

SAR-830/AP Small Animal Ventilator

Reliable ventilator system for rodents and larger animals

Standard Features

- Dependable, all-electronic ventilator
- Pressure or volume-cycled operation
- Wide tidal volume and rate range
- Mice to Guinea pig size
- Expandable to 5 animals
- Safe with oxygen and anesthesia

The **SAR-830/AP Small Animal Ventilator** is a versatile and easy-to use ventilator for a variety of laboratory animals. It can operate in volume or pressure-cycled modes. **VOLUME MODE** delivers a fixed tidal volume on each breath, and **PRESSURE MODE** causes inflations to stop at a preset airway pressure. A built-in air pump provides completely self-contained operation. These ventilators are suitable for use with animals in the mouse to Guinea pig range of body weights, and can be expanded to larger animals using simple plug-in external valves.

Fixed volumes are generated by gating a known airflow into the lungs for a set inspiratory time: the well-known flow-time principle. Only three controls — **RESPIRATORY RATE**, **INSPIRATORY TIME**, and **FLOW RATE** are necessary to produce tidal volumes, respiratory rates, and I/E ratios over a wide range. A bar-graph display shows airway pressure in any mode of operation.

Operation

RESPIRATORY RATE in breaths/min is directly dialed in and shown on the digital display. **INSPIRATION TIME** in seconds is set with a 10-turn dial. **INSPIRATORY FLOW** is adjusted using the front-panel flowmeter. In pressure mode, the end-inspiratory **PRESSURE** is set in cmH_2O . During inspiration, airflow is introduced into the lungs until this pressure is reached, at which point inspiration is terminated. **PRESSURE MODE** is especially useful for very small animals, where hyperinflation of the lungs can be a problem. **PRESSURE** or **VOLUME** mode is selected with a single switch.



Model SAR-830/AP Small Animal Ventilator

Expandability

These units can easily be expanded to ventilate multiple small animals simultaneously by adding external valve assemblies. A metered flow source is required for each external valve assembly. These external valves are available for animals ranging from mice to cats in size. Refer to the accessories list for details.

The SAR-830/AP is easily connected to anesthesia sources. A built-in data port can be used to provide remote-control of ventilator operation.

SPECIFICATIONS

Respiratory rate range	5 - 200 breaths/min
Tidal Volume range (NOTE 1)	0.2 - 35ml
Inspiration time range	0 - 5.00 seconds
Inspiratory flow range (NOTE 2)	100 - 1000 ml/minute
Pressure control range	0 - 50.0 cmH_2O
Analog rate output voltage	10mV/breath/min
Analog pressure output voltage	50mV/ cmH_2O
Logic Sync Out voltage	5V (TTL)
Remote-control inputs	two TTL logic inputs
Power requirements	120/240VAC, selectable
Dimensions	9Wx5.5Hx9D in (23x14x23 cm)

NOTE 1: Using internal valves. External valve assemblies available for larger animals provide up to 350ml volumes.

NOTE 2: Rat - Guinea pig. *Mouse Kit* provides special low range flowmeter and mouse-compatible tubing set.

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SAR-830 Ventilator Accessories and Options

External Valve Assemblies

External valve assemblies (CTP-VA-x series) are used to expand the number of animals being ventilated, or to ventilate larger animals than can be accommodated with the standard SAR-830. The valve assembly connects to the ventilator through a supplied 12' cable, and acts as a slave to the SAR-830. The CTP-VA-1 is equivalent to the standard SAR-830 internal valves, and is used to create one or more additional ventilator stations. To connect more than one valve assembly, an MVA-4 electrical adapter is required. A controlled flow source is required for each external valve assembly. Tubing and connectors are supplied.

Flowmeter/Regulators

A regulated flow source is required for each external valve assembly attached to an SAR-830. Flowmeters are available as single units or as four-flowmeter manifolds. The flowmeter manifolds can be used to mix anesthetic gasses, or as independent flowmeters for multiple valve assemblies. Digital mass flowmeters are also available where the highest accuracy is required.

Adapters and Miscellaneous

The MVA-4 Multi-Valve Adapter allows up to four CTP-VA-1 valve assemblies to be attached to one SAR-830 series ventilator, for a total of five ventilator stations. Up to four CTP-VA-1 valve assemblies can be powered by one SAR-830 ventilator or two CTP-VA-3's, due to power supply constraints.

Anesthesia

Connecting an anesthesia system to the SAR-830 is straightforward. The recommended method is to use a rubber compliance bag that is kept filled with the anesthetic mixture, and is attached to the inlet of the ventilator. This method prevents backpressure on the vaporizer, and allows the ventilator to draw in the gas as needed. See our *Anesthesia Brochure* for details.

Remote control options

Every SAR-830 series ventilator has a built-in remote control port that operates with a few TTL logic inputs. We can provide Labview programs and a small data acquisition adapter that allow advanced remote control operations. These include neural-controlled ventilation, constant CO₂ operation, complex breathing patterns, and more. Contact us for more information!

Ordering Information:

Part No.:	Model:	Description:
12-01000	SAR-830	Small Animal Ventilator, Volume-cycled without air pump, 120/240V 50/60Hz
12-01100	SAR-830/A	Small Animal Ventilator, Volume-cycled with internal air pump
12-02000	SAR-830/P	Small Animal Ventilator, Volume and Pressure-cycled, without air pump
12-02100	SAR-830/AP	Small Animal Ventilator, Volume/Pressure-cycled, with internal air pump
12-01020	Mouse Kit	Special smaller internal components and tubing set for body weight 10-100g
12-04000	CTP-VA-1	External Valve Assembly, rodent size (same as SAR-830 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	OPTION 023	External air pump, 8 liter/min range
12-10033	OPTION 024	External air pump, 16 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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