Welch Allyn®

Welch Allyn **Surveyor**™ Patient Monitors and Microstream® CO_2 Monitoring

PATIENT MONITORING

With **Microstream® CO_2 Monitoring** by Covidien, recognize the difference in capnography performance.

Stay focused on your patient ventilation with CO_2 technology you can trust. Choose from a range of FilterLine® sampling lines, depending on your environment of use, as well as your patient's specific condition.

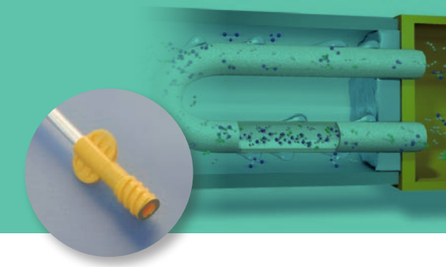
Workflow Efficiency and CO_2 Accuracy

Microstream technology is engineered to accomplish the critical task of simplifying the use of CO_2 monitoring. Through its reduced startup and usage times, it can improve efficiency and clinical workflow.[1] Microstream Capnography produces accurate readings in a rapid timeframe so that clinicians can view their patient's CO_2 status faster. Microstream-enabled technology warms up to full accuracy in seconds and requires calibration only once per year. Conversely, other CO_2 monitoring solutions may take longer to reach full accuracy and require frequent calibrations and manual zeroing. While Microstream CO_2 accuracy is unaffected by anesthetic agents, other CO_2 technologies may require users to enter concentration compensations to prevent false readings when anesthetic agents such as nitrous oxide are present.[2-4]

POWERED BY Mortara

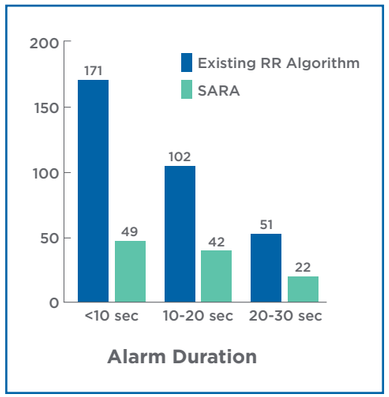
With the industry's broadest range of diagnostic cardiology solutions, we help people get better care, inside and outside the hospital. Backed by **clinical excellence, connected solutions and continuous innovation,** Welch Allyn Cardiology is proud to be powered by Mortara.

Technology that Helps Reduce the Cost of Ownership



The Microstream brand name is rooted in the core of the technology. It refers to the ultra-low sampling flow rate of just 50ml/minute, compared to some competitive systems with flow rates greater than 100 ml/min.[5] Microstream low flow technique allows efficient moisture filtration, which in turn eliminates the need for messy water separation fixtures which often accompany costly liquid collection bottles. Additionally, the Microstream internal pump and sensor are designed for 30,000 monitoring hours which equates to roughly 10 years of use (at 8 hours/day, 5 days/week). The pump is activated only after the CapnoLine® sampling line is connected, which further helps optimize its life and helps minimize maintenance costs.[6]

Meaningful Alarm Management

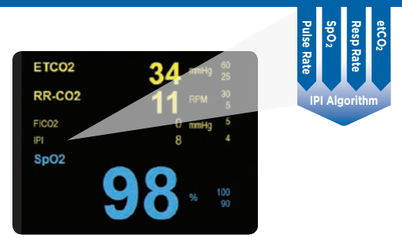


Comparison of alarm events both with and without SBD and SARA. Fifty-six monitoring periods at 2 hours with low respiratory rate alarm set at 8 breaths per minute.[7]

Smart Capnography is a suite of algorithms proven to reduce alarms and simplify the use of capnography monitoring. It includes Smart Breath Detection™ (SBD) to detect waveform patterns and Smart Alarm for Respiratory Analysis™ (SARA) to recognize and reduce clinically insignificant respiratory alarms, while accurately reflecting the patient's condition and preserving clinically significant alarm vigilance. With SBD and SARA technology, respiration rate (RR) alarms have been shown to be reduced by 53% overall, and short duration alarms, which are alarms lasting less than 10 seconds, were reduced by an additional 19%.[1] No significant RR alarms were missed with SBD and SARA technology. By reducing the distraction caused by clinically insignificant alarms, SBD and SARA technology can help preserve overall alarm vigilance, and thereby potentially contribute to improved patient safety.

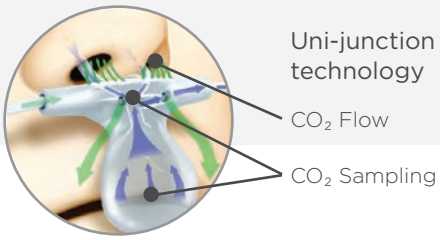
Innovative Monitoring of Total Respiratory Status

Integrated Pulmonary Index™ (IPI), a measurement index incorporated in Surveyor patient monitors, is the Covidien innovative IPI algorithm, developed to help clinicians more easily monitor a patient's complete respiratory status. IPI incorporates real-time $etCO_2$, respiration rate, SpO_2 and pulse rate measurements into a single number that represents an inclusive respiratory profile.



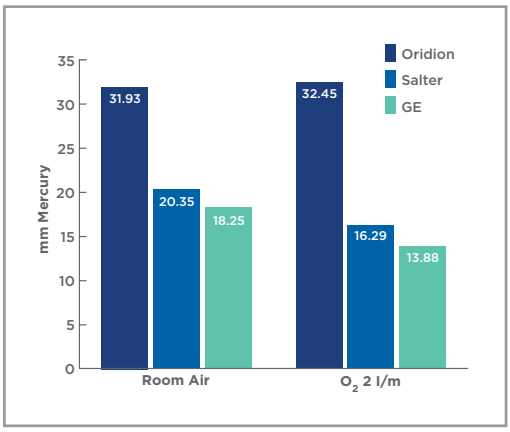
Smart Design Sampling Lines

Microstream Smart CapnoLine® patient sampling lines are engineered to obtain a quality sample, regardless of the particular sampling line being used. Whether the patient is breathing from one or both nares, orally, or switching back and forth between nasal and oral breathing, with Smart CapnoLine sampling lines, a quality sample will be obtained. The patented Uni-junction™ design senses pressure from each breath, causing only the source of breath (i.e. oral, nasal) with the greatest pressure to be sampled.[8,9]



Ensuring Sampling Accuracy

Obtaining an accurate CO_2 measurement and waveform depends on quality sampling lines. If the sampling line is not providing a representative CO_2 sample, the accuracy of the measurement could be compromised. When three commonly used sampling lines designed for oral and nasal sampling were compared to the CapnoLine for CO_2 accuracy, each was shown to be statistically equivalent during nasal breathing. However, during mouth breathing, the Microstream Smart CapnoLine was able to maintain greater accuracy than the other brand sample lines.[8]



O_2/CO_2 Nasal FilterLine for nasal sampling, with or without O_2 delivery.

Smart CapnoLine Plus CO_2 oral/nasal sampling line with or without the option to provide supplemental O_2.

Contact your Welch Allyn representative or visit www.welchallyn.com to learn more.

[1] ZOLL M Series High and Low Flow etCO2 Manual

[2] Nonin Lifesense Manual, page 50 ("presented CO2 or etCo2 can be false indicating a high presence of N2O and desflurane." Directs user to a compensation table.)

[3] Smiths BCI Capnocheck manual, page 2-1 (requires activating "N2O compensation")

[4] GE Dash manual, page 15-5 (user must select percentage of N2O concentration to compensate for N2O related elevated etCO2 value)

[5] Criticare 8100E specifications

[6] MicromediCO2 Integration Guide, p. 89, section 9.2.

[7] Colman J, Cohen J, Lain D. Smart Alarm Respiratory Analysis (SARA) used in capnography to reduce alarms during spontaneous breathing. Supplement to ANESTH ANALG, April 2008, Volume 106, No. 4S, Abstract S-10.

[8] Colman Y, David U. Comparison of Capnography Filter Lines for Nose and Mouth Breathing of End Tidal Carbon Dioxide Sampling With and Without Supplemental Oxygen. STA Annual Meeting Abstracts, January 2009

[9] Dungan G, Colman J, Lain D. Evaluation of oxygen delivery via a novel smart CapnoLine delivery system during simultaneous oxygen therapy and carbon dioxide monitoring. Presented at the Society for Technology in Anesthesia 2012 Conference, Palm Beach, FL.

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