MIR
MEDICAL INTERNATIONAL RESEARCH

Spirotel ®

GSM SIM Card Inside!

Mobile Health Mini-Laboratory

Spirotel ® is a Pocket Laboratory which integrates

4 devices in one

Spirometer
with "Touch Screen" display

Intelligent 3D Oximeter ®
with on screen results

Triaxial Accelerometer
with motion analysis for therapy monitoring

e-diary
for home care symptom control

www.spirometry.com www.oximetry.com

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Spirotel ®

Clinical Trials
Home Care Respiratory Tests
Data Transfer via Email

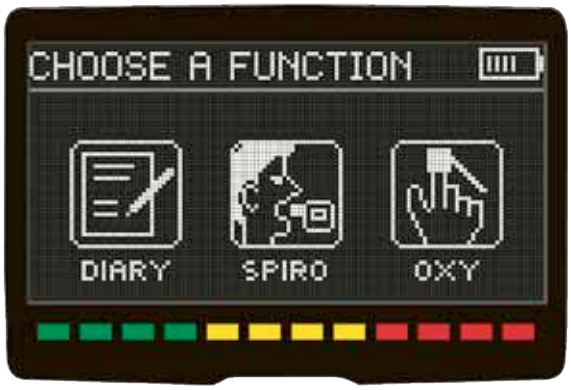
Oximeter

The intelligent 3D Oximeter® introduced by MIR correlates SpO2 measurement with the triaxial accelerometer by calculating physical activity and body position during the registration of desaturation events: i.e. while standing, walking, sleeping etc. and shows the results directly on the display.

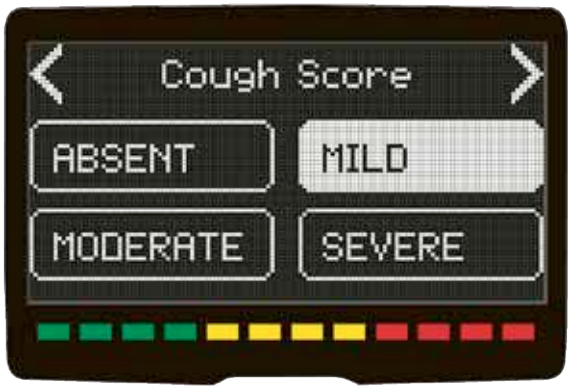
Spirometer

The removable reusable turbine flowmeter guarantees a robust and secure connection. The parameters and trends are shown directly on the touch screen display.

The turbine is easy to remove for cleaning, and is accurate, repeatable, robust and extremely durable.



Main Menu



Symptom Score Example

Data Transfer

The results can be transmitted via USB or Bluetooth.
Among the principal innovations introduced by Spirotel ® is the option of GSM/GPRS/ EDGE embedded module which allows the transmission of recorded data via Email or via FTP to a web server.

Real Time Test via Internet

Thanks to the GSM/GPRS/EDGE embedded module Spirotel ® is able to perform Real Time measurements directly via Internet.
This option also allows Spirotel ® to transmit and receive SMS with alert messages for the patient or with reconfiguration data (alarms, thresholds etc.).

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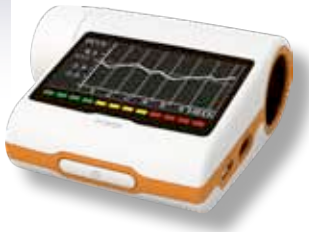

Spirotel ® Technical Data

Central unit
Display: LCD Backlit Touch screen Display (resolution: 160x80), with "traffic light" indication.
Power supply: Lithium ion 3.7V, 1.100mA rechargeable (battery for 40 hours continuous measurement back-up).
Data transmission: USB 2.0, (Bluetooth® optional), (GPRS-EDGE optional).
Accelerometer: Triaxial ± 2g, 400Hz sampling.
Memory: non-volatile flash memory (with capacity for more than 10.000 spirometry tests).
Alarms type: multiple alarm settings with automatic switch ON for session reminder.
Reconfigurable data (alarms, threshold etc): via SMS and secure connection with web-server (with the optional GPRS-EDGE module).
Dimensions and weight: central unit 92x88x38mm, 124g.
Removable turbine (reusable): 89x35mm, 20g.
Battery charger (optional): 100VAC - 240VAC, 50Hz-60Hz. output 5VDC, 500mA, micro USB type B.

Spirometer
Flow sensor: bi-directional digital turbine.
Flow range: ±16L/s.
Volume accuracy: ±3% o 50mL, whichever is greater.
Flow accuracy: ±5% o 200mL/s, whichever is greater.
Dynamic resistance at 12L/s: <0.5cmH2O/L/s.
Temperature sensor type: digital (0-45°C) for authomatic BTPS conversion.

3D Oximeter® (optional)
SpO2 range: 0-100%.
SpO2 accuracy: ±2% (50-100% SpO2).
Pulse rate range: 20-254BPM.
Pulse rate accuracy: ±2BPM or 2%, whichever is greater.

Spirometer measured parameters
FVC, FEV1, FEV1/FVC%, FEV3, FEV3/FVC%, FEV6, FEV1/FEV6%, PEF, FEF25%, FEF50%, FEF75%, FEF25%-75%, FET, Estimated Lung Age, Extr. Vol., FIVC, FIV1, FIV1/FIVC%, PIF, VC, IVC, IC, ERV, FEV1/VC%, VT, VE, Rf, ti, te, ti/t-tot, VT/ti, MVV measured, MVV calculated

3D Oximeter® measured parameters (standard)
SpO2 [Baseline, Min, Max, Mean], Pulse rate [Baseline,Min, Max, Mean], T90% [SpO2<90%], T89% [SpO2<89%],T88% [SpO2<88%], T5% [ΔSpO2>5%], ΔIndex [12s], SpO2 Events, Pulse rate events [Bradycardia, Tachycardia], Step counter, Movement [VMU], Recording time, Analysis time.

Sleep analysis (specific parameters)
Body position, SpO2 Events, Desaturation index (ODI), Desaturation [Mean Value, Mean duration, Longest duration, Nadir Peak], ΔSpO2 [Min Drop, Max Drop], Total Pulse Variations, Pulse Rate Index, NOD89% [SpO2<89%; >5min], NOD4% [SpO2 Basale-4%; >5min], NOD90% [SpO2<90%; Nadir<86%; >5min].

6MWT (6 Minute Walk Test specific parameters)
O2-Gap, Estimated distance, Distance walked, Predicted distance [Min, Standard], TΔ2% [SpO2≥2%], TΔ4% [ΔSpO2≥4%], Time [Rest, Walking, Recovery], Desaturation Area/Distance.
Optional data entry: Borg Dyspnea [Baseline, End, Change], Borg Fatigue [Baseline, End, Change], Arterial blood pressure [Systolic, Diastolic], Oxygen administered.

Bluetooth module technical specifications (optional)
Fully qualified Bluetooth v2.1+EDR.
SPP (serial port profile) and DUN (Dial-Up Networking Profile) for the direct connection with the internal modem of a mobile phone.
Dual role (master and slave).

GPRS-EDGE module technical specifications (optional)
Quad-Band 850/900/1800/1900 MHz.
EDGE (E-GPRS) multi-slot class 10.
GSM 850/900MHz power class 4 (33dBm) .
GSM 1800/1900MHz power class 1 (30dBm).
Internal antenna (gain 2.42 dBi).
SMS MT, MO.
SMS CB.
SMS storage into SIM card.
Internet protocols: TCP/IP, SSMTP, FTP, HTTP, POP3.
Secure connection protocol: SSL.
Symmetric key encryption: DES, 3DES, RC2,RC4.
Asymmetric key encryption: RSA, DSS.
Certified R&TTE, FCC, PTCRB.

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