

## O.R. monitor provides superior flexibility and performance

**Measures 3/5 Lead ECG with ST Segment Monitoring, NIBP, SpO<sub>2</sub>, Respiration and Dual Temperature**

Also available with Anesthetic Agent Monitoring, Automatic Agent I.D., Dual IBP, and EtCO<sub>2</sub>



The Waveline Pro displays as many as eight colorful waveforms on a crisp 15" high resolution screen. The O.R. Monitor is lightweight, portable and measures multiple parameters, including ECG (3 or 5 lead) with ST Segment Monitoring, Respiration, Dual Temperature, SpO<sub>2</sub> and NIBP. Configurations are available that measure Capnography, Dual Channel IBP, Anesthetic Agents, and Automatic Agent I.D. The Waveline Pro is also available with a built-in thermal printer.

### A Quick Look

- Standard 3/5 lead ECG with ST segment monitoring, NIBP, SpO<sub>2</sub>, respiration and dual temperature.
- Optional CO<sub>2</sub> (mainstream and/or sidestream), dual invasive blood pressure monitoring, anesthetic agent monitoring, and strip chart printer.
- 8-waveform display with large waveforms and digits.
- Simultaneous multi-lead ECG monitoring.
- Auto setting of alarm limits.
- Color-coded alarms.
- Graphical and tabular trends (48 hour).
- Patient data entry.
- Battery backup (2 removable batteries).
- Networking capability (wireless and non-wireless).
- Bigger time stamp in upper right corner
- Standby button
- Revised SpO<sub>2</sub> pitch tone is still audible when SpO<sub>2</sub> rate decreases.
- Volume and Sounds are adjustable and now can be turned off completely
- Option to print Numerical Data Only
- Color of the waveforms can be changed



### Physical Dimensions & Weight

Base Unit: 12.1"/309 mm (H) x 14.4"/365 mm (W) x 6.3"/159 mm (D)  
 Weight: 17.6 lbs/8.0 kgs (including anesthetic agents module and batteries)

### Application

Neonatal, pediatric and adult patients

### Performance Specifications

Display: 15" color TFT, Resolution 1024 x 768  
 Trace: 8 waveforms  
 Indicator: Alarm indicator  
 Power indicator  
 QRS beep and alarm sound

Trend time: 1 ~ 48 hours  
 Recorder: Built-in, thermal array, 2 channels  
 Record width: 1.9"/48 mm  
 Recorder paper: 2"/50 mm  
 Record speed: 25 mm/s, 50 mm/s

### ECG

Input: 5-lead ECG cable and standard AAMI line for connection  
 Lead Choice: I, II, III, aVR, aVF, aVL, V, TEST  
 Gain Choice: x0.5, x1, x2, x4  
 Frequency Characteristic: 0.05 ~ 35 HZ (+3dB)  
 ECG Waveforms: 7 channels  
 Penetration Voltage: 4000VAC 50/60Hz  
 Sweep Speed: 12.5, 25 and 50 mm/s  
 HR Display Range: 30 ~ 300bpm  
 Accuracy:  $\pm 1$  bpm or  $\pm 1\%$ , whichever is greater  
 Alarm Limit Range Setting: Upper limit 100 ~ 200 bpm; Lower limit 30 ~ 100 bpm

### RESP

Measure Method: RA-LL impedance  
 Range: 0 ~ 120 rpm  
 Accuracy:  $\pm 3$  rpm  
 Alarm Limit Setting: Upper limit 6 ~ 120 rpm; Lower limit 3 ~ 120 rpm  
 Sweep Speed: 12.5 and 25 mm/s

### TEMP

Range: 25° ~ 50° (C)  
 Accuracy:  $\pm 0.2^\circ$  C (25.0° ~ 34.9° C)  
 $\pm 0.1^\circ$  C (35.0° ~ 39.9° C)  
 $\pm 0.2^\circ$  C (40.0° ~ 44.9° C)  
 $\pm 0.3^\circ$  C (45.0° ~ 50.0° C)  
 0.1° C

Display Resolution: 0.1° C  
 Alarm Limit Setting: Upper limit 0° ~ 50° C, lower limit 0° ~ 50° C  
 Channel: 2 channels

### SpO<sub>2</sub>

ASpO<sub>2</sub>: Anti-motion SpO<sub>2</sub>  
 SpO<sub>2</sub> % Range: 0 ~ 100%  
 SpO<sub>2</sub> Accuracy:  $\pm 2\%$  (70 ~ 100%, non-motion)  $\pm 3\%$  (70 ~ 100%, motion)  
 Pulse Rate Range: 30 ~ 250 bpm  
 Pulse Rate Accuracy:  $\pm 2$  bpm (non-motion)  $\pm 3$  bpm (motion)  
 Alarm Limit Setting: Upper limit 70 ~ 100%, lower limit 70 ~ 100%  
 SpO<sub>2</sub> Probe: Red light LED wavelength; 660nm $\pm$ 5nm  
 Infrared light LED wavelength; 940nm $\pm$ 10nm

### NIBP

Measuring Technology: Automatic oscillating measurement  
 Cuff Inflating: <30s (0 ~ 300 mmHg, standard adult cuff)  
 Measuring Period: AVE<40s  
 Mode: Manual, Auto  
 Measuring Interval in AUTO Mode: 2 min ~ 4 hrs  
 Pulse Rate Range: 30 ~ 250 (bpm)  
 Measuring Range: Adult/Pediatric Mode  
 SYS: 40 ~ 250 (mmHg) DIA: 15 ~ 200 (mmHg)  
 Neonatal Mode  
 SYS: 40 ~ 135 (mmHg) DIA: 15 ~ 100 (mmHg)  
 Resolution: 1mmHg

### NIBP (cont.)

Accuracy: Maximum Mean error:  $\pm 5$ mmHg  
 Maximum Standard Deviation: 8mmHg  
 Overpressure Protection: Adult Mode: 300(mmHg) Neonatal Mode: 160 (mmHg)  
 SYS: 50 ~ 240 mmHg DIA: 15 ~ 180 mmHg

### Alarm Limit Setting:

### IBP

Measurement Range: -50 ~ 300mmHg  
 Channel: 2 channels  
 Pressure Transducer: Sensitivity, 5 $\mu$ V/V/mmHg  
 Impedance Range: 300 ~ 3000 $\Omega$   
 Transducer Sites: ART, PA, CVP, RAP, LAP, ICP  
 mmHg/kPa selectable  
 Unit: 1 mmHg  
 Resolution:  $\pm 1$  mmHg or  $\pm 2\%$ , whichever is greater  
 Accuracy:  $\pm 1$  mmHg or  $\pm 2\%$ , whichever is greater  
 Alarm Range: -10 ~ 300 mmHg

### EtCO<sub>2</sub> (Dräger)

CO<sub>2</sub> Measurement Range: 0 ~ 99 mmHg  
 Accuracy:  $\pm 2$  mmHg (0 ~ 38 mmHg)  
 39-99 mmHg  $\pm 5\%$  of reading + 0.08% for every 1 mmHg (above 38 mmHg)  
 Sampling Rate: 50 ml/min  
 Initialization Time: 30 seconds (typical), reaches  $\pm 5\%$  steady-state accuracy within 3 minutes  
 Respiration Rate: 0 ~ 150 breaths/min  
 Mode: Adult, neonate

### Anesthetic Agents

Method: Infrared absorption  
 Gas Sorts: Halothane, Isoflurane, Enflurane, Sevoflurane, Desflurane, CO<sub>2</sub>, N<sub>2</sub>O (optional Automatic Agent ID)  
 Measurement Range: 0 ~ 8.5%  
 Halothane, Isoflurane: 0 ~ 10%  
 Enflurane, Sevoflurane: 0 ~ 20%  
 Desflurane: 0 ~ 10%  
 CO<sub>2</sub>: 0 ~ 100%  
 N<sub>2</sub>O: 0 ~ 100%

### Bias:

Sevoflurane, Desflurane: Halothane, Isoflurane, Enflurane,  
 $\pm(0.15 \text{ Vol}\% + 15\% \text{ rel.})$   
 CO<sub>2</sub>:  $\pm(0.5 \text{ Vol}\% + 12\% \text{ rel.})$   
 N<sub>2</sub>O:  $\pm(2 \text{ Vol}\% + 8\% \text{ rel.})$

### Networking

Industry standard 802.11b/g wireless network

### Power

Source: External AC power or internal battery  
 AC Power: 100 ~ 240VAC, 50/60Hz, 150VA  
 Battery: Built-in and rechargeable  
 Charge Time: 4 hours

### Environmental Specifications

Temperature: Operating: 5° ~ 40° C  
 Storage: -20° ~ 65° C  
 Humidity range: Operating:  $\leq 80\%$   
 Storage:  $\leq 80\%$

Also available: Automatic Agent I.D. Consult your sales representative for specifications.

**Specifications subject to change without notice.**