ADAPTIV Biphasic Technology
The 20 is equipped with ADAPTIV biphasic technology, which adjusts the shock waveform duration and voltage based on the patient’s impedance level. In AED mode, the device can provide escalating shocks (200–360 J), depending on the patient’s needs. In manual mode, the ALS clinician can give energy shocks according to established protocols.

cprMAX Technology
The 20 in AED mode is also equipped with cprMAX technology, which supports the 2005 American Heart Association (AHA) Guidelines for Cardiopulmonary Resuscitation (CPR) and Emergency Cardiovascular Care (ECC) and European Resuscitation Council (ERC) Guidelines for Resuscitation 2005. cprMAX technology is aimed at optimizing the timing and sequencing of CPR and defibrillation. The 20 with cprMAX technology is highly flexible to accommodate various patient and CPR protocol requirements. cprMAX empowers users to customize the interaction of defibrillation and CPR, with options to:
- Provide a specified CPR interval before delivering the first shock.
- Provide CPR while the device is charging.
- Prompt for CPR after each single shock.
- Customize the option for and timing of pulse checks.

Use and Maintenance
QUIK-COMBO pacing/defibrillation/ECG electrodes are compatible with the entire LIFEPAK family of products. For standardization and continuity of care, Standard adult paddles with embedded pediatric electrodes, sterilizable adult paddles, and internal paddles provide flexible therapy options for response in various cardiac emergencies. The 20 is easy to maintain and service, comes with a five-year, in-hospital warranty, and is equipped with AC power and a backup internal nickel metal hydride (NiMh) battery.

The LIFEPAK 20 defibrillator/monitor extends and enhances the LIFEPAK family of products, providing flexible, compatible, and standardized defibrillation solutions for patients across a range of hospital settings.

For further information please call Medtronic at 1.800.442.1142 or visit www.medtronic-ers.com
The LIFEPAK 20 defibrillator/monitor has seven main operating modes:

**Manual:** Provides a normal operating capability for BLS users. Allows access to manual mode settings in 900, synchronous cardioversion, pacing, and access to archived patient records. Provides shock energy defaults up to 360 joules. User selectable options 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 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 random data, which are reperformed in a continuous waveform.

**Archive Mode:** Provides the operator the opportunity to access records of previous tests for review, transcription, printing, editing or deletion.

**Auto Test Mode:** Performs daily self-tests.

**Daily Auto Test:** Each day at approximately 00:00 (100:100 am), the 2D automatically completes the following tasks:

- Turns itself off
- Performs self-tests
- Displays the device on-line status
- Tests the pacing circuitry if non invasive pacing is installed.
- Tests the waveform display system.
- Allows the patient to execute diagnostic tests.

**Power:**

The device is an AC/DC powered device with an internal battery as back-up.

- **AC Powered:** 100–120V AC (50–60 Hz), 184–240V AC, 50–60 Hz, total power draw less than 400 watts–amps (VA).
- **Internal Battery Backup:** 115 V AC/DC. Batteries charge while device operates from AC power.

**Operational Time:** A fully charged internal backup battery will provide the following prior to shutdown:

<table>
<thead>
<tr>
<th>Total</th>
<th>After Low Battery</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 hours</td>
<td>2 hours</td>
</tr>
</tbody>
</table>

**Monitoring**

- **Patient Impedance:** Limited to the available energy which results in the delivery of 125, 150, 175, 200, 225, 250, 275, 300, 325, and 360 joules and user configurable sequence of 100–360, 100–200, 200–360.
- **Pacing/Defibrillation:** Standard adult paddles with embedded pediatric paddles (optional). Standard adult paddles with embedded pediatric paddles (optional).
- **Defibrillation:** Biphasic, amplitude stable to 1.2 times the 50% point, frequency limited to the available energy which results in the delivery of 300 joules into 50 ohms.
The LIFEPAK 20 defibrillator/monitor has seven main operating modes:

**Manual Mode:** Provides a normal operating capability for BLS users. Access to manual mode allows selection of ECG, synchronous cardioresuscitation, and pacing. ECG waveform is displayed.

**AED Mode:** (Consistent with 2005 AHA Guidelines for CPR and ECC) Provides a defibrillation capability for Resuscitation 2005.) Provides a normal operating capability for BLS users. All user features are accessible except manual defibrillation, synchronous cardioresuscitation, pacing, and access to archived patient records. Provides shock default settings up to 360 Joules. 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 firmware versions, and to display and edit the diagnostic code log.

**Inservice Mode:** Simulated waveforms are available for demonstration purposes. The waveforms consist of short segments of wavefront data, which resemble real waveforms.

**Archive Mode:** Provides the operator the opportunity to access records of previous patients for review, documentation, retesting, printing, editing or deletion.

**Auto Test Mode:** Performs daily safety tests.

**Daily Auto Test:** Each day at approximately 0000/0100 AM, the 20 automatically completes the following tasks:

- Tests itself on
- Performs self-assessment
- Charges to a low energy level and then discharges through a test circuit
- Tests the pacing circuitry (if noninvasive pacing installed)
- Tests the defibrillator circuitry

**Power**

The device is an AC powered device with an internal battery backup.

AC-powered: 100 to 120 VAC @ 45–65 Hz, 180–190 VAC @ 50–60 Hz, total power draw less than 500 Va (amps) (VA).

Battery Backup: Standard. Batteries charge while device operates from AC power.

Operational time: A full charged internal backup battery will provide the following prior to shutdown:

**Continuous Power**

- **MONITOR**
- **ECG**
- **DISPLAY**
- **DATA MANAGEMENT**
- **POWER**

**Power**

The device is an AC powered device with an internal battery backup.

AC-powered: 100–120 VAC @ 45–65 Hz, 180–264 VAC @ 50–60 Hz, total power draw less than 500 Va (amps) (VA).

Battery Backup: Standard. Batteries charge while device operates from AC power.

Operational time: A full charged internal backup battery will provide the following prior to shutdown:

- **TOTAL**
- **ALWAYS ON**
- **AT REST**
- **ATTENTION TO LOW BATTERY**
- **Monitoring (minutes)**: 120 5
- **Monitoring or d/c without Rotor Detector (minutes)**: 115 5
- **Defibrillation (300X discharge)**: 90 5
- **Monitoring plus pacing (Minutes): 100 to 110 (60 min)**

**Typical Battery Charge Time:** 2 1/2 hours when device is powered off and AC power is applied.

**Low Battery Indication and Message:** When the device is unplugged from AC power, its display is switched to Battery. While battery gets low, the battery detector signal is indicated with a low battery message in the status area, and a warning tone occurs.

**Warranty:** 3-year limited loss of power (100 days) device return settings

**Service Indication:** When error detected.
ADAPTIV Biphasic Technology

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Use and Maintenance

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The LIFEPAK 20 defibrillator/monitor extends and enhances the LIFEPAK family of products, providing flexible, compatible and standardized defibrillation solutions for patients across a range of hospital settings.

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SPECIFICATIONS | LIFEPAK 20 Defibrillator/Monitor

- ADAPTIV Biphasic Technology
- cprMAX Technology
- Options
  - • QUIK-COMBO™ electrodes or hard paddles
  - • Docking station