



# MGA<sup>prime</sup>

PREMIUM - flue gas and  
emission analyzer

O<sub>2</sub> | CO<sub>2</sub> | CO | NO<sub>x</sub> | NO | NO<sub>2</sub> | SO<sub>2</sub> | CH<sub>4</sub> | HC as C<sub>3</sub>H<sub>8</sub> | N<sub>2</sub>O



# MGA<sup>prime</sup>

Highly precise NDIR measuring technique

If highly precise NDIR analysis is required for industrial applications, MGA<sup>prime</sup> fulfills exactly these requirements.

With MGA<sup>prime</sup>, simultaneous analysis of up to 8 NDIR gas components is possible:

## We offer you these special advantages:

- Gas conditioning according to CEN/TS -17021
- CH<sub>4</sub>-cross sensitivity compensation for SO<sub>2</sub>
- Duration of measurement, interval and averaging can be set by the user, measured value display also possible as a curve chart
- Automatic zeroing for long-term measurements
- Lithium-ion battery operation, including gas cooler and measurement, but without heating 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



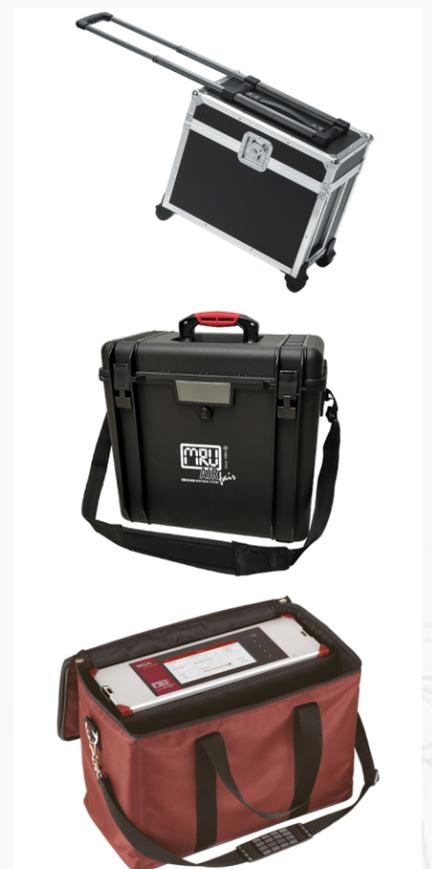
### Comfortable size

Very compact dimensions (W x H x D: 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 clear

## Operating options



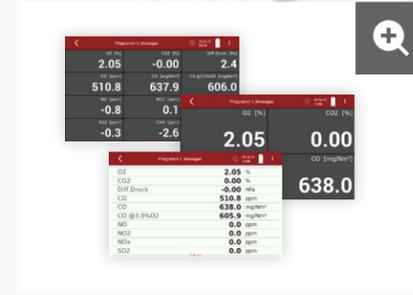
### Touchscreen

Device operation via the 7" touch/swipe display, resolution 800 x 480 px, 750 cd/m<sup>2</sup>



### Wireless

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

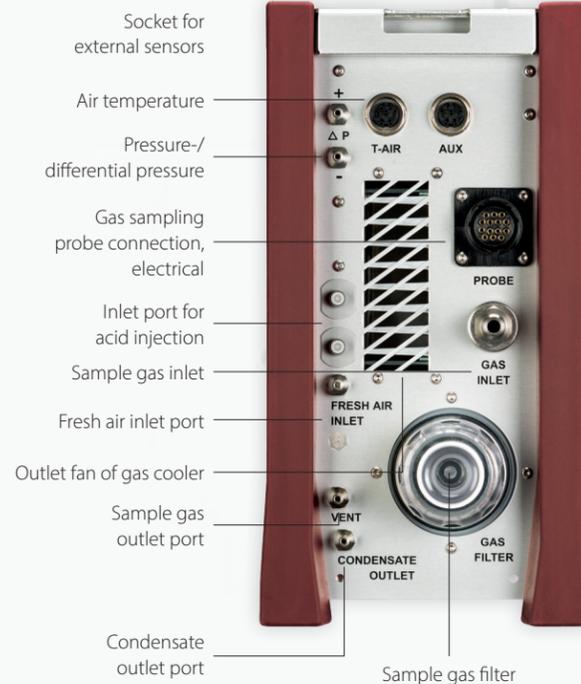


### Zoom function

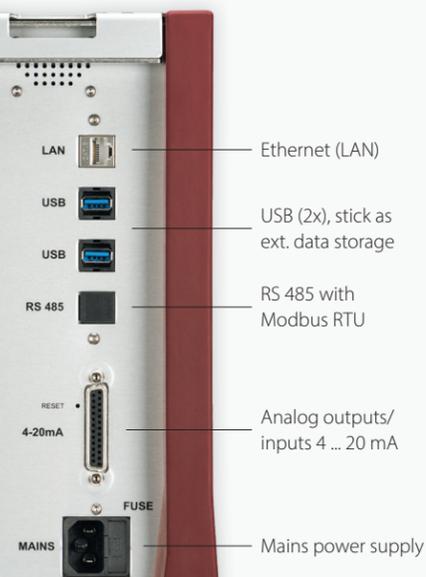
Variable display modes for the display

## Connections and interfaces

### Measurement ports



### Communication/power ports



# Gas Conditioning

An overview

## Gas sampling probe

- Robust industrial probe with heated hose
- Probe tubes of different lengths attachable
- Also possible for flue gas temperatures up to 2,012 °F
- Heated gas sampling line (9.84' - 16.4' or up to 164 foot)
- Exchangeable probe tubes up to 78.74" length
- Filters can be filled with different material, depending on the amount of dirt



Probe for low dirt applications



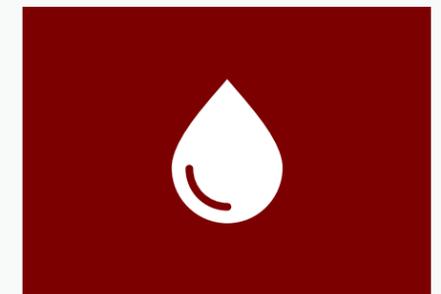
### Double stage gas cooler

- Cools hot sample gas in 2 stages and keeps it at a constant dew point of 39.2 °F
- Constant dew point compensates the cross sensitivity of water on the measured gas components
- Automatic condensate pumps for drainage



### Gas pump

- Powerful gas pump even at high negative pressure sites
- Constant low flow regulation, of 1 l/min. to increase filter life
- High filter contamination alarm
- Easily accessible main filter



### Phosphoric acid dosage

- Controlled injection of 10% phosphoric acid for reliable, precise measurement of SO<sub>2</sub> and NO<sub>2</sub>
- Required device APE, incl. acid storage container delivered ready for connection

# Data transmission & measurement

## The technology

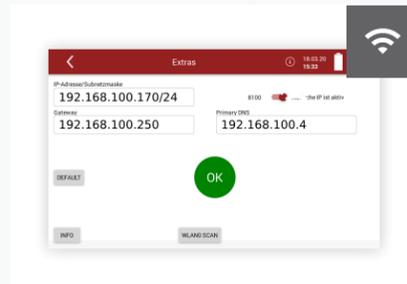
### Data transmission

#### Fully equipped standard device:

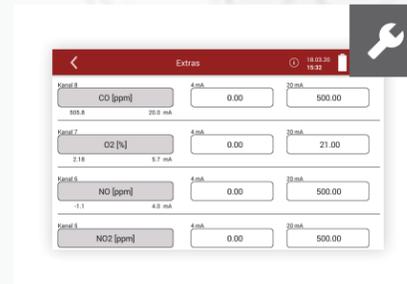
- Ethernet (LAN) TCP/IP
- WiFi
- 8 analog outputs 4 ... 20 mA
- 4 analog inputs
- USB (2x)
- RS 485

#### Internal data storage:

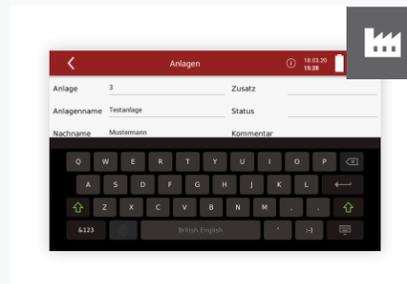
The huge memory with 400 MB offers space for thousands of facilities and data sets.



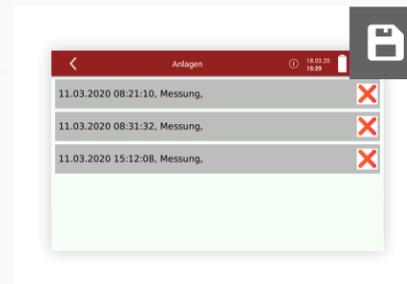
Set LAN



Set analog outputs



Manage facilities



Save measurements by facility

### High quality measurement technology

The advanced and optimized infrared measurement technology of the **MGAprime** guarantees a high measuring accuracy without zero drift.

- Optional sensors, electrochemical for H<sub>2</sub> and H<sub>2</sub>S analysis



#### 8 channel NDIR module

NO, NO<sub>2</sub>, CO, CO<sub>2</sub>, SO<sub>2</sub>,  
N<sub>2</sub>O, CH<sub>4</sub>, HC as C<sub>3</sub>H<sub>8</sub>

#### 6 channel NDIR module

NO, NO<sub>2</sub>, CO, CO<sub>2</sub>, SO<sub>2</sub>, HC as CH<sub>4</sub>

Optional sensors for  
H<sub>2</sub> and H<sub>2</sub>S analysis available

#### 6 channel NDIR module

NO, NO<sub>2</sub>, CO, CO<sub>2</sub>, SO<sub>2</sub>, HC as C<sub>3</sub>H<sub>8</sub>

Optional sensors for  
H<sub>2</sub> and H<sub>2</sub>S analysis available

### Equipment variants

- Paramagnetic or electrochemical sensor for O<sub>2</sub>
- Differential pressure measurement
- Temperature measurement of flue gas and combustion air
- Flow rate measurement and volume flow calculation

# Convenient Accessories

## For more flexibility



#### Pitot tubes for flow velocity measurement

- L-type or S-type with temperature measurement (up to 1,832 °F), length: 12" ... 60"
- Measuring ranges from 3 to 100 m/s at a resolution of 0.1 m/s
- Additional calculation of the volume flow (m<sup>3</sup>/s)



#### Dosage unit for phosphoric acid

- According to CEN/TS-17021
- Acid injection ensures precise measuring results especially at small measuring ranges of SO<sub>2</sub>
- Prevents the gas cooler from drying out



#### USB to Bluetooth converter set

- wireless long distance data transfer to PC/Notebook with MRU4win (up to 985 foot)



#### 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

## TECHNICAL SPECIFICATIONS

Gas measurement (NDIR)	Measuring range min./max.	Resolution	Repeatability	8h-Drift	Linearity
NO Nitric oxide	0 ... 200 / 4,000 ppm	0.1 ppm	2 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
NO <sub>2</sub> Nitric dioxide	0 ... 300** / 1,000 ppm	0.1 ppm	5 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
SO <sub>2</sub> Sulfur dioxide	0 ... 300** / 4,000 ppm	0.1 ppm	5 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
CO <sub>2</sub> Carbon dioxide	0 ... 40%	0.01%	0.2 % or 1 % reading	0.2 % or 1 % reading	1 % m. r.
CO Carbon monoxide	0 ... 175 / 10,000 ppm	0.1 ppm	2 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
N <sub>2</sub> O Nitrous dioxide	0 ... 100 / 500 ppm	0.1 ppm	2 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
CH <sub>4</sub> Methane	0 ... 500 / 10,000 ppm	0.1 ppm	10 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
C <sub>3</sub> H <sub>8</sub> Propane	0 ... 200 / 5,000 ppm	0.1 ppm	2 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.

Gas measurement (EC/PM)	Method	Measuring range min./max.	Resolution	Accuracy
O <sub>2</sub> Oxygen (Long Life)	EC	0 ... 25 %	0.01%	0.20% absolute
O <sub>2</sub> Oxygen	PM	0 ... 25 %	0.01%	0.1%

Other measurements	Method	Measuring range	Resolution	Accuracy*
Stack gas temperature (T <sub>gas</sub> )	NiCrNi	0 ... 2,012 °F	1 °F	± 4 °F or 2 % reading
Combustion air temperature (T <sub>air</sub> )	NiCrNi	0 ... 212 °F	1 °F	± 2 °F or 1 % reading
Differential pressure (P-Druck)	Piezoresistive	-48 ... +48 inH <sub>2</sub> O	0.001 inH <sub>2</sub> O	± 0.008 inH <sub>2</sub> O 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 <sub>2</sub>		
Emissions calculations	Software	mg/Nm <sup>3</sup> , reference to O <sub>2</sub>		

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, 96 Wh, for standby 1 hour
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. 22 lbs. (10 kg) device only, approx. 22 lbs. (10 kg) per bag (1x device and 1x accessories)



**MRU Instruments, Inc.**  
 Humble, TEXAS 77396 USA  
 Tel.: +1 (832) 230-0155  
 Info@mru-instruments.com  
 www.mru-instruments.com

MRU Representative: