Product Data

1309 Multipoint Sampler

USES:

- ❍ Air sampling in 12 locations, and delivery of the samples to a 1312 Photoacoustic Multi-gas Monitor
- ❍ Air sampling in 12 locations, and delivery of the samples to a 1311 Fast Response Triple-gas Monitor

FEATURES:

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

The 1309 Multipoint Sampler extends the area-monitoring capabilities of the *INNOVA* 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 6 temperature transducers can be connected to the 1309, providing fuller 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 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 316 stainless steel and PTFE (polytetrafluoroethylene) 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; 12 tubes 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 4 metres 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 6 temperature-transducer inputs, suitable for use with an Air Temperature Transducer MM 0034, Surface Temperature Transducer MM0035 and Operative Temperature Transducer MM0060. MM 0034 and MM 0035 transducers can be positioned up to 100 m away from the 1309, while the MM0060 can operate up to 50 m 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: if an error exists, the type of error is given to help repair.

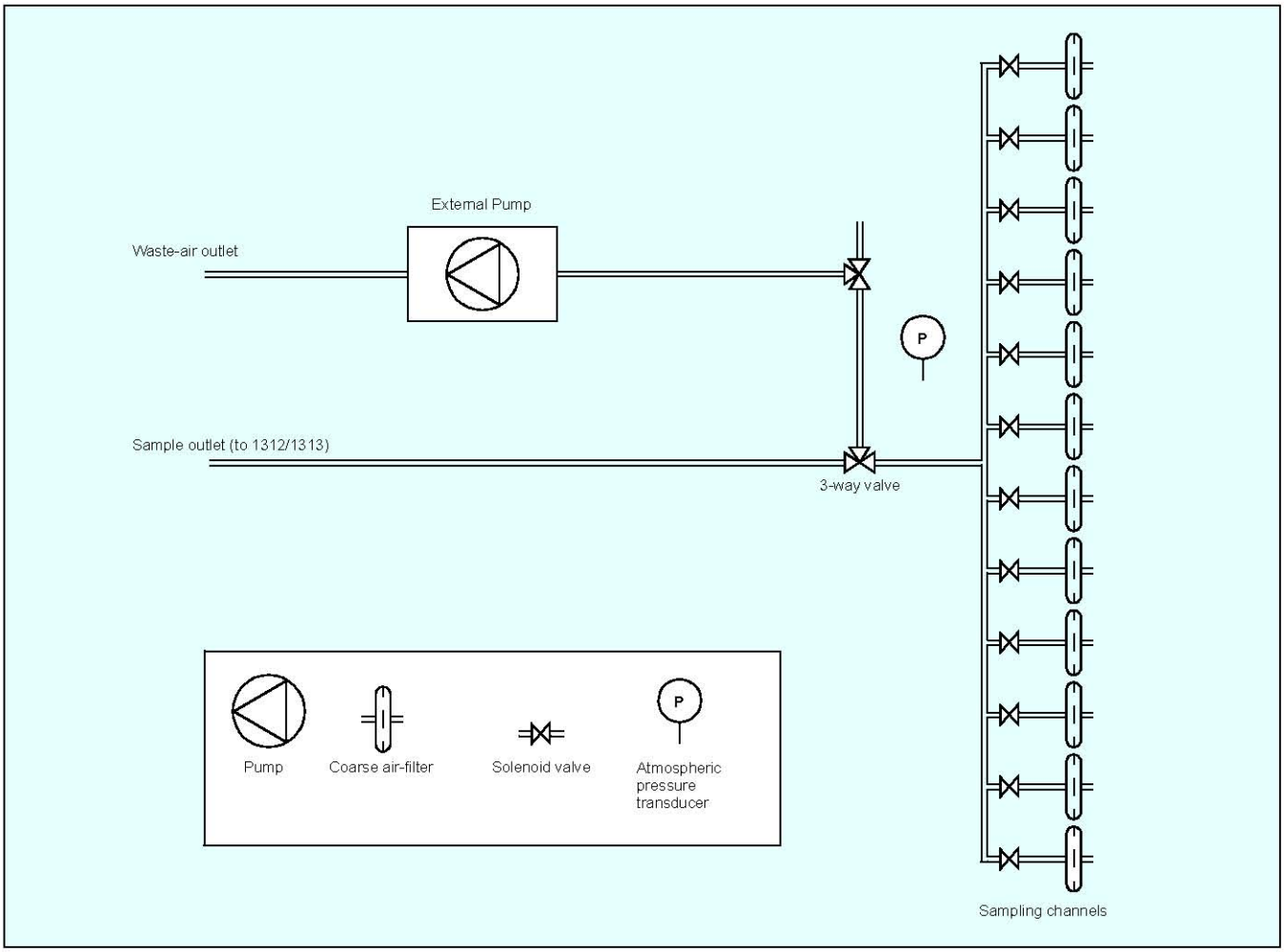

Fig. 1 A schematic diagram of the 1309's pneumatic system: the sampler system is depicted at the top. The use of non-reactive materials throughout minimizes gas adsorption in the internal air-channels

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 in a clear language 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 components.

An example of a multipoint, multi-gas 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 1312 for analysis. While the 1312 performs one analysis, the 1309 takes the next sample for analysis from the room.

Innova AirTech Instruments has a 7300 Application Software to give 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 1312.

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.

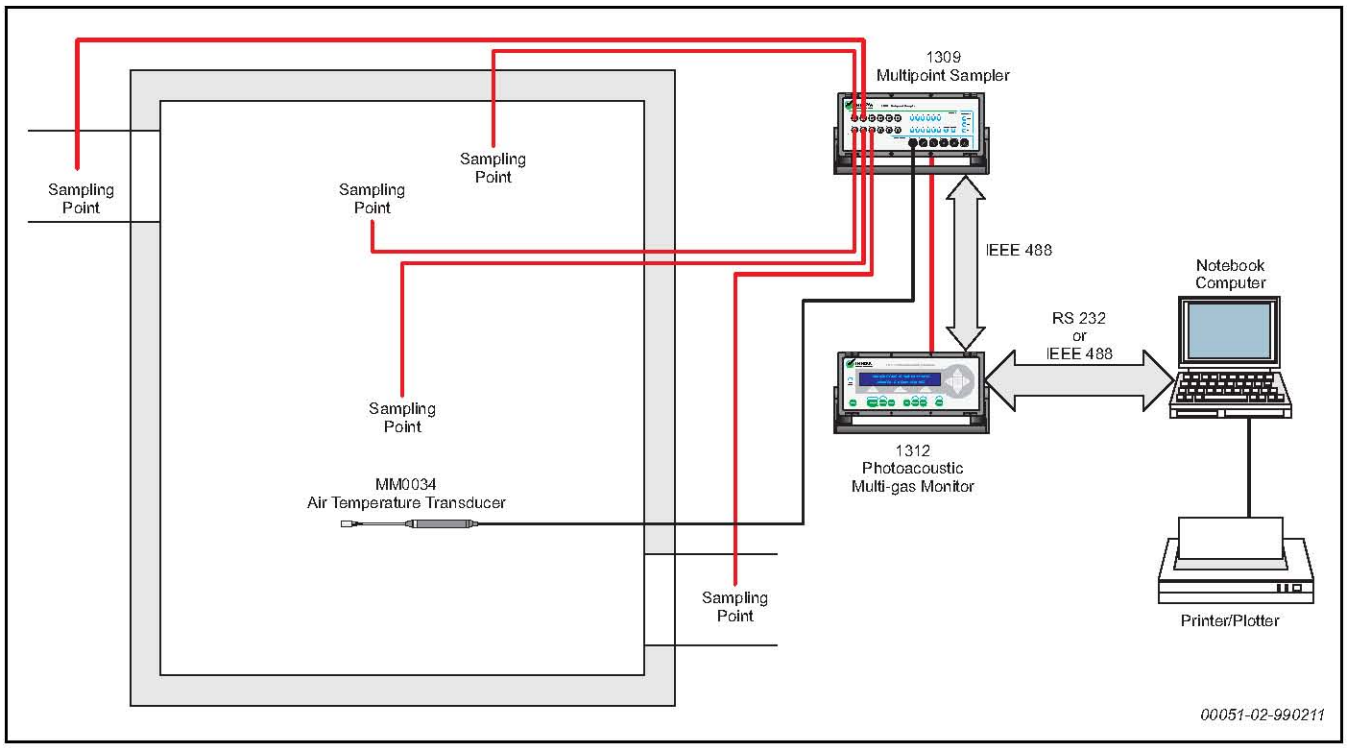

Fig. 2 A typical sampling system, shown with an application example. The diagram shows 5 sampling points, for clarity. Up to 12 similar analyses can be performed simultaneously using one 1309. 7300 Application Software gives control of all the functions of the system

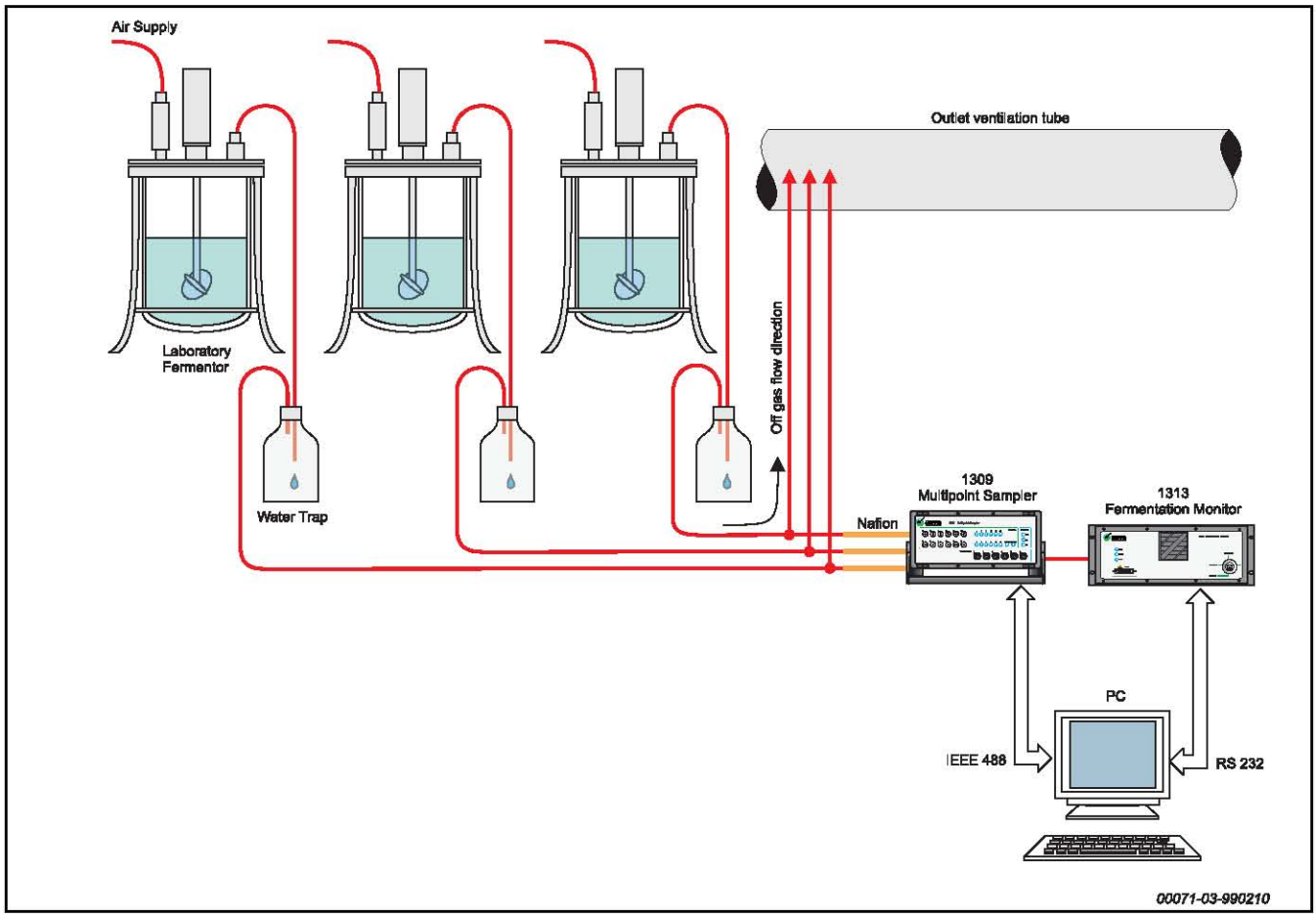

Fig.3 The diagram shows samples being drawn from 3 fermentation vessels. Up to 12 similar analyses can be performed simultaneously using one 1309 and the PC Software supplied with the 1313.

Specifications 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/vapours are monitored. Also note that certain aggressive gases could damage the internal airways of the 1309. Ask your INNOVA representative for further information.*

PUMP PERFORMANCE:
2 external pumps are available:

Pump	Distance	Tube ∅	Speed
Small	0–150m	3mm	4 m/s
Large	150–300m	4mm	5 m/s

TEMPERATURE TRANSDUCER INPUTS:
Compatible with:
Air Temperature Transducer MM 0034;
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 to 108 kPa (±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 – T 5
Listener – L 3
Service Request – SR 1
Parallel Poll – PP 1
Device Clear – DC 1

POWER SUPPLY:
100 – 127 V; 200 – 240 V AC 50 – 400 Hz, 70 VA
Complies with Safety Class I of IEC Publication 536.
DIMENSIONS:
Height: 175 mm (6.9 ins).
Width: 395 mm (15.6 ins).
Depth: 300 mm (11.8 ins).
Weight: 9 kg (19.8 lbs).

COMPLIANCE WITH STANDARDS:

CE	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. Part 1: Residential, commercial and light industry. EN 50081–2 (1993): Generic emission standard. Part 2: 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. Part 1: Residential, commercial and light industry. EN 50082–2 (1995): Generic immunity standard. Part 2: Industrial environment. **Note:** The above is guaranteed using accessories listed in this Product Data sheet only.
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: IP 20
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
13 x DS 2306 External fine air-filters for sampling tubes
13 x UD 5041 Fitting for air-filters
Mains cable
User Manual

Optional Accessories

7300	Application Software
EB 6000	External Pump (small), 220V
EB6004	External Pump (small), 110V
EB 6002	External Pump (large), 220V
EB 6003	External Pump (large), 110V
MM 0034	Air Temperature Transducer
MM 0035	Surface Temperature Transducer
MM 0060	Operative Temperature Transducer
AO 0265	IEEE 488 Interface cable
WL 0845/0.4	IEEE 488 Interface cable for connecting 1309 to 1312 (0.4m)
AF 0614	PTFE tubing
UD 5023	External air-filter unit
DS 0759	Filters (25) for air-filter unit (UD 502.3)
WQ 0916	Water-trap Filter
WQ 1106	Filter cartridges (3) for use with WQ 0916
EA 6002	Tubing kit for EB 6002 and EB 6003
EA 6003	Tubing kit for EB 6000 and EB 6004
EH 6020	Nozzle Modification Kit (to use 4 mm tubing with 1309)