

A reliable, fully remote-controllable multipoint sampler for gas sampling of up to 12 different locations

INNOVA 1309



- Full remote-control from a PC via the gas monitor over the IEEE 488/RS-232 serial interface
- Twelve 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



The INNOVA 1309 Multipoint Sampler from LumaSense Technologies is designed to extend the area-monitoring capabilities of LumaSense 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.

The sampling system is configured and remote controlled from a PC. The computer is connected to the gas monitor, which receives the measurement samples from the 1309. Communication between the PC and the monitor is done via the RS-232 serial interface.

Description and Functions

The pneumatic system of the 1309 is shown in Fig.1. The sampler system is constructed of AISI-316 stainless steel and PTFE (poly-tetrafluoro-ethylene) 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 highly efficient 1309's sampler system transports gas samples from the sampling point at approximately four meters per second. 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 1309 free of particles.

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.

Application areas:

- Air sampling in 12 locations and delivery of the sample to a Photoacoustic Field Gas Monitor
- Air sampling in 12 locations delivery of the sample to a Fixed Photoacoustic Multigas Monitor
- Air sampling in 12 locations delivery of the sample to an SF₆ Leak Detector

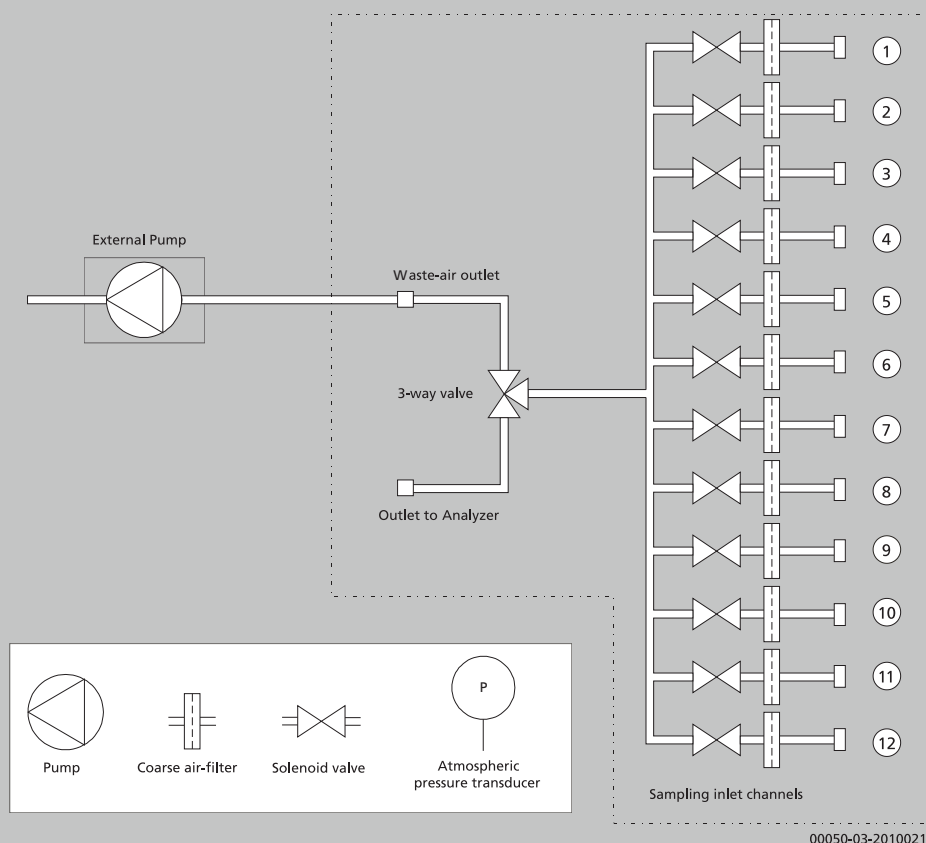


Fig. 1. A schematic diagram of the 1309's pneumatic system: the sampler system is depicted at the top. The use of non-reactive materials throughout minimizes gas adsorption in the internal air-channels

Control of the 1309

The 1309 can be controlled via the gas monitor: 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 combined with a gas monitor and a controlling computer to provides offers wide-ranging monitoring capabilities. The 1309 makes it possible to perform multi-point monitoring tasks in a variety of situations and environments, without changing the system components.

An example of a multipoint, multigas monitoring system is shown in Fig. 2. The 1309 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.

The LumaSoft Gas Multi Point 7850 software full coordination and control of all the sampling and monitoring functions of the system. The software coordinates the functions of the instruments to form a monitoring system which, via tubing, can perform gas-monitoring tasks in up to 24 different locations by combining two 1309 samplers.

When a user sets up a measurement task using the software, the task is performed automatically and measurement data is collected and displayed on the screen.

Air-samples are drawn from up to 24 sampling points and delivered to the monitor. The monitor can then measure the concentrations of up to five gases, water vapour and air pressure in each sample.

Measurement data is stored in an SQL Server 2005 database, providing easy access to measurement data

during a measurement task. The user also has online access to measurement data from Microsoft Excel while a task is running. This makes the data readily available to produce tailor-made reports.

Alarm Features

The alarm function is used to define software alarms for each gas on each channel.

LumaSoft Gas Multi Point 7850

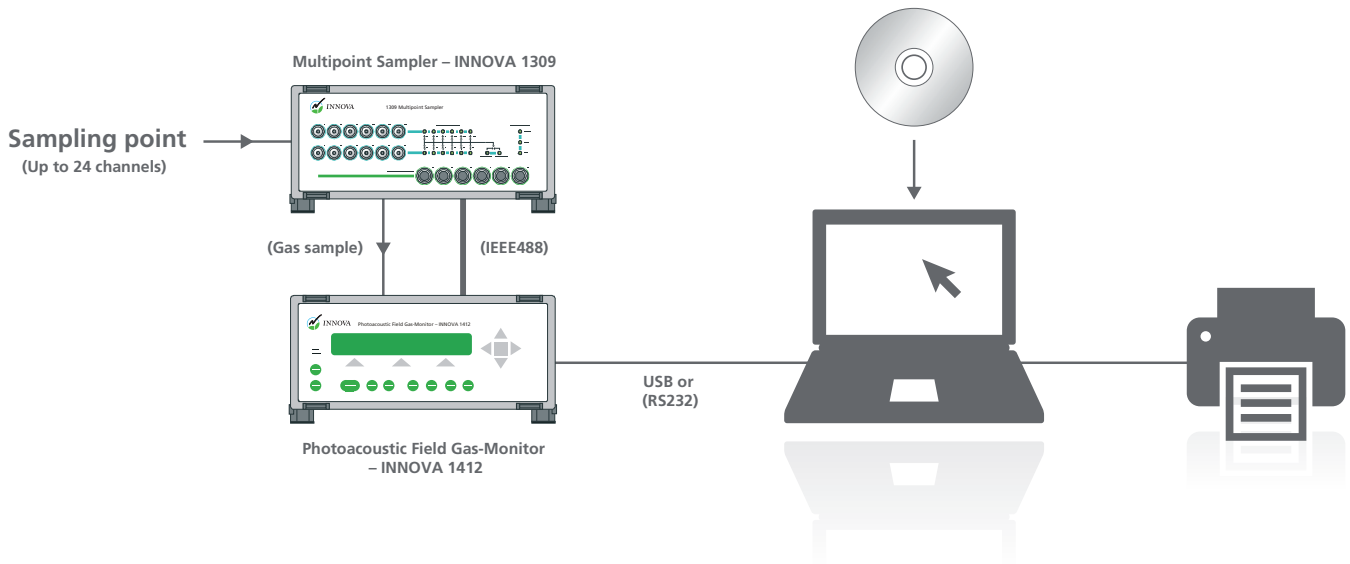


Fig. 2. A typical sampling system. The diagram shows one sampling point, for clarity. Up to 24 similar analyses can be performed simultaneously using two 1309's. LumaSoft Gas Multi Point 7850 gives control of all the functions of the system.

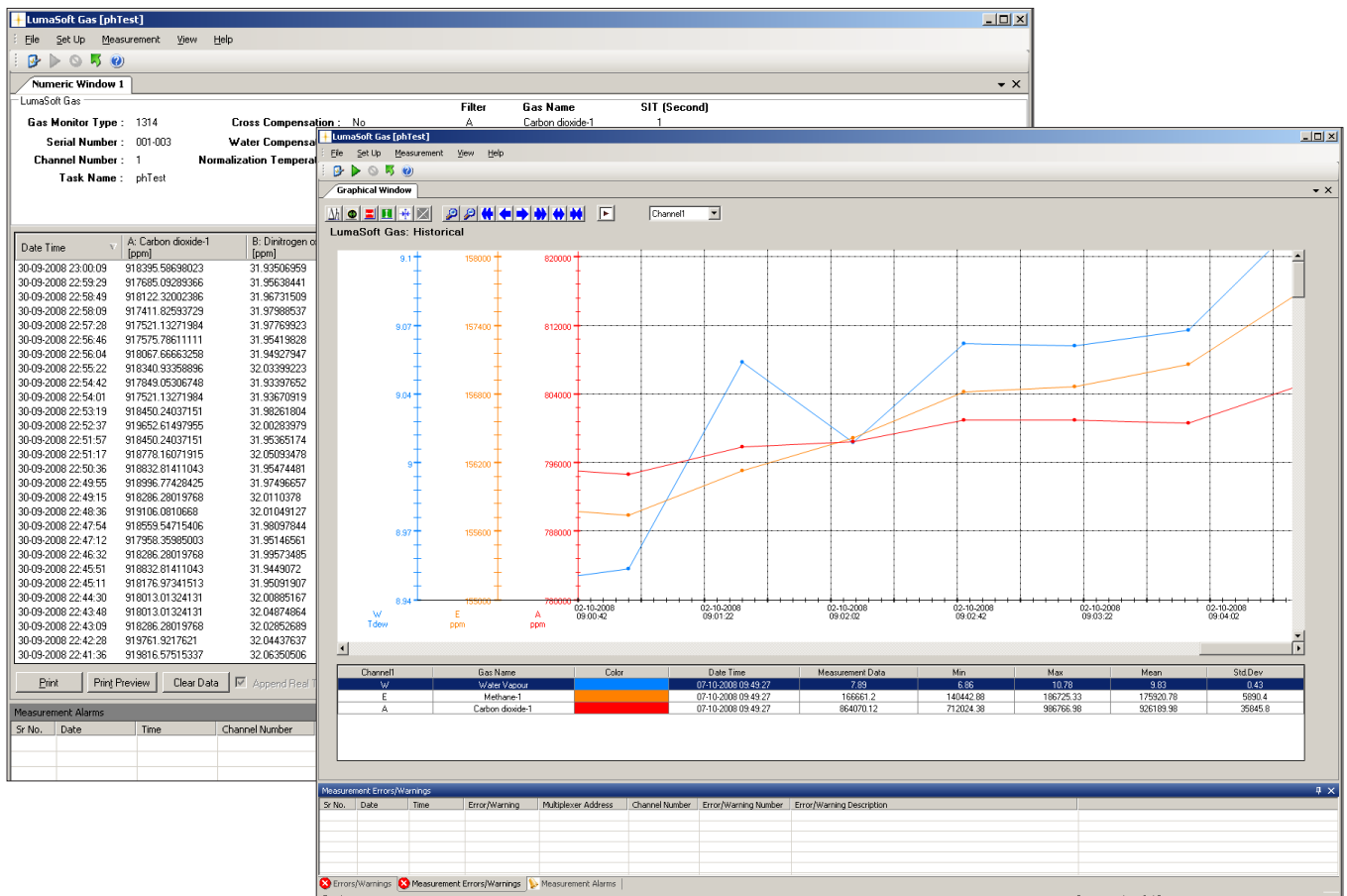


Fig. 3. In the 7850 software, the numeric and graphic windows show measurement results and other appropriate information for each sample channel.

Technical Specifications

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/vapours 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 - 75m	3mm	4m/s
Large	75 -150m	4mm	5m/s

For tube lengths up to 300m a pump must be placed in front of each sampling channel.

Pressure Transducer

Measures atmospheric pressure around the multiplexer
Measurement range: 85 - 108kPa (± 1.5 kPa)

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

Voltage: 100 – 240 VAC 50/60 Hz
Power consumption: 70VA

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 3rd Ed. (2010): Safety requirements for electrical equipment for measurement, control and laboratory use.
EMC Emission	EN 61326-1:2006: Class B, Basic and Industrial locations. Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements EN 61000-6-1:2007: Generic standards - Immunity for residential, commercial and light-industrial environments EN 61000-6-2:2005: Generic standards - Immunity for industrial environments EN 61000-6-3:2007: Generic standards - Emission standard for residential, commercial and light-industrial environments EN 61000-6-4:2007: Generic standards - Emission standard for industrial environments.
Temperature	IEC 68-2-1 & IEC 68-2-2: Environmental Testing. Cold and Dry Heat. Operating Temperature: +5°C to +40°C (41°F to 104°F) Storage Temperature: -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 ² , 10-500 HZ IEC 68-2-27: Shock: 1000 m/s ² IEC 68-2-29: Bump: 3000 bumps at 250 m/s ²

Ordering Information

1309 Multipoint Sampler

Includes the following accessories:

2xVF0007 Fuse 1.6A

3xYM0652 Knurled nuts to secure tubing to nozzles

Mains cable

Instruction Manual

Optional Accessories

7850 LumaSoft Gas Multi Point

EB6000 External pump (small), 230V

EB6004 External pump (small), 115V

EB6002 External pump (large), 230 V

EB6003 External pump (large), 115 V

AO0265 IEEE-488 Interface cable for connecting 1309 to 1412, 1314

WL0845 IEEE-488 Interface cable for connecting 1309 to 1412, 1314

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)

JV0901 RS-232 to USB converter

LumaSense Technologies

Americas, Australia, India, China
Sales & Service
Santa Clara, CA
Tel: +1 800 631 0176
Fax: +1 408 727 1677

info@lumasenseinc.com

LumaSense Technologies, Inc., reserves the right to change the information in this publication at any time.

Europe, Middle East, Africa
Sales & Service
Frankfurt, Germany
Tel: +49 69 97373 0
Fax: +49 69 97373 167

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INNOVA Gas Products Sales & Service
LumaSense Technologies A/S
Energivej 30, DK- 2750 Ballerup
Tel: +45 44 20 01 00
Fax: +45 44 20 01 01

www.lumasenseinc.com

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