

GENERAL DESCRIPTION

The Environics® Series 2014 Computerized VOC Gas Dilution System is a microprocessor based gas dilution system designed for the preparation of calibration standards used for VOC (Volatile Organic Compounds) monitoring programs. The Series 2014 can be used to dynamically produce ppb level standards from ppm level cylinder gases.

EPA methods for VOC's specify a dynamic dilution to produce the initial multi-point calibration as well as the required daily and pre-sample calibration at the nominal 10 ppb level.

The Series 2014 employs mass flow controllers calibrated to a NIST (National Institute of Standards and Technology) traceable primary standard. All gas wetted surfaces are electropolished stainless steel to minimize absorption effects at ppb levels. Seals are gas compatible elastomers. A heated flow path is provided.

Commands are entered from the front panel and displayed on a backlit twenty-five line by eighty character liquid crystal display. Calibration sequences are stored in the internal microprocessor for recall by the keypad, optional RS-232 communications or optional status interface.

Humidification and pressurization options are available.

A purge circuit allows for nitrogen purge of the gas wetted surfaces to minimize contamination.

The Series 2014 is available in either a standard 19" rack mount or bench top configuration.

PRODUCT FEATURES AND BENEFITS

- Dynamic mixing with automatic computation of component and balance gas flow rates allows the user to formulate ppb standards and vary the concentration.
- Minimizes inventory of expensive, long lead time, VOC gas cylinders. Save on gas costs, cylinder rental and handling labor.
- K-factor computerized correction insures accurate use of all gases based on the thermal density.

- Internally-stored mass flow controller calibration data improves accuracy.
- High capacity memory permits storage and recall of up to 200 multi-component "recipes", saving time and reducing errors.
- Twenty-five line by eighty character display permits viewing of data in worksheet form.
- Modular design allows user to add additional gas circuits later, reducing initial investment and protecting against obsolescence.
- Optional RS-232 Serial Data Interface permits remote operation and complete integration with a data station.

SOFTWARE

The Series 2014 has six primary routines accessible through "soft" keys, located immediately below their on-screen labels.

- **Concentration Mode:** User enters target output gas concentration for the span gas. The actual concentration is displayed during mixing.
 - **Flow Mode:** User enters target flow rate (cc's per minute) for each component gas. Actual flow rates are displayed after mixing is initiated.
 - **Maintain Ports:** User enters the name of the component gas in the source cylinder, its concentration and the port to which it is connected.
 - **Divider Mode:** Allows the user to operate the instrument as a computerized ten step gas divider.
 - **Automatic Sequencer:** Permits unattended automatic operation of the instrument on a programmable seven-day schedule.
 - **Purge Mode:** Purge component gas circuits and mixing zone.
 - **Status (Optional):** Allows user to remotely activate different modes of the system and also activate external devices
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SPECIFICATIONS

Performance (as a percent of setpoint)^{*}

	From 10 to 100% of Full Scale Flow
Accuracy	
Concentration:	± 1.0%
Flow:	± 1.0%
Flow Repeatability (of setpoint)	±0.05%

^{*}Mass flow controllers are calibrated using a NIST traceable Primary Flow Standard, using a Reference Temperature of 0° C (32°F) and a Reference Pressure of 760mm Hg (29.92 in. Hg)

Warm up time: 30 minutes

Mechanical

Inlets

Balance:	One external ¼" Swagelok™*
Purge:	One external ¼" Swagelok™*
Analyte:	One external ¼" Swagelok™*

Outlet

One external ¼" Swagelok™*

Operating Pressures at inlets (flow dependent)

Minimum:	10 psig (0.689 Bar)
Recommended:	25 psig (1.724 Bar)
Maximum:	75 psig (5.171 Bar)

Wetted Surfaces

Tubing:	Electropolished 316 Stainless Steel
MFC's:	Stainless Steel
Seals:	Viton (Optional - Kalrez, Buna-N, Neoprene, Metal)

Operating temperatures

32° - 122° F (0° - 50° C)

Performance temperatures

59° - 95° F (15° - 35° C)

Weight

Minimum:	35 lbs. (16 Kg)
Maximum:	70 lbs. (32 Kg)

*(or compatible fitting)

Dimensions (w x h x d)

Portable: 17" x 7" x 23.5"
(43.18cm x 17.78 cm x 59.69 cm)

Rack: 19" x 7" x 23.5"
(48.26 cm x 17.78 cm x 59.69 cm)

Electrical

Standard: 115 VAC (100 to 130 VAC), 50/60 Hz
Optional: 220 VAC (200 to 260 VAC), 50/60 Hz
Current: 3 Amps (maximum)

Electronics

Inmos T 400 series, 32 Bit processor
12 Bit A/D and D/A Conversion

Operating Modes

Front panel membrane keypad
Internal timer control
Optional RS-232 serial data interface
Optional Status board interface

Data Output

Parallel printer port (Centronics™ compatible)
Optional RS-232 serial data interface

OPTIONS

- RS-232 Serial Data Interface
- Status Board
- Solenoid Valve on Output
- Extra Component Gas Port
- Pressurization Package
- Humidification Package

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