LIFEPAK® 12 DEFIBRILLATOR/MONITOR

Works like you work.™

PHYSIO CONTROL


u make a difference.

Your job demands more.

Use a tool that can tackle today's patient care needs and adapt to tomorrow's challenges.

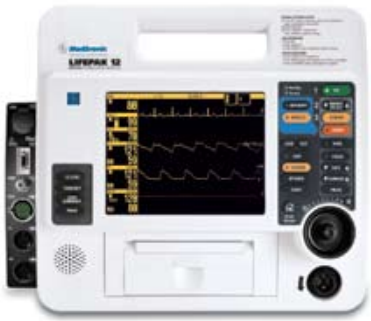
The gold standard for more than 30 years, LIF are continually evolving to keep pace with the patient care. The LIFEPAK 12 defibrillator/mon parameter therapeutic and diagnostic function portable device.

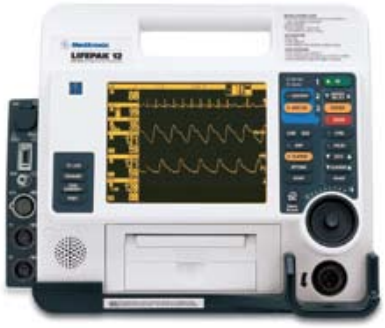
Over 80,000 LIFEPAK 12 defibrillator/monitors on rescue rigs and in hospitals worldwide. Fee global community keeps us innovating—addin you in your lifesaving work.

Trusted

VOLUTION

Keeping pace as patient care evolves.





rillator/monitor

te cardiac care

nded diagnostic

ng capabilities.

so does the *12.*

Here are highlights of advances since its first release:

1998

The LIFEPAK 12 defibrillator/monitor revolutionizes acute cardiac care, with expanded diagnostic and monitoring capabilities.

1999

LIFEPAK 12 defibrillator/monitor is enhanced with ADAPTIV™ biphasic technology up to 360J, NIBP and CO_2 monitoring capabilities.

2001

Among many features added to the *12* are ST Monitoring up to 8 hours and invasive pressure monitoring.

2004

Bluetooth® capabilities enable wireless transmission of 12-lead ECGs.

2007

cprMAX™ technology provides increased flexibility for protocols to maximize CPR.

STEMI Management technology enables secure and flexible flow of ECG data, linking EMS and hospitals for improved STEMI treatment.

Complemented by a rich range of services and opt

Technical Field Service

We offer one of the largest and best-trained networks of technica in the industry. On call 24 hours a day, 7 days a week (North Ame your phone call within two hours, to work with you to quickly ass the best solution. An integral part of your team, our field service r tenure of more than 12 years and log an average of 2,400 field ho with you to design a customized service offering that meets your a comprehensive plan covering repair, preventative maintenance limited to repair-only or inspection-only.

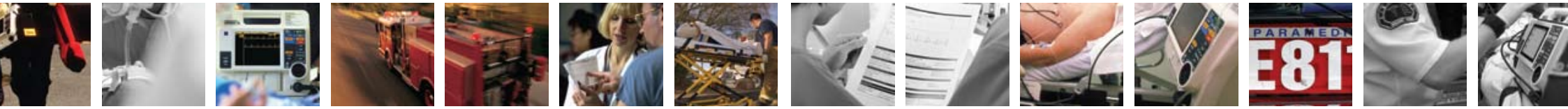
Training

Whether you are taking delivery of your first LIFEPAK 12 defibrilla new options, your sales rep will provide inservice training to help your Physio-Control products. Specialized training—ranging from live webcasts to on-site classes—is also available for features su monitoring and 12-lead ECG. Continuing education credits are av

Grant Consultation

This complimentary program helps Physio-Control customers strea and writing process. Free assistance is provided to communities, h fire and EMS agencies in applying for grants to upgrade equipmen programs, and provide training. Customers receive guidance on id timing grant applications, and crafting a grant proposal to improve

Accessories



demands of your changing job.

use when cond counts

e you work—in the most demanding

ts you quickly scan clutter-free waveforms

drop test/impact test of 18 inches;

N MONITORING

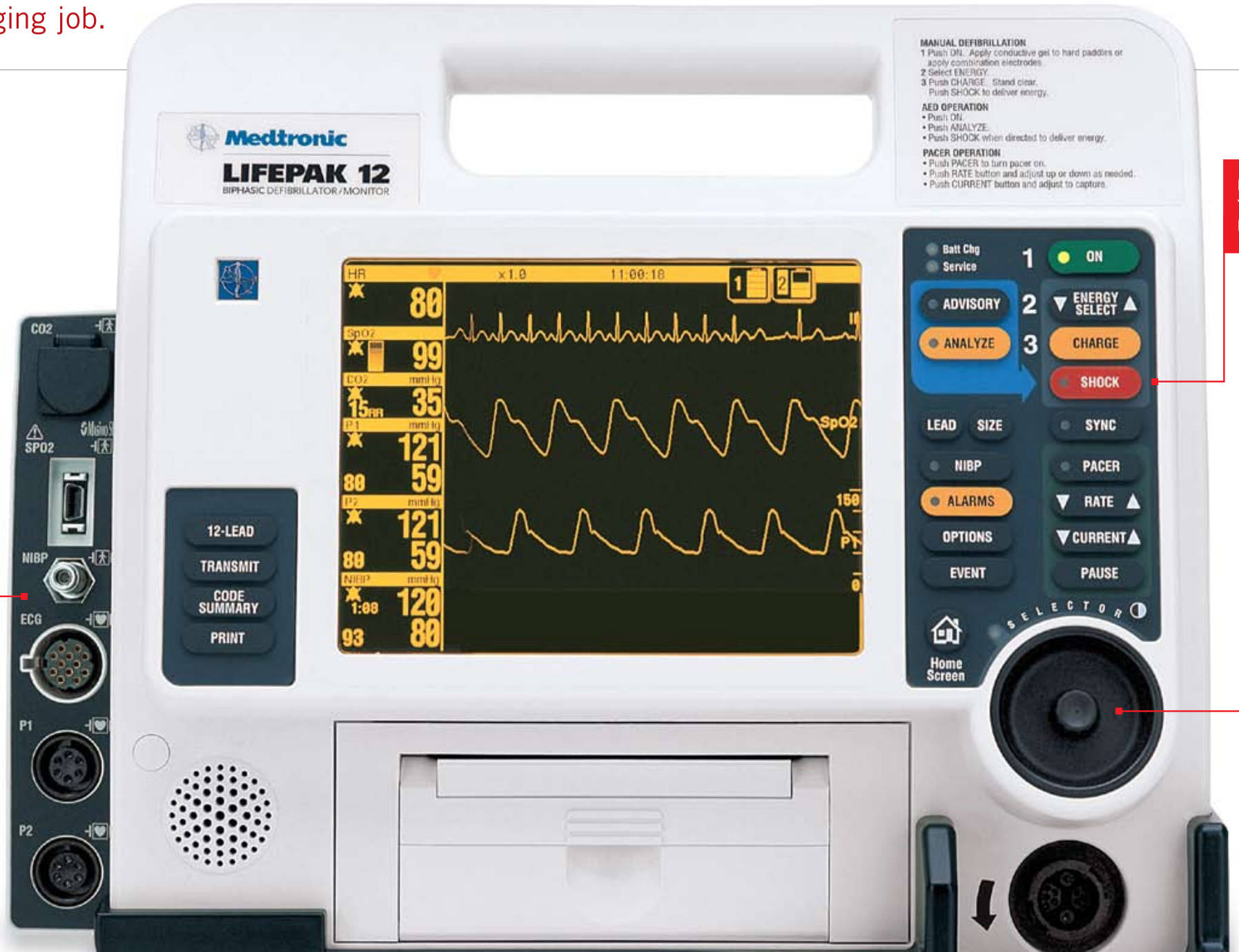
-lead ECG acquisition and transmission, dvance the state of the art, with ST changes in a patient's 12-lead ECG.

tor/monitor on the market today* with Because ECGs (and the diagnosis) can quickly, the device takes a series of and alerts you to changes in a patient's

status breath by breath with patented technology and FilterLine® accessories in high humidity. EtC0$_2$ monitoring is and nonintubated patients.

ns allows for evaluation of changes in nt response to therapy over time.

etry offers accurate and stable oxygen



standard. Raising the bar.

Improving treatment with secure flow of ECG data

Mortality for Acute Coronary Syndrome (ACS) has been shown to increase 40% if door-to-balloon time stretches from 90 minutes to 120 minutes.[4]

Transmitting 12-lead ECGs from the field so hospitals can confirm STEMI diagnosis and activate the cardiac cath lab before the patient arrives can help you meet the ACC/AHA 90-minute door-to-balloon guideline for STEMI patients.[5] The LIFENET STEMI Management Solution links EMS response with hospitals via the internet to improve treatment and management of patients with ACS. Using cutting edge technology, 12-lead ECG data is sent from the *12* to a network of receiving targets in the ED, cath lab, or anywhere the LIFENET Client software is installed, so patient data can be shared quickly. This technology enables hospitals to make patient care decisions such as referral to a PCI capable hospital, or cath lab activation, all while you are still en route.

Studies have reported a significant association between prehospital 12-lead ECGs and shorter door-to-balloon times. Two recent studies found the effect was strongest when the cath lab was activated while the patient was still en route to the hospital.[6,7]

LIFENET® STEMI Management So
technology facilitates a seamless, sec
ECG data between prehospital, emer
treatment centers, enabling you to im
times and reduce false-positive cath l
STEMI care network linking EMS resp
created using our web application an
your gateway devices like SmartPhon
in the field focus on patient care, a ga
diagnostic quality ECGs wirelessly fro
to the proper destination, helping you
90-minute door-to-balloon guideline f
system works on a variety of wireless
requires no dedicated hardware. App
a state-of-the-art datacenter that max
availability—are provided on a subscr
of support are available to meet your

CODE-STAT™ 7.0 Data Review So
Advanced CPR Analytics. This pos
annotates chest compressions onto t
ECG report and calculates CPR statis
2005 AHA Guidelines. The software s
and reporting by consolidating all disp
outcome data into a single e-file. With
download, review, manage and analy
data from multiple LIFEPAK defibrillat
facilitates quality analysis and busines
creation of benchmarking and trendin
system's performance.

DT EXPRESS™ Data Transfer Sof
Windows-based software application
LIFEPAK devices. The software make
critical event and waveform data to yo
patient data, print out a hardcopy rep
disk. For storage and on-screen view
to CODE-STAT 7.0 data review softw

Powerful

eries has five main

atures available
hronous

rating capability for

tomize the device
xecute device

waveforms for

F NiCd (FASTPAK®
AK NiCd battery) or

ter

rates from Power

ed batteries will
down:

	AFTER LOW BATTERY			
	Typical		Min.	
EL	LCD	EL	LCD	EL
43	10	6	2	1
62	14	8	2	1
86	20	12	4	2
73	16	10	2	1
40	7	7	3	3
54	10	10	3	3
80	14	14	6	6
76	12	12	3	3
42	9	6	2	1
60	12	8	2	1
84	18	12	4	2
71	14	10	2	1

0044, 11141-

Low battery icon at
ssage in status area
is indicated, device
When both batteries
e is a voice prompt

power (<30

letected

with
lbs) (unit and
eries). Add 0.3 lbs

Standard Paddles (hard): 0.9kg (1.9 lbs)

Height: 31.7cm (12.5 in)

Width: 39.6cm (15.6 in)

Depth: 23.1cm (9.1 in)

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:
640 x 480 black and white LCD
640 x 480 amber and black EL display

User selectable LCD contrast

Displays a minimum of 4 seconds of ECG and alphanumerics for values, device instructions or prompts

Option to display one or two additional waveforms

Waveform Display Sweep Speed: 25mm/sec for ECG and 12.5mm/sec of CO_2

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: Three format types of CODE SUMMARY™ critical event record (short, medium and long)

- 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

Bluetooth wireless data transfer to cell phone to LIFENET RS receiving station

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

EIA/TIA-RS232E compatible at 9600, 19200, 38400 and 57600 bps

Group III, Class 2 or 2.0 fax

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, 2.5, 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 x 1.0 gain

Common Mode Rejection: 90dB at 50/60Hz

SpO_2

MASIMO SET Sensors
Saturation Range: 1 to 100%

Saturation Accuracy: (70–100%) (0–69% unspecified)
Adults/Pediatrics:
+/- 2 digits (during no motion conditions)
+/- 3 digits (during motion conditions)

Neonates:
+/- 3 digits (during no motion conditions)
+/- 3 digits (during motion conditions)

Dynamic signal strength bar graph

Pulse tone at the onset of the pleth waveform

SpO_2 Update Averaging Rate: User selectable 4, 8, 12 or 16 seconds

SpO_2 Measurement: Functional SpO_2 values are displayed and stored

Pulse Rate Range: 25 to 240 pulses per minute

Pulse Rate Accuracy: (Adults/Pediatrics/Neonates)
+/- 3 digits (during no motion conditions)
+/- 5 digits (during motion conditions)

SpO_2 waveform with autogain control

NIBP

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: ± 3 pulses per minute or ± 3%

$EtCO_2$

Microstream technology

Measurement range: 0 to 99mmHg

Display: CO_2 waveform and $EtCO_2$ numerics

Units: mmHg, kPa, %; user selectable

Automatic ambient pressure compensation

CO_2 Accuracy (>20 minutes): 0 to 38mmHg: ± 2mmHg39 to 99mmHg: ± 5% of reading + 0.08% for every 1mmHg

Warm Up Time: 30 seconds (typical), 180 seconds max

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

Respiration Rate Range: 0 to 60 breaths per minute

Respiration Rate Accuracy: 0 to 40 bpm: ± 1 bpm, 41 to 60 bpm: ± 2 bpm

Invasive Pressure (2 channels)

Measurement Range: -30 to +300mmHg in six user selectable ranges

Display: IP waveform and 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: ± 1mmHg or 2% of reading, whichever is greater, plus transducer error

Leakage Current: Meets ANSI/AAMI/IEC requirements

Trend

Display: Choice of HR, SpO_2(%), EtCO2, RR, NIBP, P1, P2, ST shown in channels 2 or 3

Time Scale: Auto, 30 minutes, 1, 2, 4 or 8 hours

Duration: Up to 8 hours with -06 Memory PCB or later. Reduced storage capacity with earlier versions.

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

VF/VT Alarm: Activates continuous CPSS monitoring in Manual Mode

Apnea Alarm: Occurs when 30 seconds have elapsed since last detected respiration

INTERPRETIVE ALGORITHMS

12-Lead Interpretive Algorithm: GE Medical 12SL, Includes AMI statement

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

FREQUENCY RESPONSE

Diagnostic: 0.05 to 150Hz or 0.05 to 40Hz (user configurable)

Monitor: 0.67 to 40Hz or 1 to 30Hz (user configurable)

Paddles: 2.5 to 30Hz

Analog ECG Output: 0.67 to 32Hz (except 2.5 to 30Hz for Paddles ECG and 1.3 to 23Hz for 1 to 30Hz monitor frequency response)

DEFIBRILLATOR

Waveform: Biphasic truncated exponential with voltage and duration compensation for patient impedance

Energy Accuracy: ±1 joule or 10% of setting, whichever is greater, into 50 ohms

±1 joule or ±5%, whichever is greater, of 50 ohm value into 25 to 200 ohms*

Paddle Options: QUIK-COMBO pacing/defibrillation/ECG electrodes (standard)

FAST-PATCH disposable defibrillation/ECG electrodes (optional)

Standard Paddles (optional)

Internal Handles with discharge control (optional)

External Sterilizable Paddles (optional)

Cable Length: 2.4m (8 ft) long QUIK-COMBO cable (not including electrode assembly)

Manual

Energy Select (Biphasic): 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 or user configurable sequence 100 to 360 joules

Energy Select (Internal): 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 30 and 50 joules

Charge Time: Charge time to 360J in less than 10 seconds, typical

Synchronous Cardioversion: Energy transfer begins within 60ms of the QRS peak

AED

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"

Output Energy (Biphasic): User configurable, sequence of three sequential shock levels ranging from 150-360 joules (200-360 joules, Japan)

* Note: ±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.

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

PACER

Pacing Mode: Demand
defaults (user configu

Pacing Rate: 40 to 170

Rate Accuracy: +/- 1.5

Output Waveform: Mon
current pulse (20 + 1

Output Current: 0 to 20

Pause: Pacing pulse f
of 4 when activated

Refractory Period: 200

ENVIRONMENTAL

Temperature, Operating
SpO2: 5˚ to 45˚C (41˚

Temperature, Non-opera
(-4˚ to 140˚F) except t

Relative Humidity, Oper

Atmospheric Pressure,
(0 to 4572m) (0 to 15,

Water Resistance, Oper
IEC 60529 (with batte

EMC: IEC 60601-1-2:
Medical Equipment-
Collateral Standard:
Requirements
and Tests

IEC 60601-2-4:2002;
Clause 36, Particular
Cardiac Defibrillators
monitors

Shock (drop): Five drop
a steel surface

Vibration: MIL-STD-8
Aircraft – category 4,
and Ground Mobile –

AC POWER ADAPTE

Function

Dimensions: 27.7 x 16

Weight: < 2.3kg (<5 lb

Charge Time (with fully

FASTPAK and FASTPAK

LIFEPAK NiCd: 2.1 hou

LIFEPAK NiCd: 3.0 hou

LIFEPAK SLA: 6 hours

AC Input: Accepts line
47 to 63Hz (domestic
380 to 420Hz (militar

Fuses: Two 250V fuse
220 to 240V: T2.5A) i

Environmental

IPX4 per IEC 60529

Altitude, Operating: To

Altitude, Non-operating

Humidity: 5 to 95% no

Temperature, Operating

Temperature, Storage:
(-4˚ to 150˚F) (followe

d-proven defibrillator/monitor in the world.

Experience the le

that has made LI

the clear favorite

world—for every

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 citizens everywhere.

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2 Chapman FW, Walker RG, Koster RW. Use of 360 joule biphasic shocks for initial and recurrent ventricular fibrillation in prehospital cardiac arrest [ERC abstract O-33]. *Resuscitation.* 2006;69:49-50.

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6 Bradley EH, Herrin J, Wang Y, et al. Strategies for reducing the door-to-baloon time in acute myocardial infarction. *N Engl J Med.* 2006;355:2308-2320.

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