MRU ®
since 1984
AIR fair
EMISSION MONITORING SYSTEMS

NO_x | NO | NO_2 | CO | CO_2 | SO_2 | N_2O | CH_4 | HC as C_3H_8 | O_2

MGA*prime Q*
Portable emissions analysis.

TÜVRheinland ®
ZERTIFIZIERT

Verified and certified according to EN 15267 sheets 1, 2 and 4.
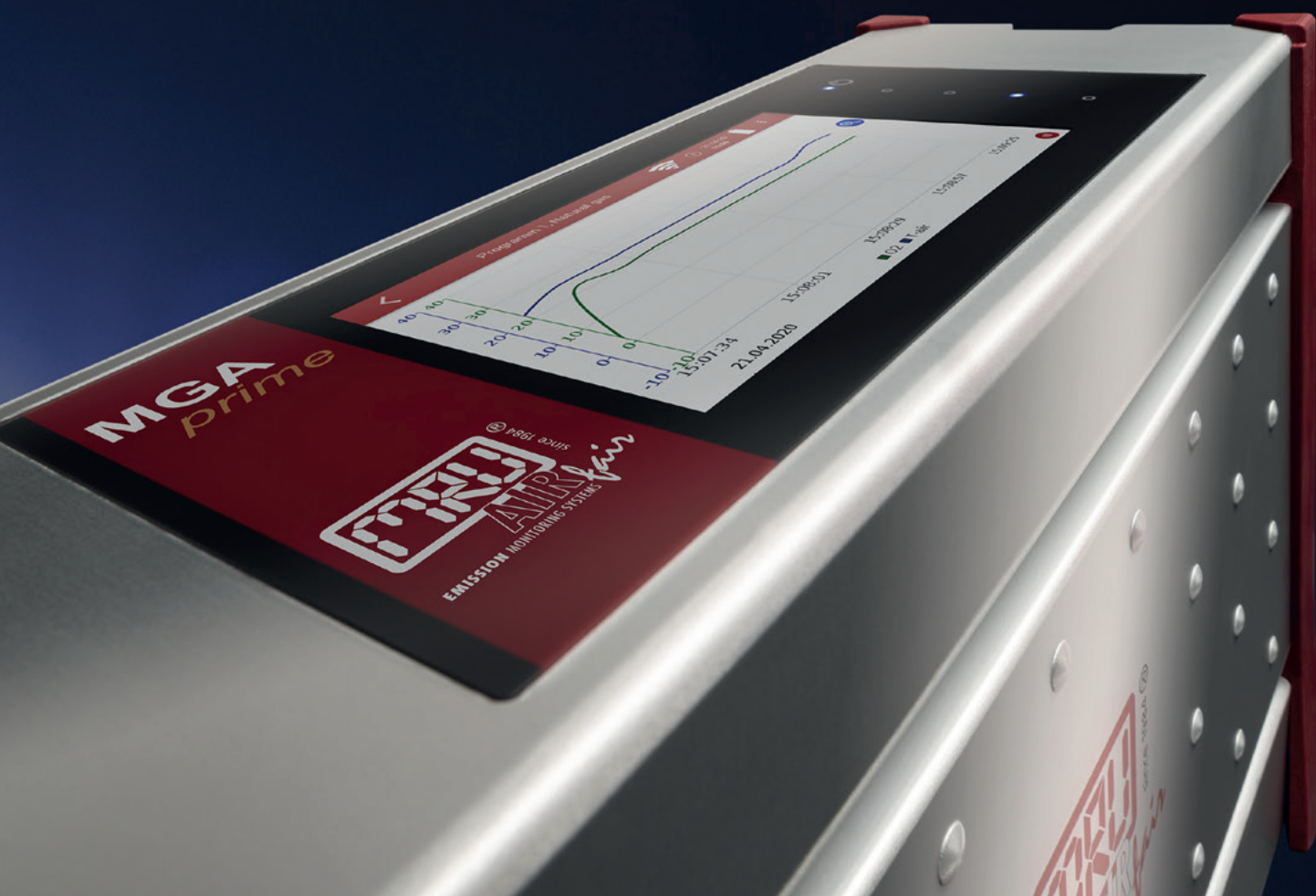
MGA*prime Q*
Certified for official measurements

The gases and measuring ranges

| Gas	Measur. range ppm/mg/Nm³	Add. measuring range ppm/mg/Nm³	TÜV certified	QAL1 certificate
CO	0 ... 176 / 0 ... 220	0 ... 3.000 / 0 ... 3.750	yes	yes
CO_2	0 ... 20 %	0 ... 20 %	yes	yes
NO	0 ... 200 / 0 ... 270	0 ... 2.000 / 0 ... 2.680	yes	yes
NO_2	0 ... 150 / 0 ... 308	0 ... 500 / 0 ... 1.025	yes	applied for
N_2O	0 ... 100 / 0 ... 194	0 ... 250 / 0 ... 484	applied for	applied for
SO_2	0 ... 150 / 0 ... 430	0 ... 1.000 / 0 ... 2.855	applied for	applied for
CH_4	0 ... 500 / 0 ... 357	0 ... 10.000 / 0 ... 7.138	no	no
HC as C_3H_8	0 ... 200 / 0 ... 393	0 ... 5.000 / 0 ... 9.815	no	no
O_2	0 ... 25 %	0 ... 25 %	yes	yes

We offer you these special advantages:

- duration of measurement, interval and averaging can be set by user, measured value display also possible as a curve chart
- Lithium-ion battery operation, including gas cooler and measurement , but without heated hose
- Data transmission LAN, WiFi, USB, RS 485, analog as well 400 MB internal data storage

The device in detail

An overview of the special features
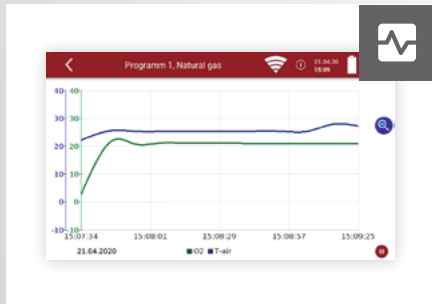
Practical touch display

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 (15 kg) including nylon pouch, IP 42

On the go

Handy nylon IP42 protective bag (part of the certification)

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
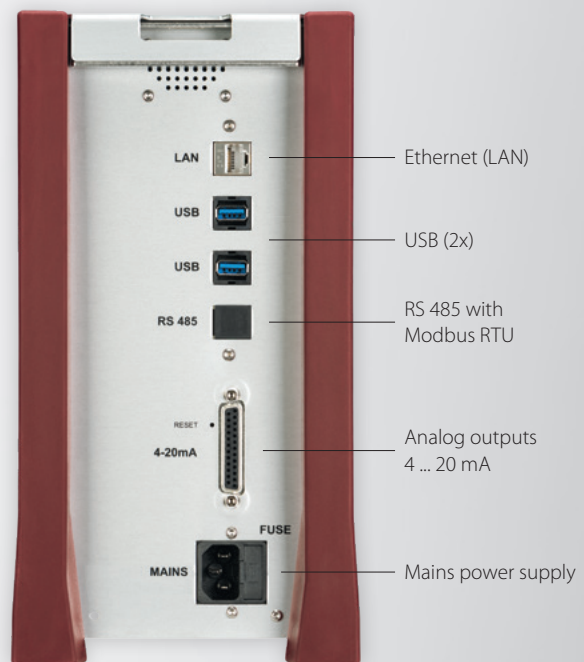device display on smartphone

Zoom function

Variable display modes for the display

Connections and interfaces

Measuring technology

Socket for external sensors

Air temperature

Pressure-/differential pressure

Gas sampling probe connection, electrical

Inlet port for acid injection

Sample gas inlet

Fresh air inlet port

Outlet fan of gas cooler

Sample gas outlet port

Condensate outlet port

Sample gas filter

Data communication

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
- Equipped with probe tube Ø12/300 mm (changeable)
- Also for exhaust gas temperature measurement
- Heated gas sampling line (3 m)
- Easy to change filter in the probe head
- Filters can be filled with different material, depending on the amount of dirt

Effective filter system, quickly exchangeable by the user, filled with:

- Glass wool for high amounts of dirt
- Filter sleeve for little dirt

Double stage gas cooler

- Keeps sample gas at a constant dew point of 4 °C
- Constant dew point compensates the cross sensitivity of water on the measured gas components
- Automatic condensate delivery

Gas pump

- Powerful pump for use with high negative pressure
- Regulation on low, constant flow volume to increase in filter life
- High contamination alarm of the filter

Phosphoric acid dosage

- Controlled injection of 10 % phosphoric acid for reliable, precise measurement of SO_2 and NO_2

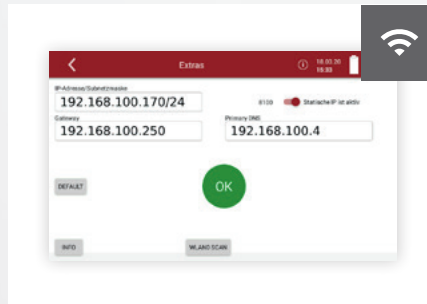# Data transmission and measurement
The technology behind

Data transmission
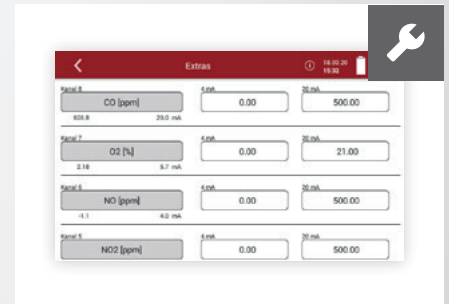
Fully equipped standard device:

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

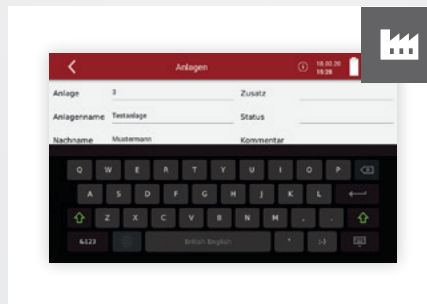**Internal data storage:**

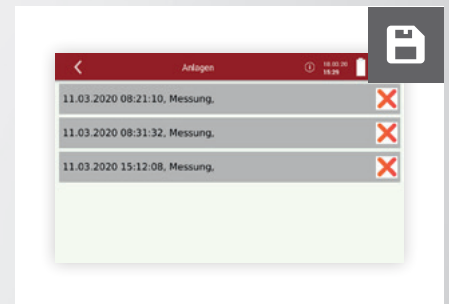The huge memory with 400 MB offers space for thousands of facilities and data sets.

Set LAN

Set analog outputs

Manage facilities

Save measurements by facility

High quality measurement technology

The optimized NDIR measurement technology of the MGA*prime Q* guarantees standard-compliant measuring ranges and accuracies without zero point drift.

- Double tube infrared module for gas analysis
- Paramagnetic O_2 analysis
- Differential pressure measurement ±100 hPa
- Temperature measurement of flue gas (1,100 °C) and combustion air (500 °C)
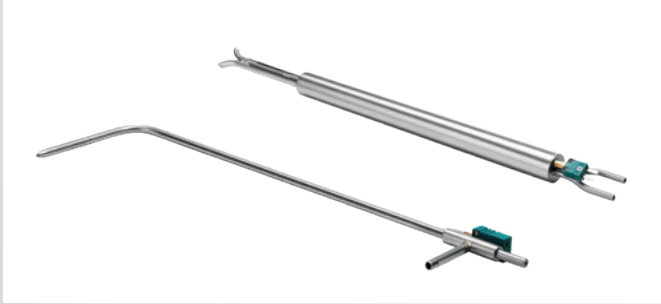- Flow rate measurement and volume flow calculation
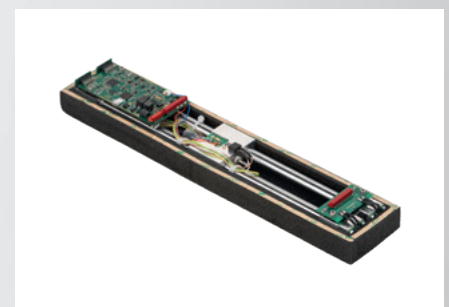
Equipment

8 channel NDIR module
NO, NO_2, CO, CO_2, SO_2,
N_2O, CH_4, HC as C_3H_8

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)

Combustion air temperature sensor

- Length: 300 mm

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

Dosage unit for phosphoric acid

- Controlled dosage and injection of 10 % phosphoric acid for reliable, precise measurement of SO_2 and NO_2

MGA*prime Q*
Technical data

Gas measurement (NDIR)	Measuring range min./max.	Resolution	Repeatability*	8h-Drift*	Linearity
Nitric monoxide (NO)	0 ... 200/2,000 ppm	0.1 ppm	2 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
Nitric dioxide (NO$_2$)	0 ... 150/500 ppm	0.1 ppm	1 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
Sulphur dioxide (SO$_2$)	0 ... 150/1,000 ppm	0.1 ppm	2 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
Carbon dioxide (CO$_2$)	0 ... 20 %	0.01 Vol%	0.2 % or 1 % reading	0.2 % or 1 % reading	1 % m. r.
Carbon monoxide (CO)	0 ... 176/3,000 ppm	0.1 ppm	2 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
Nitrous oxide (N$_2$O)	0 ... 100/250 ppm	0.1 ppm	2 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
Methane (CH$_4$)	0 ... 500/10,000 ppm	0.1 ppm	10 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
Propane (C$_3$H$_8$)	0 ... 200/5,000 ppm	0.1 ppm	2 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.

Gas measurement (PM)	Method[1]	Measuring range	Resolution	Accuracy
Oxygen (O$_2$)	PM	0 ... 25 %	0,01 %	0,1 %

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 1 % reading
Ambient air temperature (T$_{amb}$)	NiCrNi	0 ... 100 °C	1 °C	± 1 °C or 2 % reading
Differential pressure (P-Druck)	Piezoresistive	-100 ... +100 hPa	0.1 Pa	± 2 Pa or 1 % reading
Flow velocity measurement (v)	Pitot	3 ... 100 m/s	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, 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, 96 Wh, for standby 1 hour
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	IP42 inside transport case
Dimensions (W x H x D)	430 x 290 x 150 mm
Weight	approx. 15 kg only device, approx. 10 kg bag with accessories

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

MRU representative:

Data subject to change without notice. | [1] PM = paramagnetic sensor, NDIR = non-dispersive infrared spectroscopy | * which ever is larger | N-12743-K0-10-620-SDE

MRU® since 1984
AIR*fair*
EMISSION MONITORING SYSTEMS