![MRU AIRfair — EMISSION MONITORING SYSTEMS — since 1984 ®]

NO_x | NO | NO_2 | CO | CO_2 | SO_2 | HC as CH_4 or C_3H_8 | O_2 | H_2S | H_2

VARIO*luxx*
Portable, certified stack gas emission analyser.

Combined NDIR/EC measurement technology for precise measurement results.

VARIO*luxx*
First choice for smart gas analysis

The combination of infrared measurement technology and electrochemical sensors ensures versatility and reliable analysis even of small measuring ranges. VARIO*luxx* – portable industrial measurement technology for high requirements!

With **VARIO*luxx*,** the simultaneous analysis of up to 9 exhaust gas components is possible:

NO_x | NO | NO_2 | CO | CO_2 | SO_2 | HC as CH_4 or C_3H_8 | O_2 | H_2S | H_2

We offer you these special advantages:

- Automatic measuring program with data recording
- Automatic zero point measurement for long-term measurements
- Lithium-ion battery operation, including gas cooler and measurement technology

TÜV SÜD

complying with international ASTM D6522 and USEPA methods CTM-030 and CTM-034

**acc. DIN EN 50379-1 and 2**

The gases and measuring ranges

Gas	Method[1]	Measuring range min./max.	Note
O_2	EC	0 ... 25 %	TÜV certified
O_2	PM	0 ... 25 %	
CO	EC	0 ... 10,000/20,000	TÜV certified
CO	NDIR	0 ... 3,000 ppm/10.00 %	
CO_2	NDIR	0 ... 5.00/40.00 %	TÜV certified
CH_4	NDIR	0 ... 3,000 ppm/4.00 %	
C_3H_8	NDIR	0 ... 1,000/10,000 ppm	
NO	EC	0 ... 1,000/5,000 ppm	TÜV certified
NO_2	EC	0 ... 200/1,000 ppm	TÜV certified
SO_2	EC	0 ... 2,000/5,000 ppm	TÜV certified
H_2S	EC	0 ... 50/500 ppm	
H_2	EC	0 ... 1,000/2,000 ppm	

[1] EC = elektrochemical sensor, PM = paramagnetic sensor, NDIR = non-dispersive infrared spectroscopy
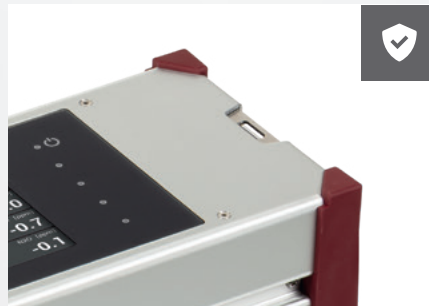
The device in detail
An overview of the special features
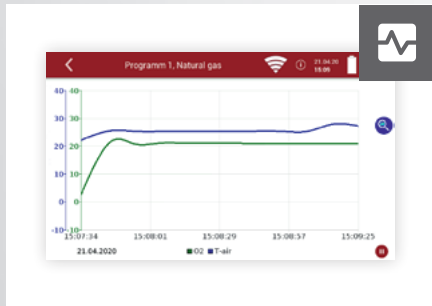
Practical touch display

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: 430 x 290 x 150 mm) and light weight (8 kg)

On the go

Aluminum transport case with wheels or nylon carrying/protective bags

Operation and interfaces
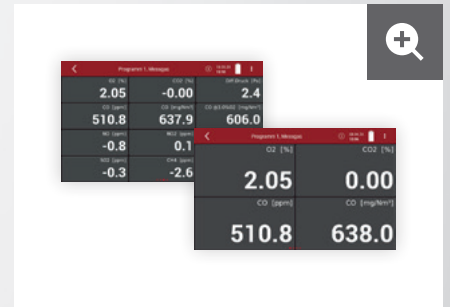## Simple and clear

Operating options

Touchscreen

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

Contactless

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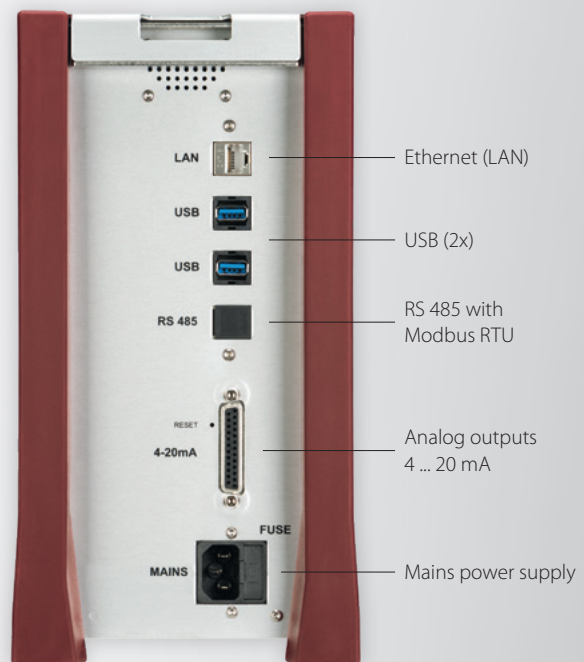device display on smartphone

Zoom function

Scalable display mode for the display

Connections and interfaces

Measuring technology

Data communication

Socket for external sensors

Air temperature

Pressure-/differential pressure

Gas sampling probe connection, electrical

Sample gas inlet

Fresh air inlet port

Outlet fan of gas cooler

Sample gas outlet port

Condensate outlet port

Sample gas filter

Ethernet (LAN)

USB (2x)

RS 485 with Modbus RTU

Analog outputs 4 ... 20 mA

Mains power supply

The gas conditioning
An overview

Gas sampling probe

- Robust industrial probe with heated hose
- Also possible for flue gas temperatures up to 1,100 °C
- Heated gas sampling line (3 m, 5 m or up to 50 m)
- Exchangeable probe tubes up to 2 m length
- Easy to change filter in the probe head
- Filters can be filled with different material, depending on the amount of dirt

Probe for low dirt applications

Peltier gas cooler

Automatic condensate pumps

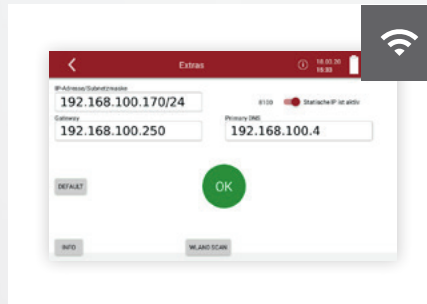### Gas pump

Powerful pump for fast response times

Data transmission and measurement
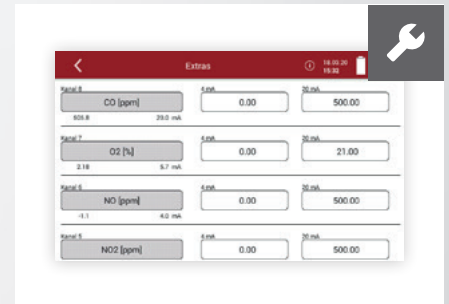## The technology behind

Data transmission

Fully equipped standard device:
- Ethernet (LAN) TCP/IP
- WiFi
- 8 analog outputs 4 ... 20 mA
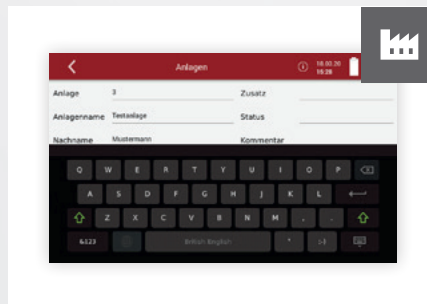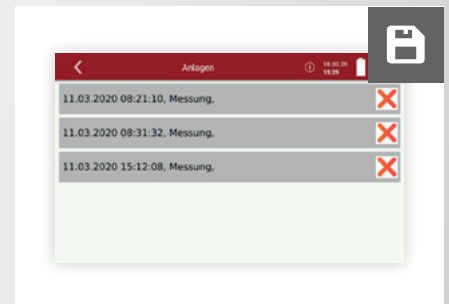- 4 analog inputs
- USB (2x)
- RS 485 (option)

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 infrared measurement technology and electrochemical sensors of the VARIO*luxx* guarantees onereliable analysis of small measuring ranges.

- Infrared sensors (NDIR) for CO_2, CO, CH_4, C_3H_8
- Electrochemical sensors (EC) for CO, NO, NO_2, SO_2, H_2S, H_2, O_2 (max. 6 sensors simultaneously)
- Paramagnetic O_2 analysis
- Differential pressure measurement
- Temperature measurement of flue gas and combustion air
- Flow rate measurement and volume flow calculation
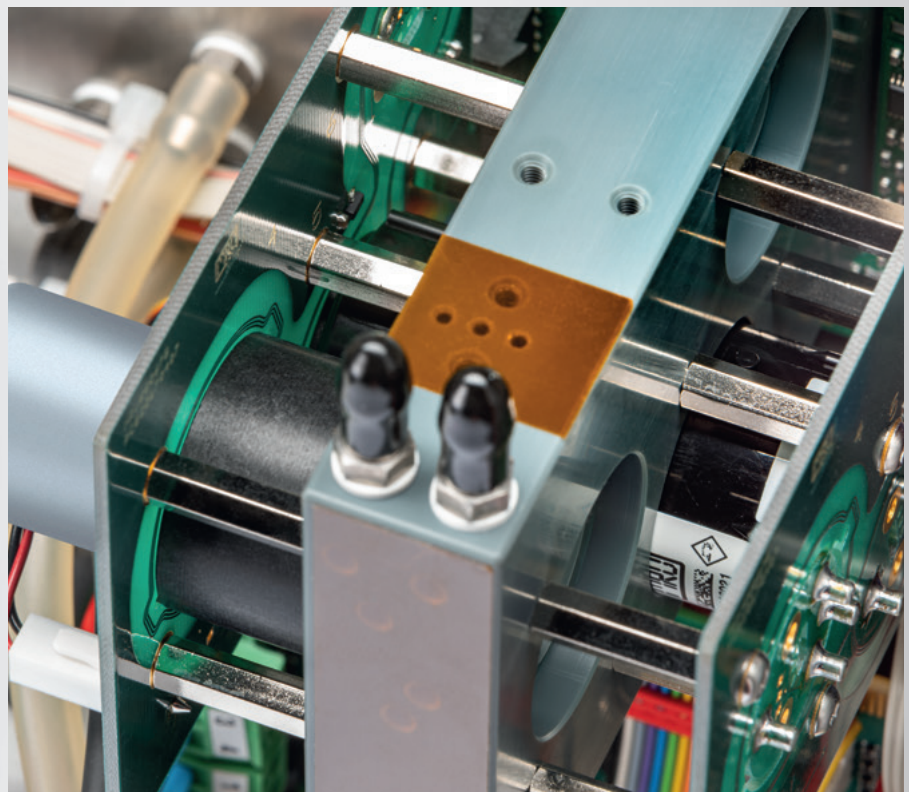
Practical accessories
For more flexibility

Pitot tubes for flow velocity measurement

- L-type or S-type with temperature measurement (up to 1,000 °C), length: 300 ... 1,500 mm
- Measuring ranges from 3 to 100 m/s at a resolution of 0.1 m/s
- Additional calculation of the volume flow (m³/s)

USB WiFi adapter

- For wireless data transmission

NiMH battery

- Practical battery for safe flight transportation, instead of a lithium-ion battery

WiFi printer

- With lithium-ion battery and USB socket
- Suitable for 80 mm paper width

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* – Technical data

Gas measurement	Note	Method[1]	Measuring range min./max.*	Resolution	Accuracy**
Oxygen (O_2) (long life)	TÜV certified	EC	0 ... 25.00 %	0.01 %	0.2 %
Oxygen (O_2)		PM	0 ... 25.00 %	0.01 %	0.1 %
Carbon monoxide (CO_{low})	spec. adjustment		0 ... 500.0 ppm	0.1 ppm	± 2 ppm or 5 % reading
Carbon monoxide (CO_{H2komp})	TÜV certified	EC	0 ... 10,000/20,000 ppm	1 ppm	± 10 ppm or 5 % reading
Carbon monoxide ($CO_{very high}$)		EC	0 ... 2.00/10.00 %	0.01 %	± 0.01 % or 5 % reading
Carbon monoxide (CO)		NDIR	0 ... 3,000/30,000 ppm	1 ppm	± 10 ppm or 2 % reading***
Carbon monoxide (CO)		NDIR	0 ... 1.00/10.00 %	0.01 %	± 0.1 % or 2 % reading
Carbon dioxide (CO_2)	TÜV certified	NDIR	0 ... 5.00/40.00 %	0.01 %	± 0.3 % or 2 % reading
Methane (CH_4)		NDIR	0 ... 3,000/10,000 ppm	1 ppm	± 20 ppm or 2 % reading
Propane (C_3H_8)		NDIR	0 ... 1,000/10,000 ppm	1 ppm	± 10 ppm or 2 % reading
Methane (CH_4)		NDIR	0 ... 1.00/4.00 %	0.01 %	± 0.05 % or 2 % reading
Nitric monoxide (NO_{low})	spec. adjustment		0 ... 300.0 ppm	0.1 ppm	± 2 ppm or 5 % reading
Nitric monoxide (NO)	TÜV certified	EC	0 ... 1,000/5,000 ppm	1 ppm	± 5 ppm or 5 % reading
Nitric dioxide (NO_{2low})	spec. adjustment		0 ... 100.0 ppm	0.1 ppm	± 2 ppm or 5 % reading
Nitric dioxide (NO_2)	TÜV certified	EC	0 ... 200/1,000 ppm	1 ppm	± 5 ppm or 5 % reading
Sulphur dioxide (SO_{2low})	spec. adjustment		0 ... 100.0 ppm	0.1 ppm	± 2 ppm or 5 % reading
Sulphur dioxide (SO_2)	TÜV certified	EC	0 ... 2,000/5,000 ppm	1 ppm	± 10 ppm or 5 % reading
Hydrogen sulphide (H_2S_{low})	spec. adjustment		0 ... 50/500 ppm	0,1 ppm	± 2 ppm or 5 % reading
Hydrogen sulphide (H_2S)		EC	0 ... 2,000/5,000 ppm	1 ppm	± 5 ppm or 5 % reading
Hydrogen (H_2)		EC	0 ... 1,000 2,000 ppm	1 ppm	± 5 ppm or 5 % reading
Other measurements		Method	Measuring range	Resolution	Accuracy**
Stack gas temperature (T_{gas})		NiCrNi	0 ... 1,100 °C	1 °C	± 1 °C or 2 % reading
Combustion air temperature (T_{air})		NiCrNi	0 ... 500 °C	1 °C	± 1 °C or 2 % reading
Ambient air temperature (T_{amb})		NiCrNi	0 ... 100 °C	1 °C	± 1 °C or 2 % reading
Differential pressure (P-Druck)		Piezoresistive	-120 ... +120 hPa	1 Pa	± 2 Pa or 1 % reading
Flow velocity measurement (v)		DiffDruck	3 ... 100 m/s	1 m/s	± 1 m/s or 1 % reading
Standardized ext. signal (AUX connection)		software	for NiCrNi-thermocouple, 0 ... 10 Vdc, 4 ... 20 mA, RS 485		
Combustion calculations (fuel type depend.)		software	Losses, ExcAir, Air Ratio, dew point, CO_2		
Emission calculations		software	mg/Nm³, reference to O_2, g/s, kg/h		

General technical data	
Operating system	LINUX
Display, operation	7" TFT (800 x 480 px) colour 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
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	+5 ... +45 °C; RH up to 95 % non condensing
Storage temperature	-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, optional)
Dimensions (W x H x D)	430 x 290 x 150 mm
Weight	approx. 8 kg only device, approx. 13 kg packed in bag with accessories

Data subject to change without notice. | [1] EC = 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-12745-K0-10-620-SDE

MRU – Competence in gas analysis. For over 35 years.

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