

DESCRIPTION

The Environics® Series 2020 Computerized Gas Dilution System automatically generates precise gas standards for rapid multi-point and multi-scale calibrations. The Series 2020 precisely dilutes high concentration Protocol-1 or certified gas cylinders to an infinitely variable range of concentrations from high percents to low parts per million. The instrument meets or exceeds the performance requirements of the United States EPA 40 CFR Part 51 Method 205 Appendix M.

The Series 2020 consists of a single chassis supporting up to six (6) mass flow controllers, a serpentine pre-mix zone and a zero dead-space final mixing zone. All gas wetted surfaces are electropolished stainless steel. Seals are gas compatible elastomers.

The Series 2020 employs mass flow controllers calibrated to a NIST (National Institute of Standards and Technology) traceable primary standard.

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.

The Series 2020 is available in either a bench top configuration or an optional standard 19" rack mount.

PRODUCT FEATURES AND BENEFITS

- Broad range of dilution ratios (1:1 - 10,000:1) allows the user to significantly reduce the number of gas cylinders needed to perform compliance tests.
- Broad dilution ratio capability allows calibration of most analyzer ranges from one cylinder of each gas specie significantly reducing gas costs, transport and handling labor.
- Automatic calculation of dilution and span gas flows based on the concentration commanded by the user eliminates the need for manual computation and allows rapid transition from point to point and scale to scale.

- 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 2020 has seven 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%
Repeatability	± 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

- Minimum: 10 psig (0.67 Bar)
- Recommended: 25 psig (1.68 Bar)
- Maximum: 75 psig (5.04 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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