Environics®

Product Data
Series 2010
Computerized Automotive Gas Divider

Description

The Environics® Brand Series 2010 Computerized Automotive Gas Divider is an advanced microprocessor controlled instrument for the dynamic calibration of automotive or mobile source emissions analyzers. The Series 2010 automatically performs standard ten-step dilutions of all calibration gases in accordance with U.S. Environmental Protection Agency protocols. The 2010 may also be used to generate calibration standards in user specified concentration (%, ppm, or ppb) by dynamic dilution of higher concentration source cylinders. The concentrations generated may be varied infinitely within the operating range of the instrument.

The Series 2010 consists of a single chassis supporting three thermal 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 instrument's mass flow controllers are factory calibrated using a primary flow standard traceable to the United States' National Institute of Standards and Technology (NIST).

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

The Series 2010 is available in either a bench top or an optional standard 19" rack mount.

PRODUCT FEATURES AND BENEFITS

- Automated ten (10) step divide mode which allows user to specify divide points, dwell time, and order provides operational flexibility and saves technician time.
- Three (3) mass flow controller design which allows the user to go as low as a 1% step (% of cylinder gas concentration) with no loss of accuracy. The user can generate a wider range of standards with each cylinder thus saving on gas costs.
- Optional RS-232 Serial Data Interface and analog outputs permit integration with existing and future automotive emissions test benches and communication protocols.
- Gas mixing on a mass flow basis eliminates complicated pressure controls and inaccuracies due to critical orifice erosion and temperature variations.
- Internally-stored mass flow controller calibration data improves accuracy by as much as a factor of ten and simplifies field recalibration.
- Optional ozone generator and gas phase titration module allows the user to easily check NOx converter efficiency without investing in a second instrument.

SOFTWARE

The Series 2010 has six primary routines.

- **Divide Mode**: Allows the user to operate the instrument as a computerized ten-step gas divider.
- **Concentration Mode**: User enters target output gas concentration for the span gas. The actual concentration is displayed during mixing.
- **Automatic Sequence Mode**: Permits unattended automatic operation of the instrument on a programmable seven-day schedule.
- **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.
- **Purge Mode**: Purge component gas circuits and mixing zone.

SPECIFICATIONS

Performance (as a percent of set point)*

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

* Mass flow controllers are at Standard Temperature (0o C) and Pressure (760 mm Hg , 29.92 in. Hg) using a primary flow standard traceable to the United States' National Institute of Standards and Technology (NIST).

Mechanical

Inlets

Dilution:	External ¼" Swagelok™*
Span(s):	External ¼" Swagelok™*
Ozone source gas:	External ¼" Swagelok™*

Outlet

One external ¼" Swagelok™*

*(or compatible fitting)

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:	Stainless Steel
MFC's:	Stainless Steel
Seals:	Viton

Operating temperatures

40° - 104° F (4° - 40° C)

Performance temperatures

59° - 95° F (15° - 35° C)

Weight

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

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 series, 32 Bit , parallel 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

Data Output

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

OPTIONS

- RS-232 Serial Data Interface
- Ozone Generator/GPT Module
- Status Board
- Solenoid Valve on Output
- Extra Gas Inlets (limit 6)

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