

## DECLARAȚIE


Prin prezenta, societatea RSIELECTRO SRL, cu sediul în București, str. Vulturii nr.18-18A, sector 3, România, înregistrată în Registrul Comerțului sub numărul J40/28281/1994, cod fiscal RO 6890803, reprezentată legal prin D.L. Alexandru SGARBURĂ, în calitate de administrator, confirmă că firma **MIC-TAN SRL**, cu sediul în Municipiul Chișinău, str. Alexandru cel Bun, nr.38, MD 2001, Republica Moldova, reprezintă societatea RSIELECTRO SRL pe teritoriul Republicii Moldova în ceea ce privește distribuția echipamentelor de analiză a calității aerului produse de compania franceză ENVEA GLOBAL și asigură toate serviciile necesare : școlarizare personal, instalare, punere în funcțiune, service în perioada de garanție și postgaranție.

București,

07.11.2019

Alexandru SGARBURĂ

Administrator





NEW

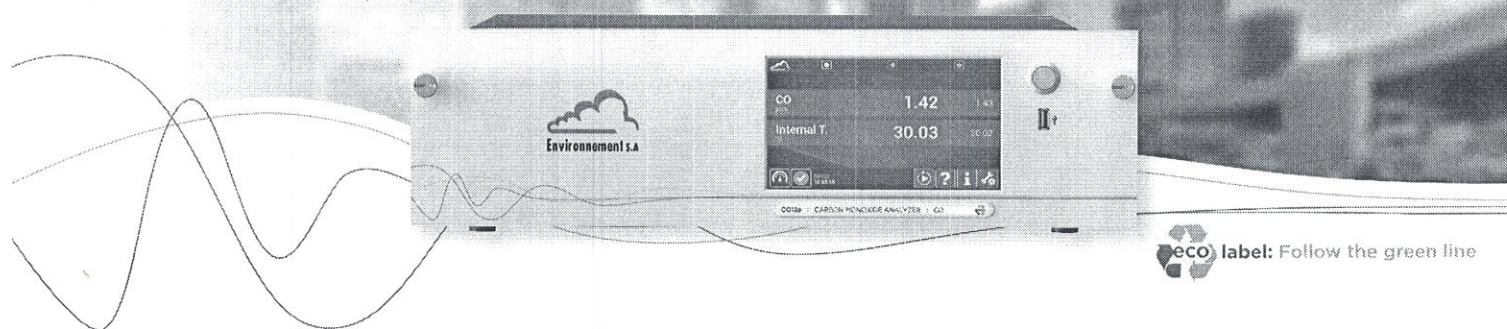


SERIES

AIR QUALITY MONITORING SYSTEMS



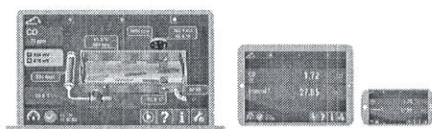
# Non dispersive Infra Red CO analyzer CO12e



**label:** Follow the green line



ESA Connect™



Adopt the no-screen version of the analyzer and avoid the pollution related to the screen manufacturing and recycling cycle: The analyzer is connected with your device (PC, smartphone or tablet)

## E-SERIES ADVANTAGES:

### > Environmental friendly:

- Sustainable eco-design
- Low carbon footprint
- Over 95% of the analyzer can be recycled
- Ultra low power consumption
- No use of heavy metals (eg. Mercury)

### > Long lifespan, excellent accuracy

### > Reliable electronics

### > Economic, Easy and reduced maintenance

### > Common electronic boards: optimized spare parts stock

### > Service Assistant inside

### > Interactivity: connected instruments

## COMPLIANCE WITH:

EN 14626, EN 15267, ISO 4224,  
40 CFR PART 53 SUB B & SUB C 40 CFR PART



TÜV RHEINLAND  
QAL 1 CERTIFIED  
CERTIFICATE N°  
0000050626



U.S. ENVIRONMENTAL  
PROTECTION AGENCY  
APPROVAL  
RFCA-0915-228

## SPECIFIC FEATURES:

- Superior metrological performances for CO measurements in the range 0-300 ppm
- Breakthrough mechanical design for weight and power saving as well as thermal insulation & reliability
- Innovative conception of the optical module for excellent sensitivity and signal stability
- Automatic or programmable response time adjustment, ensuring efficient monitoring of low concentration levels of CO
- Acquisition synchronized to the correlation wheel rotation for great accuracy and repeatability
- Real-time calibration graph, animated synoptic, auto-diagnostic, control and maintenance data screens can be displayed while the instrument is operating
- Service assistant inside: detects early signs of trouble, allows predictive maintenance, identifies the service needed and guides the service operations step by step: increased productivity on site, reduced downtime, more efficiency, less training
- Simultaneous multi-screen remote access via Wifi or LAN using the dedicated application ESA Connect™ for control, diagnostics, software update...
- ESA Connect™ application for iOS and Android available for free download
- Ultra low power consumption (50 W) means environment-friendly and cost-saving analyzer
- Includes embedded Communication Protocol for XR® Management Software with automatic recognition and configuration
- Automatic recognition of plugged electronic boards or optional devices: plug and play principle
- SmartStatusLight™ power button on the front panel indicating if the instrument is ready to use or not (ON/OFF, Alarm, Maintenance required...)

## MAIN APPLICATIONS:

Continuous indoor and outdoor air quality monitoring • Stationary and mobile AQMS laboratories • Industrial fence-line monitoring • Continuous emissions monitoring (CEM) by dilution • Background (urban or suburban), Rural, Traffic, Kerbside measurement campaigns and monitoring studies • Laboratory and field studies on CO effects...

[www.environnement-sa.com](http://www.environnement-sa.com)



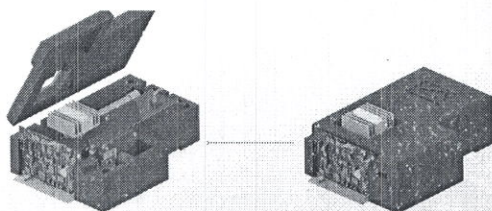


## SPECIFICATIONS:

- Measurement Range: **0-300 ppm**, user selectable and programmable
- Detection limit(2σ): **0.035 ppm**
- Noise: **0.015 ppm**
- Zero drift: **<0.3 ppm/3 months**
- Span drift: **<15% /month**
- Response time: automatic and/or programmable (min 35 s)
- Linearity: **1%** (of the reading value)
- Pressure compensation
- Sample flow-rate: **1 l/h**
- Internal sampling pump
- Internal solenoid valve block for zero air and span gas
- Data storage: 1 year (1 minute data)
- Ethernet network connection (RJ45), 3 x USB ports, 2 dry contacts outputs included
- Integrated web-server with full remote emulation of the analyzer
- Dimensions (mm, LxDxH): 483x545x133
- Chassis: 19" rack, 3U
- Weight: 7,1 kg (15.6 lbs)
- Operating temperature: 10-40°C
- Power supply: 115 V, 60 Hz - 230 V, 50 Hz
- Power consumption: 50 W

## MAIN OPTIONS:

- 7" TFT colour touch screen
- Wireless Stick (in standard with the no-screen version)
- Serial interface (via USB port)
- External opto-isolated I/O interface with:
  - 4 independent analog inputs
  - 4 independent analog outputs
  - 4 remote control inputs
  - 6 dry contacts outputs
- 24 V DC Power supply for on-board applications



CO12e measuring module

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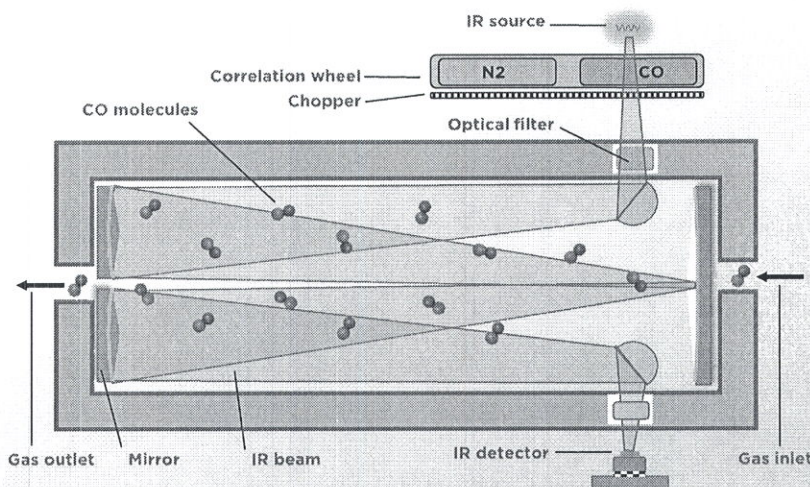
## PRINCIPLE OF OPERATION:

The **CO12e** is a continuous carbon monoxide analyzer with a detection limit of 0.035 ppm. Its measurement principle is based on carbon monoxide detection by absorption of infrared light.

The CO sample concentration is determined by measuring the quantity of infrared light the sample gas absorbs as it flows through a multi-reflection chamber. As the absorption spectrum is not continuous, a gas filter, named correlation wheel, is used in conjunction with the optical filter for highly selective sample gas measurement. The correlation wheel consists of two-sealed and equal volume compartments, one being filled with carbon monoxide (CO), the other with nitrogen (N<sub>2</sub>). As the wheel turns round, the light beam passes alternatively through the CO cell and the N<sub>2</sub> cell and then through interference optical filters before reaching the detector. If the sample contains CO, the reference beam will not be attenuated because it was already attenuated by the CO of the reference cell.

The measuring module and correlation wheel being set in the enclosed foam box for stable temperature and no interference from external conditions, the CO12e offer excellent accuracy and reliability. Using state-of-the-art optical and electronic technologies, the analyzer offers countless advantages while requiring only limited maintenance.

### CO12e Operating Principle



The e-Series of analyzers has been fully eco-designed, with a special consideration to the environmental impacts of the product during its whole lifecycle. The exclusive "inside the box" foam modular concept makes the product more robust, power saving, quieter in operation, simpler to service and eco-friendly.

Detailed information related in the e-Series brochure



# AC32e

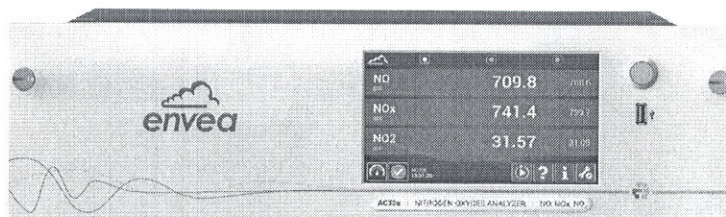


## Chemiluminescence Nitrogen Oxides Analyzer

AIR QUALITY MONITORING SYSTEMS



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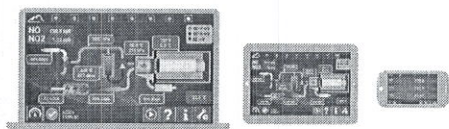


### SPECIFIC FEATURES:

- Excellent metrological performances for NO, NO<sub>2</sub> and NO<sub>x</sub> measurements with selectable display in ppb or µg/m<sup>3</sup>
- Innovative conception of the PM module for excellent sensitivity and signal stability
- Real-time calibration graph, animated synoptic, auto-diagnostic, control and maintenance data screens can be displayed while the instrument is operating
- Service assistance inside: detects early signs of trouble, allows predictive maintenance, identifies the needed service and guides service operations step by step: increased productivity on site, reduced downtime, more efficiency, less training
- Includes embedded Communication Protocol for XR® Software with automatic recognition & configuration
- Ultra low power consumption: an environmentally-friendly and cost-saving analyzer
- Breakthrough mechanical design for weight and power saving as well as thermal insulation & reliability
- Automatic recognition of plugged electronic boards or optional devices: plug & play principle
- Local and remote control through digital port (configuration, calibration, test and diagnosis parameters for maintenance support)
- Optional: 24V power supply and enhanced temperature range for mobile AQMS laboratories or solar powered air quality monitoring stations



ENVEA Connect™  
Free Apps  
IOS / Android



Adopt the no-screen version and avoid the pollution related to the screen manufacturing and recycling cycle. The analyzer is connected with your device (computer, tablet or smart-phone). Simultaneous multi-screen remote access via Wifi or Lan using the dedicated application ENVEA Connect™ for control, diagnostics, software update...

### MAIN APPLICATIONS:

- > Continuous indoor and outdoor air quality monitoring
- > Stationary and mobile AQMS laboratories
- > Leakage detection in industrial applications
- > Continuous emissions monitoring (CEM) by dilution
- > Background, rural, urban or sub-urban, industrial, traffic, roadside studies
- > Laboratory and field studies on pollution effects

### COMPLIANCE WITH:

ISO 7996, EN 14211 (2012), EN 15267 (2009),  
40 CFR PART 53 & PART 58



QAL 1 CERTIFIED  
N°0000053805



U.S. EPA APPROVED  
RFNA-0118-249



# Chemiluminescence NO, NO<sub>2</sub> & NOx analyzer **AC32e**

## PRINCIPLE OF OPERATION:

The **AC32e** is a criteria pollution monitor based on the chemiluminescence, the standard method for the measurement of the concentration of nitrogen dioxide and nitrogen monoxide in ambient air (EN 14211).

The chemiluminescence method for gas analysis of oxides of nitrogen relies on the measurement of light produced by the gas-phase titration of nitric oxide and ozone. This light is measured using a photomultiplier tube (PM). To measure total oxides of nitrogen (NOx), the sample passes over a heated catalyst to reduce all oxides of nitrogen to NO. The instrument performs the automatic switching of the catalyst in and out of the sample path so that the resulting signals are compared to indirectly measure NO<sub>2</sub>.

## TECHNICAL SPECIFICATIONS

Measurement Range	0-1 ppm / 0-10 ppm (user selectable or auto-ranging)
Detection limit (2σ)	<0.2 ppb
Noise	<0.1 ppb
Zero drift	<1 ppb / 24h
Span drift	<1 ppb / 24h
Response time	min. 40 s
Linearity	1% (of Full Scale)
Repeatability	1%
Sample flow-rate	0.66 l/min (1 l/min with sample dryer)
Memory Capacity	1 year (15 minutes average)
Output connectivity	Ethernet (RJ45 socket, UDP protocol, Modbus TCP), USB port, External zero/span SV control
Dimensions L x W x H (mm)	483 x 545 x 133
Chassis	19" rack, 3U
Weight	10.3 kg without external pump (4.6 kg)
Standard operating temperature	0°C to +40°C
Power supply	100-250 V, 50/60 Hz
Power consumption 220 V (or optional 24V power supply)	160 W/h (72 W/h with optional 24V PS)
Chamber pressure	200 hPa
NOx converter	Molybdenum (regulated at 340°C)
Ozone scrubber	Heated catalytic
P.M temperature	Controlled at 0°C
Reaction chamber temperature	60°C
External pump assembly	
Filter valve block for calibration control (zero & span)	
Built-in web-server with full remote emulation of the analyzer	

## MAIN OPTIONS:

- WiFi module (in standard with the no-screen version)
- RS232 or RS485 serial interface (via USB port)
- External module for NH<sub>3</sub> measurement (0-1000 ppb)
- Built-in permeation bench with NO<sub>2</sub> tube
- Sample dryer
- External opto-isolated I/O interface with:
  - 4 independent analog inputs
  - 4 independent analog outputs
  - 4 remote control inputs
  - 6 dry contacts outputs
- 24V power supply & enhanced T° range up to +50°C for use without air conditioner



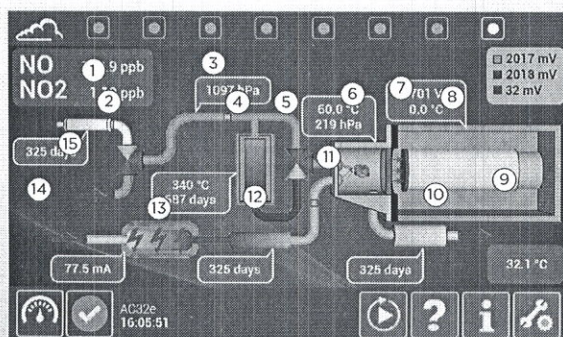
## E-SERIES ADVANTAGES:

- > Environmental friendly:
  - Low carbon footprint
  - Over 95% of the analyzer can be recycled
  - Ultra low power consumption
- > Economic, Easy and reduced maintenance
- > Service Assistant inside
- > 7" TFT colour touch screen
- > Interactivity: connected instruments
- > SmartStatusLight™ power button for status of operation (ON/OFF, Alarm, Maintenance required...)
- > Common electronic boards: optimized spare parts stock

The e-Series of analyzers has been fully eco-designed, with a special consideration to the environmental impacts of the product during its whole life-cycle. The exclusive «inside the box» foam modular concept makes the product more robust, power saving, simpler to service and eco-friendly.

Detailed information on the e-Series brochure

## AC32e Operating Principle - NO cycle



- (1) Zero filter
- (2) Zero SV
- (3) Sample restrictor
- (4) NOx converter oven
- (5) NOx cycle SV
- (6) Reaction chamber
- (7) Optical filter
- (8) Photomultiplier enclosure

- (9) External vacuum pump
- (10) O<sub>3</sub> scrubber
- (11) O<sub>3</sub> restrictor
- (12) O<sub>3</sub> purifier
- (13) O<sub>3</sub> generator
- (14) Air inlet
- (15) Sample inlet



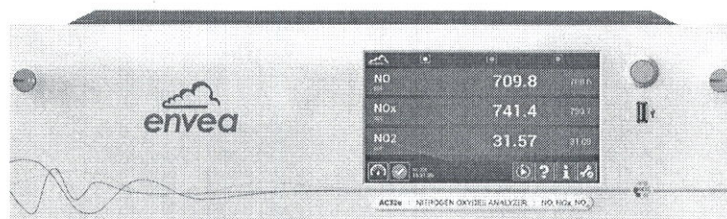


# Chemiluminescence Nitrogen Oxides Analyzer

AIR QUALITY MONITORING SYSTEMS

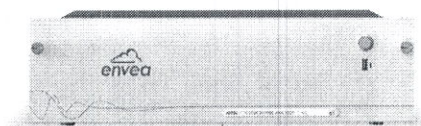


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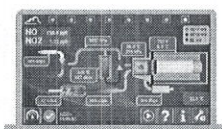


## SPECIFIC FEATURES:

- Excellent metrological performances for NO, NO<sub>2</sub> and NO<sub>x</sub> measurements with selectable display in ppb or µg/m<sup>3</sup>
- Innovative conception of the PM module for excellent sensitivity and signal stability
- Real-time calibration graph, animated synoptic, auto-diagnostic, control and maintenance data screens can be displayed while the instrument is operating
- Service assistance inside: detects early signs of trouble, allows predictive maintenance, identifies the needed service and guides service operations step by step: increased productivity on site, reduced downtime, more efficiency, less training
- Includes embedded Communication Protocol for XR® Software with automatic recognition & configuration
- Ultra low power consumption: an environmentally-friendly and cost-saving analyzer
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- Automatic recognition of plugged electronic boards or optional devices: plug & play principle
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Free Apps  
iOS / Android



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## MAIN APPLICATIONS:

- > Continuous indoor and outdoor air quality monitoring
- > Stationary and mobile AQMS laboratories
- > Leakage detection in industrial applications
- > Continuous emissions monitoring (CEM) by dilution
- > Background, rural, urban or sub-urban, industrial, traffic, roadside studies
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U.S. EPA APPROVED  
RFNA-0118-249



# Chemiluminescence NO, NO<sub>2</sub> & NOx analyzer **AC32e**

## PRINCIPLE OF OPERATION:

The **AC32e** is a criteria pollution monitor based on the chemiluminescence, the standard method for the measurement of the concentration of nitrogen dioxide and nitrogen monoxide in ambient air (EN 14211).

The chemiluminescence method for gas analysis of oxides of nitrogen relies on the measurement of light produced by the gas-phase titration of nitric oxide and ozone. This light is measured using a photomultiplier tube (PM). To measure total oxides of nitrogen (NOx), the sample passes over a heated catalyst to reduce all oxides of nitrogen to NO. The instrument performs the automatic switching of the catalyst in and out of the sample path so that the resulting signals are compared to indirectly measure NO<sub>2</sub>.

## TECHNICAL SPECIFICATIONS

Measurement Range	0-1 ppm / 0-10 ppm (user selectable or auto-ranging)
Detection limit (2σ)	<0.2 ppb
Noise	<0.1 ppb
Zero drift	<1 ppb / 24h
Span drift	<1 ppb / 24h
Response time	min. 40 s
Linearity	1% (of Full Scale)
Repeatability	1%
Sample flow-rate	0.66 l/min (1 l/min with sample dryer)
Memory Capacity	1 year (15 minutes average)
Output connectivity	Ethernet (RJ45 socket, UDP protocol, Modbus TCP), USB port, External zero/span SV control
Dimensions L x W x H (mm)	483 x 545 x 133
Chassis	19" rack, 3U
Weight	10.3 kg without external pump (4.6 kg)
Standard operating temperature	0°C to +40°C
Power supply	100-250 V, 50/60 Hz
Power consumption 220 V (or optional 24V power supply)	160 W/h (72 W/h with optional 24V PS)
Chamber pressure	200 hPa
NOx converter	Molybdenum (regulated at 340°C)
Ozone scrubber	Heated catalytic
P.M temperature	Controlled at 0°C
Reaction chamber temperature	60°C
External pump assembly	
Filter valve block for calibration control (zero & span)	
Built-in web-server with full remote emulation of the analyzer	

## MAIN OPTIONS:

- WiFi module (in standard with the no-screen version)
- RS232 or RS485 serial interface (via USB port)
- External module for NH<sub>3</sub> measurement (0-1000 ppb)
- Built-in permeation bench with NO<sub>2</sub> tube
- Sample dryer
- External opto-isolated I/O interface with:
  - 4 independent analog inputs
  - 4 independent analog outputs
  - 4 remote control inputs
  - 6 dry contacts outputs
- 24V power supply & enhanced T° range up to +50°C for use without air conditioner



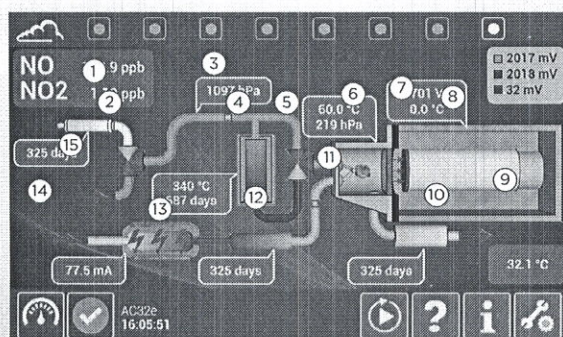
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- > Common electronic boards: optimized spare parts stock

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Detailed information on the e-Series brochure

## AC32e Operating Principle - NO cycle



- |                               |                                |
|-------------------------------|--------------------------------|
| (1) Zero filter               | (9) External vacuum pump       |
| (2) Zero SV                   | (10) O <sub>3</sub> scrubber   |
| (3) Sample restrictor         | (11) O <sub>3</sub> restrictor |
| (4) NOx converter oven        | (12) O <sub>3</sub> purifier   |
| (5) NOx cycle SV              | (13) O <sub>3</sub> generator  |
| (6) Reaction chamber          | (14) Air inlet                 |
| (7) Optical filter            | (15) Sample inlet              |
| (8) Photomultiplier enclosure |                                |





## Automatic & Real-Time Suspended Particulate Monitor

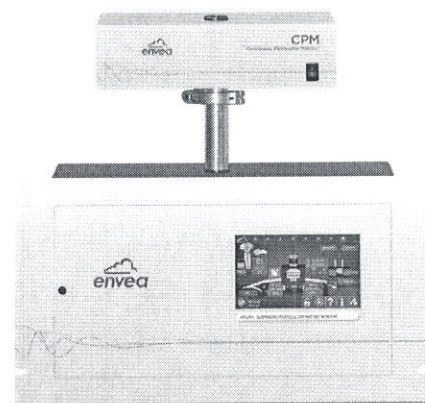
AIR QUALITY MONITORING SYSTEMS

### DESCRIPTION:

The standard Beta gauge measurement Method **ISO 10473** of the MP101M analyzer allows, when used with the patented optical technology of the CPM module, the continuous and simultaneous measurement of fine dust.

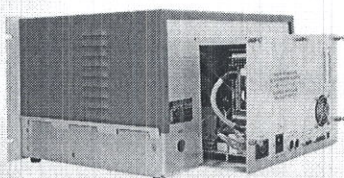
The beta attenuation instrument is compliant with **EN 12341 for PM10** and **EN 14907 for PM2.5** European Standards and is approved as Federal Equivalent Method (FEM) by **US EPA for PM10 and PM2.5** continuous suspended particulate monitoring.

- Precise beta attenuation monitoring of PM10, PM2.5, PM1 or TSP mass concentration ( $\mu\text{g}/\text{m}^3$ )
- Real time optical indication about PM10, PM2.5, PM1 and TSP mass concentration ( $\mu\text{g}/\text{m}^3$ ) using a single inlet
- Real time particles counting trend & classification by range size

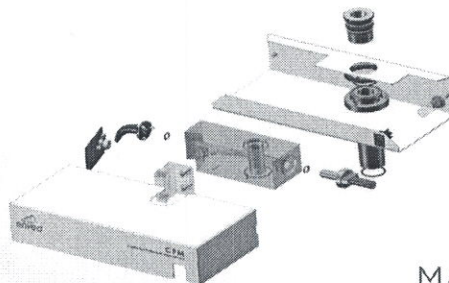


### SPECIFIC FEATURES:

- True volumetric air flow control with 3 atmospheric pressure and temperature sensors
- Sampling flow-rate continuously regulated to the atmospheric temperature and pressure: reduces evaporation artefacts of volatile compounds (mandatory for PM2.5 according to EU regulations)
- Automatic calibration of the real time optical module (CPM) to the reference measurement ( $\beta$  gauge)
- Flow calibration possible during the measurement
- Built-in reference gauge for calibration: no need for factory re-calibration
- Calibration screen for atmospheric pressure sensors
- Regulated Sampling Tube (RST) compliant with CEN PM10, PM2.5 guidelines and US-EPA standard: sample not affected by seasonal or geographical factors and avoids evaporative losses of semi-volatile particles
- Fibreglass tape with 3 years of autonomy of continuous sampling with daily cycles (1200 cycles)
- Low activity C14 sealed flat source with analyzer lifetime duration
- Rugged instrument, not sensitive to vibration, humidity, temperature...
- New: On board web server compatible with any internet browser. ESA Connect™ user interface with on-line help for the display, configuration, maintenance, diagnostics or software updating of the analyser, remotely, from any PC, tablet or smartphone.



Sliding drawer  
on the rear panel  
for easy access and maintenance



Optical CPM light  
scattering module  
for evaluation in real time  
of several particulate  
size fractions

### MAIN APPLICATIONS:

- Ambient air quality monitoring
- Indoor dust monitoring
- Working places

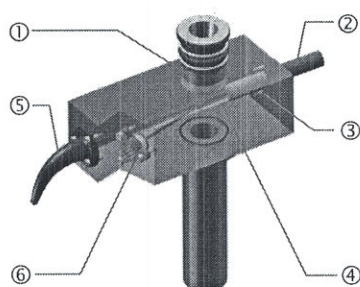


# Suspended Particulate Monitor **MP101M** with **CPM** option

## PRINCIPLE OF OPERATION:

The **CPM** (Continuous Particulate Measurement) principle is based on the measurement of the light scattered at a small angle, close to forward scattering, where the signal is not sensitive to the particle's nature. The intensity of this signal is continuously analysed, in order to classify the particles into 7 size ranges. Knowing the number and size of detected particles, a powerful algorithm is applied to continuously convert these data into mass concentration.

Combination of both technologies provide a real-time indication of particles for PM10, PM2.5 and PM1 simultaneously.



- ① Sampling tube
- ② Laser diode
- ③ Diaphragm
- ④ Laser beam
- ⑤ Light trap
- ⑥ Photodiode

## CPM MODULE SPECIFICATIONS

Technology	Light scattering (*)
Max. number of counted particles	200 000 / cm <sup>3</sup>
Optical source	Red visible laser diode
Detector	Photodiode
Temporal resolution	1 second
Dimensions	285 x 131 x 67 mm (WxDxH)

(\*) Light scattering technologies applied to particle mass concentration measure can be affected by aerosols chemical composition and atmospheric conditions & should be subject to operator interpretation.

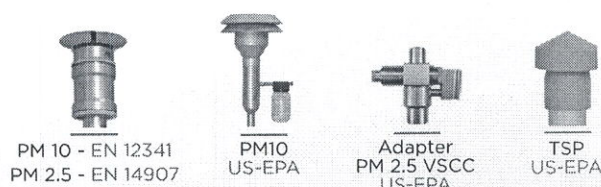
## OPTIONS & ACCESSORIES:

- **CPM module** for optical real-time measurement (concentration, counting, classification by size range) of particles (see specific brochure)
- US EPA and EU-CEN compliant sampling inlets
- **Temperature-regulated sampling tube (RST):**  
1 m, 1.5 m, 2 m, 2.75 m, compliant with **CEN PM10 Directive**
- Max 2 ESTEL electronic boards with:
  - 4 independent analog inputs / outputs
  - 4 remote control inputs
  - 6 dry contacts outputs
- External pump assembly: diaphragm (9.5kg), rotary vane (7kg)
- Easy to install span calibration module for automatic and programmable calibrations
- Field connection kit for leak and zero test (on RST tube)
- Laboratory connection kit for leak and zero test (on MP101M)
- Bead flowmeter for leak test
- HEPA filter for zero test

## TECHNICAL SPECIFICATIONS

Measuring ranges	0-10 000 µg/m <sup>3</sup> (user-selectable & programmable)
Lower detectable limit	0.5 µg/m <sup>3</sup> (24h average)
Measurement cycles	1/2h, 1h, 2h, 3h, 6h, 12h, 24h, user-selectable (up to 96 hours)
Measuring period	10 min, 15 min, 30 min, 1h, 2h, ..., 48h (user-selectable)
Beta Source	Sealed Carbon 14 (1.6MBq±15%)
Detector	High performance Geiger-Müller counter
Sampling flow rate	1 m <sup>3</sup> /h
Standard filter	Fibreglass tape (width 35 mm, length 30 m) Autonomy for 1,200 samples (>3 years of daily measurements)
Power supply	230V/50Hz (115V/60 Hz)
Housing	19" rack / 6U
Dimensions	483 x 324 x 266 mm (W x D x H)
Weight	15 kg (without pump)
Operating temperature	+10°C to +40°C
Serial link	1 RS 232/RS422
Ethernet (RJ45) and USB ports	
On-board web-server with remote ESA Connect™ interface	

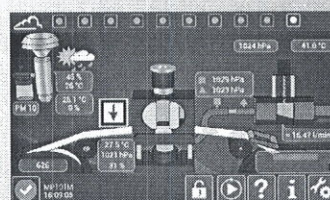
## SAMPLING INLETS



Other sampling inlets for research or specific applications are available upon request, such as PM1 for Europe and US-EPA



Automatic and programmable Span Calibration Module



TCP/IP remote ESA Connect™ interface with animated diagram and intuitive navigation



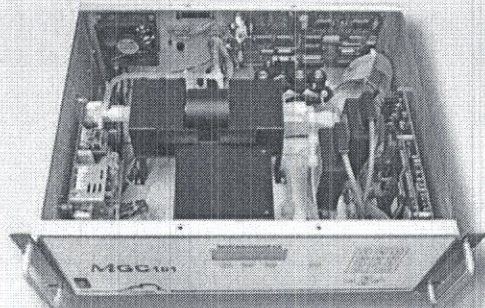




# Multi-Gas Calibrator **MGC101**



Multi-gas calibrator for ambient air  
gas analyzer calibration



MGC 101 - internal view

## EXCLUSIVES FEATURES:

- User-friendly interactive software with plain language prompts: is simple to use, reducing technician training time and virtually eliminating error
- Automatic calculation of dilution and span gas flows, based on commanded concentration, eliminates the need for any manual computation and allows rapid transition from point to point
- Internally-stored mass flow controller calibration data improve accuracy (factor of ten) and simplifies field recalibration
- Simultaneous connection from 1 to 4 gas cylinders (option for 5)
- Easy programming with keyboard and pop up menu
- Automatic calibration sequences storage
- LCD screen (4 lines / 20 characters)

## MAIN APPLICATIONS:

- Air quality monitoring stations and mobile laboratories for manual automatic or remote calibration
- Used as a reference calibrator in central station
- Test of analyzers: Automatic zero, precision, span, multi-point calibration and gas phase titration (GPT)





# Multi-Gas Calibrator MGC101

## SPECIFICATIONS:

- Flow accuracy:  $\pm 1\%$  of set point
- Flow repeatability:  $\pm 0.05\%$  of full scale
- Dilution ratio:
  - dilution mode: from 1:12 to 1:900
  - TPG mode: from 1:56 to 1:500
- Ozone production: 0.02 ppb to 0.5 ppm (option 0.05 ppb to 1 ppm) at 10 l/m
- Pre-heating time: 30 minutes
- Response time: 2 min for an accuracy of 1%
- Zero air inlet: 1 external (1/4" Swagelok)
- Gas inlet: 4 external (1/4" Swagelok)
- Gas outlet: 1 external (1/4" Swagelok)
- Operating pressure (zero air & span gas):
  - 1.72 bars (recommended)
  - 1.03 bar (min)
  - 2.07 bars (max)
- Microprocessor-based operations
- RS232 serial data interface (specific protocol)
- Display: alphanumeric LCD 20 characters and 4 lines
- Remote control using dry contacts
- Programmable Inputs/outputs (8 I/8O)
- Housing: 19" - 4U standard rack
- Dimensions: 483 x 380 x 177 mm (W x D x H)
- Weight: 10 to 15 Kg (according to options)
- Power supply: 230 V, 50 Hz or 115 V, 60 Hz
- Consumption: 500 VA
- Operating temperature: 0 to + 50°C

## Options :

- Up to 2 internal permeation benches, for most of the certified permeation tubes disposable type ( $\text{SO}_2$ ,  $\text{NO}_2$ ,  $\text{H}_2\text{S}$ ,  $\text{NH}_3$ ...)
- Other dilution ratios upon request
- 3rd mass flow controller
- Photometer
- Solenoid valve on the outlet
- Additional gas inlet

## OPERATING PRINCIPLE:

The MGC101 Multi-Gas Calibration System is a computer controlled, state-of-the-art instrument for dynamic calibration of ambient air analyzers. It automatically performs zero, precision, span and multi-point calibrations using  $\text{NO}$ ,  $\text{NO}_2$ ,  $\text{SO}_2$ ,  $\text{CO}$ ,  $\text{O}_3$ , hydrocarbon and other gases of interest. The MGC101 meets all U.S. Environmental Protection Agency requirements.

The MGC101 consists of a single chassis supporting 2 thermal mass flow controllers, an ozone generation module, a mixing zone, a reaction chamber for gas phase titration, and control electronics. The mass flow controllers are calibrated to a NIST (National Institute of Standards and Technology) traceable primary standard. The calibration data consists of a comparison of desired versus actual flow over the full dynamic range of the instrument with linear interpolation between points. Calibration data is stored in non-volatile memory and may be updated by the user with a suitable standard.

The MGC101 ozone generator is factory calibrated using a NIST traceable ozone standard. This temperature controlled, ultra-violet (UV) based ozone generator includes a precision photo-optical feedback circuit to compensate for lamp aging effects. The MGC101 is available in either a standard rack mount or portable configuration.

## Standard functions:

**Blend:** the calibrator automatically calculates and delivers the specified concentrations at the required flow rate.

**Ozone generation:** allows precise and stable ozone generation.

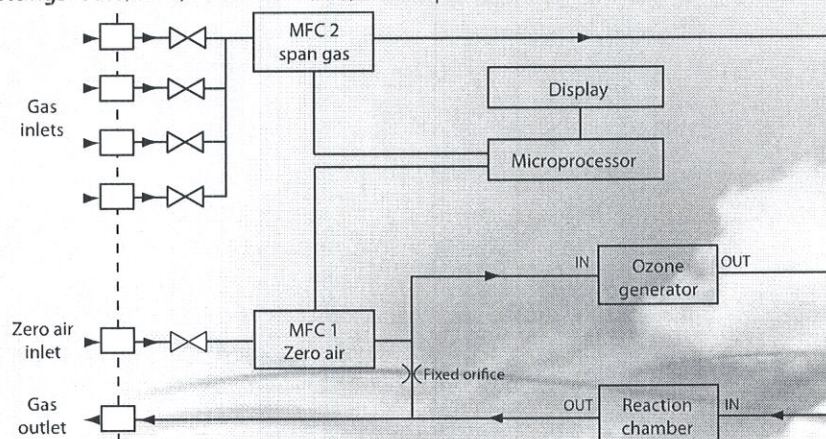
**Gas Phase Titration (GPT):** the GPT method is based on the reaction:  $\text{NO} + \text{O}_3 \rightarrow \text{NO}_2 + \text{O}_2$ . The method of Gas Phase Titration recommended by Environnement S.A is the excess nitric oxide Transfer Standard Procedure (GPT-NO).

**Manual:** allows user to manually command a desired rate of flow for each mass flow controller.

**Display:** allows user to monitor flow rates for each mass flow controller separately, provide ozone oven block temperature during ozone generation and gas phase titration routines. RDM calibration: multi-point calibration.

**Ozone generator calibration:** performed using 7 up to 11 points for an improved linearity. MFC output flow rate check: used when a reference flow rate is connected to the inlet of MGC101.

**Settings:** date, time, screen contrast, RS232 parameters...



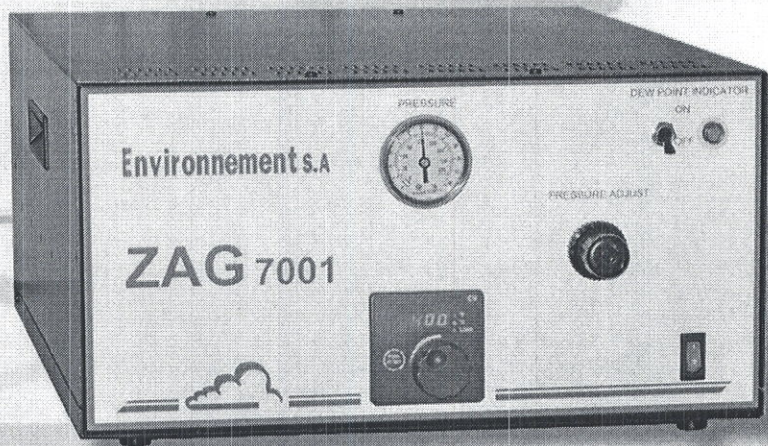
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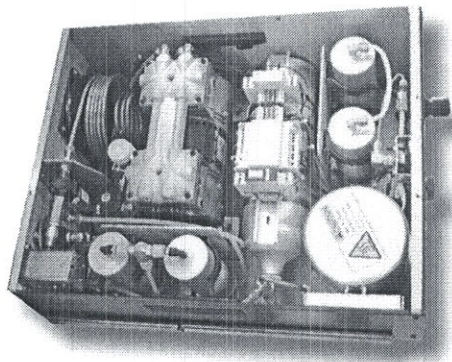




# Zero Air Generator ZAG7001



- Zero air generation for ambient air gas analyzers
- Compact and silencing device



ZAG 7001 internal view

## MAIN FEATURES:

The ZAG 7000 Zero Air Generator is a pure air generator system, capable of continuous delivery of up to 20 standard liters per minute (SLPM), 30 pounds per square inch (PSI) of dry, contaminant-free air.

- Internal compressor with pressure control
- Internal PSA dryer
- Long-lasting filtering cartridges
- Automatic condensates removal

The ZAG is a powerful stand-alone unit, so there is no need for you to worry about an external compressed air supply.

## APPLICATIONS:

- Check of zero point of ambient air gas analyzers
- Supply of diluent air for most of calibration systems, including the MGC 101 model
- Supply of zero air for dilution-based sampling systems





# Zero Air Generator **ZAG7001**

## SPECIFICATIONS:

- Residual pollutant concentrations:
  - NO, NO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub>, O<sub>3</sub>, H<sub>2</sub>S: <0.5 ppb
  - CO: < 25 ppb (with optional scrubber)
  - Hydrocarbons: < 20 ppb (with optional scrubber)
- Flow rate: 1-20 NI/min at 2.07 bars (30 psig)
- Dew point:
  - < -30°C up to 10 NI/min
  - < -10°C up to 20 NI/min
- Dryer: Pressure Swing Adsorption dryer (PSA)
- Pump: internal ion-life, oil-less piston pump
- HC scrubber temperature: adjustable from 300°C up to 480°C for improved THC removal
- Dimensions:
  - 482 x 597 x 222 mm (W x D x H)
  - 19 x 23.5 x 8.75 inches (W x D x H)
- Weight: 20.4 kg / 45 lbs
- Power supply: 100 to 250 VAC, 50-60Hz
- Consumption: <500 Watts
- Operating temperature: +4 to +44°C
- Performance temp. range: +15 to +30°C

## OPTIONS:

- CO and THC catalytic converter

## OPERATING PRINCIPLE:

The ZAG 7001 Zero Air Generator is a pure air generator system that is capable of continuous delivery of up to 20 standard liters per minute (SLPM), 30 pounds per square inch (PSI) of dry, contaminant-free air.

The air is suitable for use as: a zero reference calibration gas, ultra-pure combustion air for flame ionization detector, and service air for pneumatically operated valves.

The system is capable of delivering air free from water vapor, particles, sulfur dioxide (SO<sub>2</sub>), Hydrogen Sulfide (H<sub>2</sub>S), Oxides of Nitrogen (NO), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Carbon Monoxide (CO) and Hydrocarbons (HC).

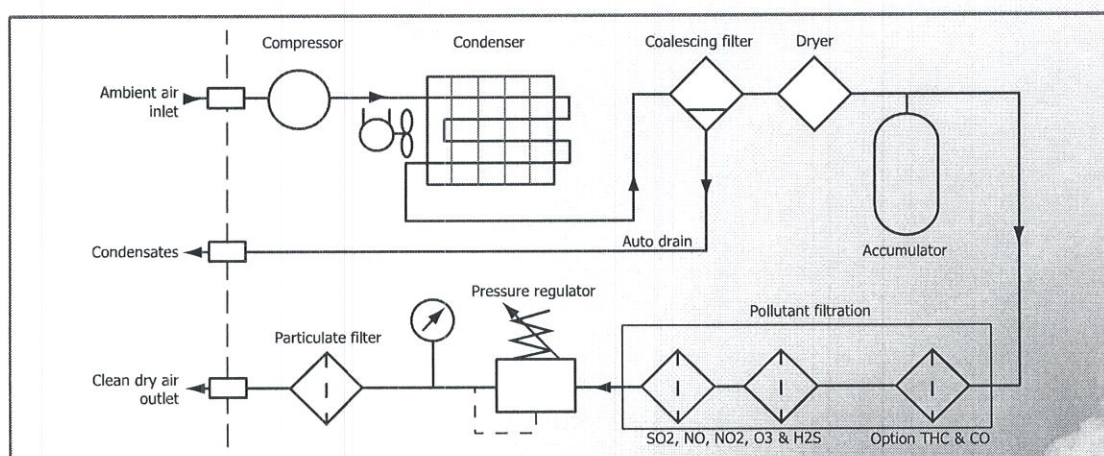
The state-of-the-art PSA molecular sieve removes water and produces air with a dew point of less than -30°C. An 80 seconds drain interval negates the potential of excess water build-up.

Model ZAG 7001 consists of oil-less piston pump and scrubbers to remove SO<sub>2</sub>, NO, NO<sub>2</sub>, O<sub>3</sub> and H<sub>2</sub>S. Optional scrubbers are available to remove CO and Hydrocarbons. A ballast tank is standard in the system. It extends both the pump and scrubber life by cycling the pump automatically only as needed.

Model ZAG 7001 offers automatic pneumatic control. It will automatically turn on and off based on the demand of the system that it is supporting.

Operation of the system has been simplified so that the operator can set the output pressure desired through a regulator on the front panel of the system. The output pressure gauge is located to accurately reflect the output pressure of the system.

The Zero Air Generator is designed to fit into a 19" rack with optional slides or used in a portable mode. Strict attention has been paid to the weight of all components to make this system as light as possible.



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**Environnement s.a.**

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## *Certificat de Contrôle Qualité* *Quality Test Certificate*

**INSTRUMENT : CO12M**

**COMMANDE/ ORDER : ESP/12-MAN0019**

**N°/ SN : 979**

**PROPRIETE DE/ PROPERTY OF :**

Cet instrument a été fabriqué et étalonné suivant les normes de fabrication en vigueur dans notre usine de Poissy - France. A chaque étape de la fabrication, différentes séries de tests et de contrôles approfondis ont été réalisées et assurent un fonctionnement correct et précis de l'appareil. Toutes les caractéristiques sont conformes aux spécifications définies par le constructeur et par la plupart des Organismes Internationaux de Normalisation. La procédure métrologique utilisée est conforme et satisfait aux critères de notre programme qualité.

The above instrument was manufactured, checked and calibrated according to our working standards in our plant of Poissy - France. At each step in the manufacturing process, we have performed extensive series of tests and controls which ensure proper and reliable functioning. All features were found to meet those specified by manufacturer and by most of the International Standard Organizations. The metrology procedures utilized conform to and satisfy requirements of our quality program.

**TESTÉ PAR/ TESTED BY : A.TOUNKARA**

**DATE DU TEST/ DATE OF TEST: 07-FEVRE 12**

**CERTIFICAT(E) N° : CO12M9795641**

**APPROUVE PAR/ APPROVED BY :**

