mm, up to 500°C)	High temperature (Ø 10 mm, up to 1.100°C)	Heated head + pre-filter (only with heated tubing)	Flexible probe tip (up to 500°C)
150 mm	100911	100559			
250 mm	101010	101950			
300 mm	100912	100540		102950	101254
360 mm	100913	30001220	102731		
400 mm					102353
450 mm	101234				
500 mm	100914	30001224		102951	
700 mm	100915			102952	
750 mm			101183		
1000 mm	100916		30001303	102953	
1500 mm	100917		101608	102954	

- Probe with tips up to 360 mm fit in the Expert / IN / INS transport case without disassembly
- A protection bag is available for secure transportation of probe tips up to 750 mm (item no. 55991)
- Various heat protection shields are available (to fit on probe tip or as special fixation cone in mini-size)

Further customizing items:

Transport case: Special versions – indoor & outdoor- do exist to operate the analyser with closed cover. Further items: subcase, trolley for easy conveyance and flight protective case.

Power supply: The battery box (item no. 100968 + connection plug at instrument) provides with enough power to operate the unit with gas cooler during 6-12 hours.

All of the **J2KN^{pro} accessories (memory card, temperature sensors, analog output box, data transfer options)** are compatible to the industrial versions IN and INS of the ecom-J2KN^{pro}.

Outdoor case

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