Product Specifications

Physical

Defibrillator Model
HeartStart MRx (M3536A)

Dimensions
Without external paddles: 12.4 in. (W) x 7.7 in. (D) x 11.7 in. (H) (313 mm x 195 mm x 295 mm). With external paddles: 12.4 in. (W) x 7.7 in. (D) x 13.4 in. (H) (313 mm x 195 mm x 340 mm)

Weight
13.2 lbs. (6 kg): base unit with 1 battery, pads and pads cable. 13 lbs. (5.9 kg) with optional 75 mm strip chart printer. Paddle tray and external standard paddles add less than 2.5 lbs. (1.1 kg). Carrying case adds 4.1 lbs. (1.86 kg).

Environmental and physical requirements

Solids/Water
Resistance
IP24

Temperature
Operating: 32º - 113º F (0º - 45º C)
Storage: -4º - 158º F (-20º - 70º C)

Humidity
Operating: 0% to 95% relative

Altitude
Operating: 0 to 15,000 ft (0 to 4,500 m)
Storage: 0 to 15,000 ft (0 to 4,500 m)

Mechanical Shock
Bump: IEC 68-2-29
Freefall: IEC 68-2-32

Vibration
Operating: MIL STD 810E 514.4 Category 6 Helicopter,
General Storage, UH60 Non-Operating: IEC 68-2-6 Swept Sine Vibration and IEC 68-2-64 Random Vibration

Safety
Meets EN 60601-1, UL 2601-1, CSA C22.2 No. 601-1

Display

Dimensions
8.4’’ diagonal (128 mm x 171 mm)

Type
TFT color LCD

Resolution
480 x 640 pixels (VGA)

Wave Viewing Time
5 seconds (ECG)

Defibrillation

Waveform

Truncated Exponential Biphasic.Waveform parameters adjusted as a function of patient impedance.

Output Energy

Manual (selected): 1-10, 15, 20, 30, 50, 70, 100, 120, 150, 170, 200 Joules into a 50 Ohm load AED Mode (single energy output): 150 Joules into a 50 ohm load.

Charge Time

Less than 5 seconds to 200 Joules with a new, fully charged lithium ion battery at 25º C

Shock Delivery

Via multifunction defib electrode pads or paddles
Shock-to-Shock
Cycle Time

Typically less than 20 seconds
Patient Impedance
Range

Minimum: 15 Ohm (internal defibrillation); 25 Ohm (external defibrillation)
Maximum: 180 Ohm
AED Mode
Shock advisory sensitivity and specificity meet AAMI DF-39 guidelines

Battery

Type
6.3 Ah, 14.8 V, rechargeable lithium ion

Dimensions
6.5" (H) x 3.8" (W) x 1.6" (D) (165 mm x 95 mm x 42 mm)

Weight
1.6 lb. (0.73 kg)

Charge Time
Approximately 3 hours from fully depleted to 100%, 90 minutes from fully depleted to 80%
Capacity
At least 5 hours of continuous 12-lead ECG, SpO_2,and CO_2monitoring, with NBP every 15 minutes on one new, fully charged battery.

At least 3.5 hours of continuous 12-lead ECG, SpO_2, and
CO_2 monitoring, with NBP every 15 minutes and pacing at 180 ppm at 160 mA on one new, fully charged battery.

Battery Indicators
Battery gauge on battery, capacity indicator on display; flashing RFU indicator, chirp, and 'Low Battery' message appears on display for low battery condition, when 10 minutes of monitoring time and 6 maximum energy discharges remain (with a new battery at room temperature, 25º C)

Strip chart recorder

Recorder
Standard: 50 mm (paper width) thermal array printer
Optional: 75 mm (paper width) thermal array printer

Continuous ECG Strip
Prints primary ECG lead with event annotations and measurements in real-time or with 10-second delay

Auto Printing
Recorder can be configured to print marked events, charge, shock and alarms

Reports
Event Summary, 12-Lead, Operational Check,
Configuration, Status Log, and Device Information

Paper Size
1.97 in. (50 mm) W by 100 ft. (30 m) L
2.95 in. (75 mm) W by 100 ft. (30 m) L

Data storage

Internal
12 hours of continuous ECG waveforms and events,
plus 50 12-lead ECG reports

Data Card
12 hours of continuous ECG waveforms and events, plus 50 12-lead ECG reports, on a CompactFlash memory card

ECG and arrhythmia monitoring

Input
Up to 4 ECG waves displayed and up to 3 ECG waves print simultaneously.

Lead I, II, or III obtained through 3-lead ECG cable and separate monitoring electrodes. With 5-lead cable, obtain leads I, II, III, aVR, aVL, aVF, or V. Pads ECG obtained through 2 multifunction defibrillation electrode pads.

Lead Fault
'Lead Off ' message and dashed line displayed, if an electrode or lead wire becomes disconnected

Pads Fault
Dashed line displayed if a pad becomes disconnected.

Heart Rate Display
Digital readout on display 15 to 300 bpm, accuracy ±10%

Heart Rate/Arrhythmia Alarms
HR, Asystole,VFIB/VTACH,VTACH, extreme tachycardia, extreme bradycardia, PVC rate
ECG Size
2.5, 5,10, 20, 40 mm/mV, autogain

SpO2 pulse oximetry

Range
0 to 100%

Resolution
1%

Alarm Range
Low Limit: 50 to 99% (Adult/Pediatric)
High Limit: 51 to 100% (Adult/Pediatric)

Alarm Delay
10 seconds

Noninvasive Blood Pressure

Pressure Range
Systolic: 40 to 260 mmHg
Diastolic: 20 to 200 mmHg

Initial Pressure
Adult: 160 mmHg
Pediatric: 120 mmHg

Maximum Pressure
280 mmHg

Alarm Range

Systolic high limit: 30 - 270 (Adult), 35 - 180 (Pediatric)
Systolic low limit: 30 - 265 (Adult), 30 - 175 (Pediatric)
Diastolic high limit: 18 - 240 (Adult), 18 - 150 (Pediatric)
Diastolic low limit: 10 - 240 (Adult), 10 - 145 (Pediatric)

End-tidal CO2

Range
0 to 99 mmHg

Resolution
1 mmHg (0.1 kPa)

Sample Size
50 ml per minute

Alarm Range

Low Limit: 10 to 95 mmHg (Adult/Pediatric)
High Limit: 20 to 100 mmHg (Adult/Pediatric)

12-lead ECG

Input
12-Lead cable: leads I, II, III, aVR, aVL, aVF,V/C1-V/C6

Display View
All 12-lead ECG waves display simultaneously

Strip Recorder
All 12-leads print on the strip chart printer in 3x4 format

Transmission

CompactFlash data card; Bluetooth® dial-up Internet connection, Bluetooth® FTP

CPR feedback and measurement

Compression Depth
Target: -1.50 to -2.00 in. (-38 to -51 mm)

Compression Rate
Target: 90 to 120 cpm

Ventilation Volume
Graphic indicator: empty, 1/3-full, 2/3-full, full

Ventilation Rate

Target for breaths delivered before 60 seconds since last compression: 6 to 16 vpm

Target for breaths delivered beyond 60 seconds since last compression: 9 to 16 vpm

Noninvasive pacing

Waveform
Monophasic Truncated Exponential

Current Pulse Amplitude
10 mA to 160 mA (5 mA resolution); accuracy
10 mA to 50 mA ± 5 mA, 50 mA - 160 m A ± 10%

Pulse Width
40 ms with ± 10% accuracy

Rate
30 ppm to 180 ppm (10 ppm increments);
accuracy ± 1.5%

Modes
Demand or Fixed Rate

Refractory Period
340 msec (30 to 80 ppm); 240 msec (90 to 180 ppm)