





Non-invasive Vital





M Series CCT Specifications

Defibrillator

Waveform: ZOLL Rectilinear Biphasic. Energy Selection: Selectable at 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 30, 50, 75, 100, 120, 150, 200 joules. (Delivered

Charge Time: Less than 6 seconds with a new fully charged battery (first 15 charges to 200J.) Depleted batteries will result in a longer defibrillator charge time.

Energy Display: Monitor display indicates both selected and delivered energy. 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. Charge Controls: Control on apex paddle and on device

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 µV and wide complex ventricular tachycardia with

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

rates greater than 150 bpm.

Display

Screen Type: Color LCD. Screen Size: 6.5 inches (16.5 cm) diagonally. Sweep Speed: 25 mm/sec Viewing Time: 4 seconds.

Information: Heart Rate, Lead/Pads, Alarm On/Off, Advisory Functions and Prompts, Defibrillator Test Function, Error Corrections and Faults, Code Markers Alarm Selection and Limits, Delivered Energy, SpO₂, Pacer Functions, EtCO₂, NIBP, Invasive Pressures (2)

ECG Monitoring

Patient Connection: 3-lead ECG cable, 5-lead ECG cable, 12 lead cable, paddles or MFE Pads. Input selection on

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) standard/0.05-150 Hz

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 ±5%. Heart Rate Alarm: On/Off displayed on monitor User-selectable, tachycardia 60-280 bpm, bradycardia

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 $^{\text{\tiny TM}}$: Beeper/voice prompts indicate shockable

Recorder

Paper: 90 mm (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 Printout 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 Slots

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

Continuous recording of ECG, vital sign and device data; episodic recording of NIBP data. Playback on PC equipped with ZOLL Data Control and specified PCMCIA Card reader.

Type: Rechargeable, sealed lead acid.

Recharge Time: 7.2 hours or less with integral charger. Operating Time: For a new, fully charged battery pack at 20°C: 60 defibrillator discharges at maximum energy (200 oules); 2.5 hours continuous ECG and SpO2 monitoring; 2.3 hours of continuous ECG with pacing (60 mA at 80 bpm) and SpO₂ monitoring, or 1.5 hours of continuous ECG with pacing (60 mA at 80 bpm) SpO₂ monitoring, EtCO2, and IBP monitoring.

Pulse Oximetry

Saturation (% SpO₂) Range: 1%-100%. Pulse Rate (bpm) Range: 25-240.

Saturation (% SpO₂) Accuracy During No Motion Conditions: Adults - 70%-100% ± 2 digits, 0%-69% unspecified. Saturation (% SpO₂) Accuracy During Motion Conditions: Adults - 70%-100% ± 3 digits, 0%-69% unspecified. Pulse (bpm) Accuracy During No Motion Conditions: 25 to

Pulse (bpm) Accuracy During Motion Conditions: 25 to 240 ± 5 digits.

Saturation (% SpO2) Resolution: 1%. Pulse Rate (bpm) Resolution: 1 BPM.

Bio-Compatibility: Patient contacting material meets requirements of ISO 10993-1, Biological Evaluation of Medical Device — Part 1, for external devices, intact surfaces and short-term exposure.

Note: The M Series Pulse Oximetry Option is calibrated for functional saturation.

Pacemaker (Option)

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

Pulse: Rectilinear, constant current; 40 milliseconds ±2ms; 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 ±1.5% (increments or decrements by a value

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.

EtCO₂ (Option)

Warm-Up Time: Operational in 15 seconds, full specification within 60 seconds

Step Response Time: Less than 60 ms adult, less than 50 ms neonate.

End Tidal CO2 (EtCO2) Range: 0-100 mmHg. End Tidal CO₂ (EtCO₂) Accuracy: 0-40 mmHg ± 2 mmHg, 41-70 mmHg $\pm -5\%$, 71-100 mmHg $\pm 8\%$. End Tidal CO2 (EtCO2) Resolution: 1 mmHg.

Respiration Rate (RR) Range: 0-150 respirations per minute. Respiration Rate (RR) Resolution: 1 respiration/min. EtCO2 Alarm Limits: User-selectable/High 5 to 100 mmHg,

Low 0 to 95 mmHg/OFF. Respiration Rate (RR) Alarm Limits: User-selectable, High

5 to 150 respirations per minute, Low 0 to 100 respirations per minute/OFF.

O2/N2O Compensation: User-configurable. Halogenated Agents: Specification allows for halogenated

anesthetic agents, which may be present at normal clinical levels. The presence of desflurane in the exhaled breath beyond normal values (5-6%) may positively bias Carbon Dioxide values by up to an additional 2-3 mmHg. Barometric Pressure Compensation Range: 550-780 mmHg

Airway Adapter Deadspace: Adult <5 cc, Neonatal <.5 cc.

Environmental:

Operating Temperature: 10° to 40°C. Storage and Shipping Temperature: -10° to 55°C. Electromagnetic Immunity: (EtCO2 Option): AAMI DF-2: IEC 1000-4-3, 15 V/m.

NIBP (Option)

Characteristics and Specification Patient Population: Adult, Pediatric.

Method: Oscillometric.

Control: Automatic and manual measurements Auto Intervals: 2.5, 3-10, 15, 20, 30, 45, 60, 90, 120 min. STAT Mode: Maximum number of measurements in minutes, not to exceed 10.

Displayed Pressures: Systolic, Diastolic, Mean. Displayed Units: mmHg, kPa.

Systolic Range: 40 to 260 mmHg. Diastolic Range: 25 to 200 mmHg. Mean Range: 30 to 220 mmHg. Pressure Transducer Accuracy: ±3 mmHg.

Redundant Circuit Overpressure Limit: 300 mmHg. Pulse Rate Range: 40 to 200 bpm. Typical Measurement Time: 30 seconds

12-lead ECG and MUSE Interface (Option)

12 Simultaneously Acquired ECG Leads 12-lead ECG Bandwidth: 0.05 to 150 Hz. Ontional Bandwidth: 0.05 to 40 Hz

Sampling Rate: 500 sps. A/D Resolution: 18-bits.

ECG Printing Formats Supported: 4x3 (3 rows, 4 columns, 2.5-10 seconds), 4x3 Cabrera, 4x3 Median Complexes, 2x6 fax only (6 rows, 2 columns, 5 seconds). Two configurable Custom Lead Groups for 3 Lead strip

GF Medical Systems 12SI Analysis Algorithm: Interpretive Statements (configurable - ON/OFF), Global ECG Measurements, 12-Lead Measurements Matrix

(configurable-ON/OFF). Fax Transmission: Group 3 Facsimile, 24 Preprogrammed Phone Numbers (each with 20 digits). Manual Dial Option, Pulse/Tone Option, Cellular phone-compatible modem, 11-Digit Alphanumeric Site and Device Identifier.

Patient Demographics: Patient Name, Patient ID (automati-

cally generated or manually entered), Age, Gender.

IBP (Option)

Number of Channels: 2

Transducer Requirements Excitation Voltage: 2.5 V dc.

Transducer Output: 5µV/V/mmHg. Input Impedance: minimum 250 ohms

Output Impedance: maximum 3000 ohms. Pressure Range: -50 to 300 mmHg. Offset Range: ±200 mmHg.

Accuracy: ±2% measurement or, ±2 mmHg, whichever is greater, not including transducer IBP Safety: per EN60601-2-34.

Temperature (Option)

Number of Channels: 2. Probe Requirement: YS1 400 compatible. Temperature Measurement Range: 15 to 45°C. Resolution: 0.1 °C, not including sensor.

General

Size: 10.2 in (25.9 cm) high x 10.3 in (26.2 cm) wide x 8.7 in (22.1 cm) deep.

Weight: 17.2 lb. (7.82 kg) with Multi-Function Cable and battery; 19.2 lb. (8.4 kg) with paddles and battery.

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 50°C; Storage and Shipping Temperature: -20° to 60°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 Émissions; 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,

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



ZOLL Medical Corporation

Burlington, Massachusetts 01803-4420 U.S.A. 781-272-5578 Telefax

ZOLL Medical European Operations

+31 488 4111 87 Telefax

www.zoll.com

ZOLL Medical U.K. Ltd.

Cheshire, England +44 1925 846 400 +44 1925 846 401 Telefax

ZOLL Medical Deutschland GmbH

Köln, Germany +49 221 398 9340 +49 221 398 9336 Telefax

ZOLL Medical the Netherlands

Dodewaard, the Netherlands +31 488 4111 83 zolleur@worldonline.nl

ZOLL Medical Canada Mississauga, Ontario, Canada 905-629-5005

905-629-0575 TelefaX **ZOLL Medical France** Paris, France +33 1 43 59 2020

ZOLL Medical Australia Pty. Ltd

+61 2-94209834 Telefax

+33 1 43 63 5138 Telefax

ZOLL Medical Far East Regional Office

+612 43 292226 +612 43 292226 Telefax **ZOLL Medical Middle East and**

Africa Region Office

Dubai, United Arab Emirates +971 5 065 31504 +971 4 332 8835 Telefax

ZOLL Medical Japan

Tokyo, Japan +81 3 5768 0788 +81 3 5768 0788 Telefax

ZOLL Medical Latin America Parkland, FL 33067 954-345-4224 954-345-2648 Telefax





The Only Defibrillator You Will Want for **Critical Care Transport**

Clinically Superior Resuscitation Therapy









Specifications subject to change without notice.

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ZOLL Defibrillation: Clinically Superior Resuscitation Therapy



Superior Defibrillation

Only the ZOLL Rectilinear Biphasic™ waveform has proven its clinical superiority for defibrillating VF in high-impedance patients* and cardioverting AF patients.¹² It reduces the myocardium's exposure to high peak current and maintains an optimal waveform shape over a wide range of patient variability—enhancing efficacy while reducing the risks of inappropriate currents.

Superior Pacing

Clinical studies³ have confirmed superior capture rates, lower mean capture thresholds, less muscle artifact and better patient tolerance. ZOLL's constant current, 40-msec pulse overcomes disadvantages inherent in other external pacemakers.



Advisory Capability

The new ZOLL CCT has advisory capabilities to guide less experienced personnel safely and efficiently through defibrillation. ECG displays, optional voice prompts, auto reanalyze, energy levels and many other features can be individually configured to adapt to all skill levels.

References

Mittal S, Ayati S, Stein KM, Knight BP, Morady F, Schwartzman D, Cavlovich D, Platia EV, Calkins H, Tchou PJ, Miller JM, Wharton JM, Sung RJ, Slotwiner DJ, Markowitz SM, Lerman BB. Comparison of a novel rectilinear biphasic waveform with a damped sine wave monophasic waveform for transthoracic ventricular defibrillation. Journal of the American College of Cardiology, 1999; 35:4.

 Mittal S, Ayati S, Stein KM, Schwartzman D, Cavlovich D, Tchou PJ, Markowitz SM, Slotwiner DJ, Scheiner MA, Lerman BB. Transthoracic cardioversion of atrial fibrillation: Comparison of rectilinear biphasic versus damped sine wave monophasic shocks. Circulation, 2000; 101:1282-1287.

3. Clinical studies on file

* Superior first shock efficacy (high impedance patients) at a 90% confidence level.

What Makes a Defibrillator Better for Transport?

Superior Care and Portability in One Compact Unit

When you're transporting critical care patients, defibrillation is a capability you need to have on hand. But you also need to keep track of crucial vital signs along the way. The M Series CCT brings together ZOLL's superior biphasic defibrillation, external pacing, complete monitoring, a multiple application printer and a large full-color display—in a single portable unit.

ZOLL XL Battery for Longer Transport Times

The XL Battery delivers the runtime required for long, portable operation. Built-in AC mains power makes transportation from crashcart to bedside—or helicopter to ambulance—easy.

Transport-Ready Design

For transport needs, the M Series CCT is the most efficient, most complete solution. The M Series CCT stays out of the way until you need it. And at just 17 pounds (including the battery), it's smaller and 21% lighter than its nearest competitor.

Easy-to-Read Display

The bright, 6.5" diagonal color display makes monitoring information easy to read at a glance, whether you're rushing down a hallway or working in a helicopter.

M Series Technology and Simplicity

The M Series CCT is the newest member of the ZOLL family of familiar, easy-to-operate defibrillators. With its straightforward controls and ZOLL Uniform Operating System, the M Series CCT reduces staff training and minimizes operator confusion. It is the perfect combination for critical care transport and advanced life support.



TRANSPORT DEFIBRILLATOR

Small and Lightweight

Superior Defibrillation

Superior Pacing

Multi-parameter Vitals
Monitoring

Easy-to-Read Display

Extended Runtime

Vital Signs Assessment: Invasive and Non-invasive Parameters

A Full Range of Parameters For a Full Range of Patients

The M Series CCT features a three-channel display for ECG and up to two invasive pressures with ranges covering arterial, pulmonary arterial, central venous or intracranial pressure as well as two temperature channels. In addition, it also provides you all the non-invasive parameter options of the M Series including SpO₂, EtCO₂, NIBP and fully interpretive 12-lead ECG.



Flexible Color Display

The color display shows multiple vital signs in different colors in three different channels—organizing information so you can quickly assess your patient's status while on the move.

Quick, Easy Connections

A VGA output connects the defibrillator to standard displays. It's also compatible with most common IBP transducers and temperature probes.



Ready to Gather and Share Critical Data

The M Series CCT is compatible with ZOLL Data Control for seamless transfer of patient information, including code summary data, via PC card or RS232 upload.



