

# IRGAS



# LPA

CIC Photonics, Inc. is dedicated to providing today's growing industries with the highest sensitivity and fastest time response instrumentation. Our analyzers are used worldwide in a variety of different arenas, and although CIC Photonics has a set of core systems, we pride ourselves on truly meeting the needs of our customers by adapting the core analyzers to their specifications.

Our IRGAS Long Path Analyzer (LPA) incorporates a rugged FTIR spectrometer with a stainless steel 4m to 6m, or a 9.6m gas cell. This combination produces an analyzer that can handle some of the most demanding applications, while still providing high energy thru puts of 36-48 %. The IRGAS LPA is ideal for applications requiring limits of detection in the ppm level to 10 ppb, and has rapid gas exchange due to it's low internal volume.

Included with the IRGAS LPA is CIC Photonics patented SPGAS analytical software package. This package does everything from concentration tracking and hardware managing to allowing the user to recalculate previously collected data within minutes.

## “We sell Solutions, not Boxes”

### General Parameters

Measurement Technique:	Fourier Transform Infrared Spectroscopy
Gases Measurable:	Most molecules expect for monoatomic (Ne, He, Ar) and diatomic homopolar (N <sub>2</sub> , H <sub>2</sub> , O <sub>2</sub> )
Range:	10ppb to ppm levels
Number of Components:	Unlimited
Response Time:	Gas cell and flowrate dependent
Operating Temperature:	10-35°C
Dimensions:	17 in (W) x 14 in (D) x 17 in (H) (for horizontal mounting of 4Runner)
Weight:	80lbs (Depends on components)
Power:	120/240 VAC, 50/60 Hz
Computer requirements:	PC with Microsoft Windows 2000/XP/Vista

### Limits of Detection

Species	Formula	6m 4Runner	9.6m Ranger
		LOD (ppm)	LOD (ppm)
Acetylene	C <sub>2</sub> H <sub>2</sub>	0.002	0.001
Acrolein	C <sub>3</sub> H <sub>4</sub> O	0.014	0.008
Ammonia	NH <sub>3</sub>	0.003	0.002
Carbon Dioxide	CO <sub>2</sub>	0.001	0.001
Carbon Monoxide	CO	0.058	0.036
Diborane	B <sub>2</sub> H <sub>6</sub>	0.007	0.005
Ethylene	C <sub>2</sub> H <sub>6</sub>	0.037	0.023
Hydrogen Bromide	HBr	0.172	0.107
Hydrogen Chloride	HCl	0.053	0.033
Hydrogen Cyanide	HCN	0.007	0.004
Hydrogen Fluoride	HF	0.003	0.002
Hydrogen Selenide	H <sub>2</sub> Se	0.267	0.167
Hydrogen Sulfide	H <sub>2</sub> S	4.040	2.525
Methane	CH <sub>4</sub>	0.019	0.012
NitricOxide	NO	0.133	0.083
Nitrogen Dioxide	NO <sub>2</sub>	0.010	0.006
Nitrous oxide	N <sub>2</sub> O	0.009	0.006
Phosphine	PH <sub>3</sub>	0.023	0.015
SulfurDioxide	SO <sub>2</sub>	0.015	0.009
Water	H <sub>2</sub> O	0.006	0.004

The LODs listed above are for a MB3000 spectrometer w/ a DTGS detector. The number of scans is 16 and for every 1 scan that equals 6 seconds. Level of confidence is sigma 1. LODs are determined at 25°C and 1 atm

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## Gas Cell

Pathlength:	4-6 meter 4Runner or 9.6 meter Ranger
Construction:	316L Stainless Steel
Mirrors:	304 Stainless Steel, Gold Coated
Windows:	ZnSe-AR coated (others available)
O-Rings:	Kalrez (others available)
Fittings:	1/4" VCR (others available)
Temperature:	0-300°C
Pressure:	Atmospheric to 200psi
Flow:	0.05-5 slpm (w/out pressure transducer)

## Spectrometer

Model:	ABB Bomem MB3000
Spectra Resolution:	2cm <sup>-1</sup> (other available)
Scan Time:	Avg. manual is 3s and automated 23s
Infrared Source:	SiC glowbar
Reference Laser:	VCSEL solid state 760nm
Detector :	TE-cooled InAs or DTGS
Spectrometer & Optics Purge Flow:	5 SLPM
Purge Connection:	Quick connect (others available)
Beamsplitter:	ZnSe

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## Applications

Combustion Gas Monitoring

EPA Protocol Testing

Emission Gas Analysis

Stack Gas Analysis

Gas Certification

Research Studies

Semiconductor Monitoring

Air Monitoring

Leak Detection

Moisture Analysis

Corrosive and Toxic Gases



## Analyzer Options

Digital Analog Output

Valving Manifolds

Automated Manifold

Moisture Reduction Stack

Additional Analyzers (O<sub>2</sub>, H<sub>2</sub>, THC)

Multipoint Monitoring

Heated /Unheated Sampling System

Pressure / Temperature Transducer

Enclosures

Computer

Pump