LIFEPAK® 15 MONITOR/DEFIBRILLATOR
For Emergency Medical Services
When you respond to emergencies, you need the most advanced monitor/defibrillator that sets the new standard in innovation, operations and toughness.
The LIFEPAK 15 monitor/defibrillator delivers.

Physio-Control defibrillators have set the standard for over 55 years, and the enhanced LIFEPAK® 15 monitor/defibrillator raises the bar. As our most advanced emergency response monitor/defibrillator, the LIFEPAK 15 device balances sophisticated clinical technologies and supreme ease of use in a device that’s tough enough to stand up to your most challenging environments. Evolving from its original platform, the 15 adds new features—temperature monitoring and external power—to complement existing features which include 360J energy and 12-lead ECG transmission. And that means your team can be even more effective.

A LIFEPAK device never stands on its own—and the LIFEPAK 15 monitor is no different. Physio-Control is committed to providing innovative solutions for emergency response care, from first responders to throughout the hospital.

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

The pioneer in portable defibrillation and monitoring technology, Physio-Control is committed to creating technologies and devices that change the way you provide emergency care. You can see the results in the enhanced LIFEPAK 15 monitor/defibrillator, which sets a new standard in innovation—yet again.
Advanced monitoring parameters
The 15 gives you more monitoring capabilities than any other device. Noninvasive monitoring of carbon monoxide, SpO₂, and methemoglobin (related to certain chemical exposures and drugs) offered by Masimo® Rainbow® Technology helps you detect hard-to-diagnose conditions and improve patient care. In addition, the 15 now 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™ software.

Advanced support for treating cardiac patients
The 15 continuously monitors all 12-leads in the background and alerts you to changes using the ST-Segment trend monitoring feature, after acquiring the initial 12-lead. Additionally, STJ values are now included on the 12-lead printout to help you identify changes. The 15 also works seamlessly with the web-based LIFENET System 5.0, so you can automatically share critical patient data with multiple patient care teams.

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 defibrillation is common among VF cardiac arrest patients and that defibrillation of recurring episodes of VF is increasingly difficult. Another recent 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 been demonstrated to help professionals perform compressions and ventilations within the recommended range of the 2010 ERC 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, EMS personnel can review CPR statistics and provide training and feedback where it is most needed.
The new standard in operational effectiveness.

Flexible, connected and easy to use, the LIFEPAK 15 monitor/defibrillator was designed based on the feedback and needs specific to working in the field.

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**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.

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**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. In addition, you can track the status and service life of your batteries using LIFENET® Asset, part of the LIFENET System data network.

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**Data connectivity**
The 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 using LIFENET Asset and alert you to any potential issues.

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**Upgradable platform**
The 15 platform is flexible enough to adapt to evolving protocols and new guidelines, and can be upgraded as you’re ready to deliver new capabilities. With more processing power and speed, the 15 is designed to grow as your needs change, helping you avoid costly premature replacements.

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**Attention to detail**
The LIFEPAK 15 monitor is designed based on field feedback to make it a more effective tool. The 15 has a larger handle for easier handoffs, an easy to clean keypad, and a common interface to the LIFEPAK 12 defibrillator/monitor that helps reduce training.
The new standard in toughness.

We believe LIFEPAK equipment should live up to the highest expectations of those working in the harshest settings. The 15 is LIFEPAK TOUGH™, with improved ruggedness and durability you can rely on.

Works when dropped, kicked, soaked or dirty
The LIFEPAK 15 monitor/defibrillator passes 30-inch drop tests, which is equal to falling off a cot or dropping it in transit. And with an IP44 rating, it doesn’t matter how wet or dirty it gets, so you can keep working in steady wind, rain and other harsh environments.

Toughened inside and out
We heard from emergency response teams that they wanted a tougher device—so we added a shock-absorbing handle, a double-layer screen that can take a beating from doorknobs and cot handles, and redesigned cable connections for confident monitoring and therapy delivery.

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

* A variety of customized service options are available.
LIFEPAK® 15 MONITOR/DEFIBRILLATOR

Integrated Carbon Monoxide and Methemoglobin monitoring.

12-lead ECG transmissions via the LIFENET System and ST segment trend monitoring make the LIFEPAK 15 device a vital part of decreasing EMS-to-Balloon (E2B) response times.

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.

Easy one-touch Bluetooth® data transmission.

Large screen for better visibility and easy monitoring and one touch to switch from LCD color view to SunVue mode for best viewing in sunlight.

On-screen temperature display in either Celsius or Fahrenheit.
CPR Metronome, a proven technology that actively guides users to a consistent compression rate without the need for extra external hardware.

Integrated Oridion EIC O₂ provides waveform ranges as low as 0–20 mmHg to help identify ROSC or gauge CPR quality, consistent with the AHA guidelines.

Redesigned cable connector gives you the confidence for secure therapy delivery.

Ergonomically designed handle has built-in shock absorbers for cushion and fits two gloved hands for easy pass off.

The LIFEPAK 15 monitor/defibrillator at a glance.
For more than 55 years, 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 powerful 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 over 55 years of experience in emergency care.

For more information about the enhanced 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.
Physio-Control Family of Products

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<th>Defibrillators/Monitors</th>
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<tr>
<td><strong>LIFEPAK CR® Plus Automated External Defibrillator</strong></td>
<td>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.</td>
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<tr>
<td><strong>LIFEPAK® 1000 Defibrillator</strong></td>
<td>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.</td>
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<tr>
<td><strong>LIFEPAK® 15 Monitor/Defibrillator</strong></td>
<td>The LIFEPAK 15 monitor/defibrillator is the new standard in emergency care for ALS teams who want the most clinically innovative, operationally effective, and LIFEPAK TOUGH device available today.</td>
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<tr>
<td><strong>LIFEPAK® 20e Defibrillator/Monitor</strong></td>
<td>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.</td>
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CPR Assistance

LUCAS® 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.

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™ 9.0 Data Review Software
CODE-STAT 9.0 data review software is a retrospective analysis tool that provides easy access to data, reports, and post-event review.
### 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: 8.6 kg (18.9 lb)
  - Fully featured monitor/defibrillator with new roll paper and two batteries installed: 9.1 kg (20.1 lb)
- **Lithium-ion battery:** 0.59 kg (1.3 lb)
- **Accessory Bags and Strap Shoulder:** 1.77 kg (3.9 lb)
- **Standard (Hard) Paddles:** 0.95 kg (2.1 lb)
- **Height:** 31.7 cm (12.5 in)
- **Width:** 40.1 cm (15.8 in)
- **Depth:** 23.1 cm (9.1 in)

### DISPLAY

- **Size (active viewing area):** 212 mm (8.4 in) diagonal; 171 mm (6.7 in) wide x 128 mm (5.0 in) 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 record: short, medium, and long
  - 12-lead ECG diagnostic: 0.05 to 150 Hz
  - Functional SpO₂ values are "<50" for levels below 50%.
- **Saturation Accuracy:** 70–100% (0–69% unspecified)
- **Pulse Rate Accuracy (Adults/Pediatrics):** ±2 pulses per minute or ±2%, whichever is greater
- **Response Time:** 3.3 seconds (includes delay time and rise time)
- **Initialization Time:** 30 seconds (typical), 10–180 seconds
- **Ambient Pressure:** automatically compensated internally
- **Display Choice of:** IP waveform and numerics
- **Display:** 20–300 bpm digital display
- **Accuracy:** ±4% or ±3 bpm, whichever is greater

### 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 5-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/ECG 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, AVR, AVL, and AVF acquired simultaneously (4-wire ECG cable)

Leads I, II, AVR, AVL, and C lead acquired simultaneously (10-wire ECG cable)

**ECG size:** 4, 3, 2.5, 2, 1.5, 1, 0.5, 0.25 cm/mV

#### Heart Rate Display:

20–300 bpm digital display

- **Accuracy:** ±4% or ±3 bpm, whichever is greater

**Response Time:** 40 to 120 msec

**Amplitude:** 0.5 to 5.0

**Common Mode Rejection (CMRR):**

- ECG Leads: 90 dB

#### SpO₂/SpCO/SpMet

**Sensors:**

- NELLCOR® sensors including RAINBOW® sensors
- NELLCOR® sensors when used with the MASIMO RED™ MNC adapter

**SpO₂**

- **Displayed Saturation Range:** "<50% for levels below 50% - 100% (0–69% unspecified)
- **Accuracy:** ±2% of reading, ±3% of reading, whichever is greater

**SpCO**

- **Sensor:** Only Rainbow Sensors
- **SpCO Concentration Display Range:** 0 to 40%

**SpMet**

- **Sensor:** Only Rainbow Sensors
- **SpMet Saturation Range:** 0 to 15.0%

**Display Resolution:**

- SpO₂: 0.1% up to 10%, then single digit resolution up to 1%
- SpMet: ±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, 60 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 Pressure Time:** If measurement time exceeds 120 seconds

### CO₂

- **CO₂ Range:** 0 to 99 mmHg
- **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:

- **180 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:** Autoscale, 0–20 mmHg (0–4 Vol%), 0–50 mmHg (0–10 Vol%), 0–100 mmHg (0–14 Vol%)

### Invasive Pressure

- **Transducer Type:** Strain–gauge resistive bridge
- **Transducer Sensitivity:** 5 V/V mm Hg

- **Excitation Voltage:** 5 Vdc

- **Connector:** Electro Shield: CXS 3152A 145–85

- **Bandwidth:** Digital filtered, DC to 30 Hz (< -3db)
- **Zero Drift:** 1 mm Hg/hr without transducer drift
- **Zero Adjustment:** ±150 mm Hg including transducer offset

- **Numeric Accuracy:** ±1 mm Hg or 2% of reading, whichever is greater, plus transducer error

- **Pressure Range:** -30 to 300 mm Hg, in six user selectable ranges

### Invasive Pressure Display

- **Display:** IP waveform and numerics
- **Units:** mmHg
- **Labels:** P1 or P2, ART, PA, CVP, ICP, LAP (user selectable)

#### Temperature

- **Range:** 25.8° to 45.2°C (76.6° to 113.4°F)
- **Resolution:** 0.1°C
- **Accuracy:** ±0.2°C including sensor

#### Reusable Temperature Cable: 5 foot or 10 foot

#### Disposable Sensor Types: Surface–Skin; Bladder (14F, 16F, 18F), 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 and includes an indicator for which alarms are active

**VF/VT Alarm:** Activates Continuous Patient Surveillance System (CPSS) monitoring in Manual mode

**AneuA Alert:** 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:** 100 mm (3.9 in)

**Print Speed:** 25 mm/sec or 12.5 mm/sec

Optional: 50 mm/sec time base for 12-lead ECG reports

**Delay:** 8 seconds

**Autoprint:** Waveform events print automatically (user selectable)

**Frequency Response:** (user selectable)

**POWER**

**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 AUTO, ANALYZE R, QUIK-PACER, CPR FIRST
- Initial CPR Time: Time interval for initial CPR. Options are 15, 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 seconds.
- Pulse Check: Allows the user to be prompted for a pulse check at various times. Options are ALWAYS, AFTER EVERY SECOND NSA, AFTER EVERY NSA, NEVER
- Stack Shock: Allows for a pulse check 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 (user selectable)

**Rate Accuracy:** ±1.5% over entire range

**Output Waveform:** Monophasic, truncated exponential current pulse (20 ±1.5 msec)

**Output Current:** 0 to 200 mA

**Pause:** Pacing pulse frequency reduced by a factor of 4 when activated

**Refractory Period:** 200 to 300 msec ±3% (function of rate)

**ENVIRONMENTAL**

Unit meets functional requirements during exposure to the following environments unless otherwise stated.

**Operating Temperature:** 0° to 45°C (32° to 113°F); -20°C to +5°C (-4° to 41°F) for 1 hour after storage at room temperature; 60°C (140°F) for 1 hour after storage at room temperature

**Storage Temperature:** -20° to +65°C (-4° to 149°F) except therapy electrodes and batteries

**Relative Humidity, Operating:** 5 to 95%, non-condensing

**Relative Humidity, Storage:** 10 to 95%, non-condensing

**Atmospheric Pressure, Operating:** 382 to 4,572 m (1,253 to 15,000 ft). NBP: -152 to 3,048 m (-500 to 10,000 ft)

**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 9 (3.75 Gs), Ground Mobile - category 6 (3.14 Gms), EN 1789: Simuladul Sweep, 1 octave/min, 10−150 Hz, ±0.15 mm/s²

**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 60601-2-27 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 60601-1.05 ± 0.05 joule impactUL 60601-1 6.78 Nm impact with 2-inch diameter steel ball. Meets IEC82262 protection level IK 04

**EMC:** EN 60601-1-2:2001 Medical Equipment

**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 940), HCl (0.5% solution, pH=1), Isopropyl Alcohol, NaCl solution (0.9% solution), Cosmetic discoloration of the paddle well shorting bar shall be allowed following exposure to HCl (0.5% solution).

**BATTERY**

**Battery Specifications**

**Battery Type:** Lithium-ion

**Weight:** 0.59 kg (1.3 lb)

**Voltage:** 11.1V typical

**Capacity (rated):** 5.7 amp hours

**Charge Time (with fully depleted battery):** 3.5 hours via power supply, 4.5 hours via battery charger (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:** 0° to 50°C (32° to 122°F)

**Operating Temperature Range:** 0° to 50°C (32° to 122°F)

**Short Term (<1 week) Storage Temperature Range:** -20° to 60°C (-4° to 140°F)

**Long Term (>1 week) Storage Temperature Range:** 20° to 25°C (68° to 77°F)

**Operating and Storage Humidity Range:** 5 to 95%, non-condensing relative humidity, non-condensing
REFERENCES


All claims valid as of October 2012.

For further information please contact your local Physio-Control representative or visit our website at www.physio-control.com