

# TELEDYNE ANALYTICAL INSTRUMENTS



- Adaptive signal filtering optimizes response time
- GFC wheel guaranteed against leaks for 5 years
- Temperature and pressure compensation
- Internal data logging with 1 minute to 24 hour averages
- Advanced remote operation software

## PRINCIPLE OF OPERATION

Teledyne's GFC-7001E Gas Filter Correlation CO analyzer measures low ranges of carbon monoxide by comparing infrared energy absorbed by a sample to that absorbed by a reference gas according to the Beer-Lambert law. This is accomplished with a gas filter wheel which alternately allows a high energy light source to pass through a CO filled chamber and a chamber with no CO present.

The light path then travels through the sample cell, which has a folded path of 14 meters. The energy loss through the sample cell is compared with the zero reference signal provided by the gas filter to produce a signal proportional to concentration, with little effect from interfering gases within the sample.

## MODEL GFC-7001E Trace CO Analyzer

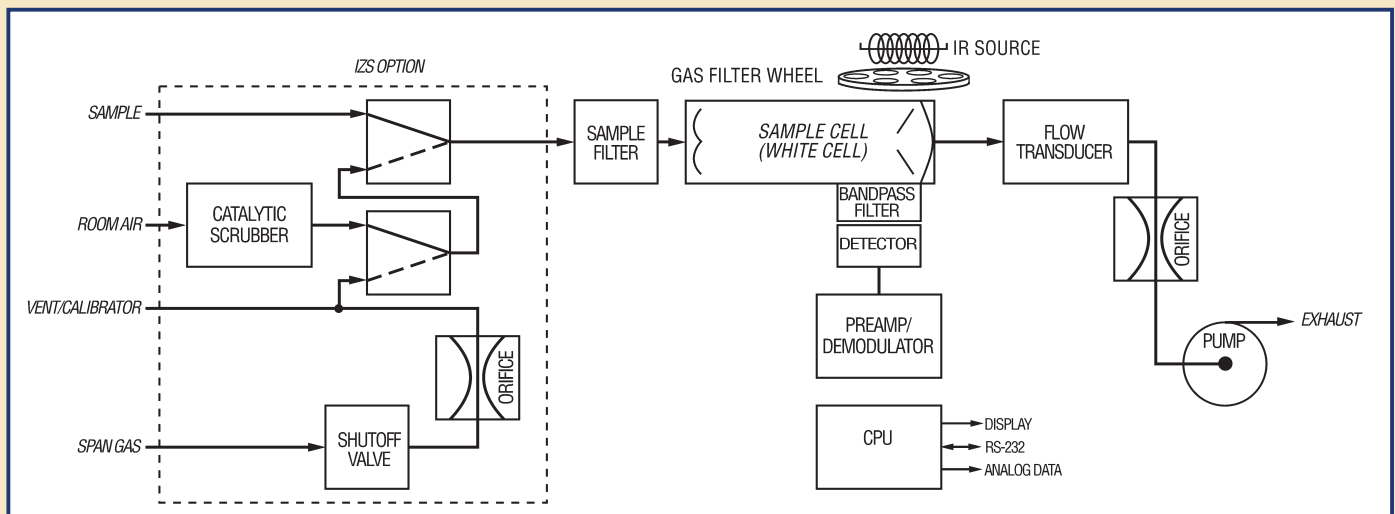
### ADVANCED PERFORMANCE

This design produces excellent zero and span stability and a high signal to noise ratio allowing extreme 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 allows logging multiple parameters including average and instantaneous values, calibration data and operating parameters. Up to 8000 records of stored data can be retrieved via the RS-232 port or from the front panel. The GFC-7001E features rugged construction and is designed to perform with a minimum of attention. If maintenance is required, modular construction makes service a simple operation.

### APPLICATIONS

The GFC-7001E, typically applied for combustion efficiency and emissions monitoring purposes, is also ideal for the continuous detection of ultra trace levels of CO in ultra-high purity bulk gases (N<sub>2</sub>, Ar, O<sub>2</sub> and He) used in the manufacturing of semiconductor and optical fiber related components. The GFC-7001E is also ideally applied for the detection of trace carbon monoxide (0-5 ppm) in medical grade oxygen and medical grade air.



**Built for Reliability and Performance**

# Model GFC-7001E Specifications

<b>Ranges:</b>	0-1000 ppm full scale, user selectable; dual ranges and auto ranging supported; 0-1 ppm full scale optional range available
<b>Alarms:</b>	3 x energizable alarm relays can be provided for CO Concentration, Cal in Process, Range Change or for System Failure indication purposes (option)
<b>Units:</b>	ppb, ppm, $\mu\text{g}/\text{m}^3$ , $\text{mg}/\text{m}^3$
<b>Zero noise:</b>	<0.02 ppb (RMS)
<b>Span noise:</b>	<0.5% of reading above 5 ppm (RMS) <sup>2</sup>
<b>Lower detectable limit (LDL):</b>	0.04 ppm
<b>Zero drift:</b>	(24 hrs): <0.1 ppm*; (7 days): 0.2 ppm*
<b>Span drift:</b>	(24 hrs) < 0.5% reading* (7 days) 1% of reading*
<b>Lag time:</b>	10 seconds
<b>Rise &amp; fall time:</b>	<60 seconds to 95%
<b>Linearity:</b>	1% full scale
<b>Precision:</b>	0.5% of reading
<b>Sample flow rate:</b>	800 cc / min $\pm$ 10%
<b>Operating temp range:</b>	41 to 104°F (5 - 40°C)
<b>Dimensions:</b>	7" H x 17" W x 25" D (178 x 432 x 635 mm)
<b>Weight:</b>	40 lbs (18.2 kgs)
<b>Power:</b>	Selectable voltage: 100V / 115V / 220-240V Selectable frequency: 50 Hz or 60 Hz
<b>Analog outputs:</b>	Bi-Polar, 10V, 5V, 1V, 100 mV, selectable
<b>Recorder offset:</b>	$\pm$ 10%
<b>RS-232:</b>	Standard, DB-9 connector
<b>RS-485:</b>	Optional, DB-9 connector
<b>Status (digital):</b>	8 outputs and 6 inputs (opto-isolated)

**Current output:** 0-20mA or 4-20mA isolated output (optional)

**Approvals:** USEPA, CE

\* At constant temperature and voltage

## CONFIGURATIONS

- Auto ranging and dual ranges
- 47mm particulate filter
- 8 isolated digital status outputs
- 6 isolated digital inputs
- Bi-directional RS-232
- Advanced remote operation software
- Supported voltages: 100V, 115V, 220 - 240V
- Supported frequencies: 50 Hz, 60 Hz
- Selectable output voltage: 10V, 5V, 1V, 100mV

## OPTIONS

- "U" version - 0-1 ppm full scale range
- 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-7001E) 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.

