

## DRE Waveline Plus

Vital Signs Monitor

Equipment for the way *you* operate



### ► A Quick Look

- Upgradeable monitor with maximum seven parameters
- Available with EtCO<sub>2</sub>
- High resolution 10.4" (diagonally) color TFT display
- Multi-lead ECG monitoring
- Built-in cautery and defibrillator protection
- 24 hr. graphical/tabular trends with zoom facility with separate trend for storing
- 240 NIBP readings
- Graded and color coded alarms with audio/visual indicators
- Alarm recall ability to view last 16 stored critical alarms (patient related)
- Demo mode for training the staff
- Optional EtCO<sub>2</sub>
- Optional dual channel thermal array recorder
- Comprehensive patient data entry
- Battery back-up operation [built-in or external battery (12V)]
- Ability to interface with auxiliary monitor for remote display
- RS-232 communication port
- Recorder

### Reliability in a box.

DRE introduces its new top-of-the-line Waveline Plus vital signs monitor. With its high resolution (10.4" diagonally) color TFT display, the Waveline Plus is fully upgradeable with a maximum of seven parameters (Pulse Oximetry, ECG, Adult/Ped/Neonate Non-Invasive Blood Pressure, 2-Temp, Respiration, optional IBP and ETCO<sub>2</sub>).

The Waveline Plus monitor also comes equipped with an optical encoder for easy transitions through the menu pages.

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## Technical Specifications

### Power Requirements

- Power supply ..... AC 90-264V/47-63Hz
- Input Power ..... <55VA
- Fuses ..... Two fuse sockets in the rear panel indicated by "FUSE", 5X20, 2A/250V
- Battery ..... 12V/4.0AH sealed lead-acid
- Charge time ..... >8 hours
- Operating time ..... >1.5 hours (full recharge)
- Battery charging method ..... Automatic charging after monitor is connected to AC power supply (with charge protection function)
- Discharge protection ..... When powered by battery, the monitor will be automatically turned off when battery power is almost used up.

### Performance Specifications

#### ECG

- Patient safety standard ..... IEC60601-1-1988
- CMRR ..... >60dB (Common Mode Rejection Ratio)
- Heart rate range ..... 20 ~ 254bpm ± 1bpm
- Heart rate averaging ..... 8 second average
- ST segment range ..... -0.8 ~ + 0.8mV
- Interface ..... AAMI 6-pin
- Lead selection ..... I, II, III (3 lead mode)  
I, II, III, aVR, aVL, aVF, V (5 lead mode)
- Lead fault alarm ..... Audible, visual
- Input ..... 5-lead ECG patient cable
- QRS Indicator ..... Audible and visual alert
- Waveform storage ..... 6 minutes
- Sweep speed ..... 12.5/25/50 mm/sec
- Gain selection ..... 4mV, 2mV, 1mV, 0.5mV, 0.25mV, Auto
- Trends ..... 2 hours » 4 hours » 8 hours » 24 hours » 48 hours
- Patient Isolation ..... Breakdown voltage, 4000VAC 50Hz, 60 seconds
- Frequency width ..... Leakage current, <10µA  
Monitoring mode, 0.5 ~ 40Hz (+0.4dB, -3.0dB)  
Surgery mode: 0.5 ~ 20Hz (+0.4dB, -3.0dB)  
(not calibration significant)
- Patient drive current ..... <10µA
- Enclosure leakage current ..... <0.1mA
- Maximum T wave rejection capability ..... 1.2mV
- Heart rate alarm response time ..... < 7 seconds
- Aspect ratio ..... 0.24 ~ 0.6 sec/mV
- Alarm frequency ..... Low alarm, 2-2.4kHz  
High alarm, 3-3.4kHz
- Defibrillator protected and ESIS protected ..... Tested with 5kV
- Recovery time following defibrillation ..... <5 seconds

#### Respiration

- Measurement method ..... Thoracic impedance
- Respiration Rate Range ..... 0 ~ 100±1rpm
- Accuracy ..... ±2 rpm
- Pulse Oximetry ..... (SpO<sub>2</sub>)
- SpO<sub>2</sub> ..... Range 0-100%
- Adult/pediatric/neonate SpO<sub>2</sub> Averaging ..... 8 second average
- SpO<sub>2</sub> accuracy ..... ±2% (70 ~ 100%), ±3% (40 ~ 70%)

#### Respiration continued

- Pulse rate range ..... 30 ~ 250bpm
- Pulse rate averaging ..... 8 beat average
- Pulse rate accuracy ..... ±1% @ 30 ~ 100bpm
- Sensor types ..... Finger, universal "Y", wrap probes
- Pulse rate display ..... Digital
- Operating temperature ..... 0° - 40° C (32° - 104° F)
- Operating humidity ..... 30-85% RH
- Storage temperature ..... -10° - 60° C (14° - 140° F)
- Storage humidity ..... 10 - 95% RH
- Operating altitude ..... -1000 ft - 15000 ft

#### EtCO<sub>2</sub> (Optional)

- Type ..... Side stream, non dispersive infrared
- Method ..... CO<sub>2</sub> sample line with nasal cannula or endotracheal tube connector
- Sidestream ..... 0-30 mmHg, ± 3mmHg,  
31-99 mmHg, ± 10% of value

#### Power

- Power Requirements ..... 100 - 120 VAC;  
220-240 VAC;  
50 - 60 Hz
- Battery ..... 12 VDC 1.8 Ah
- DC input ..... 10 - 14 VDC
- Power consumption ..... Max. 50 VAC, 40 WDC
- Protective class ..... IEC Class 1

#### Display

- Method ..... TFT 64 color LCD
- Screen dimensions ..... 11.5 cm (H) x 8.42 cm (W)
- Monitoring traces ..... 2 (selectable)
- Sweep speed ..... 6.25, 12.5, 25 mm/sec
- Line list ..... 400 sets of data
- Graphic trend ..... 1, 3, 6, 12, 24 hr

#### Alarm ranges

	High	Low
• Blood pressure (mmHg) .....	50-240	20-160
• Systolic .....	40-180	20-120
• Diastolic .....	50-200	20-120
• Mean .....	35-300	30-295
• Heart rate, pulse rate bpm .....	51-100	50-99
• SpO <sub>2</sub> (%) .....	16-45	15-44
• Body temperature (F) .....	61-113	59-111
(C) .....	10-150	3, 5-145
• Respirations .....		10-60
• Apnea (sec) .....		

#### Recorder

- Recording method ..... Dual Trace Thermal Head
- Resolution ..... 8 dots/mm
- Recording speed ..... 6.25, 12.5, 25 mm/sec (selectable)

#### Safety Approval & Quality System

- Designed to meet IEC60601-1-1988, EN60601-1-1, EN60601-2
- Class II equipment, double insulated
- Type BF applied parts
- ISO9001 and EN46001 certified