

## MAX-Bev CO<sub>2</sub> Purity Monitoring System

The Thermo Scientific™ MAX-Bev™ CO<sub>2</sub> Purity Monitoring System is a fully integrated solution capable of measuring trace impurities in carbon dioxide (CO<sub>2</sub>) gas down to single-digit parts-per-billion (ppb), as well as absolute purity. This system is based on the Thermo Scientific™ MAX-iR™ FTIR Gas Analyzer, which is capable of performing all relevant analytical measurements except oxygen. The analyzer incorporates a deuterated triglycine sulfate (DTGS) thermal detector, which has a spectral range of 600–5,000 cm<sup>-1</sup>. This broad range allows for the measurement of all infrared-active impurities, as well as the direct measurement of absolute CO<sub>2</sub> purity, which eliminates the need for cumbersome wet methods (such as Zahm-Nagel purity testing). By using incredibly precise pressure and temperature controls, the MAX-Bev CO<sub>2</sub> Purity Monitoring System is capable of measuring CO<sub>2</sub> at 100 ± 0.02% simultaneously with trace impurities.

### Sulfur impurity measurement

Within the MAX-Bev CO<sub>2</sub> Purity Monitoring System, an oxidizer module converts all reduced sulfur species to sulfur dioxide (SO<sub>2</sub>), which is then measured by the MAX-iR Gas Analyzer to determine the total reduced sulfur impurity level in the carbon dioxide. This is a more reliable method compared to industry-standard UV fluorescence analyzers, which are prone to maintenance issues and extended downtime.

### MAX-Acquisition Software

The entire MAX-Bev CO<sub>2</sub> Purity Monitoring System is controlled by Thermo Scientific™ MAX-Acquisition™ Software, which allows you to control all aspects of data acquisition and analysis, view system diagnostics and alarms, and generate/print certificates of analysis (CoA) as well as historical reports.

### Features

Automated CO<sub>2</sub> purity monitoring

Meets requirements of the International Society of Beverage Technologists (ISBT) and European Industrial Gases Association (EIGA)

10 channel multiplexer

MFCs control sample flow and validation gas dilution for automated QA/QC

Optional zirconium oxide oxygen analyzer

Touch screen control

Works with MAX-Acquisition Software

SQLite historical database

Save and print customizable CoAs



**MAX-Bev CO<sub>2</sub> Purity Monitoring System specifications**
**Multiplexer**

Number of sample channels	10
Sample flow	7 L/min
Total analysis time	10 minutes

**Gas requirements**

Zero gas	Nitrogen, N3.0 or better, 80 psig
Clean dry air	Clean dry air, filtered and free of H <sub>2</sub> O and hydrocarbons, 80 psig
CO <sub>2</sub> reference gas	Research grade (99.9999%) CO <sub>2</sub> , 80 psig
Impurities reference gas	Blend of 5 ppm COS, 10 ppm benzene and 75 ppm propane in N <sub>2</sub> balance, 80-85 psig
O <sub>2</sub> reference gas (optional)	50 ppm O <sub>2</sub> in N <sub>2</sub> balance, 20-30 psig

**Facilities requirements**

Environmental temperature range	20-30°C
Environmental relative humidity (RH)	10-90% RH, non-condensing
Power	208-240 VAC, 50/60 Hz, 20 A circuit (4 A typical, 16 A max.)
Dimensions (W x H x D)	651 x 1952 x 944 mm
Estimated weight	180 kg

**Factory integration**

Data outputs	Modbus TCP/IP
	Relay outputs (Form C)
	Analog outputs (4-20 mA)
	Digital outputs (24 V sourcing)
Data inputs	Modbus TCP/IP remote control
	Analog inputs (4-20 mA)
	Digital inputs (24 V) for remote start and stop
	Thermocouple inputs (Type K)

**MAX-Bev CO<sub>2</sub> Purity Monitoring System analytical specifications**

Compound	Calibration range	Detection limit
Acetaldehyde	ND-400 ppm	5 ppb
Acetone	ND-1000 ppm	20 ppb
Ammonia	ND-400 ppm	10 ppb
Benzene (total aromatic hydrocarbon)	ND-5 ppm	5 ppb
Carbon dioxide	90-100%	Matrix
Carbon monoxide	ND-55 ppm	120 ppb
Ethane	ND-500 ppm	20 ppb
Ethanol	ND-1000 ppm	20 ppb
Ethylene	ND-100 ppm	20 ppb
Methane	ND-65 ppm	5 ppb
Methanol	ND-750 ppm	10 ppb
Moisture	ND-100 ppm	1 ppm
Nitric oxide	ND-100 ppm	75 ppb
Nitrogen dioxide	ND-30 ppm	25 ppb
Oxygen	ND-500 ppm	1 ppm
Pentane	ND-500 ppm	100 ppb
Propane	ND-400 ppm	100 ppb
Total hydrocarbon	ND-1000 ppm	100 ppb
Total non-methane hydrocarbon	ND-1000 ppm	100 ppb
Total sulfur (SO <sub>2</sub> )	ND-20 ppm	10 ppb

 Learn more at [thermofisher.com/max-bev](https://thermofisher.com/max-bev)

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