MGA*prime*

PREMIUM - flue gas and emission analyzer

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

MGA*prime*

Highly precise NDIR measuring technique

If highly precise NDIR analysis is required for industrial applications, MGAprime fulfills exactly these requirements.

With **MGA*prime,*** simultaneous analysis of up to 8 NDIR gas components is possible:

We offer you these special advantages:

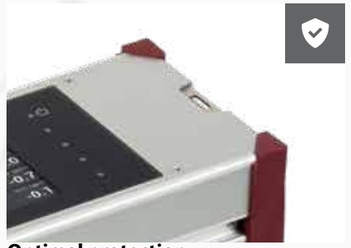
- Gas conditioning according to CEN/TS -17021
- CH_4-cross sensitivity compensation for SO_2
- Duration of measurement, interval and averaging can be set by the user, measured value display also possible as a curve chart
- Automatic zeroing for long-term measurements
- Lithium-ion battery operation, 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

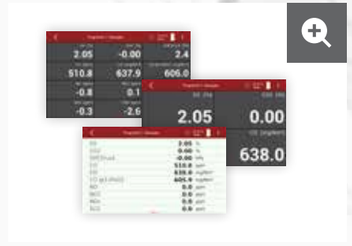
Operating options

Touchscreen

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

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_2 and NO_2
- 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 MGA*prime* guarantees a high measuring accuracy without zero drift.

- Optional sensors, electrochemical for H_2 and H_2S analysis

8 channel NDIR module	**6 channel NDIR module**	**6 channel NDIR module**
NO, NO_2, CO, CO_2, SO_2, N_2O, CH_4, HC as C_3H_8	NO, NO_2, CO, CO_2, SO_2, HC as CH_4 Optional sensors for H_2 and H_2S analysis available	NO, NO_2, CO, CO_2, SO_2, HC as C_3H_8 Optional sensors for H_2 and H_2S analysis available

Equipment variants

- Paramagnetic or electrochemical sensor for O_2
- 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 (m³/s)

Dosage unit for phosphoric acid

- According to CEN/TS-17021
- Acid injection ensures precise measuring results especially at small measuring ranges of SO_2
- 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

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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_2	Nitric dioxide	0 … 300** / 1,000 ppm	0.1 ppm	5 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
SO_2	Sulfur dioxide	0 … 300** / 4,000 ppm	0.1 ppm	5 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
CO_2	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_2O	Nitrous dioxide	0 … 100 / 500 ppm	0.1 ppm	2 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
CH_4	Methane	0 … 500 / 10,000 ppm	0.1 ppm	10 ppm or 1 % reading	2 ppm or 1 % reading	1 % m. r.
C_3H_8	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_2	Oxygen (Long Life)	EC	0 … 25 %	0.01%	0.20% absolute
O_2	Oxygen	PM	0 … 25 %	0.01%	0.1%

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, 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)

Data subject to change without notice. | 1 EC = elektrochemical sensor, PM = paramagnetic sensor, NDIR = non-dispersive infrared spectroscopy | * which ever is larger | **150 ppm possible with optional APE-box | N-12744-K2-0,5M-0821

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