



The **Physio-Control Lifepak 12** is a defibrillator/monitor with pacing options. The Lifepak 12 offers both manual and semi-automatic external defibrillation monitors along with an Add mode. The defibrillator comes with a Shock advisory system to help detect rhythm for shocking, along with a simple 1-2-3 operation. With a large LDC screen, 3 ECG channels can be simultaneously viewed with up to 8 seconds of cascading ECG. Additionally, the Lifepak 12 can also monitor parameters such as heart rate, pulse oximetry, oxygen, blood pressure, and additional vital. The system can easily be connected to Bluetooth to transfer ECG reading and patient data.

## Features

- Biphasic defibrillation waveform
- Semi-automatic defibrillation
- Noninvasive pacemaker
- Pulse oximeter
- Interpretive 12-lead ECG
- Noninvasive blood pressure (NIBP) monitor
- End-tidal CO<sub>2</sub> (EtCO<sub>2</sub>) monitor
- Invasive pressure (IP) monitor
- Vital sign (VS) and ST monitoring
- Fax transmission
- Paddle accessories
- Electroluminescent (EL) display  
(The optimal viewability of an EL display is compromised in direct sunlight.)



# Specifications

## Physical

### Weight

**Basic defibrillator/monitor with QUIK-COMBO cable:** 6.6 kg (14.5 lbs) (unit and QUIK-COMBO cable only – no batteries)

**Fully featured defibrillator/monitor with QUIK-COMBO cable:** 8.0 kg (17.6 lbs) (unit and QUIK-COMBO cable only – no batteries)

**FASTPAK battery:** 0.64 kg (1.4 lbs)

**FASTPAK 2 battery:** 0.64 kg (1.4 lbs)

**LIFEPAK NiCd battery:** 0.8 kg (1.7 lbs)

**LIFEPAK SLA battery:** 1.27 kg (2.8 lbs)

**Height:** 31.7 cm (12.5 in)

**Width:** 38.9 cm (15.3 in)

**Depth:** 21.7 cm (8.5 in)

## Display

### Size

140.8 mm (5.5 in) wide x 105.6 mm (4.2 in) high for LCD, or  
165.1 mm (6.5 in) wide x 123.8 mm (4.9 in) high for EL display

### Display Type

640 dot x 480 dot black and white LCD or amber and black EL display

User selectable display contrast

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

Option to display one or two additional waveforms

Waveform display sweep speed: 25 mm/sec for ECG, SpO2, IP, and 12.5 mm/sec for CO2

## Communications

The device is capable of transferring data records by PC Card internal modem, external EIA/TIA modem, cellular modem, or serial connection.

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

EIA/TIA-232E compatible at 9600, 19200, 38400, 57600 bps.

Group III, Class 2 or 2.0 facsimile, (wired only).



## Specifications Continued

### Operating Modes

**Advisory Mode (SAS):** Provides all features available except manual defibrillation, synchronous cardioversion, pacing, and access to previous patient records.

**Manual Mode:** Provides normal operating capability for ALS users.

**Archive Mode:** Allows operator to transmit, print, edit, or delete previous patient records.

**Setup Mode:** Allows operator to configure the instrument.

**Service Mode:** Allows operator to execute device diagnostic tests and calibrations.

**Inservice Mode:** Provides simulated waveforms and trend graphs for demonstration purposes.

### Power

#### Battery Only Configuration

Choice of NiCd (FASTPAK or FASTPAK 2 battery, LIFEPAK NiCd battery 1.7 Ah or 2.4 Ah3) or SLA (LIFEPAK SLA battery)

Dual battery capability

Optional external AC Power Adapter

Batteries charge while device operates from Power Adapter

### Data Management

The device captures and stores patient data, events (including waveforms and annotations), and continuous ECG waveform records in internal memory.

The user can select and print reports and transfer the stored information via an internal modem and various serial transfer protocols.

#### Report Types

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

- Initial ECG (except short format)
- Auto vital sign measurements every 5 minutes

3-channel or 4-channel 12-lead ECG report

Continuous ECG waveform records (transfer only)

Trend Summary

Vital Signs Summary

Snapshot



## Specifications Continued

### ECG Monitor

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 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, and C-lead acquired simultaneously, (5-wire ECG cable)

Leads I, II, III, AVR, AVL, AVF, V1, V2, V3, V4, V5, and V6 acquired simultaneously, (10-wire ECG cable)

**EGG 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:  $\pm 4\%$  or  $\pm 3$  bpm, whichever is greater

Out of range indication: Display symbol “---”

Heart symbol flashes for each QRS detection

#### QRS Detection Range

Duration: 40 to 120 ms

Amplitude: 0.5 to 5.0 mV

#### Continuous Patient Surveillance System (CPSS)

In advisory mode while Shock Advisory System is not active, CPSS monitors the patient, via QUIK-COMBO paddles or Lead II ECG, for potentially shockable rhythms.

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

**Analog ECG Output:** 1V/mV x 1.0 gain

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

### SpO2 (Masimo Sensors)

**Saturation Range:** 1 to 100%

#### Saturation Accuracy

Adults/Pediatrics:  $\pm 2$  digits (during no motion conditions);  $\pm 3$  digits (during motion conditions)

#### Neonates

$\pm 3$  digits (during no motion conditions);  $\pm 3$  digits (during motion conditions)



## Specifications Continued

### SpO2 (Masimo Sensors) Continued

#### 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:  $\pm 3$  digits (during no motion conditions);  
 $\pm 5$  digits (during motion conditions)

#### SpO2 waveform with autogain control

**Nellcor sensors when used with MNC-1 adapter**

### NIBP

#### Blood Pressure

*Systolic Pressure range:* 30 to 245 mmHg (4 to 32.7 kPa)

*Diastolic Pressure range:* 12 to 210 mmHg (1.6 to 28 kPa)

*Mean Arterial Pressure range:* 20 to 225 mmHg (2.7 to 30 kPa)

*Units:* mmHg, kPa, (user configurable)

*Blood Pressure Accuracy:* maximum mean error of  $\pm 5$  mmHg  
( $\pm 0.7$  kPa) with a standard deviation no greater than  $\pm 8$  mmHg  
( $\pm 1.1$  kPa)

*Blood pressure measurement:* 40 seconds, typical

#### Pulse Rate

*Pulse Rate range:* 30 to 200 pulses per minute

*Pulse Rate accuracy:*  $\pm 2$  pulses per minute or  $\pm 2\%$ , whichever is greater

#### Operation Features

*Initial Cuff Pressure:* User selectable, 100 to 180 mmHg

*Automatic Measurement Time Interval:* User selectable

#### Automatic Cuff Deflation

*Excessive Pressure:* If cuff pressure exceeds 300 mmHg

*Excessive Time:* If measurement time exceeds 120 seconds

### CO2

**CO2 Range:** 0 to 99 mmHg (0 to 13.2 kPa); Units: mmHg, kPa, % (user configurable)

**CO2 Accuracy (0 to 20 minutes):** 0 to 38 mmHg (0 to 5.1 kPa):  $\pm 4$  mmHg; 39 to 99 mmHg (5.2 to 13.2 kPa):  $\pm 12\%$  of reading

**CO2 Accuracy (>20 minutes):** 0 to 38 mmHg (0 to 5.1 kPa):  $\pm 2$  mmHg; 39 to 99 mmHg (5.2 to 13.2 kPa):  $\pm 5\%$  of reading;  $+0.08\%$  for every 1 mmHg (0.13 kPa) above 38 mmHg

**Respiration Rate Range:** 0 to 60 breaths/minute



## Specifications Continued

### CO2 Continued

**Respiration Rate Accuracy:** 0 to 40 bpm:  $\pm 1$  bpm; 41 to 60 bpm:  $\pm 2$  bpm  
**Warm up time:** 30 seconds (typical), 180 seconds maximum  
**Rise Time:** 190 ms  
**Response Time:** 2.9 seconds (includes delay time and rise time)  
**Ambient Pressure:** Automatically compensated internally  
**Optional Display Waveform:** CO2 Pressure

### IP

**Transducer Type:** Strain-gauge resistive bridge  
**Transducer Sensitivity:**  $5\mu\text{V/V/mmHg}$   
**Excitation Voltage:** 5Vdc  
**Connector:** Electro Shield CXS 3102A 14S-6S  
**Bandwidth:** Digital filtered, dc to 30 Hz ( $< -3\text{db}$ )  
**Zero Drift:** 1 mmHg/hr without transducer drift  
**Zero Adjustment:**  $\pm 150$  mmHg including transducer offset  
**Numeric Accuracy:**  $\pm 1$  mmHg or 2% of reading, whichever is greater, plus transducer error  
**Pressure Range:** -30 to 300 mmHg in six user selectable settings  
**Pulse Range:** Pulse rate not derived from IP, IP monitor functions over the full ECG/SpO2/NIBP HR/PR range of 20–300 bpm  
**Leakage Current:** Meets ANSI/AAMI/IEC leakage requirements  
**IP Connector Pinout:** Counterclockwise from 12 o'clock, viewed from the front of LIFEPAK 12:  
A pin = -signal; B pin = +excitation; C pin = +signal;  
D pin = -excitation; E pin = shield; F pin = unlabeled.  
**Invasive Pressure Display**  
Display: IP waveform and numerics  
Units: mmHg, kPa (user configurable)  
Labels: P1 or P2, ART, PA, CVP, ICP, LAP (user selectable)

### Trend

**Display:** Choice of HR, SpO2 (%), EtCO2, FiCO2, RR, NIBP, P1, P2, STM shown in Channels 2 or 3  
**Time Scale:** Auto, 30 minutes, 1, 2, 4, or 8 hours  
**Duration:** Up to 8 hours with -06 or later Memory PCB. Reduced storage capacity with earlier versions.

### ST

**After initial 12-lead ECG analysis, automatically selects and trends ECG lead with the greatest ST displacement**



## Specifications Continued

### Alarms

**Quick Set:** Activates alarms for all parameters

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

**Apnea 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 Algorithms

**12-Lead Interpretive Algorithm: GE Medical 12SL, includes AMI statements**

### Printer

Prints continuous strip of the displayed patient information

**Paper Size:** 50 mm (2.0 in) or optional 100 mm (3.9 in)

**Print Speed:** 25 mm/Sec  $\pm$ 5% (measured in accordance with AAMI EC-11, 4.2.5.2) Optional 50 mm/sec time base for 12-Lead ECG reports

Delay: 8 seconds

**Autoprint:** Waveform events print automatically (user-configurable)

### Frequency Response

**Diagnostic Frequency Response:** 0.05 to 150 Hz or 0.05 to 40 Hz (user-configurable)

**Monitor Frequency Response:** 0.67 to 40 Hz or 1 to 30 Hz (user-configurable)

**Paddles Frequency Response:** 2.5 to 30 Hz

**Analog ECG Output Frequency Response:** 0.67 to 32 Hz (except 2.5 to 25 Hz for Paddles ECG and 1.3 to 23 Hz for 1 to 30 Hz Monitor Frequency Response)

