

## Basic Features

- ◆ Invasive Blood Pressure/ECG/ Respiration/Temp.
- ◆ Drop down choice screens list all options for parameters
- ◆ Special power up feature allows the user to choose to use default, last or custom settings
- ◆ Auto sequences for BPM, static-pressure levels & performance
- ◆ 10 universal patient lead connectors (Extra space between posts for the largest connectors)
- ◆ Mini-din connectors compatible w/standard BP cables, (Optional MiniDin-M to Din-F cable adapter available BC20-40736)
- ◆ % Battery life display & low battery indicator
- ◆ Powered by 2-9V batteries or optional battery eliminator
- ◆ Display backlight
- ◆ Full remote operation via RS232
- ◆ Flash programmable for upgrades
- ◆ Fetal/Maternal

## Options

- ◆ Battery Eliminator
- ◆ SpO<sub>2</sub> Option
- ◆ Cardiac Option
- ◆ Fetal/Maternal Option

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# MULTI-PARAMETER PATIENT SIMULATORS

BC Biomedical PS-2200 Series



Dual graphic displays allow for the simultaneous viewing of all operating parameters



Settings are made by simply highlighting the parameter

Alternatively, drop down choice menus provide an on-screen listing of all options for each parameter



This unit can produce a wide variety of ECG simulations. The user simply selects the parameters that match the desired output. The unit can simulate 49 different arrhythmias. For ease of selection, they are grouped into four basic categories. Where applicable, both manual & automatic triggering of the waveform is available. Seven different pacemaker waveforms may be simulated. Additionally, the width & amplitude of the pacer pulse may be selected. The unit will generate Sine, Square, Triangular & Pulse waveforms with adjustable amplitudes for performance testing. A special Automatic mode is available to auto sequence through the entire range of waveforms. Also, an R-Wave (Havertriange) waveform may be selected with separate amplitude & width settings. Respiration is simulated at 8 different rates, with the ability to select from 4 Baseline Impedances, the Lead in which it will appear, & the Delta Ohms (amplitude) of the signal. Additionally, an Apnea period may be selected. The unit will simulate seven temperatures. This is done by providing the necessary ohmic levels for both the YSI 400 & 700 Series thermistors. Blood pressure simulation varies between the members of the PS-2200 Family. There are models with 1, 2 & 4 blood pressure outputs. Both static & dynamic invasive pressures are simulated. In the static mode, the BP outputs are fixed at the selected level or sequenced through the list using the Automatic mode selection. In the Dynamic mode, the selected waveform is synchronized with the ECG & provides a continuous output. Additionally, a Respiration Artifact may be added. A special Swan-Ganz mode is available that will allow Manual or Automatic simulation of that sequence. Each channel has independent settings. The unit has a special training mode that aids users in practicing the identification of arrhythmias. A series of settings allows the feature to be customized to fit the exact training requirement. The unit provides a set of test terminals to quick check leads. It will determine if a lead has less than 1000 Ohms resistance. This option provides a combination of fetal & maternal ECG waveforms with & without contractions. Additionally, it provides an Intrauterine-Pressure (IUP) waveform. When used with the MSP-2100 external module & FingerSim family of SpO<sub>2</sub> finger simulators, the system will provide a pulse synchronized SpO<sub>2</sub> output for all NSR rates. When used with the MCO-2100 External Module, this option provides both the hardware & software to simulate Cardiac Output waveforms for testing devices that utilize Baxter-Edwards type catheters.

**BC Biomedical**   
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# BC BIOMEDICAL PS-2200 SERIES

## SPECIFICATIONS

### ECG Functions

RATE	30, 40, 45, 60, 80, 90, 100, 120, 140, 160, 180, 200, 220, 240, 260, 280, 300 BPM
AMPLITUDE	.05, .1, .15, .2, .25, .3, .35, .4, .45, .5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5 mV (Lead II)
S-T SEGMENT ELEVATION	+/- 0, .05, .1, .2, .3, .4, .5, .6, .7, .8 mV
ARTIFACTS	50 HZ, 60 HZ, Muscle, Baseline Wander, Respiration
QRS INTERVAL	Adult (80 ms) or Pediatric (40 ms)
AUTOMATIC MODE	Yes

### Arrhythmia Functions

ARRHYTHMIAS	49 different
GENERAL GROUPS	Supraventricular, Premature, Ventricular, Conduction
TRIGGERING	Manual & Automatic

### Pacemaker Functions

WAVEFORMS	Atrial, Pacer, Asynchronous, Non-Capture, Non-Function, Demand – Occasional, Demand – Frequent, AV - Sequential
PULSE HEIGHT	1, 2, 3, 4, 5, 6, 7, 8, 9, 10 mV
PULSE WIDTH	0.1, 0.5, 1, 1.5, 2 ms

### EGG-Performance Functions

SINE	0.1, 0.5, 5, 10, 40, 50, 60, 100 Hz
SQUARE	0.125, 2 Hz
TRIANGLE	2, 2.5 Hz
PULSE	30, 60, 120 BPM; 60 ms Width
AMPLITUDE	.05, .1, .15, .2, .25, .3, .35, .4, .45, .5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5 mV (Lead II)
AUTOMATIC MODE	Yes
R WAVE RATE	30, 60, 80, 120, 200, 250 BPM
R WAVE WIDTH	8, 10, 12, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200 ms
R WAVE AMPLITUDE	.05, .1, .15, .2, .25, .3, .35, .4, .45, .5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5 mV (Lead II)

### Respiration

RATE	15, 20, 30, 40, 60, 80, 100, 120 BrPM
BASELINE IMPEDANCE	500, 1000, 1500, 2000 OHMS
LEAD	LA or LL
DELTA IMPEDANCE	0.1, 0.2, 0.5, 1, 2, 3 OHMS
APNEA	12, 22 & 32 SEC Plus Continuous

### Temperature

SIMULATION SELECTIONS	YSI 400 Series & 700 Series 0, 24, 30, 35, 37, 40, 42 °C (32.0, 75.2, 86, 95, 98.6, 104, 107.6 °F)
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### Blood Pressure

STATIC	-10, -5, 0, 20, 40, 50, 60, 80, 100, 150, 160, 200, 240, 250, 300, 320, 400 mmHg Yes
AUTOMATIC STATIC PRESSURE	8
DYNAMIC WAVEFORMS	0 to 16 mmHg
RESPIRATION ARTIFACT	5uV/mmHg & 40uV/mmHg
SENSITIVITY	Yes
SWAN-GANZ SIMULATION	7 (Model PS-2240 Only)
PRESET STATIC GROUPS	

### Training

TIMER	Manual, 10, 15, 20, 25, 30 SEC
RANDOMIZER	Off, On
ARRHYTHMIAS	All, Subset

### Fetal/Maternal (Option)

FETAL HEART RATE	60, 90, 120, 140, 150, 210, 240 BPM
IUP PERIOD (AUTO)	Single Contraction (Manual), 2, 3, 5 MIN
FETAL HEART RATE (DURING CONTRACTION)	Uniform Deceleration, Early Deceleration, Late Deceleration, Uniform Acceleration

### SpO<sub>2</sub> Simulation (Option)

RATE	30, 40, 45, 60, 80, 90, 100, 120, 140, 160, 180, 200, 220, 240, 260, 280, 300 BPM
SpO <sub>2</sub> OUTPUT	80, 90, 97%

### Cardiac Output (Option)

INJECTATE TEMPERATURE	0, 24°C
INJECTATE FLOW	2.5, 5, 10 L/MIN
OTHER OUTPUTS	Faulty - Injectate, Left-to-Right Shunt, Calibrated Temperature Pulse

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