

## Model 2010T Multi-gas Dilution Calibrator (Portable, Rack or Bench)



The 2010T Intelligent Multi-gas Calibrator can easily perform gas dilution, multi-source gas blending, ozone and gas phase titration (GPT - NO + O<sub>3</sub> to generate NO<sub>2</sub>) for environmental, laboratory, or point source monitoring.

The Model 2010T represents the latest generation of calibrator technology for environmental, laboratory or point source monitoring. The unit has two internal mass flow controllers (MFC's), with options for an internal Ozone generator and a photometer (5.25 inches high and weighing less than 25 lbs).

The Model 2010T calibrator uses embedded microprocessor technology to precisely deliver and control gas concentrations along multiple curve fits to linearize the desired outputs for the intended purpose. The unit can be operated manually, automatically, or semi-automatically by remote access. It also has the capability to produce and store in memory 20 calibration sequences with up to 20 levels of source/dilution in each sequence. Users can choose either the front panel membrane keypad, external keyboard, serial port, or Ethernet to input calibration sequences.

The instrument's pneumatic system uses Mass Flow Controllers to precisely meter gas streams and implements multiple types of curve correction algorithms to linearize calibrations. A second source MFC can be added for a wider dynamic range or trace level applications. An optional second source MFC with blending allows user-performed interferent testing and evaluation. Calibrator design exceeds US EPA calibration method requirements. Dilution components are calibrated with standards and test equipment traceable to the National Institute of Standards and Technology.

Sabio's calibrators allow the user to view the value of NO<sub>2</sub> generated during GPT and displays the dilution of all gases present when using a multi-blend cylinder.

### Standard Features Pneumatics

- ▶ Diluent Mass Flow Controller, 0-10 SLM
- ▶ Source Mass Flow Controller, 0-100 SCCM
- ▶ 4 Calibration Gas Input Ports and 1 Purge Port
- ▶ 5 Output Ports and 1 Vent Port
- ▶ 1 Diluent Gas Input
- ▶ Vivid Color Display

### Electronics/Communication

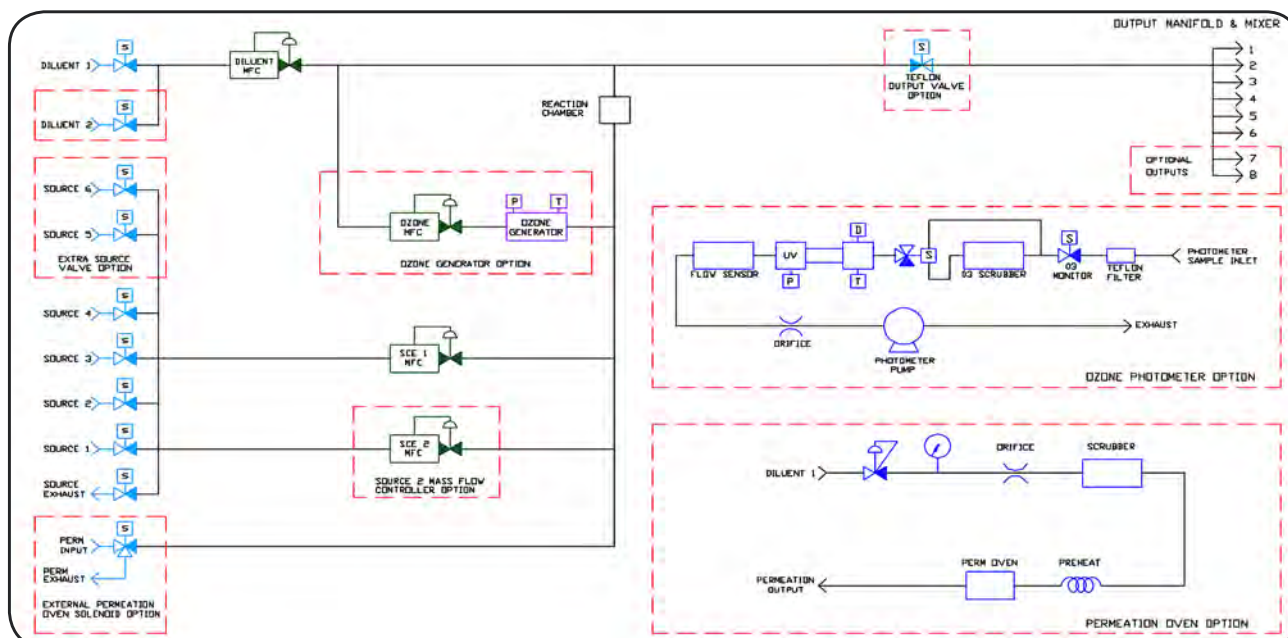
- ▶ Membrane Keypad
- ▶ 8 Bits Digital Input/Output (24 Bit optional)
- ▶ 1 Serial Port for Data Communications
- ▶ External PC keyboard Input Port
- ▶ Centronics Parallel Printer Port
- ▶ Air Source Control Port
- ▶ RS-232, RS-485, USB and Modbus, DOT Commands

### Electrical

- ▶ Standard 98-264 VAC, 150-300 VA, 50/60 Hz Operation

### Optional Features

- ▶ Alternate Diluent Mass Flow Controller, Ranges 0-20 SLM
- ▶ Alternate Source Mass Flow Controller, Ranges 0-2 SLM
- ▶ Second Source Mass Flow Controller, Ranges 0-2 SLM
- ▶ Additional Calibration Gas Input Ports
- ▶ Permeation Port
- ▶ Additional Output Ports
- ▶ Second Diluent Gas Input Port
- ▶ Internal Ozone Generator w/Gas Phase Titration (GPT) compatibility
- ▶ Ozone Generator UV Optical Servo Control Loop
- ▶ Internal Ozone UV Absorption Photometer
- ▶ Multi-Source Gas Blending
- ▶ Master Output Solenoid
- ▶ Instrument Solenoid Driver for External Valves
- ▶ Rack Mount Kit
- ▶ Glass chamber for GPT
- ▶ Ethernet TCP/IP
- ▶ Transport case



### SPECIFICATIONS

Specifications subject to change without notice

Dilution System	
Input Dilution Gases	1 Standard, (2 Optional)
Input Source Gases	4 Standard, 1 Purge, 2 Additional (Optional)
Dilution Mass Flow Controller	0-10 SLPM, Optional Range 0-20 SLPM
Source Mass Flow Controller	0-100 SCCM, Optional Range 0-2 SLPM
2nd Source Mass Flow Controller	0-2 SLPM
Flow Accuracy	<±1% full scale
Flow Repeatability	<±0.15% full scale
Linearity	<±0.5% full scale
Response Time at Output	< 1 minute
Optional Internal Ozone Generator	
Output (Standard)	0 - 1000 ppb, Max - 6 ppm Flexcal
Accuracy	± 1% of Set Point or ± 1 ppb @ 5 SLPM
Nominal Flow	100 SCCM, ± 1 SCCM
UV Lamp Temperature	50°C, ± 0.1°C
Optional UV Absorption Photometer	
Standard Ranges	0-0.5, 1.0, 2.0 ppm
Linearity	<±1 ppb or 0.5% of full scale
Precision	<1 ppb
Zero Drift	<1 ppb for 24 hours
Flow Rate	1 Liter (nominal)
Analog Output	3 Ranges: 5V, 1V, optional 100mV
Response Time	< 180 Seconds to 95% (system)
Rise/Fall Time	< 20 Seconds (photometer)

### Calibrator Interface

Operation	Keypad, keyboard, serial, USB, Ethernet
Calibration Definitions	20 factory- defined calibration sequences (≤20 pts)
Calibration Types	Gas Dilution, Ozone, GPT (Gas Phase Titration)
Gas Definitions	2 Diluent Gases, 20 Source Gas
Auto Calibrations	20 timer driven routines perform user-defined calibration sequences on a daily schedule
Digital Inputs	24 status I/O bits for calibrator functions
Digital Input Types	Contact closure or TTL logic
Digital Outputs	8 status I/O bits
Communications	Ethernet TCP/IP, RS-232, RS-485, USB

### Physical & Operational Specifications

Operating Temperature	5 °C to 40 °C
Dimensions	5.25" (13.3 cm) H x 16.2" (41.2 cm) W x 19.25" (48.9 cm) D
Average Weight	24 lbs. (10.9 kg)
Input Voltage	98-264 VAC, 150-300 VA, 50/60 Hz