







# Spirolab III diagnostic spirometer with oximetry option

FVC, VC with breathing pattern plus MVV tests with real time curves

- High resolution colour screen
- Fast but silent thermal printer
- Digital turbine flow meter with guaranteed accuracy in all environmental conditions
- PRE-POST bronchodilator comparison
- Selectable language and predicted values
- Connectivity: USB, Bluetooth® and RS232

Standard device includes: SpirolabIII winspiroPRO CD Carrying case



# Two different flowmeters

# **Reusable turbine** for long term use

- High accuracy
- Long term stability
- Easy to clean

# Disposable turbine for single patient use

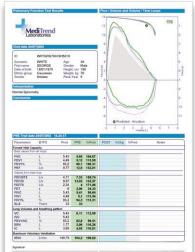
- Very low cost
- High accuracy
- Maximum hygiene guaranteed
- Available in boxes of 100 pieces
- Easy to replace no calibration needed

International patent pending





World's first disposable turbine



# Sample oximetry printout Exercise Test. Several others available





spirolab*III*complies
with the new
ATS and ERS
standards

# winspiroPRO Software

- On-line PC connection with icon interface
- Real time Flow/Volume and Volume/time curves
- Bronchial challenge with FEV1 dose-response
- Integration with Electronic Medical Record
- Paediatric incentive animations
- Lung age estimation

winspiro PRO

Data and graphs export also via E-mail

# spirolabIII Spirometer

# **Technical specifications**

Power supply: Rechargeable battery

and mains power

Temperature sensor: semiconductor (0-45°C)

Flow sensor: bi-directional digital turbine

Flow range: ± 16 L/s

Volume accuracy: ± 3% or 50 mL Flow accuracy: ± 5% or 200 mL/s Dynamic resistance: <0.5 cmH2O/L/s Connectivity: USB, Bluetooth, RS 232 Display: FSTN graphic, 320x240 pixel Printer/paper: Thermal, 112 mm width Mouthpieces: 30 mm external diameter Dimensions: 310 x 205 x 65 mm

Weight: 1,9 Kg circa

## **Measured parameters**

FVC, FEV1, FEV1/FVC%, FEV6, FEV1/FEV6%, PEF, FEF25%, FEF50%, FEF75%, FEF25-75%, FET, Vext, FIVC, FIV1, FIV1/FIVC%, PIF, \*FVC, \*FEV1, \*PEF, VC, IVC, IC, ERV, FEV1/VC%, VT, VE, Rf, ti, te, ti/t-tot, VT/ti, MVV (\* Best value)

Screen shot with complete test summary



## **Option: Finger Oximeter**

# **Technical specifications**

SpO2 range: 0-99%

SpO2 accuracy: ± 2% between 70-99% SpO2

Pulse Rate range: 30-254 BPM Pulse Rate accuracy: ± 2 BPM or 2%

## winspiroPRO Software

SpO2 and Pulse Rate graphic trend Flexible reporting with several printout categories Statistical analysis of desaturation events

#### MIR

Via del Maggiolino, 125 00155 Roma - Italy tel. +39 06.22754777 fax +39 06.22754785

> www.spirometry.com mir@spirometry.com

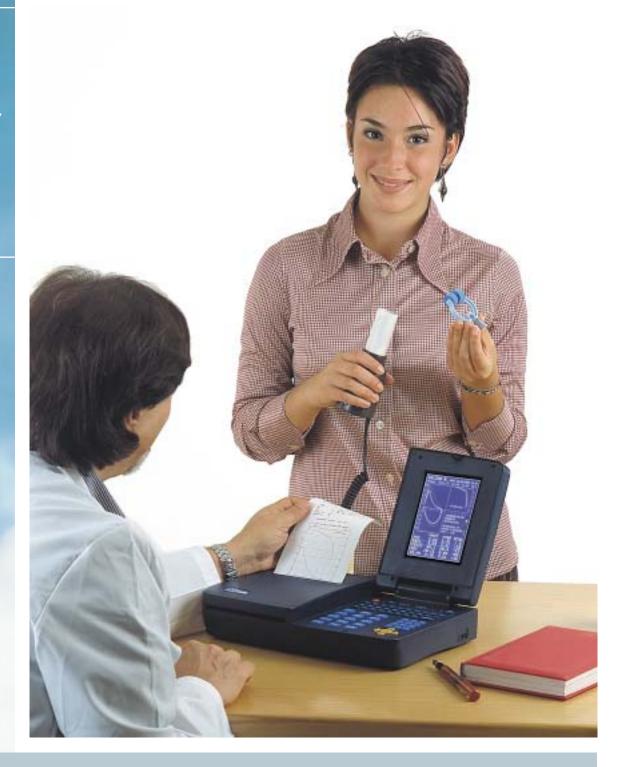
Ref. Doc. SpiroLAB3\_ENG\_06\_Rev0.PSD





# 

Smaller, lighter, faster, more powerful, simple to use and accurate, Spirolab II has it all





**C E** 0476

FDA approved

ATS certified

ISO 9001-2000 **ISO** 13485









# **Versatile portable spirometry**

- External printer direct connection
- Only 1.9 kg for truly portable spirometry
- Silent thermal printer full spirometric report prints in seconds
- Rechargeable battery plus mains power
- **User-friendly keyboard** with dedicated function keys plus alphanumeric data entry
- Internal temperature sensor for automatic BTPS conversion
- Upgradeable internal software by connecting to the PC Latest version always available at our site www.spirometry.com





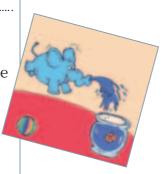
# Quality spirometry, precise measurement

The proven MIR digital turbine flow sensor requires no calibration and complies with ATS 24/26 waveforms.

Certified by Dr. Crapo at LDS Hospital, Salt Lake City - Utah

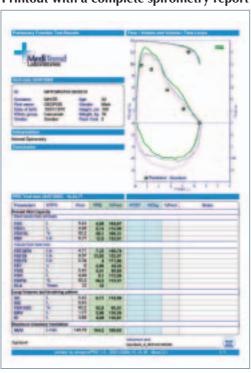
# **On-Line PC connection**

- WinspiroPRO software turns the spirolab II
   into an on-line clinical spirometer with the
   Flow/Volume curve shown on PC in real time
- PRE-POST bronchial challenge test
- FEV1 dose-response curves
- Lung Age estimation
- Includes a series of user-selectable, and amusing, paediatric incentive animations

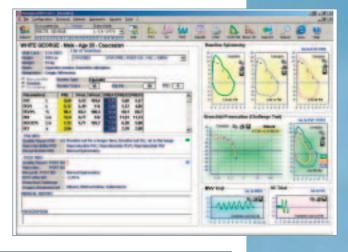




#### Printout with a complete spirometry report







#### **Technical specification**

Power supply:
Rechargeable battery and mains power
Temperature sensor:
Semiconductor 0-45° C
Flow and volume
transducer:
digital turbine
Flow/volume range:
± 16 Ls-1 / 10 L, BTPS
Volume accuracy:
± 3% or 50 mL

± 5% or 200 mL/s **Dynamic resistance:**<0.8 cm H<sub>2</sub>O/L/s **Colour display:**FSTN 240x320 **Printer/paper:**Thermal, 112 mm width **Mouthpieces:**30 mm external diameter **Serial output:**RS 232, optoisolated **Dimensions:**310 x 205 x 65 mm

Flow accuracy:

Weight:
1,9 Kg circa
Parameters:
FVC, FEV1, FEV1%, FEV6,
FEV6%, FEV1/FEV6%, PEF,
FEF25-75%, FEF25%,
FEF50%, FEF75%, FET,
Vext, \*FVC, \*FEV1, \*PEF,
PIF, FIVC, FIV1, FIV1%,
VC, IVC, ERV, IC, VT, VE,
BF, Ti, Te, Ti/Ttot, VT/Ti,
MVV

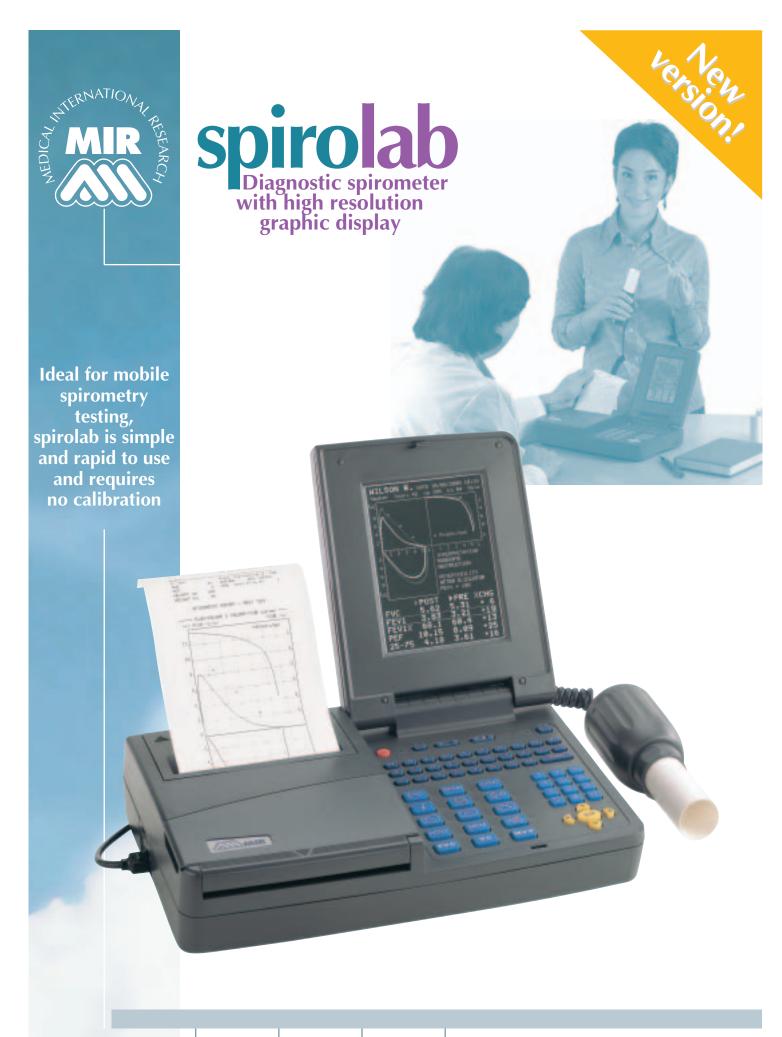
Carrying-case included

#### MIR

Via del Maggiolino, 125 00155 Roma - Italy tel. +39 06.22754777 fax +39 06.22754785

www.spirometry.com mir@spirometry.com

www.spirometry.com





FDA registered

ATS standard

**ISO** 9001

EN 46001

# www.spirometry.com

# Complete spirometry testing

- FVC, VC with breathing pattern plus MVV tests with real time curves
- Over 30 parameters with automatic interpretation and test quality control
- PRE/POST bronchial response protocol with F/V loop comparison
- FEV1/drug administration trend

# Versatile portable spirometry

- External printer direct connection
- Internal database for several hundred complete tests
- **Predicted values** with several sets of authors
- Only 1.9 kg for truly portable spirometry



# Stand alone spirometry

- Silent thermal printer full spirometric report prints in seconds
- Rechargeable battery plus mains power
- User-friendly keyboard with dedicated function keys plus alphanumeric data entry

# Quality spirometry precise measurement

The proven MIR digital turbine flow sensor requires no calibration and complies with the severe ATS 24/26 waveforms.



#### **Technical specification**

Power supply: rechargeable battery and mains power Temperature sensor:
Semiconductor 0-45° C
Flow and volume transducer: digital turbine Flow/volume range:
± 16 Ls<sup>-1</sup> / 10 L, BTPS
Volume accuracy:
± 3% or 50 mL
Flow accuracy:
± 5% or 200 mL/s

**Dynamic resistance:**<0.8 cm H<sub>2</sub>O/L/s **Monochromatic display:**FSTN 240x320 **Printer/paper:**Thermal, 112 mm width **Mouthpieces:**30 mm external diameter **Serial output:**RS 232, optoisolated **Dimensions:**310 x 205 x 65 mm **Weight:**1,9 Kg circa

#### **Parameters:**

FVC, FEV1, FEV1%, FEV6, FEV6, FEV6%, FEV1/FEV6%, PEF, FEF25-75%, FEF25%, FEF50%, FEF75%, FET, Vext, PIF, FIVC, FIV1, FIV1%, VC, IVC, ERV, IC, VT, VE, BF, Ti, Te, Ti/Ttot, VT/Ti, MVV

**spirolab** meets the ATS and ERS standards.

#### Option:

carrying-case, PC software

#### MIR

Via del Maggiolino, 125 00155 Roma - Italy tel. +39-0622754777 fax +39-0622754785

www.spirometry.com mir@spirometry.com



Spirobank II

World First
Unrivalled features

in one single device



PC connection via USB or RS 232

WYWWW.SIDIIFO

Spirometer with 6,000 spirometry test memory capacity Oximeter with 1,000 hours (40 days) oximetry recording Bluetooth connection to printer or mobile phone Available with disposable or reusable digital turbine flowmeter MIR spirobank 11 **Spirometry features** Internal temperature sensor for automatic BTPS conversion

High resolution/high visibility graphic display Patient identification by name or ID code Automatically records the best 3 trials

**Option: SpO2 module** 

Short or long term (overnight) SpO2 and Heart Rate measurements ODI, NOD, T90%, T89% and T88% calculation Sleep apnea detection with desaturation events recording Walking test (6MWT) with SpO2 and Heart Rate analysis

# Portable multipurpose and multifunction spirometer

# Spirometry features and measured parameters

FVC, FEV1, FEV1/FVC%, FEV6, FEV6%, PEF, FEF25%, FEF50%, FEF75%, FEF25-75%, FET, Vext, FIVC, FIV1, FIV1/FIVC%, PIF, \*FVC, \*FEV1, \*PEF, VC, IVC, IC, ERV, FEV1/VC%, VT, VE, Rf, ti, te, ti/t-tot, VT/ti, MVV (\* Best value)

No calibration required PRE-POST bronchodilator comparison Spirometry interpretation with test quality assurance

# WinspiroPRO PC Software - Spirometry program

On line PC connection with simple to use icon-based interface Flow/Volume and Volume/time curve shown in real time on PC Bronchial challenge test with FEV1 dose-response curve Includes a series of user-selectable paediatric incentive animations Data and graphs export also via e-mail Lung age estimation

# **Technical specifications - Spirometer**

Temperature sensor: semiconductor (0-45°C) Flow sensor: bi-directional digital turbine

Flow range: ± 16 L/s

Volume accuracy: ± 3% or 50 mL Flow accuracy: ± 5% or 200 mL/s

Dynamic resistance at 12 L/s: <0.5 cmH2O/L/s

Display: STN graphic, 128x64 pixel Keyboard: membrane, 6 Keys

Connectivity and data transmission: USB, Bluetooth, wireless internal modem for acoustic coupling to telephone (telemedicine applications),

RS 232 (cable on request)

Power Supply: 4 x 1.5 V, AAA battery Weight: 180 grams battery included Dimension: 60x145x30 mm

# Option: SpO2 module

## **Technical specifications - Oximeter**

SpO2 range: 0-99%

SpO2 accuracy: ± 2% between 70-99% SpO2

Heart Rate range: 30-254 BPM

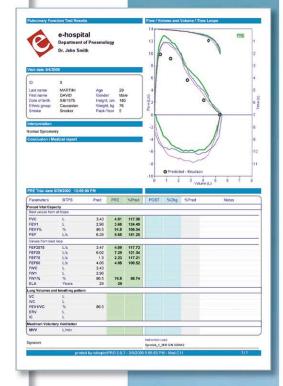
Heart Rate accuracy: ± 2 BPM or 2%, whichever is greater

# WinspiroPRO PC Software - Oximetry program

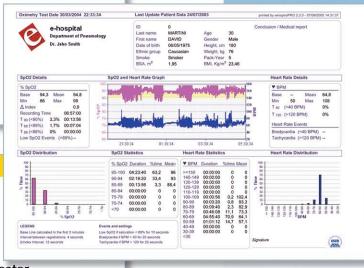
Complete SpO2 and Heart Rate graphic analysis PC on line test with real time SpO2 and HR profile Statistic analysis for assessing desaturation events

# Standard price includes: USB cable Carrying case WinspiroPRO software CD for spirometry

#### Printout with complete spirometry report



One of the oximetry report printouts available





MIR Via del Maggiolino, 125 00155 Roma - Italy tel +39 06.22754777 fax +39 06.22754785

www.spirometry.com mir@spirometry.com







Plugs directly into the USB socket on your PC
No batteries and no other connection required
Internal temperature sensor for automatic BTPS conversion
Available with disposable or reusable digital turbine flowmeter



www.spirometry.com

# **Technical data**

# Portable USB spirometer: measured parameters

FVC, FEV1, FEV1/FVC%, FEV6, FEV6%, PEF, FEF25%, FEF50%, FEF75%, FEF25-75%, FET, Vext, FIVC, FIV1, FIV1/FIVC%, PIF, \*FVC, \*FEV1, \*PEF, VC, IVC, IC, ERV, FEV1/VC%, VT, VE, Rf, ti, te, ti/t-tot, VT/ti, MVV (\* Best value)

# WinspiroPRO PC software - Spirometry program

On line PC connection with simple to use icon-based interface Flow/Volume and Volume/time curve shown in real time on PC Lung age estimation

PRE-POST bronchodilator comparison

Bronchial challenge test with FEV1 dose-response curve Spirometry interpretation with test quality assurance

Includes a series of user-selectable and amusing

paediatric incentive animations

Powerful database facilities

Printout with complete spirometry report

Data and graphs export also via e-mail

# **Technical specification**

Temperature sensor: semiconductor (0-45°C) Flow sensor: bi-directional digital turbine

Flow range: ± 16 L/s

Volume accuracy: ± 3% or 50 mL Flow accuracy: ± 5% or 200 mL/s

Dynamic resistance at 12 L/s: <0.5 cmH2O/L/s

Communication port: USB

Power Supply: line powered from USB port

Dimension: 52x128x26 mm

Weight: 60 grams

## **PC System Requirements**

Microsoft Windows: 98 (Second Edition), 2000, Me, XP

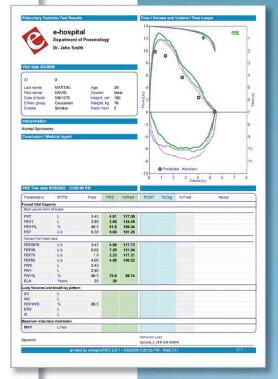
Minimum CPU: clock 300 Mhz

Minimum RAM: 64 MB

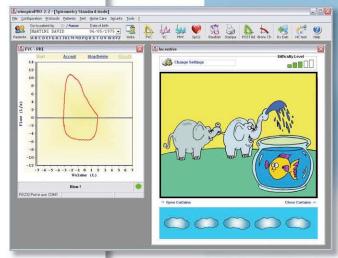
Recommended RAM: 128 MB Screen resolution: 1024 x 768 Hard disk space required: 160MB

USB socket available

**Printout** with complete spirometry report



One of the many paediatric incentive animations





**Standard price includes: USB** cable **Carrying case** 

WinspiroPRO software CD for spirometry

MIR Via del Maggiolino, 125 **8** MiniSpir 00155 Roma - Italy tel +39 06.22754777 fax +39 06.22754785 www.spirometry.com

mir@spirometry.com

Ref. Doc.MiniSpir\_Short\_ENG\_05\_Rev0.PSD







Stand-alone and on-line PC operation

Direct parallel printer connection

Automatic test interpretation

Reusable or disposable flowmeter available

No calibration required



















# Spirobank Multifunction spirometer with alphanumeric display



MIR turbines are developed in full compliance with ATS standards and do not require calibration

## **Choose between two different flowmeters**

# Reusable turbine for long term operation

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

# Disposable turbine for single patient use

- High accuracy
- Maximum hygiene guaranteed
- Easy replaceable without calibration
- Very low cost
- Available in boxes of 100 pieces





World's First!
Disposable turbine

International patent pending

# **Stand-alone spirometer**

- FVC, VC and MVV tests with PRE/POST comparison
- 26 parameters with automatic test interpretation and test quality control
- **Up to 100 test** memory capacity
- Internal temperature sensor for automatic BTPS conversion
- Several sets of predicted values
- Upgradeable internal software via internet at www.spirometry.com
- On-line PC connection

# **Easy telemedicine application**

• By using a special (optional) **internal software**, stored data can be transmitted via modem for **telemedicine applications** 

# **Direct printer connection**

- Stored test results can be printed by connecting the unit directly to a standard parallel printer.
- The **printout** gives a **full spirometry report** with **Flow/Volume curve**, results plus predicted values



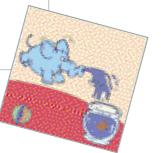


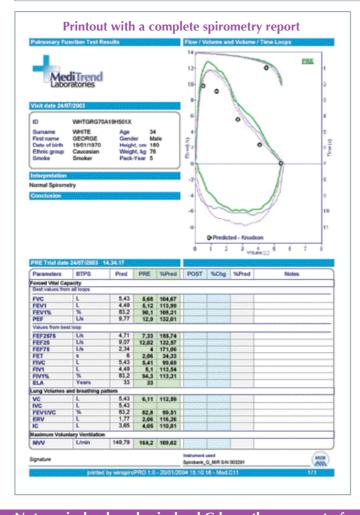
# Spirobank Multifunction spirometer with graphic display

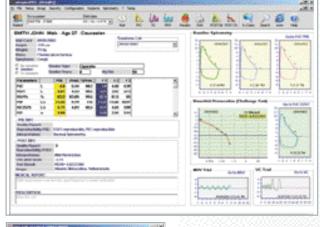
# **On-Line PC connection**

- WinspiroPRO software turns spirobank and spirobankG into an on-line clinical spirometer with the Flow/Volume curve shown on PC in real time
- PRE-POST bronchial challenge test
- **FEV1** dose-response curves
- Lung Age estimation
- Includes a series of user-selectable, and amusing, paediatric incentive animations











Note: spirobank and spirobankG have the same set of options, the only variation is the display

**Forced vital capacity:** FVC, FEV1, FEV1/FVC%, FEV6, FEV6%, PEF, FEF25, FEF50, FEF75, FEF25-75, FET, Vext, \*FVC, \*FEV1, \*PEF,

FIVC, FIV1, FIV1/FIVC%, PIF

**Slow vital capacity:** VC, IVC, IC, ERV, FEV1/VC% **Breathing pattern:** VT, VE, Rf, ti, te, ti/ttot, VT/ti

Max voluntary ventilation: MVV

(\* = Best value)

# **TECHNICAL SPECIFICATION**

**Temperature sensor:** semiconductor (0-45 °C)

Flow sensor: infrared interruption

**Max volume:** 10 L **Flow range:** ± 16 L/s

**Volume accuracy:** ± 3% or 50 mL, whichever is greater **Flow accuracy:** ± 5% or 200 mL/s, whichever is greater

**Dynamic resistance at 12L/s:** <0.5 cmH<sub>2</sub>O/L/s **Display (SpirobankG):** 120 x 32 pixel, graphic LCD

**Display (Spirobank):** 16 characters x 2 lines, alphanumeric LCD

**Keyboard:** 5 keys

Communication port: RS-232, bidirectional

**Power supply:** 9V DC (PP3 battery) **Dimensions:** 162 x 49 x 34 mm **Weight:** 180 grams (with battery)

# Standard equipment

- Reusable turbine for long term operation
- New winspiroPRO PC software
- RS-232 Interface cable
- 2 paper mouthpieces ø 30mm
- 1 plastic noseclip
- Carrying bag

#### **Options**

- **Disposable turbine** for single patient use available in boxes of 100 pieces
- USB to RS232 converter cable
- RS232 to parallel printer converter
- External modem for telemedicine applications





#### MIR

Via del Maggiolino, 125 00155 Roma - Italy tel. +39 06.22754777 fax +39 06.22754785 www.spirometry.com mir@spirometry.com



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# Asthma and COPD patient Telemonitoring via WEB

Spot and overnight SpO2 and HR measurements Sleep apnea desaturation recording Also ideal for screening in the doctor's office

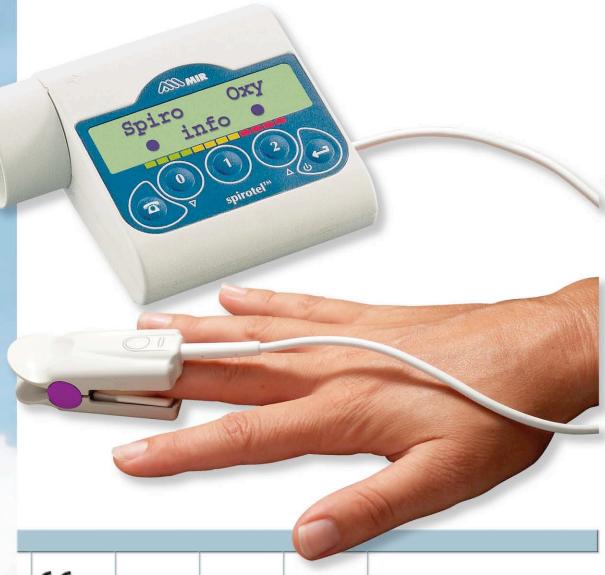
# Patient tests easily transmitted via telephone

Without modem, without wires, without problems

Doctor secure access to the patient results via Internet

Easy data analysis with comprehensive graphic presentations

World's First Telemedicine "mini-lab" for Home Care





**C E** 

FDA Approved

ATS Standard **ISO** 9001-2000 **ISO** 13485



# Spirote R Telespirometry + Oximetry in a single pocket device

# 3 data receiving systems available

- via Internet
- via PC-modem
- via RS232 cable

# spirotel records:

- Spirometry: FVC, FEV1, FEV1%, PEF, FEF 25-75, FET, Flow/Volume loop and Volume/time curve
- Oximetry: %SpO2 and Heart Rate for spot and overnight recording (every 4 sec)
- Respiratory symptoms based on programmable questions

# spirotel offers:

- COPD monitoring, sleep apnea screening, desaturation analysis
- Up to 24 hours SpO2 and HR recording
- Digital turbine for accurate measurements without calibration
- Large memory capacity for spirometry and oximetry tests
- Internal software upgradeable via WEB

# **User friendly**

- Switch ON/OFF, spirometry, oximetry and data transmission keys
- Spirometry test quality control
- Automatic test interpretation by traffic light
- Programmable warnings for SpO2 and Heart Rate levels
- Ideal for adult and pediatric monitoring

# Easy wireless data transmission

- spirotel is a pocket-sized device designed for patient use
- The test results are transmitted simply by making a call, placing the phone handset near to spirotel and pressing the key with the phone icon

# **Telemedicine**



# **PATIENT**

## spirotel

towards the "virtual clinic" with major benefits both for patient and for health system

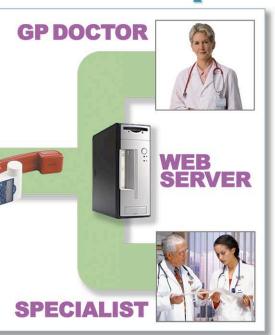
- Automatic data receiving by dedicated WEB server
- Test records accessible by the doctor via Internet
- Easy yet advanced PC software, for comprehensive data analysis
- Patient risk highlight by traffic light "flag" (green, yellow,red)
- Email or SMS message to the doctor to advise of data reception



# WinspiroPRO PC Software

- Spirometry parameters, curves and symptoms trends for an ideal evaluation of patient's follow-up
- Sleep apnea detection and "walking test" recording with %SpO2 and Heart Rate profile
- Statistic analysis to assess desaturation events
- Data and graphs export also by email
- Can be integrated into other management systems

# made simple

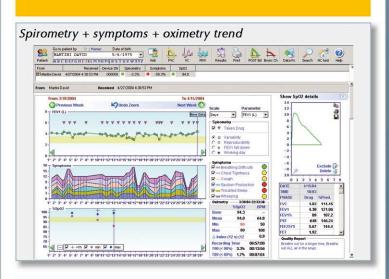


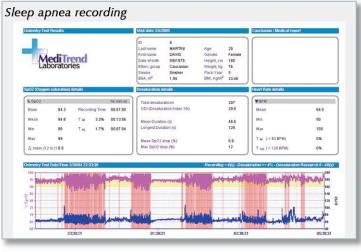
# Perfect for clinical trials teleconsulting and e-Health Care

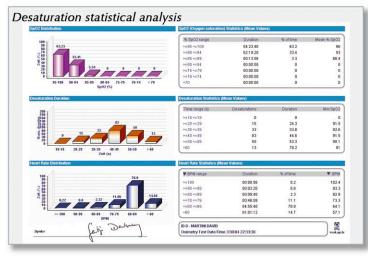
Usable in remote locations and in extreme conditions



Option:
the test results can
be transmitted directly
to the doctor's mobile phone via MMS







# Spirotel® Telespirometry + Oximetr







# **Technical Specifications spirometer**

Weight: 100 g with battery - Dimensions: 70x80x30 mm

Power supply: 3V Lithium battery CR123A Keyboard: Membrane keyboard, 5 keys

Display: STN LCD, 2 lines x 16 alphanumeric characters Data transmission: RS232 at 9600 baud or via telephone

Flow sensor: Digital Turbine Test duration: Maximum 60 s

Flow range: ± 16 L/s

Flow accuracy: ± 5% or 200 mL/s, whichever is greater

Max volume: 10 L

Volume accuracy: ± 3% or 50 mL, whichever is greater

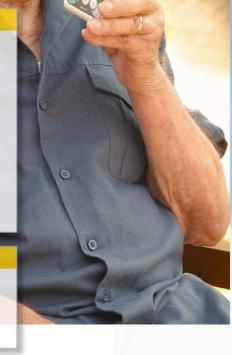
# **Technical Specifications oximeter**

SpO2 range: 0-99%

SpO2 accuracy:  $\pm 2\%$  between 70-100% SpO2

HR range: 30-254 BPM

HR accuracy: ±2 BPM or 2%, whichever is greater



MIR

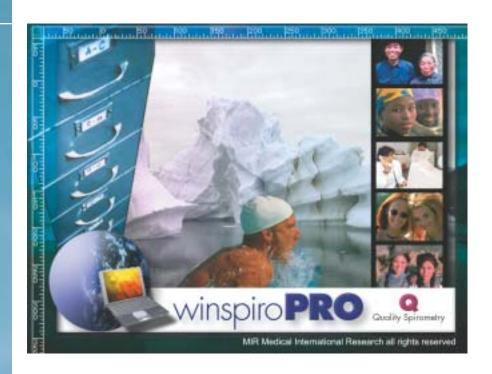
Via del Maggiolino, 125 00155 Roma - Italy tel. +39 06.22754777 fax +39 06.22754785

> www.spirometry.com mir@spirometry.com



# innovation WINSPIROPRC The software for

maximum spirometry performance





The most complete spirometry software for real time testing on and downloading to your PC

Includes FVC, VC and MVV testing plus a whole lot more

# 10 reasons to go Winspiro PRO

- New web browser and XP based user interface
- Simple, single-screen patient spirometry summary with dynamic management of all data and curves
- New and intuitive hyperlinked spirometry curves
- Bronchial challenge and bronchial dilator protocols, with "one click" operation
- Direct email of spirometry data and curves
- Network ready software with powerful SQL database, for large-scale data collection
- Suitable for clinical trials and telemedicine applications.
- Direct hyperlink to MIR web site for easy access to software updates, service etc
- Includes internal software upgrade for your MIR spirometer
- The most complete spirometry software package available today



Ref.Doc. WinspiroPRO\_ENG\_02\_rev0.qxd



# SPIROMETRY OXIMETRY TELEMEDICINE

# **Latest products**



The world's first disposable turbine





# Minispir

Spirometer connected to the PC via USB cable, with automatic BTPS conversion of the measured parameters.
Includes Winspiro PRO PC software.



surname.

Spirobank II
Spirometer with oximetry option.
Patient data is inserted by name and

Memory with capacity for 6000 spirometry tests or

1000 hours (40 days) of oximetry recording. Sleep apnea detection with desaturation events recording. Walking test with timer and alarm for the rest, walking and recovery phases. Connectivity: USB, Bluetooth, RS232 plus acoustic modem.

Includes Winspiro PRO PC software.

# **Portable devices**



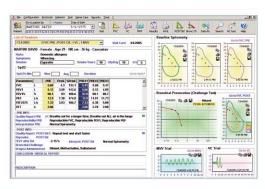
Spirolab, Spirolab II

Diagnostic spirometer with colour or monochrome display, easy touch keys with intuitive icons, complete alphanumeric keyboard, rechargeable battery and thermal printer. Memory capacity:

- Spirolab II 1.500 spirometry tests
- Spirolab 750 spirometry tests Over 30 parameters with automatic interpretation FVC, VC, MVV and breathing pattern. Includes Winspiro PRO PC software.

#### WinspiroPRO

A simple and intuitive software which transforms MIR instruments into on-line devices with advanced spirometry and oximetry functions.



# **Pocket devices**





**Spirodoc** Spirometer with oximetry option, ideal for screening.





mir@spirometry.com

# Spirotel

Telespirometry and teleoximetry in a single device.

When used at home the results can be transmitted acoustically to a central computer (Web Server) using a standard telephone line or via Bluetooth without modem, without wires, without problems. The test data can then be accessed by the doctor via internet.

# P + vin P = mn P = max Trend analysis:

C Prestous West B- HVIGI-

- spirometry
- symptoms
- oximetry

Sleep oximetry

**Telespirometry and Teleoximetry** 

Exclude []



Mean SpO2 grop (%)

