



SASS[®] 4000 Plus

High-Volume Concentrator + Wet Collection

Multi-Functional CBRN Solutions



SASS[®] 4000 Plus: High-Volume Concentrator PLUS Wet Sample Collection

THE SASS[®] 4000 PLUS combines a highly efficient, high-volume aerosol concentrator (SASS 4000) with a portable multi-stage, wetted-wall, cyclone sampler (SASS 2300) that extracts particulates and water-soluble chemical vapors from the concentrated air into to a liquid phase suitable for later analysis.

APPLICATION AREAS

- Counter-terrorism
- Epidemiology
- Agriculture
- Food processing air quality
- Medical facility air quality

The SASS 4000 continuously samples over 3500 liters/minute of ambient air. Air flows radially inward into the concentrator through a coarse square-mesh screen. This inward radial flow provides 360 degree sampling of the surrounding aerosol environment. The primary fan and a curved air shroud are mounted above the sampler inlet section, channeling exhaust air into a vertical stream away from the inlet area.

Particulates in this air stream are transferred to a much smaller secondary air stream using patent-pending centrifugal and virtual impaction principles. The secondary flow can reach aerosol concentrations that are 4X to 15X higher than present in the incoming air, yet the velocity of this secondary aerosol concentrate flow is much lower than peak velocities in the primary circuit.

This secondary air flow is then routed, via a hose connection, into the SASS 2300 where the concentrated particulates and the vapors are extracted from sampled air and trapped in a small volume of liquid that can be removed at any time for analysis. Trace aerosol concentrations can be amplified by extending the sampling time. Our patented fluid monitoring system maintains a fixed liquid volume in the device that is independent of collection time, air temperature or relative humidity.

It is the only wet-type air sampler shown to efficiently collect virus-sized particles, and has been successfully used to detect the airborne viral pathogens that cause exotic Newcastle disease and hoof-and-mouth disease, as well as some strains of avian influenza virus. Furthermore, it is the only portable sampler technology to receive U.S. Department of Homeland Security Certification under the U.S. Safety Act of 2002.

The air sampler is microcontroller-based and can function as a stand-alone unit or connected to other sampling, detection or communication systems via RS-232 or wireless link. Reprogramming of sampler operation may be performed at any time over the RS-232 link without having to disassemble the unit.

SASS 4000 Specifications	
Characteristic	Description
Primary airflow	4000 liters/min is sampled uniformly from around the concentrator's circumference.
Secondary airflow	30-325 LPM at +0.4 cm of water static head maximum; aerosol concentrate typically delivered to a wet or dry sampler such as the SASS 2300 or SASS 3100, respectively.
Aerosol range	Particles greater than 0.5 microns in diameter with a density of 1.0 g/cc
Secondary airflow connection	Hose barb fitting on base surface for nominal 3.8 cm ID hose.
Concentration enhancement	4 - 15 times typical for aerosols greater than 0.5 microns in size. Performance also influenced by secondary airflow- request specific data for your application.
Overall size	38 cm high x 25.4 cm diameter max.
Weight	6.32 kg (13.9 lbs.)
Operating temperature range	-40°C to 60°C
Power consumption	<ul style="list-style-type: none"> • 160 watts at 24VDC; Brushless drive motor with 70,000 hour life at 40°C. • 100 to 230 VAC lump-in cord AD/DC converter supplied.
Sound level	72 dBA @ 1 meter radius on inlet equatorial plane.
Mounting	Quick-detach tripod legs; 0.53m to 1.46m adjustable height.
Accessories	<ul style="list-style-type: none"> • Hard shell carrying case. • Electret sample filter assembly (for stand-alone operation).
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See SASS 2300 specifications on next page

SASS 2300 Wetted-Wall Air Sampler Specifications

Characteristic	Description
Operating principle	Multi-stage wetted-wall cyclone with enhanced particulate collection.
Air collection rate	325 LPM using 30,000 hr. life brushless fan.
Particulates collection range	1-10 µm. Contact Research International regarding vapor collection applications.
Concentration ratio	67,000/minute, nominal.
Liquid inventory	4-5 cc range, adjustable by user. Proprietary control loop maintains a constant liquid volume in the sampler, independent of collection time, temperature, or humidity; useful for concentrating trace airborne analytes.
Make-up water	1 liter on-board reservoir; supplemental off-board reservoirs may be used in fixed installations: 0.8 cc/min, typical evaporation rate at 20C/50% RH.
Physical size	18.4 cm x 21.3 cm x 34.3 cm (7.2" W x 8.4" D x 13.5" H).
Weight	3.7 kg w/o battery, 4.7 kg with battery (8.2/10.4 lbs). Add 1 kg (2.2 lbs) for 1 liter of water.
Air inlet	Industry-standard threaded adapter.
Humidity range	Non-condensing conditions.
Operating temperature	Above freezing conditions to 66O C.
Power source	BA-5590/U primary battery; or BA-5390/U extended life primary battery; or UBI 2590 rechargeable battery; or 82-265 Volt (47-63 Hz) AC lump-in-cord power supply.
Power consumption	1.33 amps @ 12 V, 16 W.
Sample extraction	On-board 12 cc/min peristaltic pump, manual or remotely controlled. Vial filling module included. Air sampling may continue during extraction.
System controls	Microprocessor controlled. RS-232 or optional wireless link for remote operation or reprogramming. Additional TTL and motor drivers available.
PC interface requirements	OS: Windows®. Processor: 400 MHz Pentium or equivalent (Min.). RAM: 96 MB (Min.), 256 MB (Recommended). Hard Disk: 1.2 MB available space. CD-ROM.
Sound level	60 dB (A).
Package	Lightweight two-piece molded plastic shell with swivel-style carrying handle.
Decontamination	Auto-flush protocol using onboard water, or manual flush with detergent and/or disinfectant. Disposable fan module.
Accessories	Carrying case; inlet hose; 8cc sample bottles; sample bottles; rechargeable battery and charger.
Approvals	U.S. Dept. of Homeland Security certified under U.S. Safety Act of 2002
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