

MAX-Bev CO₂ Purity Monitoring System

The Thermo Scientific™ MAX-Bev™ CO₂ Purity Monitoring System is a fully integrated solution capable of measuring trace impurities in carbon dioxide (CO₂) 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⁻¹. This broad range allows for the measurement of all infrared-active impurities, as well as the direct measurement of absolute CO₂ 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 CO₂ Purity Monitoring System is capable of measuring CO₂ at 100 ± 0.02% simultaneously with trace impurities.

Sulfur impurity measurement

Within the MAX-Bev CO₂ Purity Monitoring System, an oxidizer module converts all reduced sulfur species to sulfur dioxide (SO₂), 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 CO₂ 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 CO₂ purity monitoring

Compliant with International Society for Beverage Technologists (ISBT) Standards

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 CO₂ Purity Monitoring System specifications
Multiplexer

Number of sample channels	10
Sample flow	7 L/min
System response time	≤75 seconds

Gas requirements

Zero gas	Nitrogen, N3.0 or better, 80 psig
Clean dry air	Clean dry air, filtered and free of H ₂ O and hydrocarbons, 80 psig
CO ₂ reference gas	Research grade (99.9999%) CO ₂ , 80 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 CO₂ Purity Monitoring System analytical specifications

Gas	Units	Lower alarm threshold	Upper alarm threshold	LOD
Carbon dioxide	%	99.9	100.03	N/A
Oxygen (optional)	ppm	N/A	30	1
Moisture	ppm	N/A	20	1
Ammonia	ppm	N/A	2.5	0.01
Nitric oxide	ppm	N/A	2.5	0.075
Nitrogen dioxide	ppm	N/A	2.5	0.025
Total hydrocarbon	ppm	N/A	50	0.100
Total non-methane hydrocarbon	ppm	N/A	20	0.100
Acetaldehyde	ppb	N/A	200	5
Carbon monoxide	ppm	N/A	10	0.12
Total aromatic hydrocarbon (benzene)	ppb	N/A	20	5
Total sulfur (SO ₂)	ppb	N/A	100	10

Learn more at thermofisher.com/max-bev

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