



## Technical specification

|           |                                |
|-----------|--------------------------------|
| Width     | 220 mm                         |
| Length    | 210 mm                         |
| Thickness | 51 mm                          |
| Weight    | 1450 g (battery pack included) |

### Sensors



miniflowmeter (code 900595)  
for reusable and disposable turbine  
dimension (Ø 30 mm, 42 mm)



Reusable soft, adult, MIR sensor for oximetry tests (code 919024) only for spirolab code 911081

|                               |                                                                              |
|-------------------------------|------------------------------------------------------------------------------|
| Power supply                  | Rechargeable battery and mains power Ni-MH, 6 elements                       |
| Current capacity              | 4500 mAh                                                                     |
| Consumption                   | average 250 mA                                                               |
| Backup battery voltage        | none                                                                         |
| Batteries charger             | Output voltage=12 V, current=1A, compliant with EN 60601-1                   |
| Autonomy                      | ~10 hours                                                                    |
| Connectivity                  | USB 2.0, Bluetooth® 2.1                                                      |
| Display                       | 7 inch colour touch screen LCD<br>Display with 800x480 resolution            |
| Keyboard                      | absent, touchscreen                                                          |
| Mouthpieces                   | Ø 30 mm (1.18 inch)                                                          |
| Type of electrical protection | Internally powered<br>Class II while charging battery                        |
| Safety level for shock hazard | Type BF Apparatus                                                            |
| Conditions of use             | Apparatus for continuous use                                                 |
| Storage conditions            | Temperature: MIN -40 °C,<br>MAX +70 °C<br>Humidity: MIN 10% RH;<br>MAX 95%RH |

|                      |                                                                                |
|----------------------|--------------------------------------------------------------------------------|
| Transport conditions | Temperature: MIN -40 °C,<br>MAX +70 °C<br>Humidity: MIN 10% RH;<br>MAX 95%RH   |
| Operating conditions | Temperature: MIN + 10 °C,<br>MAX + 40 °C<br>Humidity: MIN 10% RH,<br>MAX 95%RH |

|                                                |                                                                             |
|------------------------------------------------|-----------------------------------------------------------------------------|
| Applied norms                                  | Electrical Safety EN 60601-1<br>Electro Magnetic Compatibility EN 60601-1-2 |
| Degree of protection against water penetration | IPX1 appliance protected against water leaks                                |

## Codes and equipments

|          |                             |
|----------|-----------------------------|
| 911080E0 | spiro                       |
| 911080E1 | spiro with reusable turbine |

|          |                                 |
|----------|---------------------------------|
| 911080E2 | spiro with 120 FlowMir          |
| 911081E0 | spiro+oxy                       |
| 911081E1 | spiro+oxy with reusable turbine |
| 911081E2 | spiro+oxy with 120 FlowMir      |

## Spirometry

|                     |                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flow sensor         | bi-directional digital turbine                                                                                                                                                                                                                                                                                                                                                                               |
| Volume rate         | 10 L                                                                                                                                                                                                                                                                                                                                                                                                         |
| Flow range          | ±16L/s                                                                                                                                                                                                                                                                                                                                                                                                       |
| Volume accuracy     | ±2.5% or 50 mL                                                                                                                                                                                                                                                                                                                                                                                               |
| Flow accuracy       | ±5% or 200 mL/s                                                                                                                                                                                                                                                                                                                                                                                              |
| Dynamic resistance  | <0.5 cm H <sub>2</sub> O/L/s                                                                                                                                                                                                                                                                                                                                                                                 |
| Temperature sensor  | semiconductor (0-45°C)                                                                                                                                                                                                                                                                                                                                                                                       |
| Test available      | FVC, VC, IVC, MVV, PRE-POST FVC, FEV1, FEV1/FVC%, FEV1/PEF, FEV1/VC, FEV1/FEF0.5, DTPEF, FEV 0.5, FEV0.5/FVC, FEV0.75, FEV0.75/FVC, FEV2, FEV2/FVC, FEV3, FEV3/FVC, FEV6, FEV1/FEV6, PEF, FEF25, FEF50, FEF75, FEF2575, FEF7585, FET, Vext, ELA, EVOL, FIVC, FIV1, PIF, FIV1/FIVC, FIF25, FIF50, FIF75, R50, MVVcal, PIF, IRV, VC, EVC, IVC, IC, ERV, IRV, FEV1/VC, TV, VE, RR, ti, te, ti/t-tot, TV/ti, MVV |
| Measured parameters | Up to 10000 tests                                                                                                                                                                                                                                                                                                                                                                                            |
| Memory capacity     | Up to 10000 tests                                                                                                                                                                                                                                                                                                                                                                                            |

## Oximetry (on request)

|                                                                     |                                                                                                                                                                                                                   |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement method                                                  | Red and infrared absorption                                                                                                                                                                                       |
| SpO <sub>2</sub> range                                              | 0-99%                                                                                                                                                                                                             |
| SpO <sub>2</sub> accuracy                                           | ± 2% between 70-99% SpO <sub>2</sub>                                                                                                                                                                              |
| Average number of heart beats for the %SpO <sub>2</sub> calculation | 8 beats                                                                                                                                                                                                           |
| Pulse Rate range                                                    | 18-300 BPM                                                                                                                                                                                                        |
| Pulse Rate accuracy                                                 | ± 2BPM or 2% whichever is greater                                                                                                                                                                                 |
| Average interval for the calculation of cardiac pulse               | 8 seconds                                                                                                                                                                                                         |
| Signal quality indication                                           | 0 - 8 segments on display                                                                                                                                                                                         |
| Test available                                                      | spot                                                                                                                                                                                                              |
| Measured parameters                                                 | SpO <sub>2</sub> % min, max, average<br>BPM min, max, average<br>Test duration<br>% Bradycardia Duration (<40 BPM)<br>% Tachycardia Duration (>120 BPM)<br>% of Time with SpO <sub>2</sub> ≤ 90% (T90%, T89%), T5 |
| Memory capacity                                                     | about 500 hours oximetry                                                                                                                                                                                          |

## Certificates & Registrations

|                    |                                                                   |
|--------------------|-------------------------------------------------------------------|
| CE 0476            | MED 9826                                                          |
| FDA 510 (k)        | K 052140                                                          |
| Health Canada      | 71191 (class II)                                                  |
| CND code           | Z12150102 (spiro)<br>Z1203020408 (spiro + oxy)                    |
| GMDN code          | 46906 (spiro), 45607 (spiro + oxy)                                |
| Ministry of Health | 1272475/R (spiro)<br>1272476/R (spiro + oxy)<br>1645455/R (spiro) |