

Mainstream Capnograph Comparison

Competitors to the Viamed VM-2500-M

- Respirationics – Tidal Wave 715 (Mainstream & Sidestream unit)
- GE/Marquette – Capnostat (CO₂ sensor module)
- HP/Agilent/Philips – M1016A (module)
- HP/Philips – IntelliVue MP2 (portable patient monitor)
- Phasein – EMMA (Pocketsize EtCO₂ and Respiration Rate Capnometer unit)
- Smiths Medical – Capnostream (this is an own brand label of the Phasein EMMA)
- Nonin – 9847
- Nihon-Kohden – TG-920P (Wearable mainstream CO₂ sensor kit for non-intubated patients - *New*)

Company Product Model	Viamed VM-2500-M	Respirationics Tidal Wave Sp 710 (with Option C)	Respirationics CO2SMO (also features sidestream sampling)
General			
Display	Colour OLED, 240 x 320 pixels 57mm x 43mm	Backlit LCD 55mm x 28mm	Cold Cathode Display (CCD) 127mm x 308mm
Data Displayed	EtCO ₂ , FiCO ₂ , RR, SpO ₂ , PR, Plethysmogram, Capnogram	EtCO ₂ , RR, SpO ₂ , PR, Plethysmogram, Capnogram	EtCO ₂ , RR, SpO ₂ , PR, Capnogram
Size mm (L x W x D)	150 x 75 x 35	200 x 950 x 48	229 x 203 x 838
Weight	< 400g (complete device with batteries)	793g	3.63kg
Ingress Protection	IPX1	Not stated	Not stated
Operating Principle	State-of the-art, single path, non- dispersive infrared (NDIR), mainstream sensor	Solid state mainstream sensor. Single beam, non-dispersive infrared (NDIR) absorption, ratiometric measurement.	Solid state mainstream sensor. Single beam, non-dispersive infrared (NDIR) absorption, ratiometric measurement.
Mainstream CO2 Analyser			
Model	IRMA CO ₂ Analyser	Capnostat Mainstream CO ₂ Sensor	Capnostat Mainstream CO ₂ Sensor
Size mm (L x W x D)	30 x 37 x 33	33 x 42 x 22	33 x 42 x 22
Weight	< 30g	18g (cable excluded)	18g (cable excluded)
Measurement Range			
EtCO ₂ and FiCO ₂	0 – 15% (displayed as %, mmHg or kPa)	0 – 150 mmHg (displayed as mmHg, kPa or %)	0 – 100 mmHg
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	30 – 250 breaths/min	30 – 250 breaths/min
Accuracy			
EtCO ₂ and FiCO ₂	+/- (0.2 vol. % + 2% of reading) +/- (0.3 vol. % + 4% of reading) incl. interfacing gases)	+/- 2 mmHg (for 0 – 40 mmHg) +/- 5% of reading (for 41 – 70 mmHg) +/- 8% of reading (for 71 – 150 mmHg)	+/- 2 mmHg (for 0 – 40 mmHg) +/- 5% of reading (for 41 – 70 mmHg) +/- 8% of reading (for 71 – 100 mmHg)
SpO ₂	+/- 2% (70 – 100%)	+/- 2% (for 80 – 100%) 1 S.D., or 68% of readings within claim.	+/- 2% (for 80 – 100%) 1 S.D., or 68% of readings within claim.
Respiration Rate	+/- 1 digit at 60 breaths/min	+/- 1 breath/min	+/- 1 breath/min
Pulse Rate	+/- 1 digit (≤100/min) or +/- 1% (> 100/min)	+/- 1% of full scale	+/- 1% of full scale
Signal Processing			
Automatic Zeroing	Manual zeroing required when offset in gas value is observed.	Not known	15 second adapter zero performed when changing to a different style of sensor.
Calibration	Not required	Not required	Not required
Warm-up Time	< 10 seconds to full specification.	Capnogram within 15 seconds, full specification within 60 seconds.	Capnogram within 15 seconds, full specification within 60 seconds.
Total Response Time (s)	< 1 second	60 ms	60ms
Rise Time (ms)	≤ 90 (at 10l/min)	Not known	Not known
Compensations			
N ₂ O	Manual	Manual	Manual
O ₂	Manual	Manual	Manual
Barometric Pressure	Automatic	Not known	Not known
Temperature	Automatic	Not known	Not known
Operation & Service			
Service/Maintenance	Annual maintenance check recommended.	Not known	Not known
Data Storage			
Data memory on device	15 min / 1hr / 6hr on screen Up to 400 hours in total	30 min on screen 24 hours, battery backed	30 min / 2hr / 8hr / 12hr on screen or printed out 24 hours, battery backed
Real-Time Mode (visualization and storage of	Visualize and save numerical parameters every 4 seconds on PC	Not known	Not known

measurement data on a PC)			
Power			
Power supply options	4 x AA batteries 1 x Li-ion rechargeable battery AC power supply	Rechargeable batteries AC power supply	Sealed lead acid gel cell AC power supply
Battery life	Up to 6 hours continuous operation.	4.5 hours (NiMH Rechargeable battery) 5.5 hours (Standard AA batteries)	2 hours
Battery recharging time	5 – 6 hours	Not known	12 hours