



# spirobank II

Defines what a Pulmonary Mini-Lab can do

New option  
disposable turbine

## Unique in the world. All in one

- Spirometer with 6000 test memory
- Oximeter with 1000 hours recording
- Stand alone or PC online operation
- Graphic display with user friendly icons
- Patient identification by name or ID code
- **Bluetooth®** connection to printer or mobile phone
- USB, RS232 and wireless acoustic modem
- Upgradeable internal software via internet



PC Software  
included



**SpO2  
option**



Quality Instruments

CE

0476

FDA

Approved

ATS-ERS

Standards

ISO

9001-2000

ISO

13485

The image is a vertical composition. The background is a soft-focus photograph of a blue sky with wispy white clouds. In the foreground, a white and black medical device, likely a nasal cannula or a similar respiratory interface, is positioned diagonally. The device has a white cylindrical body and a black circular top. In the upper right corner, there is a screenshot of a medical report from a computer screen. The report is for a patient named MARTINI, DAVID, dated 7/24/2003. It includes a table of Spirometry results, a table of Oximetry results, and several graphs: Sleep Oximetry, Oximetry Test Data, SpO2 (Oxygen Saturation), Pulse Rate Distribution, and Desaturation Data. The report concludes with a signature line.

**Patient Information:**  
 Go to patient by: / Name  
 MARTINI, DAVID  
 Patient: SEVERE ASTHMA  
 MARTINI, DAVID - Male - Age: 31 - 7/24/2003  
 Visit Card Valid From: 7/24/2003 3 PVC-PRE; POST

**Spirometry**

Parameters	PRE	Post
FVC L	5.68	5.40
FEV1 L	5.47	4.40
FEV1% %	96.14	83.2
PFR L/s	0.25	0.27
PEF25 L/s	2.33	4.71
PEF L/s	2.46	
FEF25 L/s	0.40	0.47
FEF50 L/s	2.21	5.51
FEF75 L/s	4	3.34
VEF5 mL	526	
FEV5 L	6	

CONCLUSION: MEDICAL REPORT

**Oximetry** 7/24/03 13:41:25

SpO2 Mean	91.7	SpO2 Min
SpO2 Min	85 <th>SpO2 Max</th>	SpO2 Max
SpO2 Max	97 <th>SpO2 Min</th>	SpO2 Min
T90 (+ 90%)	21.8%	T40 (+ 40%)
T80 (+ 80%)	88.3%	T120 (+ 120%)

CONCLUSION: MEDICAL REPORT

**Sleep Oximetry**

**Oximetry Test Data**

% SpO2

Recording

**SpO2 (Oxygen Saturation)**

Time (%)

21

95-100 9

**Pulse Rate Distribution**

Time (%)

150 160 170 180 190 200

**Desaturation Data**

Num. desatur

4

10-19

Conclusion / Medical Report

Signature

**Printout with spirometry report**

**Flow / Volume and Volume / Time Loops**

Flow (L/s) vs Time (s) graph showing predicted and actual values. The predicted curve is shown in green, and the actual curve is in black. The volume (L) is shown on the x-axis, and flow (L/s) is on the y-axis.

PRE	%Pred	POST	%Pred	%Chg	Notes
5.68	105				
5.12	114				
90.1	108				
12.90	132				
7.33	156				
12.02	133				
7.21	130				
4.90	171				
5.41	100				
5.10	114				
94.3	113				
33					
6.11	113				
83.8	101				
2.06	116				
4.05	111				
164.2	110				

**6 Minute Walk Test (BMWT) Results**

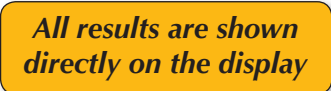
Distance (m): Walked 450, Predicted 485 (93%), Predicted min 346 (130%), AUC Distance 4.1, Dyspnea (Borg scale) Baseline 2 End 2 Chg 0, Fatigue (Borg scale) Baseline 4 End 7 Chg 3

**Pulse Rate Details**

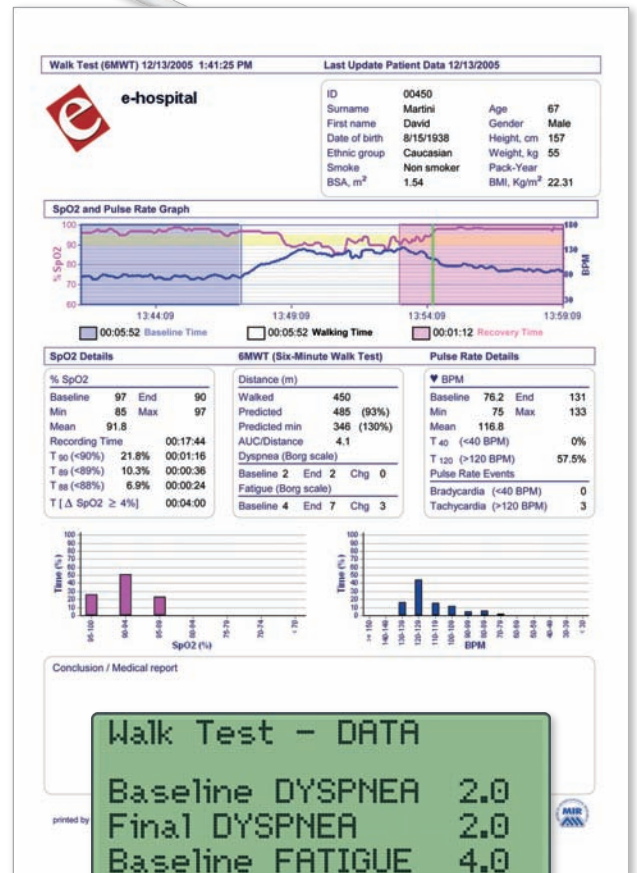
Parameter	Value	Limit
Baseline	76.2	Max 131
Min	75	Max 133
Mean	116.0	
T 40 (<40 BPM)	0%	
T 120 (>120 BPM)	57.5%	
Pulse Rate Events		
Bradycardia (<40 BPM)	0	
Tachycardia (>120 BPM)	3	

**Time (%) vs BPM**

Bar chart showing the percentage of time spent at different heart rate zones (BPM) during the 6 Minute Walk Test.



Three phase printout of 6 Minute Walk Test:  
Baseline, Walk, Recovery



*"Extra-oximetry" data for 6 Minute Walk Test*

# spirobank II

Defines what a Pulmonary Mini-Lab can do



## The most powerful, the most simple

### Spirometry features

FVC, VC, IVC, MVV, PRE-POST BD

Automatically records the best 3 trials

Internal temperature sensor for automatic BTPS

Advanced spirometry test interpretation

Lung age estimation

### Option: SpO2 module

Sleep disorder detection with events recording

Six minute walk test with automatic alarm for rest, walk and recovery

Parameters directly shown on the display (min, max, mean SpO2 and

Pulse Rate,  $\Delta$  Index, T90, T89, T88, T5, ODI, NOD, Desaturation Area etc.)

Its innovative functions make it the most unique oximeter on the market



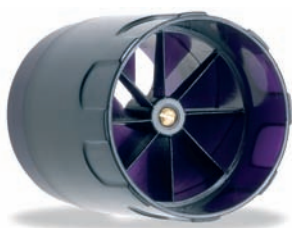
## Two different flowmeters available

### FlowMir disposable turbine for single patient use

- High accuracy
- Easy to replace
- Very low cost
- Designed for use with MIR spirometers
- FlowMIR is factory calibrated
- Available in box of 100 pieces
- No maintenance – No filter – No problem
- Hygiene 100% guaranteed by single packaging



### Reusable turbine for long term operation



- High accuracy
- Long term stability
- Easy to clean or sterilize

World's First  
International Patent Pending

MIR digital reusable and disposable turbines  
are developed in full compliance with ATS standards  
and guarantee accuracy in all environmental conditions



## winspiroPRO PC software

### Spirometry program

- Flow/Volume and Volume/time curves
- PRE-POST bronchodilator comparison
- FEV1 dose-response curve
- Exclusive paediatric incentive system
- Advanced spirometry test interpretation
- Several sets of predicted values
- Integration with Electronic Medical Record
- Data and graphs export also via e-mail

### Oximetry program

- PC online with SpO2 and Pulse Rate trend
- Desaturation events analysis
- Possibility to modify the registered data (start/end walk test phase, artefacts, etc.)
- One of the most distinctive elements of the **spirobank II** is the "specialised and detailed" printout in colour, which is easy to read and facilitates the diagnostic interpretation

## spirobank II base unit

### Technical specifications

Temperature sensor: semiconductor (0-45°C)  
 Flow sensor: bi-directional digital turbine  
 Volume range: 10 L  
 Flow range:  $\pm 16$  L/s  
 Volume accuracy:  $\pm 3\%$  or 50 mL  
 Flow accuracy:  $\pm 5\%$  or 200 mL/s  
 Dynamic resistance at 12 L/s:  $<0.5$  cmH<sub>2</sub>O/L/s  
 Display type: graphic LCD - FSTN  
 Display resolution: 128x64 pixel  
 Keyboard: membrane, 6 Keys  
 Connectivity: USB, **Bluetooth®**, RS 232, wireless internal modem (for Telemedicine applications)  
 Power Supply: 4x1.5 V, AAA battery  
 Dimension: 60x145x30 mm  
 Weight: 180 grams (with batteries)

### Measured parameters

FVC, FEV1, FEV1/FVC%, FEV3, FEV3/FVC%, FEV6, FEV1/FEV6%, PEF, FEF25%, FEF50%, FEF75%, FEF25-75%, FET, Vext, Lung Age Estimation, FIVC, FIV1, FIV1/FIVC%, PIF, VC, IVC, IC, ERV, FEV1/VC%, VT, VE, Rf, ti, te, ti/t-tot, VT/ti, MVV  
**Best values:** FVC, FEV1, PEF

## Digital Oximeter option

### Technical specifications

SpO2 range: 0-99%  
 SpO2 accuracy:  $\pm 2\%$  between 70-99% SpO2  
 Pulse Rate range: 30-254 BPM  
 Pulse Rate accuracy:  $\pm 2$  BPM or 2%

### Measured parameters

**Basic:** SpO2 [Baseline, Min, Max, Mean], Pulse Rate [Baseline, Min, Max, Mean], T90 [SpO2<90%], T89 [SpO2<89%], T88 [SpO2<88%], T5 [ $\Delta$ SpO2>5%],  $\Delta$  Index [12s], SpO2 Events, Pulse Rate Events [Bradycardia, Tachycardia]  
**6 Minute Walk Test:** T $\Delta$ 2 [SpO2 $\geq 2\%$ ], T $\Delta$ 4 [ $\Delta$ SpO2 $\geq 4\%$ ], Recording time, Time [Rest, Walking, Recovery], Walked Distance, Predicted Distance [Min, Standard], Desaturation Area/Distance, Borg Dyspnea [Baseline, End, Change], Borg Fatigue [Baseline, End, Change]  
**Sleep Test:** Desaturation Events, Desaturation Index (ODI), Desaturation [Value, Duration, Nadir],  $\Delta$ SpO2 [Min Drop, Max Drop], Pulse Variations, Pulse Rate Index, NOD 89 [SpO2<89%; >5 min], NOD 4 [SpO2 Baseline-4%; >5 min], NOD 90 [SpO2<90%; Nadir <86%; >5 min]

## Standard price includes

- **spirobank II** base unit
- USB cable
- Carrying case
- Plastic noseclip
- 4 AAA alkaline batteries
- **winspiroPRO** software CD

## Available options

- Adult reusable SpO2 finger probe
- Adult disposable SpO2 finger probe
- Paediatric reusable SpO2 finger probe
- Neonatal reusable SpO2 probe
- Neonatal disposable SpO2 probe
- SpO2 extension cable
- RS232 cable for PC

### MIR

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