

NEW Accurate Certified and Synchronized Patient Monitor Testing.... In the Palm of Your Hand



Only Manufacturer Certified Simulator with Accurate NIBP CalTables & SpO2 R-Curves!

Certified by Masimo for testing Masimo® & Masimo® Rainbow Pulse Oximetry Technologies

AccuSim Total Patient Simulator

The New AccuSim combines the power of Clinical Dynamics' unrivaled NIBP and SpO2 technologies into one powerful hand held instrument. Total Patient Simulator accurately simulates, tests and calibrates all of your patient monitors. AccuSim provides unmatched synchronized simulation accuracy by utilizing our industry standard NIBP CalTables and SpO2 Simulation R-Curves. These were developed in cooperation with, and approved by, the world's leading patient monitoring manufacturers. The AccuSim is the only instrument with:

- Fully Synchronized Patient Monitor Simulation System
- Built-In Pressure Meter with High Accuracy Pressure Transducer
- Accurate NIBP Simulation with CalTables
- Built In Adult NIBP Cuff Mandrel
- Accurate Second Generation SpO2 Simulation with R-Curves
- Accurately tests Masimo's® Rainbow Technology & Other New Pulse Oximetry Technologies
- Respiration Simulation
- Temperature Simulation
- 12 Lead ECG Simulation
- Invasive Blood Pressure Simulation
- Arrhythmias and Pacer
- USB Connectivity
- Internet Updateable Firmware



AccuSim's Optional Dashboard PC Utility is a fully featured remote control suite for easy and complete automated testing utilizing USB Connectivity.

AccuPulse NIBP CalTables™

- Welch-Allyn Propaq Encore
- Zoll Advantage/Propaq MD
- Welch Allyn VSM300
- Welch Allyn VSM6000
- Welch Allyn Spot VSM
- Welch Allyn Spot LXi
- Welch Allyn BP3400
- Datascope Accutorr Plus
- GE Medical Dash 4000
- GE Medical Dinamap Pro
- Philips Medical M3
- Philips Medical VS1
- Colin Medical
- Criticare
- CAS Medical
- SunTech
- Smiths Medical Advisor
- SpaceLabs SL 90207
- SpaceLabs SL 90217

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AccuSim Total Patient Simulator

Technical Specifications



Fully Synchronized NIBP Simulator

NIBP Cal Tables™ Includes all Caltables available in our AccuPulse NIBP Simulator. Please contact factory for the availability of specific calibration tables.

BP Presets		Pulse Rate
Systolic/Diastolic (mmHg)		Pulse Rate Range: 15 - 330 bpm
Adult	Neonatal	Pulse Rate Accuracy:
240/190	150/120	15 - 300 bpm: +/- 0.5 bpm
200/150	120/90	301 - 330 bpm: +/- 1 bpm
150/100	100/70	
120/80	80/50	Pulse Amplitude
100/65	60/30	Pulse Amplitude Range: 0 - 150%
80/50	35/15	Pulse Amplitude Resolution: 1%
60/30		Pulse Amplitude Accuracy: Better than 0.1%
BP Simulation		BP Envelope Shift
Range: 10 mmHg - 295 mmHg		BP Envelope Shift: +/- 100 mmHg maximum
Accuracy: +/- 0.5 mmHg		Minimum Diastolic: 15 mmHg
		Maximum Systolic: 275 mmHg

Displayed/Measured Parameters

Dynamic NIBP Cuff Pressure Waveform

Digital Manometer

Pressure Range: 0.0 to 400.0 mmHg
Accuracy: +/- 0.5 mmHg
Resolution: +/- 0.1 mmHg
Measurement Units: kPa, mmHg, cmH2O and psi

Leak Test Time

Automatic Inflation
Automatic Timer
Leak Test Time and Pressure: 3 programmable selections
Time Range: 30-999 seconds
Range: 50.0 to 300.0 mmHg

OverPressure Test

Automatic Inflation
Instantaneous Pressure: 0 - 400 mmHg
Pop-Off Pressure: 10 - 400 mmHg

Cuff Supports

Built-in Adult Mandrel
Neonatal Mandrel Optional

Adaptor Hoses

Optional Adaptor Hoses insert between the NIBP device, cuff and analyzer. These adaptors are compatible with oscillometric NIBP monitors.

- Male/Female Luer
- Male/Female Clippard (GE Medical, Draeger/Siemens)
- Colder/CPC (GE Medical, Protocol Systems)
- OBAC Quick Release (Philips Medical)
- Universal 5/32" I.D. Hose

Self Test Accessories

- Pressure Bulb Assembly (tees into any Cuff Adapter)
- Self system leak test hose (plugged at distal end)

Fully Synchronized SpO2 Simulator

Oxygen Saturation (SpO2)

Range: 0-100 SpO2%

Resolution: 1 SpO2%

±0.5 SpO2%, 70-100 SpO2%

Accuracy:

±1 SpO2%, 50-69 SpO2%

Pulse Rate

Range: 15-330 BPM

Resolution: 1 BPM

Accuracy:

±1 BPM, 15-299 BPM

±2 BPM, 300-330 BPM

R-Curves (Red/IR Ratio)

R-Curves specify the relationship between the Red/IR ratio measured by

pulse oximeters and the SpO2 value displayed. R-curves are obtained by each pulse oximeter manufacturer during clinical trials.

Preset Manufacturer's R-Curves (14):

BCI, Criticare, CSI-Spot, Datascope, Datex, Hewlett-Packard (Philips), Masimo, Nellcor, Nellcor Oximax, Nihon Kohden, Nonin, Novamatrix, Ohmeda & Sensormedics

Please contact the factory for the availability of other R-Curves.

Pulse Modulation Amplitude

Simulates the effect of tissue perfusion

Range: 0.10 - 20.0%

Resolution: .05%

Ambient Light

Simulates the ambient light level "seen" by the oximeter probe

Range: DC Level & AC Level: (5-255 DC) (0-255% AC)

Resolution: 1%

Accuracy: ±1%

Flicker Frequency Presets (6):

60 Hz

120 Hz

121 Hz

50 Hz

100 Hz

101 Hz

Motion Artifact

Amplitude Range: 0-100

Pause

PVC

Atrial

Fibrillation

Tachycardia

Bradycardia

Auto Sequences

Preset Auto Sequences automate pulse oximeter testing.

User configurable sequences.

Remote Control

Remote control operation available through USB.

Cables

The following Simulator and Probe Analyzer cables are available for purchase.

Please contact Clinical Dynamics for details.

Optional SpO2 Simulator Adapter

Cables: BCI, Criticare, CSI-Spot, Datascope, Datex, Ohmeda, Philips (HP), Masimo, Nellcor / Oximax, Nihon Kohden, Nonin, Novamatrix, Sensormedics, & Tuffsat

Fully Synchronized Patient Simulator

ECG Type

NSR (Normal Sinus Rhythm)

(Heart) RATE: 30 - 330 BPM (adjust in steps of 1)

AMP: 0.15 - 5.00 mV (adjust in steps of 0.01)

MODE: Continuous, Triggered

ECG Faults

Tachycardia, Brachycardia, VT, VF or Asystole

Pacer

Atrial Pacer

Polarity: Ve+, Ve-

Width: 1 -5ms

Amp: 0.15-5.00 mV (adjust in steps of 0.01)

Sync: Pacer Only, Pacer AP, Pacer ASP

ST Segment

ST Elevation

ST Elevation Enabled, Disabled

Direction Elevation, Depression

Height 7%, 13%, 20%

Slope: Flat, Positive Slope, Negative Slope

Myocardial Infarction: Isc, Inj, Inf, Iinf

Tall T wave

RATE: 30 - 330 BPM (adjust in steps of 1)

AMP: 0.15 - 4.00 mV (adjust in steps of 0.01)

Height 0 - 125% (adjust in steps of 1%)

RWD

Width: 40-120 mS (adjust in steps of 1)

AMP: 0.15-5.00 mV (adjust in steps of 0.01)

ECG Performance

Type: Sine, Square, Triangle

Pulse Amp = 0.1 - 5.0 mV (adjust in 0.1 steps)

Frequency 0.1 - 0.9 Hz (adjust in 0.1 Hz steps)

1-9 Hz (adjust in 1 Hz steps)

10-100 Hz (adjust in 10 Hz steps)

ECG Arrhythmias

PAC1, PAC2, PVC, MB, AS, AFB

ECG Auto Sequence

RWD, Tall T, Ppr, Tac

Respiration

RATE 4-120 BrBm (breaths per minute)

Base Impedance 250, 500, 750, 1000

ohms

(variation) Dynamic Impedance

1, 5, 10, 15 ohms

Invasive Blood Pressure

Static Pressure: 0 mmHg to 300 mmHg

(adjust in steps of 1)

Dynamics Pressure: 100/60, 120/80

Simulated Wave

Contact Factory for availability of additional Waves

Gain: 5uV/V, 40uV/V

Temperature:

Probe: 400, 700 series

Temperature: 30, 37 degrees C

General Specifications

Display

Graphic LCD

Resolution: 128 x 64 pixels

LED Backlight

Communication Port

Universal Serial Bus (USB)

Power Supply

100-240 VAC, 50 watts, 50-60 Hz, Desktop

Switcher

Output: 24VDC @ 2.1A, 6 foot cable

Safety Agency Approvals: UL, CE, TUV

• Li-Ion Rechargeable Battery

Weight

1.9 pounds (0.86 kilograms)

Dimensions

4.25" Wide x 2" High x 11.5" Long

(10.5" long w/ECG option)

Includes Built-in Adult Cuff Support

Standard Accessories

• External Power Supply

• Tilt Stand

• Operation Manual

• Neonatal Mandrel

Optional Accessories

• Hose Adaptor Kit

• Carry Case

• Motion Sinewave Frequency 1-25 Hz Gain

levels 1-8

• Patient Simulator Kit

• Arrhythmia Delay; Adjustable duration 2.0 to

8.0 seconds (in 0.5 sec increments)

Frequency of occurrence adjustable from

1 to 19 out of 20 pulses

• AccuPulse NIBP CalTables™

Please contact the factory for the

availability of other calibration tables,

or visit our web site for updates at

www.clinicaldynamics.com

Environmental

RoHS Compliant (Lead-Free)

CE Mark Certified



Specifications are measured at an ambient temperature between 65°-75° F after a 15-minute warm-up and are subject to change without notice. AccuPulse Handheld is protected under US Patent No. 5,027,641. 2008 Clinical Dynamics. All rights reserved.