SABLE SYSTEMS INTERNATIONAL

THE RM8 Intelligent RESPIROMETER MULTIPLEXER

Increase Experimental Productivity without Sacrificing Accuracy

Efficiency. Accurate respirometry takes time and care. Animals or other preparations must sometimes be held under experimental conditions for extended periods to prevent handling or stress artifacts. Running experiments in parallel rather than in series greatly increases throughput and makes better use of time and equipment. Our **RM8** respirometer multiplexer allows you to select from any one of seven respirometer chambers or sample streams with full baselining available at any time on the eighth channel.

You can switch between chambers and baselines at will, manually or automatically, between or during recordings (with appropriate software, such as ExpeData from Sable Systems, LabHelper from Warthog Systems, LabView or other suitable data acquisition systems). The **RM8** is fully compatible with flow-through (open flow) or constant volume (stop-flow) gas analysis. The **RM8** was introduced in 1992, and it has recently been upgraded to add several advanced features, including multiple manual and computer control options plus a two-line alphanumeric display. Do not confuse it with inferior imitations.

The RM8 allows permits significant gains in the productivity and flexibility of any hardware configuration for aerial respirometry. It allows an experiment that might otherwise have taken a week or more to be completed in a single day, *and more accurately*. It allows the best and most effective use of your experimental organisms and your time. And you can enjoy the confidence of knowing that the **RM8** is not a mere fly-by-night imitation - it is the real thing, and the product of years of experience and innovation.

The RM8 has two sets of eight switchable airstreams, each of which can be directed to common ports under computer control. The two sets are independent, but are switched simultaneously, and can be used (for example) to connect to both sides of a series of respirometer chambers. LEDs indicate which airstream is currently selected. Selection of any of the eight duplicate airstreams is accomplished by sending a TTL-level, four-bit digital word to one or two **RM8** multiplexers, or a serial command if more than two are being used. This is easily accomplished with any good data acquisition system, such as ***ExpeData***. Multiple switches can also be selected.

How does channel selection work? A four-bit word can have any of 2^4 or 16 values. The value of the word (binary 0 through binary 15, making a total of 16 values) determines which airstream will be selected. If a single **RM8** is used, only the first three bits are used, allowing any of 2^3 or 8 chambers to be selected. If two **RM8s** are used, then four bits are used. For more than two units, a serial data stream (produced by the

host computer or an A/D interface such as our UI-2) specifies which channel is switched. The theoretical limit is 256 channels or 32 multiplexers.

What happens to respirometer chambers that are not selected? Will they become significantly hypoxic or hypercapnic? A good question. An ingenious design feature allows respirometer chambers that are not selected to be flushed continuously with a user-provided airstream to prevent hypercapnic or hypoxic conditions from developing between readings. Alternatively, our **MF-8** *respirometer manifold* or **FlowBar-8** *mass flow generator* can be used to control air-flow independently through all chambers at once, and the

RM8 can then be used to sub-sample the air emerging from each chamber, allowing lightning-fast changes from chamber to chamber. Or, the **RM8** can deliberately prevent any gas flow while the chamber is not selected, thus transforming itself into a stop-flow multiplexer. (Note that unlike imitations, *our stop-flow configuration absolutely prevents cross-contamination between samples*). Of course, we offer full technical support, so if the aforegoing sounds complicated, don't be alarmed - we'll walk you through it in no time.

The Sable Systems **RM8** is supplied with a univeral input power source. A cable for connection to TTL-level digital outputs (eg. From ***ExpeData,*** **DataCan** or other data acquisition systems) is supplied. Like all of our instruments, the RM-8 is guaranteed to be free of defects in materials or workmanship for three years and includes lifetime technical and applications support.

ACCESSORIES:

MuxScan II- electrical multiplexer

By using this adapter, you can quickly and easily connect up to 8 activity detectors or other transducers (range: 0 to 5V) to your **RM8**, and the adapter will select the appropriate detector automatically when its corresponding solenoid valve is energized. All connections are made via research-grade BNC connectors, except for the connection to the multiplexer itself, which is accomplished via a DB-15 connector with attached cable (supplied). The multi-activity adapter also has provision for biasing resistive detectors such as thermistors, light dependent resistors (handy for activity detection at moderate light levels) and phototransistors (ditto, using either visible light or invisible infrared illumination).