LIFEPAK® 20 DEFIBRILLATOR/MONITOR

Works like you work™
When cardiac arrest occurs, the clock starts ticking. Respond quickly with confidence.
LIFEPAK 20 defibrillator/monitor.
Two defibrillators in one.

- An ideal crash cart device, the 20 puts early, effective defibrillation into the hands of first responders.
- The closed door reduces the “confusion factor” and ensures basic responders are presented with only the controls they require to facilitate fast and easy operation.
- The 20 is highly intuitive, making it easy for infrequent AED-trained responders to quickly understand and use.
- The proven Shock Advisory System™ from Physio-Control guides users through 1-2-3 step operation, with loud voice prompts and clear, simple graphics.

AED Mode
Easy to use for early defibrillation

- When the code team arrives, the 20 easily converts to manual mode—with a push of the latch the door opens—automatically converting to a manual defibrillator.
- For quick and effective clinical decisions, more advanced monitoring parameters such as ECG, external pacing and pulse oximetry are displayed clearly through color-matched waveforms and values.

Manual Mode
Flexible for advanced care professionals

In support of early defibrillation, the American Heart Association and European Resuscitation Council recommend first-responding personnel should be trained and encouraged to perform defibrillation within 3 minutes of collapse. Hospital first responders equipped with a LIFEPAK 20 defibrillator can make the lifesaving difference for victims of sudden cardiac arrest.
You’ve got enough to worry about.
Always ready.
Respond quickly to the care of your patients.

With any LIFEPAK product, you can be assured it’s designed for clinical professionals, by clinical professionals. We continually analyze, test and validate real-world field data and customer feedback to evolve the product design to meet your hospital’s needs—so it works like you work.

Ready — Device readiness is easy with automated daily self-tests and a viewable readiness display that provides assurance your device is ready to accompany you to a code or transport a patient within the hospital.

Easy to Use — The simple, intuitive user interface and clear, comprehensive prompts empower trained users to respond quickly with confidence.

Powerful — Escalating energy up to 360J provides the options you need for maximum defibrillation success. For patients who need more than one shock, increasing the dose of subsequent shocks has been shown to be a better strategy for terminating shockable heart rhythms. 3,4,5

Flexible — With two display options, the 20 is easy to configure to your patient care protocols, or make changes as recommended by the American Heart Association and European Resuscitation Council.
Clinically advanced and packed with power

The LIFEPAK 20 defibrillator/monitor was the first to be designed specifically for the hospital market. Physio-Control continues to be at the forefront of improving patient care with CODE SUMMARY™ to report a critical event record, including a cardiorespiratory event, vital signs log and the associated waveforms.

- Using the data in the CODE-SUMMARY report, clinical teams can use CODE-STAT™ Data Review Software, to annotate chest compressions onto the patient’s continuous ECG report and calculate CPR statistics. Now you can facilitate quality analysis, helping you drive improvements to resuscitation outcomes.
- Vital signs monitoring allows for evaluation of changes in patient condition and patient response to therapy over time.
- The 20 offers noninvasive pacing, ECG monitoring (3- or 5-wire), and synchronized cardioversion. MASIMO SET® pulse oximetry offers accurate and stable oxygen saturation monitoring, for quick and effective clinical decisions under conditions of both active movement and low perfusion.

Complemented by a rich range of services and options

Training
Whether you are taking delivery of your first LIFEPAK 20 defibrillator/monitor, or adding new options, Physio-Control provides a broad set of product in-servicing and clinical training materials designed to help you keep your staff’s skills up-to-date. The 20 also has on-site inservice training available with purchase.
Get the broadest therapeutic dose—up to 360J—for difficult-to-defibrillate patients. LIFEPAK defibrillators with ADAPTIV™ biphasic technology offer the maximum range of energy settings, up to 360 joules.

For patients who need additional shocks, increasing the dose of subsequent shocks above the first shock has shown to be a better strategy for terminating VF than simply repeating a failed dose.3,4,5

**Accessories**

We offer a full catalog of accessories and disposable products to suit your needs. Standard adult paddles with embedded pediatric paddles, sterilizable adult paddles, and internal paddles provide flexible therapy options for all hospital departments.
### GENERAL

The LIFEPAK 20 defibrillator/monitor has seven main operating modes:

- **Manual Mode:** Provides a normal operating capability for ALS users. Allows access to manual mode energy selections up to 360J, synchronized cardioversion and pacing. ECG waveform is displayed.
- **AED Mode:** (Consistent with 2005 AHA Guidelines for CPR and ECC and ERC Guidelines for Resuscitation 2005.) Provides a normal operating capability for BLS users. All user features are available except manual defibrillation, synchronized cardioversion, pacing, and access to archived patient records. Provides shock energy defaults up to 360J. User selectable option to display ECG waveforms and/or visual AED prompts.
- **Setup Mode:** Allows the operator to configure the device settings.
- **Service Mode:** Allows the operator to execute diagnostic tests and calibrations, to display device module software and hardware versions, and to display and print the diagnostic code log.
- **Inservice Mode:** Simulated waveforms are available for demonstration purposes. The waveforms consist of short segments of realistic data, which are repeated to form a continuous waveform.
- **Archive Mode:** Provides operator the opportunity to access records of previous patients for review, transmission, printing, editing or deletion.
- **Auto Test Mode:** Performs daily self tests.

#### Operating Time:

- **AC Powered:** The device is an AC line operated device with an internal battery as backup.
- **Depth:** 26.2 cm (10.3 in)
- **Height:** 21.3 cm (8.4 in)
- **Width:** 26.2 cm (10.3 in)
- **Weight:** 5.58 kg (12.3 lbs)

### PHYSICAL CHARACTERISTICS

- **Size (active viewing area):** 115.18 mm (4.53 in) wide x 86.38 mm (3.4 in) high
- **Resolution:** 320 x 240 dot color active LCD.
- **ECG size:** 4, 3, 2.5, 2, 1.5, 1, 0.5, 0.25 cm/mV
- **Continuous Patient Surveillance System (CPSS):**
  - In AED mode, while Shock Advisory System is not active, CPSS monitors the patient, via QUIK-COMBO paddles or lead II ECG, for potentially shockable rhythms.
- **Display Symbol:*** 
  - Heart symbol flash for each QRS detection.
  - Continuous Patient Surveillance System (CPSS):
    - Heart symbol flash for each QRS detection.
- **Heart Rate Display:**
  - 20 to 300 BPM digital display
- **Pulse Rate Range:**
  - 25 to 240 pulses per minute
- **Pulse Rate Accuracy:**
  - Adults/Pediatrics: ± 3 digits (during motion conditions)
  - Neonates: ±3 digits (during motion conditions)
- **ECG:***
  - ECG can be monitored through 3-wire or 5-wire ECG cables.
- **Defibrillation:**
  - Compatible with LIFEPAK 12 ECG and therapy cables.
- **SpO2:***
  - Disposable Masimo SET Sensors
  - Update Averaging Rate: User selectable 4, 9, 12 or 16 seconds
- **Measurement:** Functional SpO2 values are displayed and stored

### DATA MANAGEMENT

- **Memory:**
  - Two full capacity patient records that include: Code Summary critical event record, (short, and medium)
  - Continuous ECG waveform records (transfer only)
  - Continuous Patient Surveillance System (CPSS): Code Summary critical event record: up to 100 single waveform events
  - Continuous Waveform: 45 minute continuous ECG record

### COMMUNICATIONS

- **SpO2:**
  - Update Averaging Rate: User selectable 4, 9, 12 or 16 seconds
  - Measurement: Functional SpO2 values are displayed and stored

### REPORT TYPES

- **Continuous ECG waveform records (transfer only)***
- **Initial ECG (except short format)***
- **Continuous Waveform:** 45 minute continuous ECG record

### POWER

- **AC Powered:** 90–132 VAC 50/60Hz, 198–264 VAC 50/60 Hz, total power draw less than 120 volt-amperes (VA).
- **Internal Battery Backup:** NiMh. Batteries charge while device operates from AC Power.

### MONITOR

- **SpO2:**
  - Disposable Masimo SET Sensors
  - Measurement: Functional SpO2 values are displayed and stored

### SPECIFICATIONS

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<tr>
<th><strong>TOTAL</strong></th>
<th><strong>AFTER LOW BATTERY</strong></th>
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<tbody>
<tr>
<td>Monitoring (minutes):</td>
<td>120</td>
</tr>
<tr>
<td>Monitoring in device without Pulse Oximeter (minutes):</td>
<td>135</td>
</tr>
<tr>
<td>Defibrillation (360 J discharges):</td>
<td>90</td>
</tr>
<tr>
<td>Monitoring plus pacing (Minutes at 100 ma, 60 ppm):</td>
<td>70</td>
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</tbody>
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- **Battery Charge Time:** <2.5 hours when device is powered off and AC power is applied
- **Low Battery Indication and Message:** When the device is unplugged from AC power, it switches to battery. When battery gets low, the battery detection icon is indicated with a low battery message in the status area, and a warning tone occurs.
- **Service Indicator:** When error detected.
ALARMS
Quick Set: Activates alarms for all parameters
VF/VT Alarm: Activates continuous CPSS monitoring in Manual Mode

PRINTER
Prints continuous strips of the displayed patient information
Paper size: 50 mm (2.0 in)
Print speed: Continuous ECG 25 mm/sec ±5% (measured in accordance with AAMI EC-11, 4.2.5.2)
Delay: 8 seconds
Autoprint: Waveform events print automatically (user configurable)

FREQUENCY RESPONSE
Diagnostic: 0.05 to 150 Hz or 0.05 to 40 Hz (user configurable)
Monitor: 0.67 to 40 Hz or 1 to 30 Hz (user configurable)
Paddles: 2.5 to 30 Hz
Analog ECG Output: 0.67 to 32 Hz (except 2.5 to 30 Hz for paddles ECG)

DEФИBRILLATOR
Waveform: Biphasic Truncated Exponential
The following specifications apply from 25 to 200 ohms, unless otherwise stated.
Energy Accuracy: ±1 joule or ±1% of setting, whichever is greater, into 50 ohms ±2% or ±15% of setting, whichever is greater, into any impedance from 25 to 100 ohms.
Voltage Compensation: Active when disposable therapy electrodes are attached. Energy output within ±5% or ±1 joule, whichever is greater, of 50 ohm value, limited to the available energy which results in the delivery of 360 joules into 50 ohms.

Patient Impedance

<table>
<thead>
<tr>
<th>Patient Impedance</th>
<th>Phase 1</th>
<th>Phase 2</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
<td>Max.</td>
</tr>
<tr>
<td>25</td>
<td>5.1</td>
<td>6.0</td>
</tr>
<tr>
<td>50</td>
<td>6.8</td>
<td>7.9</td>
</tr>
<tr>
<td>100</td>
<td>8.7</td>
<td>10.6</td>
</tr>
</tbody>
</table>

Paddle Options
- QUIK-COMBO pacing/defibrillation/ECG electrodes (standard)
- Standard adult paddles with embedded pediatric paddles (optional)
- Internal handles with discharge control (optional)
- External sterilizable paddles (optional)
- FAST-PATCH disposable defibrillation/ECG electrodes (optional)

Cable length: 2.44 meter (8-foot) long QUIK-COMBO cable (not including electrode assembly)

AED
Shock Advisory System (SAS) is an ECG analysis system that advises the operator if the algorithm detects a shockable or nonshockable ECG rhythm. SAS acquires ECG via therapy electrodes only.

Shock Ready Time: Using a fully charged battery at normal room temperature, the device is ready to shock within 16 seconds of power on, if initial rhythm finding is “Shock Advised.”

The AED mode of the LIFEPAK 20 defibrillator/monitor is not intended for use on children less than 8 years of age.
cprMAX technology Setup Options (items marked with * are default settings):
- Stacked Shocks: Off*, On
- Initial CPR: Off*, Analyze First, CPR First
- Preshock CPR: Off*, 15, 30 seconds
- Pulse Check: Never*, After Second No Shock Advised, After Every No Shock Advised, Always
- CPR Time 1 & 2: 15, 30, 45, 60, 90, 120*, 180 seconds, 30 minutes

Users should refer to the LIFEPAK 20 defibrillator/monitor operating instructions for details on how to customize the configuration of their devices to hospital protocols.

MANUAL
Energy Select: 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 30, 50, 70, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, and 360 joules and user configurable sequence of 100 to 360, 100 to 360, 100 to 360.

Charge time:
- Charge time to 200J <5 seconds with fully charged battery
- Charge time to 360J <7 seconds with fully charged battery
- Charge time to 360J <10 seconds while not in low battery operations

Synchronized Cardioversion:
- Energy transfer begins within 60 ms of the QRS peak
- Energy transfer begins within 25 ms of the External Sync Pulse
- External Sync Pulse: 0 to 5V (TTL Level) Pulse, active High, >5 ms in duration, no closer than 200 ms apart and no further than 1 second apart

PACER
Pacing Mode: Demand or nondemand
Rate and current defaults (user configurable)
Pacing Rate: 40 to 170 ppm
Rate Accuracy: ±1.5% over entire range
Output Waveform: Monophasic, amplitude stable to ±5% relative to leading edge for currents greater than or equal to 40 mA, Duration 25 ±1 ms, Rise/Fall times ≤1 ms [10 to 90% levels]
Output Current: 0 to 200 mA
Pause: Pacing pulse frequency reduced by a factor of 4 when activated
Refractory Period: 200 to 300 ms ±3% (function of rate)

ENVIRONMENTAL
Temperature, Operating: 5 to 45°C (41 to 113°F)
Temperature, Nonoperating: -20 to +60°C (-4 to +140°F) except therapy electrodes
Relative Humidity, Operating: 5 to 95%, noncondensing
Atmospheric Pressure, Operating: Ambient to 522 mmHg (0 to 3,049 meters) (0 to 10,000 feet)
Water Resistance, Operating (without accessories except for ECG Cable and hard paddles): IPX1 (splashing) per IEC 60601-1 clause 44.6 (1990)
Vibration: MIL-STD-810E Method 514.4, Cat1
Shock (Drop): 1 drop on each side from 457.2 mm (18 in.) onto a steel surface

EMC
IEC 60601-2-4:2002; Clause 36/EN 60601-2-4:2003; Clause 36, Particular Requirements for the Safety of Cardiac Defibrillators and Cardiac Defibrillator monitors

All specifications are at 20°C (68°F) unless otherwise stated.
The LIFEPAK 15 monitor/defibrillator is the new standard in emergency care for ALS teams who want the most clinically innovative, operationally innovative and LIFEPAK TOUGH™ device available today. The 15 integrates Masimo Rainbow SET® technology that monitors SpO₂, Carbon Monoxide and Met-hemoglobin, includes a metronome to guide CPR compressions and ventilations and provides an option to escalate energy to 360 J. An entirely new platform, the 15 is powered by Lithium-ion battery technology, incorporates the SunVue™ display screen for viewability in bright sunlight, and data connectivity to easily and securely collect and send patient information. Similar form factor and user interface with the LIFEPAK 12 defibrillator/monitor will ease transition and training costs.

Experience the legendary quality that has made LIFEPAK products and services the clear favorite around the world.

As your trusted partner in saving lives, we offer a full suite of solutions from field to hospital, whether your need is emergency response or quality control analysis.
LIFEPAK 1000 Defibrillator
The 1000 is a powerful and compact device designed to treat cardiac arrest patients and provide continuous cardiac monitoring capabilities. Built-in flexibility allows the 1000 to be programmed for use by first responders or professionals and enables care providers to change protocols as standards of care evolve. A large, intuitive screen displays graphics and ECG readings that are clear and easy to read from a distance. The 1000 is designed for external areas of the hospital where a simple-to-use AED with the option of manual defibrillation is required.

LIFEPAK CR® Plus Automated External Defibrillator
Designed for minimally trained rescuers in commercial and public settings, the CR Plus guides the rescuer step by step with calm, clear voice prompts. Simple to use, it is built with the same advanced defibrillation technology used by EMS and hospital personnel.

CPR Assistance

LUCAS™ Chest Compression System
Designed to provide effective, consistent and uninterrupted compressions according to ERC Guidelines, the device is used on adult patients in out-of-hospital and hospital settings. Maintaining high quality hands-free compressions frees responders to focus on other lifesaving therapies. LUCAS is translucent, except for the hood and piston, making it the ideal chest compression device for use in the cath lab.

LIFENET® System

LIFENET System
The LIFENET System provides EMS and hospital care teams with reliable, quick access to clinical information helping to improve patient care flow and operational efficiency. The LIFENET System provides customers with a reliable and secure web-based platform linking care teams with critical information for emergent patient data and post-event review. From providing an advanced alert of an incoming patient, to reviewing post event data, to tracking assets, the LIFENET System is the most comprehensive system on the market today.
For more than 50 years, Physio-Control, maker of the renowned LIFEPAK defibrillators, has been developing technologies and designing devices that are legendary among first response professionals, clinical care providers and the community.