

Model 2010D Gas Dilution Calibrator (Portable, Rack or Bench)



Overview

The 2010D Intelligent Gas Dilution Calibrator can easily perform gas dilution, multi-source gas blending, ozone and gas phase titration (GPT) for environmental, laboratory, or point source monitoring.

The Model 2010D 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 2010D 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.

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
- ▶ Bright Active Matrix Color Display

Electronics

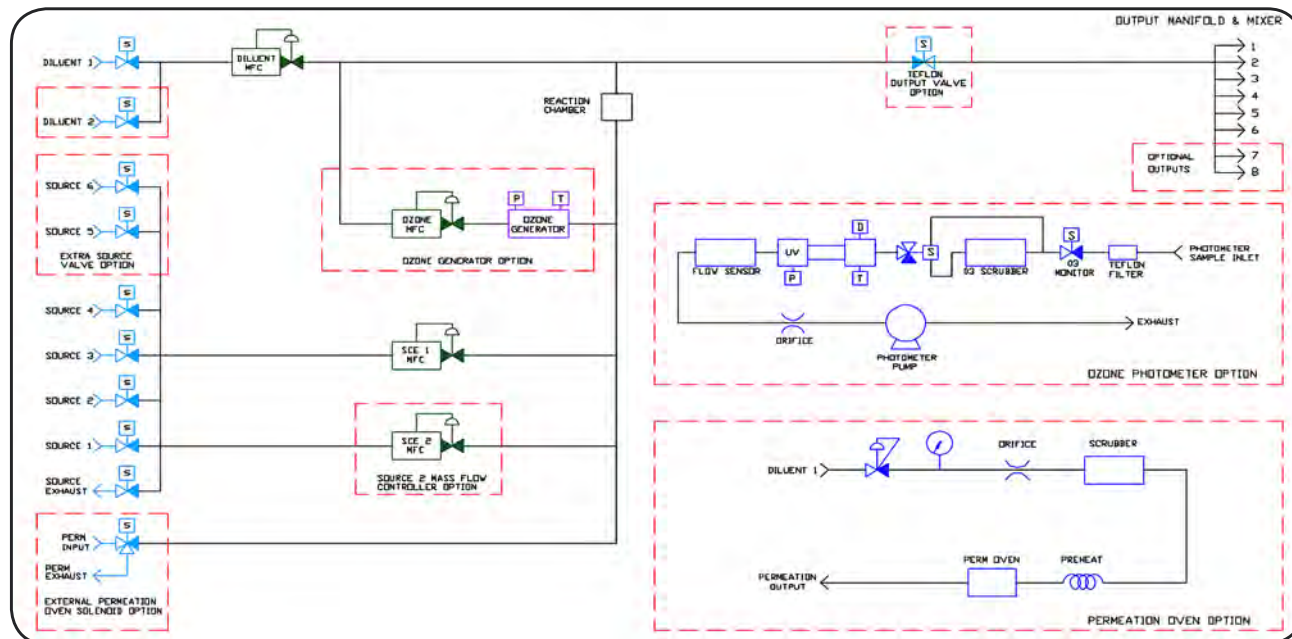
- ▶ 42-Button Membrane Keypad
- ▶ 8 Bits Digital Input/Output
- ▶ 1 Serial Port for Data Communications
- ▶ External PC keyboard Input Port
- ▶ Centronics Parallel Printer Port
- ▶ Air Source Control Port

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
- ▶ Ethernet TCP/IP, RS-232, RS-485, USB and Modbus



SPECIFICATIONS	
Specifications subject to change without notice	
Dilution System	
Input Dilution Gases	1 Standard, 1 Additional (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)	0.05-1.5 ppm @ 5 SLPM
Accuracy	± 1% of Set Point or ± 2 ppb @ 5 SLPM
Nominal Flow	100 SCCM, ± 1 SCCM
UV Lamp Temperature	50°C, ± 0.1°C
Optional UV Absorption Photometer	
Standard Ranges	< ± 1 ppb for 24 hours or 30 days
Linearity	1 Liter (nominal)
Precision	± 1 ppb
Zero Drift	<± 1 ppb for 24 hours or 30 days
Flow Rate	1 Liter (nominal)
Analog Inputs	3 Ranges: 100 mV, 1V, 5V

Calibrator Interface	
Operation	Keypad, keyboard, serial, USB, Ethernet
Calibration Definitions	20 factory-defined calibration sequences (≤20 pts each)
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	24 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