



## SIARETRON 4000 ICU

### Intensive care ventilator

code: 960400

rev. 3 - 20/06/2008



#### Main characteristics

The Siaretron 4000 ICU electronic lung ventilator is equipped with a TFT 15" colour monitor displaying the curves of pressure, flow, volume, the loops of breathing parameters, the trends and the ventilatory parameters.

The ventilator is suitable for adult, children and newborn patients; complete with flow trigger and pressure one. It is equipped with the most modern ventilatory methods: controlled volume ventilation (IPPV), controlled pressure ventilation (PCV), SIMV, assisted pressure ventilation (PSV), CPAP, non-invasive ventilation NIV and APRV, drug nebulizer, BILEVEL CPAP, SIGH and Manual.

Siaretron 4000 ICU is supplied with back up long lasting batteries and its software can be updated for new modes and last generation ventilatory strategies.

#### TECHNICAL DATA

|                               |                                |
|-------------------------------|--------------------------------|
| Dimensions (portable version) | 410 x 310 x 350 mm (W x H x D) |
| Dimensions (trolley version)  | Not available                  |
| Weight (portable version)     | About 10 Kgs                   |
| Weight (trolley version)      | Not available                  |
| Relative Humidity (use)       | 30 – 95% RH                    |
| Working temperature           | From 10 to 40 C°               |



---

## OPERATION DATA

---

|  |  |
|--|--|
| Use destination                                      | High performance Intensive care ventilator, equipped with 15" TFT colour monitor for adults, children and newborns (weight > 3.5 kg)   |
| Operation principle                                  | <ul style="list-style-type: none"><li>• Time Cycled at constant volume</li><li>• Pressure cycled</li><li>• Microprocessor controlled flow</li><li>• Spontaneous breath with integrated valve</li></ul> |
| Ventilation modalities                               | IPPV, IPPV-AST , PCV-PRVC , SIMV+PS-SPONT, PSV , CPAP , BILEVEL CPAP, MANUAL , SIGH , NEB , APRV , Apnoea BACK-UP , NIV  |
| Breathing rate                                       | From 5 to 150 bpm  |
| Inspiratory Time; Expiratory Time (maximum, minimum) | Ti min = 0.08 s (minimum inspiratory time)<br>Ti max = 9.6 s (maximum inspiratory time)<br>Te min = 0.08 s (minimum expiratory time)<br>Te max = 9.6 s (maximum expiratory time)                       |
| SIMV Breathing rate                                  | From 0 to 149 bpm  |
| SIMV Inspiratory time                                | From 0.1 to 2.0 sec.   |
| Tidal volume   | Adult from 100 to 3000 ml<br>Paediatric / Neonatal from 10 to 300 ml   |
| I:E ratio  | 1:4 , 1:3 , 1:2 , 1:1 ; 2:1 ; 3:1 , 4:1  |
| Inspiratory pause                                    | From 0 to 50 % of the inspiratory time   |
| Inspiratory pressure limit                           | From 0 to 80 mbar  |
| PEEP   | From 0 to 30 mbar  |
| BILEVEL CPAP   | Pressure, low level: 0 - 35 mbar<br>Time, low level: from 1 to 100 seconds<br>Pressure, high level: 5 - 40 mbar<br>Time, high level: from 1 to 100 seconds   |

---



|                                      |   |
|--------------------------------------|---|
| Minute volume with 1:2 ratio         | Max. 40 l/min.  |
| Accuracy on Tidal Volume measurement | +/- 20% of real reading above 100ml<br>+/- 20ml of real reading below 100ml   |
| O2 concentration                     | Adjustable from 21 to 100% with electronic integrated mixer   |
| Trigger                              | Pressure trigger: adjustable from off; 1 to 9 mbar under PEEP level<br>Flow trigger: adjustable from off; 1 to 15 l/min |
| Trigger detective method             | Through sensor (pressure or flow)   |
| Max. inspiratory flow                | From 1 to 100 l/min   |
| SIGH                                 | Selectable rate<br>Selectable volume adjustable in % of set Tidal Volume  |
| Drug nebulizer                       | Selectable to 6 l/min with automatic compensation on forced ventilation modes and dedicated output                      |
| Supply pressure                      | O2 – Aria: pressure included between 280 kPa and 600 kPa (2,8 - 6 bar)<br>Max flow requested from ventilator: 120 l/min |
| Patient circuit                      | Double-hose, non rebreathing  |
| Other controls                       | Button 100% O2 x 5 min<br>INSP Block and EXP Block (max. 20 seconds)<br>Nebulizer                                       |
| Expandability                        | Software upgradeable for future modalities  |
| Dead space compensation              | Automatic compensation of mechanical and patient circuit dead space   |

## **GAS CONSUMPTION**

|               |                           |
|---------------|---------------------------|
| Control       | Around 2 l/min            |
| Minute volume | Same as set minute volume |



## MONITORING AND USER INTERFACE

---

15" TFT colour display

The display allows:

- setting and displaying of physiological breathing parameters
  - displaying of alarm signs and messages
  - displaying of operative modes, Trigger, time function, date and timer
  - setting of MENU function
  - setting of the language, trigger, clock setting
  - displaying of software version
- 

Display keyboard

Lateral keyboard for rapid access of functions

Encoder for:

- selection, set up and confirmation of physiological breathing parameters
  - selection and direct activation of function
- 

Settable parameters

Tidal Volume - Flow - Minute Volume - Insp. Time (SIMV) - Rate - I:E Ratio - Insp. Pause - PEEP - CPAP - PAW Limit - FiO<sub>2</sub> - TRIGGER - Width and interval, SIGH - Pressure and Time for BILEVEL CPAP

---

Measured parameters (BTPS)

- PAW: peak, mean, plateau, PEEP (range -20 -- 80 cmH<sub>2</sub>O)
  - T<sub>insp.</sub>, T<sub>exp</sub>, T<sub>pause</sub> (range 0.08 -- 9.6 s)
  - I:E ratio (range 1:4 -- 4:1)
  - Compliance (range: 10 -- 150 ml/cmH<sub>2</sub>O)
  - Resistance (range: 0 -- 400 cmH<sub>2</sub>O/l/s)
  - % of FiO<sub>2</sub> (range: <18% -- 100%)
  - Rate (range: 0 -- 150 bpm)
  - Tidal Volume: V<sub>Te</sub>, V<sub>ti</sub> (range: 10 -- 3000 ml)
  - Minute Volume (range: 0 -- 40 l/min)
  - Flow peak: Exp. - Insp. (range: 1 -- 100 l/min insp.; 1 -- 150 l/min exp.)
  - FiCO<sub>2</sub>, FeCO<sub>2</sub>: with optional CO<sub>2</sub> module (range: 0 -- 10%)
-



---

|                                     |  |
|-------------------------------------|--|
| MENU function (function for set up) | <ul style="list-style-type: none"><li>• operative modes</li><li>• alarms (manual or automatic)</li><li>• graphical display</li><li>• parameter trend (trend)</li><li>• functioning set up</li><li>• system information</li></ul> |
| Displayed graphics                  | CURVES: Pressure - Flow - Volume<br>LOOPS : Pressure / Volume - Flow / Volume<br><br>(max. flow range: -150 – 150 l/min; max. volume range: 0 – 2500 ml; max. pressure range: -20 – 80 cmH <sub>2</sub> O)                       |
| Graphical set up                    | Time, PAW Range – FLOW – VOLUME  |
| Trend                               | Parameter trends: PAW (peak, mean) - PEEP - Tidal Volume – Minute Volume - FiO <sub>2</sub> - Rate   |
| Trend duration                      | Up to 340 h. with minimal resolution of 5 min.   |
| Flow sensor                         | Magnetic perturbation, multi-usage, stérilisable<br>Flow sensor calibration  |
| Oximeter                            | Electronic with automatic calibration at the start up.   |
| Capnometria ( optional )            | CO2 module code: A57.049201  |

---

## ALARMS

---

|                  |   |
|------------------|---|
| Selecting system | Automatic ( +/- 20 % )<br>Manual (with limit set up)  |
| Alarm types      | With limits set by the operator<br>By default: the operator cannot set them up                          |
| Alarm silencing  | Possible on some of the parameters ( Low gas pressure – Power off - O2 Sensor - 1000 hours maintenance) |
| Alarm priority   | High - Mean - Low - Standby - Memo  |

---



---

**Alarms with limits set up by the operator**

---

|                       |   |
|-----------------------|---|
| FiO <sub>2</sub>      | High – Low  |
| Paw                   | High – Low  |
| Expired Minute Volume | High – Low  |
| Expired Tidal Volume  | High – Low  |
| Breathing rate        | High – Low  |
| FiCO <sub>2</sub>     | High – Low (with optional CO <sub>2</sub> module) |
| FeCO <sub>2</sub>     | High – Low (with optional CO <sub>2</sub> module) |

---

**System alarms**

---

|                                |   |
|--------------------------------|---|
| Apnoea                         | Low Rate (function of Apnoea BACK-UP)<br>Activation time 30 seconds |
| Gas feeding: O <sub>2</sub>    | Low (< 2,7 bar)   |
| Gas feeding: Air               | Low (< 2,7 bar)   |
| Electric power supply          | Alarm occurs in case of failure of external power supply            |
| Low Battery                    | Alarm occurs in case the battery power is lower than 11 Vdc         |
| O <sub>2</sub> Sensor          | Connection status and/or sensor status                              |
| Maintenance                    | 1000 ore  |
| FiO <sub>2</sub> concentration | < 18%   |
| Fan                            | Not working fan   |
| PAW                            | High – Low  |

---

**POWER SUPPLY**

---

|                            |  |
|----------------------------|--|
| Electric power supply      | 100-230 Vac 50-60Hz<br>12 V dc with external auxiliary battery |
| Power                      | 80 Watt  |
| Internal power supply      | From 1 to 3 battery packs: 12 Vdc / 3,4 Ah (each battery pack) |
| Internal battery operation | 3 hours max. (1 battery pack in perfect working conditions)    |
| Re-charging time           | About 4 hours  |

---



---

|                      |  |
|----------------------|--|
| External connections | <ul style="list-style-type: none"><li>• RS232</li><li>• Optional: Serial connection to PC (transfer patient data, events, graphics and trends)</li></ul> |
|----------------------|--|

---

## CAPNOMETRIA ( optional )



---

|                        |   |
|------------------------|---|
| Capnometry connection  | Available: O <sub>2</sub> , CO <sub>2</sub> ,   |
| Description            | Ultra small infrared main stream multi-gas probe comprising a multi channel IR-bench, barometric pressure sensor, power regulator, signal processor and a RS-232 interface. |
| Measuring mode         | Mainstream  |
| Dimensions and weight  | 37 x 27 x 25 mm<br>< 30 g (cable not included)  |
| General specifications | See on relative Multigas Analyzer Modules for ICU technical data sheet  |

---

## CONFORMITY TO NORMS

ISO 5369, EN 1281-1, IEC 601-1, IEC 601-1-2, Directive 93/42 EEC, EN 4135, IEC 601-1-4, NF S 90-118, EN 794-1, UNI CEI ISO 14971, UNI EN 475, UNI EN ISO 9703-3.

---

|                                       |                |
|---------------------------------------|----------------|
| Class and type according to IEC 601-1 | Class 1 Type B |
|---------------------------------------|----------------|

---

|  |           |
|--|-----------|
| Class according to 93/42 EEC Directive | Class IIb |
|--|-----------|

---



---

## ACCESSORIES

---

### Supplied Accessories

- O2 supply hose (code G60005100)
- AIR supply hose (code G60007100)
- O2 cell (code E75000004)
- Flow transducer (code G80300000)
- Nebulizer set (code 600100)
- Silicone patient circuit for adults (code 001562/SLR)
- Antibacterial filter (cod. A36.049011)
- Power cable, SHUKO-VDE (cod. G30105100)
- Air filter (cod. G00212000)
- User's Manual

---

### Optional Accessories

See on Export Price List

---



Connect With Us

