



Teledyne Analytical Instruments

GFC-7000



Ultra Trace CO₂ Analyzer

- Proven Gas Filter Correlation (GFC) infrared detector assembly
- 0-100 ppb to 0-100 ppm, user selectable
- Gas Filter Wheel for CO₂ specific measurement
- GFC wheel guaranteed against leaks for 5 years
- Multi-tasking software allows viewing test variables while operating
- Continuous self checking with warning alarms
- Bidirectional RS-232 for remote operation
- Digital status outputs provide instrument condition
- Adaptive signal filtering optimizes response time
- Temperature and pressure compensation
- Internal data logging with 1 minute to 24 hour averages
- Advanced remote operation software

PRINCIPLE OF OPERATION

The GFC-7000 measures carbon dioxide (CO₂) by comparing infrared energy absorbed by a sample to that absorbed by a reference gas according to the Beer-Lambert law. This is accomplished by using a Gas Filter Wheel which alternately allows a high energy infrared light source to pass through a CO₂ filled chamber and a chamber with no CO₂ present.

The light then travels through the sample cell, which has a folded path. The energy loss through the sample cell is compared with the zero reference signal provided by the gas filter to produce an output proportional to concentration, with little effect from interfering gases within the sample.

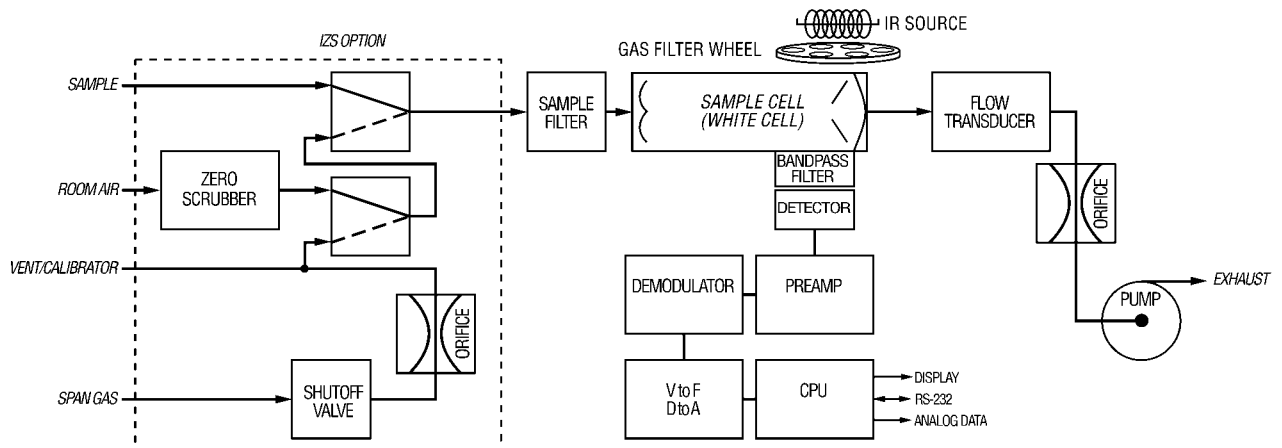
ADVANCED PERFORMANCE

This design produces superior zero and span stability and a high signal-to-noise ratio, allowing excellent sensitivity. Multi-tasking software gives real time indication of numerous operating parameters and provides automatic alarms if diagnostic limits are exceeded.

Built-in data acquisition and internal memory allow logging multiple parameters including average and instantaneous values, calibration data, and operating parameters. Up to 8,000 records of stored data can be retrieved via the RS-232 port or from the front panel.

APPLICATIONS

The GFC-7000 is ideal for detecting the breakthrough of ppb CO₂ levels from molecular sieves which are applied on the incoming air used for cryogenic air separation purposes. In addition, the GFC-7000 can also analyze ultra trace CO₂ levels which are dissolved in liquid oxygen found within the main condensers of cryogenic air separation plants.



GFC-7000 ULTRA TRACE CO₂ ANALYZER

SPECIFICATIONS

Ranges:	0-100 ppb to 0-100 ppm full scale, user selectable Dual ranges and auto ranging supported
Alarms:	3 x energizable alarm relays can be provided for CO ₂ Concentration, Cal in Process, Range Change or for System Failure indication purposes (option)
Units:	ppm, mg/m ³
Zero noise:	<2.5 ppb (RMS)
Span noise:	<0.5% of reading (RMS) ²
Lower detectable limit (LDL):	<5 ppb
Zero drift:	(24hrs): 10 ppb*; (7 days): 20 ppb*
Span drift:	(7 days): 1% of reading*
Lag time:	10 seconds
Rise & fall time:	<90 seconds to 95%
Linearity:	1% full scale
Precision:	0.5% of reading
Sample flow rate:	800 cc / min ±10%
Operating temperature range:	5 - 40°C
Dimensions:	7" (178 mm) x 17" (432 mm) x 25" (635 mm)
Weight:	40 lbs (18.2 kgs)
Power:	Selectable voltage: 100V / 115V / 220-240V Selectable frequency: 50 Hz or 60 Hz
Analog outputs:	Bi-Polar, 10V, 5V, 1V, 100 mV, selectable
Recorder offset:	±10%
RS-232:	Standard, DB-9 connector
Status (digital):	12 outputs and 3 inputs (opto-isolated)
Current output:	0-20mA or 4-20mA isolated output, optional
Approvals:	CE

* At constant temperature and voltage

CONFIGURATION

- Auto ranging and dual ranges
- 47mm particulate filter
- 12 isolated digital status outputs
- 3 isolated digital inputs
- Bi-directional RS-232
- Advanced remote operation software
- Supported voltages / frequencies:

100V / 50Hz	100V / 60Hz
115V / 60Hz	220V / 50Hz
220V / 60Hz	230V / 50Hz (CE)
240V / 50Hz	
- Selectable output voltage:

100mV	1V
5V	10V

Additional Options:

- Rack mount (19") with chassis slides
- Rack mount only
- Isolated 0-20mA or 4-20mA output
- Multi-drop RS-232 connection
- Calibration Valves:
 - Internal Zero Span (IZS) Stainless steel auto-cal valves (mounted within the GFC-7000) for selection of customer-supplied zero and span gas
 - Shut-off valve and flow control for external span gas cylinder
 - Internal zero air scrubber
- RS-485 Communications

Accessories:

- RS-232 cable
- Expendables kit
- Spare parts kit

TELEDYNE ANALYTICAL INSTRUMENTS

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Warranty

Instrument is warranted for 1 year against defects in material or workmanship

NOTE: Specifications and features will vary with application. The above are established and validated during design, but are not to be construed as test criteria for every product. All specifications and features are subject to change without notice.

