

Personal Air Samplers



Monitoring the world around us since 1864



Munro Group

Monitoring the World Around us Since 1864

Munro Environmental - Air Sampling and Monitoring

The air we breathe is composed of Nitrogen (78%), Oxygen (21%), Argon (0.9%) and Carbon Dioxide (0.03%) plus many other gases, vapours, mists, dusts and living organisms in minute amounts. These additional materials may be naturally occurring or produced by man. Sources include industry, transport, agriculture, power generation, combustion, incineration, respiration, the weather and volcanic activity. Material also comes from extra-terrestrial sources, meteorites and comets entering the atmosphere. Many of these materials are completely benign or may be beneficial to life. However, some materials can be hazardous to health or the environment at even the smallest measurable concentrations.

Where appropriate, government agencies have established ceiling values and guidance limit values for concentrations of gases, vapours, mists, radionucleides and dusts in the workplace and the environment.

In order to make an assessment of the concentration of these materials in the atmosphere, a sample is taken from the air for analysis. The taking of the sample is a fundamental part of the analysis process. The sample must be accurate, representative and collected in a way that will maintain the condition of the sample until it is analysed. The airborne concentration is calculated from the analytical result and the volume of the air sampled. Therefore it is important that the air flow rate and sample time are recorded with the appropriate accuracy. Most air samplers incorporate an airflow sensor or control mechanism and a clock to provide the user with this data.

The wide variety of materials and applications that may be sampled call for many different air sampler configurations. Munro Environmental air samplers can draw from 5 millilitres per minute to 100 litres per minute or more through a wide variety of sampling media including glass fibre and cellulose filters for dusts and activated carbon for gases and vapours.

In some situations, air pollution studies and walk-through surveys, a dust measurement must be made instantaneously. The direct reading dust monitors supplied by Munro Environmental are used to record variations in concentration in real-time for such applications. While hourly averages calculated from this data may be suitable for some applications, readings taken every second can be reported if required.

The instruments manufactured by Munro Environmental at our factory in east London are supplied alongside other quality environmental monitoring instruments made in the UK and elsewhere.

Personal Air Samplers

To assess occupational exposure to gases, vapours and dusts an operator wears a personal sampler with a suitable sample head located in the breathing zone. The sample is collected during working activity, often over 8 hours. Personal air samplers must be small, lightweight and quiet to be acceptable to the wearer while being robust, reliable and accurate so that the technician can be confident in the quality of the collected sample. The instruments in the Munro range include simple air samplers designed for dust sampling as well as microprocessor controlled instruments suitable for a wide variety of sampling applications. These samplers are also used for static sampling, for example where the environment in a room or at the boundary of a work area must be sampled

Personal Air Sampling



In order to assess what an individual breathes in during their job, surveys of exposure are conducted using personal samplers. These should be small, light and quiet so operators are not handicapped by the sampler. While a simple device is suitable for some applications, surveys in potentially explosive atmospheres must be carried out using equipment certified intrinsically safe. Guidance about sampling methods are published by national agencies including H&SE in the UK, OSHA and NIOSH in USA. Munro supply air samplers suitable for all these applications.



AS100 and AS200

These basic air samplers use a new diaphragm vacuum pump to ensure a smooth and reliable air flow with a minimum of maintenance. Both have automatic electronic flow compensation to overcome the effects of increasing filter back pressure and to ensure that flow is maintained within $\pm 5\%$ of the desired set point. The AS200 incorporates an accurate elapsed time module with a LCD display, meeting the latest guidance. The ABS enclosure ensures that the internal components are well protected against moisture, dust and chemical ingress. To reduce weight and improve battery life we have incorporated nickel metal hydride batteries which are more "environmentally friendly" than some other types. We offer single and five channel standard battery chargers. Munro offers a full range of accessories to complement the instrument, including Filter holders, filters cyclones, asbestos heads, IOM heads and Arnold bubblers as well as specialised devices to fractionate the particulate.



SPECIFICATIONS

| | |
|----------------------|--|
| Reference | AS100 & AS200 (AS200 includes LCD elapsed timer) |
| Flow Rate | 0.5 to 2.5 l/min stabilised to within $\pm 5\%$. |
| Maximum load | At 2 l/min - 29.9 mbar |
| Filter size | 25mm standard; 37mm optional. |
| Carrying attachment | Belt clip; kit incl. Harness. |
| Rechargeable battery | Ni-Mh 3.6V 1.2 Ahr. Recharge time 14 hr. @ 100mA |
| Average current | 80 to 100mA. |
| LED indicator | Yellow/Green pump running Red - Battery discharged |
| Dimensions | 107mm (H) x 80mm (W) x 50mm (D) |
| Weight | 0.370 kg |
| Accessories | |
| Sampling heads | 25mm & 37mm open face filter holders. 25mm cowled filter holder. Cyclone for respirable dust separation; (but see text). |
| | IOM dual fraction dust sampler |
| Battery charger | 240V ac input; 100mA output. 6-way 100mA charger is also available. |
| Harness | Strong webbing belt with shoulder strap. |
| Calibrator | To set up the flow rate. |
| Filters | Glass fibre, cellulose, polycarbonate, silver, ptf |

Intrinsically Safe Personal Air Sampling



The personal air samplers from AP Buck Inc. offer the highest specification for sampling both solvent vapours and particulates. The samplers are CENELEC certified Intrinsically safe EEx ib IIB T3 and are suitable for use in chemical and petrochemical works, pharmaceutical plants and other areas where explosive vapour may be present. Two models are available, each in three configurations, so that the widest range of air sampling applications can surveyed.

While the **Buck-Basic** is suitable for many applications, the **Buck-Genie VSS** has (probably) the highest specification of any personal air sampler with programmable sample schedules, precise flow measurement, temperature and pressure recording and on-board data logging. All these features in a light, robust package to ensure the highest user satisfaction.

Buck Basic - Intrinsically Safe, microprocessor controlled air sampler with a wide flow range suitable for dust and vapour monitoring applications. Three versions available with maximum flow rates of 1.0, 5.0 and 12.0 litres per minute. Accuracy $\pm 3\%$ of selected flow.

SPECIFICATIONS

Reference

Constant flow range
Constant pressure range
Accuracy
Rechargeable NiCd batteries
Operating temperature limits
Dimensions
Weight

Buck-Basic 1

5 to 600 ml/min. Use Non-adjustable Tube Holder APB-109032
5 to 75 ml/min. Use Low Flow Holder APB-109033
3% of set flow
4.8V, 1.5 aH
0 to 40°C
114mm (H) x 102mm (W) x 50cm (D)
0.539 kg

Reference

High flow range
Low flow range
Flows >600 ml/min
Accuracy
Rechargeable NiCd batteries
Operating temperature limits
Dimensions
Weight

Buck-Basic 5

0.6 to 5 l/min. (600 ml/min to 5,000 ml/min)
5 to 600 ml/min with optional Uni. Low Flow Holder APB-109030
use optional Non-Adjustable Low Flow Holder APB-109032.
3% of set flow
4.8V, 1.5 aH
0 to 40°C
114mm (H) x 102mm (W) x 50cm (D)
0.539 kg

Reference

Flow Range:
Accuracy all ranges
Rechargeable NiCd Batteries
Operating Temperature Limits
Dimensions
Weight

Buck-Basic 12

2 to 12 l/min. (2000 ml/min to 12000 ml/min)
2% of set point and 3% of selected Flow
4.8V, 1.5 Ahr
0 to 40°C
146mm (H) x 102mm (W) x 50mm (D)
0.652 kg

Accessories

FastOne Charger Single Station
FastFive Charger Five Station
Standard Charger Single Station
NiCd Battery, Triple Pack, UL, cUL, rechargeable
(for extended run times with Basic-5 and 1 pumps)
Battery Eliminator, replaces Basic battery pack
(for continuous operation, non-hazardous areas)

Intrinsically Safe Personal Air Sampling



Buck VSS - Programmable air samplers with the highest specification. Calibrated airflow and pressure sensors to give a traceable flow calibration. Instrument data logged in memory at regular intervals to verify sampler performance. Printout without a PC. Three versions available with maximum flow rates of 1.0, 5.0 and 12.0 litres per minute. Accuracy $\pm 2\%$ of set point, $\pm 3\%$ of selected flow.

SPECIFICATIONS

| | |
|------------------------------|--|
| Reference | Buck-Genie VSS-1 |
| Constant flow range | 5 to 600 ml/min. Use Non-adjustable Tube Holder APB-109032 |
| Constant pressure range | 5 to 75 ml/min. Use Low Flow Holder APB-109033 |
| Accuracy | 2% of set point and 3% of selected Flow |
| Rechargeable NiCd Batteries | 4.8V, 1.5 Ahr |
| Operating Temperature Limits | 0 to 40°C |
| Dimensions | 114mm (H) x 102mm (W) x 50mm (D) |
| Weight | 0.539 kg |

| | |
|------------------------------|--|
| Reference | Buck-Genie VSS-5 |
| Flow range total | 0 to 5 l/min. |
| Const. flow range | 800 to 5,000 ml/min |
| Const. pressure flow range | 5 to 800 ml/min use Universal Low Flow Holder APB-109030 |
| Accuracy | 2% of set point and 3% of selected Flow |
| Rechargeable NiCd Batteries | 4.8V, 1.5 Ahr |
| Operating Temperature Limits | 0 to 40°C |
| Dimensions | 114mm (H) x 102mm (W) x 50mm (D) |
| Weight | 0.539 kg |

| | |
|------------------------------|--|
| Reference | Buck-Genie VSS-12 |
| High Flow | 2 to 12 l/min. (2000 to 12000 ml/min) |
| Low Flow | 5 to 800 ml/min use Universal Low Flow Holder APB-109030 |
| Accuracy | 2% of set point and 3% of selected Flow |
| Rechargeable NiCd Batteries | 4.8V, 1.5 Ahr |
| Operating Temperature Limits | 0 to 40°C |
| Dimensions | 146mm (H) x 102mm (W) x 50mm (D) |
| Weight | 0.652 kg |

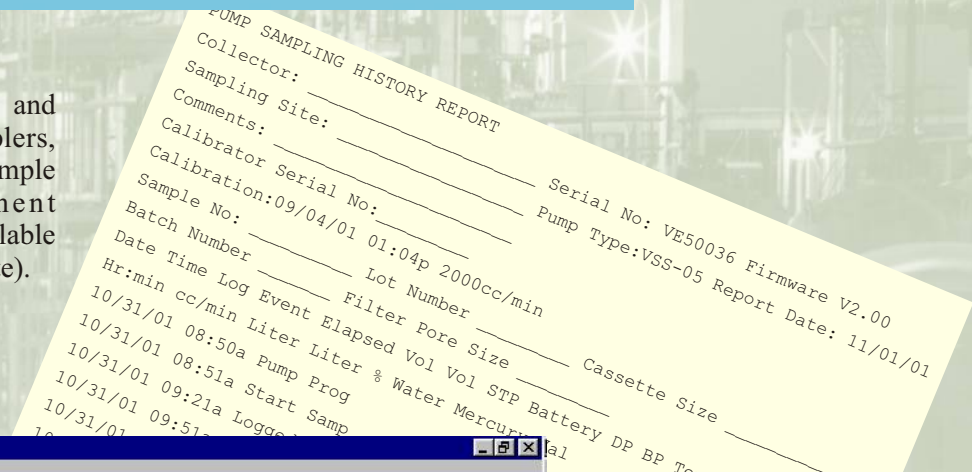
Accessories

- FastOne Charger Single Station
- FastFive Charger Five Station
- Standard Charger Single Station
- NiCd Battery, Triple Pack, UL, cUL, rechargeable (for extended run times with VSS-5 and 1 pump)
- Battery Eliminator, replaces VSS battery pack (for continuous operation, non-hazardous areas)
- VSS Cable-Converter, allows VSS Series pumps to print Sample History Reports to printer
- VSS PC Link Express Software Package (incl. 1 CD-ROM, 1 VSS Communication Cable, one 9-25 pin adapter, instructions)
- VSS Comms Cable, 6 pin mini-DIN to 9 pin DSUB connector



VSS PC Link Express

Software Package – Set up and interrogate VSS air samplers, download and store logged sample data. Upgrade instrument firmware (updates are available free from the A.P.Buck web site).



PC Link Express Registered Version

File Help

Program Pump | **Real Time** | **Read Logs** | **PC/Pump Setup**

Sampling Settings for Pump VE50036

| | | |
|---|--|--|
| Select Unit Of Measurement <input type="radio"/> English <input checked="" type="radio"/> Metric | Startup Display Screens <input type="radio"/> On <input checked="" type="radio"/> Off | History Report Rate Set Log Rate To: <input type="text" value="0"/> minutes <input type="checkbox"/> Clear Logs in pump |
| Password Settings <input type="radio"/> On <input checked="" type="radio"/> Off | Flow Fault Settings <input type="radio"/> Activated <input checked="" type="radio"/> Deactivated | <input type="button" value="Clear Data in Pump"/> |
| Timing Setup <input type="checkbox"/> Timing Routines Activated <input checked="" type="radio"/> Start/Stop <input type="radio"/> Duration | Reset Time In VSS Pump <input type="text" value="26/06/01 15:29:15"/> | |

Timing

Start Time:

Stop Time:

Duration: Hours:Mins

PC Link Express Registered Version

File Help

Program Pump | **Real Time** | **Read Logs** | **PC/Pump Setup**

Serial Number: VE50036 Model: BUCK VSS-5 Pump

Current Setup Status

- Timing Routines are: Deactivated
- History Report Logging Rate: Every 15 Minutes
- Unit Of Measure: Metric
- Flow Fault is: Deactivated
- Password is: Off
- Startup Display Screens Are: On
- Current Flow Setting: 2000cc/min
- Flow Mode is: Volumetric

Time Values

Total Motor Run Time: 0h 22m Version 1.39

Current Pump Time:

Current Sampling Data

| | |
|-----------------------------------|-----------------------------|
| Current DP: 72mm of Water | Sample Run Time: 0h 16m |
| Cumulative Volume: 32.71 L | Volumetric Flow: 2006cc/min |
| Battery Capacity: 92% | Total Logs Saved are: 2 |
| Current BP: 762mm of Mercury | Current Temp: 23C |
| S.T.P. Cumulative Volume: 32.67 L | S.T.P. Flow: 1992cc/min |

Updating Display

Calibration of Air Samplers



Accurate assessment of airborne concentrations depends upon precise analysis, sample timing and flow rate setting. In addition to standard rotameter flow meters Munro Environmental offers two calibrators from AP Buck, used to set and verify airflow rates for personal air samplers. The performance of a sampler against increasing restriction can be assessed by using the variable restriction of the **Buck PDS**



Buck PDS Primary Flow Diagnostic System

Battery-powered airflow calibrator and air sampler test system. Variable backpressure setting to assess sampler performance over the flow range. Accurate flow calibration, optional flow cell for highest precision.



Mini-BUCK Calibrator

Accurate and repeatable airflow calibration by timing the traverse of a bubble film across a fixed volume. High accuracy and precision, simple battery-powered operation. Flow rate ranges of up to 1.0, 5.0 and 30 litres per minute available.

SPECIFICATIONS

Reference

Flow Range
Accuracy
PDS Flow cell
Flow Range
Accuracy
Display Data
In-line valves
Rechargeable NiCd Batteries
Operating Temperature Limits
Operating Pressure
Barometric Pressure
STP Correction
Dimensions
Weight
Options

Buck PDS Primary Flow Diagnostic System

500 to 5000 ml/min
2% of set point
Primary Gas low Standard S-5 (optional)
1 to 6000 ml/min
0.5% of any display
2 line, 32 character
A bypass valve in series with a regulating valve
4.8V, 1.5 aH
0 to 40°C
inline maximum 2 psi (0.14 kg/cm²)
sea level to 10,000 ft altitude 0. 6 in. Hg
English: 29.97 in. Hg at 77°F Metric: 760 mm Hg at 25°C
190mm (H) x 140mm (W) x 70mm (D)
0.821 kg

S-1 Flow Cell (1 to 300 ml/min)
S-5 Flow Cell (1 to 6000 ml/min)
S-30 flow cell (0.1 to 30 l/min)
PDS Printer Cable, sample history reports direct to printer

Reference

Range
Display
Battery life
Dimensions
Weight

mini-Buck Calibrator M-5

1 to 6000 ml/min (1.0 & 30.0 litre versions also available)
4 character LCD
8 hours
140mm (H) x 153mm (W) x 64mm (D)
0.740 kg

MUNRO

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