



GOW-MAC[®]
INSTRUMENT CO.

Series 210ACE Acetaldehyde Analyzer

Highly selective for Acetaldehyde in CO₂

Rugged, simple to use, low maintenance

Batch or continuous stream monitoring

Automatic, hands-free calibration,
flow setting and analysis

Rack mount or bench-top

Acetaldehyde contamination of CO₂ 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 acetaldehyde speciation and quantitation; one that is reliable, yet fast and easy to use.

The GOW-MAC[®] Series 210ACE Acetaldehyde Analyzer meets ISBT Method 11 criteria for selective measurement of acetaldehyde in CO₂. A newly designed flame ionization detector (FID) and proprietary technology are used for the specific measurement of acetaldehyde without interference from other potential impurities in beverage-grade CO₂. The detector exhibits linearity over six orders of magnitude, with detection limits for acetaldehyde of < 30 part-per-billion (ppb), far below the ISBT specification of 0.2 part-per-million (ppm).

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

The Series 210ACE is designed for hands-free application via the use of a computerized user interface. A 2-line LCD display and non-tactile keypad allows for fast, easy, and constant monitoring and reporting acetaldehyde data.



Speciation System

There are several potential impurities in processed CO₂ at the ppb level that can potentially interfere with the absolute identification of acetaldehyde. The speciation system employed by the Series 210ACE has been tested against virtually all of the potential alcohol and oxygenate impurities that could be present and determined to be interference-free.

Acetaldehyde is captured by the software system, with results displayed digitally on the instrument's front panel. The impurity is speciated, captured, compared against a previous (automatic) standard run, and the value is read from the instrument panel. Acetaldehyde is speciated and captured in < 3 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 is internally regulated and factory set negating the need for operator intervention. Transport gas cylinders/regulators would be placed in areas where they will not be subjected to temperature variations greater than $\pm 3^{\circ}\text{C}$. The transport gas may be supplied by cylinder, bulk vessel or portable generator.

SB-210ACE

The calibration and sample gases are externally regulated by the user. As an option to the Series 210ACE, 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 meters on the front panel of the instrument.

The automatic injection system is 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 210ACE 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 output in the form of a mA current, which is proportional to the acetaldehyde 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 0.2 to 2 ppm acetaldehyde in N₂. 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 acetaldehyde concentration, in ppb, is displayed on the front panel and updated upon the completion of each analysis.

Bake-out: Upon the user's command, the software system will initiate a timed bake-out sequence of the speciation system. The speciation oven will automatically elevate to a factory-set temperature for a specific period of time and automatically cool to resume operation.

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 210ACE 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 210ACE. 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 210ACE has been developed for both the CO₂ producer and the beverage bottler. It can accept samples from a variety of sources 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	≅ 30 ccpm
Transport Gas Pressure Required*	60 psig
Instrument Operating Temp.	5 - 40 °C
Detector Temperature	Factory set; adjustable
Oven Temp Regulation	Factory set w/ software controlled conditioning
Power Required	400 W
Sample Flow Rate Pressure Required*	5 psig (20 psig max)
Calibration Gas Pressure Required*	5 psig (20 psig max)
Sensitivity	≤ 30 ppb acetaldehyde
Operating Range	30 ppb - 5 ppm
User Interface	Keypad: Numerical, non-tactile Display: 16 character x 2-line LCD 5 x 7 characters w/ cursor LED backlight 99.0 x 24.0 mm viewing area
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)

* Sample, transport, and calibration gas inlet pressures up to 3000 psi with optional pressure regulators.

** 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 210ACE..... 115 V, 60 Hz

Series 212ACE..... 230 V, 50 Hz



Global Headquarters
GOW-MAC Instrument Co.
277 Brodhead Road
Bethlehem, PA 18017 U.S.A.
Tel: (610) 954-9000
Fax: (610) 954-0599
E-mail: sales@gow-mac.com
URL: www.gow-mac.com

Asian-Pacific Office
GOW-MAC Instrument Co. - Taiwan
3Fl. No. 33, Lane 92, Beida Road
Hsinchu City 300, Taiwan ROC
Tel: +886-3-5422845
Fax: +886-3-5422045
E-mail: jclo@gow-mac.com

China Office
GOW-MAC Instrument Co. - China
Beijing, China
Tel: + 86-13-501010846
E-mail: sales@gow-mac.com.cn
URL: www.gow-mac.com.cn

