Small, lightweight, rugged unit provides therapy and multi-parameter monitoring

Simple operation, dedicated therapy controls and one-touch operation

Configurable options and convenient field upgrades

Automated External Defibrillator (AED) capability with Shock Advisory System™

Extensive data storage, transmission and retrieval capabilities

LIFENET® system compatible

OPTIONS:

ADAPTIV™ Biphasic or monophasic defibrillation waveforms

EL or LCD display

Noninvasive pacing

GE Medical 12SL® ECG analysis program

Nellcor™ pulse oximetry (SpO₂)

Microstream™ Capnography (EtCO₂)

Invasive Pressures (2)

Vital signs trending

AC or DC Power Adapter

NiCd or SLA batteries

Medtronic Physio-Control offers leading edge solutions for the problems you face today and configurable capabilities for the solutions you will need tomorrow. The LIFEPAK 12 defibrillator/monitor series provides therapeutic and diagnostic functions in a single, small device designed for both out-of-hospital and hospital users. The innovative platform design provides full-featured defibrillation and industry-standard monitoring all loaded into a single portable device.

The 12 offers a choice of ADAPTIV Biphasic or industry standard monophasic (Edmark) defibrillation waveforms, with the capability to deliver shocks at energy levels recommended by the American Heart Association in collaboration with the International Liaison Committee on Resuscitation (ILCOR). Both monophasic and biphasic devices utilize the same field-proven Shock Advisory System used in thousands of LIFEPAK AEDs since 1986.

Configurable options, including AED and manual defibrillation modes, allow standardization across user groups and ease of patient transfer.

Dedicated defibrillation and pacing therapy buttons provide fast and effective therapy for both beginning and advanced users. The Selector knob and home screen button make it simple to switch between menus.

In AED mode, the LIFEPAK 12 defibrillator/monitor series utilizes the Medtronic Physio-Control field proven Shock Advisory System with clear, voice prompts to advise
**GENERAL**

The LIFEPAK 12 defibrillator/monitor series has five main operating modes:

Advisory Mode (SAS): Provides all features available except manual defibrillation, synchronous cardioversion and pacing.

Manual Mode: Provides normal operating capability for ALS users.

Setup Mode: Allows operator to customize the device.

Service Mode: Allows operator to execute device diagnostic tests and calibrations.

Inservice Mode: Provides simulated waveforms for demonstration purposes.

**POWER**

Battery Only Configuration: Choice of NiCd (FASTPAK® battery, FASTPAK 2 battery, LIFEPAK NiCd battery) or SLA (LIFEPAK SLA battery)

Dual battery capability

Optional external AC and (+12) VDC Power Adapters

Batteries charge while device operates from Power Adapter

Operating Time: Two new fully charged batteries will provide the following prior to shutdown:

<table>
<thead>
<tr>
<th>BATTERY CONFIGURATION</th>
<th>MINUTAgE</th>
<th>TOTAL</th>
<th>AFTER LOW BATTERY</th>
</tr>
</thead>
<tbody>
<tr>
<td>NiCd</td>
<td>110</td>
<td>81</td>
<td>60</td>
</tr>
<tr>
<td>NiCd**</td>
<td>155</td>
<td>114</td>
<td>85</td>
</tr>
<tr>
<td>NiCd***</td>
<td>220</td>
<td>162</td>
<td>86</td>
</tr>
<tr>
<td>SLA</td>
<td>180</td>
<td>132</td>
<td>100</td>
</tr>
</tbody>
</table>

**DISPLAY**

Size (active viewing area): LCD: 140.8mm (5.5 in) wide x 105.6mm (4.2 in) high EL: 165.1mm (6.5 in) wide x 123.8mm (4.9 in) high

Resolution:

- ECG 160 x 100
- Capnography 128 x 64

**DATA MANAGEMENT**

The device captures and stores patient data, events (including waveforms and annotations), user test results and continuous ECG waveform records in internal memory.

The user can select and print reports and transfer the stored information via an internal modem through landline or mobile phones.

Report Types:

- Initial ECG (except short format)
- Automatic capture of vital signs measurements every 5 minutes
- 3-channel or 4-channel 12-lead ECG report
- Continuous waveform records (transfer only)
- Trend Summary – includes patient information, vital signs log and vital signs graphs
- Vital Signs – includes patient information, event and vital signs log
- Snapshot – includes patient information and 8 seconds of ECG captured at the time of transmission

Memory Capacity:

Two full-capacity patient records that include:

- CODE SUMMARY critical event record – up to 100 single waveform events
- Continuous Waveform – 45-minute continuous ECG record

**COMMUNICATIONS**

The device is capable of transferring data records by internal modem, external EIA/TIA modem, cellular modem or serial connection.

Supports EIA/TIA-602 compatible modems using Xon/ Xoff or RTS/CTS flow control at 9600 to 38400 bps.

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>SPECIFICATION</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>6.0kg (13.3 lbs)</td>
</tr>
<tr>
<td>FASTPAK and FASTPAK 2 battery</td>
<td>6.0kg (1.3 lbs)</td>
</tr>
<tr>
<td>LIFEPAK NiCd battery</td>
<td>0.8kg (1.7 lbs)</td>
</tr>
<tr>
<td>LIFEPAK SLA battery</td>
<td>1.3kg (2.8 lbs)</td>
</tr>
<tr>
<td>Standard paddles (hard)</td>
<td>0.9kg (1.9 lbs)</td>
</tr>
<tr>
<td>Height</td>
<td>31.7cm (12.5 in)</td>
</tr>
<tr>
<td>Width</td>
<td>38.9cm (15.3 in)</td>
</tr>
<tr>
<td>Depth</td>
<td>21.7cm (8.5 in)</td>
</tr>
</tbody>
</table>

**voice prompts**: used for selected warnings and alarms (configurable on/off).

**ECG**

ECG is monitored via several cable arrangements.

A 3-wire cable is used for 3-lead ECG monitoring.

A 5-wire cable is used for 7-lead monitoring.

A 10-wire cable is used for 12-lead acquisition. When the chest electrodes are removed, the 10-wire cable functions as a 4-wire cable.

Standard paddles or QUIK-COMBO pacing/defibrillation/ ECG electrodes or FAST-PATCH® disposable defibrillation/ECG electrodes are used for paddles lead monitoring.

Lead Selection:

- Leads I, II, III, (3-wire ECG cable)
- Leads I, II, III, AVR, AVL and AVF acquired simultaneously (4-wire ECG cable)
- Leads I, II, III, AVR, AVL, AVF, V1 (Labeled “C” on 5-wire ECG cable)
- Leads I, II, III, AVR, AVL, AVF, V1, V2, V3, V4, V5 and V6 acquired simultaneously, (10-wire ECG cable)

**ECG Size**: 4, 3, 2, 1.5, 1, 0.5, 0.25 cm/mV (fixed at 1 cm/mV for 12-lead)

**Heart Rate Display**: 20 to 300 bpm digital display

**Out of range indication**: Display symbol “—-”

Heart symbol flashes for each QRS detection

Continuous Patient Surveillance System (CPSS): In advisory mode while Shock Advisory System is not active, CPSS monitors the patient, via paddles or Lead II ECG, for potentially shockable rhythms.

Analog ECG output: 1V/mV ± 1.0 gain

**Common Mode Rejection**: 90dB at 50/60Hz

**SpO2**

Nellcor sensors

**SpO2 Measurement Range**: 50 to 100%

**SpO2 Waveform**: RI pleth signal

**SpO2 Update Rate**: as each pulse is detected

**Calibration Range**: 70 to 100%

**SpO2 Measurement**: Functional SpO2 values are displayed and stored

**Pulse Rate**: ±3 pulses per minute

**Dynamic signal strength bar graph**

**Pulse tone proportional to value of displayed oxygen saturation**

**NIHB**

Oscillometric measurement

**Systolic Pressure Range**: 30 to 245mmHg

**Diastolic Pressure Range**: 12 to 210mmHg

**Units**: mmHg, kPa

**Mean Arterial Pressure Range**: 20 to 225mmHg

**Blood Pressure Accuracy**: maximum mean error of ± 5mmHg with a standard deviation no greater than ± 8mmHg

**Pulse Rate Range**: 30 to 200 pulses per minute

**Pulse Rate Accuracy**: ± 2 pulses per minute or ± 2% whichever is greater

**Typical Measurement Time**: 40 secs
**Leakage current:** Meets ANSI/AAMI/IEC requirements

**Numeric accuracy:** ±1 mmHg or 2% of reading, whichever is greater, plus transducer error

**Pressure transducer:** Strain-gauge resistive bridge

**Response Time:** 2.9 seconds (includes delay time and rise time)

**Respiration Rate Accuracy:** ±2 bpm

**Respiration Rate Range:**
- 0 to 40 bpm: 
- 41 to 60 bpm: ±2.9 seconds (includes delay time and rise time)
- ±5% accuracy applies when disposable therapy electrodes are attached. Energy output is limited to the available energy which results in delivery of 360 joules into 50 ohms.

**Output Power (EtCO₂):**
- Gas: 0 to 60 breaths per minute
- ±0.5% accuracy over entire range

**Display:**
- IPX4 (splash proof) per IEC 529
- All specifications are at 20°C unless otherwise stated.

**Off label use:**
- ECO₂: Microstream™ technology
- CO₂ Accuracy: ±20 minutes: ±38mmHg, ±2mmHg
- Warm Up Time: 30 minutes (typical), 180 minutes max
- Response Time: 2.9 seconds (includes delay time and rise time)

**Invasive Pressure (2 channels):**
- Measurement range: -30 to +300mmHg in six user selectable ranges
- Display: IP waveform and EtCO₂ numerics
- Units: mmHg, kPa
- User-selectable labels: ART, PA, CVP, ICP, LAP
- Transducer type: Strain-gauge resistive bridge
- Transducer sensitivity: 5mV/V/mmHg
- Bandwidth: 0 - 30 Hz (<-3dB)
- Numeric accuracy: ±1 mmHg or 2% of reading, whichever is greater, plus transducer error

**Leakage current:** Meets ANSI/AAMI/IEC requirements

**Trend**
- Display: Choice of HR, SpO₂, (EtCO₂, %), ETCO₂, RR, NIBP, PI, P2, ST shown in channels 2 or 3.
- Time scale: Auto, 30 minutes, 1, 2, 4 or 8 hours
- Duration: Up to 8 hours
- ST segment: After initial 12-lead ECG analysis, automatically selects and trends lead with the greatest ST displacement.

**ALARMS**
- Quick Set: Activates alarms for all parameters.
- Apnea alarm: Occurs when 30 seconds have elapsed since last detected respiration.

**INTERPRETIVE ALGORITHMS**
- 12-lead Interpretive algorithm: GE Medical 12SL, Includes AMI statements.

**PRINTER**
- Prints continuous strip of the displayed patient information
- Paper Size: 50mm (2.0 in) or optional 100mm (3.9 in)
- Print Speed: 25mm/Sec +/- 5% (measured in accordance with AAMI EC-11, 4.2.5.2)
- Delay: 8 seconds
- Autoprint: Waveform events print automatically (user configurable)

**Optional 50mm/sec timebase for 12-lead ECG reports**

**AC AND DC POWER ADAPTER**
- **Function:**
  - Dimensions: 27.7 x 16.8cm (10.9 x 6.6 in)
  - Weight: < 2.3kg (<5 lbs) (including cables)
  - Charge Time (with fully depleted battery): FASTPAK and FASTPAK 2: 1.5 hours
  - **LIFEPAK NiCd 3009376-01:** 2.1 hours
  - **LIFEPAK NiCd 3009376-01:** 3.0 hours
  - **LIFEPAK SLA:** 6 hours typical, 12 hours maximum
  - **AC Input:** Accepts line power from both: 90 to 264VAC, 47 to 63Hz (domestic/international) 108 to 118VAC, 380 to 400Hz (military)
  - **DC Input:** 9 to 16VDC
  - **Fuses:** Two 250V fuses (100 to 200V: T5A; 220 to 240V: T2.5A) in the power input module (AC Power Adapter only)

**Environmental**
- IPX4 per IEC 529
- **Altitude, Operating:** To 5455m (18,000 ft)
- **Altitude, Non-operating:** To 5455m (18,000 ft)
- **Humidity:** 5 to 95% non-condensing
- **Temperature, Operating:** 5 to 95% non-condensing
- **Temperature, Storage:** -20°C to 70°C (-4°C to 150°F) followed by one hour temperature stabilization in operating temperature range
- **Vibration, Operating and Non-operating:** MIL-STD-810E Method 514.4 Categories 4, 6, 8
- **All specifications are at 20°C unless otherwise stated.**
operator when it detects a shockable rhythm with visual and voice prompts. In manual mode, the LIFEPAK 12 defibrillator/monitor series features simple 1-2-3 operation.

Large display allows 1, 2 or 3 ECG channels to be viewed simultaneously, with up to eight seconds of cascading ECG. Heart rate, oxygen saturation and other vital information is clearly visible.

GE Medical’s 12SL ECG analysis program offers interpretive 12-lead ECG analysis. The 12SL ECG analysis program provides accuracy with simultaneous acquisition, analysis and interpretation of all 12-leads. 12-lead transmission capabilities give you a head start in diagnosis and treatment of AMI and other conditions. Patient data, including 12-lead ECG reports can be integrated into the GE Medical MUSE CV® cardiovascular information system.

Pulse oximetry is available with Nellcor C-LOCK ECG synchronization for timing pulse oximetry measurements with ECG signal.

Capnography (EtCO₂) monitoring is available for use on intubated and nonintubated patients. Superior moisture handling eliminates the need for water traps or additional moisture filters. Innovative Microstream™ technology and FilterLine™ accessories reduces maintenance costs associated with mainstream sensor and cable damage.

Oscillometric noninvasive blood pressure (NIBP) monitoring with proven performance in most ambient noise and motion environments is also available. Automatic measurement modes provide vital sign assessment at intervals appropriate for patient condition.

The AC and DC Power Adapters provide line power as well as battery charging capability. A full line of batteries are available to meet varied usage requirements, with fuel gauge indicators providing visual indication of remaining capacity.