The Resmon Pro is a professional, stand-alone device for non-invasive evaluation and quantification of the degree of pulmonary obstructive diseases. Laboratories love the Resmon Pro because it is accurate, versatile and efficient. Patients love it because it is fast and easy to use.

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With such versatility, the Resmon Pro is ideal for virtually any testing environment—including pulmonary laboratories, private offices, on-site school or workplace settings and sites for clinical trials or research studies.

**SPECIFICATIONS**

**FLOW MEASUREMENT**
Mesh type: ±1.5 L/s
LINEARITY: ±2%
MOUTH PRESSURE: Range: ±2.5 cm H₂O
MOUTH PRESSURE LINEARITY: 0.05% full scale
RESOLUTION: 0.015 cm H₂O

**PHYSICAL DIMENSIONS**
Height: 21 in (55 cm)
Width: 35 in (89 cm)
Depth: 10 in (26 cm)
WEIGHT: 15 lbs (7kg)

**TESTING “WITHIN BREATH” SIGNALS MODE**
SINGLE FREQUENCY
5, 6, 8, 10 Hz
MULTIPLE FREQUENCY
5 + 11 + 19 Hz
PSEUDO RANDOM NOISE (PSRN)
5-37 Hz

**MEASUREMENT ACCURACY**
±0.1 cm H₂O/L/s or 10% of the measured value

**CALIBRATION**
Factory calibration according to international guidelines + auto-zeroing of the sensors before each test + calibration check with a test object (provided)

**PATIENT LOAD**
0.46-0.54 cm H₂O/L/s in the frequencies of normal breathing (0.1-1 Hz)

**DEAD SPACE**
35 cc

**CONNECTIVITY**
2 USB ports
Ethernet

**PROCESSOR AND MEMORY**
Dual core architecture, 64 MB RAM, 4 GB flash memory

**DISPLAY**
5.7” LCD backlit touchscreen display

**ELECTRICAL SPECIFICATIONS**
Medical grade 100/240 V, 50/60 Hz 60 W input AC/15 VDC output power supply (included)

**STAND-BY CURRENT**
250 mA

**AVERAGE CURRENT**
1500 mA

**MATERIALS EXTERNAL CASE**
ABS

**SUPPORT ARM**
Aluminum

**LOUDSPEAKER MEMBRANE**
Silicone rubber

**CERTIFICATION**
MDD 93/42 EEC, FDA pending

Not approved for clinical or diagnostic use in the U.S.A.
The Resmon Pro is the result of more than 15 years of research performed at the medical engineering school of the Politecnico di Milano University (Milan, Italy). In cooperation with key scientific clinical and research centers in Europe, US and Australia.

### RESMON PRO FOT SYSTEM
**DESIGNED, DEVELOPED, PRODUCED AND SUPPORTED BY EXPERTS**

The Resmon Pro FOT System is the result of more than 15 years of research performed at the medical engineering school of the Politecnico di Milano University (Milan, Italy). In cooperation with key scientific clinical and research centers in Europe, US and Australia.

### UNIQUE FEATURES FOR CLINICAL AND RESEARCH USE
- **“WITHIN-BREATH” ANALYSIS OF BREATHING PATTERNS AT FAST SAMPLING FREQUENCY**
  - Real-time display of resistance (R), reactance (X) and tidal volume
  - Accurate calculation of inspiratory, expiratory and total parameters
  - Full respiratory pattern parameters measurement and reporting
- **THREE MEASUREMENT MODES:**
  - Single frequency mode options of 5, 6, 8, 10 Hz (for children and severely obstructed patients)
  - Innovative “enhanced optimized” multiple frequency mode of 5-11-19 Hz
  - “Enhanced optimized” Pseudo Random Noise (PSN) of 5-37 Hz
- **EXCLUSIVE “10 BREATHS” MODE**
  - Comfortable testing for the patient with an automatic discard algorithm for non-physiological, non-coherent breaths
- **AUTOMATIC ADJUSTMENT AND DETECTION**
  - Automatic adjustment based on patient impedance, auto adjustment of stimulus amplitude during the first three breaths for optimal patient comfort
  - Unique automatic detection and quantification of Expiratory Flow Limitation with patented $\Delta X_{rs}$ index graph and % of Flow Limited breaths (FL%), also used for pre-post bronchodilator or pre-post treatment testing
  - Complies to ERS guideline of peak-to-peak mouth pressure
- **MINIMAL DEAD SPACE**
  - Only 35cc of dead space

### CONVENIENT SIZE AND FUNCTIONS
- Easily transportable allowing for testing in the lab and off-site (school, office, etc.)
- Self-contained and compact unit
- Quiet operation with an automatic “active-wash” silent fan for expired $CO_2$ removal from the system
- Suitable for children
- Unique ERJ referenced verification tool is included to verify the accuracy of both resistance ($R_{rs}$) and reactance ($X_{rs}$) recordings at any time
- Verification date/time printed on final report for quality assurance.

The Resmon Pro requires no personal computer and is a completely stand-alone system for evaluating pulmonary function with the ability to download tests to PC software after testing. It includes:
- A wide touchscreen for fast, easy and intuitive test management
- Large internal memory
- Built-in database to store and retrieve patient data
- Multi-user access with data security
- Detailed report of results for further trending, analysis and statistics
  - Data available in RAW, XSL/CSV and PDF output
  - Connectivity options

### CLINICAL ISSUES AND FOT SOLUTIONS
- “Spirometry is not an easy test to perform because the forceful expiratory and inspiratory manoeuvres require good patient co-operation. Children aged <5 years, elderly people and those with physical and cognitive limitations cannot perform spirometry easily.” Ref: Brashier et al, 2015
- Pre-Post bronchodilator testing with forced flow-volume loops maneuvers and body plethysmography are very difficult to perform by most patients especially in Acute Exacerbations COPD (AECOPD)
- DEEP INHALATION EFFECT: It has been demonstrated and referenced over the last years that the Deep Inhalation can alter the bronchial tone in COPD and Asthma patient, adults and pediatrics.
  - “The deep inspiration that precedes forced expiration may modify airway smooth muscle tone, and, therefore, may influence the result of the BHR test.” Ref: Osteveen et al 2013
- EFL (EXPIRATORY FLOW LIMITATION) often difficult measurement:
  - “EFL promotes dynamic pulmonary hyperinflation and intrinsic positive end-expiratory pressure (PEEP) with concurrent dyspnea” Ref: Kouloris et al, 2011
- Airways Clearance Therapy Effects:
  - “In spite of the widespread application of airways clearance techniques in respiratory rehabilitation, we could not identify, at this time, objective outcome measurements for these treatments” Ref : Gigliotti et al, 2015
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THE RESMON PRO FOT SYSTEM

The Resmon Pro system is designed to test the pulmonary function of patients using the Forced Oscillation Technique (FOT). It is a compact, portable device that can be used in various settings, including laboratories and off-site locations such as schools and offices.

CONVENIENT SIZE AND FUNCTIONS

- Easily transportable allowing for testing in the lab and off-site (school, office, etc.)
- Self-contained and compact unit
- Quiet operation with an automatic “active-wash” silent fan for expired CO₂ removal from the system
- Suitable for children
- Unique ERJ referenced verification tool is included to verify the accuracy of both resistance (Rrs) and reactance (Xrs) recordings at any time
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A unique feature of the Resmon Pro FOT system is detection and quantification of the degree of Expiratory Flow Limitation.

RESMON PRO FOT SYSTEM: FORCED OSCILLATION TECHNIQUE

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### SPECIFICATIONS

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- **Range**: ±1.5 L/s
- **Linearity**: ±2%
- **Mouth Pressure**: Range: ±2.5 cm H₂O
- **Mouth Pressure Linearity**: 0.05% full scale
- **Resolution**: 0.015 cm H₂O

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- **Pseudo Random Noise (PSRN)**: 5-37 Hz

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**CALIBRATION**

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**DEAD SPACE**

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**CONNECTIVITY**

- 2 USB ports
- Ethernet

**PROCESSOR AND MEMORY**

- Dual core architecture, 64 MB RAM, 4 GB flash memory
- 5.7” LCD backlit touchscreen display

**ELECTRICAL SPECIFICATIONS**

- Medical grade 100/240 V, 50/60 Hz 60 W input AC/15 VDC output power supply (included)
- Stand-by current: 250 mA
- Average current: 1500 mA
- Materials external case: ABS
- Support arm: Aluminum
- Loudspeaker membrane: Silicone rubber
- Certification: MDD 93/42 EEC, FDA pending

**RESOLUTION**

- 0.015 cm H₂O

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