BAGGI®

SENSEVOLUTION®
Industrial measurement & analysis solutions

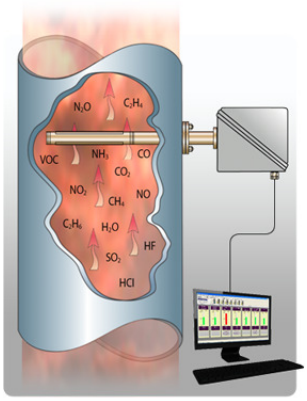
BAGGI BA-MEM
Maritime Emission Monitoring Analyzer
(Infrared Spectrometry based)

The BAGGI BA-MEM is part of the **BAGGI BASE®** Instruments Series. They are the result of combining the latest state-of-the-art-technology with over 50 years of industry experience.

The BA-MEM analyzer is able to monitor continuously the emissions from large diesel engines, either fixed or onboard ships. The sensors are tested against extensive physical disturbances, including vibrations (IECD 68).
The BA-MEM is a Combustion Emission Monitoring system able to meet the requirements of both customers and Environmental Authorities worldwide.
The measurements performed by the infrared sensor for assessing the quality of the Exhaust Gas Cleaning Systems are typically:

- SO_2 (0 – 500 ppm)
- CO_2 (0 – 10 %)
- NO_x (0 – 1500 ppm)

The analyzer operates upon the single beam dual wavelength infrared technology where pulses of two specific wavelengths are transmitted through the sample cell in the stack mounted sensor. The 'measure' pulse is partially absorbed by the gaseous component to be measured, while the 'reference' pulse is relatively unaffected. A total of 8 wavelengths are available and in some circumstances reference wavelengths are shared. This allows up to 6 gas concentrations to be measured simultaneously (e.g. NO, SO_2, CO, CO_2, H_2O). The specific wavelengths used are application dependent.
As shown in the figure, the analyzer (sensor) is located directly inside the stack, avoiding the need of extracting a sample from the stack. This eliminates the necessity of costly sample handling systems, but more importantly the analysis is performed on an unmodified and truly representative gas sample. The analyzer executes the algorithms for calculating the gas concentrations and includes temperature and pressure probes for their automatic compensation.



When requested, an additional dedicated sensor can be mounted into the stack for O_2 measurement.
The system is completed by the Control/Verification unit, made by the BASE® Series embedded computer and the related actuators. The Control/Verification unit runs an application software for:

- collecting the measurement values from the sensor(s);
- archiving the results in standard CSV format;
- presenting a graphical user interface (GUI) to the Operator;
- transmitting remotely the information via current loops, relay signals, serial lines and WiFi;
- verifying the zero setting of the system by filling the sample probe with clean and dry instrument air;
- verifying the span setting by filling the sample probe with certified span gas;
- purging the sample cell with instrument air.

The Control/Verification unit is available also in ATEX certified versions.
This rugged system is designed for low maintenance: only a single annual check is recommended. The typical life of the Infrared source is four years.

CE Ex BASE

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The figure beneath shows the Control/Verification unit in the ATEX certified version. This one is contained within a Stainless Steel 316L enclosure provided with a protective air purge system and a Vortex cooler (connected to the plant instrument air). Magnetic push buttons allow controlling the system without opening the cabinet.

ATEX compliance:

- II 2 G Ex px II T6
- II 3 G Ex pz II T6

The BA-MEM allows prompt updates with regard to measuring range, presentation and reporting format, thus ensuring compliance with reporting criteria such as US EPA 40 CFR part 60 and 75 and control charts for EN14181.

Sensor Specifications	
Principle of operation	Infrared absorption with multiple wavelength selection
Spectral range	Specific application dependent wavelengths between 2 – 12 µm
Infrared source/detector	Nichrome filament/solid state pyroelectric element
Sample path length	1 metre (enveloped folded beam)
Sample temperature	Up to 500 °C / 932 °F (depending on the application))
Accuracy	Typically ±2% of full scale concentration
Response time	Typically 120 seconds to T90
Contacting materials	Calcium fluoride, Glass, 316 Stainless Steel, Graphite
Enclosure	Aluminium alloy casting with high protection finish, protected to IP65 (NEMA 4X)
Operating environment	-10 °C to +45 °C (+14 °F to 113 °F) optional cooler/heater for extended range
Dimensions/Weight	- 1294mm L x 244mm D x 169mm H (51.00" L x 9.6" D x 6.5" H) - Weight: 21 Kg
ATEX compliance	II 2 G Ex d IIB T6
Control/Verification Unit Specifications (ATEX version)	
External input/output	- Analog input: four inputs filtered with transient protection - Analog output: three isolated outputs, 4 – 20 mA (standard) - Analog output: three additional isolated outputs (optional) - Digital input: six digital inputs (optional) - Digital output: four isolated relay signals (alarm and warning) - Digital output: four additional relay signals (optional) - Serial line: RS-232/RS-422/RS-485 with Modbus/Profibus/FieldbusFoundationProtocol - Ethernet card: two 10/100 mbps with RJ-45 port - One integrated WiFi card 11 Mbit/s
Power	90-264 VAC, 47-63 Hz; 6A max
Operating environment	- 0 °C to 40 °C (32 °F to 104 °F) - 0 °C to 55 °C (32 °F to 131 °F) with vortex cooler
Enclosure protection	IP66
Dimensions/Weight	- Wall Mount: 500mm H x 400mm L x 250mm D (19.68" H x 15.74" L x 9.84" D) - Weight: 15 Kg approx.
ATEX Compliance	II 2 G Ex px II T6 II 3 G Ex pz II T6

All the specifications subject to change without notice

For specific requirements, please contact the e-mail address below:
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