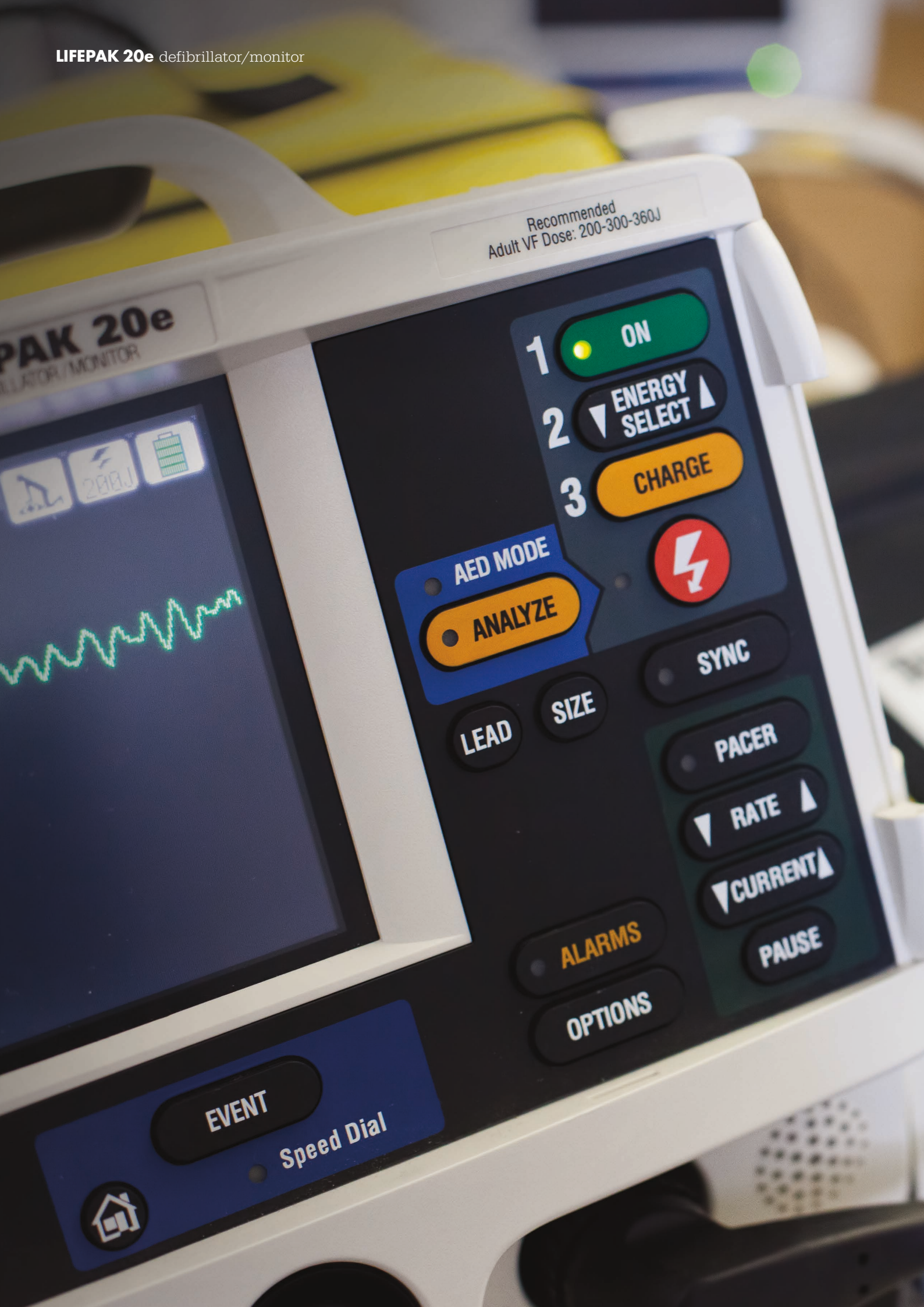
stryker

LIFEPAK® 20e
defibrillator/monitor

With CodeManagement Module®

LIFEPAK 20e defibrillator/monitor



Amidst financial pressures and evolving guidelines, your hospital remains focused on saving lives. With the LIFEPAK 20e defibrillator/monitor, you get the lifesaving power and ease of use that are essential for swift, successful response to today's cardiac events, plus something more—the ability to improve your resuscitation management for tomorrow's emergencies.

Improving resuscitation performance is a top priority for today's hospitals. And for us.

You need defibrillation equipment you can depend on in that moment when saving a life is the only thing that matters. And you need the right tools to monitor, document and review each event to respond even better the next time. All of this is key for effective resuscitation management—and we designed the LIFEPAK 20e defibrillator/monitor with CodeManagement Module to deliver it.

As part of the Stryker Resuscitation Management System, the LIFEPAK 20e meets all your defibrillator/monitor needs in a compact, affordable package. Designed specifically for crash cart use, it is simple yet powerful, and ready when you are. With features like capnography, a CPR metronome, and the ability to remotely send data to CODE-STAT™ data review software, the LIFEPAK 20e with CodeManagement Module helps your hospital meet the demands of performance improvement and better prepare for tomorrow's emergencies.

CodeManagement Module adds additional capabilities to the LIFEPAK 20e to transform the way your hospital manages resuscitations.

The **LIFEPAK 20e** defibrillator/monitor with CodeManagement Module

Easy to use for both BLS and ALS teams

- With an intuitive door system, the LIFEPAK 20e functions as an automated external defibrillator (AED) for your BLS teams, who can begin early defibrillation before the resuscitation team arrives
- Standardized and clear user interface, so teams who use legacy devices will recognize it immediately
- Larger clock provides better visibility throughout the room and a centralized device to use for time management and documentation
- Compact, ergonomic footprint ensures stability and efficiency during patient transport
- Auto-send of patient and device data facilitates quality improvement review and hospital-wide device tracking

Powerful to improve your resuscitation management

- Waveform capnography is the most reliable verification of endotracheal tube position during cardiac arrest and can assist in assessing quality of CPR. (Strong recommendation in the ERC Guidelines 2015)
- Other monitoring parameters include ECG (3- or 5-wire), pacing, pulse oximetry
- Metronome helps rescuers perform compressions at a rate of 100 per minute, within the ERC Guidelines recommended compression rate
- 360J biphasic technology allows highest available energy for difficult-to-defibrillate patients
- Wirelessly transmits patient data to CODE-STAT* software for post-event review, to capture event data and facilitate resuscitation response improvement

Ready for when your team needs to respond

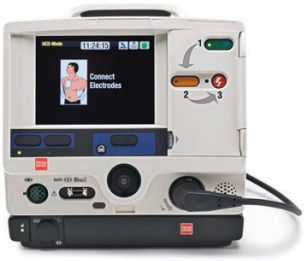
- Performs daily readiness self-check
- LIFENET® Asset status wirelessly monitors device data including battery charge status, updates and self-tests, and enables your biomed team to do upgrades that would have previously required a service call
- Battery status indicator
- Internal Lithium-Ion battery** provides over 90 minutes of monitoring when not connected to AC power
- On-site in-service training by dedicated nurses, clinical training materials
- On-site service and off-site biomed training solutions available

*CODE-STAT software available as a subscription. Ask your sales representative for details.
**CodeManagement Module runs on a separate Lithium-ion battery. Both are connected to AC power using a single cord.

Flexible to fit your hospital's needs

A choice of purchase options for an integrated system that works together seamlessly and adds new features without breaking standardization:

- Purchase new LIFEPAK 20e defibrillator/monitors or upgrade software to add metronome and larger code clock
- Extend the capabilities of your existing LIFEPAK 20e devices by adding CodeManagement Module
- Purchase new LIFEPAK 20e defibrillator/monitors with CodeManagement Module



AED Mode
for BLS teams

Manual Mode
for ALS teams

Meet today's high standard of resuscitation management–and **improve your hospital's performance** for tomorrow's emergencies.

Stryker not only supplies lifesaving technology like the LIFEPAK 20e defibrillator/monitor, we also help you get your cardiac resuscitation devices, protocols, departments and people in sync across the entire hospital. So you can respond better to evolving guidelines and requirements, improve performance and efficiency, and give your teams a better chance of ensuring the right outcomes today—and even better ones tomorrow.

The LIFEPAK 20e defibrillator/monitor with CodeManagement Module is an integral part of the Stryker Resuscitation Management System. It wirelessly transmits device data for readiness, delivers advanced technology for sophisticated defibrillation, works with other Stryker technologies such as the LUCAS 3.1 chest compression device to improve CPR performance, and transmits patient data for post-event review.

The Stryker **Resuscitation Management System**

Readiness

The Resuscitation Management System gives you the visibility, insight and control to make sure your people and equipment are fully prepared, so your hospital has the resources to better handle a cardiac event wherever and whenever it occurs. The right start is everything when it comes to a favorable outcome.

Response

The Resuscitation Management System is based on our decades of experience working with the real-world needs of hospitals like yours. We know that our equipment must be powerful but easy to use, so you can respond to cardiac events early and effectively for the best possible outcomes.

Review

The Resuscitation Management System enables you to easily collect and review post-event data for quality improvement, providing your trained staff valuable information to reduce risk and drive improved lifesaving performance.

Prevention

With Resuscitation Management System technologies, you can extend your hospital's monitoring capabilities, better assess patient status, and give rapid response teams the information they need to provide fast, effective care. Think of it as giving your teams a vital head start should a patient's condition start to deteriorate.

LIFEPAK 20e defibrillator/monitor

Specifications

General

The LIFEPAK 20e defibrillator/monitor has seven main operating modes:

Manual mode: Provides a normal operating capability for ALS users. Allows access to manual mode energy selections up to 360J, synchronized cardioversion and pacing. ECG waveform is displayed.

AED mode: Provides a normal operating capability for BLS users. All user features are available except manual defibrillation, synchronized cardioversion, pacing, and access to archived patient records. Provides shock energy defaults up to 360J. User selectable option to display ECG waveforms and/or visual AED prompts.

Setup mode: Allows the operator to configure the device settings.

Service mode: Allows the operator to execute diagnostic tests and calibrations, to display device module software and hardware versions, and to display and print the diagnostic code log.

Inservice mode: Simulated waveforms are available for demonstration purposes. The waveforms consist of short segments of realistic data, which are repeated to form a continuous waveform.

Archive mode: Provides operator the opportunity to access records of previous patients for review, transmission, printing, editing or deletion.

Auto Test mode: Performs daily self-tests.

Power

The device is an AC line-operated device with an internal battery as backup.

AC powered: 100–120 VAC 50/60Hz, 220–240 VAC 50/60 Hz, total power draw less than 120 Volt-Amperes (VA).

Internal battery backup: A new fully-charged internal backup battery will provide the following prior to shutdown:

	Total	After low battery
Monitoring plus SpO2: (minutes):	210	5
Monitoring, plus pacing (at 100ma, 60 ppm), plus SpO2 (minutes):	110	2
Defibrillation (360J discharges):	140	3

Battery charge time: <4 hours when device is powered off and AC power is applied.

Low battery indication and message: When the device is unplugged from AC power, it switches to battery. When the battery gets low, the battery status indicator displays one yellow segment and a "low battery" message and warning tone occurs. Shortly thereafter the status indicator displays one flashing red segment, the "low battery; connect to AC power" message appears, and a warning tone occurs.

Service indicator: LED illuminates when error is detected.

Physical characteristics

Weight:

- Fully featured defibrillator/monitor (pacing, Sp02 and door, without paper or cables) 5.58 kg (12.3 lbs)
- QUIK-COMBO® cable: 0.20 kg (.43 lbs)
- Standard (hard) paddles: 0.88 kg (1.95 lbs)
- For SpO2 cable and standard re-usable sensor, add: 0.11kg (0.25lbs)
- For full roll of 50mm paper, add: 0.09kg (0.20lbs)

Height: 21.3 cm (8.4 in)

Width: 26.2 cm (10.3 in)

Depth: 26.2 cm (10.3 in)

Display

Size (active viewing area): 115.18 mm (4.53 in) wide x 86.38 mm (3.4 in) high

Resolution: 320 x 240 dot color active LCD

Displays a minimum of 3.7 seconds of ECG and alpha numeric for values, device instructions or prompts

Option to display one additional waveform

Waveform display sweep speed: 25 mm/sec for ECG and SpO2

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.

Report types:

- Two format types of CODE SUMMARY™ critical event record: (short and medium)
- Initial ECG (except short format)
- Auto vital sign measurements every 5 minutes
- Continuous ECG waveform records (transfer only)

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 IrDA

Monitor

ECG

ECG can be monitored through 3-wire or 5-wire ECG cables.

Standard paddles or therapy electrodes (QUIK-COMBO pacing/defibrillation/ECG electrodes) are used for paddles lead monitoring.

Compatible with LIFEPAK 12 ECG and therapy cables.

Lead selection:

- Leads I, II and III, (3-wire ECG cable)
- Leads I, II, III, AVR, AVL and AVF, V (c) acquired simultaneously, (5-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

Out of range indication: Display symbol "---"

Heart symbol flash for each QRS detection

Continuous Patient Surveillance System (CPSS): In AED 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
< 35 ms delay

Common mode rejection: 90 db at 50/60 Hz

SpO2

Masimo SET

- Additional configuration available for compatibility with select Nellcor 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

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

Alarms

Quick set: Activates alarms for all parameters

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

Printer

Prints continuous strips of the displayed patient information

Paper size: 50 mm (2.0 in)

Print speed: Continuous ECG 25 mm/sec +/- 5% (measured in accordance with AAMI EC-11, 4.2.5.2)

Delay: 8 seconds

Autoprint: Waveform events print automatically (user configurable)

Print speed for CODE SUMMARY reports: 25 mm/sec

Frequency response

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

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

Paddles: 2.5 to 30 Hz

Analog ECG output: 0.67 to 32 Hz (except 2.5 to 30 Hz for paddles ECG)

Defibrillator

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 joule or 15% of setting, whichever is greater, into any impedance from 25–100 ohms

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% W, or if the magnitude of the patient impedance is greater than 440 + 15% W

Voltage compensation: Active when disposable therapy electrodes are attached. Energy output within ± 5% or ± 1 joule, whichever is greater, of 50 ohm value, limited to the available energy which results in the delivery of 360 joules into 50 ohms.

Patient Impedence	Phase 1 duration (MS)		Phase 2 duration (MS)	
	Min.	Max.	Min.	Max.
25	5.1	6.0	3.4	4.0
50	6.8	7.9	4.5	5.3
100	8.7	10.6	5.8	7.1
125	9.5	11.2	6.3	7.4
200	10.9	13.4	7.3	9.0

Paddle options:

- QUIK-COMBO pacing/defibrillation/ECG electrodes (standard)
- Standard adult paddles with embedded pediatric paddles (optional)
- Internal handles with discharge control (optional)

Cable length: 2.4 meter (8-foot) long QUIK-COMBO cable (not including electrode assembly)

Manual

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 and user configurable sequence of 100–360, 100–360, 100–360 joules

Charge time:

- Charge time to 200J <5 seconds with fully charged battery
- Charge time to 360J <7 seconds with fully charged battery
- Charge time to 360J <10 seconds while not in low battery operations

Synchronized cardioversion:

- Energy transfer begins within 60 ms of the QRS peak
- Energy transfer begins within 25 ms of the External Sync Pulse
- External Sync Pulse; 0–5V (TTL Level) Pulse, active High, > 5 ms in duration, no closer than 200 ms apart and no further than 1 second apart

AED

Shock Advisory System is an ECG analysis system that advises the operator if the algorithm detects a shockable or nonshockable 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 16 seconds of power on, if initial rhythm finding is "Shock Advised"

The AED mode of the LIFEPAK 20e defibrillator/monitor is not intended for use on children less than 8 years of age.

User configurable protocol of three sequential shock levels, each 150-360 Joules

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
- Motion Detection: On* or Off
- Auto Analyze: Off* or After First Shock

Users should refer to the LIFEPAK 20e defibrillator/monitor operating instructions for details on how to customize the configuration of their devices to hospital protocols.

Pacer

Pacing mode: Demand or nondemand rate and current defaults (user configurable)

Pacing rate: 40 to 170 ppm

Rate accuracy: +/- 1.5% over entire range.

Output waveform: Monophasic, amplitude stable to +/- 5% relative to leading edge for currents greater than or equal to 40 mA, Duration 20 +/- 1 ms, Rise/Fall times <= 1 ms [10–90% levels]

Output current: 0 to 200 mA

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

Refractory period: 200 to 300 ms +/- 3% (function of rate)

Environmental

Temperature, operating: 5 to 40° C (41 to 104° F)

Temperature, nonoperating: -20 to +60° C (-4 to +140° F) except therapy electrodes

Relative humidity, operating: 5 to 95%, noncondensing

Atmospheric pressure, operating: Ambient to 522 mmHg (0 to 3,048 meters) (0 to 10,000 feet)

Water resistance, operating (without accessories except for ECG cable and hard paddles): IPX1 (spillage) per IEC 60601-1

Vibration: MIL-STD-810E Method 514.4, Cat 1

Shock (drop): 1 drop on each side from 45.7 cm (18 in.) onto a steel surface

EMC

IEC 60601-1-2/EN 60601-1-2, Medical Equipment-General Requirements for Safety-Collateral Standard: Electromagnetic Compatibility-Requirements and Tests

IEC 60601-2-4/EN 60601-2-4, Particular Requirements for the Safety of Cardiac Defibrillators and Cardiac Defibrillator Monitors

All specifications are at 20° C (68° F) unless otherwise stated.

CodeManagement Module

Specifications

Physical characteristics

CodeManagement Module adds 1.63 kg (3.6 lbs) to LIFEPAK 20e defibrillator/monitors.

Size (maximum) of LIFEPAK 20e device with CodeManagement Module

Height: 25.4cm (10.0 in)

Width: 26.2cm (10.3 in)

Depth: 29.7 cm (11.7 in)

Display

With CodeManagement Module, the LIFEPAK 20e defibrillator/monitor displays a minimum of 3.7 seconds of ECG and alphanumerics for values, device instructions, or prompts

Waveform display sweep speed: 12.5 mm/sec for CO_2

Power

LIFEPAK 20e defibrillator/monitor with CodeManagement Module

AC powered: 100–120 VAC 50/60Hz, 220–240 VAC 50/60 Hz, total power draw less than 150 Volt-Amperes (VA)

Internal battery backup: Lithium-ion. Batteries charge while device operates from AC Power.

Low battery indication and message: When the device is unplugged from AC power, it switches to battery. When battery gets low on the CodeManagement Module, the defibrillator indicates with a message to connect to AC power in the status area, and a warning tone occurs.

Battery charge time: <4 hours when device is powered off and AC power is applied

Operating time: A new fully-charged internal backup battery will provide at least 210 minutes of monitoring prior to shutdown.

CO_2 monitoring

Drift of measurement accuracy: No drift in accuracy for at least 6 hours

Respiration rate accuracy:
0 to 70 bpm: ±1 bpm
71 to 99 bpm: ±2 bpm

Respiration rate range: 0 to 99 breaths/minute

CO_2 Range: 0 to 99 mmHg (0 to 13.2 kPa)
Units: mmHg, %, or kPa

Flow rate: 42.5 to 65 ml/min (measured by volume)

Rise time: 190 msec

Response time: 4.5 seconds maximum (includes delay time and rise time)

Initialization time: 30 seconds (typical), 10–180 seconds

Ambient pressure: Automatically compensated internally

Waveform scale factors: Autoscale, 0–20 mmHg (0–4 Vol%), 0–50 mmHg (0–7 Vol%), 0–100 mmHg (0–14 Vol%)

No breath alarm: Occurs when 30 seconds has elapsed since last detected respiration

CO_2 accuracy

	CO_2 partial pressure at sea level:	**Accuracy:**
(0–80 bpm)*	0 to 38 mmHg (0 to 5.1 kPa)	±2 mmHg (0.27 kPa)
	39 to 99 mmHg (5.2 to 13. kPa)	±5% of reading + 0.8% for every 1 mmHg (0.13 kPa) above 38 mmHg (5.2 to 13. kPa)
(>80 bpm)*	0 to 18 mmHg (0 to 2.4 kPa)	±2 mmHg (0.27 kPa)
	19 to 99 mmHg (2.55 to 13.3 kPa)	±4 mmHg (0.54 kPa) or ±12% of reading, whichever is higher

*For RR > 60 bpm, to achieve specified CO_2 accuracy, the Microstream® Filterline® H Set for infants must be used.

Data management and transmission

The LIFEPAK 20e device captures and stores patient data, events (including waveforms and annotations), and continuous ECG and CO_2 waveform records in internal memory.

Wireless data transmission via LIFENET network

Wireless networks

The LIFEPAK 20e device with the CodeManagement Module supports the following:

- 802.11a, b, g, and n wireless networking standards
- Security types:
  - Open
  - WPA-Personal
  - WPA2-Personal
  - WPA-Enterprise
  - WPA2-Enterprise
- Enterprise authentication protocols:
  - EAP-TLS
  - EAP-TTLS
  - PEAP/MSCHAPv2
- TCP/IP support
  - Internet Protocol Version 4 (IPv4)
  - IP addressing: automatically obtains IP address, or a static address may be assigned.
  - DNS servers: automatically obtains DNS server address, or static addresses of the primary and secondary DNS servers may be assigned.

All specifications are at 20° C (68° F) unless otherwise stated.

Find out how the **LIFEPAK 20e** defibrillator/monitor with CodeManagement Module can take your hospital's resuscitation performance to the next level.

Visit strykeremergencycare.com/products/devices/LIFEPAK-20e/ or contact your local Stryker representative.

All claims valid as of September 2019.

For further information, please contact your Stryker representative or visit our website at strykeremergencycare.com

Emergency Care

This document is intended solely for the use of healthcare professionals. A healthcare professional must always rely on his or her own professional clinical judgment when deciding whether to use a particular product when treating a particular patient. Stryker does not dispense medical advice and recommends that healthcare professionals be trained in the use of any particular product before using it.

The information presented is intended to demonstrate Stryker's product offerings. A healthcare professional must always refer to operating instructions for complete directions for use indications, contraindications, warnings, cautions, and potential adverse events, before using any of Stryker's products. The products depicted are CE marked in accordance with applicable EU Regulations and Directives. Products may not be available in all markets because product availability is subject to the regulatory and/or medical practices in individual markets. Please contact your representative if you have questions about the availability of Stryker's products in your area. Specifications subject to change without notice.

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