

# ZOLL

## Defibrillator Monitor Pacemaker

**M**Series

The Smallest, Lightest, Most Advanced  
Defibrillator Monitor Ever Made



**ZOLL**  
*It's about time.*

## ZOLL M Series

- Straightforward controls, intuitive menus, and ZOLL's Uniform Operating System make operation simple and reduce staff training requirements.
- High Contrast screen, with improved readability, and wide angle of view (60°), is superior to any LCD display.
- Error Correction minimizes problems during use by providing helpful prompts for corrective action.
- Durable Xtreme Pack™ jacket provides convenient storage for all cables, electrodes, and batteries.
- Full range of models are available from Manual to Advisory and AED to meet all needs and are fully upgradeable to keep pace with changing demands.

## All the Capabilities You'll Ever Need

Only 11 lb (5 kg). Half the weight and a third of the size of any unit in its class. The M Series has everything you need for cardiac resuscitation: fast, easy-to-use defibrillation, external pacing, ECG with advanced monitoring, built-in AC or DC power, and an integrated information management system.

### M Series Specifications

#### ECG Monitoring

**Patient Connection:** 3-lead ECG cable, 5-lead ECG cable, 12-Lead ECG cable, paddles or MFE Pads. Selectable by front panel switch.

**Input Protection:** Fully defibrillator protected. Special circuit prevents distortion of ECG by pacer pulse. (Pacer version only.)

**Implanted Pacemaker Spike Display:** Dedicated circuitry detects most implanted pacemaker spikes and provides standard display marker of spike on ECG trace.

**Bandwidth:** 0.5-40 Hz (-3 dB) or 0.5-30Hz; 0.05-150 Hz diagnostic.

**Lead Selection:** Displayed on monitor.

**ECG Size:** 0.5, 1, 1.5, 2, 3 cm/mV - display on monitor.

**Heart Rate:** Digital display 0-300 bpm  $\pm$  5%.

**Heart Rate Alarm:** On/Off displayed on monitor. User-selectable, tachycardia 60-280 bpm, bradycardia 20-100 bpm.

**1 Volt ECG Out:** 1.0 volt/cm of deflection on strip chart recorder. < 25 ms delay from patient ECG input.

**Display Format:** Non-fade moving bar display.

**SmartAlarms™:** Beeper/voice prompts indicate shockable rhythm.

#### Display

**Screen Type:** High-resolution display.

**Screen Size:** 5.6 inches (14.2 cm) diagonally.

**Sweep Speed:** 25 mm/sec.

**Viewing Time:** 4 seconds.

**Channels:** 2.

**Information:** Heart Rate, Lead/Pads, Alarm On/Off, NIBP, 12-Lead ECG, SpO<sub>2</sub>, EtCO<sub>2</sub>, AED Functions and Prompts, Defibrillator Test Function, Self Test Function, Error Corrections and Faults, Pacer Functions (optional), Code Markers, Alarm Selection and Limits, Delivered Energy.

#### Defibrillator

**Waveform:** Damped sinusoid or ZOLL Rectilinear Biphasic.

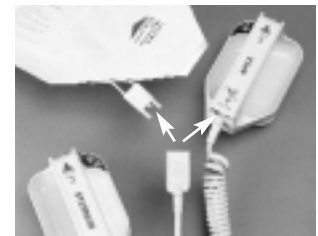
**Energy Selection:** Selectable at 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 30, 50, 75, 100, 150, 200, 300, 360 joules. (Delivered into 50 $\Omega$  load.) Selected using controls on sternum paddle or device front panel. Rectilinear Biphasic energy selection up to 200 joules maximum.

**Charge Time:** Less than 7 seconds with a new fully charged battery (first 15 charges to max energy). Depleted batteries will result in a longer defibrillator charge time.

**Energy Display:** Monitor display indicates both selected and delivered energy.



Code Marker System for all drugs and interventions makes charting easy. Information can be printed either on a Summary Report or easily downloaded to a PC using the removable PCMCIA card.



A universal connector for paddles and pads eliminates confusing adaptors and misconnections that can delay life-saving efforts.

**Synchronized Mode:** Synchronizes defibrillator pulse to patient's R-wave. "SYNC" message displayed on monitor. Marker on display and recorder paper identifies R-wave discharge point.

**Advisory Function:** Single analysis or programmable auto re-analyze x3 with programmable auto energy level selection, screen prompts, and voice prompts.

**AED Function:** Auto analyze and charge x3 with programmable auto energy level selection, screen prompts, and voice prompts.

**Charge Controls:** Control on apex paddle and on device front panel.

**Paddles:** External anterior/anterior adult and pediatric. Adult paddles slide off to expose pediatric paddles.

**Multi-Function Electrode (MFE) Pads:** Specifically designed adult anterior/posterior pre-gelled ZOLL MFE Pads, and Multi-Function stat•padz™ packaged in pairs.

**Built-In Defibrillator Tester:** Tests defibrillator energy output and continuity of universal cable and paddles; documented on PCMCIA card and strip chart.

**Defibrillation Advisory:** Evaluates electrode connection and patient ECG to determine if defibrillation is required.

**Shockable Rhythms:** Ventricular fibrillation with amplitude > 100  $\mu$ V and wide complex ventricular tachycardia with rates greater than 150 bpm.

**Multi-Function Electrode Impedance Measurement Range:** 0-250 ohms.

#### Pacemaker (Pacer Version Only)

**Type:** VVI demand; asynchronous (fixed rate) when used without ECG leads or in ASYNC pacing mode.

**Pulse:** Rectilinear, constant current; 40  $\pm$  2 milliseconds; amplitude variable 0 to 140 mA  $\pm$  5% or 5 mA, whichever is greater; digitally displayed on the monitor (increments or decrements by a value of 2 mA); rate variable from 30 to 180 ppm  $\pm$  1.5% (increments or decrements by a value of 2 ppm).

**Output Protection:** Fully defibrillator protected and isolated.

**Multi-Function Electrode (MFE) Pads:** Specifically designed pre-gelled ZOLL stat•padz™, pro-padz™ and pedi-padz™ MFE packaged in pairs.

#### Recorder

**Paper:** 80 mm thermal (grid width). 90 mm (paper width).

**Speed:** 25 mm/sec, 6-second delay.

**Annotations:** Time, date, defib energy, heart rate, pacer output (pacer version only), QRS sync marker, ECG size, lead, alarm, defib test OK/Fail, analyze ECG, analysis halted, noisy ECG, shock advised, no shock advised, ECG too large, ECG too small, and diagnostic bandwidth.

**Printing Method:** High-resolution, thermal array print head.

**Print-out Modes:** Manual or automatic - user-configurable.

**On/Off Control:** Front panel and paddle.

**Automatic Function:** 15-second recording initiated by alarm activation or defibrillator discharge.

#### PCMCIA Card System

Accepts two standard series Type II Flash Cards, 1-16 MB; Fax modem card capability in slot 2.

#### PCMCIA Card

Records continuous ECG and device data; optionally records digitally compressed audio data; play on PC with Specified Card Reader and ZOLL Data Control.™

#### Battery Packs

**Type:** Rechargeable, sealed lead acid.

**Recharge Time:** 4 hours or less with integral charger.

**Operating Time:** For a new, fully charged battery pack at 20°C: 35 defibrillator discharges at maximum energy, or 3 hours of continuous ECG monitoring, or 2.5 hours of continuous ECG monitoring/pacing at 60 mA, 80 beats/min. Additional parameters will effect operating time. Consult your operator's guide.

#### General

**Size:** 6.8 in (17.3 cm) high x 10.3 in (26.2 cm) wide x 8.2 in (20.8 cm) deep.

**Weight:** 11.5 lb. (5.23 kg) with Multi-Function Cable and battery; 13.5 lb. (6.14 kg) with paddles.

**Design Standards:** Meets or exceeds UL 2601, AAMI DF-39, AAMI DF-2, and IEC 601-2-4.

**Patient Safety:** All patient connections are electrically isolated.

**Environmental:** Operating Temperature: 0° to 55°C; Storage and Shipping Temperature: -40° to 65°C; Humidity: 5 to 95% relative humidity, non-condensing; Vibration: Mil Std 810E, Minimum Integrity Test; Shock: IEC 68-2-27, 50g 6ms half sine; Operating Pressure: 594 to 1060 mBar; Material Ingress: IEC 529, IP23; Electromagnetic Compatibility (EMC): CISPR; 11 Class B Radiated and Conducted Emissions; Electromagnetic Immunity: AAMI DF-2; IEC 801-3 to 20 V/m; Electrostatic Discharge: AAMI DF-2; IEC 1000-4-2; Conducted Susceptibility: IEC 1000-4-4, 1000-4-5, 1000-4-6.

**AC Power:** Meets all IEC, UL, and AAMI safety requirements.

**Options:** Xtreme Pack I Carry Case  
Xtreme Pack II Durable Rubber Case for added protection.



Specifications subject to change without notice.

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