

X Series[®] Advanced

Advance your care
for every rescue



Technical Specifications

General

Weight: 4.8 kg without battery and paper, 5.3 kg with battery and paper

Dimensions: 22.6 cm x 26.4 cm x 20.1 cm

Enclosure Protection:

Solid Foreign Object: IEC 60529, IP5X

Water: IEC 60529, IPX5

Operating Temperature:

0° to 50° C

-20° C to 60° C for 1 hour after the device has been resting at room temperature

Storage Temperature: -30° to 70° C

Storage Temperature Note: The X Series Advanced device may not perform to specifications when stored at the upper or lower extreme limits of storage temperature and immediately put into use

Humidity: 15 to 95% RH

(non-condensing)

Vibration: EN ISO 9919 (per IEC 60068-2-64) • RTCA/DO-160G (multiple helicopter frequencies) • EN 1789 for ambulance

Shock: IEC 60068-2-27, 100g, 6 ms half sine

Drop: EN 1789, 76.2 cm functional drop, IEC 60601-1, tested at 2 metres

Altitude: -170 m to 4572 m

Monitor/Display

Size: 16.56 cm diagonal

Input: 3-lead, 5-lead, or 12-lead patient cable, paddles (authorised ZOLL electrodes via multifunction cable)

Type: Colour LCD, 640 x 480 pixels, 800 MCD

Sweep Speed: 25 mm/sec or 50 mm/sec (user-selectable)

Lead Selections: Paddles (Pads), I, II, III, AVR, AVL, AVF, V1-6

Frequency Response:

0.67 to 20 Hz Limited response

0.67 to 40 Hz Monitoring response

0.525 to 40 Hz Filtered Diagnostic response

0.525 to 150 Hz Diagnostic response

Defibrillator

Waveform: Rectilinear Biphasic™

Energy Selections: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 30, 50, 70, 85, 100, 120, 150, 200 joules

Energy Display: Display indicates selected and delivered energy

Charge Time: Less than 7 seconds with a new, fully charged battery

Charge Controls: Front panel and on apex paddle

Pads/Paddles: Hands-free pads and external adult and paediatric paddles. Adult paddles slide off to expose paediatric paddles

Synchronised Mode: Synchronises defibrillator pulse to patient's R wave. "SYNC" message displayed on monitor and markers shown on both monitor and recorded ECG

Rapid Shock: Shock/No Shock decision with pre-charge of the device in 4 to 5 seconds (RapidShock is only available in adult mode when ZOLL authorised CPR electrodes are used.)

Patient Modes

User-Selectable: Adult, Paediatric, Neonate.

Automatically sets configurable defaults for alarm limits, defibrillation energy, and NIBP settings

Trends (on-screen)

All parameters trended/viewable 30 seconds

Trend Intervals: 1, 5, 10, 15, 20, 60 minutes (Tabular)

TBI Dashboard

SBP: Over the last 15 minutes and updates whenever a new reading is taken

SPO₂: Data over the last 3 minutes and updates the data every second

Duration: 24 hours at 1-minute intervals

Snapshots: 32 monitor snapshots

Memory Capacity

A combination of 24 hours of trends at 1-minute intervals, 500 non-ECG events and 32 snapshots, including monitor, defibrillator, pacer, and treatment snapshots

Pacer

Type: External transcutaneous pacing

Pulse Types: Rectilinear, constant current

Pulse Width: 40 ms ± 2 ms

Pacer Rate: 30 – 180 bpm ± 1.5%

Output Current: 0 – 140 mA ± 5% or 5 mA, whichever is greater

Modes: Demand and Fixed

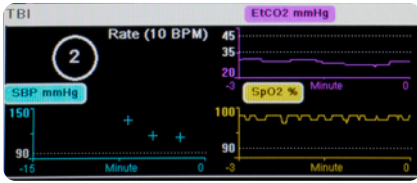
Real-Time Clinical Feedback

See-Thru CPR[®]: Filters out compression artefact

Real CPR Help Dashboard™: Real-time depth and rate feedback. CPR Dashboard™: Numeric readout of pedi and adult depth and rate, release indicator, perfusion performance indicator (PPI)

Real BVM Help™: Provides ventilation feedback including rate and tidal volume in ml

TBI Dashboard: Provides graphical trends for SpO₂, Systolic BP and EtCO₂. EtCO₂: Data over the last 3 minutes and updates every second



ECG

Cable Detection: Automatic 3-, 5-, 12-lead ECG
Input: 3-lead cable, 5-lead cable, 12-lead cable, paddles, therapy cable
Leads: I, II, III, AVR, AVL, AVF, V1 – V6
Heart Rate Range: 30 – 300 bpm
Heart Rate Accuracy: ± 3 bpm or 3%, whichever is greater
Pacer Detection and Display
ECG Sizes: 0.125, 0.25, 0.5, 1, 2, 4 cm/mV, and auto-ranging
Sweep Speed: 25 mm/sec, 50 mm/sec

Masimo® SET SpO₂

Saturation Range: 0 – 100%
Saturation Accuracy:
 Oxygen Saturation (% SpO₂) - During no motion conditions 60 - 80 ± 3%, Adults/Paediatrics/Infants 70 - 100 ± 2%, Adults/Paediatrics/Infants ± 3%, Neonates oxygen saturation (% SpO₂) - During motion conditions 70% - 100% ± 3% Adults/ Paediatrics/Infants/Neonates oxygen saturation (% SpO₂) - During low perfusion conditions 70 - 100 ± 2%, Adults/Paediatrics/Infants/Neonates
Pulse Rate Range: Pulse rate (bpm) 25-240 bpm during no motion conditions 25 - 240 ± 3 bpm Adults/ Paediatrics/Infants/Neonates pulse rate (bpm) - During motion conditions 25 - 240 ± 5 bpm Adults/Paediatrics/Infants/Neonates pulse rate (bpm) - During low perfusion conditions 25 - 240 ± 3 bpm Adults/Paediatrics/Infants/Neonates
SpO₂ Average time setting:
 4, 8 (default), 16 seconds

Masimo rainbow® SET SpCO®

Range: 0 – 99%
 Accuracy: 1 – 40% ± 3 digits

Masimo rainbow® SET SpMet®

Range: 0 – 99%
 Accuracy: 1 – 15% ± 1 digits

Masimo rainbow® SET SpHb®

Measurement Range: 0 – 25 g/dL
 Accuracy (Adults/Infants/Paediatrics): 8 – 17 g/dL +/- 1 g/dL
 Resolution (SpHb g/dL): 0.1 g/dL

Masimo rainbow® SET SpOC™

Measurement Range: 0 – 35 mL of O₂/dL of blood
 Resolution: 0.1 mL/dL

Masimo Perfusion Index (PI)

Measurement Range: 0.02 – 20%
 Resolution: 0.1%

Masimo Pleth Variability Index (PVI®)

Measurement Range: 0 – 100%
 Resolution: 1%

Non-Invasive Blood Pressure (NIBP)

Smartcuf® and Sure BP® NIBP technology
Measurement Intervals: Automatic 1-, 2-, 3-, 5-, 10-, 15-, 30-, 60-minute, and manual
TurboCuf: 5 min of repeated NIBP readings
Display: Systolic, diastolic, mean. Viewable on-screen with large numerics
Cuff Overpressure Protection
Typical Measurement Time:
 30 – 45 sec (on deflation)
 15 – 30 sec – Sure BP (on inflation)
Standard Cuff Sizes:
 Adult Mode: Adult, large adult, small adult, child, thigh
 Paediatric Mode: Child, small child, small adult, infant, newborn
 Neonate Mode: Neonate #1 to #5 – disposable, newborn (#6), infant (#7) – reusable
Default Cuff Inflation Pressure:
 Adults: 160 mmHg
 Paediatrics: 120 mmHg
 Neonates: 90 mmHg
Pressure Measurement Range:
 Systolic: 20 – 260 mmHg
 Diastolic: 10 – 220 mmHg
 Mean: 13 – 230 mmHg
Maximum Cuff Inflation Pressure:
 Adults: 270 mmHg
 Paediatrics: 170 mmHg
 Neonates: 130 mmHg

Microstream® EtCO₂

Range:
 0 – 150 mmHg
Accuracy:
 0-38 mmHg: +/- 2 mmHg
 39-150 mmHg: +/- 5% of reading + 0.08% for every 1 mmHg above 38 mmHg
Respiration Range: 0 – 149 breaths per minute
Respiration Rate Accuracy:
 0 – 70 bpm ± 1 bpm
 71 – 120 bpm ± 2 bpm
 121 – 149 bpm ± 3 bpm
Flow rate: 50 ml/min -7.5 + 15 ml/min
Typical response time: 2.9 seconds
Maximum response time: 3.9 seconds

Impedance Pneumography

Displayed Data: Numeric breath rate, Impedance waveform
Breath Rate Range: Adult, Paediatric: 2 to 150 breaths/minute. Neonates: 3 to 150 breaths/minute
Breath Rate Accuracy: 2% or ± 2, whichever is greater
Displayed Breath Rate: Average of last 10 breath-to-breath rates
Leads: Lead I (RA – LA), Lead II (RA – LL)
Sweep Speed: 3.13, 6.25, 12.5 mm/sec
Alarm Settings: High, low, and no breath rate alarm

Temperature

Two YSI 400/700 series-compatible channels
Range: 0 – 50°C (32 – 122°F)
Units: °C or °F
Display: T1, T2, and Delta temp
Accuracy: ± 0.1°C from 10 – 50°C ± 0.2°C from 0 – 10°C

Invasive Pressure

Three Channels Pressure Range: -30 – 300 mmHg
Pulse Rate Measurement Range: 25 – 250 bpm
Formats: S/D, S/D (M), (M) user selectable
User-Selectable Labels: P1, P2, P3, ABP, AO, ART, CVP, BAP, FAP, LAP, PAP, RAP, UAP, UVP, ICP
Transducer Requirements: 5M µV/V/mmHg
Zero Adjustment: ± 200 mmHg
Numeric Pressure Accuracy: ± 2 mmHg or 2% reading, whichever is greater of reading, plus transducer error
Transducer Connector: Standard 6-pin MS connector

Printer

Type: High-resolution thermal array
Annotation: Time, date, ECG lead, ECG gain, heart rate, defibrillation, and pacing parameters and treatment summary events
Paper Width: 80 mm
Paper Speed: 25 mm/sec, 50 mm/sec
Delay: 6 seconds
Frequency Response: Automatically set to monitor's frequency response
Record Modes: Manual and automatic (user configurable)
Print Option Single waveform or a combination up to 3, on alarm, snapshots, treatment summary report, and trend summary

Battery

Type: Rechargeable lithium-ion, 11.1 Vdc, 6.6 Ah, 73 Wh
Capacity: With a new, fully charged battery operating at room temperature: • At least 7 hours of continuous monitoring of 3/5 lead ECG and Display Brightness set to 70%. • At least 6 hours of continuous monitoring of ECG, SpO₂, CO₂, and 2 channels of Temperature, with NIBP measurements every 15 minutes and 10 200 J shocks (display set to 30%). • At least 3.5 hours pacing, with ECG, SpO₂, CO₂, 2 channels of Temperature, NIBP every 15 minutes and pacing at 180 ppm, and 140 mA (display set to 30%). • At least 3 hours of AED (Rescue Protocol) monitoring with ECG, SpO₂, CO₂, and 2 channels of Temperature, with NIBP measurements every 15 minutes, 2-minute CPR intervals, and 200 J shock discharges after every CPR interval (display set to 70%). • At least 2 hours while pacing at 180ppm and 140mA, with continuous monitoring of ECG, SpO₂, CO₂, and NIBP measurements every 15 minutes, followed by at least 35 2-minute CPR intervals, with discharges at maximum shock setting (200 J) after every CPR interval (display set to 70%). • At least 300 discharges at maximum shock energy (200 joules) with no parameters and 70% brightness. • At least 10 discharges at maximum shock setting (200 joules) after a Low Battery indication
AC Power Adapter: 100 – 240 VAC 50-60 Hz, 2A 100 – 115 VAC 400Hz, 2A

ZOLL MEDICAL CORPORATION

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