## FlowAnalyser PRO Premium Gas Flow Analyzer



The FlowAnalyser PRO, with ultimate performance and configurability, enables a wide range of professionals to push the limits of what is possible.

Thanks to its extreme precision and reliability, the FlowAnalyser PRO is capable of testing a wide range of medical devices such as respiratory and anesthesia devices, oxygen flow meters, pressure gauges and suction devices.

Ultra-Low Flow

# Automatic Breath Detection



#### Features

- Automatic Breath Detection
- Highest Flow Accuracy
- Ultra-Low Flow Measurement
- Fast Sampling Rate of 1000 Hz
- Pressure & Vacuum Measurements
- High Resolution Multi-touch Display

- Lightweight Portability
- 16-Hour Battery Life
- Integrated Apps with Guided Test Sequences
- Premium Platform for Future Updates
- Swiss Quality and Precision
- Accredited ISO 17025 Calibration

## Direct Access

#### Easy to Use Interface

The FlowAnalyser PRO offers a beautiful, high resolution multitouch user interface that is completely configurable.

#### **Apps with Test Sequences**

Run tests easier and faster with our apps. The FlowAnalyser PRO ventilator tester supports you with apps for testing and calibrating many devices. The apps enable safe and fast testing. Entire test sequences are displayed with images and texts and measured automatically. The test results are recorded in a PDF report, which can be signed directly on the screen.

#### Versatility

Tests a wide range of medical devices such as respiratory and anesthesia devices, oxygen flow meters, pressure gauges, suction devices, pneumatic systems, and Capnography monitors.

- Remote Control via USB or RS232
- Pairs with our Anesthesia Gas Sensor
- Utilizes our Test lungs



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DC IN

24V/2.5

16 h battery

**USB** drive

Webserver

#### **Automatic Breath Detection**

Measure breath based respiratory parameters with automatic trigger detection for conventional and high-frequency medical ventilators.



# Reporting Software Mul sma

#### MultiGasAnalyser OR-703

Smallest multi-gas sensor in the world.

FlowAnalyser PRO, in combination with the MultiGasAnalyser, offers the best and easiest solution for testing anesthesia devices. The MultiGasAnalyser OR-703, paired with the Flow-Analyser PRO, can measure  $CO_2$ ,  $N_2O$ , Halothane, Enflurane, Isoflurane, Sevoflurane and Desflurane.

#### **Order information**

700.300.000	FlowAnalyser PF-300 PRO
700.300.001	Biomedical Test-Set "Ventilation" FlowAnalyser PF-300 PRO
700.300.002	Biomedical Test-Set "Ventilation & Anaesthesia" FlowAnalyser PF-300 PRO

Email: sales@imtanalytics.com

#### **Technical Specification FlowAnalyser PF-300 PRO**

Flow and pressu	re measurements	Range	Accuracy	
	Measuring direction	Bidirectional		
	Temperature compensated	Automatic	Automatic	
	Pressure compensated	Automatic		
Flow	Humidity compensated	Automatic		
	O <sub>2</sub> compensated	Automatic		
	Flow	± 300 L/min	± 1.65 %* or ± 0.04 L/min (for 1040°C)**	
	Ultra-Low Flow	± 1 L/min	± 1.65 %* or ± 0.01 L/min (for 1040°C)**	
	High Pressure & Vacuum (P <sub>High</sub> )	-1-10 bar	± 1 %* or ± 7 mbar**	
	Differential Pressure (P <sub>Diff</sub> )	± 250 mbar	$\pm 0.5\%^* \text{ or } \pm 0.1 \text{ mbar}^{**}$	
Pressure	Low Differential Pressure (P <sub>Diff1ow</sub> )	-10-10 mbar	$\pm 1\%$ or $\pm 0.01$ mbar**	
11000010	Pressure in Flow Channel (P <sub>Channel</sub> )	-50-160 mbar	$\pm 0.5\%$ or $\pm 0.1$ mbar**	
	Atmospheric Pressure (P <sub>Atmo</sub> )	500-1240 mbar	± 1%* or ± 5 mbar**	
	Flow	L/min, L/s, cfm, mL/min, mL/s		
Units	Pressure	bar, mbar, cmH <sub>2</sub> O, inH <sub>2</sub> O, Torr, inHg, hPa, kPa, mmHg, PSI		
Additional measu		Range		
Oxygen	Concentration	0-100%	± 1% O <sub>2</sub> **	
	Pressure compensated	≤ 150 mbar		
Temperature	In Flow Channel	0-50°C	± 1.75 %* or ± 0.5 °C**	
Dew point	In Flow Channel	-10-50°C	± 2 %* or ± 1°C**	
Humidity	In Flow Channel	0-100 % RH	± 3 % RH ** from 10 % RH to 80 % RH	
		(non condensing)	± 5 % RH ** for <10% and >80 % RH	
CO <sub>2</sub>	Concentration (with optional OR-703)	0-15 vol%	± (0.2 vol% + 2% of reading)	
		15 – 25 vol%	unspecified	
N <sub>2</sub> O	Concentration (with optional OR-703)	0-100 vol%	± (2% vol% + 2% of reading)	
HAL, ISO, ENF	Concentration (with optional OR-703)	0-8 vol%	± (0.15 vol% + 5% of reading)	
11AE, 100, ENI		8-25 vol%	unspecified	
SEV	Concentration (with optional OR-703)	0-10 vol%	± (0.15 vol% + 5% of reading)	
0LV		10-25 vol%	unspecified	
DES	Concentration (with optional OR-703)	0-22vol%	± (0.15 vol% + 5% of reading)	
DES	Concentration (with optional On-703)	00 05.10/		
		22-25 vol%	unspecified	
Gas types			He, He/O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O <sub>2</sub> CO <sub>2</sub> , customised gas types	
Gas types Gas standards	1	Air, O <sub>2</sub> , Air/O <sub>2</sub> , N <sub>2</sub> O/O <sub>2</sub> , ATP, ATPD, ATPS, AP2	He, He/O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O, CO <sub>2</sub> , customised gas types 1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,	
Gas standards		Air, O <sub>2</sub> , Air/O <sub>2</sub> , N <sub>2</sub> O/O <sub>2</sub> , ATP, ATPD, ATPS, AP2 BTPD, BTPD-A, 0/1013	He, He/O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O, CO <sub>2</sub> , customised gas types 1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A, 3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS	
Gas standards Respiratory para		Air, O <sub>2</sub> , Air/O <sub>2</sub> , N <sub>2</sub> O/O <sub>2</sub> ,           ATP, ATPD, ATPS, AP2           BTPD, BTPD-A, 0/101:           Range	He, He/O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O, CO <sub>2</sub> , customised gas types 1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A, 3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS Accuracy	
Gas standards	Rate	Air, O2, Air/O2, N2O/O2,           ATP, ATPD, ATPS, AP2           BTPD, BTPD-A, 0/1013           Range           1-2000 bpm	He, He/O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O, CO <sub>2</sub> , customised gas types 1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A, 3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS Accuracy ±1 bpm or ± 1%**	
Gas standards Respiratory para	Rate Inspiratory time (Ti)	Air, O2, Air/O2, N2O/O2,           ATP, ATPD, ATPS, AP2           BTPD, BTPD-A, 0/1013           Range           1 – 2000 bpm           0-60 s	He, He(O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O, CO <sub>2</sub> , customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ± 0.01 s	
Gas standards Respiratory para Breath rate	Rate Inspiratory time (T <sub>i</sub> ) Expiratory time (T <sub>e</sub> )	Air, O2, Air/O2, N2O/O2,           ATP, ATPD, ATPD, ATPS, AP2           BTPD, BTPD-A, 0/1013           Range           1 – 2000 bpm           0 – 60 s           0 – 90 s	He, He/O2, N2, N2O, CO2, customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ± 0.01 s	
Gas standards Respiratory para	Rate       Inspiratory time (T <sub>i</sub> )       Expiratory time (T <sub>e</sub> )       Inspiratory hold time	Air, O2, Air/O2, N2O/O2,           ATP, ATPD, ATPS, AP2           BTPD, BTPD-A, 0/1013           Range           1 - 2000 bpm           0-60 s           0-90 s           0-60 s	He, He/O2, N2, N2O, CO2, customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ±0.01 s         ±0.01 s	
Gas standards Respiratory para Breath rate	Rate Inspiratory time (T <sub>i</sub> ) Expiratory time (T <sub>e</sub> )	Air, O2, Air/O2, N2O/O2,           ATP, ATPD, ATPS, AP2           BTPD, BTPD-A, 0/1013           Range           1 – 2000 bpm           0 – 60 s           0 – 90 s           0 – 60 s           0 – 90 s	He, He/O2, N2, N2O, CO2, customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ±0.01 s         ±0.01 s         ±0.01 s	
Gas standards Respiratory para Breath rate	Rate         Inspiratory time (T <sub>i</sub> )         Expiratory time (T <sub>e</sub> )         Inspiratory hold time         Expiratory hold time         Post-inspiratory pause (% T <sub>P</sub> )	Air, O2, Air/O2, N2O/O2,           ATP, ATPD, ATPS, AP2           BTPD, BTPD-A, 0/1013           Range           1-2000 bpm           0-60 s           0-90 s           0-60 s           0-90 s           0-90 s           0-100 %	He, He/O2, N2, N2O, CO2, customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ± 1 bpm or ± 1%**         ± 0.01 s	
Gas standards Respiratory para Breath rate Time	Rate       Inspiratory time (Ti)       Expiratory time (To)       Inspiratory hold time       Expiratory hold time	Air, O2, Air/O2, N2O/O2,           ATP, ATPD, ATPS, AP2           BTPD, BTPD-A, 0/1013 <b>Range</b> 1-2000 bpm           0-60 s           0-90 s           0-60 s           0-90 s           0-100 %           1:300-300:1	He, He/O2, N2, N2O, CO2, customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ±0.01 s         ±0.01 s         ±0.01 s	
Gas standards Respiratory para Breath rate	Rate         Inspiratory time (T <sub>i</sub> )         Expiratory time (T <sub>e</sub> )         Inspiratory hold time         Expiratory hold time         Post-inspiratory pause (% T <sub>P</sub> )	Air, O2, Air/O2, N2O/O2,           ATP, ATPD, ATPS, AP2           BTPD, BTPD-A, 0/1013           Range           1-2000 bpm           0-60 s           0-90 s           0-60 s           0-90 s           0-90 s           0-100 %	He, He/O2, N2, N2O, CO2, customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ± 1 bpm or ± 1%**         ± 0.01 s	
Gas standards Respiratory para Breath rate Time	Rate         Inspiratory time (T <sub>i</sub> )         Expiratory time (T <sub>e</sub> )         Inspiratory hold time         Expiratory hold time         Post-inspiratory pause (% T <sub>P</sub> )         I:E	Air, O2, Air/O2, N2O/O2,           ATP, ATPD, ATPS, AP2           BTPD, BTPD-A, 0/1013 <b>Range</b> 1-2000 bpm           0-60 s           0-90 s           0-60 s           0-90 s           0-100 %           1:300-300:1	He, He/O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O, CO <sub>2</sub> , customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ±0.01 s         ±0.01 s         ±0.01 s         ±0.01 s         ±0.1 %         ±2%*	
Gas standards Respiratory para Breath rate Time Ratio	Rate         Inspiratory time (T <sub>i</sub> )         Expiratory time (T <sub>e</sub> )         Inspiratory hold time         Expiratory hold time         Post-inspiratory pause (% T <sub>P</sub> )         I:E         T <sub>i</sub> /T <sub>total</sub>	Air, O2, Air/O2, N2O/O2,           ATP, ATPD, ATPS, AP2           BTPD, BTPD-A, 0/1013 <b>Range</b> 1-2000 bpm           0-60 s           0-90 s           0-60 s           0-90 s           0-100 %           1:300-300:1           0-100 %	He, He/O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O, CO <sub>2</sub> , customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ±0.01 s         ±0.01 s         ±0.01 s         ±0.01 s         ±0.1 %         ±5%*	
Gas standards Respiratory para Breath rate Time Ratio Breath volume	Rate           Inspiratory time (T <sub>i</sub> )           Expiratory time (T <sub>e</sub> )           Inspiratory hold time           Expiratory hold time           Post-inspiratory pause (% T <sub>P</sub> )           I:E           T <sub>i</sub> /T <sub>total</sub> Vti, Vte	Air, O2, Air/O2, N2O/O2,         ATP, ATPD, ATPS, AP2         BTPD, BTPD-A, 0/1013 <b>Range</b> 1 - 2000 bpm         0-60 s         0-90 s         0-60 s         0-90 s         0-100 %         1:300-300:1         0-100 %         ± 60 L	He, He/O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O, CO <sub>2</sub> , customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ±1.75% or ±0.10 mL	
Gas standards Respiratory para Breath rate Time Ratio Breath volume Minute volume	Rate           Inspiratory time (T <sub>i</sub> )           Expiratory time (T <sub>e</sub> )           Inspiratory hold time           Expiratory hold time           Post-inspiratory pause (% T <sub>P</sub> )           I:E           T <sub>i</sub> /T <sub>total</sub> Vti, Vte           Vi, Ve	Air, O2, Air/O2, N2O/O2,           ATP, ATPD, ATPS, AP2           BTPD, BTPD-A, 0/1013 <b>Range</b> 1 - 2000 bpm           0-60 s           0-90 s           0-60 s           0-90 s           0-100 %           ± 60 L           0-300 sL/min	He, He/O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O, CO <sub>2</sub> , customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1 %**         ±0.01 s         ±1.75% or ± 0.10 mL         ±1.75% or ± 5 mL	
Gas standards Respiratory para Breath rate Time Ratio Breath volume Minute volume Pressure	Rate         Inspiratory time (T <sub>0</sub> )         Expiratory hold time         Expiratory hold time         Post-inspiratory pause (% T <sub>P</sub> )         I:E         T <sub>i</sub> /T <sub>total</sub> Vti, Vte         Vi, Ve         P <sub>Peak</sub> , P <sub>Mean</sub> , PEEP, P <sub>Plateau</sub>	Air, O₂, Air/O₂, N₂O/O₂,           ATP, ATPD, ATPS, AP2           BTPD, BTPD-A, 0/1013 <b>Range</b> 1 - 2000 bpm           0-60 s           0-90 s           0-60 s           0-90 s           0-100 %           ± 60 L           0-300 sL/min           0-160 mbar	He, He/O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O, CO <sub>2</sub> , customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1 %**         ±0.01 s         ±0.01 s         ±0.01 s         ±0.01 s         ±0.01 s         ±1.5%*         ±5%*         ±1.75%* or ± 0.10 mL         ±0.75%* or ±0.1 mbar**	
Gas standards Respiratory para Breath rate Time Ratio Breath volume Minute volume Pressure Peakflow	Rate         Inspiratory time (T <sub>e</sub> )         Expiratory hold time         Expiratory hold time         Post-inspiratory pause (% T <sub>P</sub> )         I:E         T <sub>i</sub> /T <sub>total</sub> Vti, Vte         Vi, Ve         P <sub>Peak</sub> , P <sub>Mean</sub> , PEEP, P <sub>Plateau</sub> PF <sub>Insp</sub> , PF <sub>Exp</sub>	Air, O₂, Air/O₂, N₂O/O₂,           ATP, ATPD, ATPS, AP2           BTPD, BTPD, A, 0/1013           Range           1 – 2000 bpm           0 – 60 s           0 – 90 s           0 – 60 s           0 – 90 s           0 – 100 %           ± 60 L           0 – 100 mbar           ± 300 sL/min           0 – 1000 mL/mbar	He, He/O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O, CO <sub>2</sub> , customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ±0.01 s         ±0.01 s         ±0.01 s         ±0.01 s         ±1.05% or ± 0.10 mL         ±1.75% or ± 0.01 mla**	
Gas standards Respiratory para Breath rate Time Ratio Breath volume Minute volume Pressure Peakflow Compliance	Rate         Inspiratory time (T <sub>e</sub> )         Expiratory hold time         Expiratory hold time         Post-inspiratory pause (% T <sub>P</sub> )         I:E         T,/T <sub>total</sub> Vti, Vte         Vi, Ve         P <sub>Finsp</sub> , PEEP, P <sub>Plateau</sub> PF <sub>insp</sub> , Resp.         C <sub>Stat</sub> Automatic, Adult, Pediatric, HFO, ext. Trigger	Air, O₂, Air/O₂, N₂O/O₂,           ATP, ATPD, ATPS, AP2           BTPD, BTPD, A, 0/1013           Range           1 – 2000 bpm           0 – 60 s           0 – 90 s           0 – 60 s           0 – 90 s           0 – 100 %           ± 60 L           0 – 100 mbar           ± 300 sL/min           0 – 1000 mL/mbar	He, He/O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O, CO <sub>2</sub> , customised gas types 1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A, 3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS Accuracy ±1 bpm or ± 1%** ± 0.01 s ± 0.1% ± 2%* ± 5%* ± 5%* ± 1.75% or ± 0.10 mL ± 1.75%* or ± 0.11 mbar** ± 1.65%* or ± 0.01 wL/mbar**	
Gas standards Respiratory para Breath rate Time Ratio Breath volume Minute volume Pressure Peakflow Compliance Trigger	Rate         Inspiratory time (T <sub>e</sub> )         Expiratory hold time         Expiratory hold time         Post-inspiratory pause (% T <sub>P</sub> )         I:E         T,/T <sub>total</sub> Vti, Vte         Vi, Ve         P <sub>Finsp</sub> , PEEP, P <sub>Plateau</sub> PF <sub>insp</sub> , Resp.         C <sub>Stat</sub> Automatic, Adult, Pediatric, HFO, ext. Trigger	Air, O₂, Air/O₂, N₂O/O₂,           ATP, ATPD, ATPS, AP2           BTPD, BTPD, A, 0/1013           Range           1 – 2000 bpm           0 – 60 s           0 – 90 s           0 – 60 s           0 – 90 s           0 – 100 %           ± 60 L           0 – 100 mbar           ± 300 sL/min           0 – 1000 mL/mbar	He, He/O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O, CO <sub>2</sub> , customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ±0.05 s         ±0.05 s         ±0.1%         ±1.75 % or ±0.10 mL         ±1.75 %* or ±0.10 mL         ±0.75 %* or ±0.1 mbar**         ±3 %* or ±0.01 mL/mbar**         Adjustable on flow or pressure curves with user-defined limits.	
Gas standards Respiratory para Breath rate Time Ratio Breath volume Minute volume Pressure Peakflow Compliance Trigger General informat	Rate         Inspiratory time (T <sub>e</sub> )         Expiratory hold time         Expiratory hold time         Post-inspiratory pause (% T <sub>P</sub> )         I:E         T,/T <sub>total</sub> Vti, Vte         Vi, Ve         P <sub>Finsp</sub> , PEEP, P <sub>Plateau</sub> PF <sub>insp</sub> , Resp.         C <sub>Stat</sub> Automatic, Adult, Pediatric, HFO, ext. Trigger	Air, O₂, Air/O₂, N₂O/O₂,         ATP, ATPD, ATPS, AP2         BTPD, BTPD-A, 0/1013 <b>Range</b> 1 – 2000 bpm         0 – 60 s         0 – 90 s         0 – 60 s         0 – 100 %         1:300 – 300:1         0 – 100 %         ± 60 L         0 – 160 mbar         ± 300 sL/min         0 – 1000 mL/mbar         Adult, Pediatric, HFO; /	He, He/O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O, CO <sub>2</sub> , customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ±0.05 s         ±0.05 s         ±0.1%         ±1.75 % or ±0.10 mL         ±1.75 %* or ±0.10 mL         ±0.75 %* or ±0.1 mbar**         ±3 %* or ±0.01 mL/mbar**         Adjustable on flow or pressure curves with user-defined limits.	
Gas standards Respiratory para Breath rate Time Ratio Breath volume Minute volume Pressure Peakflow Compliance Trigger General informat Power	Rate         Inspiratory time (T <sub>o</sub> )         Expiratory time (T <sub>o</sub> )         Inspiratory hold time         Expiratory hold time         Post-inspiratory pause (% T <sub>P</sub> )         I:E         T <sub>i</sub> /T <sub>total</sub> Vti, Vte         Vi, Ve         P <sub>Peak</sub> , P <sub>Mean</sub> , PEEP, P <sub>Plateau</sub> PF <sub>insp</sub> , PF <sub>Exp</sub> C <sub>Siat</sub> Automatic, Adult, Pediatric, HFO, ext. Trigger	Air, O₂, Air/O₂, N₂O/O₂,           ATP, ATPD, ATPS, AP2           BTPD, BTPD-A, 0/1013 <b>Range</b> 1 – 2000 bpm           0 – 60 s           0 – 90 s           0 – 60 s           0 – 90 s           0 – 100 %           ± 60 L           0 – 100 mbar           ± 300 sL/min           0 – 100 mL/mbar           Adult, Pediatric, HFO; /           100 – 240 VAC, 50 – 60           16 hours	He, He/O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O, CO <sub>2</sub> , customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ±0.05 s         ±0.05 s         ±0.1%         ±1.75 % or ±0.10 mL         ±1.75 %* or ±0.10 mL         ±0.75 %* or ±0.1 mbar**         ±3 %* or ±0.01 mL/mbar**         Adjustable on flow or pressure curves with user-defined limits.	
Gas standards Respiratory para Breath rate Time Ratio Breath volume Minute volume Pressure Peakflow Compliance Trigger General informat Power Battery operation	Rate         Inspiratory time (T <sub>o</sub> )         Expiratory time (T <sub>o</sub> )         Inspiratory hold time         Expiratory hold time         Post-inspiratory pause (% T <sub>P</sub> )         I:E         T <sub>i</sub> /T <sub>total</sub> Vti, Vte         Vi, Ve         P <sub>Peak</sub> , P <sub>Mean</sub> , PEEP, P <sub>Plateau</sub> PF <sub>insp</sub> , PF <sub>Exp</sub> C <sub>Siat</sub> Automatic, Adult, Pediatric, HFO, ext. Trigger	Air, O₂, Air/O₂, N₂O/O₂,           ATP, ATPD, ATPS, AP2           BTPD, BTPD-A, 0/1013 <b>Range</b> 1 – 2000 bpm           0 – 60 s           0 – 90 s           0 – 60 s           0 – 90 s           0 – 100 %           ± 60 L           0 – 100 mbar           ± 300 sL/min           0 – 100 mL/mbar           Adult, Pediatric, HFO; /           100 – 240 VAC, 50 – 60           16 hours	He, He/O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O, CO <sub>2</sub> , customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ±0.1%         ±1.75 % or ±0.10 mL         ±1.75 %* or ±0.10 mL         ±1.75 %* or ±0.1 mbar**         ±3%* or ±0.01 mL/mbar**         Adjustable on flow or pressure curves with user-defined limits.	
Gas standards Respiratory para Breath rate Time Ratio Breath volume Minute volume Pressure Peakflow Compliance Trigger General informat Power Battery operation Power consumptio	Rate         Inspiratory time (T <sub>o</sub> )         Expiratory time (T <sub>o</sub> )         Inspiratory hold time         Expiratory hold time         Post-inspiratory pause (% T <sub>P</sub> )         I:E         T <sub>i</sub> /T <sub>total</sub> Vti, Vte         Vti, Vte         Vti, Ve         P <sub>Peak</sub> , P <sub>Mean</sub> , PEEP, P <sub>Plateau</sub> PF <sub>insp</sub> , PF <sub>Exp</sub> C <sub>Stat</sub> Automatic, Adult, Pediatric, HFO, ext. Trigger         ion	Air, O₂, Air/O₂, N₂O/O₂,           ATP, ATPD, ATPS, AP2           BTPD, BTPD-A, 0/1013           Range           1 – 2000 bpm           0 – 60 s           0 – 90 s           0 – 60 s           0 – 90 s           0 – 100 %           1 :300 – 300:1           0 – 100 %           ± 60 L           0 – 300 sL/min           0 – 1000 mL/mbar           ± 300 sL/min           0 – 1000 mL/mbar           Adult, Pediatric, HFO; /           100 – 240 VAC, 50 – 60           16 hours           Typical 5 VA, max. 25 V	He, He, Oz, Nz, NzO, COz, customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ±0.1%         ±1.75 % or ±0.10 mL         ±1.75 % or ±0.10 mL         ±1.75 % or ±0.1 mbar**         ±3%* or ±0.01 mL/mbar**         Adjustable on flow or pressure curves with user-defined limits.	
Gas standards Respiratory para Breath rate Time Ratio Breath volume Minute volume Pressure Peakflow Compliance Trigger General informat Power Battery operation Power consumptio Weight	Rate         Inspiratory time (T <sub>o</sub> )         Expiratory time (T <sub>o</sub> )         Inspiratory hold time         Expiratory hold time         Post-inspiratory pause (% T <sub>P</sub> )         I:E         T <sub>i</sub> /T <sub>total</sub> Vti, Vte         Vti, Vte         Vti, Ve         P <sub>Peak</sub> , P <sub>Mean</sub> , PEEP, P <sub>Plateau</sub> PF <sub>insp</sub> , PF <sub>Exp</sub> C <sub>Stat</sub> Automatic, Adult, Pediatric, HFO, ext. Trigger	Air, O₂, Air/O₂, N₂O/O₂,           ATP, ATPD, ATPS, AP2           BTPD, BTPD-A, 0/1013 <b>Range</b> 1 – 2000 bpm           0 – 60 s           0 – 90 s           0 – 60 s           0 – 90 s           0 – 100 %           ± 60 L           0 – 100 mbar           ± 300 sL/min           0 – 100 mL/mbar           Adult, Pediatric, HFO; /           100 – 240 VAC, 50 – 60           16 hours           Typical 5 VA, max. 25 VA           3.2 kg	He, He/O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O, CO <sub>2</sub> , customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ±0.1%         ±1.75 % or ±0.10 mL         ±1.75 %* or ±0.10 mL         ±1.75 %* or ±0.1 mbar**         ±3%* or ±0.01 mL/mbar**         Adjustable on flow or pressure curves with user-defined limits.	
Gas standards Respiratory para Breath rate Time Ratio Breath volume Minute volume Pressure Peakflow Compliance Trigger General informat Power Battery operation Power consumptio Weight Dimensions (w × d	Rate         Inspiratory time (T <sub>o</sub> )         Expiratory time (T <sub>o</sub> )         Inspiratory hold time         Expiratory hold time         Post-inspiratory pause (% T <sub>P</sub> )         I:E         T <sub>i</sub> /T <sub>total</sub> Vti, Vte         Vti, Vte         Vti, Ve         P <sub>Peak</sub> , P <sub>Mean</sub> , PEEP, P <sub>Plateau</sub> PF <sub>insp</sub> , PF <sub>Exp</sub> C <sub>Stat</sub> Automatic, Adult, Pediatric, HFO, ext. Trigger	Air, O₂, Air/O₂, N₂O/O₂,         ATP, ATPD, ATPS, AP2         BTPD, BTPD-A, 0/1013 <b>Range</b> 1 – 2000 bpm         0 – 60 s         0 – 90 s         0 – 60 s         0 – 90 s         0 – 100 %         1:300 – 300:1         0 – 100 %         ± 60 L         0 – 300 sL/min         0 – 100 mL/mbar         ± 300 sL/min         0 – 1000 mL/mbar         Adult, Pediatric, HFO; /         100 – 240 VAC, 50 – 60         16 hours         Typical 5 VA, max. 25 V         3.2 kg         24 × 26 × 13 cm         Internal, USB stick	He, He/O <sub>2</sub> , N <sub>2</sub> , N <sub>2</sub> O, CO <sub>2</sub> , customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ±0.1%         ±1.75 % or ±0.10 mL         ±1.75 %* or ±0.10 mL         ±1.75 %* or ±0.1 mbar**         ±3%* or ±0.01 mL/mbar**         Adjustable on flow or pressure curves with user-defined limits.	
Gas standards Respiratory para Breath rate Time Time Ratio Breath volume Minute volume Pressure Peakflow Compliance Trigger General informat Power Battery operation Power consumptio Weight Dimensions (w × d Data Storage	Rate         Inspiratory time (T <sub>o</sub> )         Expiratory time (T <sub>o</sub> )         Inspiratory hold time         Expiratory hold time         Post-inspiratory pause (% T <sub>P</sub> )         I:E         T <sub>i</sub> /T <sub>total</sub> Vti, Vte         Vti, Vte         Vti, Ve         P <sub>Peak</sub> , P <sub>Mean</sub> , PEEP, P <sub>Plateau</sub> PF <sub>insp</sub> , PF <sub>Exp</sub> C <sub>Stat</sub> Automatic, Adult, Pediatric, HFO, ext. Trigger	Air, O₂, Air/O₂, N₂O/O₂,         ATP, ATPD, ATPS, AP2         BTPD, BTPD-A, 0/1013 <b>Range</b> 1 – 2000 bpm         0 – 60 s         0 – 90 s         0 – 60 s         0 – 90 s         0 – 100 %         ± 60 L         0 – 100 mbar         ± 300 sL/min         0 – 100 mL/mbar         Adult, Pediatric, HFO; /         100 – 240 VAC, 50 – 60         16 hours         Typical 5 VA, max. 25 VA         3.2 kg         24 × 26 × 13 cm         Internal, USB stick         High resolution touch-s         USB-A for USB stick, USB	He, He/, Dz, Nz, NzO, COz, customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ±0.1%         ±0.1%         ±1.75% or ±0.10 mL         ±1.75%* or ±0.10 mL         ±1.75%* or ±0.1 mbar**         ±1.65%* or ±0.01 mL/mbar**         Adjustable on flow or pressure curves with user-defined limits.         Hz         A (during battery charging)         screen display 5* (800 × 480 px)         JSB-B for FlowLab Software, individual communication, TTL for	
Gas standards Respiratory para Breath rate Time Ratio Breath volume Minute volume Pressure Peakflow Compliance Trigger General informat Power Battery operation Power consumptio Weight Dimensions (w × d Data Storage Display Interfaces	Rate         Inspiratory time (T <sub>o</sub> )         Expiratory time (T <sub>o</sub> )         Inspiratory hold time         Expiratory hold time         Post-inspiratory pause (% T <sub>P</sub> )         I:E         T <sub>i</sub> /T <sub>total</sub> Vti, Vte         Vti, Vte         Vti, Ve         P <sub>Peak</sub> , P <sub>Mean</sub> , PEEP, P <sub>Plateau</sub> PF <sub>insp</sub> , PF <sub>Exp</sub> C <sub>Stat</sub> Automatic, Adult, Pediatric, HFO, ext. Trigger	Air, O₂, Air/O₂, N₂O/O₂,         ATP, ATPD, ATPS, AP2         BTPD, BTPD-A, 0/1013         Range         1 – 2000 bpm         0 – 60 s         0 – 90 s         0 – 60 s         0 – 90 s         0 – 100 %         1:300 – 300:1         0 – 100 %         ± 60 L         0 – 300 sL/min         0 – 100 mL/mbar         ± 300 sL/min         0 – 1000 mL/mbar         Adult, Pediatric, HFC; #         100 – 240 VAC, 50 – 60         16 hours         Typical 5 VA, max. 25 V         3.2 kg         24 × 26 × 13 cm         Internal, USB stick         High resolution touch-stick         USB-A for USB stick, Lexternal trigger, RS232	He, He, V2, N2, N2O, CO2, customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ±0.1%         ±2%*         ±5%*         ±1.75% or ±0.10 mL         ±1.75%* or ±0.1 mbar**         ±3%* or ±0.01 mL/mbar**         Adjustable on flow or pressure curves with user-defined limits.         Hz         A (during battery charging)         screen display 5* (800 × 480 px)         JSB-B for FlowLab Software, individual communication, TTL for	
Gas standards Respiratory para Breath rate Time Ratio Breath volume Ratio Breath volume Pressure Peakflow Compliance Trigger General informat Power Battery operation Power consumptio Weight Dimensions (w × d Data Storage Display Interfaces Calibration	Rate         Inspiratory time (T <sub>0</sub> )         Expiratory time (T <sub>0</sub> )         Inspiratory hold time         Expiratory hold time         Post-inspiratory pause (% T <sub>P</sub> )         I:E         T <sub>i</sub> /T <sub>total</sub> Vti, Vte         Vi, Ve         P <sub>Finsp</sub> , P <sub>Exp</sub> C <sub>Stat</sub> Automatic, Adult, Pediatric, HFO, ext. Trigger         ion         x h)	Air, O₂, Air/O₂, N₂O/O₂,         ATP, ATPD, ATPS, AP2         BTPD, BTPD-A, 0/1013         I - 2000 bpm         0-60 s         0-90 s         0-100 %         1:300-300:1         0-100 %         ± 60 L         0-100 mL/mbar         4 Adult, Pediatric, HFO; /         100-240 VAC, 50-60         16 hours         Typical 5VA, max. 25 Va         3.2 kg         24 × 26 × 13 cm         Internal, USB stick         High resolution touch-ss         USB-A for USB stick, L         external trigger, RS232         Annually	He, He/, Dz, Nz, NzO, COz, customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ±0.1%         ±0.1%         ±1.75% or ±0.10 mL         ±1.75%* or ±0.10 mL         ±1.75%* or ±0.1 mbar**         ±1.65%* or ±0.01 mL/mbar**         Adjustable on flow or pressure curves with user-defined limits.         Hz         A (during battery charging)         screen display 5* (800 × 480 px)         JSB-B for FlowLab Software, individual communication, TTL for	
Gas standards Respiratory para Breath rate Time Time Ratio Breath volume Pressure Peakflow Compliance Trigger General informat Power Battery operation Power consumptio Weight Dimensions (w × d Data Storage Display Interfaces Calibration Operating tempera	Rate         Inspiratory time (T <sub>o</sub> )         Expiratory time (T <sub>o</sub> )         Inspiratory hold time         Expiratory hold time         Post-inspiratory pause (% T <sub>P</sub> )         I:E         T <sub>i</sub> /T <sub>total</sub> Vti, Vte         Vi, Ve         P <sub>Finsp</sub> , P <sub>Exp</sub> C <sub>Stat</sub> Automatic, Adult, Pediatric, HFO, ext. Trigger         ion         x h)	Air, O₂, Air/O₂, N₂O/O₂,           ATP, ATPD, ATPS, AP2           BTPD, BTPD-A, 0/1013 <b>Range</b> 1 – 2000 bpm           0 – 60 s           0 – 90 s           0 – 60 s           0 – 90 s           0 – 100 %           ± 60 L           0 – 100 %           ± 60 L           0 – 100 mbar           ± 300 sL/min           0 – 100 mbar           ± 300 sL/min           0 – 100 mbar           100 – 240 VAC, 50 – 60           16 hours           Typical 5 VA, max. 25 Va           3.2 kg           24 × 26 × 13 cm           Internal, USB stick           High resolution touch-ss           USB-A for USB stick, L           external trigger, RS232           Annually           10 – 40 °C (50 – 104°F)	He, He/, Dz, Nz, NzO, COz, customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ±0.1%         ±0.1%         ±1.75% or ±0.10 mL         ±1.75%* or ±0.10 mL         ±1.75%* or ±0.1 mbar**         ±1.65%* or ±0.01 mL/mbar**         Adjustable on flow or pressure curves with user-defined limits.         Hz         A (during battery charging)         screen display 5* (800 × 480 px)         JSB-B for FlowLab Software, individual communication, TTL for	
Gas standards Respiratory para Breath rate Time Time Ratio Breath volume Pressure Peakflow Compliance Trigger General informat Power Battery operation Power consumptio Weight Dimensions (w × d Data Storage Display Interfaces Calibration	Rate         Inspiratory time (T <sub>o</sub> )         Expiratory time (T <sub>o</sub> )         Inspiratory hold time         Expiratory hold time         Post-inspiratory pause (% T <sub>P</sub> )         I:E         T <sub>i</sub> /T <sub>total</sub> Vti, Vte         Vi, Ve         P <sub>Finsp</sub> , P <sub>Exp</sub> C <sub>Stat</sub> Automatic, Adult, Pediatric, HFO, ext. Trigger         ion         x h)	Air, O₂, Air/O₂, N₂O/O₂,         ATP, ATPD, ATPS, AP2         BTPD, BTPD-A, 0/1013         Pange         1-2000 bpm         0-60 s         0-90 s         0-60 s         0-90 s         0-100 %         1:300-300:1         0-100 %         ± 60 L         0-300 sL/min         0-100 mL/mbar         ± 300 sL/min         0-100 mL/mbar         Adult, Pediatric, HFO; /         100-240 VAC, 50-60         16 hours         Typical 5 VA, max. 25 V         3.2 kg         24 × 26 × 13 cm         Internal, USB stick, L         external trigger, RS232         Annually         10-40°C (50-104°F)         10-90% R.H.***	He, He/, Dz, Nz, NzO, COz, customised gas types         1, AP25, STP, STPD0, STPD20, STPD21, STPH, BTPS, BTPS-A,         3, 20/981, 15/1013, 25/991, 20/1013, 23/1013, NTPD, NTPS         Accuracy         ±1 bpm or ± 1%**         ±0.01 s         ±0.1%         ±0.1%         ±1.75% or ±0.10 mL         ±1.75%* or ±0.10 mL         ±1.75%* or ±0.1 mbar**         ±1.65%* or ±0.01 mL/mbar**         Adjustable on flow or pressure curves with user-defined limits.         Hz         A (during battery charging)         screen display 5* (800 × 480 px)         JSB-B for FlowLab Software, individual communication, TTL for	

The greater tolerance is valid:

\*Tolerance related to the measured value, \*\* Absolute tolerance, with steady air flow, \*\*\* Non-condensing, \*\*\*\* The unit sL/min is based on ambient conditions of 0°C and 1013.25 mbar (DIN 1343).

### IMT.Analytics

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