The ZOLL® R Series® monitor/defibrillator provides clinicians with comprehensive support for resuscitation. This includes cutting-edge technology to help you meet current guidelines for achieving high-quality CPR, as well as OneStep™ electrodes that simplify and speed therapy. And to help ensure that the R Series will be Code-Ready®, it conducts an automated self-test daily.

Driving High-Quality CPR

- CPR Dashboard™ featuring Real CPR Help® — Guides rescuers with real-time audio and visual feedback on CPR quality measures. It provides numeric displays of depth and rate and visual indicators of compression release, as well as a unique Perfusion Performance Indicator™.
- See-Thru CPR® — Reduces the duration of pauses during CPR by filtering out the CPR artifact so rescuers can see whether an organized underlying rhythm has developed without stopping compressions.

### Technical Specifications

**General**
- **Size:** 8.2 in (20.8 cm) high x 10.5 in (26.7 cm) wide x 12.5 in (31.7 cm) deep.
- **Weight:** 13.6 lbs (6.2 kg) with OneStep™ Cable and SurePower™ battery pack; 15.2 lbs (6.9 kg) with paddles.
- **Power Sources:** AC Mains: 100 to 120 V AC (50/60 Hz), 220 to 240 V AC (50 Hz); Battery: Rechargeable lithium ion battery pack.
- **Low Battery Indicator:** A “LOW BATTERY” message appears on the monitor when there are less than 15 minutes of ECG monitoring.
- **Design Standards:** Meets or exceeds applicable requirements of UL 60601, AAMI DF80, IEC 60601-2-4, EN 60601-2-25, and 60601-2-27.
- **Patient Safety:** All patient connections are electrically isolated.
- **Environmental:** Operating Temperature: 0°C to 40°C; Storage and Shipping Temperature: -20°C to 60°C; Humidity: 5% to 95% relative humidity, noncondensing; Vibration: IEC 68-2-6 and IEC 68-2-34; Shock: IEC 68-2-27, 50 g 6mS half-sine; Operating Pressure: 594 to 1060 millibars; Particle and Water Ingress: IEC 529, IP22; Electromagnetic Compatibility (EMC); CISPR 11 Class B Radiated and Conducted Emissions; Electromagnetic Immunity: AAMI DF80, EN 61000-4-3 to 10 V/m, Electrostatic Discharge: AAMI DF80, EN 61000-4-2; Conducted Susceptibility: EN 61000-4-4, 61000-4-5, 61000-4-6.

**Defibrillator**
- **Waveform:** Rectilinear Biphasic™
- **Patient Impedance Range:** 15 to 300 ohms.
- **Energy Selections:** 1 to 10, 15, 20, 30, 50, 75, 100, 120, 150, and 200 joules selected using controls on front of the defibrillator or sternum paddles. (Note: When using appropriate pediatric resuscitation electrodes, the 75-joule setting is replaced by 70- and 85-joule settings.)
- **Smart Step Energy Levels:** Automatically escalates energy through a configured adult or pediatric protocol.
- **Energy Display:** Shown on monitor for both selected and delivered.
- **Charge Time:** Less than 7 seconds with a new, fully charged battery (first 15 charges to 200 joules); longer charge times may result with a depleted or older battery.
- **Synchronized Mode:** Synchronizes defibrillator pulse to patient’s R wave. “SYNC” message displayed on monitor and markers shown on both monitor and recorded ECG.
- **Charge Controls:** Control from front of defibrillator or apex paddle.
- **Paddles:** External apex/sternum paddles; adult plates slide off to expose pediatric electrode surface.
- **Code Readiness Testing:** Verifies defibrillator hardware, therapy delivery cable (with both paddles and electrodes), electrode condition and expiration (with select OneStep electrodes) without the need for a separate test fixture.

**ECG Monitoring**
- **Patient Connection:** 3-lead ECG cable, 5-lead ECG cable, paddles, or hands-free electrodes; selectable by front panel switch.
- **Input Protection:** Fully defibrillator protected. Circuits designed to prevent distortion of ECG signal by pacer pulse.
- **Implanted Pacemaker Spike Display:** Circuits designed to detect most implanted pacemaker spikes and display a marker on the ECG trace.
- **Bandwidth:** 0.5 to 21 Hz (3-dB) standard; 0.05 to 150 Hz diagnostic with configurable options of 0.5 Hz to 40 Hz or 1 Hz to 21 Hz.
- **Lead Selection:** I, II, III aVR, aVL, aVF, V, P, P2, F3 with OneStep Pacing electrode.
- **ECG Size:** 0.5, 1.0, 1.5, 2.0 or 3.0 cm/mV display on monitor.
Heart Rate Display: 0 to 300 bpm ±5%.
Heart Rate Alarm: User selectable for tachycardia at 60 to 280 bpm; for bradycardia at 20 to 100 bpm. On/Off status displayed on the screen.

CPR Dashboard Featuring Real CPR Help
Activated when OneStep Complete, OneStep CPR, or OneStep Pediatric CPR electrodes are connected.

Detection Technology: Accelerometer.
Compression Depth: Detected between 0.75 in (1.9 cm) and 3.0 in (7.6 cm), with an accuracy of ±0.25 inches (0.6 cm).
Compression Rate: Detected between 50 and 150 compressions per minute.
Release Bar: Ensures proper release off of the chest.
Feedback: Configurable audio and visual prompts for rate and depth issued when compressions fall outside of AHA/ERC recommendations.

CPR Idle Time Display: Indicates elapsed time since last detected chest compression.

Perfusion Performance Indicator (PPI): Integrates compression depth and rate in order to rapidly visualize CPR performance per AHA/ERC recommendations.

See-Thru CPR Filter
Removes compression-related artifact from the ECG via an adaptive filtering technique.

Display
Screen Type: Color, VGA liquid crystal display (LCD).
Screen Size: 6.5 inches (16.5 cm) diagonally.
Sweep Speed: 25 mm/sec.
Viewing Time: 5 seconds with standard display format.
Channels: 3.

Battery Packs
Type: 10.8 V (nominal) rechargeable lithium ion.
Capacity: 5.8 amp hours.
Weight: 1.7 lb (0.77 kg).
Recharge Time: 5 hours or less with integral charger.
Operating Time: >4 hours of continuous ECG monitoring; 100 maximal energy (200 joules) discharges; 3.5 hours of continuous ECG monitoring and pacing at 60 mA, 80 ppm.

Recorder
Technology: 90 mm thermal array; 80 mm grid width.
Speed: 25 mm/sec, 6-second delay.
Printing Modes: Manual or automatic.
Annotations: Time, date, defibrillation energy, patient impedance, heart rate, pacer output, QRS synchronization marker, ECG size, ECG lead, alarm, defibrillator test results, analyze ECG, ECG bandwidth.

I/O, Storage, Communications
Sync In: 0 to 5 V (TTL Level) pulse, active high, 5 to 15 ms in duration, no closer than 200 ms apart; energy transfer begins within 25 ms of the leading edge of the sync in pulse.
Marker Out: 0 to 5 V (TTL Level) pulse, active high, 10 ms in duration, the leading edge of the pulse occurs within 35 ms of R wave peak.
ECG Output: 1.0 V/cm of deflection on recorder; <25 ms delay from the patient ECG input.
Card Slot: Compact flash compatible.
Internal Memory: Disk on chip.

Advisory Defibrillation
Shock Advisory Function: Evaluates ECG rhythm to determine if shock delivery is required.
Shockable Rhythms: Ventricular fibrillation with amplitudes >100 µV, and wide-complex ventricular tachycardia with rates >150 bpm for adults or >200 bpm for pediatric applications. Refer to Operator’s Manual for details on sensitivity and specificity performance.
Protocol Configurations: Configurable for either CPR or shock-first-driven protocols. Energy sequences can be configured for single or multiple shocks with fixed or escalating energy levels. The CPR interval length is configurable in 1-minute increments up to 4 minutes.

External Pacing
Type: VVI demand; asynchronous (fixed rate) when used without ECG leads or in asynchronous (ASYN) pacing mode.
Pulse: Rectilinear, constant current: 40 ms ±2 ms; variable 0 to 140 mA ±5% or 5 mA, whichever is greater. Rate is variable from 30 to 180 ppm ±1.5%. Output Protection: Fully defibrillator protected and isolated.

OneStep Pacing: Eliminates the need to connect separate ECG leads when used in conjunction with OneStep Pacing and OneStep Complete electrodes.

Pulse Oximetry with Masimo SET® Technology
Saturation Range: 1-100% (%SpO₂) with a resolution of 1%.
Pulse Rate Range: 25-240 ppm with a resolution of 1 ppm.
Saturation Accuracy: Non-motion conditions ±2% for adults/pediatrics; ±3% for neonates. During motion ±3% for all patients.
Pulse Rate Accuracy: Non-motion conditions ±3 ppm. During motion ±5 ppm.

Mainstream CO₂, Capnostream 5 Sensor
Principle of Operation: Nondispersive infrared (NDIR) single-beam optics, dual wavelength, no moving parts.
Warm-up Time: Full specifications within 2 minutes at an ambient temperature of 25°C. Capnogram in 20 seconds.
Environmental: Operating Temperature: -5°C to 45°C, Storage and Shipping Temperature: -40°C to 70°C.

Sidestream CO₂, LoFlo Sensor
Principle of Operation: Nondispersive infrared (NDIR) single-beam optics, dual wavelength, no moving parts.
Warm-up Time: Full specifications within 2 minutes at an ambient temperature of 25°C. Capnogram in 20 seconds
Environmental: Operating Temperature: 0°C to 40°C, Storage and Shipping Temperature: -40°C to 70°C.

NIBP
Patient Population: Adult, Pediatric.
Method: Oscillometric.
Control: Automatic and manual measurement.

WiFi Capable
WiFi 802.11 a/b/g/n Ambicom-specific 1100C-CF Card P/N 9005-000101-01 compatibility.
Typical Readiness File: 750K.
Typical Code Data File: 1.2 MB.