

SAR-1000 Small Animal Ventilator

Advanced ventilator system for rodents



STANDARD FEATURES

- Pressure or volume-cycled operation
- Wide tidal volume and rate range
- User-friendly set-up and operation.
- Mice to Guinea pig size
- Built-in auto-SIGH function
- Direct display of Tidal Volume & all parameters
- Remote control via USB port
- Safe with oxygen and anesthesia

The SAR-1000 Small Animal Ventilator is a versatile and easy-to-use ventilator for mice, rats, and other small animals. VOLUME mode delivers a fixed tidal volume on each breath, and PRESSURE mode causes inflation to stop at a preset airway pressure. In either mode, lung inflation is maintained at the end of inspiration until the percent inspiration (%Insp) time has elapsed. This end inspiratory pause (EIP) improves gas exchange and the overall efficiency of ventilation.

In volume mode, the ventilator operates on the proven *flow-time* principle, where a known airflow is delivered for a set time, thus delivering a fixed volume. In pressure mode, airflow is simply adjusted to give a suitable inspiration time. Actual tidal volume is computed and displayed on the LCD display, as well as minute ventilation (MV) and other respiratory parameters.

A built-in air pump allows completely self-contained operation. This pump draws in room air, oxygen, or anesthetic gasses through a rear-panel port.

Operation

The controls on the SAR-1000 are simple and intuitive. Respiratory rate (RR) is set directly and reads out as breaths/minute. Percent inspiration (%Insp) determines the fraction of the total cycle time devoted to inspiration. The pressure knob is used to set the desired end-inspiratory pressure (and sigh pressure setting). The inspiratory flow knob is used to set the airflow rate during inspiration. When this is adjusted, the LCD display is automatically updated to show the new flow rate and corresponding tidal volume.

The volume and pressure modes are switch-selectable and function as described above. In any mode, the front-panel pressure bar graph continuously displays the current airway pressure. This pressure signal is also available as an output for external recording.

Sighs are initiated manually by pressing the sigh pushbutton or programmed to occur automatically. On a sigh breath, the end-inspiratory pressure will be determined by the sigh pressure setting.

Special features and advantages

The SAR-1000 incorporates numerous features and innovations resulting from our long experience with small animal respiratory support and monitoring. Accuracy of respiratory parameters is assured through the use of advanced sensors for airflow and pressure. The simple but versatile operating modes allow safe long-term ventilation of small, delicate animals.

Using external control programs, it is possible to synchronize the ventilator for imaging purposes, do neural-controlled ventilation, constant-CO₂ ventilation, and much more.

VENTILATE

ANESTHETIZE

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Accessories and add-ons

The SAR-1000 is fully compatible with oxygen and inhalational anesthetic gasses. An optional anesthesia kit turns the SAR-1000 into a complete and compact anesthesia ventilator. Mixing manifolds are available for combining air or oxygen with anesthetic gasses.

The ventilator is expandable to multiple animals via a rear-panel expansion port. Using available external valve assemblies, up to five mice or rats can be ventilated based on a single SAR-1000. Valve assemblies for larger animals are also

available. Please refer to the accessories list for details.

Although the SAR-1000 comes complete with everything needed for immediate operation, we offer a variety of accessories and replacement components. These include a range of endotracheal tubes, connectors, tubing sets, etc. We are happy to customize the configuration to meet any special requirements. Besides its primary use as a normal rodent ventilator, it can operate under remote computer control using the built-in USB port and a host PC.

SPECIFICATIONS

Respiratory rate range	5 - 200 breaths/min
Tidal Volume range (NOTE 1)	0.2 - 30ml
Inspiration/Expiration range (%Insp)	10 - 90%
Inspiratory flow range	10 - 1000 ml/minute
Pressure control range	0 - 50.0 cmH ₂ O
Internal air pump capacity	2.5 lpm @ 5psi (0.34 bar)
Analog pressure output voltage.....	50mV/cmH ₂ O
Logic Sync Out voltage	5V (TTL)
Remote-control interfaces	serial (USB), and parallel logic inputs
Parallel remote-control input voltage (HOLD & MAN)	5V (TTL)
INSP, EXP, and PRES MONITOR ports (front panel)	Luer female
PUMP IN, PUMP OUT, FLOW IN, EXP AIR, and IN VENT ports (rear panel)	0.15" flex tubing barb (4mm)
Power requirements (supplied with mains cord for destination country).....	120/240VAC, 50VA
Dimensions	9Wx4Hx9D in (23x10x23 cm)

NOTE 1: Using internal valves. External valve assemblies available for larger animals provide up to 125ml volumes.

ORDERING INFORMATION

Part No.:	Model:	Description:
12-03100	SAR-1000	Small Animal Ventilator, 120/240V 50/60Hz, with software and accessories
12-04000	CTP-VA-1	External Valve Assembly, rodent size (same as SAR-1000 internal valves)
12-05000	CTP-VA-3	External Valve Assembly, rabbit, cat, small dog size
12-10010	MVA-4	Electrical adapter for adding up to four external valve assemblies
12-10020	EFM-1	Flowmeter/regulator with stand, specify range: 1, 2.5, 5, 10 or 20 liters/min
12-10021	EFM-4	Flowmeter/regulator manifold w/ four flowmeters on stand, specify ranges
12-10032	PUMP-8	External air pump, 8 liter/min range
13-21031	TRACH-1	Endotracheal tube, flexible Teflon with Luer connector (mouse), pack of 5
13-21032	TRACH-2	Endotracheal tube, flexible Teflon with Luer connector (rat), pack of 5
13-13000	Isoflurane Kit	Complete anesthesia kit for Isoflurane includes vaporizer, fittings, flowmeter, & tubing

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