

Sidestream Capnograph Comparison

Competitors to the Viamed VM-2500-S

- Nellcor NPB-75
- Nellcor NPB-70 (EtCO₂ only, no SpO₂)
- Oridion Microcap (EtCO₂ only)
- Respironics – LoFlo
- Datex-Ohmeda – Capnomac Ultima
- BCI – Capnocheck Plus (bedside & transport)
- BCI – Capnocheck II Handheld
- Nonin (Medair) – Life Sense
- Medlab – Capnox
- Respironics – Tidal Wave Sp 715 (Mainstream and Sidestream)

Company Product Model	Viamed VM-2500-S	Nellcor N85	Oridion Microcap Plus
General			
Display	Colour OLED, 240 x 320 pixels 57mm x 43mm	LCD, 128 x 64 pixels with LED backlight 7 segment LED numeric display of EtCO ₂ and SpO ₂ .	LCD, 128 x 64 pixels with LED backlight 7 segment LED numeric display of EtCO ₂ and Respiration Rate.
Data Displayed	EtCO ₂ , FiCO ₂ , RR, SpO ₂ , PR, Capnogram, Plethysmogram	EtCO ₂ , RR, SpO ₂ , PR, Capnogram, Plethysmogram	EtCO ₂ , FiO ₂ , RR, SpO ₂ , PR, Capnogram, Plethysmogram
Size mm (L x W x D)	150 x 75 x 35	206 x 88 x 53	206 x 88 x 53
Weight	< 400g	850g	800g
Ingress Protection	IPX1	IPX1	Not stated
Operating Principle	Ultra-compact infrared spectrometer with integrated low-flow pump.	Microstream non-dispersive infrared spectroscopy.	Microstream non-dispersive infrared spectroscopy.
Measurement Range			
EtCO ₂ and FiCO ₂	0 – 15% (displayed as %, mmHg or kPa)	0 – 13% (displayed as %, mmHg or kPa)	0 – 13% (displayed as %, mmHg or kPa)
SpO ₂	0 – 100%	0 – 100%	0 – 100%
Respiration Rate	0 – 150 breaths/min	0 – 150 breaths/min	0 – 150 breaths/min
Pulse Rate	20 – 300 beats/min	20 – 250 beats/min	20 – 250 beats/min

Accuracy			
EtCO ₂ and FiCO ₂	+/- (0.2 vol. % + 2% of reading) +/- (0.3 vol. % + 4% of reading) incl. interfering gases.	0 – 38 mm Hg +/- 2mm Hg, 39 – 99 mm Hg +/- 5% of reading.	0 – 38 mmHg +/- 2 mmHg, 39 – 76 mmHg +/- 5% of reading, 77 – 99 mmHg +/- 8% of reading
SpO ₂	+/- 2% (70 – 100%)	Low perfusion: 70 – 100% +/- 2 digits	Adults: 70 – 100% +/- 2 digits Neonates: 70 – 100% +/- 3 digits
Respiration Rate	+/- 1 digit at 60 breaths/min	Not stated	Not stated
Pulse Rate	+/- 1 digit (≤100/min) or, +/- 1% (> 100/min)	Low perfusion: 20 – 250 bpm +/- 3 digits	Not stated
Signal Processing			
Automatic Zeroing	Yes, performed at start up and then every 24 hrs.	Yes	Yes
Calibration	Not required	Calibrate after 1,400 hours of initial use. Calibration should be performed annually or after 4,000 hours, whichever comes first.	Self calibration, check 1 x year with calibration gas.
Warm-up Time	< 10 seconds to steady state accuracy.	30 seconds (reaches steady state accuracy in 20 minutes)	30 seconds (reaches +/- 5% steady state accuracy within 3 minutes)
Total Response Time (s)	< 3 seconds (with 2m sampling line)	2.45 seconds (typical), 2.9 seconds maximum.	2.45 seconds (typical), 2.9 seconds maximum.
Rise Time (ms)	≤ 200 (at 50 ml/min sample flow)	Adult – 240 (with low dead space endotracheal tube adapter) Neonatal – 190 (with FilterLine airway adapter)	Adult – 240 (with low dead space endotracheal tube adapter) Neonatal – 190 (with FilterLine airway adapter)
Compensations			
N ₂ O	Manual	Not required due to Microstream technology	Not required due to Microstream technology
O ₂	Manual	Not required due to Microstream technology	Not required due to Microstream technology
Barometric Pressure	Automatic	Not stated	Automatic
Temperature	Automatic	Not stated	No

Sampling Lines			
Sampling Flow Rate	50 +/- 10 ml/min	50 +/- 7.5 ml/min	50 ml/min
Integrated bacteria filter	Yes	Not stated	Not stated
Humidity removal	Yes - Nomo Adapter removes water and water vapour from the sampled gas.	Yes – Hydrophobic filter located at the end of the sample line to strip water vapour from the sample gas.	Yes – Hydrophobic filter located at the end of the sample line to strip water vapour from the sample gas.
Water removal	Yes - The membrane-like surface of the sampling line allows water to evaporate into the surrounding air, while leaving CO2 unaffected.	Yes – The drying element allows the water vapour to pass outside the sampling line	Yes – The drying element allows the water vapour to pass outside the sampling line
Detection of sampling line	Yes	Yes FilterLine Recognition Safeguard (FRS)	Yes FilterLine Recognition Safeguard (FRS)
Sampling line status indicator	Yes (Light Emitting Gas Inlet)	Yes (Caution message displayed)	Yes (Caution message displayed)
Operation & Service			
Estimated usage costs	Low. Long life sampling line.	High. Frequent replacement of accessories, pump replacement needed and ongoing servicing required.	High. Frequent replacement of accessories, pump replacement needed and ongoing servicing required.
Pump Life time	5 years of normal use	Should be replaced every 7,000 operating hours (292 days)	Should be replaced every 7,000 operating hours (292 days)
Service/Maintenance	Annual maintenance check recommended.	Monitor should be returned to the manufacturer for periodic maintenance ever 14,000 hours (583 days). The battery pack should be replaced once every two years.	Monitor should be returned to the manufacturer for periodic maintenance ever 14,000 hours (583 days).
Data Storage			
Data memory on device	Up to 400 hours in total	Not stated	Not stated
Real-Time Mode (visualization and storage of measurement data on a PC)	Yes	Yes	Not stated
Power			
Power supply options	4 x AA batteries, Li-ion rechargeable battery, AC power supply.	NiMH rechargeable battery AC power supply	NiMH rechargeable battery AC power supply
Battery life	Up to 6 hours continuous operation.	4 – 7 hours (depending on power management)	3 – 6 hours (depending on power management)
Battery recharging time	5 – 6 hours to full function.	Approximately 4.5 hours	Approximately 4.5 hours