LIFEPAK® 15
monitor/defibrillator

For hospital
In any area of the hospital, the most advanced emergency response monitor/defibrillator sets the standard in innovation, operation and toughness.
The LIFEPAK 15 monitor/defibrillator delivers

Physio-Control defibrillators have set the standard for six decades. As our most advanced emergency response monitor/defibrillator, the LIFEPAK 15 device offers sophisticated clinical technologies and operational effectiveness with a rich array of features—like the most powerful escalating energy available (up to 360J), advanced monitoring parameters, and a flexible platform. At the same time, it’s tough enough to stand up to your most challenging environments.

A LIFEPAK device never stands on its own—and the LIFEPAK 15 monitor is no different. Physio-Control is committed to providing complete solutions for any area of the hospital.

Our products have helped save tens of thousands of lives. We’re proud to continue this work with the LIFEPAK 15 monitor/defibrillator.
The standard in clinical innovation

The pioneer in portable defibrillation and monitoring technology, Physio-Control is committed to improving technologies and devices—such as the powerful LIFEPAK 15 monitor/defibrillator.
Advanced monitoring parameters
With more monitoring capabilities than any other monitor/defibrillator, the LIFEPAK 15 gives you EtCO₂ with continuous waveform capture. Masimo® Rainbow® technology helps you detect hard-to-diagnose conditions and improve patient care with noninvasive monitoring of carbon monoxide, SpO₂ and methemoglobin. In addition, the LIFEPAK 15 offers temperature monitoring—and like other data, you can transmit it to other systems, trend it, or display for post-event review in CODE-STAT™ data review software.

Advanced support for treating cardiac patients
Not only can you easily acquire a pre-medication 12-lead ECG, you can also rely on the LIFEPAK 15 monitor/defibrillator to continuously monitor all 12 leads in the background and alert you to changes using the ST-Segment Trending feature. The LIFEPAK 15 also works seamlessly with the web-based LIFENET® System, so you can automatically share critical patient data with multiple patient care teams throughout a region in real time.

Full energy up to 360 joules, for every patient who needs it
The LIFEPAK 15 monitor/defibrillator features 360J biphasic technology, which gives you the option of escalating your energy dose up to 360J for difficult-to-defibrillate patients. Why is this necessary? Recent studies have shown that refibrillation is common among VF cardiac arrest patients and that defibrillation of recurring episodes of VF is increasingly difficult. A randomized controlled clinical trial shows the rate of VF termination was higher with an escalating higher energy regimen of 200J and over.¹

Proven CPR guidance and post-event review
The CPR Metronome in the LIFEPAK 15 monitor uses audible prompts to guide you without distracting vocal critique. A metronome has been a feature that has demonstrated to help you perform compressions and ventilations within the recommended range of the 2015 AHA Guidelines. Post-event review of CPR data and delivering feedback to the team has been shown to be effective in improving CPR quality in both hospital and out-of-hospital.²³⁴ And by transmitting code data directly to CODE-STAT Data Review software, QA/QI personnel can review CPR statistics and provide training and feedback where it is most needed.

¹ Proven CPR guidance and post-event review
² Post-event review of CPR data and delivering feedback to the team has been shown to be effective in improving CPR quality in both hospital and out-of-hospital.²³⁴
The standard in operational effectiveness

Flexible, connected and easy to use, the LIFEPAK 15 monitor/defibrillator was designed based on the feedback and needs of people like you.

Upgradable platform
All LIFEPAK products are built as platforms, which means they are flexible enough to adapt to evolving protocols and new guidelines, and can be upgraded as you’re ready to deliver new therapies. With more processing power and speed, the LIFEPAK 15 is designed to grow as your needs change, helping you avoid costly premature replacements.

Flexible power options
Choose between external worldwide AC or DC power, or use the latest Lithium-ion dual battery technology for up to six hours of power. The LIFEPAK 15 monitor’s two-battery system requires no maintenance or conditioning, and allows you to charge batteries in the device.

Data connectivity
The LIFEPAK 15 collects code summaries and equipment status data along with critical clinical information as you treat patients. Using LIFENET Connect, part of the LIFENET System data network, the code summaries can be sent directly to your quality improvement team for review with CODE-STAT Data Review Software. Your equipment manager can also view equipment status on the LIFENET System 5.0 using LIFENET Asset and alert you to any potential issues.

Attention to detail
The LIFEPAK 15 is designed for easy, intuitive use, which you can see through finishing touches such as an ergonomic handle, larger SPEED DIAL for easy selection, and an easy-to-clean keypad.

Dual-mode LCD screen with SunVue™ display
Switch from full-color to high-contrast SunVue mode with a single touch for the best full-glare view in the industry. A large screen (8.4 inches diagonally) and full-color display provide maximum viewability from all angles.

Code summaries can be sent directly to your quality improvement team for review with CODE-STAT Data Review Software.
The standard in toughness

The LIFEPAK 15 is LIFEPAK TOUGH, with improved ruggedness, portability and durability you can rely on.

Toughened inside and out
We heard from medical professionals that they wanted a more durable device—so we added a shock-absorbing handle, a double-layer screen that can withstand severe bumps and falls, and redesigned cable connections that lock tight for confident monitoring and therapy delivery. The LIFEPAK 15 is the only device rated to withstand a 30" fall from bed height or a drop in transit.

Easy to clean
Industry-leading IP44 rating protects against fluids and substances, and exterior case and keypads are designed to help you meet requirements.

Unmatched field service
The unit’s self-checking feature alerts our service team if the device needs attention, so you know it’s ready when you need it. Our on site maintenance and repair, access to original manufacturer parts, and highly trained, experienced service representatives give you the peace of mind that your LIFEPAK 15 will be ready when you need it.*

*A variety of customized service options are available.
The latest Lithium-ion battery technology and dual battery system allows for nearly six hour run time, automatic switching between external power and batteries, and an approximate two-year replacement cycle.

Integrated carbon monoxide and methemoglobin monitoring.

ST-Trend Tracking and 12-lead ECG transmissions via the LIFENET System makes the LIFEPAK 15 monitor/defibrillator a vital part of decreasing Door-to-Balloon (D2B) response times.

Quickly collect and access patient and CPR performance data.

On-screen temperature display in either Celsius or Fahrenheit.

Large screen with high resolution for maximum viewability in any setting.
Ergonomically designed handle has built-in shock absorbers for cushion and fits two gloved hands for easy pass off.

CPR Metronome is a proven technology that actively guides users to a consistent compression rate without the need for extra external hardware.

Integrated Microstream™ EtCO₂ monitoring by Medtronic provides waveform ranges as low as 0-20 mmHg to help identify ROSC or gauge CPR quality, consistent with current AHA guidelines.

The LIFEPAK 15 monitor/defibrillator at a glance

Redesigned cable connector gives you the confidence for secure therapy delivery.
For six decades, Physio-Control has been developing technologies and designing devices that are legendary among first response professionals, clinical care providers and the community.
A legacy of trust

Since we were founded in 1955, Physio-Control has been giving medical professionals around the world legendary quality and constant innovation. Our LIFEPAK devices have been carried to the top of Mount Everest. They’ve been launched into orbit on the International Space Station. And you’ll find more than half a million units in use today on fire rescue rigs, ambulances and hospital crash carts worldwide.

We are inspired and informed by the rescuers who choose our products to save lives. The knowledge gained from working with some of the world’s largest EMS organizations helps us constantly improve clinical standards and durability.

Today, we continue our legacy of innovation with leading technologies that improve patient care. Our 360J biphasic technology gives patients the best chance at survival. Our secure, web-based flow of ECG data helps improve STEMI patient outcomes. And our carbon monoxide monitoring helps catch the number one cause of poisoning deaths.

From the streets to the emergency room to the administrative office, we offer a full suite of solutions that range from code response to quality control analysis. And even as we bring ground-breaking products to the market, some things don’t change. As always, when you choose our products, you don’t just get a device. You also get the most comprehensive warranty in the business, industry-leading technical service, and a partner with six decades of experience in emergency care.

For more information about the LIFEPAK 15 monitor/defibrillator—and how it can help you do what you do best—please contact your local Physio-Control representative or visit www.physio-control.com.
Specifications

General
The LIFEPAK 15 monitor/defibrillator has six main operating modes:
AED mode: for automated ECG analysis and a prompted treatment protocol for patients in cardiac arrest.
Manual mode: for performing manual defibrillation, synchronized cardioversion, noninvasive pacing, and ECG and vital sign monitoring.
Archive mode: for accessing stored patient information.
Setup mode: for changing default settings of the operating functions.
Service mode: for authorized personnel to perform diagnostic tests and calibrations.
Demo mode: for simulated waveforms and trend graphs for demonstration purposes.

Physical characteristics
Weight:
• Basic monitor/defibrillator with new roll paper and two batteries installed: 17.5 lb (7.9 kg)
• Fully featured monitor/defibrillator with new roll paper and two batteries installed: 18.5 lb (8.4 kg)
Lithium-ion battery: ≤1.3 lb (0.6 kg)
Accessory bags and shoulder strap: 3.9 lb (1.77 kg)
Standard (hard) paddles: 2.1 lb (0.95 kg)
Height: 12.5 in (31.7 cm)
Width: 15.8 in (40.1 cm)
Depth: 9.1 in (23.1 cm)

Display
Size (active viewing area): 8.4 in (212 mm) diagonal; 6.7 in (171 mm) wide x 5.0 in (128 mm) high
Resolution: display type 640 dot x 480 dot color backlit LCD
User selectable display mode: full color or SunVue display high contrast
Display: a minimum of 5 seconds of ECG and alphanumeric values, device instructions, or prompts
Display: up to three waveforms
Waveform display sweep speed: 25 mm/sec for ECG, SpO2, IP; and 12.5 mm/sec for CO2

Data management
The device captures and stores patient data, events (including waveforms and annotations), and continuous waveform and patient impedance records in internal memory.
The user can select and print reports, and transfer the stored information via supported communication methods.

Report types:
• Three format types of CODE SUMMARY™ critical event records: short, medium, and long
• 12-lead ECG with STEMI statements
• Continuous Waveform (transfer only)
• Trend Summary
• Vital Sign Summary
• Snapshot

Memory capacity: Total capacity is 360 minutes of continuous ECG, 90 minutes of continuous data from all channels, or 400 single waveform events.
Maximum memory capacity for a single patient includes up to 200 single waveform reports and 90 minutes of continuous ECG.

Communications
The device is capable of transferring data records by wired or wireless connection. This device complies with Part 15 of the FCC rules, and its operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
• Serial Port RS232 communication + 12V available
• Limited to devices drawing maximum 0.5 A current
• Bluetooth® technology provides short-range wireless communication with other Bluetooth-enabled devices

Monitor
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 ECG monitoring.
A 10-wire cable is used for 12-lead ECG acquisition.
When the chest electrodes are removed, the 10-wire cable functions as a 4-wire cable.
Standard paddles or QUIK-COMBO® pacing/defibrillation/EGC electrodes are used for paddles lead monitoring.
Frequency response:
• Monitor: 0.5 to 40 Hz or 1 to 30 Hz
• Paddles: 2.5 to 30 Hz
• 12-lead ECG diagnostic: 0.05 to 150 Hz
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, AVR, AVL, AVF, and C lead acquired simultaneously (5-wire ECG cable)
• Leads I, II, III, AVR, AVF, V1,V2,V3,V4,V5, and V6 acquired simultaneously (10-wire ECG cable)
ECG size: 4, 3, 2.5, 2, 1.5, 1, 0.5, 0.25 cm/mv (fixed at 1 cm/mv for 12-lead)
Heart rate display:
• 20–300 bpm digital display
• Accuracy: ±4% or ±3 bpm, whichever is greater
• GRS Detection Range Duration: 40 to 120 msec
• Amplitude: 0.5°C to 5.0 m
Common mode rejection (CMRR): ECG Leads: 90 db at 50/60 Hz
SpO2/SpCO/SpMet
Sensors:
• MASIMO® sensors including RAINBOW® sensors
• NELLCO® sensors when used with the MASIMO RED™ MNC adapter
SpO2
Displayed saturation range: <50% for levels below 50%; 50 to 100%
Saturation accuracy: 70–100% (0–69% unspecified)
Adults/pediatrics:
±2 digits (during no motion conditions)
±3 digits (during motion conditions)
Dynamic signal strength bar graph
Pulse tone at SpO2 pulsations are detected
SpO2 update averaging rate user selectable:
4, 8, 12 or 16 seconds
SpO2 sensitivity user selectable: Normal, High
SpO2 measurement: Functional SpO2 values are displayed and stored
Pulse rate range: 25 to 240 bpm
Pulse rate accuracy (adults/pediatrics): ±2 digits (during no motion conditions)
±3 digits (during motion conditions)
Optional SpO2 waveform display with autogain control
SpCO
SpCO concentration display range: 0 to 40%
SpCO accuracy: ±3 digits
SpMet
SpMet saturation range: 0 to 15.0%
SpMet display resolution: 0.1% up to 10%
SpMet accuracy: ±1 digit
NIBP
Blood pressure systolic pressure range: 30 to 255 mmHg
Diastolic pressure range: 15 to 220 mmHg
Mean arterial pressure range: 20 to 235 mmHg
Units: mmHg
Blood pressure accuracy: ±5 mmHg
Blood pressure measurement time: 20 seconds, typical (excluding cuff inflation time)
Pulse rate range: 30 to 240 pulses per minute
Pulse rate accuracy: ±2 pulses per minute or ±2%, whichever is greater

Operation features initial cuff pressure: User selectable, 80 to 180 mmHg
Automatic measurement time interval: User selectable, from 2 min to 60 min
Automatic cuff deflation excessive pressure:
If cuff pressure exceeds 290 mmHg
Excessive time: If measurement time exceeds 120 seconds
CO2
CO2 range: 0 to 99 mmHg (0 to 13.2 kPa)
Units: mmHg, %, or kPa
Respiration rate accuracy:
• 0 to 70 bpm: ±1 bpm
• 71 to 99 bpm: ±2 bpm
Respiration rate range: 0 to 99 breaths/minute
Rise time: 190 msec
Response time: 3.3 seconds (includes delay time and rise time)
Initialization time: 30 seconds (typical), 10-180 seconds
Ambient pressure: automatically compensated internally
Optional display: CO2 pressure waveform
• Scale factors: Autoload, 0–20 mmHg (0–4 Vol%), 0–50 mmHg (0–7 Vol%), 0–100 mmHg (0–14 Vol%)
Excitation voltage: 5 Vdc
Connector: Electro Shield: CKS 3102A 14S-6S
Bandwidth: Digital filtered, DC to 30 Hz (< -3db)
Zero drift: 1 mmHg/hr without transducer drift
Zero adjustment: ±150 mmHg including transducer offset
Numerical accuracy: ±1 mmHg or 2% of reading, whichever is greater, plus transducer error
Pressure range: -30 to 300 mmHg, in six user selectable ranges
Invasive pressure display
Display: IP waveform and numerics
Units: mmHg
Labels: PI or P2, ART, PA, CVP, ICP, LAP (user selectable)
Temperature
Range: 76.6°F to 113.4°F (24.8° to 45.2°C)
Resolution: 0.1°C
Accuracy: ±0.2°C including sensor
Reusable temperature cable: 5 foot or 10 foot
Disposable sensor types: Surface–Skin, Esophageal/Rectal
Trend
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 ECG lead with the greatest ST displacement
Display choice of: HR, PR (SpO2), PR (NIBP), SpO2 (%), SpCO (%), SpMet (%), CO2 (ECO2/FICO2), RR (CO2), NIBP, IP1, IP2, ST

Alarms
Quick set: Activates alarms for all active vital signs
VF/VT alarm: Activates continuous (CPSS) monitoring in Manual mode
No breath alarm: Occurs when 30 seconds has elapsed since last detected respiration
Heart rate alarm limit range: Upper, 100–250 bpm; lower, 30–150 bpm

Interpretive algorithm
12-Lead interpretive algorithm: University of Glasgow 12-Lead ECG Analysis Program, includes AMI and STEMI statements

Printer
Prints continuous strip of the displayed patient information and reports
Paper size: 3.9 in (100 mm)
Defibrillator

Biphasic 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 joules or 15% of setting, whichever is greater, into 25-175 ohms.
- **Voltage compensation:** Active when disposable therapy electrodes are attached. Energy output within ±5% or ±1 joule, whichever is greater, of 50 ohms value, limited to the available energy which results in the delivery of 360 joules into 50 ohms.
- **Paddle options:** QUIK-COMBO pacing/defibrillation/ECG electrodes (standard). Cable Length 8 foot long (2.4 m) QUIK-COMBO cable (not including electrode assembly). Standard paddles (optional).
- **Manual mode**
- **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
- **Charge time:** Charge time to 360 joules in less than 10 seconds, typical.
- **Synchronous cardioversion:** Energy transfer begins within 60 msec of the QRS peak
- **Paddles leads off sensing:** When using QUIK-COMBO electrodes, the device indicates Paddles Leads Off if the resistive part of the patient impedance is greater than 300 ±15% ohms, or if the magnitude of the patient impedance is greater than 440 ±15% ohms.

**AED mode**

**Shock Advisory System**™ (SAS): an ECG analysis system that advises the operator if the algorithm detects a shockable or non-shockable 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 20 seconds if the initial rhythm finding is "SHOCK ADVISED".

**Biphasic output:** Energy Shock levels ranging from 150–360 joules with same or greater energy level for each successive shock.

**cprMAX™ Technology:** In AED mode, cprMAX technology provides a method of maximizing the CPR time that a patient receives, with the overall goal of improving the rate of survival of patients treated with AEDs.

**Setup options:**
- **Auto Analyze:** Allows for auto analysis. Options are OFF, AFTER 1ST SHOCK.
- **Initial CPR:** Allows the user to be prompted for CPR for a period of time prior to other activity. Options are OFF, ANALYZE FIRST, CPR FIRST.
- **Initial CPR Time:** Time interval for Initial CPR. Options are 15, 30, 45, 60, 90, 120, and 180 seconds.
- **Pre-Shock CPR:** Allows the user to be prompted for CPR while the device is charging. Options are OFF, 15, 30, 60 seconds.
- **Pulse Check:** Allows the user to be prompted for a pulse check at various times. Options are ALWAYS, AFTER EVERY SECOND RSA, AFTER EVERY RSA, NEVER.
- **Stacked Shocks:** Allows for CPR after 3 consecutive shocks or after a single shock. Options are OFF, ON.
- **CPR Time:** 1 or 2 User selectable times for CPR. Options are 15, 30, 45, 60, 90, 120, 180 seconds and 30 minutes.

**Pacer**

**Pacing mode:** Demand or non-demand rate and current defaults.

- **Pacing rate:** 40 to 170 PPM.
- **Rate accuracy:** ±1.5% over entire range
- **Output waveform:** Monophasic, truncated exponential current pulse (20 ± 1 ms)
- **Output current:** 0 to 200 mA.
- **Pause:** Pacing pulse frequency reduced by a factor of 4 when activated.

**Refractory period:** 180 to 280 msec (function of rate).

**Environmental**

- **Unit meets functional requirements during exposure to the following environments unless otherwise stated:**
- **Operating temperature:** 32° to 113°F (0° to 45°C); -4° to -20°C for 1 hour after storage at room temperature; 140°F (60°C) for 1 hour after storage at room temperature
- **Storage temperature:** -4° to 149°F (-20° to 65°C) except therapy electrodes and batteries
- **Relative humidity, operating:** 10 to 95%, non-condensing.
- **Shock Advisory System:** Allows the user to be prompted to perform CPR even if the patient is still receivng shock output.

**Battery**

- **Battery capacity:** For two, fully charged batteries, 68°F (20°C)
- **Operating mode**
  - **Monitoring (minutes):** Typical 360, 340, 420
  - **Pacing (minutes):** Minimum 340, 320, 400
  - **Defibrillation (S60 discharges):** Capacity after low battery Typical 21, 20, 30
- **Battery specifications**
  - **Battery type:** Lithium-ion
  - **Weight:** ≤1.3 lb (0.6 kg)
  - **Charging time with fully depleted battery:** 4 hours and 15 minutes (typical)
  - **Battery indicators:** Each battery has a fuel gauge that indicates its approximate charge. A fuel gauge that shows two or fewer LEDs after a charge cycle indicates that the battery should be replaced.
  - **Charging temperature range:** 41° to 113°F (5° to 45°C)
  - **Operating range:** 32° to 113°F (0° to 45°C)
  - **Short term (<1 week) storage temperature range:** -4° to 140°F (-20° to 60°C)
  - **Long term (>1 week) storage temperature range:** 68° to 77°F (20° to 25°C)
  - **Operating and storage humidity range:** 5 to 95% relative humidity, non-condensing.

**Pacing**

**Pacing mode:** Demand or non-demand rate and current defaults.

**Rate accuracy:** ±1.5% over entire range.

**Output waveform:** Monophasic, truncated exponential current pulse (20 ± 1 ms).

**Output current:** 0 to 200 mA.

**Pulse width:** Pacing pulse frequency reduced by a factor of 4 when activated.

**Environmental**

- **Unit meets functional requirements during exposure to the following environments unless otherwise stated:**
  - **Operating temperature:** 32° to 113°F (0° to 45°C); -4° to -20°C for 1 hour after storage at room temperature; 140°F (60°C) for 1 hour after storage at room temperature
  - **Storage temperature:** -4° to 149°F (-20° to 65°C) except therapy electrodes and batteries
  - **Relative humidity, operating:** 10 to 95%, non-condensing.

**Atmospheric pressure, operating:** -1,253 to -1,253 m. Ambient pressure: -500 to 10,000 ft (-1,520 to 3,048 m).

**Water resistance, operating:** IP44 (splash proof, dust and sand resistant) per IEC 529 and EN 1789 (without accessories except for 12-lead ECG cable, hard paddles, and battery pack).

**Vibration:** MIL-STD-810E Method 514.4, Propeller Aircraft - category 4 (figure 514.4-7 spectrum a), Helicopter - category 6 (3.75 Grms), Ground Mobile - category 8 (3.14 Grms), EN 1789: Sinusoidal Sweep, 1 octave/min, 10-150 Hz, ±0.15 mm/2 g.

**Shock (drop):** 5 drops on each side from 18 inches onto a steel surface EN 1789: 30-inch drop onto each of 6 surfaces.

**Shock (functional):** Meets IEC 60608-2-27 and MIL-STD-810E shock requirements 3 shocks per face at 40 g, 6 ms half-sine pulses.

**Bump:** 1000 bumps at 15 g with pulse duration of 6 msec.

**Impact, non-operating:** EN 60601-1 0.5 + 0.05 joule impact UL 60601-1 0.78 lb impact 2 inch diameter steel ball. Meets IEC62262 protection level IK 04.


**Cleaning:** Cleaning 20 times with the following: Quaternary ammonium, isopropyl alcohol, hydrogen peroxide.

**Chemical resistance:** 60 hour exposure to specified chemicals: Betadine (10% Povidone-Iodine solution), Coffee, Cola, Dextrose (5% Glucose solution), Electrode Gel/Paste (98% water, 2% Carbopol 9409, HCl (0.5% solution, pH=1), Isopropyl Alcohol, NaCl solution (0.9% solution), Cosmetic disoloration of the paddle well shorting bar shall be allowed following exposure to HCL (0.5% solution).

**Power**

- **Power adapters:** AC or DC

- **Power Adapters provide operation and battery charging from external AC or DC power:**
  - Full functionality with or without batteries when connected to external AC/DC
  - Typical battery charge time while installed in LIFEPAK 15 device is 190 minutes
  - Indicators: external power indicator, battery charging indicator
References


All claims valid as of August 2018.

Physio-Control is now part of Stryker.