Multi-Gas Calibrator Model MGC 101

Ambient Air Quality Monitoring

Multi-gas calibrator for ambient air gas analyzer calibration

MGC 101 - internal view

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)

Exclusive 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 improves 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)

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Specifications:

- Flow accuracy: ± 1% of full scale
- Repeatability: ± 0.1% of full scale
- Dilution ratio:
  - dilution mode: from 1:12 to 1:900
  - TPG mode: from 1:56 to 1:500
- Ozone production: 0.2 ppb to 0.5 ppm (option 0.5 ppb to 1 ppm / 100 ppb to 6 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):
  - 1.68 bars (recommended)
  - 0.67 bar (min)
  - 3.44 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: 250 VA
- Operating temperature: +4 to + 50 °C

Options:

- Internal permeation bench, for most of the certified permeation tubes disposable type (SO_2, NO_2, H_2S, NH_3...)
- Other dilution ratios upon request
- 3rd mass flow controller
- Photometer
- Solenoid valve on the outlet
- Additional gas inlet

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Operating principle:

Model MGC101 Computerized 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 NO, NO_2, SO_2, CO, O_3, hydrocarbons and other gases of interest, and meets all U.S. Environmental Protection Agency requirements.

Model 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.

Model 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.

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: $NO + O_3 \rightarrow NO_2 + O_2$. 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.

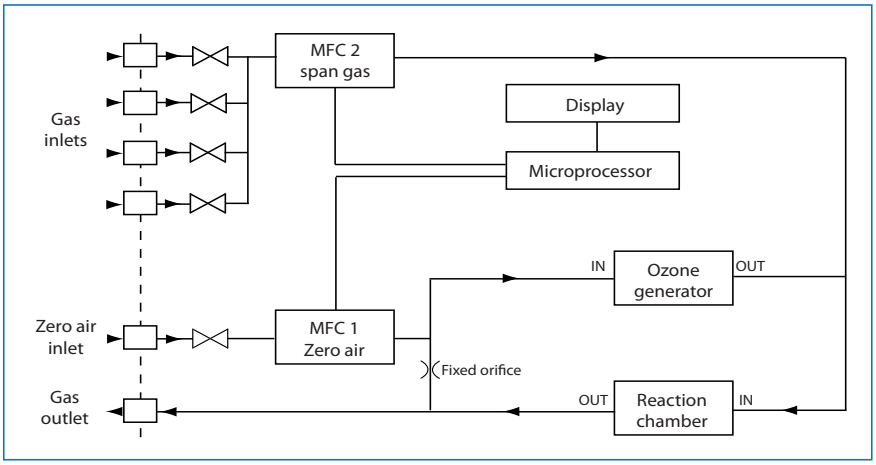
Display: allows user to monitor flow rates for each mass flow controller separately, provides ozone oven block temperature during ozone generation and gas phase titration routines.

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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