MRU INSTRUMENTS

VARIO*luxx* SYNGAS

Portable syngas analyzer

O_2 | CO_2 | CO | CH_4 | H_2 | H_2S

Combined NDIR/EC/TCD measurement technology for precise measurement results of main syngas components.

VARIO*luxx* SYNGAS

First choice for smart gas analysis

Suitable for semi - continuous measurement of syngas from coke ovens, blast furnaces, biomass, coal catalytic oxidation, waste- or plasma-gasification processes, steam reforming of liquid hydrocarbons (refinery gas, etc.).

With **VARIO*luxx*,** the simultaneous analysis of up to 5 syngas components is possible:

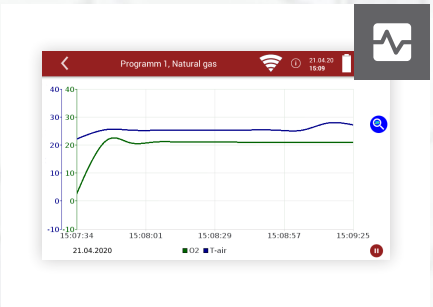
CO | CO_2 | CH_4 | H_2 | O_2 | plus calculated N_2 and calorific value MJ/m^3 and MJ/kg

We offer you these special advantages:

- Integrated electrical gas cooler (Peltier) and automatic condensate draining pump
- Strong sample gas pump and externally accessible particulate Teflon filter
- Automatic zeroing by means of 3-way solenoid valve, user programmable
- Internal sample flow monitoring with display and alarm
- Use of long-life EC cell for O_2, NDIR for CO/CO_2/CH_4 and TCD for H_2 measurement
- Linux OS and large back-lit 840x480 px color display, with touch and swipe technique
- Lithium-ion battery operation, including gas cooler and measurement technology

The device in detail

An overview of the special features



Practical touch display

High resolution 7" color display with graphical output of the measured values

Optimal protection

All-metal housing with soft bumper corners for the harsh industrial everyday use

Comfortable size

Very compact dimensions (W x H x D: 18" x 13" x 8") and light weight (22 lbs.) including nylon pouch, IP 42

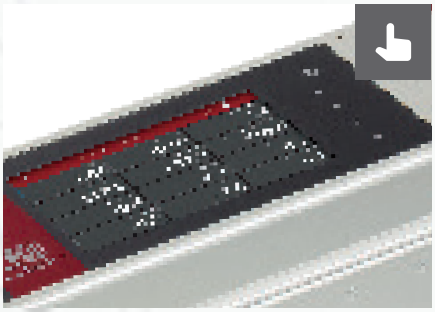
On the go

Aluminum transport case with wheels, robust Pelicase or nylon carrying/protective bags

Operation and interfaces

Simple and user friendly

Operating options

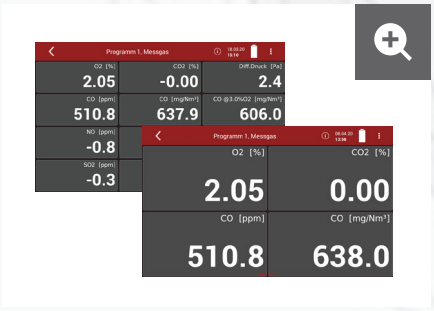


Touchscreen

Device operation via the 7" touch/swipe display, resolution 800 x 480 px, 750 cd/m²

Wireless

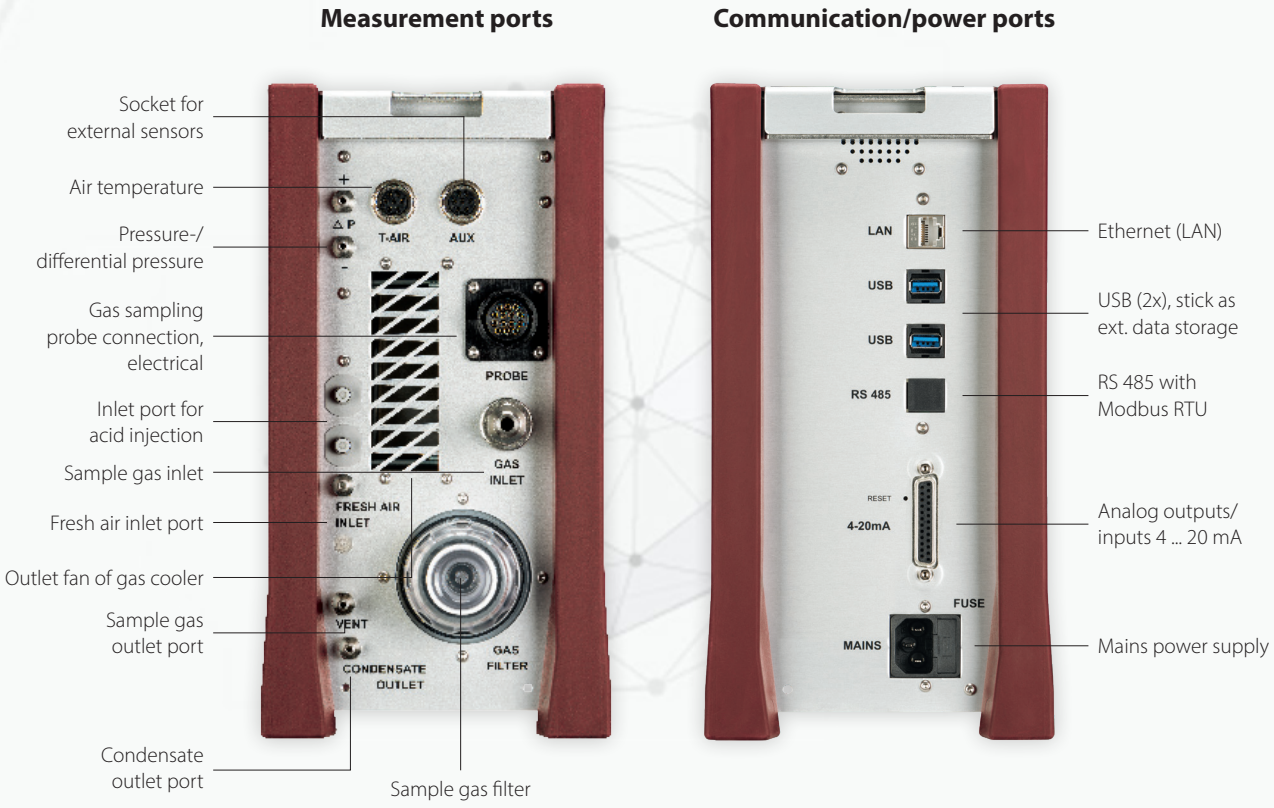
Operation via smartphone or PC via. VNC connection, mirrored device display on smartphone



Zoom function

Variable display modes for the display

Connections and interfaces



Gas conditioning for dirty syngas

Gas sampling probe

- Robust industrial probe with heated filter, regulated by analyzer including gas temperature measurement, using K-type thermocouple
- Easy replaceable probe head filter
- Exchangeable probe tubes in various lengths

Portable washing device
for tar or heavy hydrocarbons removal

Peltier gas cooler
Automatic condensate pumps

Gas pump
Powerful pump for fast response times

Data transmission & measurement

The technology

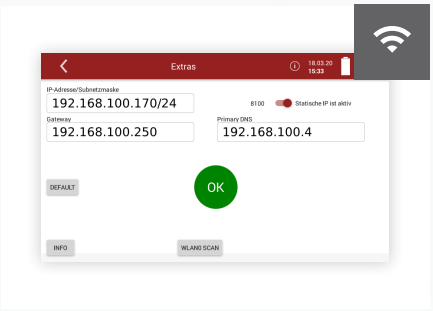
Data transmission

Fully equipped standard device:

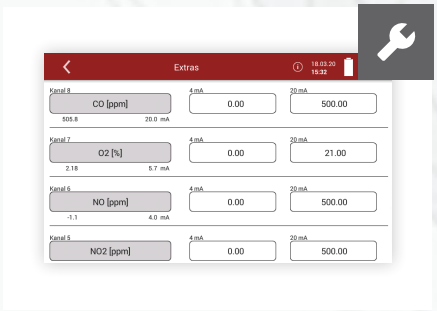
- Ethernet (LAN) TCP/IP
- WiFi
- 8 analog outputs 4 ... 20 mA
- 4 analog inputs
- USB (2x)
- RS 485

Internal data storage:

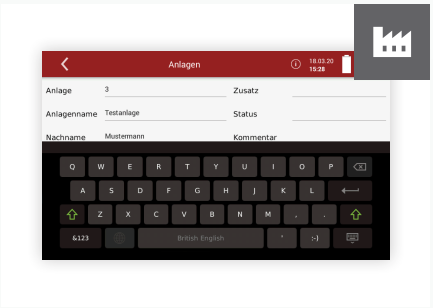
The huge memory with 400 MB offers space for thousands of facilities and data sets.



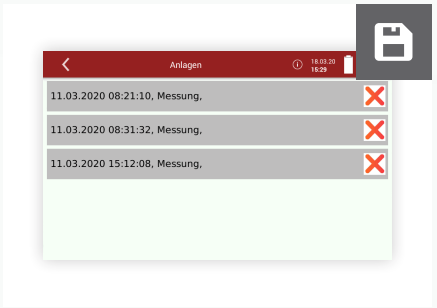
Set LAN



Set analog outputs



Manage facilities

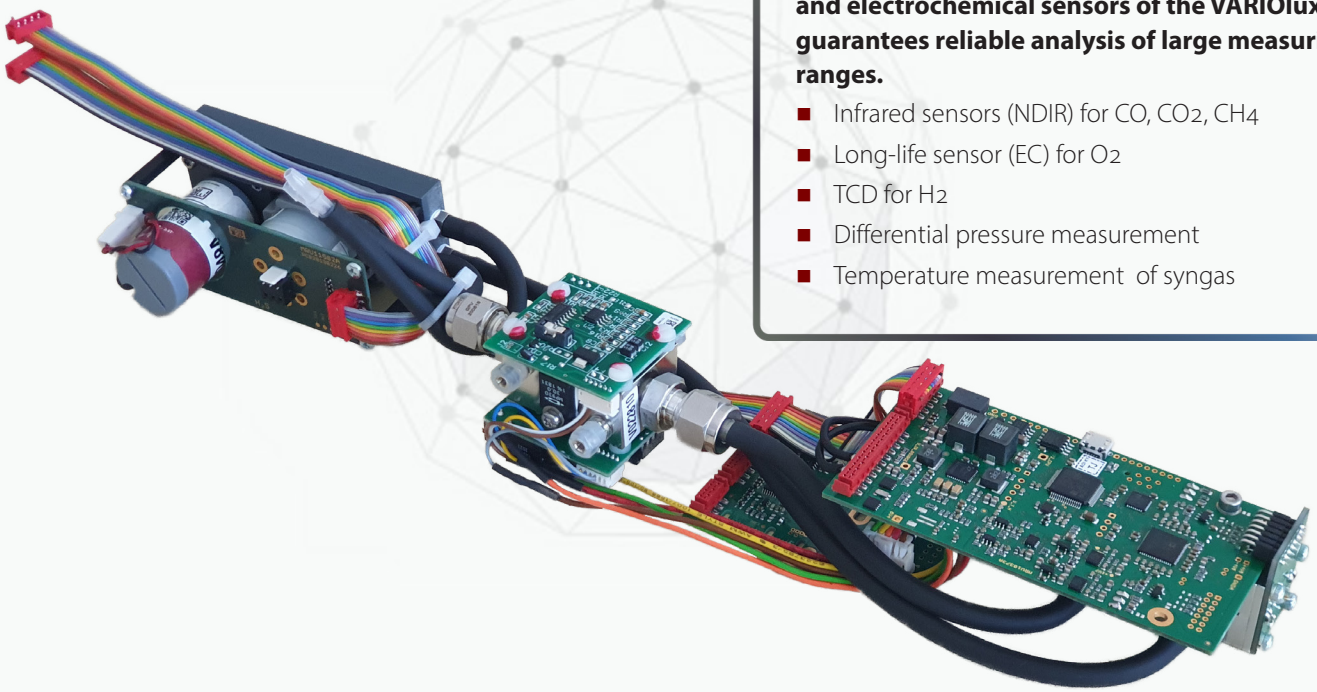


Save measurements by facility

High quality measurement technology

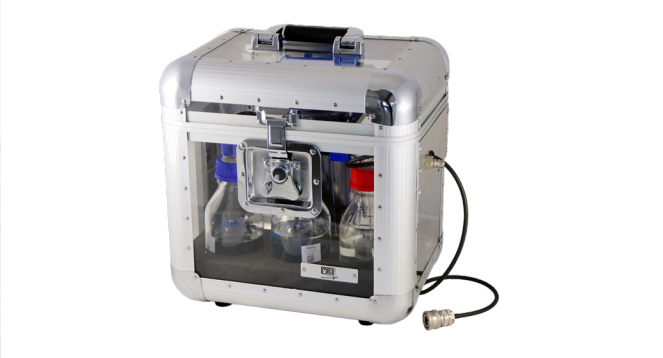
The combination of TCD (Thermal Conductivity Detector), Infrared measurement technology and electrochemical sensors of the VARIOluxx guarantees reliable analysis of large measuring ranges.

- Infrared sensors (NDIR) for CO, CO_2, CH_4
- Long-life sensor (EC) for O_2
- TCD for H_2
- Differential pressure measurement
- Temperature measurement of syngas



Practical accessories

For more flexibility



Portable syngas treatment (washing) device

- for tar or heavy hydrocarbons removal

Industrial probe head

- With integrated heater, 160°C temperature regulation by the analyzer

Rugged "Pelicase" style transport case

- also usable for flight transportation

USB to Bluetooth converter set / USB to WLAN converter

- Wireless data transfer to PC/ notebook with MRU4win
- WiFi for short distance and Bluetooth for up to 300m

PC software "MRU4Win"

- Software for Windows to visualize measure data, manage, export and print
- Connect multiple devices at the same time and read out live values
- Logging and saving live values
- Database with customer contacts, attachments and manage users
- Export measurement reports as PDF
- Documents with customized logo and print out the address
- Read out data storage, save measurements, print and save as PDF

VARIO*luxx* SYNGAS

TECHNICAL SPECIFICATIONS

Gas measurement		Method	Measuring range min./max.	Resolution	Accuracy
O_2	Oxygen (Long Life)	EC	0 … 25 %	0.01%	0.20%
O_2	Oxygen	PM	0 … 25 %	0.01%	0.1%
CO	Carbon monoxide	NDIR	0 ... 10.00 % / 100.00 %	0.01%	**± 0.1** % or 2 % reading
CO_2	Carbon dioxide	NDIR	0 ... 10.00 % / 100.00 %	0.01%	**± 0.3** % or 2 % reading
CH_4	Methane	NDIR	0 ... 10.00 % / 100.00 %	0.01%	**± 0.2** % or 2 % reading
H_2	Hydrogen	TCD	0 ... 10.00 % / 100.00 %	0.01%	**± 0.1** % or 2 % reading
H_2S	Hydrogen sulfide	EC	0 ... 2,000 ppm / 5,000 ppm	1 ppm	**± 5 ppm or 5** % reading

Calculated components	
Calorific value N2 balance	O ... SO MJ/m3 or MJ/kg difference to 100%

Other measurements	Method	Measuring range	Resolution	Accuracy
Stack gas temperature (T_{gas})	NiCrNi	0 ... 2,012 °F	1 °F	± 4 °F or 2 % reading
Combustion air temperature (T_{air})	NiCrNi	0 ... 212 °F	1 °F	± 2 °F or 1 % reading
Differential pressure (P-Druck)	Piezoresistive	–48 ... +48 inH2O	0.001 inH2O	± 0.008 inH2O or 1 % reading
Flow velocity measurement (v)	Pitot	3 ... 100 m/s	0.1 m/s	± 1 m/s or 1 % reading
Standardized ext. signal (AUX connection)	Software	for K-thermocouple, 0 ... 10 Vdc, 4 ... 20 mA, RS 485		
Combustion calculations (fuel type depend.)	Software	Losses, Excess Air, Air Ratio, dew point, CO_2		
Emissions calculations	Software	mg/Nm3, reference to O_2		

General technical data	
Operating system	LINUX
Display, operation	7"TFT (800 x 480 px) color display, backlit, with touch pad
Data storage type	Dynamic, internally 10,000 data sets, external USB stick
Interface to PC/notebook	Ethernet, WiFi, RS 485
Cable/wireless communication interface	RS 485, RJ45 (Ethernet), WiFi, Bluetooth
Printer	External USB/WiFi printer
Analog output/input 4 ... 20 mA	8 channel out, 4 channel in, user configurable
Universal analog input (AUX)	0 ... 10 Vdc, 4 ... 20 mA, NiCrNi-thermocouple, RS 485
System warm-up time	30 minutes, typical
Mains free operation time	Li-Ion, 48 Wh, for standby 1 hour (optional additional battery, 48 Wh Li-Ion)
Operating conditions	41 ... 113 °F (+5 ... +45 °C); RH up to 90 % non-condensing
Storage temperature	-4 ... 122 °F (-20 ... +50 °C)
Power supply	86 ... 265 Vac, 47 ... 63 Hz, 105 W (up to 600 W with heated gas sample line)
Protection class	IP20 (or IP42 inside transport case)
Dimensions (W x H x D)	16.92"x 11.41"x 5.90" (430 x 290 x 150 mm)
Weight	Approx. 17.6 lbs. (8 kg) only device, approx. 28.6 lbs. (13 kg) packed in bag with accessories

Data subject to change without notice. | TEC = elektrochemical sensor, PM = paramagnetic sensor, NDIR = non-dispersive infrared spectroscopy
*overload range of ECS is usable only for short duration | **which ever is larger | ***with hourly reset to zero | N-623005YN-GB-K1-0K-621

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