UNI-SiM Vital Signs Simulator

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The world's first integrated NiBP, SpO2 and patient simulator.

☑ NiBP ☑ ECG ☑ Respiration
☑ SpO2 ☑ IBP ☑ Temperature

The new Rigel UNI-SiM is truly unique, incorporating 6 vitals signs into one hand-held simulator.
Battery-operated, the UNI-SiM can simulate NiBP, SpO2, ECG wave forms, temperature, respiration and invasive blood pressure simultaneously.

The UNI-SiM is the only simulator capable of undertaking six synchronised vital signs parameters tests, enabling medical device engineers to quickly, easily and accurately perform NiBP, SpO2, ECG, temperature, IBP and respiration functionality tests simultaneously using a single portable instrument.

The battery powered vital signs simulator reduces the time taken to test the correct performance of a wide range of medical devices and equipment used in hospitals, operating theatres and other facilities.

It synchronises the full functionality of Rigel's BP-SiM and SP-SiM as well as a comprehensive patient simulator (ECG, invasive blood pressure, respiration and temperature) to cut simulation times and deliver cost saving benefits – engineers no longer need to use a variety of different instruments for testing these functions separately.

Whilst the UNI-SiM instrument incorporates a range of custom settings that include a variety of paediatric and adult NiBP

pressures, pulse volume adjustments, heart rate and manufacturer-specific O-curves, the UNI-SiM is fully customisable to meet specific performance test conditions.

The Rigel UNI-SiM also utilises new and advanced technologies to maximise the accuracy of each simulation. For example both electronic and optical SpO2 simulation methods are combined into a single test setup and manufacturer specific simulation curves are included during NiBP simulation, reducing uncertainties thus improving the test time. Featuring Bluetooth connectivity, simulation test results can be stored within the instrument and printed wirelessly to the rugged battery operated Elite Test and Tag printer.

Test and Tag Compatible

The Rigel Test and Tag system allows customised Thermal PASS / FAIL labels to be printed. The benefits of using the Test and Tag printer includes:

■ Tough and durable labels
■ Resistant to most solvents used in the

Key features

■ **6 in 1 vital signs tester**
Combining simulation of NiBP, SpO2, ECG, temperature, respiration and IBP

■ **Synchronised heart rate**
Test across all parameters from one centralised heart rate simulation

■ **Hand-held**
This portable and lightweight unit is ideal for field service technicians

■ **Battery operated**
Convenient and fast testing without mains power

■ **Manual and automatic operation**
Choose the operation mode, staying in full control of the test situation

■ **Onboard data entry and storage**
Store up to 10,000 asset records, making record management simple and reducing duplication of data

■ **Custom test protocols**
Create your own automatic sequences to automate your PPM procedures

■ **Download / Upload software**
Easy transfer of data between the PC and simulator, reducing data duplication

■ **Bluetooth communication**
Wireless transfer test and clone data between PC and tester as well as communication between barcode scanner and printers

■ **Bar code / Test and Tag capability**
Onsite printing and scanning of barcode labels

medical sector

■ Opportunity to advertise your logo and company details or emergency telephone number with every item you Test and Tag.

■ Automatic barcode generation enables easy use of the barcode scanner and speeds up test time.

The unique Test and Tag label displays test status and retest due date, barcode and asset ID number, and identifies test personnel.

Med-eBase PC Software

The UNI-SiM is compatible with Med-eBase, a new and comprehensive download software package capable of producing asset management records and work schedules. Use the software to configure a number of UNI-SiM at the same time to ensure that all engineers work to the same test routines. Create customer test routines including test protocols for testing patient monitors (NiBP, SpO2, ECG etc.), defibrillators and other medical devices. Test protocols can be easily uploaded to the UNI-SiM using the Bluetooth connection.

Use your UNI-SiM during functional testing to collect not only the electrical safety test record but also the performance of the medical device. The complete PPM in one single record.

Furthermore, the software allows you to

produce certificates and print or email them to make sure test records are kept for future reference.

Key Features

■ Windows Explorer type interface
■ Download from UNI-SiM to PC via Bluetooth
■ Upload from PC to UNI-SiM via Bluetooth
■ Create test routines and configure multiple testers
■ Output database to Excel / Access.
■ Database function
■ Test schedule function
■ Printing of test certificate
■ Store test certificate as HTML for easy email application

Rigel UNI-SiM Design Philosophy

The UNI-SiM has been designed to address the challenges associated with moving test equipment on-site. This is often a struggle due to the amount of test equipment required by test engineers. The UNI-SiM fulfils the market's need for smaller tester equipment not only is it handheld, but it also combines the functions of several testers, reducing the range of equipment needed for comprehensive on-site testing. This offers the immediate benefit of flexibility and freedom to move around.

The challenge was to combine the benefits of the size and weight of a smaller hand-held simulator with the test versatility of a number of

Applications

■ Verify the correct performance of single and multi parameter vital signs monitors
■ Comprehensive system leak tests (NiBP)
■ Testing of the over-pressure safety valves (NiBP)
■ Accurate static pressure measurement (Manometer)
■ Performance testing of ECG recorders
■ Check quality of SpO2 probes and monitors

What comes in the box?

■ Carrying Case
■ 5-pc tubing adaptor (NiBP)
■ SpO2 probe interface
■ ECG interface box
■ Power Supply
■ Instruction Manual
■ Bluetooth USB Adaptor
■ Calibration Certificate
■ Application Software

Other products in the range

■ Rigel BP-SiM NiBP Simulator
■ Rigel SP-SiM SpO2 Simulator
■ Rigel 333 ECG Simulator

Optional accessories

■ Temperature simulator cables
■ IBP simulator cables
■ SpO2 probe adaptor boxes
■ Barcode scanner
■ Test and Tag printer
■ Med-eBase database software

larger bench-mounted simulators. By providing synchronised outputs in one handheld enclosure, the UNI-SiM truly replicates a real-life patient, offering the simultaneous simulation of up to 6 vital signs from one test instrument .

Today's industry demands test equipment that can save time and cost through greater flexibility. These factors have been taken into account during the development of the UNI-SiM. Its test capabilities and functionality exceed those of most individual simulators yet the UNI-SiM is only a fraction of the size and

weight of all testers combined.

No other range of individual patient / vital signs simulators on the market offers a handheld enclosure with test capabilities equal to most bench mounted versions. Despite its small and compact design, the UNI-SiM is able to offer a graphic user - interface, large internal memory, Bluetooth communication, asset management facilities, user-configurable performance tests and more.

We believe that the new UNI-SiM is set to become the new standard in vital signs monitoring and performance testing.

Biomed testing on the move.

Tests in detail

Integrated Keyboard

The integrated keyboard provides an easy solution to the increasing requirements for asset management. Capture the performance of the NiBP monitor on the UNI-SiM and store in the onboard memory, including information regarding make, model, serial number, site & location. Using the Bluetooth interface, the data can easily be downloaded to a PC application.
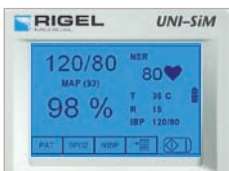
Displaying a full Vital Signs simulator

Thanks to its large ¼ VGA display, the UNI-SiM is able to display all the simulated vital signs parameters into a single and easy to read screen, including NiBP pressures, SpO2 value, ECG waveform settings, temperature, respiration, heart rates and invasive blood pressure. Use the UNI-SiM as a complete tester for all vital signs.
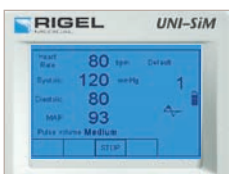
Displaying a full NiBP simulator

The UNI-SiM has the full functionality of an NiBP simulator, including leakage testing, over pressure tests and manometer functions. The UNI-SiM's shows the pressure curves and simulation values clearly. Use the UNI-SiM as a complete tester for the NiBP functions.
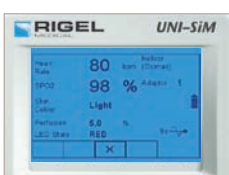
Displaying a full SpO2 simulator

The UNI-SiM has the full functionality of an SpO2 simulator and is able to simulate a wide variety of aspects associated with Pulse oximetry such as; R-curves, saturation levels, heart rate, skin colour, perfusion and artefacts. An easy to use overview screen is instantly available in manual mode simulation.

Displaying a full 12-lead patient simulator

The UNI-SiM has all the functionality of a full 12-lead patient / ECG simulator. Providing a synchronised output for both SpO2 and NiBP simulations, the patient simulator provides a wide variety of ECG waveforms, Arrhythmias, performance waveforms, temperature, respiration, heart rates and invasive blood pressure. Use the UNI-SiM as a complete tester for all vital signs functions.

Rigel's Med-eKit can include the following:

288 Electrical Safety Analyser
- Light, hand-held, battery operation
- Conform IEC 62353 / 60601/ VDE 0751 / NFPA-99 / AS-NZS 3551
- Memory for up to 10,000 devices
- Bluetooth communication
- Full, semi automatic & manual tests

BP-SiM NiBP Simulator
- Light, hand-held, battery operation
- Adult & Paediatric NiBP Simulations
- Manufacturer specific O-curves
- Overpressure and leak test
- Memory for up to 10,000 devices

SP-SiM SpO2 Simulator
- Light, hand-held, battery operation
- Tests probe and monitor all at once
- User configurable simulations
- Manufacturer R-curves
- Memory for up to 10,000 devices

As well as:
- Patient Simulator
- Flow Analyser
- Defib Analyser
- Printer
- Barcode Scanner
- Asset Management Software
- Non-Rigel Test Equipment

SPECIFICATIONS

Non-invasive Blood Pressure

Simulation waveform	Oscillometric
Integrated Pump	0 to 350 mmHg user configurable
Leak test	user configurable between 0-350mmHg
Chronometer	configurable upto 999 secs
Digital Manometer	0 - 410 mmHg
Pressure Accuracy	+/- 0.5% FS
Pressure Units	mmHg, inHg, kg/cm2, cmH2O, mBar, PSI, inH2O and kPa

Oxygen Saturation

Range	50 to 100%
Accuracy	± 1 bpm
Chronometer	test option to test response time SpO2 monitor.

ECG Arrhythmia Simulator

ECG	full 12 lead simulation including high level output
Wave forms	Normal Sinus Rhythm (NSR), ST Elevation, ST Depression, Myocardial Infarction, Tall T
Rate	20 – 300 BPM typed value
Performance waveforms	Sine, Square, Triangle, and Pulse
Pacer Waveforms	Synchronous Atrial, Asynchronous Atrial
Pacer Only	Pacer Pulse rate 60 BPM, Ventricular Pacer rate 70 BPM, Atrial & Ventricular Pacer Heart rate 70 BPM, R Wave Detection

Arrhythmia Waveforms

Atrial	Sinus Arrhythmia (SA), Missing beat, Atrial Flutter (AFLT), Atrial Fibrillation (AFB), Paroxysmal Atrial Tachycardia (PAT), Junctional Premature Contraction
Atrial Conduction	First Degree AV Block, Second Degree AV Block - Mobitz I, Second Degree AV Block - Mobitz II, Third Degree AV Block, Right Bundle Branch Block (RBB), Left Bundle Branch Block (LBB), Left Anterior Hemiblock
Ventricular	Premature Ventricular Contraction - Intermittent Premature Ventricular Contraction – Continuous, Bigeminy, Trigeminy, Ventricular Flutter (VFLT), Ventricular Fibrillation (VFB), Ventricular Tachycardia (VTC), Right Focal PVC.

Temperature

Simulation	YSI 400 / 700 Static
Range	preset at 25, 33, 37and 41°C

Respiration

Rates	5, 10, 15, 30, 60, 120, 180 Breaths per Minute
Base resistances	250, 500, 750, 1000 ohms
Apnoea Simulation	0 – 60 seconds duration 0 – 300 seconds interval.

Invasive Blood Pressure

Channels	2 channels
Static	0 to 300mmHg. Typed values
Dynamic	0 – 300mmHg for systolic & diastolic

General

Operation	Battery cell, insitu charge
Battery charger	110-230VAC, 50/60 Hz
Battery life	4-24 hours testing depending on simulations
Memory Capacity	Appr. 10,000 records
Communication	Via Blue Tooth
Display	Monochorme, ¼ VGA full graphics
Keypad	Alpha-numeric
Weight	<1.5 kg
Size (L x W x D)	270 x 110 x 75 mm / 10.5 x 4 x 3"
Operating conditions	10-30'C, 0-90% RH - NC
Storage environment	-15' - +60'C
Environmental Protection	IP 40

Part number:	370A930