Cost-effective, customizable multi-gas monitoring system for a wide variety applications

INNOVA 1316-1

CE

• Measures up to 5 gases

• Cost-effective: low initial investment and cost of ownership

• Short warm-up and fast response time

• Stable: rarely needs calibration

The 1316-1 Multi Gas Monitor from LumaSense Technologies is a cost-effective gas monitor suitable for a variety of applications. The 1316-1 can measure up to five gases, including Oxygen, and can be easily customized for different measurement tasks by combining relevant modules and sensors.

For instance, in the basic configuration, a module measures the concentration of Carbon monoxide, Carbon dioxide and Hydrocarbons (as either n-Hexane or Propane). With optional sensors, the measurement of Oxygen and Nitric oxide can be added, all in one device.

The 1316-1 does not require highly skilled operators. Its innovative design, based on proven measurement principles, ensures that calibrations are seldom required. The 1316-1 automatically compensates for drift using a zero calibration routine while measurements are performed.

The software supplied with the monitor provides a user-friendly way to configure the monitor and display real-time measurement data in either a numeric or graphical display. The software can communicate with up to four instruments, each representing a separate sample point.

Application areas:

• Production control

• Process control

• Chemical plant monitoring

• Biogas monitoring

• Fermentation monitoring

• Exhaust monitoring

Measurement Methods

All 1316 modules use Non-Dispersive Infrared (NDIR) measurement technology. The module optics incorporates a precision beam focusing architecture. The concentrated infrared beam is passed through the sample chamber then into an optical assembly of highly specialized filters and a unique multi-element detector.

The optional sensors are electrochemical sensors, ready to be connected and controlled by the module. All calculations are performed in real time and transmitted to the user software.

The monitor is ready for use within a few minutes and the measurement provides results within a few seconds.
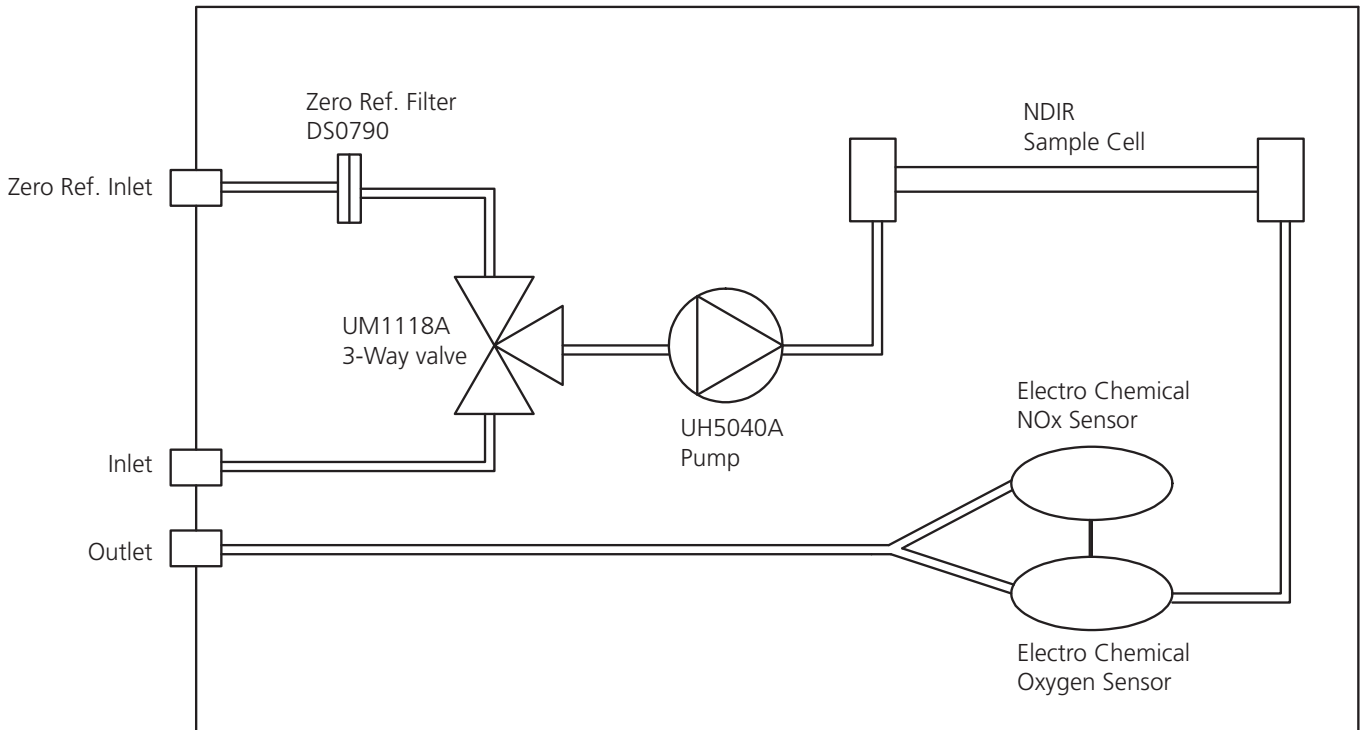
The Measurement Cycle

The user software communicates with the 1316-1 Multi Gas Monitor using a USB or RS-232 interface. The pump continuously draws air from the sampling point through the air filter to flush out the old air in the measurement system comprising the selected module and two sensors.

Light from the infrared source is sent through the measurement chamber, passed through specialized filters and a reference filter. The absorptions of energy at the specific wavelengths are calculated. Multi-point, multi-temperature factory calibration curves are then applied to the absorption calculations to report the concentration of the individual gases in the chamber.

After passing the NDIR Sample Cell, the gas is sent to the optional electrochemical sensors and the signals are measured. The measured signals are reported back to the module and the concentration of the gas is reported together with the gas concentrations from the module via the interface connection to the software.

Easy Set Up With an Intuitive Interface

The dedicated user software provides user-friendly proce-dures to setup the monitor, display measurement data as numeric values or as graphics, and store data on the PC disk while measurements are being made.

Graphical Window
Graphical view allows monitoring of each channel individually. You can easily customize and scale the graph properties.
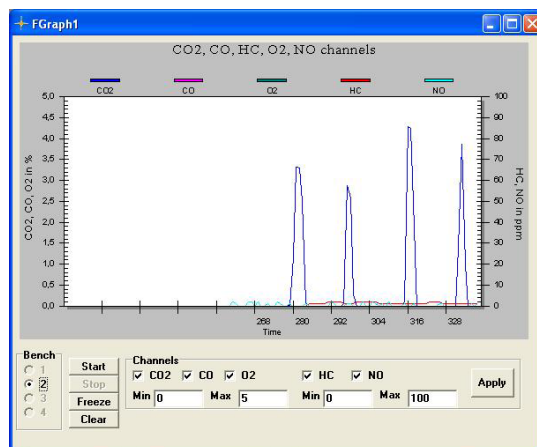
Process Information in Real Time
The Numeric window features Real Time display for online monitoring of gas concentrations.

Hardware Requirements:
• 1 GHz Pentium processor or better

• Min. 512 MB RAM (min. 2 GB on Windows 7)

• Min. 100 MB hard-disc space available

• One USB port or RS-232 for each 1316 Monitor.

Software Requirements
Windows® XP, Vista or Windows 7

Graphical display of gas concentrations enables easy user access to information

Main window showing numeric values.

Technical Data

Measurement Technique	Non Dispersive Infrared to measure CO2, CO and Hydrocarbon as either n-Hexane or Propane. Electrochemical Sensors to measure O2 and NO	Dimensions	Height: 140 mm (5.5 in.) Width: 236 mm (9.3 in.) Depth: 259 mm (10.2 in.) Weight: 3.5 kg
Response Time	Response time is specified at a sample flow rate of 800 milliliter per minute using 1 m sample tube ID Ø 3 mm. T_{90} & T_{10}: 5 seconds for NDIR, 17 seconds for electrochemical sensors.	Communication	The monitor has two interfaces: RS-232 or USB which are used for remote control of the 1316. BZ6012 software communicates using either RS-232 or USB.
Data Refresh Rate	1 sec	CE	CE-mark indicates compliance with EMC Directive and Low Voltage Directive.
Detection Limit	CO_2....................................100 ppm CO...50 ppm Hydrocarbon Propane.........6 ppm n-Hexane..............................3 ppm	Safety	EN61010-1. 2nd (2003): Safety requirements for electrical equipment for measurement control and laboratory use.
		EMC	EN61326-1 (2003) Electrical equipment for measurement control and laboratory use-EMC requirements.
Zero Drift	Zero drift is compensated for by auto-matic zero calibrations.	Environment	Altitude up to 3,000 m (10,000 ft) Operating Temperature: 5 to 40°C Storage Temperature: Without Electro Chemical Sensors: -20 to +70°C; Including Electro Chemical Sensors: 0 to 50°C Humidity: up to 90% Relative humidity, non condensing Pollution Degree II
Pumping Rate	Gas Inlet flow: 800 ml/min; Zero Reference Inlet: 700 ml/min		
Power Requirements	Voltage: 100-240 V AC Power consumption: 40 VA		
		Enclosure	IP20

Specifications 1316-1

Measurement Method	Gas	Resolution	Measurement Range	Accuracy	Precision
VM0100A Module	HC (n-Hexane or Propane)	1 ppm	1 to 2,000 ppm	±4 ppm abs. or ±3% rel.	±4 ppm abs. or ±3% rel.
			2,000 to 15,000 ppm	±5% rel.	
			15,000 to 30,000 ppm	Unspecified	Unspecified
	CO	0.001%	0.001 to 10 %	±0.02% abs. or ±3% rel.	±0.02% abs. or ±3% rel.
			10 to 15 %	±5% rel.	
	CO_2	0.01%	0.01 to 16 %	±0.3% abs. or ±3% rel.	±0.3% abs. or ±3% rel.
			16% to 20 %	±5% rel.	
VM0201A Module	NO	1 ppm	0 to 4,000 ppm	±25 ppm abs. or ±4% rel.	±25 ppm abs. or ±4% rel.
			4,000 to 5,000 ppm	±5% rel.	
VM0200A Module	O_2	0.01%	0.01 to 25 %	±0.1% abs. or ±3% rel.	±0.1% abs. or ±3% rel.

Specifications

Ordering Information

The Multi Gas Monitor - INNOVA 1316-1 is delivered with all calibrations.

The LumaSoft Gas Multi Point 7950 software enables remote control of up to 24 Gas Monitors - INNOVA 1316

Included Accessories

VF0007A....... Fuses 1.6A T
WL0816 .... RS-232 interface cable
UD5091A...... Inlet filter assembly
BE6020 .... Instruction Manual for 1316-1

BZ6012 .... 1316-1 User Software Mains Cable
AT2177 .... PFTE tubing 4 meters
AM0001A..... 1.8 m USB cable

Optional Accessories

7950.............. LumaSoft Gas Multi Point Software
VM0200A ..... O_2 electrochemical sensor
VM0201A .... NO electrochemical sensor
UA1372A...... Mounting kit for O_2 and other sensors
AF0614 .... PFTE tubing

UA1365 .... in line Genie Membrane separator
UA0381 .... Calibration
UD5091A...... Inlet filter assembling
DS2306 .... Inlet filter
DS0790 .... Zero ref. filter