microCapStar CO_2 Analyzer

Fast response end-tidal Carbon Dioxide monitor for mice

The MICROCAPSTAR End-Tidal Carbon Dioxide Analyzer provides accurate end-tidal or continuous measurement of expired CO_2 in animals as small as mice. It features very low sample flow requirements, rapid response time, and long-term stability. Respiratory rate (RR) is computed using the excursions of the CO_2 waveform. The CO_2 and RR measurements, as well as a trend plot of the end-tidal values, are displayed on the graphics LCD screen.

The heart of the MICROCAPSTAR is a new temperature-controlled, miniature infrared CO_2 sensor with digital output. Low sample flow and rapid response is achieved with a carrier gas system employing digitally-controlled active flow management. This technique precisely and automatically maintains the ratio of carrier flow to sample flow, which is essential for accurate measurements. The heated measurement cell prevents water condensation, even during long-term measurement sessions.

The front-panel display shows CO_2 concentration (either instantaneous or $ETCO_2$) in either percent or mmHg. Calibration is performed with a single calibration gas and room air. An adjustable $ETCO_2$ alarm provides a warning when end-tidal values fall out of a user-adjustable preset range. All adjustments are performed digitally using a single knob. Built-in diagnostics monitoring warn of plugged sample tubing or other fault conditions.

The advanced features, reliability, and ease of operation of the MICROCAPSTAR make it the perfect companion to our SAR-830 series Small Animal Ventilators for monitoring respiratory status. An accessory pack containing spare low-volume sample tubing and a variety of connectors and fittings is included with the instrument. A range of accessories is available to ensure easy setup and convenient operation. Windows-based monitoring software is included, which allows display of the measurements, and saving the data to a disk file.

CO_2 monitoring is widely recognized as an important measure of the respiratory status of experimental animals. It is useful in setting ventilator parameters, and serves to gauge depth of anesthesia in unassisted, spontaneously breathing animals as well. The MICROCAPSTAR extends this important technique to the realm of small experimental animals.

Standard Features:

- End-tidal peak or continuous readings
- Low sample flow requirements
- Accurate and stable monitoring
- Simple and easy one-gas calibration
- Linear output signal for recording

Applications:

- Suitable for mice and other small animals
- Respiratory monitoring
- Use with ventilated or unassisted animals
- Verifies proper ventilator operation

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CWE INCORPORATED

800-642-7719 (610-642-7719 in PA) FAX 610-642-1532

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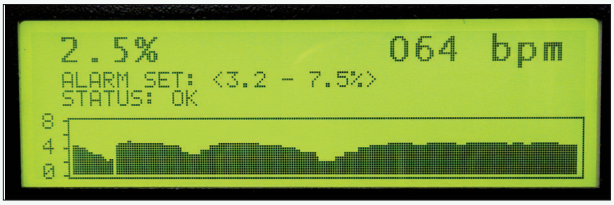
Specifications: (Note 1)

Carbon dioxide measurement	single beam, non-dispersive infrared
Measurement range	0 - 9.9% (0 - 76.0mmHg) CO_2
Accuracy	0.15% (1.1mmHg)
Resolution (internal and analog output)	0.01% (0.1mmHg)
Resolution (display)	0.1% (1.0mmHg)
Linearity	0.1% CO_2
Repeatability	0.1% CO_2
Response time (T_{10} - T_{90})	75mS at 70 ml/min through cell
Sample cell materials	sapphire and stainless steel
Analog output scaling	1.1V/% (0-10V)
Response time (T_{10} - T_{90})	150mS at 50 ml/min sampling
Zero stability	0.2% (8 hours), 0.3% (24 hours)
Interference effects: 50% N_2O	0.1% at 0% CO_2, 0.6% at 5% CO_2 (uncomp.)
Maximum sample cell pressure	+5 psig
Interference effects: vaporized anaesthetic agents	negligible
Operating temperature range	5-40° C
Optical bench temperature	48° C, controlled
Warm-up time	4 min to 0.2%, 10 min to 0.1%
$ETCO_2$ trend display	5 minute graphical scrolling display
Sample flow (sample inlet - carrier flow out)	10ml/min nominal, adjustable from 5.0 - 20ml/min
Sample tubing connections (carrier flow, sample inlet)	Luer female
Calibration controls	Zero, Span
$ETCO_2$ alarm adjustment range	1.0 - 9.9% (8 - 75mmHg)
Respiratory rate measurement range	5 - 200 breaths/min
Signal outputs (rear panel)	BNC jacks
CO_2 output scaling	1.0V / %CO_2
Respiratory rate output scaling	0.05V / bpm
Alarm output	5V if alarm condition, 0V if no alarm
Serial data output format	2400 baud, 8 data, no parity, 1 stop bit
Electrical requirements	120VAC/220VAC switchable, 35VA
Dimensions	19W x 5.25H x 16D in., 49W x 13H x 41D cm
Weight	10 lbs. (4.5kg)

The graphics LCD display panel (shown at right) provides the instantaneous CO_2 measurement (Fast Mode), or $ETCO_2$, as well as respiratory rate, alarm settings, system status, and operator messages. The graph at bottom shows the $ETCO_2$ history over a five minute period.



Ordering Information

15-10000	MICROCAPSTAR CO_2 Analyzer, with sample set & accessories
15-00100	Sample tubing set, 1m long
15-00110	Sample tubing set, 2m long
11-01108	In-line miniature hydrophobic filter, 13mm dia, Luer fittings, pk of 5
11-01110	Calibration gas, 4 liter aerosol can, 5% CO_2, 20% O_2, balance N_2
11-02000	Replacement sample air pump

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