



**TELEDYNE**  
ANALYTICAL INSTRUMENTS  
Everywhere you look™

# GFC Series

Infrared Analyzers with  
Gas Filter Correlation Technology

## FEATURES

- Models available for CO, CO<sub>2</sub>, and N<sub>2</sub>O gas detection
- Gas filter correlation method provides part-per-billion (ppb) detection
- Large color touch-screen provides large, luminescent interface
- Adaptive signal filtering optimizes response time
- Temperature and pressure compensation
- USB ports on front panel for peripheral devices and firmware upgrades
- Commonality of parts across all models



## GFC Series Configurations

Model	Gas Analyzed
GFC-7000T	CO <sub>2</sub>
GFC-7001T	CO
GFC-7002T	N <sub>2</sub> O

The GFC Series gas filter correlation analyzers measure low ranges of gases (CO<sub>2</sub>, CO, and N<sub>2</sub>O detecting models available) by comparing infrared energy absorbed by a sample to that absorbed by a reference according to the Beer-Lambert law.

Using a Gas Filter Correlation Wheel, a high energy IR light source is alternately passed through a target gas-filled chamber and a chamber with no target gas present. The light path then travels through

the sample cell, with a variable length folded path depending on the gas being detected. The energy lost through the sample cell is compared with the reference signal provided by the filter wheel to produce a signal proportional to concentration, with little effect from interfering gases within the sample. This design produces excellent zero and span stability and high signal to noise ratio, allowing excellent performance over a wide concentration range.

All GFC Series instruments offer an advanced color display, capacitive touch screen, intuitive user interface, flexible I/O, and built-in data acquisition capability. All instrument set up, control, and access to stored data and diagnostic information is available through the front panel or via RS232, Ethernet, or USB com ports either locally or by remote connection using the included APIcom™ software.

### CALIBRATION OPTIONS:

- Ambient zero/ambient span
- Ambient zero/pressurized span
- Zero scrubber/pressurized span
- Zero scrubber/ambient span

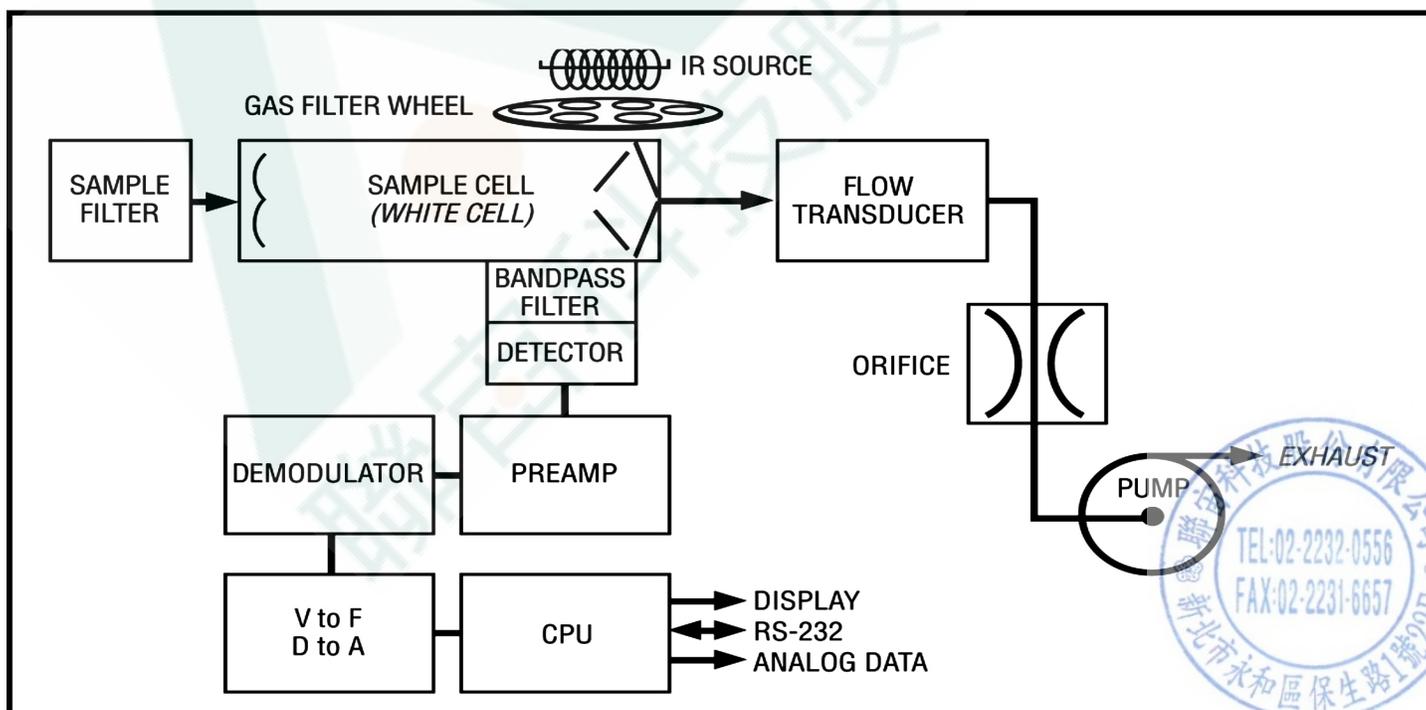
### MOUNTING OPTIONS:

- Rack mount brackets with chassis slides
- Rack mount brackets only
- Handles

### OTHER OPTIONS:

- Paramagnetic O<sub>2</sub> Sensor
- CO<sub>2</sub> Sensor
- Concentration alarm relays
- Expendables kit

## GFC Series Schematic



# GFC Series - Infrared Analyzers

SPECIFICATIONS	GFC-7000T	GFC-7001T	GFC-7002T
<b>Gas Analyzed</b>	CO <sub>2</sub>	CO	N <sub>2</sub> O
<b>Range</b>	0-2 ppm to 0-2,000 ppm full scale (0-100 ppb to 0-100 ppm full scale for -U version) (dual ranges and auto-ranging supported)	0-1 ppm to 0-1,000 ppm full scale (0-100 ppb to 0-100 ppm full scale for -U version) (dual ranges and auto-ranging supported)	0-1 ppm to 0-1,000 ppm full scale (0-200 ppb to 0-200 ppm full scale for -U version) (dual ranges and auto-ranging supported)
<b>Measurement Units</b>	ppb, ppm, µg/m <sup>3</sup> , mg/m <sup>3</sup> (selectable)	ppb, ppm, µg/m <sup>3</sup> , mg/m <sup>3</sup> (selectable)	ppb, ppm, µg/m <sup>3</sup> , mg/m <sup>3</sup> (selectable)
<b>Zero Noise</b>	< 0.1 ppm (RMS) (< 2.5 ppb (RMS) with -U option)	< 0.02 ppm (RMS) (< 10 ppb (RMS) with -U option)	< 0.02 ppm (RMS) (< 10 ppb (RMS) with -U option)
<b>Span Noise</b>	< 1% of reading (RMS) (< 5% of reading (RMS) with -U option)	< 0.5% of reading (RMS) above 5 ppm (< 0.5% of reading above 2.5 ppm with -U option)	< 0.5% of reading (RMS) above 5 ppm (< 0.5% of reading (RMS) for -U option)
<b>Lower Detectable Limit</b>	< 0.2 ppm (< 5 ppb with -U option)	0.04 ppm (< 20 ppb with -U option)	0.04 ppm (< 10 ppb with -U option)
<b>Zero Drift</b>	< 0.25 ppm/24 hours	< 0.1 ppm/24 hours (< 20 ppb/24 hours with -U option)	< 0.1 ppm/24 hours (< 25 ppb/24 hours with -U option)
<b>Span Drift</b>	< 0.5% of reading /24 hours	< 0.5% of reading /24 hours (< 0.5% of reading/24 hours above 5 ppm with -U option)	< 0.5% of reading /24 hours
<b>Lag Time</b>	10 seconds	10 seconds	10 seconds
<b>Rise and Fall Time</b>	< 60 seconds to 95%	< 60 seconds to 95%	< 60 seconds to 95%
<b>Linearity</b>	1% of full scale	1% of full scale	1% of full scale
<b>Precision</b>	0.5% of reading	0.5% of reading	0.5% of reading
<b>Sample Flow Rate</b>	800 cm <sup>3</sup> /min ± 10%	800 cm <sup>3</sup> /min ± 10% (1800 cm <sup>3</sup> /min +/- 20% with -U option)	800 cm <sup>3</sup> /min ± 10%
<b>ELECTRICAL SPECIFICATIONS</b>			
<b>Power Requirements</b>	100V-120V or 220V-240V, 50/60 Hz	100V-120V or 220V-240V, 50/60 Hz	100V-120V or 220V-240V, 50/60 Hz
<b>Analog Output Ranges</b>	10V, 5V, 1V, 0.1V (selectable)	10V, 5V, 1V, 0.1V (selectable)	10V, 5V, 1V, 0.1V (selectable)
<b>Recorder Offset</b>	± 10%	± 10%	± 10%
<b>PHYSICAL SPECIFICATIONS</b>			
<b>Operating Temp Range</b>	5 - 40°C (41 - 104°F)	5 - 40°C (41 - 104°F)	5 - 40°C (41 - 104°F)
<b>Dimensions (HxWxD)</b>	7 x 17 x 23.5 inches (178 x 432 x 597 mm)	7 x 17 x 23.5 inches (178 x 432 x 597 mm)	7 x 17 x 23.5 inches (178 x 432 x 597 mm)
<b>Weight</b>	40 lbs (18 kg)	40 lbs (18 kg)	50 lbs (22.7 kg)
<b>COMMUNICATIONS</b>			
<b>Included I/O</b>	1 x Ethernet: 10/100Base-T 2 x RS232 (300-115,200 baud) 2 x USB ports for firmware upgrades 8 x opto-isolated digital outputs 6 x opto-isolated digital inputs 4 x analog outputs (3 x 4-20mA current outputs)	1 x Ethernet: 10/100Base-T 2 x RS232 (300-115,200 baud) 2 x USB ports for firmware upgrades 8 x opto-isolated digital outputs 6 x opto-isolated digital inputs 4 x analog outputs (3 x 4-20mA current outputs)	1 x Ethernet: 10/100Base-T 2 x RS232 (300-115,200 baud) 2 x USB ports for firmware upgrades 8 x opto-isolated digital outputs 6 x opto-isolated digital inputs 4 x analog outputs (3 x 4-20mA current outputs)
<b>Optional I/O</b>	1 x USB communications port 1 x RS485 8 x analog inputs (0-10V, 12-bit) 4 x digital alarm outputs Multidrop RS232	1 x USB communications port 1 x RS485 8 x analog inputs (0-10V, 12-bit) 4 x digital alarm outputs Multidrop RS232	1 x USB communications port 1 x RS485 8 x analog inputs (0-10V, 12-bit) 4 x digital alarm outputs Multidrop RS232



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