



Sensonic cgm

continuous gas measurements

CHARACTERISTIC	FEATURES	TECHNICAL DATA	SENSORS	EQUIPMENT	APPEARANCE
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Small in size, yet very skillful analyser – it has the best capabilities/price ratio. Sensonic CGM is our alternative for large, intricate CEMS systems, as it does not fall behind them concerning functionality and abilities, and is far ahead in terms of expenses.

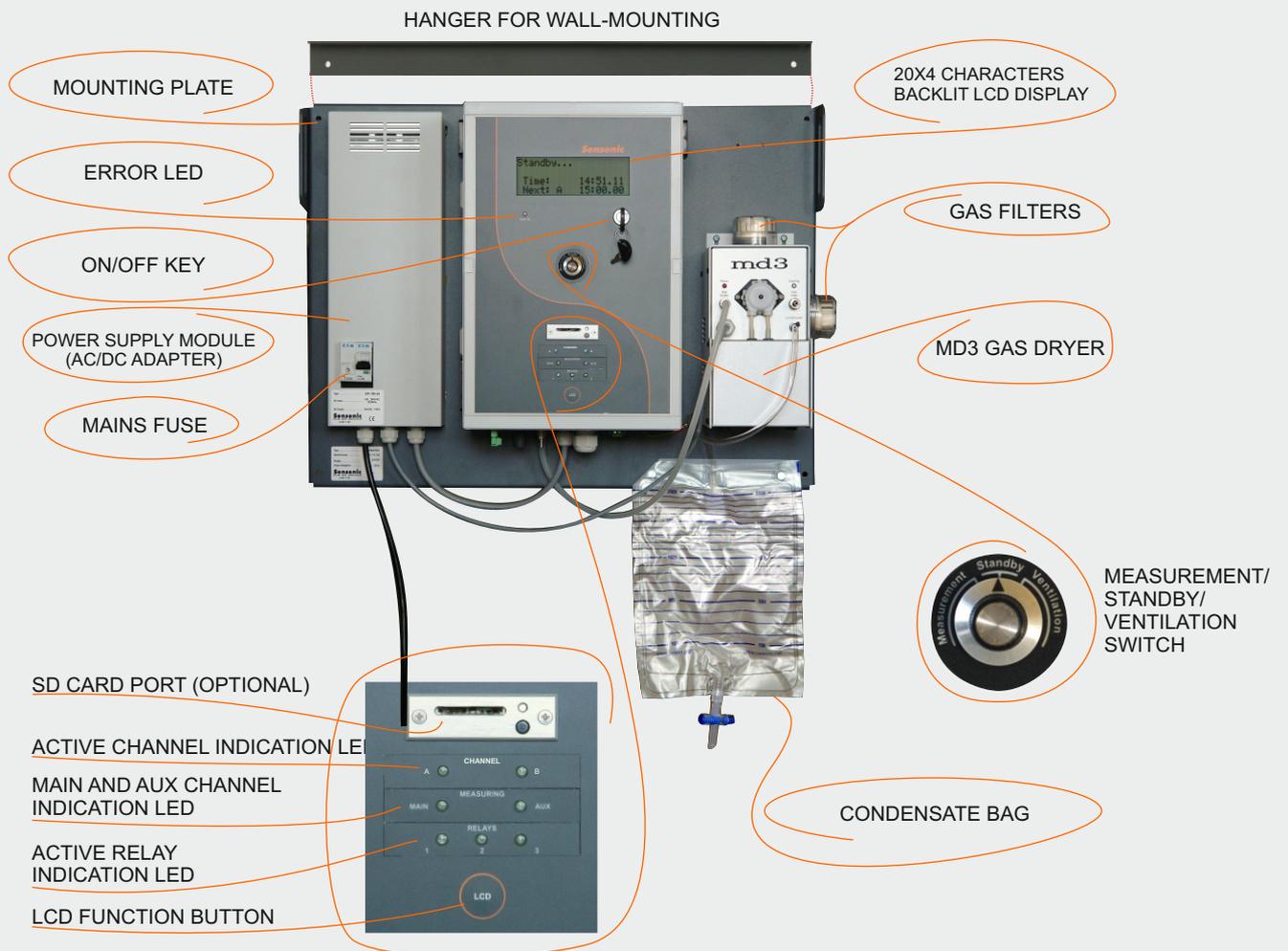
It has modular construction, and many add-ons, that makes it easily adjustable to a very specific, individual application.

Powerful PC software allows to adopt many aspects of the analyser's work very individually (work schedule, analogue outputs' behaviour, data presentations, and more...).

Manufactured according to the principles of ISO 10396.

CHARACTERISTIC	FEATURES	TECHNICAL DATA	SENSORS	EQUIPMENT	APPEARANCE
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- Standard configuration consists up to 6 sensors (NDIR and electrochemical)
- Up to 8 sensors in an extreme, unique configuration
- **NEW** Large display with backlight, 4 lines x 20 characters
- Different types of gas dryers to fit the customers needs
- Compact, Split and Twin split configurations
- Data-logger with SD card for results collection
- Analogue outputs (both current and voltage) to control external devices
- Digital and analogue inputs to pass signals from external devices, to trigger Sensonic CGM actions
- Communication with PC via different interfaces (**USB, LAN, RS485 and MODBUS**)
- Different work modes to select from (continuous measurements, work with scheduler, measurements triggered with digital input, "work in-turns" - allows to measure from two different sources, and more...)
- Powerful PC program to adjust the analyser's settings and to view the results
- Rich offer of add-ons and accessories
- **NEW** Possibility to work with heated hoses
Standard lengths: 3m 5m, 8m for 115VAC and 230VAC supply.



COMPACT CONFIGURATION

ALL MOUNTED AT MEASUREMENT SITE

WITH MD2 GAS DRYER



WITH MD3 GAS DRYER



SPLIT CONFIGURATION

ANALYSER AND GAS DRYER ARE INSTALLED SEPARATELY, EACH WITH ITS OWN POWER SUPPLY
GAS DRYER INSTALLED ON THE MEASUREMENT PLACE, ANALYSER CAN BE IN A DISTANCE

ANALYSER UNIT



GAS CONDITIONING UNIT



GAS CONNECTION

TWIN SPLIT CONFIGURATION

ANALYSER AND TWO GAS DRYERS, EACH WITH A POWER SUPPLY. EACH DRYER IS AT THE MEASUREMENT SITE. SENSONIC CGM MEASURES IN TURNS - ONE CYCLE PER LOCATION.

ANALYSER UNIT WITH A DRYER



GAS CONDITIONING UNIT



GAS CONNECTION

GAS CONDITIONING UNIT



ANALYSER UNIT



SECOND GAS CONDITIONING UNIT



GAS CONNECTION

CHARACTERISTIC	FEATURES	TECHNICAL DATA	SENSORS	EQUIPMENT	APPEARANCE
SENSONIC CGM GAS ANALYSER					
Dimensions (W * H * D)					240 mm * 360 mm * 160 mm
Weight (depends on equipment)					4kg ÷ 5kg
Casing material					ABS
Mounting plate: dimensions (H*W) material weight					596 mm * 450 mm aluminium 1,9 kg
Operating conditions					T: 10°C ÷ 50°C; RH: 5%÷90% (non condensing)
Storing temperature					0°C ÷ 55°C
Power consumption (analyser only)					30W max
Data-logger: type size number of results					SD flash card max 4GB practically unlimited
Display: type maximum number of results per screen					20 characters x 4 rows 4 measurement results
Gas pump: type max gas flow standard gas flow					Diaphragm max 2l/min 1.5l/min (90l/h) - with automatic flow control
Current analogue outputs					4 outputs 0 mA ÷ 20 mA or 4 mA ÷20 mA
Voltage analogue outputs					4 outputs 0 V ÷ 5 V or 0 V ÷ 10 V
Digital inputs					2 inputs, TTL levels, floating - high level
Digital outputs					1 open collector output + 2 SPDT relays (optional)
Communication interface with PC computer					B type USB
POWER SUPPLY UNIT					
Dimensions (W * H * D)					360 mm * 130 mm * 56 mm
Weight					1,4kg
Casing material					Aluminium
Mounting plate					Power supply is mounted on common plate with analyser unit
Operating conditions					T: 10°C ÷ 50°C; RH: 5% ÷ 90% (non condensing)
Storing temperature					-20°C ÷ 55°C
Input voltage					100 ÷ 240 V AC 50 / 60 Hz
Output voltage					24V DC / 6,3 A 150W
Output current					6,3A max
Mains fuse					6A
Cable pass					2 pcs PG-9

MD2 GAS DRYER



Dimensions (W * H * D)	211 mm * 74 mm * 82 mm
Weight	450g
Drying method	Water condensation by rapid cooling down
Cooler type	Based on Peltier cooling element with fan (7VDC supply)
Cooling temperature	Down to +4°C electronically stabilised Dew point of outlet gas 8°C below the temperature of inlet gas
Ready to operate after	10 minutes
Operating conditions	T: 0°C ÷ 35°C, RH: 5% ÷ 90% (non-condensing)
Storing temperature	0°C ÷ 55°C
Maximum gas flow for efficient drying (at inlet gas temp. 100°C and RH 100%)	40 l/h
Gas filter	Integrated, with condensate reservoir and replaceable insert
Filter insert: length ID OD material pore size	32mm 15mm 20mm PE 5µm
Condensate removal	With peristaltic pump installed in analyser's body
Peristaltic pump capacity	38 ml/min
Power supply	Via Sensonic CGM (through 15-pin D-SUB connector)
Power consumption	9 W

MD3 GAS DRYER



Without filters: 110 mm * 205 mm * 160 mm
With filters: 145 mm * 240 mm * 160 mm

Dimensions (W * H * D)

Weight

1790 g (single filter version)

Drying method

Water condensation by rapid cooling down

Cooler type

Based on Peltier cooling element with fan (12VDC supply)

Cooling temperature

Constant, about +1°C, output gas dewpoint about +4°C

Ready to operate after

5 minutes

Operating conditions

T: 0°C ÷ 50°C, RH: 5% ÷ 90% (non-condensing)

Storing temperature

0°C ÷ 55°C

Maximum gas flow for efficient drying
(at inlet gas temp. 100°C and RH 100%)

100 l/h

Gas filters: quantity | material

1 (optionally 2) | PA - body, PC - cover, viton - sealing

Filter insert: length | ID | OD | material | pore size

42mm | 26mm | 32mm | glass fibre | 2µm

Condensate removal

With built-in peristaltic pump

Peristaltic pump capacity

38 ml/min

Power consumption

30 W

CHARACTERISTIC	FEATURES	TECHNICAL DATA	SENSORS	EQUIPMENT	APPEARANCE
Method		Range Resolution	Accuracy	Time (T90)	Conformity
O₂ - OXYGEN					
Electrochemical, partial pressure		20,95% 0,01%	± 0,2% abs. or 5% rel.	45 sec	ISO 12039; CTM-030
Electrochemical, partial pressure		25,00% 0,01%	± 0,2% abs. or 5% rel.	45 sec	ISO 12039; CTM-030
Electrochemical, partial pressure		100,00% 0,1%	± 0,2% abs. or 5% rel.	45 sec	ISO 12039; CTM-030
Paramagnetic		25,00% 0,01%	± 0,2% abs. or 5% rel.	45 sec	EN 14789; OTM-13
Paramagnetic		100,00% 0,1%	± 0,2% abs. or 5% rel.	45 sec	EN 14789; OTM-13
CO - CARBON MONOXIDE					
Electrochemical		4 000 ppm 1 ppm	± 5 ppm abs. or 5% rel.	45 sec	ISO 12039; CTM-030
Electrochem., with H2 compensation		4 000 ppm 1 ppm	± 5 ppm abs. or 5% rel.	45 sec	ISO 12039; CTM-030
Electrochemical		20 000 ppm 1 ppm	± 5 ppm abs. or 5% rel.	45 sec	ISO 12039; CTM-030
Electrochem., with H2 compensation		20 000 ppm 1 ppm	± 5 ppm abs. or 5% rel.	45 sec	ISO 12039; CTM-030
Electrochemical		10% 0,001%	±0,005% abs. or 5% rel.	45 sec	ISO 12039; CTM-030
NDIR		10% 0,01%	± 0,05% abs. or 5% rel.	45 sec	EN 15058; Method 10
NDIR		25% 0,01%	± 0,05% abs. or 5% rel.	45 sec	EN 15058; Method 10
NDIR		50% 0,01%	± 0,05% abs. or 5% rel.	45 sec	EN 15058; Method 10
NDIR		100% 0,1%	± 0,5% abs. or 5% rel.	45 sec	EN 15058; Method 10
CO₂ - CARBON DIOXIDE					
NDIR		5% 0,01%	± 0,05% abs. or 5% rel.	45 sec	ISO 12039; OTM-13
NDIR		10% 0,01%	± 0,05% abs. or 5% rel.	45 sec	ISO 12039; OTM-13
NDIR		25% 0,01%	± 0,05% abs. or 5% rel.	45 sec	ISO 12039; OTM-13
NDIR		50% 0,01%	± 0,05% abs. or 5% rel.	45 sec	ISO 12039; OTM-13
NDIR		100% 0,1%	± 0,5% abs. or 5% rel.	45 sec	ISO 12039; OTM-13
CH₄ - METHANE					
NDIR		1% 0,01%	± 0,05% abs. or 5% rel.	45 sec	
NDIR		5% 0,01%	± 0,05% abs. or 5% rel.	45 sec	
NDIR		10% 0,01%	± 0,05% abs. or 5% rel.	45 sec	
NDIR		25% 0,01%	± 0,05% abs. or 5% rel.	45 sec	
NDIR		50% 0,01%	± 0,05% abs. or 5% rel.	45 sec	
NDIR		100% 0,1%	± 0,5% abs. or 5% rel.	45 sec	
NO - NITRIC OXIDE					
Electrochemical		1 000 ppm 1 ppm	± 5 ppm abs. or 5% rel.	45 sec	CTM-022
Electrochemical		5 000 ppm 1 ppm	± 5 ppm abs. or 5% rel.	45 sec	CTM-022
NO₂ - NITROGEN DIOXIDE					
Electrochemical		1 000 ppm 1 ppm	± 5 ppm abs. or 5% rel.	60 sec	CTM-022
Electrochemical		4 000 ppm 1 ppm	± 5 ppm abs. or 5% rel.	60 sec	CTM-022
SO₂ - SULPHUR DIOXIDE					
Electrochemical		2 000 ppm 1 ppm	± 5 ppm abs. or 5% rel.	45 sec	
Electrochemical		5 000 ppm 1 ppm	± 5 ppm abs. or 5% rel.	45 sec	

CHARACTERISTIC	FEATURES	TECHNICAL DATA	SENSORS	EQUIPMENT	APPEARANCE
Method		Range Resolution	Accuracy	Time (T90)	Conformity
H₂S- HYDROGEN SULFIDE					
Electrochemical		1 000 ppm 1 ppm	± 5 ppm abs. or 5% rel.	70 sec	
Electrochemical		10 000 ppm 1 ppm	± 5 ppm abs. or 5% rel.	45 sec	
H₂ - HYDROGEN					
Electrochemical		2 000 ppm 1 ppm	± 10 ppm abs. or 5% rel.	50 sec	
Electrochemical		20 000 ppm 1 ppm	± 10 ppm abs. or 5% rel.	70 sec	
Thermal Conductivity Detector		10% 0,1%	± 0,5% abs. or 5% rel.	45 sec	
Thermal Conductivity Detector		25% 0,1%	± 0,5% abs. or 5% rel.	45 sec	
Thermal Conductivity Detector		50% 0,1%	± 0,5% abs. or 5% rel.	45 sec	
Thermal Conductivity Detector		100% 0,1%	± 0,5% abs. or 5% rel.	45 sec	
N₂O - NITROUS OXIDE					
NDIR		2 000 ppm 1 ppm	± 10 ppm abs. or 5% rel.	45 sec	ISO 21258
NDIR		5 000 ppm 1 ppm	± 10 ppm abs. or 5% rel.	45 sec	ISO 21258
CHF₃ - FLUOROFORM (REFRIGERANT R23)					
NDIR		2,5% 0,01%	± 0,05% abs. or 5% rel.	45 sec	
Cl₂ - CHLORINE					
Electrochemical		250 ppm 1 ppm	± 5 ppm abs. or 5% rel.	60 sec	
VOC - VOLATILE ORGANIC COMPOUNDS					
PID - Photoionization Detector		100 ppm 1 ppm	± 5 ppm abs. or 5% rel.	120 sec	METHOD 21
PID - Photoionization Detector		1 000 ppm 1 ppm	± 5 ppm abs. or 5% rel.	120 sec	METHOD 21
MEASUREMENTS					
Variable		Method	Range Resolution	Accuracy	Time (T₉₀)
T _{gas} - gas temperature		K-type thermocouple	-10 ÷ 1000°C 0,1°C	± 2°C	10 sec
T _{gas} - gas temperature		S-type thermocouple	-10 ÷ 1500°C 0,1°C	± 2°C	10 sec
T _{amb} - boiler intake air temperature		PT500 resistive sensor	-10 ÷ 100°C 0,1°C	± 2°C	10 sec
Differential pressure		Silicon piezoresistive pressure sensor	-10 hPa ÷ +40 hPa 1 Pa (0,01hPa)	± 2Pa abs. or 5% rel.	10 sec
Gas flow velocity		Indirect, with Pitot tube & pressure sensor	1 ÷ 50 m/s 0,1 m/s	0,3 m/s abs. or 5% rel.	10 sec
Lambda λ - excess air number		Calculated	1 ÷ 10 0,01	± 5°C	10 sec
qA - stack loss		Calculated	0 ÷ 100% 0,1%	± 5°C	10 sec
Eta η - combustion efficiency		Calculated	0 ÷ 120% 0,1%	± 5°C	10 sec

STANDARD EQUIPMENT

SUPPLIED ALONG WITH THE DEVICE

- Sensonic CGM gas analyser on a mounting plate
- Power supply unit that converts mains supply 115VAC or 230VAC to 24VDC for Sensonic CGM
- USB communication cable
- 8 analogue outputs (4x current, 4x voltage)
- 2 digital inputs for triggering Sensonic CGM behavior
- 7-pin connector for Tgas probe (thermocouple connection)
- Software CD with programs and manuals
- 4 wall plugs to attach mounting plate

ADDITIONAL EQUIPMENT

NECESSARY FOR THE ANALYSER TO WORK

- MD2 gas dryer

Md2 gas dryer – economy class Peltier cooler unit - basic equipment of the Sensonic CGM monitor

Ordering code:
ZMAM-DRYER-MD2



- MD3 gas dryer

High efficiency gas dryer based on the Peltier cooling element. Equipped with 1 or 2 microfibre filters. Replaces the basic MD2 dryer.

Ordering code:
Md3 dryer with 1 filter - ZMA3-DRYER-MD3S
Md3 dryer with 2 filters - ZMA3-DRYER-MD3S2



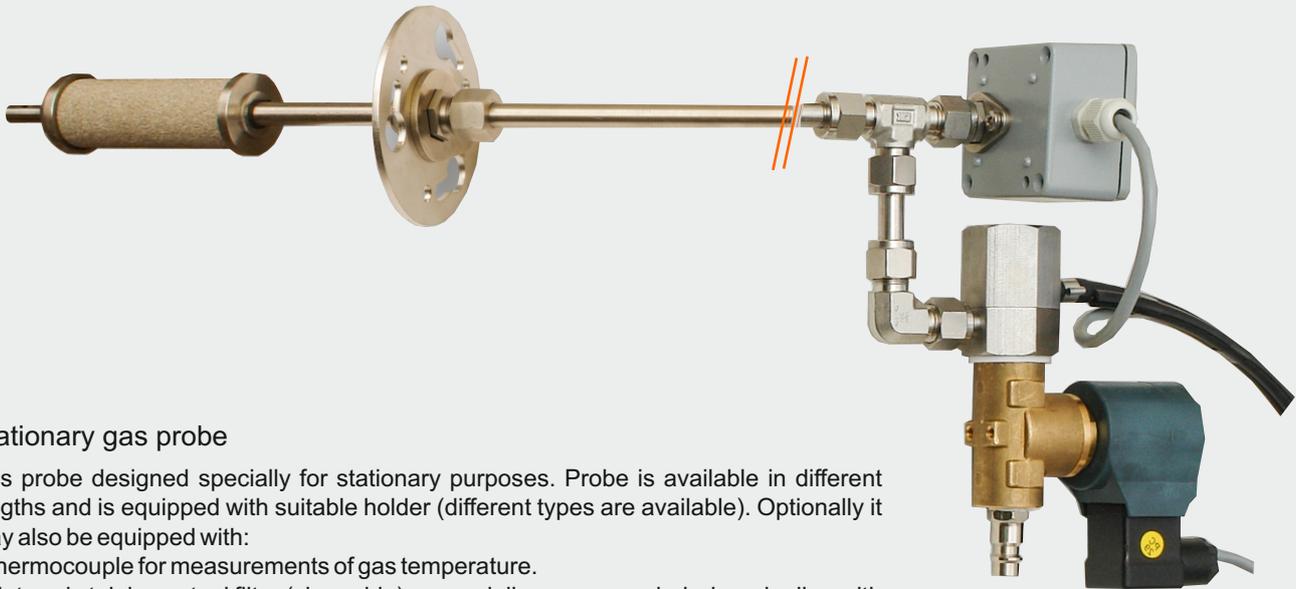
- MD3 gas dryer with power supply unit

Md3 gas dryer with its own power supply module. Can work as a part of Sensonic CGM analyser (in split or twin-split configurations), or as a standalone device.

Ordering code:
M10-00001



OPTIONAL EQUIPMENT & SPARE PARTS



- **Stationary gas probe**

Gas probe designed specially for stationary purposes. Probe is available in different lengths and is equipped with suitable holder (different types are available). Optionally it may also be equipped with:

- Thermocouple for measurements of gas temperature.
- Sintered stainless-steel filter (cleanable) - especially recommended when dealing with high concentration of dust and soot.
- "Blow-back" cleaning option - valve that allows to switch between measured gas and the compressed air inlet that is used for cleaning the sintered filter.

- **Pitot tube**

Pitot tube is used for indirect measurement of gas flow velocity (measurement with the analyser's differential pressure sensor). A few lengths of tubes are available. Pitot tube has 2m gas tubings to connect it with the analyser. It may be provided with a suitable holder for stationary purposes



Ordering codes:

- pitot tube 800mm - Z00-PITOT-8002
- pitot tube 500mm - Z00-PITOT-5002

- **Heated filter**

Heated filter is installed right after the gas probe. It is best when it is paired with heated hose to prevent vapour from condensing.



- **Ethernet / WiFi communication interfaces**

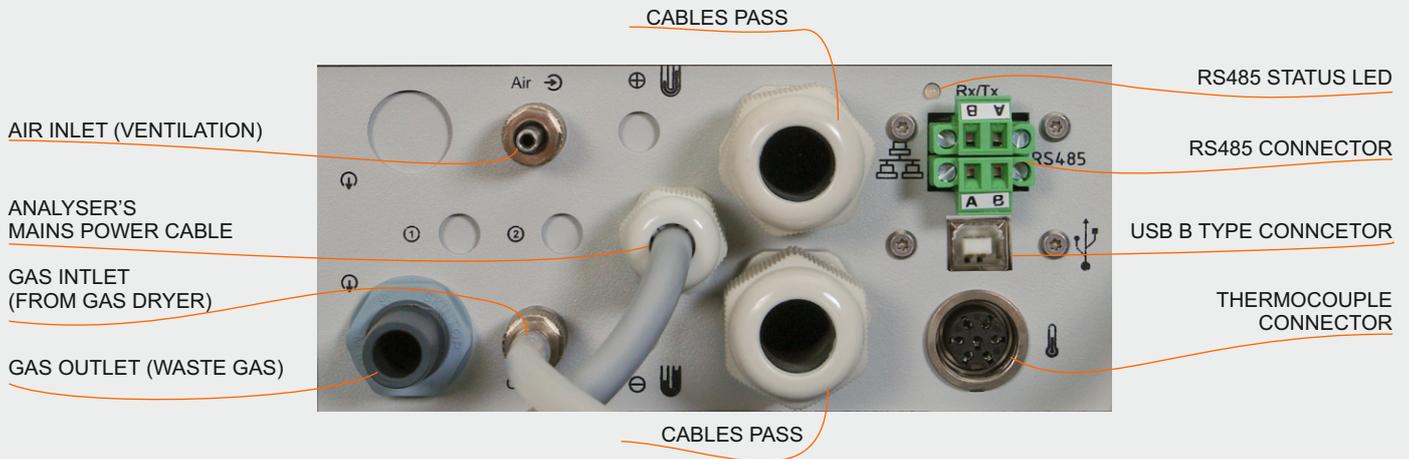
Optional interface allows to communicate with Sensonic cgm analyser within LAN network either via cable or wirelessly with help of special WiFi adapter.



Ordering code:
ZMA3-ADAP-WIFI

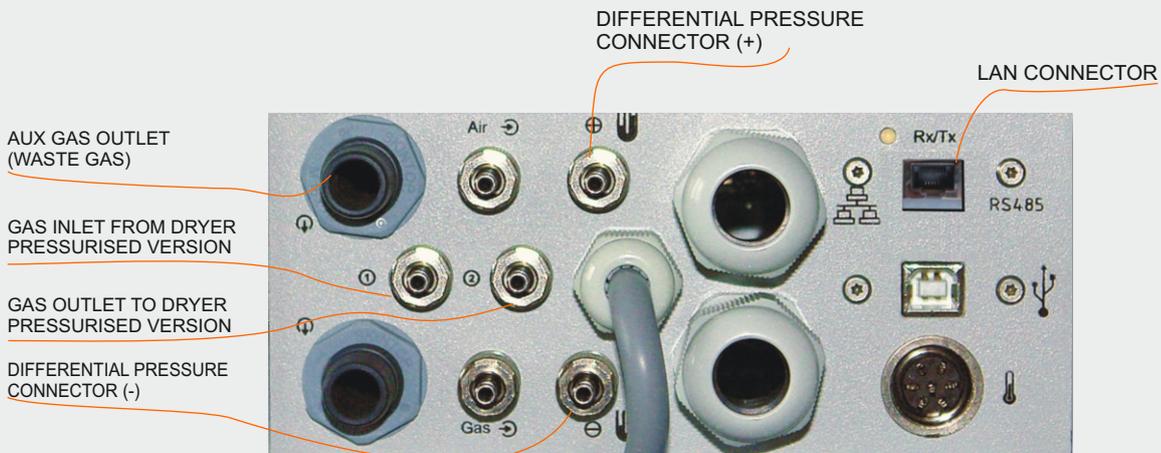
GAS AND ELECTRIC CONNECTORS (ANALYSER BOTTOM VIEW)

CONNECTION PANEL FOR THE STANDARD CONFIGURATION WITH A SINGLE GAS CHANNEL

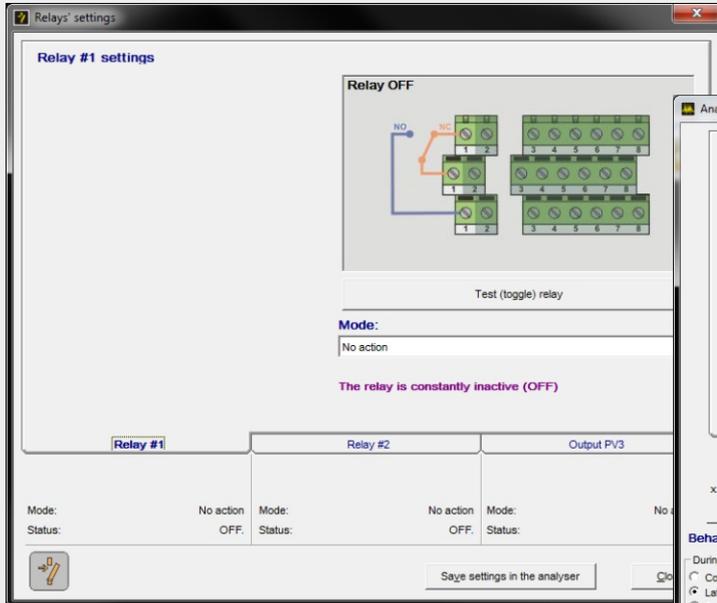


GAS AND ELECTRIC CONNECTORS (ANALYSER BOTTOM VIEW)

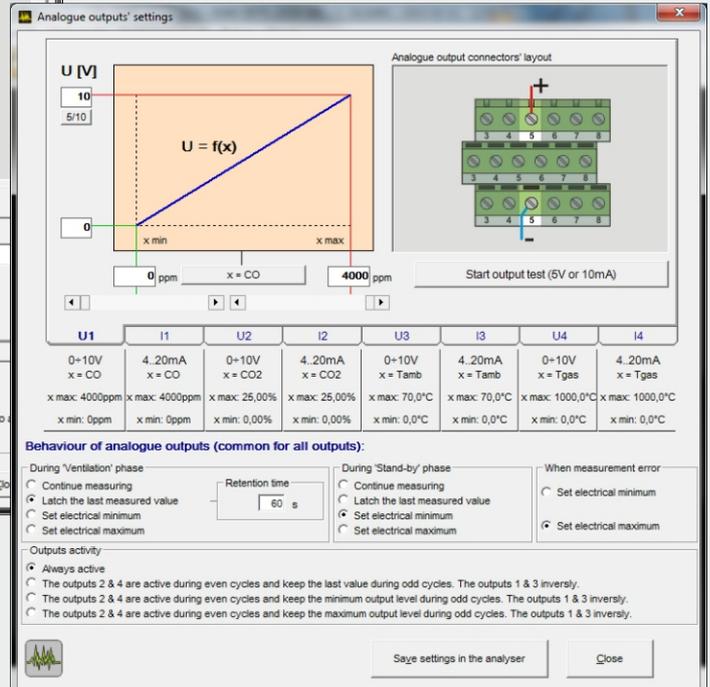
CONNECTION PANEL WITH A DOUBLE GAS CHANNEL



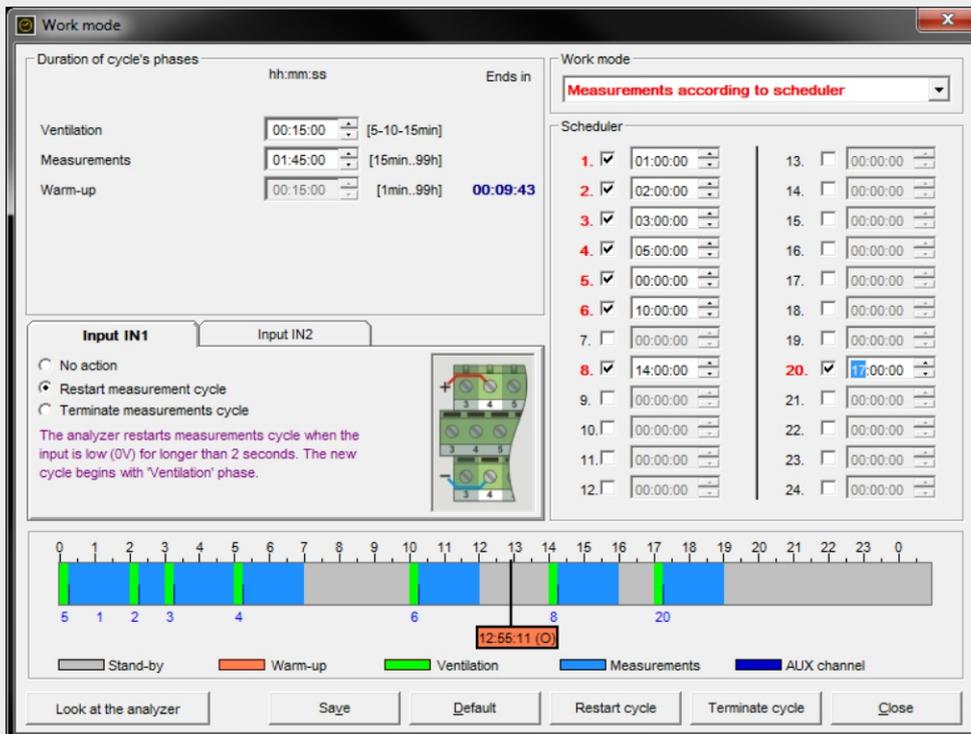
EXAMPLE SCREENSHOTS FROM THE PC



Relays' settings window



Analogue outputs' settings window



"Measurement according to scheduler" work mode window