SISTEMAS - INSTALACIONES - REDES

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MODEL S-5000

Programmable Multi-Gas Calibrator

Advantages – Features

- **Multi-Gas Calibration Via Dilution.**
- **Ozone Generator Controlled Via Detector Feedback System.**
- **Ozone Generator Controlled Via Photometric Feedback System.**
- **Temperature/Flow-Controlled Internal Permeation Oven.**
- **Capable of Storing Programmed Gas Calibration Levels.**
- **Capable of Storing Programmed Gas Calibration Sequences.**
- **Able to Accommodate Up to Four External Gas Cylinders at any One Time.**
- **Fully Displayed Menu-Driven Software System for Easy Operation.**
- **Capable of Performing Internal Calibrations on its Mass Flow Controllers, Ozone Generator and U.V. Photometer (if present).**
- **Use of Pirex Dilution/Reaction Chambers for Quicker Calibration Gas Creation.**
- **Flexibility for Increasing the Number of Mass Flow Controllers.**

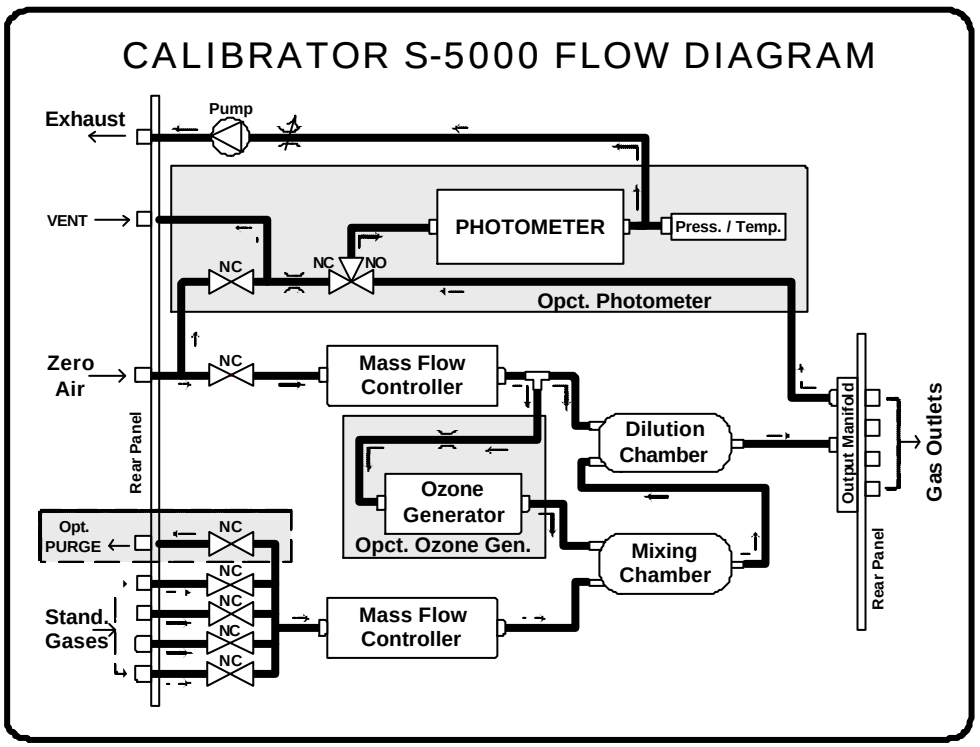
THEORY OF OPERATION

Mass flow measurements, as opposed to volumetric flow measurements, are not pressure dependent. The air and gas controllers used in the model S-5000 make use of mass flow to precisely measure and control flow rates of either clean air or gas cylinders in order to achieve precise and repeatable gas concentrations. The “MFC´s” are a combination of a mass flow sensor and a electronically actuated valve working with the sensors. The valve will open and close automatically in proportion to the flow required. A voltage command from the microprocessor is sent to the MFC and de sensor set up the flow required by that voltage. The voltage output of the sensor is then translated in the proper flow units and can be monitored on the alphanumeric display of the calibrator. The voltage feedback of the MFC is also used by the microprocessor to more accurately control the flow.

Dilution of common pollutants such as SO_2, NO, CO and CH_4, to user –specified levels occurs through the precise blending of the gas with clean (or “zero”) air inside of a dilution chamber designated per EPA specifications. Performance of Gas Phase Titration for creating NO_2 occurs through a combination of diluting NO gas in the dilution chamber, and reacting it with ozone in the reaction chamber. The ozone is created by an ozone generator (models S-5000 options: O_3, Photometer and Permeation) utilizing a low pressure mercury lamp which produces ultraviolet light at 185 nanometers wavelength, thus creating ozone in the air flow. The amount of ozone produced is proportional to the intensity of 184 nm light, which is dependent on lamp current and temperature. Lamp temperature is held constant while the lamp current is varied to produce selected amounts of ozone. Permeation oven output (typically NO_2 or SO_2) is created in the model S-5000 with Permeation by passing zero air through a temperature-controlled oven containing the desire permeation device. Concentrations are varied by precisely controlling the flow rate through the oven, while hokding the temperature stable.

Operation of the model S-5000 is simple, as desired gas calibration levels and calibration sequence of events can be programmed into the unit´s memory and then recalled by selecting the stored program number; thus, time spent setting up calibrations on-site is minimized. Such calibration programs can be easily erased or modified to fit the requirements of the user.

No calculations need to be executed by the operator since, once you answer the questions made for the S-5000 about; concentration of the gas cylinder, flow of the zero air and final output desired concentration/s, the unit will make the needed calculations and control the MFC´s to deliver the requested concentrations.



SPECIFICATIONS

Dilution System:

Accuracy of Flow Measurements:	± 0.25%
Repeatability of Flow Control:	± 0.1%
Linearity of Flow Measurements:	± 0.25%
Standard MFC Range for Dilution Air:	0 – 10 SLPM
Standard MFC Range for Cylinder Gases:	0 - 100 CSSPM

Ozone Generating Subsystem (Options: O_3 Generator; Permeation and Photometer)

O_3 Generator Output:	20 – 1,500 ppb (at 5.0 SLPM total flow; adjustable)
Stability:	± 0.0015 ppm @ 0.800 ppm

Permeation Oven Subsystem (Option: Permeation)

Stabililyty:	± 0.002 ppm
Repeatability:	± 1%

U.V. Photometer Subsystem (Option: Photometer)

Standard Range:	0 – 1.0 PPM (capable of measuring O_3 above 1 ppm)
Incremental Sensitibity:	0.001 ppm
Precision:	0.001 ppm
Noise:	± 0.001 ppm
Linearity:	Better than +1%
Zero Drift:	Zero
Electronic Span Drift:	Zero
Minimum Flow Rate:	1.5 LPM
Optional Analog Output:	1, 5, 10 Volts (selectable)

Power: 115-125 VAC
220-240 VAC

Dimensions:	**Bench Mount**	**Rack Mount**
	17.8 cm (7”)	17.8 cm (7”)
	43.5 cm (17”)	48 cm (19”)
	59 cm (23”)	59 cm (23”)

MODELS:

S-5000 This is the basic configuration used for applications invoving dilution of external gas cylinders for pollutants such as CO, SO_2, CH_4, NO, and possibly NO_2.

OPTIONS:

S-5000-O_3 Internal O_3 Generator controlled by ozonator-detector. In addition to dilution of external gas cylynders, this option has the ability to perform OZONE and GPT calibrations.

S-5000-PHT Added to the model (S-5000-O_3) is a U.V. photometric feedback system. For measuring/controlling.

Rack Mounting Slides.

Additional Mass Flow Controller.