GOW-MAC®
INSTRUMENT CO.

Series 210 BTEX Analyzer

Highly selective for BTEX in CO_2

Rugged, simple to use, low maintenance

Batch or continuous stream monitoring and reporting

Automatic, hands-free calibration, flow setting and analysis

Rack mount or bench-top

BTEX contamination of raw CO_2 is of tremendous concern to the beverage bottlers because of the obvious health considerations, as well as the enormous expense and unfavorable public relations fallout of a publicized product recall. The industry is in need of a definitive method of BTEX speciation and quantitation; one that is repeatable, reliable, fast, and easy to use.

The GOW-MAC® Series 210BTEX Analyzer meets all ISBT Method 12 criteria for selective measurement of BTEX in CO_2. A newly designed photoionization detector (PID) and proprietary technology are used for the specific measurement of BTEX without interference from other potential impurities in beverage-grade CO_2. The detector exhibits linearity over three orders of magnitude, with detection limits for BTEX of < 5 ppb, far below the ISBT specification of 20 ppb.

- *Auto-Calibration*
- *Auto-Calibration Validation*
- *Process/Manual mode*
- *As Found/As Left function*
- *Sample stream selection*
- *Six 4-20 mA outputs*

The Series 210BTEX is specifically designed as a rugged, low cost, low maintenance, simple-to-use, turn-key system that requires minimal human involvement. Calibration and sample introduction are totally automated. The Series 210BTEX system is also capable of PC-based control and data logging.

The analyzer is designed for hands-free application via the use of a computerized user interface. A 2-line LCD display and tactile keypad allows for fast, easy, and constant monitoring and reporting of BTEX data.

Speciation System

There are many potential impurities in processed CO_2 at the ppb level that can potentially interfere with the absolute identification of BTEX. The proprietary speciation system employed by the Series 210BTEX analyzer has been tested against virtually all of the potential alcohol, oxygenate, and aromatic impurities that could be present, with ionization potentials below 10.2 eV, and determined to be interference-free.

Benzene, toluene, ethyl benzene, *o*-xylene, *m*-xylene, and *p*-xylene are speciated, captured, compared against a previous (automatic) standard calibration run, and the value is read from the instrument panel. BTEX is speciated and captured in approximately 12 minutes, interference free.

Gas Flow System

The flow system combines transport, calibration and sample gas movement with discreet sample introduction and speciation capability.

The transport gas flow is controlled by a mass flow controller. The gas is supplied by cylinder, bulk vessel or portable hydrogen generator.

The calibration and sample gases are externally regulated by the user. As an option to the Series 210BTEX, GOW-MAC will design the calibration/ sample flow control accessory to meet the needs of the specific environment of the customer. Gas flows may be monitored by the flow meter on the front panel of the instrument.

The sample introduction system is automatic and comprised of two electrically actuated valves. The first valve is for stream selection of the calibration or sample gas. The second is a gas sampling valve for discreet, constant-volume sample presentation. A solenoid valve, upstream from the sample loop, is included so that valuable calibration gas is not wasted during analysis cycles or idle time.

Software System

The on-board software package contained in the Series 210BTEX allows complete unattended operation of the analyzer with a few simple input commands to the keypad on the instrument's front panel. The user is left only to ensure that the appropriate gases are flowing to the instrument.

Functions

Calibration: automatically initiates proper stream selection and span gas-cal gas purge prior to sample introduction. The calibration captures and stores the detector response factor (RF) which is proportional to the impurity signal. The data is stored, and the calibration is immediately validated by a second inject. The validation run is compared to the stored calibration run. The calibration is validated when agreement is reached between the runs. The recommended calibration gas is 100 ppb BTEX in N_2. The concentration value of calibration standard may be entered via the keypad.

Run: automatically selects the correct sample stream, and can be configured for use with an external trigger or continuous analysis. The benzene concentration, in ppb, is displayed on the front panel and updated upon the completion of each analysis. Six (6) 4 - 20 mA outputs allow the user to connect to a computer or PLC device for reading and/or controlling the other analyte concentrations.

All functions, including status notes, are clearly displayed on the front of the instrument so that the progress of each calibration, validation and/or analysis can be monitored.

Maintenance & Training

The Series 210BTEX is designed for modular maintenance in the field. All maintenance activities are "plug and play", and include detector assembly and speciation assembly replacement. Each activity requires minimum tools, and is accomplished in ten minutes or less.

No specialized training is required for operation of the GOW-MAC Series 210BTEX. It has been designed around the concepts of simplicity and human factors, and is intended to provide years of service with little operator intervention.

Applications

The Series 210BTEX has been developed for both the CO_2 producer and the beverage bottler. It can accept samples from a variety of sources (cylinders, bulk tanks, trucks, rail cars) and perform continuous, unattended sampling and analysis.

Instrument Specifications

Gas Connections	1/8" Swagelok®
Mounting	EIA Standard 19" rack, 7U height or bench top
Transport Gas Flow Rate	≅ 7 ccpm
Transport Gas Pressure Required	5 - 10 psig
Sample Gas Pressure Required	5 psig (20 psig max)
Calibration Gas Pressure Required	5 psig (20 psig max)
Instrument Operating Temp.	Ambient
Detector Temperature	Factory set; adjustable
Oven Temp Regulation	Factory set w/ software controlled conditioning
Outputs	Six (6) 4 - 20 mA Ready (Contact Closure) Signal Level (mV)
Inputs	Trigger (TTL or Contact Closure)
Sensitivity	≥ 5 ppb for all aromatics
Linear Range	5 ppb to 120 ppb (1 x 10^3)
User Interface	Keypad: Numerical, tactile Display: 16 character x 2-line LCD 5 x 7 characters w/ cursor LED backlight 99.0 x 24.0 mm viewing area
Power Required	400 W
Dimensions	16.90" W x 12.25" H x 23.00" D (42.93 x 31.12 x 58.42 cm)
Weight	Net: 50 lbs. (22.68 kg) Shipping: 60 lbs. (27.22 kg)

Specifications and features will vary depending upon system configuration and are subject to change without notice. The above specifications are established during design, but are not to be construed as test criteria for every product.

Ordering Information

Series 210BTEX..... 115 V, 60 Hz
Series 212BTEX..... 230 V, 50 Hz

GOW-MAC INSTRUMENT CO.
Analytical instruments since 1935

ISO 9001:2008
FM 581002

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