SmartSat™

Pulse Oximetry Analyzer

The Gold Standard in Oximetry Testing

- **The Most Accurate Pulse Oximetry Tester**
  Perform pulse oximetry testing with confidence. Using our patented electrical simulation technology, SmartSat delivers the most accurate and widest pulse oximetry simulation parameters available. No optical simulator can match SmartSat's performance.

- **Manufacturer-Certified SpO2 Simulation**
  SmartSat was developed with, and certified by, leading pulse oximetry manufacturers. SmartSat is used and endorsed by manufacturers for testing in engineering, production, service and support.

- **Built-In Probe Analyzer**
  SmartSat also includes a built-in probe analyzer. Quickly test a probe for opens and shorts - even intermittent ones. Since most failures are ultimately traced to the probe, SmartSat's Probe Analyzer can save you hours of troubleshooting time.

- **Efficient and Easy To Use**
  Test a pulse oximeter and probe in less than 2 minutes! Other simulators require you to scroll through endless menus. With SmartSat's large display, you can view the simulation and probe testing windows simultaneously.

Clinical Dynamics

clinicaldynamics.com

Clinical Dynamics Corporation
10 Capital Drive • Wallingford, CT 06492 USA
800.247.6427 Toll Free • +1.203.269.0090 International • Fax: +1.203.269.3402
ClinicalDynamics.com • sales@ClinicalDynamics.com

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SmartSat™ Pulse Oximetry Analyzer
Technical Specifications

SpO2 Simulator
Oxygen Saturation (SpO2)
Range: 0-100 SpO2%
Resolution: 1 SpO2%
Accuracy: ±0.5 SpO2%, 70-100 SpO2%
±1 SpO2%, 50-69 SpO2%

Pulse Rate
Range: 20-300 BPM
Resolution: 1 BPM
Accuracy: ±1 BPM, 20-199 BPM
±2 BPM, 200-300 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, Masimo, Nellcor, Nellcor OxiMax, Nihon Kohden, Nonin, Novametrix, Ohmeda, Philips Medical & 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
Frequency: 4 Hz, Contact factory for availability of other frequencies.

Arrhythmias
Simulates cardiac arrhythmias by altering the plethysmographic pulse amplitude and pulse rate.
Arrhythmias (5): Asystolic Pause
PVC
Atrial Fibrillation
Tachycardia
Bradycardia

Auto Sequences
Preset Auto Sequences automate pulse oximeter testing.
Standard Presets (18):
- All autosequences are user configurable
- User configurations are saved, replacing factory samples

Factory Samples
100-58 - preset for 13 manufacturers
50-81 - preset for Nellcor and Ohmeda
Trend Loop
4 Points
Pulse Rate: 40-200

Remote Control
The **Smart**Sat can be operated via remote control through its RS-232 port and duplicate all front panel operations.

Probe Analyzer

Probe Continuity Test
Simultaneous Channels:
2 for Nellcor-style probes: LED & PhotoDiode circuits
3 for Ohmeda-style probes: Red LED, IR LED & PhotoDiode circuits
Test Mode: Constant Current Stimulus, Voltage Output
Constant Current Stimulus: 500 uA
Intermittent "Glitch" Detection: Detects open circuits and short circuits, 1 msec or longer
Probe Connection: Connectors for Nellcor & Ohmeda probes are built into SmartSat; other probes are connected via adapter cables.

General

Display
Type: Backlit graphic LCD
Resolution: 320 h x 240 v, 0.30mm dot pitch
Controls: Contrast

Serial Interface
Remote Control Mode
Type: RS-232C, 9 pin "PC-AT" style
Baud Rates: 1200 bps

Battery & AC Adapter
Battery
Type: Nickel Metal Hydride (NiMH)
Voltage: 19.2V
Capacity: 2.1A-Hr (About 4.5 Hours usage)
Charge Time: 17 Hours (charges even if **Smart**Sat in use)
External AC Adapter : 100-240 VAC, 50 watts, 50-60 Hz, Desktop Switcher

Physical
Case: Aluminum with non-skid feet & handle
Dimensions: 8" Wide x 8" Deep x 5" High
Weight: 4 pounds including battery

SmartSat Cables
The following Simulator and Probe Analyzer cables are available for purchase.
Please contact Clinical Dynamics for details.
SpO2 Simulator Adapter Cables: BCI, Criticare, CSI-Spot, Datascope, Datex, Datex-Ohmeda, Hewlett-Packard, Masimo, Nellcor /OxiMax, Nihon Kohden, Nonin, Novametrix, Sensormedics, & Tuffsat
Probe Analyzer Adapter Cables: Criticare, Datascope, Datex, Hewlett-Packard, Masimo, Nihon Kohden, Novametrix & Sensormedics
Note: BCI, Nellcor, Nonin & Ohmeda probes connect directly.

Optional Accessories
SmartSat Carry Case

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