CDQC System

Carbon Dioxide Quality Control System

- 316 Stainless Steel Tubing and Fittings (sulfur-treated runs for trace sulfur analysis)
- Remote and Auto-Calibration
- Sample System Included
- Single/Double-Bay NEMA-12 Powder Coated Steel Cabinet w/ Windows
- FNPT Electrical Ports
- 1/4" Tube Fitting Connections

Applications & Analysis Requirements

Raw carbon dioxide (CO_2) is commonly sourced from ammonia plants, ethanol plants and other fermentation sources. For use in food and beverages, proper removal of certain compounds in these processes is critical because many of them can pose health risks and impact beverage odor and taste. As a result, ultra-pure CO_2 gas suppliers and bottlers continuously check product quality for part-per-million (PPM) or even part-per-billion (PPB) levels of these impurities. Impurity limits and the need to continuously monitor may vary depending on the customer and raw CO_2 source.

Impurity	Limit (typical)
Acetaldehyde (CH_3CHO)	0.2 ppm max
Ammonia (NH_3)	2.5 ppm max
Aromatic Hydrocarbon	20 ppb max
Benzene (C_6H_6)	20 ppb max
Carbon Dioxide (CO_2)	99.9% min
Carbon Monoxide (CO)	10 ppm max
Methanol (CH_3OH)	10 ppm max
Moisture (H_2Ov)	20 ppm max
Nitric Oxide (NO)	2.5 ppm max
Nitrogen Dioxide (NO_2)	2.5 ppm max
Oxygen (O_2)	30 ppm max
Sulfur Dioxide (SO_2)	1 ppm max
Total Sulfur	0.1 ppm max
Total Volatile Hydrocarbons	50 ppm max

CDQC System Overview

Teledyne's Carbon Dioxide Quality Control (CDQC) system offers an integrated package to continuously monitor impurities in carbon dioxide (CO_2). The plug-and-play design allows for the user to select only the gases and features of interest to maximize cost benefit and space.

Front door viewing windows allow for a view of all analyzer displays, flow and pressure settings. Stainless steel tube fitting connections and NPT or metric electrical ports, as required, are conveniently located in a central location for easy accessibility. Sample conditioning, utility gas provisions and integral calibration gas solenoid valves are standard.

Options

- Multi-point stream selection, controlled by Profibus-DP or discrete signals
- Stainless steel cabinet, NEMA or IP rated, climate control available
- Profibus-DP communications of most analyzers
- Integral zero air generator to eliminate zero air utility requirement.

Impurity	Analyzer
Benzene/Acetaldehyde/Methanol	4000 Series Ultrafast Gas Chromatograph
Carbon Monoxide (CO)	GFC-7001T Gas Filter Correlation Analyzer
Moisture	8800A Trace Moisture Analyzer
NOx/Ammonia (NH_3)	9110T NO/NO_2/NOx Analyzer 9130T Chemiluminescent Ammonia (NH_3) Gas Analyzer
Oxygen	3000TA Trace Oxygen Analyzer
Total Hydrocarbons	4020 Total Hydrocarbon Analyzer
Total Hydrocarbons (Methane/Non-Methane)	4040 Methane/Non-Methane Analyzer
Total Sulfur	6200T Total Sulfur Analyzer

Optional Accessories

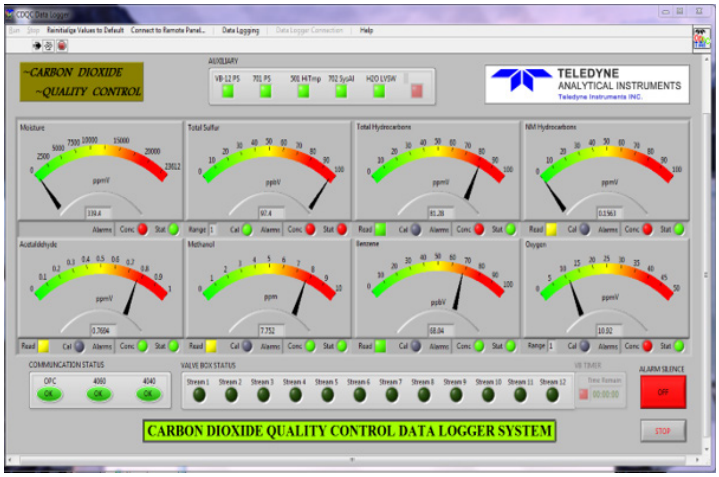
VB Series Valve Boxes

- Sequential stream timing control
- Automatic switch to next stream when the time elapsed
- Timer indicator of stream elapsed time
- Individual timer of each stream
- Stream selection can be operated in either manual sequencer
- Push-button to select the stream
- Optional Profibus-DP communications

Model 701 Zero Air Generator

- Creates hydrocarbon-free air supply for all FID-based analyzers
- Optional CO or CO and Hydrocarbon scrubber
- Automatic water drain
- Automatic pump control based on flow demand
- Source of purge air for permeation tube ovens

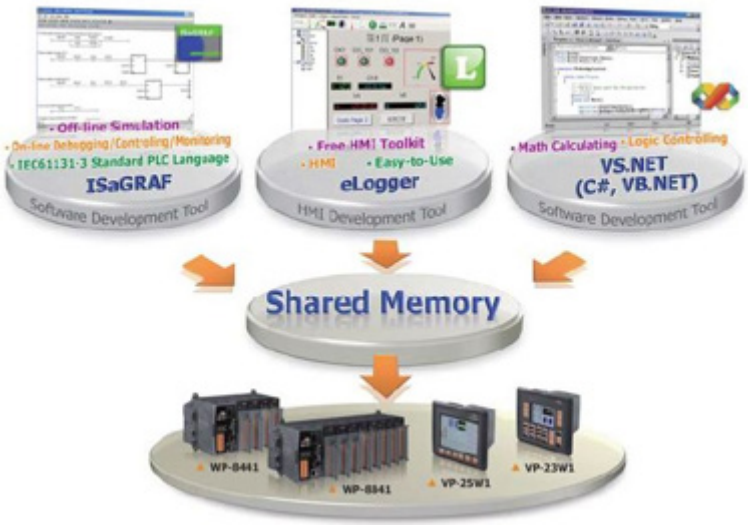
Data Acquisition System (DAS)



Software

- Real time display of analyzer output
- Trending of the outputs over time
- Gas detector tube timer control
- Alarm display based on user programmable alarm limits
- Alarm display based on analyzer status
- Statistical process control based on calibration protocol
- Data storage to a selected database
- Valve box sequencer control
- Certificate of analysis production and storage
- Display real time trend of analyzers over 6 consecutive days

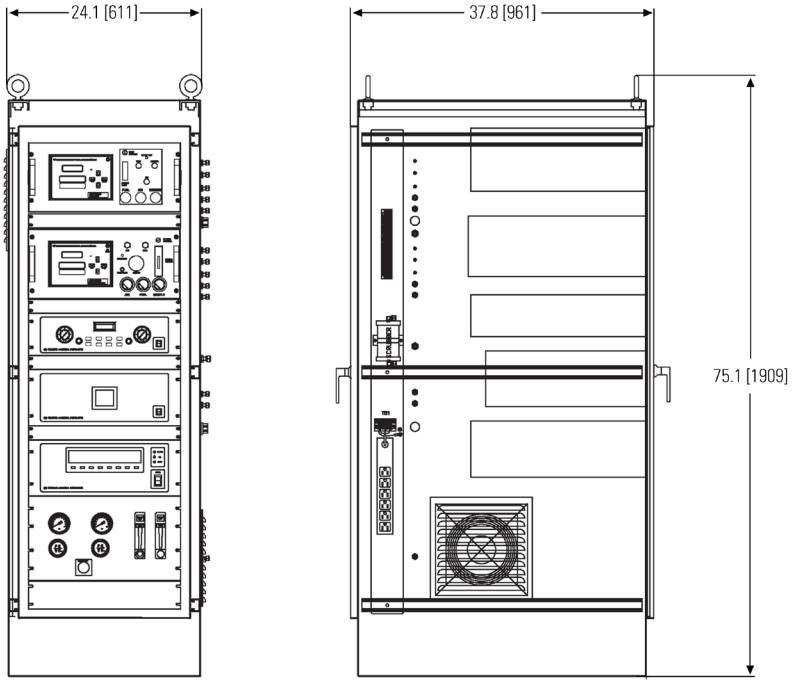
Hardware



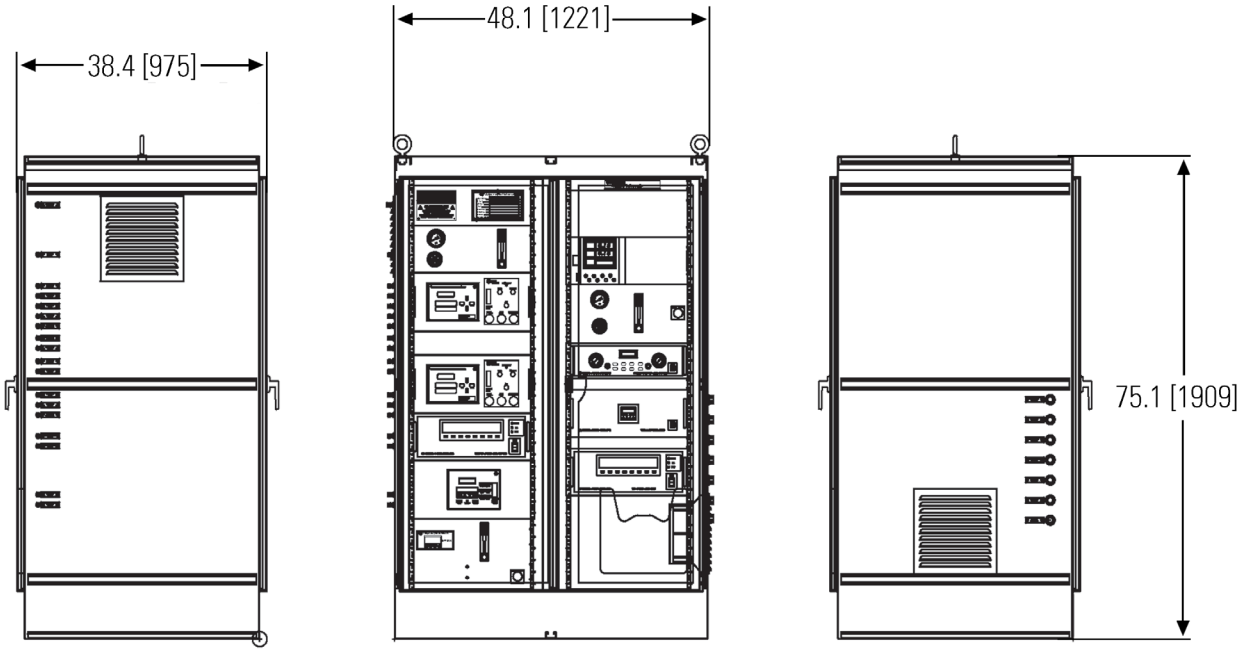
- Windows CE based
- Hard real time capability
- Fast boot speed
- PLC feel
- PXA270 CPU (32-bit & 520 MHZ)
- VGA port output or touch screens
- Options for Modbus-TCP, Modbus-RTU, Profibus-DP and OPC
- Support eLogger & soft-GRAF HMI
- Supports MS visual studio .NET
- Scalable device modules
- Integrated display and control panel
- Ethernet/RS485/RS232 Connectors

Typical Dimension Diagrams

Single Bay Cabinet



Double Bay Cabinet



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