



3915 152ND ST NE | MARYSVILLE, WA 98271 | 1.800.827.3747

Defibrillator Overview

The LIFEPAK 12 defibrillator/monitor series has five main operating modes:

Advisory Mode (SAS): Provides all features available except manual defibrillation, synchronous cardioversion and pacing

Manual Mode: Provides normal operating capability for ALS users

Setup Mode: Allows operator to customize the device

Service Mode: Allows operator to execute device diagnostic test and calibrations

Inservice Mode: Provides simulated waveforms for demonstration purposes



LIFEPAK 12 DEFIBRILLATOR

Specifications:

POWER

Battery Only Configuration:

- Choice of NiCd (FASTPAK battery, FASTPAK 2 battery, LIFEPAK NiCd battery) or SLA (LIFEPAK SLA battery)
- Dual battery capability
- Optional external AC Power Adapter
- Batteries charge while device operates from Power Adapter

Operating Time: Two new fully charged batteries will provide the following prior to shutdown:



3915 152ND ST NE | MARYSVILLE, WA 98271 | 1.800.827.3747

Specifications (continued):

	TOTAL Typical min.				AFTER LOW BATTERY Typical min			
	LCD	EL	LCD	EL	LCD	EL	LCD	EL
Monitoring (Minutes)								
NiCd*	110	81	60	43	10	6	2	1
NiCd**	155	114	85	62	14	8	2	1
NiCd***	220	162	120	86	20	12	4	2
SLA	180	132	100	73	16	10	2	1

**Defibrillation
(360 joule discharges)**

NiCd*	80	72	45	40	7	7	3	5
NiCd**	110	99	60	54	10	10	3	3
NiCd***	160	144	90	80	14	14	6	6
	145	131	85	76	12	12	3	3

**Monitoring plus Pacing
(minutes at 100ma, 60ppm)**

NiCd*	105	75	60	42	9	6	2	1
NiCd**	145	104	85	50	12	8	2	1
NiCd***	210	150	120	84	18	12	4	2
SLA	170	122	100	71	14	10	2	1

*FASTPAK, FASTPAK 2 (11141-000044,11141-000025)

**LIFEPAK NiCd (11141-000027)

***LIFEPAK NiCd (11141-000026)

Low Battery Indication and Message: Low battery icon at top of display and low battery message in status area for each battery. When low battery is indicated, device autoswitches to second battery. When both batteries reach a low battery condition, there is a voice prompt to re place battery.

Warmstart:.....With inadvertent loss of power (<30 seconds), device retains settings

Service indicator:.....When an error is detected



3915 152ND ST NE | MARYSVILLE, WA 98271 | 1.800.827.3747

Specifications (continued):

PHYSICAL CHARACTERISTICS

Weight: Basic defibrillator/monitor with QUIK-COMBO* CABLE:6.6kg (14.5lbs) (unit and QUIK-COMBO cable only., no batteries). Add 0.3 lbs When configured with front case guard.

FASTPAK and FASTPAK 2 Battery: .6kg (1.3 lbs)

LIFEPAK NiCd Battery: 0.8kg (1.7 lbs)

LIFEPAK SLA Battery: 1.3kg (2.8 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 x105.6mm (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 alphanumeric for values, device instructions or Prompts

Option to display one or two additional waveform

Waveform Display Sweep Speed: 25mm/sec for ECG and 12.5mm of CO2



3915 152ND ST NE | MARYSVILLE, WA 98271 | 1.800.827.3747

Specifications (continued):

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 graph
- Vital Signs- includes patient information, event and vital signs log
- Snapshots-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 minutes continuous ECG record

COMMUNICATIONS

The device is capable of transferring data record 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 X on/X off or RTS/CTS flow control at 9600 to 38400 bps

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

Group 111, Class 2 or 2.0 fax

Monitor

Voice Prompts: Used for selected warnings and alarms (configurable on/off)



3915 152ND ST NE | MARYSVILLE, WA 98271 | 1.800.827.3747

Specifications (continued):

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 Selections: 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 1cm/mV for 12-lead)

Heart Rate Display:.....20 to 300 bpm digital display

Out of range Indication: Display symbol "- - "
Heart Symbol flashes for each ORS 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:.....1/VmV x 1.0 gain

Common Mode Rejection:.....90dB at 50/60Hz



3915 152ND ST NE | MARYSVILLE, WA 98271 | 1.800.827.3747

Specifications (continued):

SpO2

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)

Dynamic signal strength bar graph
Pulse tone at the onset of the pleth waveform

SpO2 Update Averaging Rate:.....User selectable 4,8,12,or 16 seconds

SpO2 Measurement:.....Functional SpO2 values are displayed and stored

Pulse Rate Accuracy: (Adults/Pediatrics/Neonates) ± 3 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

SpO2 Update Averaging Rate: User selectable 4,8,12, or 16 seconds

SpO2 Measurement: Functional SpO2 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)

SpO2 waveform with autogain control



3915 152ND ST NE | MARYSVILLE, WA 98271 | 1.800.827.3747

Specifications (continued):

**NIBP
Oscillometric measurement**

Systolic Pressure range:.....30 to 245mmHg
Diastolic Pressure Range:.....12 to 210mmHg
Units:..... \pmmmHg, 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:.....2 pulses per minute or 2% whichever is greater
Typical Measurement Time:.....40 secs

**EtCO2
Microstream technology**

Measurement range:.....0 to 99mmHg
Display:.....CO2 waveform and EtCO2
Units:.....mmHg, kPa, %; user selectable

Automatic ambient pressure compensation \pm \pm

CO2 Accuracy (<20 minutes):.....0 to 38mmHg 2mmHg, 39 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: 1bpm, 41 to 60bpm: 2bpm

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:.....mV/VmmHg
Bandwidth:..... \pm0 -30Hz(<-3dB)

Numeric Accuracy:.....1mmHg or 2% or reading, whichever is greater, plus transducer error

Leakage Current:.....Meets ANSI/AAMI/IEC requirements



3915 152ND ST NE | MARYSVILLE, WA 98271 | 1.800.827.3747

Specifications (continued):

Trend

Display:.....Choice of HR, SpO2(%), 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 greater 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 ALGORITHM

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 \pm 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)



3915 152ND ST NE | MARYSVILLE, WA 98271 | 1.800.827.3747

Specifications (continued):

DEFIBRILLATOR

Waveform:..... \pm biphasic truncated exponential with voltage and duration compensation for patient impedance \pm \pm
Energy Accuracy:..... 1 joule or 10% of setting, whichever is greater, into 50 ohms 1 Joule or 5%, which ever 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 (8ft) 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
- 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



3915 152ND ST NE | MARYSVILLE, WA 98271 | 1.800.827.3747

Specifications (continued):

PACER

Pacing Mode:.....Demand or non-demand rate and current defaults (user configurable) Pacing Rate 40 to 170ppm
Rate Accuracy:..... $\pm 1.5\%$ over entire range
Output Waveform:.....Monophasic, truncated exponential current pulse (20 + 1ms)
Output Current:.....0 to 200mA
Pause:.....Pacing pulse frequency reduced by a factor of 4 when activated
Refractory Period:.....200 to 300ms $\pm 3\%$ (function of rate)

ENVIRONMENTAL

Temperature, Operating:.....0° to 50°C (32° to 122°F) SpO2: 5° to 45°C (41° to 113°F)

Temperature, Non-operation:.....-20° to ± 60 °C (-4° to 140°F) except therapy electrodes and batteries

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

Atmospheric Pressure, Operating:.....Ambient to 429mmHg (0 to 4572m) (0 to 15,000ft)

Water Resistance, Operating:.....IPX4 (splash proof) per IEC 60529 (with batteries and cables installed)

EMC:.....IEC 60601-1-2z;2001/EN60601-1-2-:2001, Medical Equipment-General Requirements for Safety-Collateral

Standard:.....Electromagnetic Compatibility-Requirements and tests 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

Shock (drop):Five drops on each side from 18 in. onto a steel surface

Vibration:.....MIL-STD-810E Method 514.4. Propeller Air craft-category4, Helicopter-category 6 (3.75g), and Ground Mobile-category8 (3.14g)

AC POWER ADAPTER

Function

Dimensions:.....27.7 x 16.8cm (10.9 x 6.6 in)

Weight:.....<2.3kg (,5 lbs) ((including cables)

Charge Time (with fully depleted battery):

FASTPAK and FASTPAK2:.....1.5 hours

LIFEPAK NiCd:.....3.0 hours

LIFEPAK SLA:.....6 hours typical , 12 hours maximum

AC Input:.....Accepts line power from both: 90 to 264VAC. 47 to 63Hz (domestic/international) 108 to 118VAC, 380 to 420V: T2.5A) in at the power input module



3915 152ND ST NE | MARYSVILLE, WA 98271 | 1.800.827.3747

Specifications (continued):

ENVIRONMENTAL

IPX4 per IEC 60529

Altitude, Operating:.....To 4545m (15,000 ft)

Altitude, Non-operating:.....To 5455m (18,000 ft)

Humidity:.....5 to 95% non-condensing

Temperature, Operating:.....0° to 50°C (32° to 122°F)

Temperature, Storage:.....-20° to 65°C (-4° to 150°F) (followed by one hour temperature stabilization in operating temperature range)

Vibration, Operating and Non-operating:

MIL-STD-810E, Method 514.4 Categories 4,6,8

All Specifications are at 20°C unless otherwise stated.