Product Description

Congratulations on selecting the AccuPulse™ -XL- NIBP Simulator for your non-invasive blood pressure (NIBP) monitor testing and simulation needs. AccuPulse XL is the first "third-generation" NIBP simulator on the market, and is the result of Clinical Dynamics' 15-year leadership in NIBP simulation technology. AccuPulse XL provides everything needed for quality–control testing of any oscillometric NIBP monitor, including the following:

- Optional Selectable CalTables™: AccuPulse XL's new CalTable™ Technology provides the first NIBP Simulator to accurately test NIBP monitors. Selectable CalTables™ is the answer to the industry's issue of accurate and consistent testing of NIBP monitors with NIBP Simulators. Select the appropriate CalTable™ on AccuPulse XL and then use the defined presets for accurate NIBP monitor testing.
- Using the appropriate CalTables™ means the NIBP monitor readings can be expected to match the AccuPulse XL BP settings
- CalTables™ are available for several popular NIBP monitors, with the ability to store 45 CalTables, updates are field upgradeable.
- AccuPulse XL simulates physiologically correct waveforms, the proper way to correctly test and validate a NIBP monitor.
- AccuPulse XL's Simulation Engine is designed with very low friction components, resulting in virtually no wear.
- 7 Adult presets cover the full Hypo through Hyper range.
- 6 Neonatal presets cover the entire range from 35/15 to 150/120
- Autosequences in both Preset and optional User Defined modes.
- Shift of the presets is available to test between the presets if needed.
- Pulse rate can be changed by the user.
- Patented NIBP Simulation Technology - U.S. Patent 5,027,641
- AccuPulse XL always tests with the NIBP Monitor cuff; Not checking the cuff can be a major source of problems.
- AccuPulse XL provides a high accuracy digital manometer.
- AccuPulse XL is half the weight of most other full featured NIBP Testers and includes an internal battery.
- AccuPulse XL has a Graphical Display. This allows it to provide a display of the cuff inflation/deflation waveform, which can be useful for diagnosing unusual NIBP Monitor behavior.
- Integrated cuff support for adult and a provided accessory neonatal support.
- Internal Pump
- Leak test
- Over-pressure, "pop-off" valve test
- Internal LiOn Battery with intelligent charger
- Comprehensive library of remote control commands
- Optional User Defined mode allows for independent Systolic and Diastolic settings to be set and adjusted for specific equipment and advanced test requirements.
- Optional Motion simulation software module.
- Optional Arrhythmia simulation software module.

Functional Description

General

The AccuPulse XL NIBP Simulator provides accurate verification testing of blood pressure monitors. AccuPulse XL is the first accurate NIBP Simulator that uses physiologically correct waveforms for testing blood pressure monitors.

AccuPulse XL includes these test modes:

Blood Pressure Test Mode: Selectable presets with physiologically correct Adult and Neonate non-invasive blood pressures provide accurate verification testing of blood pressure monitors. AccuPulse XL also provides the widest adult and neonatal simulation range of any NIBP Simulator.

Leak Test Mode with High Accuracy Digital Manometer: Automatically tests the leak rate of the blood pressure monitor, cuff and hose assembly. The user can configure and save 3 test combinations for use where the requirements vary. This mode also provides a high accuracy digital manometer.

Over-Pressure Test Mode: Automatically tests operation of the blood pressure monitor's pressure relief valve and records the set point when pressure is released by the relief valve.

Meter Mode : In addition to the 0.1 mmHg resolution manometer, this mode offers automated inflation to preset values or a user defined set pressure to verify static calibration across the entire range. The units of measure for this mode can be changed by the user if desired.

NOTE: The unit may periodically zero itself at 1 minute intervals so that any drift is removed. There will be a slight audible click heard when this occurs. This will happen automatically, and only when the system is not inflated or actively testing.

Oscillometric Blood Pressure Measurement Principles

Unlike auscultatory NIBP measurement which uses a stethoscope or microphone, the oscillometric method uses the pulses or oscillations in the cuff pressure to determine the patient's blood pressure. The cuff is inflated above the systolic pressure then deflated linearly or step-wise. When the cuff pressure is high, the pulse amplitude is small; but as the cuff pressure decreases, the pulse amplitude increases and then begins to decrease. During deflation, the amplitude of each cuff oscillation is measured and stored along with the cuff pressure at which the oscillation occurred. The oscillation amplitude is then plotted against the cuff pressure to produce the "oscillation envelope" curve. The oscillation envelope is then used to determine the patient's blood pressure. It is widely accepted that the mean arterial pressure (MAP) occurs at the peak of the envelope, where the cuff oscillation amplitudes are maximum. Unfortunately, there are no generally accepted formulas for determining the systolic and diastolic pressures. NIBP monitor manufacturers have developed unique, proprietary algorithms for estimating the systolic and diastolic pressures from the oscillation envelope.

Selectable CalTables™: AccuPulse XL's new CalTable™ Technology makes it the first NIBP Simulator to address the variations of algorithms between different NIBP monitors. Selectable CalTables™ is the answer to the industry's issue of accurate and consistent testing of NIBP monitors with NIBP Simulators. Select the appropriate CalTable™ on AccuPulse XL and then use the defined presets for accurate NIBP monitor testing. AccuPulse XL can store up to 45 defined CalTables™ for accurate testing of NIBP Monitors. These CalTables™ are approved for testing and developed by working directly with the NIBP monitoring manufacturers to assure accurate testing. New CalTables™ are continuously being released, please visit our web site, www.clinicaldynamics.com, for updates.

The Generic Preset included represents no particular manufacturer's algorithm but rather is a middle of the road approximation which will provide repeatable results. It can be tuned by the user for a particular need when appropriate. The optional User Defined software module expands this capability and provides storage of up to 45 custom presets for special applications and power users.

Leak Test

Auto-InflateStart Pressure: 3 user presets can be set and saved
Each adjustable : 50-300mmHg
Elapsed Time: 3 user presets can be set and saved
Each adjustable 20-120 seconds
High Resolution Manometer: 0.0 to 400.0 mmHg

Over-Pressure

Automatically tests operation of the monitor's relief valve
Pop-Off Pressure range: 10 to 400 mmHg
Instantaneous Pressure: 0 to 400 mmHg

Autosequences

User can utilize autosequences to test NIBP monitors with a specific series of AccuPulse XL NIBP performance tests.
Also a special user sequence is added with the optional User Defined mode

Cuff Support for Adult cuffs is the AccuPulse XL case for portability and ease of use. Neonate mandrel also supplied

- Neonate (1.25" OD,2.25" width)

Adapter Hoses

Adapter Hoses insert between the NIBP device, cuff and analyzer. These adapters are compatible with oscillometric NIBP monitors.

- Male/Female Luer
- Male/Female Clippard (GEMedical, Draeger/Siemens)
- Colder/CPC (GEMedical, 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)

Communication Ports

1 USB mini Port
1 DB9 RS232 Port

Display

Non-Glare Graphic LED Backlight
Resolution: 320 x 240

Power

External: 100-240 VAC, 50 watts, 50-60 Hz, Desktop Switcher
Output: 24VDC @ 2.1A, 6 foot cable

Safety Agency Approvals: UL, CE, TUV
Internal Battery: Lithium Ion (LiOn)

Voltage: 16.5V Capacity: 2.5A-Hr, typically 150 NIBP Simulations

Charge Time: 3.5 Hours

Weight 6 lbs. with internal battery

Dimensions 8" Wide x 5" High x 12" Long

Standard Accessories

- External Power Supply & Cord
- Neonate Cuff Support
- Adult Cuff Support (built-in)
- Five Adapter Hose set
- Operation Manual on CD
- Internal Pump
- Internal Battery

Optional Accessories

- Carry Case
- CalTables software module
- User Defined software module
- Motion software module
- Arrhythmia software module

血压预设收缩压/舒张压 (MAP)：
成人：
240/190
200/150
150/100
120/80
100/70
80/50
60/30

新生儿：
150/120
120/90
100/70
80/50
35/15
60/30

确切的舒张压、收缩压和 MAP 值是特定的 CalTables™。上面的BP预设被采用来自 GENERIC CalTable™。
准确度：± 0.5 mmHg
示波脉冲脉冲幅度范围：标称值的 0-150%
脉冲幅度分辨率：1%
心率脉搏率范围：15-330 bpm
脉率精度：±0.5 bpm、15-300 bpm、±1 bpm 301-330 bpm

显示/测量参数：
动态 NIBP 袖带压力波形
数字压力计压力范围： 0.0 至 400.0 mmHg
准确度： 0 – 400 mmHg ± 0.5 mmHg
分辨率： ±0.1 mmHg

泄漏测试
Auto-InflateStart 压力：可以设置和保存 3 个用户预设
每次可调：50-300mmHg
已用时间：可以设置和保存 3 个用户预设每20-120秒可调
高分辨率压力计： 0.0 至 400.0 mmHg

过压
自动测试监视器安全阀的操作
弹出压力范围：10 至 400 mmHg
瞬时压力：0 至 400 mmHg