



**Uses:**

- Air sampling in 12 locations, and delivery of the sample to a Photoacoustic Field Gas-Monitor – INNOVA 1412
- Air sampling in 12 locations, and delivery of the sample to a Fermentation Monitor – INNOVA 1313

**Features:**

- Full remote-control from a personal computer over the IEEE-488/IEC 625-1 interface
- 12 sample-input channels
- Six temperature-transducer inputs
- Self-test function
- Pneumatic system constructed of AISI-316 Stainless Steel and PTFE tubing to minimize gas adsorption

## Introduction

The Multipoint Sampler – INNOVA 1309 extends the area-monitoring capabilities of the LumaSense Technologies' gas monitors. The 1309 is a 12 channel multiplexer, enabling gas samples to be drawn from up to 12 different sampling locations and delivered to the gas monitor. In addition to this, up to six temperature transducers can be connected to the 1309, providing information about the environment at these specific points.

The sampling system is set up and remote controlled from a personal computer, which is connected to the gas monitor receiving the measurement samples from the 1309. Communication between the PC and the monitor is via the IEEE-488 /IEC625-1 interface.

## Description and Functions

### The Sampler System

The pneumatic system of the 1309 is shown schematically in Fig.1. The sampler system is constructed of AISI-316 stainless steel and PTFE (poly-tetrafluoroethylene) tubing to minimize adsorption of samples. The system has 12 inlet channels, each with a solenoid valve. Each inlet channel has a tube-mounting stub on the front-plate of the 1309; to connect each channel to the respective sampling point. The 12 inlet channels converge into one; a three-way valve then directs the gas sample to the gas monitor for analysis, or through the external pump via the waste-air outlet on the 1309's back-plate.

The 1309's sampler system functions efficiently, transporting gas samples from the sampling point at approximately four meters per second. However, this speed depends on the type of pump, the diameter of the tubing and the length of tubing attached to the 1309. An air-filter is attached to the end of each sampling tube to keep the Samples free of particles.

### Temperature Measurement

To complete the information about the environment at the sampling points, the 1309 is equipped with six temperature-transducer inputs, suitable for use with an Air Temperature Transducer MM0034, Surface Temperature Transducer MM0035 and Operative Temperature Transducer MM0060. The MM0034 and MM0035 transducers can be positioned up to 100m away from the 1309, while the MM0060 can operate up to 50m from the multiplexer. The measurement ranges and accuracy of these transducers are described in the individual transducers' Product Data Sheets.

### Pressure Measurement

The 1309 contains a pressure transducer that measures the atmospheric pressure surrounding the multiplexer.

### Reliability

Reliability is ensured by automatic self-tests of both hardware and software. The 1309's operating status can be read-out at any time.

# Multipoint Sampler – INNOVA 1309

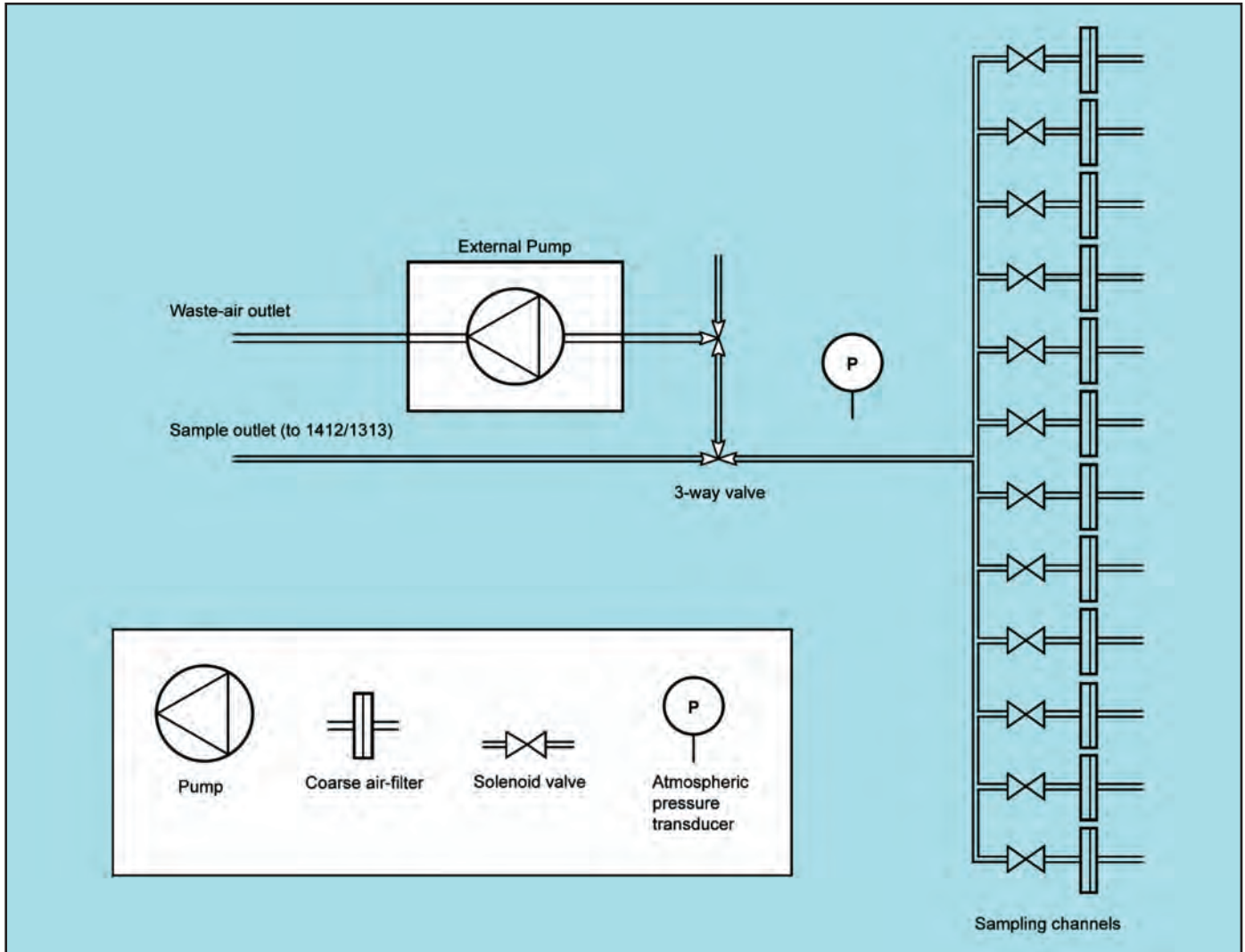


Fig. 1 A schematic diagram of the 1309's pneumatic system: the sampler system is depicted at the top. The use of non-reactive materials throughout minimizes gas adsorption in the internal air-channels

## Control of the 1309

The 1309 is fully remote-controlled from a personal computer over the IEEE/IEC interface. Control via the gas monitor is also possible: the controlling computer communicates with the monitor over the RS-232 interface; the message is then transferred to the 1309 via the IEEE/IEC interface.

Commands and information requests are sent over the interface to the 1309 to control the sampler system and to read-out data.

## System Use

The 1309 combines with the gas monitor and a controlling computer to provide a system that offers wide-ranging monitoring capabilities. The 1309 makes it possible to perform multipoint monitoring tasks in many different situations and environments, without changing the system com-

ponents. An example of a multipoint, multigas monitoring system is shown in Fig. 2. In such a system, the sampler system takes a sample of the return-air from the room, and delivers it to the 1412 for analysis. While the 1412 performs one analysis, the 1309, takes the next sample for analysis from the room.

LumaSense Technologies's 7300 Application Software for Gas Monitoring gives full coordination and control of all the sampling and monitoring functions of such a system. The application software package can control one 1309 unit and one 1412.

Another example, shown in Fig.3, is to use the 1309 with a 1313 to comprehensively monitor a multi-vessel fermentation process. The 1313 comes complete with its own PC software.

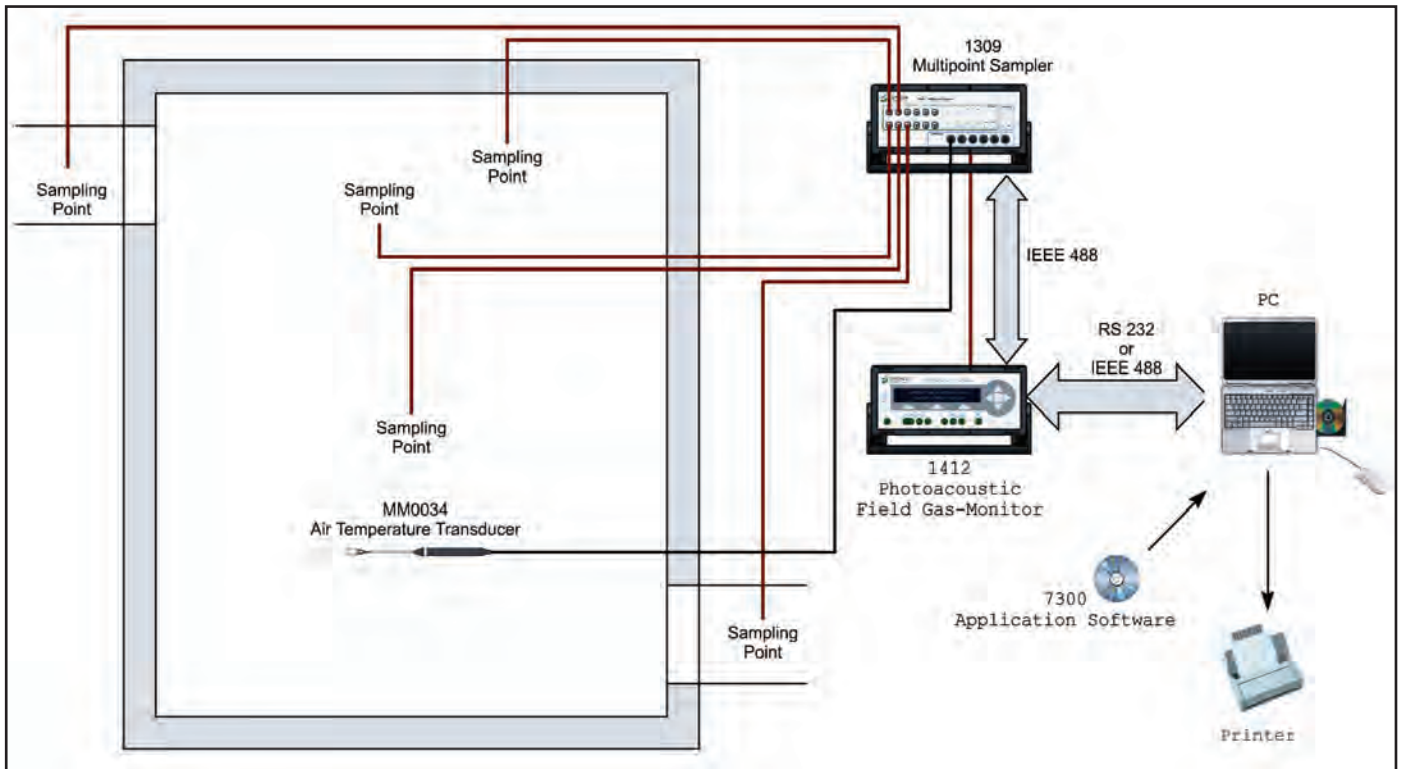


Fig.2 A typical sampling system, shown with an application example. The diagram shows 5 sampling points, for clarity. Up to 12 similar analyses can be performed simultaneously using one 1309. Application Software 7300 gives control of all the functions of the system.

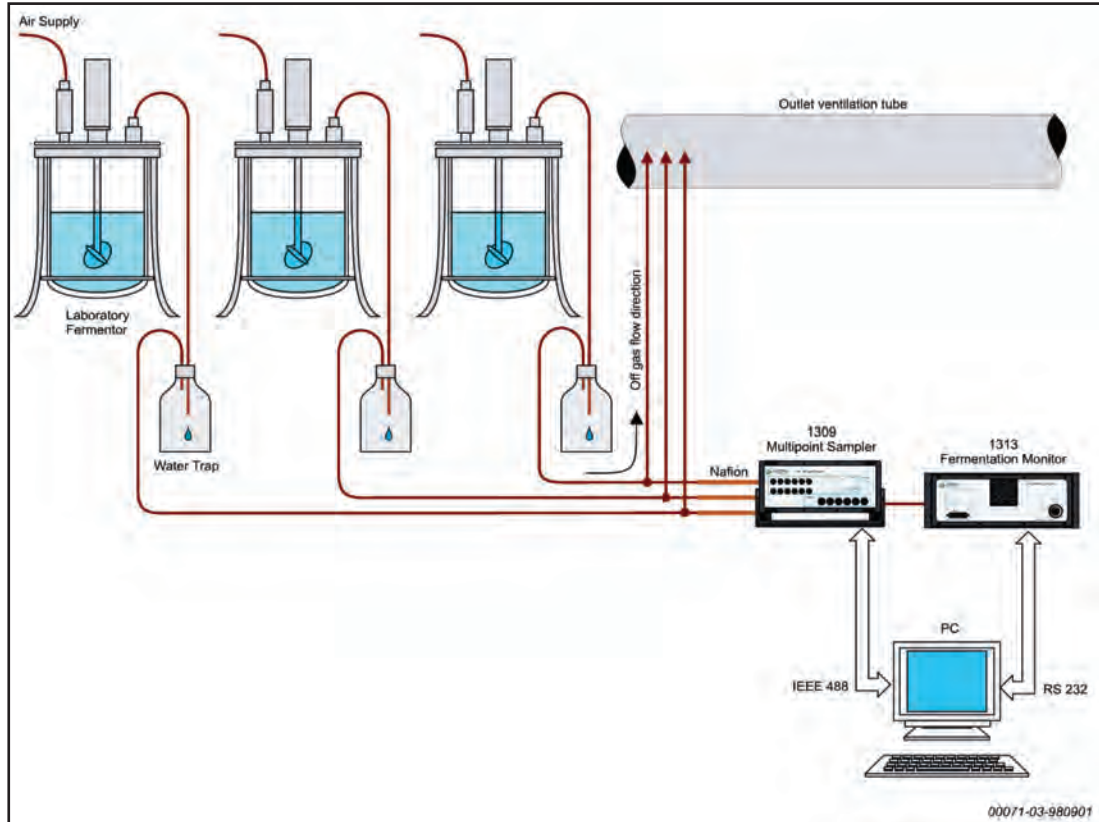


Fig. 3 The diagram shows samples being drawn from three fermentation vessels. Up to 12 similar analyses can be performed simultaneously using one 1309 and the PC Software supplied with the 1313

# Specifications – INNOVA 1309

## WARNING!

The 1309 must not be placed in areas with flammable gases/vapours in explosive concentrations, or be used for tasks in which explosive concentrations of these gases/vapors are monitored. Also note that certain aggressive gases could damage the internal airways of the 1309. Ask your LumaSense representative for further information.

## PUMP PERFORMANCE:

Two external pumps are available:

Pump	Distance	TubeØ	Speed
Small	0-150m	3mm	4m/s
Large	150-300m	4mm	5m/s

## TEMPERATURE TRANSDUCER INPUTS:

Compatible with:

Air Temperature Transducer MM0034; measurement range: -20 to + 50°C (-4 to 122°F)

Surface Temperature Transducer MM0035; measurement range: -20 to + 100°C (-4 to 212°F)

Operative Temperature Transducer MM0060; measurement range: -20 to + 50°C (-4 to 122°F)

## PRESSURE TRANSDUCER:

Measures atmospheric pressure around the multiplexer

Measurement range: 85 - 108kPa (± 1.5kPa)

## IEEE INTERFACE:

Conforms with IEEE Std. 488-1978, compatible with IEC 625-1. All functions of the 1309 are controlled over the interface; output of status information

## Functions Implemented:

Source Handshake - SH 1  
 Acceptor Handshake - AH 1  
 Talker - T5  
 Listener - L3  
 Service Request - SR 1  
 Parallel Poll - PP 1  
 Device Clear - DC 1

## POWER SUPPLY:

100 - 127V; 200 - 240V AC 50 - 400Hz, 70VA Complies with Safety Class I of IEC Publication 536

## DIMENSIONS:

**Height:** 175 mm (6.9 inch)  
**Width:** 395mm (15.6 inch)  
**Depth:** 300mm (11.8 inch)  
**Weight:** 9kg (19.8 lbs)



## COMPLIANCE WITH STANDARDS:

CE-mark indicates compliance with: EMC Directive and Low Voltage Directive.

Safety	EN 61010-1 (1993) & IEC 1010-1 (1990): Safety requirements for electrical equipment for measurement, control and laboratory use.
EMC Emission	EN 50081-1 (1992): Generic emission standard. <b>Part 1:</b> Residential, commercial and light industry. EN 50081-2 (1993): Generic emission standard. <b>Part 2:</b> Industrial environment. CISPR 22 (1993): Limits and methods of radio disturbance characteristics of information technology equipment. Class B Limits. FCC Class B Limits.
EMC Immunity	EN 50082-1 (1992): Generic immunity standard. <b>Part 1:</b> Residential, commercial and light industry. EN 50082-2 (1995): Generic immunity standard. <b>Part 2:</b> Industrial environment. <i>Note: The above is guaranteed using accessories listed in this Product Data sheet only.</i>
Temperature	IEC 68-2-1 & IEC 68-2-2: Environmental Testing. Cold and Dry Heat. <b>Operating Temperature:</b> +5°C to +40°C (41°F to 104°F) <b>Storage Temperature:</b> -25°C to +70°C (-13°F to 158°F)
Humidity	IEC 68-2-3: 90% RH (non-condensing at 40°C)
Enclosure	IEC 529: IP20
Mechanical	IEC 68-2-6: Vibration: 0.3 mm, 20 m/s <sup>2</sup> , 10-500 HZ IEC 68-2-27: Shock: 1000 m/s <sup>2</sup> IEC 68-2-29: Bump: 3000 bumps at 250 m/s <sup>2</sup>

## Ordering Information

### 1309 Multipoint Sampler

Includes the following accessories:

2xVF0032 Fuse 630mA  
 2xVF0027 Fuse 1.25A  
 3xYM0652 Knurled nuts to secure tubing to nozzles  
 Mains cable  
 Instruction Manual

## Optional Accessories

7300 Application Software (monitoring only)  
 EB6000 External pump (small), 240 V  
 EB6004 External pump (small), 110 V  
 EB6002 External pump (large), 240 V  
 EB6003 External pump (large), 110 V  
 MM0034 Air Temperature Transducer  
 MM0035 Surface Temperature Transducer  
 MM0060 Operative Temperature Transducer  
 AO0265 IEEE-488 Interface cable

WL0845 IEEE-488 Interface cable for connecting 1309 to 1412 (1m)  
 AF0614 PTFE tubing  
 AF0007 Nylon tubing  
 UD5023 External air-filter  
 DS0759 Filters (25) for air-filter unit (UD5023)  
 UA1365 In line Genie Membrane Separator  
 DS6015 Membrane replacements (5) for UA1365  
 EH6020 Nozzle Modification Kit (to use 4mm tubing with 1309)

LumaSense Technologies reserves the right to change specifications and accessories without notice.

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