LIFEPAK® 20e DEFIBRILLATOR/MONITOR

with CodeManagement Module™
Amidst financial pressures and evolving guidelines, your hospital remains focused on saving lives. With the LIFEPAK® 20e defibrillator/monitor, you get the lifesaving power and ease of use that are essential for swift, successful response to today’s codes, plus something more—the ability to improve your code management for tomorrow’s emergencies.
Improving code performance is a top priority for today’s hospitals. And for us.

You need defibrillation equipment you can depend on in that moment when saving a life is the only thing that matters. And you need the right tools to monitor, document and review each code event to respond even better the next time. All of this is key for effective code management—and we designed the LIFEPAK 20e defibrillator/monitor with CodeManagement Module to deliver it.

As part of the Physio-Control Code Management System, the 20e meets all your defibrillator/monitor needs in a compact, affordable package. Designed specifically for crash cart use, it is simple yet powerful, and ready when you are. With features like capnography, a CPR metronome, and the ability to remotely send data to CODE-STAT™ data review, the LIFEPAK 20e defibrillator/monitor with CodeManagement Module helps your hospital meet the demands of performance improvement and better prepare for tomorrow’s emergencies.

*CodeManagement Module adds new capabilities to the 20e to transform the way your hospital manages codes.*
The LIFEPAK 20e Defibrillator/Monitor with CodeManagement Module

Easy to use for both BLS and ALS teams

- With an intuitive door system, the 20e functions as an automated external defibrillator (AED) for your BLS teams, who can begin early defibrillation before the code team arrives
- Standardized and clear user interface, so teams who also use the LIFEPAK 12 and LIFEPAK 15 devices will recognize it immediately
- Larger code clock provides better visibility throughout the room and a centralized device to use for time management and documentation
- Compact, ergonomic footprint ensures stability and efficiency during patient transport
- Auto-send of patient and device data facilitates quality improvement review and hospital-wide device tracking*

Flexible to fit your hospital’s needs

A choice of purchase options for an integrated system that works together seamlessly and adds new features without breaking standardization:

- Purchase new LIFEPAK 20e defibrillator/monitors or upgrade 20/20e software to add metronome and larger code clock
- Extend the capabilities of your existing 20e devices by adding CodeManagement Module
- Purchase new LIFEPAK 20e defibrillator/monitors with CodeManagement Module

Powerful to improve your resuscitation management

- Capnography (Class I recommendation for ET tube confirmation and monitoring in the 2010 AHA and ERC guidelines) aids ET tube placement and CPR effectiveness*
- Other advanced monitoring parameters include ECG (3- or 5-wire), pacing, pulse oximetry
- Metronome helps rescuers perform compressions at the AHA Guideline rate of 100/minute
- 360J biphasic technology allows highest available energy for difficult-to-defibrillate patients
- Wirelessly transmits* patient data to CODE-STAT** software for post-event review, to capture event data and facilitate code response improvement

Ready for when your team needs to respond

- Performs daily readiness self-check
- LIFENET® Asset status wirelessly monitors device data including battery charge status, updates and self-tests, and enables your biomed team to do upgrades that would have previously required a service call
- Battery status indicator
- Runs on long-lasting Lithium-ion internal battery***, connects to AC power
- On-site inservice training by dedicated nurses, clinical training materials
- On-site service and off-site biomed training solutions available

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** CODE-STAT software now available as a subscription. Ask your sales representative for details.
*** CodeManagement Module runs on a separate but equally long-lasting Lithium-ion battery. Both are connected to AC power using a single cord.
AED Mode
for BLS teams

Manual Mode
for ALS teams
Meet today’s highest standards of code management—and improve your hospital’s performance for tomorrow’s emergencies.

Physio-Control not only supplies lifesaving technology like the LIFEPAK 20e defibrillator/monitor, we also help you get your cardiac resuscitation devices, protocols, departments and people in sync across the entire hospital. So you can respond better to evolving guidelines and requirements, improve code performance and efficiency, and give your teams a better chance of ensuring the right outcomes today—and even better ones tomorrow.
The Physio-Control Code Management System

Readiness
The Code Management System gives you the visibility, insight and control to make sure your people and equipment are fully prepared, so your hospital has the resources to better handle a code wherever and whenever it occurs. The right start is everything when it comes to a favorable outcome.

Response
The Code Management System is based on our decades of experience working with the real-world needs of hospitals like yours. We know that our equipment must be powerful but easy to use, so you can respond to codes early and effectively for the best possible outcomes.

Review
The Code Management System enables you to easily collect and review post-event data for quality improvement, providing your trained staff valuable information to reduce risk and drive improved lifesaving performance.

Prevention
With Code Management System technologies, you can extend your hospital’s monitoring capabilities, better assess patient status, and give rapid response teams the information they need to provide fast, effective care. Think of it as giving your teams a vital head start should a patient’s condition start to deteriorate.

The LIFEPAK 20e defibrillator/monitor with CodeManagement Module is an integral part of the Physio-Control Code Management System. It wirelessly transmits device data for readiness, delivers advanced technology for sophisticated defibrillation, works with other Physio-Control technologies to improve CPR performance, and transmits patient data for post-event review.
GENERAL
The LIFEPAK 20e 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: 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 380J. 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.

POWER
The device is an AC line operated device with an internal battery as backup.
AC Powered: 100–120 VAC 50/60Hz, 220–240 VAC 50/60 Hz, total power draw less than 120 Volt-Ampere (VA).
Internal Battery Backup: A new fully-charged internal backup battery will provide the following prior to shutdown:

<table>
<thead>
<tr>
<th>Module</th>
<th>Status</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring plus SPO2</td>
<td>Total</td>
<td>210 minutes</td>
</tr>
<tr>
<td>Monitoring, plus pacing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Defibrillation (SHO punches)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Battery Charge Time: <4 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 the battery gets low, the battery status indicator displays one yellow segment and a “low battery” message and warning tone occurs. Shortly thereafter the status indicator displays one flashing red segment, the “low battery; connect to AC power” message appears, and a warning tone occurs.

Service Indicator: LED illuminates when service is required.

PHYSICAL CHARACTERISTICS
Weight:
- Fully featured defibrillator/monitor (pacing, SPO2 and door, without paper or cables) 5.58 kg (12.3 lbs)
- QUIK-COMBO® cable: 0.20 kg (.43 lbs)
- Standard (hard) paddles: 0.88 kg (1.95 lbs)
Height: 21.3 cm (8.4 in)
Width: 26.2 cm (10.3 in)
Depth: 26.2 cm (10.3 in)

DISPLAY
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
Displays a minimum of 3.7 seconds of ECG and alpha numeric or numeric for values, device instructions or prompts
Option to display one additional waveform
Waveform display sweep speed: 25 mm/sec for ECG and SpO2

DATA MANAGEMENT
The device can easily print a CODE SUMMARY™ critical event record, with an introduction with patient information and critical event record. The summary report also includes event and vital signs log, and waveforms associated with certain events. The device can print archived patient records.

COMMUNICATIONS
The device is capable of transferring data records by IrDA.

DEFIBRILLATOR
Waveform: Biphasic Truncated Exponential. The following specifications apply from 25 to 200 ohms, unless otherwise specified.

Energy Accuracy:
- ±1 joule or 10% of setting, whichever is greater, into 50 ohms ±2 joule or 15% of setting, whichever is greater, into any impedance from 25–100 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.

<table>
<thead>
<tr>
<th>Patient Impedance</th>
<th>Phase 1 Duration (ms)</th>
<th>Phase 2 Duration (ms)</th>
</tr>
</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>6.5</td>
<td>7.9</td>
</tr>
<tr>
<td>100</td>
<td>9.7</td>
<td>10.8</td>
</tr>
<tr>
<td>125</td>
<td>9.5</td>
<td>11.2</td>
</tr>
</tbody>
</table>

Paddles 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)
Cable length: 2.4 meter (8-foot) long QUIK-COMBO cable (not including electrode assembly)

DEFIBRILLATOR
SpO2: Measurement: Functional SpO2 values are displayed and stored
Pulse Rate Range: 25 to 240 pulses per minute
Pulse Rate Accuracy: (Adults/Pediatrics/Neonates)

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Pulse Rate Accuracy: (Adults/Pediatrics/Neonates) +/- 2 digits (during no motion conditions) +/- 3 digits (during motion conditions)
SpO2 waveform with autogain control

ALARMS
Quick Set: Activates alarms for all parameters
VF/VT Alarm: Activates continuous CPSS monitoring in Manual Mode

POWER
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)
Print Speed for CODE SUMMARY Reports: 25 mm/sec

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)

SPO2: Update Average on: 4, 8, or 16 seconds
SpO2 Update Average: User selectable 4, 8, 12 or 16 seconds
Approval: 0.67 to 32 Hz (except 2.5 to 30 Hz for paddles ECG)

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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 100–360, 100–360, 10–360 joules
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: 0–5V (TTL Level) Pulse, active High, >5 ms in duration, no closer than 200 ms apart and no further than 1 second apart
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”

AED
Shock Advisory System is an ECG analysis system that advises the operator if the algorithm detects a shockable or nonshockable ECG rhythm. The shock advisory system 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 20e 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, 15 seconds
– CPR Time 1 & 2: 15, 30, 45, 60, 90, 120*, 180 seconds, 30 minutes
Users should refer to the LIFEPAK 20e defibrillator/monitor operating instructions for details on how to customize the configuration of their devices to hospital protocols.

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 20 +/- 1 ms, Rise/Fall times <= 1 ms [10--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)

**CO2 MONITORING**
Drift of Measurement Accuracy: No drift in accuracy for at least 6 hours
Respiration Rate Accuracy: 0 to 70 bpm: ±1 bpm
71 to 99 bpm: ±2 bpm
Respiration Rate Range: 0 to 99 breaths/minute
CO2 Range: 0 to 99 mmHg (0 to 13.2 kPa)
Units: mmHg, %, or kPa
Flow Rate: 42.5 to 65 ml/min (measured by volume)
Rise Time: 190 msec
Response Time: 4.5 seconds maximum (includes delay time and rise time)
Initialization Time: 30 seconds (typical), 10–180 seconds
Ambient Pressure: Automatically compensated internally
Waveform Scale Factors: Autoscale, 0–20 mHg (0–4 Vo), 0–50 mmHg (0–7 Vo), 0–100 mmHg (0–14 Vo)

**CO2 ACCURACY**
<table>
<thead>
<tr>
<th>CO2 PARTIAL PRESSURE AT SEA LEVEL:</th>
<th>ACCURACY:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(0–80 bpm)*</td>
<td>±2 mmHg (0.27 kPa)</td>
</tr>
<tr>
<td>0 to 38 mmHg (0 to 5.1 kPa)</td>
<td>±2 mmHg (0.27 kPa)</td>
</tr>
<tr>
<td>39 to 99 mmHg (5 to 13 kPa)</td>
<td>±5% of reading + 0.8% for every 1 mmHg (0.13 kPa) above 38 mmHg (5.2 to 13 kPa)</td>
</tr>
<tr>
<td>(80–160 bpm)*</td>
<td>±2 mmHg (0.27 kPa)</td>
</tr>
<tr>
<td>0 to 18 mmHg (0 to 2.4 kPa)</td>
<td>±4 mmHg (0.54 kPa)</td>
</tr>
<tr>
<td>19 to 99 mmHg (2.55 to 13.3 kPa)</td>
<td>±4 mmHg (0.54 kPa)</td>
</tr>
</tbody>
</table>

*For RR > 60 bpm, to achieve specified CO2 accuracy, the Microstream® Filterline® H Set for infants must be used.

**DATA MANAGEMENT AND TRANSMISSION**
The LIFEPAK 20/20e device captures and stores patient data, events (including waveforms and annotations), and continuous ECG and CO2 waveform records in internal memory.
Wireless data transmission via LIFENET network.

**WIRELESS NETWORKS**
The LIFEPAK 20/20e device with the CodeManagement Module supports the following:
- 802.11a, b, g, and n wireless networking standards
- Security types:
  - Open
  - WPA-Personal
  - WPA2-Personal
  - WPA-Enterprise
  - WPA2-Enterprise
- Enterprise authentication protocols:
  - EAP-TLS
  - EAP-TTLS
  - PEAP/MSCHAPv2
- TCP/IP support
  - Internet Protocol Version 4 (IPv4)
  - IP addressing: automatically obtains IP address, or a static address may be assigned.
  - DNS servers: automatically obtains DNS server address, or static addresses of the primary and secondary DNS servers may be assigned.
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**ENVIRONMENTAL**
Temperature, Operating: 5 to 40°C (41 to 104°F)
Temperature, Nonoperating: -20 to +60°C (-4 to +140°F)
Relative Humidity, Operating: 5 to 95%, noncondensing
Atmospheric Pressure, Operating: Ambient to 522 mmHg (0 to 3.048 meters) (0 to 10,000 feet)
Water Resistance, Operating (without accessories except for ECG Cable and hard paddles): PX1 (spillage) per IEC 60601-1 clause 44.6
Vibration: MIL-STD-810E Method 514.4, Cat 1
Shock (Drop): 1 drop on each side from 45.7 cm (18 in.) onto a steel surface
Defibrillators/Monitors

**LIFEPAK CR® Plus Automated External Defibrillator**
Featuring the same advanced technology trusted by emergency medical professionals—yet simple to use—the fully automatic LIFEPAK CR Plus AED is designed specifically for the first person to respond to a victim of sudden cardiac arrest.

**LIFEPAK® 1000 Defibrillator**
The LIFEPAK 1000 Defibrillator 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.

**LIFEPAK® 15 Monitor/Defibrillator**
The LIFEPAK 15 monitor/defibrillator is the standard in emergency care for ALS teams who want the most clinically innovative, operationally effective and LIFEPAK TOUGH™ device available today. The 15 offers sophisticated clinical technologies with a rich array of features—like the most powerful escalating energy available (up to 360J), advanced monitoring parameters and a completely upgradable platform.

**LIFEPAK® 20e Defibrillator/Monitor with CodeManagement Module™**
Clinically advanced and packed with power, the LIFEPAK 20e defibrillator/monitor is highly intuitive for first responders, and also skillfully combines AED function with manual capability so that ACLS-trained clinicians can quickly and easily deliver advanced therapeutic care. The CodeManagement Module adds waveform capnography and wireless connectivity to enhance your hospital’s ability to effectively manage resuscitations from preparedness through review.
CPR Assistance

**LUCAS® 2 Chest Compression System**
Designed to provide effective, consistent and uninterrupted compressions according to AHA Guidelines, LUCAS can be used on adult patients in out-of-hospital and hospital settings.

**TrueCPR™ Coaching Device**
TrueCPR helps your team optimize their manual CPR performance using simple real-time and post-event feedback on the most critical resuscitation parameters. It accurately measures compression depth through proprietary Triaxial Field Induction technology.

Information Management

**LIFENET® System**
The LIFENET System provides EMS and hospital care teams with reliable, quick access to clinical information through a secure, web-based platform, helping to improve patient care, flow and operational efficiency.

**CODE-STAT™ Data Review Software**
CODE-STAT data review software is a retrospective analysis tool that provides easy access to data, reports and post-event review.

Support

**Physio-Control Service**
As the world’s leading provider of defibrillation technology, Physio-Control understands our responsibility to maintain the reliability of our lifesaving defibrillator/monitors. We have over 100 field-based technical service representatives worldwide. Physio-Control is committed to service 24/7, and to returning a customer’s call within two hours to quickly assess the problem and find the best solution (U.S.). If needed, a technical service representative will be on-site within 24 hours (U.S.).
Find out how the LIFEPAK 20e defibrillator/monitor with CodeManagement Module can take your hospital’s code performance to the next level.

Visit www.physio-control.com/20e or call 1.800.442.1142 today.