

# VT Mobile

## Portable Gas-Flow Analyzer

### Technical Data



The VT Mobile is a compact and portable general purpose gas-flow analyzer designed to meet the needs of the traveling technician or engineer. This versatile tool evaluates performance of a wide variety of medical gas-flow/pressure devices and measures 16 ventilator parameters.

The easy-to-use front panel has onboard graphing ability, allowing technicians to view waveforms right on the tool's screen. Test results can be stored in the unit and uploaded to a computer later for viewing or printing using VT for Windows.

The VT for Windows PC software provides, among other features, simultaneous display of all 16 ventilator parameters to speed performance testing and other evaluations. EC.6.20 now requires completion of 100 % of life-support device preventive maintenance every year.

VT MOBILE can help you meet those requirements. The base unit measures high- and low-flow ranges, volume, pressure, and oxygen concentration. Additionally, the temperature and relative humidity option can be ordered separately to ensure the most accurate gas-flow measurements.

### Key features

- Bidirectional flow (high- and low-flow ranges), volume, vacuum, pressure and oxygen concentration measurements
- 16 ventilator parameter measurements
- Trending and statistical analysis of all measured values
- Onboard graphical display
- Portable and compact
- RS-232 for computer control
- Memory for storing results
- VT for Windows PC software
- Optional sensor assembly for temperature and humidity measurements

## Specifications

General		
Display	64 pixels x 128 pixels, reflective LCD, blue on yellow	
Operational modes	Standalone without any PC software or with the VT for Windows PC software	
Gas types	Air, N <sub>2</sub> , N <sub>2</sub> O, CO <sub>2</sub> , O <sub>2</sub> , N <sub>2</sub> O bal O <sub>2</sub> , N <sub>2</sub> bal O <sub>2</sub>	
Battery power supply	Maximum over-voltage	15 V dc
	Input voltage range	9 V dc
	Power consumption	< 70 mA
	Battery life	> 7 hours
External power supply	Maximum over-voltage	264 V ac
	Input voltage range	100 V ac to 240 V ac
	Input frequency range	50/60 Hz
	Output voltage	12 V to 15 V
	Output current	1.2 A
	Fuse rating	N/A
Dimensions (WxDxH)	10 cm x 20 cm x 3.8 cm (4 in x 8 in x 1.5 in)	
Weight	0.45 kg (1 lb)	
Technical		
Low-pressure port		
Maximum applied pressure	5 psi	
Operating pressure (differential)	-20 cmH <sub>2</sub> O to 120 cmH <sub>2</sub> O	
Operating pressure (common-mode)	N/A	
Span accuracy	+ 2 % of reading or 1.5 mmHg	
Frequency response	> 10 Hz	
Resolution	0.1 mmHg	
Sample rate	100 Hz	
Fittings	Flow connector with 2 tubes “T”connected to a single Luer fitting <b>Note:</b> No fluid may be applied to port	
High-pressure port		
Maximum applied pressure	125 psi	
Operating pressure	-2 psi to 100 psi	
Span accuracy	+ 2 % of reading or + 0.2 psig	
Frequency response	> 10 Hz	
Resolution	0.1 psi	
Sample rate	100 Hz	
Fittings	Single port, Luer lock, stainless steel <b>Note:</b> No fluid may be applied to port	

<b>Airway pressure</b>	
Maximum applied pressure	5 psi
Operating pressure	-20 cmH <sub>2</sub> O to 120 cmH <sub>2</sub> O
Span accuracy	+ 2 % of reading or + 0.5 cmH <sub>2</sub> O
Frequency response	> 25 Hz
Resolution	0.1 cmH <sub>2</sub> O
Sample rate	100 Hz
Fittings	Internally connected to flow-sensor pressure lines
<b>High-flow port</b>	
Maximum flow rate (absolute value)	200 lpm
Operating flow range	± 200 lpm
Accuracy	± 3 % of reading or ± 2 % of range
Floor for absolute accuracy	25 lpm
Resolution	0.01 lpm
Frequency response	> 25 Hz or $t_{10-90} < 40$ ms
Sample rate	100 Hz
Dynamic resistance	< 2 cm H <sub>2</sub> O @ 60 lpm
Low-flow dropout	2.5 lpm
Breath-detect threshold	4 lpm
Volume range	> ± 60 l
Tidal volume accuracy	± 3 % of reading or ± 20 ml, whichever is greater
Fittings	15 mm OD/ID, 1:40 conical male
<b>Low-flow port</b>	
Maximum flow rate (absolute value)	35 lpm
Operating flow range	+ 25 lpm
Accuracy	+ 3 % of reading or + 1 % of range
Floor for absolute accuracy	3 lpm
Resolution	0.01 lpm flow > 1 lpm
Frequency response	> 25 Hz or $t_{10-90} < 40$ ms
Sample rate	100 Hz
Dynamic resistance	< 2.5 cmH <sub>2</sub> O @ 5 lpm
Low-flow dropout	0.24 lpm
Breath-detect threshold	1 lpm
Volume range	+ 60 l
Volume accuracy	+ 3 % of reading or + 2 ml
Fittings	15 mm OD/ID, 1:40 conical male

<b>Oxygen measurement</b>	
Range	0 % to 100 %
Accuracy	± 2 % full-scale output
Resolution	0.1 % O <sub>2</sub>
Frequency response	> 15 s (t <sub>10-90</sub> )
Sample rate	100 Hz
Sensor technology	Galvanic fuel cell
Calibration	Allows user calibration using air and 100 % O <sub>2</sub> <b>Notes:</b> <ul style="list-style-type: none"> <li>• Automatic partial pressure compensation for barometric and airway pressure changes</li> <li>• Recommended interval for changing oxygen sensor is one year. However, sensor may last longer. During user calibration of the sensor, the VT MOBILE can detect if the sensor needs to be replaced</li> </ul>
<b>Barometric pressure measurement</b>	
Range	8 psia to 18 psia (400 mmHg to 900 mmHg)
Accuracy	+ 2 % of reading
Resolution	0.1 mmHg
Frequency response	< 5 s (t <sub>10-90</sub> )
Sample rate	N/A
Calibration	Not required; however, device allows user calibration of offset
<b>Secondary parameter-accuracy specifications</b>	
Inspiratory and expiratory tidal volume resolution	0.1 ml
Range	> 10 l
Accuracy	± 3 % expiratory minute volume
Resolution	0.001 lpm
Range	0 l to 60 l
Accuracy	± 3 %
<b>Breath rate</b>	
Resolution	0.1 BPM
Range	2 BPM to 150 BPM
Accuracy	± 1 % inspiratory-to-expiratory time ratio (I:E ratio)
Resolution, 0.01 range	0.25 to 9.99
Accuracy	± 2 % or 0.1 s
<b>Peak inspiratory pressure</b>	
Resolution	0.1 cmH <sub>2</sub> O
Range	± 120 cmH <sub>2</sub> O
Accuracy	+ 3 % or 1 cmH <sub>2</sub> O
<b>Inspiratory pause pressure</b>	
Resolution	0.1 cmH <sub>2</sub> O
Range	± 120 cmH <sub>2</sub> O
Accuracy	+ 3 % or 1 cmH <sub>2</sub> O

<b>Mean airway pressure</b>	
Resolution	0.1 cmH <sub>2</sub> O
Range	+ 80 cmH <sub>2</sub> O
Accuracy	+ 3 % or 0.5 cmH <sub>2</sub> O
<b>Positive-end expiratory pressure (PEEP)</b>	
Resolution	0.1 cmH <sub>2</sub> O
Range	-5 cmH <sub>2</sub> O to 40 cmH <sub>2</sub> O
Accuracy	+ 3 % or 0.5 cmH <sub>2</sub> O
<b>Peak expiratory flow</b>	
Resolution	0.01 lpm
Range	0 lpm to 150 lpm
Accuracy	± 3 % or 2 % of range
<b>Peak inspiratory flow</b>	
Resolution	0.01 lpm
Range	0 lpm to 150 lpm
Accuracy	± 3 % or 2 % of range
<b>Temperature</b>	
Resolution	0.1 °C
Range	0 °C to 50 °C
Accuracy	± 1 °C
Units	°C, °F, °K
<b>Humidity</b>	
Resolution	0.1 %
Range	0 % to 100 %
Accuracy	± 5 %
<b>RS-232 serial communications</b>	
4-pin modular connector located on upper-left side of panel. RS-232 compatible with the VT Plus for Windows software application (version 2.01.00 or higher)	
<b>Environmental specifications</b>	
Operating temperature	10 °C to 40 °C (50 °F to 104 °F)
Storage temperature	-25 °C to 50 °C (-13 °F to 122 °F)
Operating humidity	0 % to 80 % non-condensing at temperatures to 31 °C, decreasing linearly to 50 % relative humidity at 40 °C (104 °F)
Storage humidity	0 % to 95 % non-condensing
Operating barometric	7 psia to 18 psia
Storage barometric	-1000 ft to 10000 ft (787.9 mmHg to 522.7 mmHg)

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## Ordering information

### Models

**VTMOB/ENG** English Overlay  
**VTMOB/FRA** French Overlay  
**VTMOB-8002-02** German Overlay  
**VTMOB-8002-03** Italian Overlay  
**VTMOB-8002-04** Spanish Overlay  
**VTMOB/JPN** Japanese Overlay  
**VTMOB/CHI** Chinese Overlay  
**VTMOB/BRAZ** Brazil overlay

### Standard accessories

(included with each of the above models)

**VTMOB-7002** Accessory Kit

**VTPLUS-WIN** CD, includes: Quick-Reference Card, Operators Manual, Getting Started Manual, other matter

**MANUAL** Getting-Started Manual (hard copy and .pdf file on CD)

**QUICK REF CARD** Quick-Reference Card (hard copy and .pdf file on CD)

**VTMOB/HIGH SENSOR** High-Flow Sensor

**VTMOB/LOW SENSOR** Low-Flow Sensor

**VTMOB/ADPT FEMALE** High-Pressure Adapter, male to female

**VTMOB-4402** Low-Pressure Adapter

**FITTING** Oxygen-Sensor Cable, 6 ft

**VTMOB-4401** T Adapter for Oxygen Sensor

**2248801** Oxygen Sensor

**BATTERY** 9 V dc Battery (alkaline)

**CABLE ASSEMBLY** Serial Communications Cable (RS-232), 6 ft

**CD ROM** VT for Windows PC Software

**VTMOB/SOFTCASE** Soft Carrying Case

### Optional accessories

**VTMOB** High-Pressure Adapter, male to male

**ACCU LUNG** ACCU Lung Portable Precision Test Lung

**VTMOB-4405** Temperature and RH Sensor, Cable and T Adapter, 6 ft

**VTMOB-PWR ADAPTER** Power Adapter, Universal (USA and International)



VT MOBILE Tilt Stand in low-tilt position

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### About Fluke Biomedical

Fluke Biomedical is the world's leading manufacturer of quality biomedical test and simulation products. In addition, Fluke Biomedical provides the latest medical imaging and oncology quality-assurance solutions for regulatory compliance. Highly credentialed and equipped with a NVLAP Lab Code 200566-0 accredited laboratory, Fluke Biomedical also offers the best in quality and customer service for all your equipment calibration needs.

Today, biomedical personnel must meet the increasing regulatory pressures, higher quality standards, and rapid technological growth, while performing their work faster and more efficiently than ever. Fluke Biomedical provides a diverse range of software and hardware tools to meet today's challenges.

### Fluke Biomedical Regulatory Commitment

As a medical test device manufacturer, we recognize and follow certain quality standards and certifications when developing our products. We are ISO 9001 and ISO 13485 medical device certified and our products are:

- CE Certified, where required
- NIST Traceable and Calibrated
- UL, CSA, ETL Certified, where required
- NRC Compliant, where required