GOSSEN METRAWATT

QUICK SETUP GUIDE

SECULIFE PS200

SECULIFE®

The Model SECU**LIFE** PS200 is a Microprocessor based Patient Simulator. It provides ECG, Blood Pressure, Respiration and Temperature Simulation. There are 12 arrhythmias, a pacemaker rhythm, a Fetal/Maternal rhythm, seven waveforms with constant QRS duration and 12 machine performance testing waveforms.

The SECU**LIFE** PS200 makes viewing and selecting the desired waveforms and parameters quick and intuitive, with all operational information being available at one time on a cursor-based graphic display, allowing for easy maneuvering through parameters and scrolling through available options

Lead Test Connections

10 Universal Patient Lead Connectors

(V2/C2, V3/C3, V4/C4, V5/C5,

V6/C6, RA/R, LA/L, RL/N (-), LL/F, V1/C1)

LCD Graphical Display

Shows parameters for ECG, Respiration, Blood Pressure

And Temperature

6-Pin Mini-DIN Plug Connector

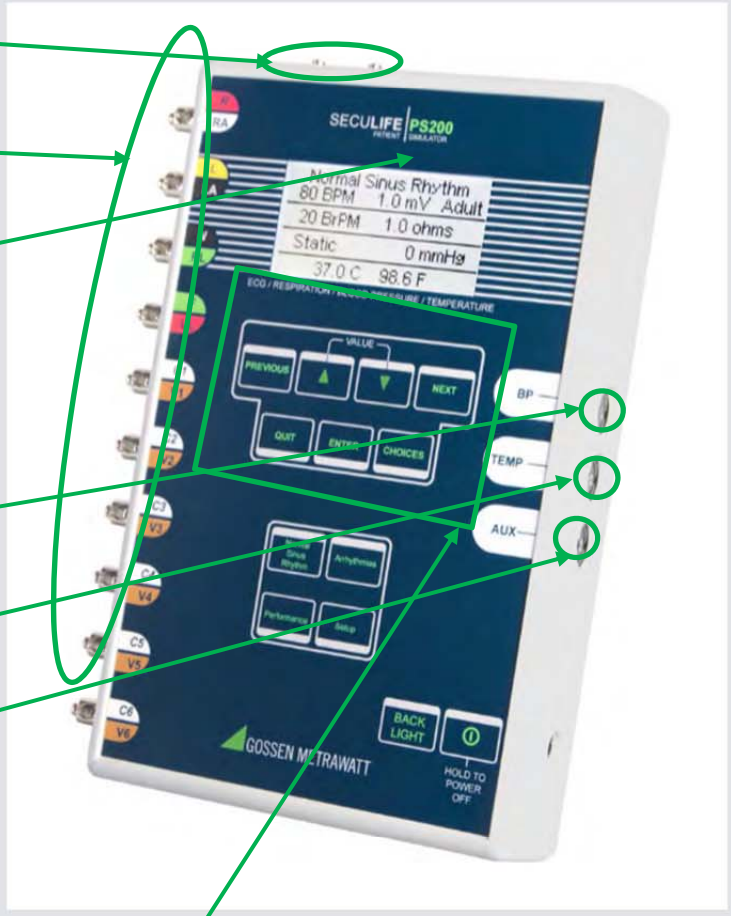
For Blood Pressure Cable

8-Pin Mini-DIN Plug Connector

For Temperature Cable

7-Pin Mini-DIN Plug Connector

For Aux functions



7 Light Touch keys for selecting Parameters and Settings

LEFT and RIGHT curved arrows for moving through Parameters

UP and DOWN arrows for scrolling through options

ENTER for selection option

CHOICES for displaying Submenu of all options for a given parameter

QUIT for returning to previous status

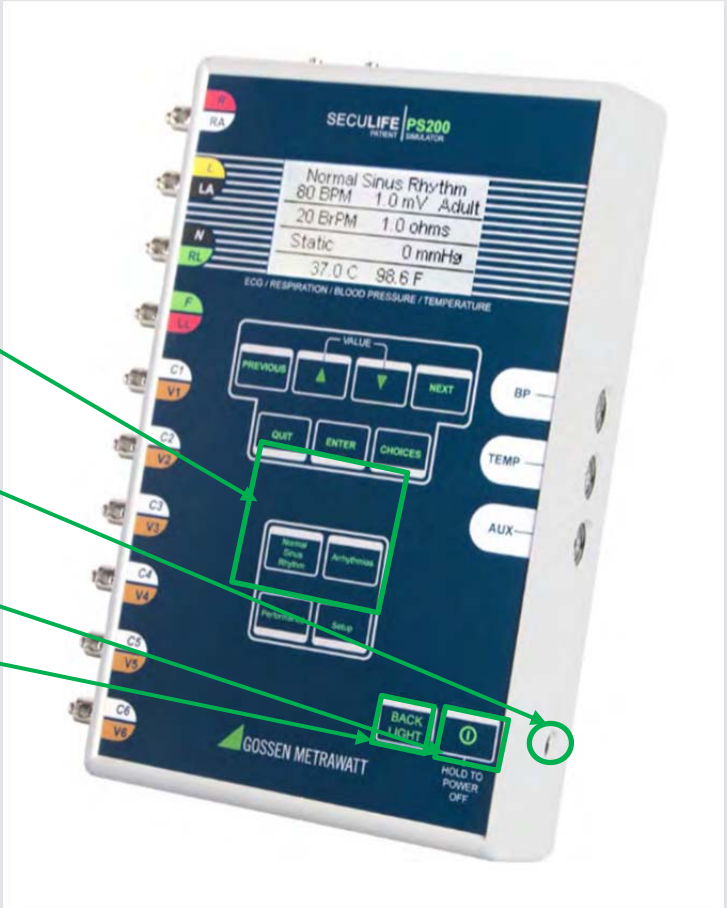
4 Light touch keys for category selection:

Normal Sinus Rhythm, Arrhythmias, Performance, Setup

Battery eliminator jacks

Power key

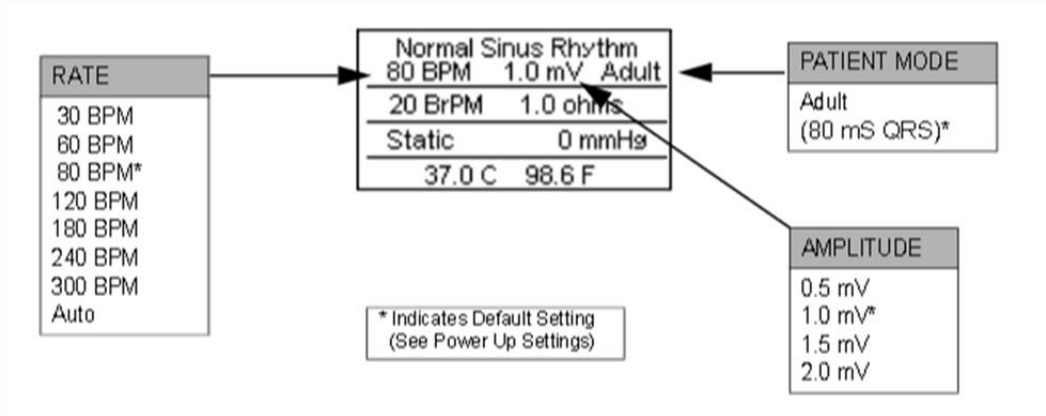
Back Light key



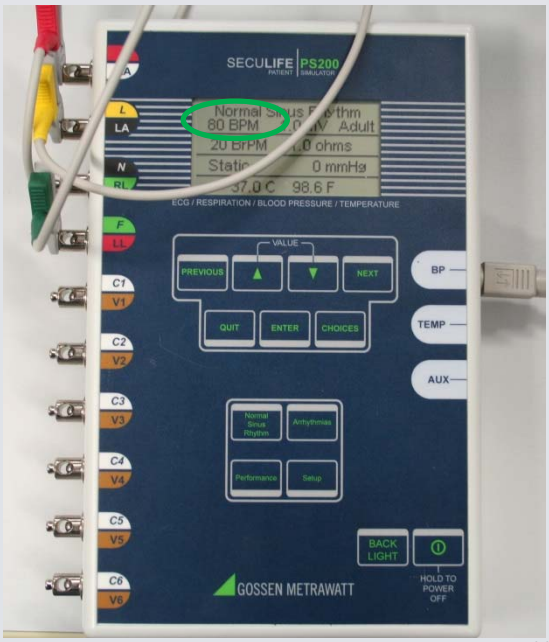
ECG – NORMAL SINUS RHYTHM

The SECU**LIFE** PS200 can send NSR waveforms to ECG machines in 3, 5 or 12 lead configurations. It has independent outputs for each signal lead, referenced to the right leg. NSR occurs when the heartbeat is normal, beating at a rate between 50 and 100 BPM with a standard QRS waveform shape and height.
The SECU**LIFE** PS200 simulates the NSR with a default rate of 80 BPM, amplitude of 1.0 mV on Lead II and P-R interval of 160 milliseconds
The SECU**LIFE** PS200 is placed into NSR mode by pressing the category key.

The display will resemble the following:



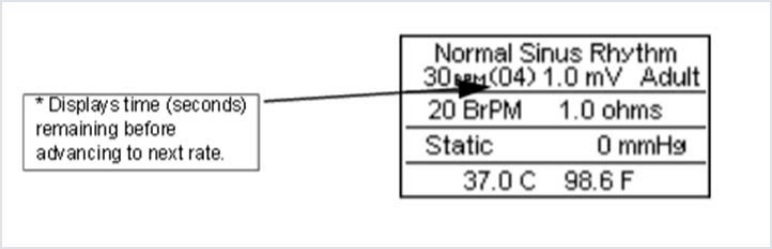
The rates and amplitudes can be selected by using **PREVIOUS**, **NEXT** to highlight the parameter to change and using **UP**, **DOWN** to scroll to the desired value. Then **ENTER** is used to accept the new setting.
Alternately, to see a submenu of all the options for a highlighted parameter use **CHOICES**. Use **UP**, **DOWN** to scroll to the desired option. Then **ENTER** is used to accept the new setting.



Display of SECU**LIFE** PS200 and display of DUT

Auto RATE

If the BPM parameter is set to AUTO, the unit will automatically sequence through all of the BPM settings, starting with 30 BPM, incrementing at a fixed interval. The interval may be set in the System Setup Menu under “Auto Step Time”. The key can be used to exit the Auto Mode during the sequence the BPM parameter is set to AUTO, the unit will automatically sequence through all of the BPM settings, starting with 30 BPM, incrementing at a fixed interval. The interval may be set in the System Setup Menuunder “Auto Step Time”.



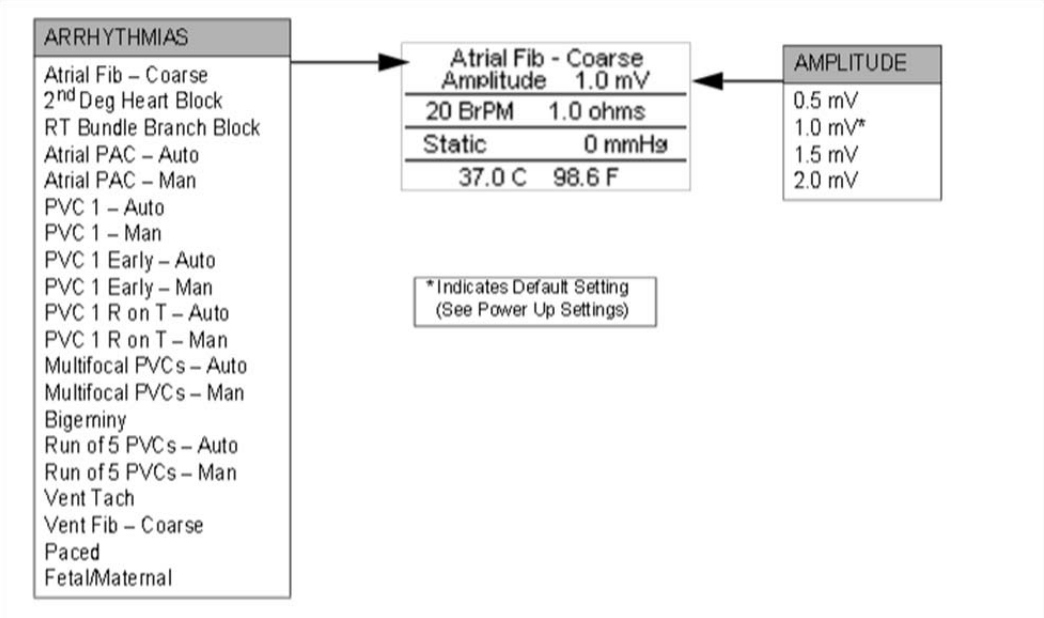
The **QUIT** key can be used to exit the Auto Mode during the sequence.

ECG- ARRHYTHMIAS

The SECU**LIFE** PS200 can send arrhythmia waveforms to ECG machines in 3, 5 or 12 lead configurations. It has independent outputs for each signal lead, referenced to the right leg. There are 12 Arrhythmias available that model abnormal heartbeats, plus Paced and Fetal/Maternal.

The SECU**LIFE** PS200 is placed into ARRHYTHMIA mode by pressing the category key.

The display will resemble the following:



The rates and amplitudes can be selected by using **PREVIOUS**, **NEXT** to highlight the parameter to change and using **UP**, **DOWN** to scroll to the desired value. Then **ENTER** is used to accept the new setting.
Alternately, to see a submenu of all the options for a highlighted parameter use **CHOICES**. Use **UP**, **DOWN** to scroll to the desired option. Then **ENTER** is used to accept the new setting.

Auto/Manual
There are 6 arrhythmias that have both Automatic and Manual versions. Both versions output the same waveform; however, in the Manual version, the arrhythmia is triggered each time is depressed. In the Auto versions, the arrhythmia is automatically triggered periodically.

The following is a brief description of how the SECU**LIFE** PS_{200} simulates the available Arrhythmias:

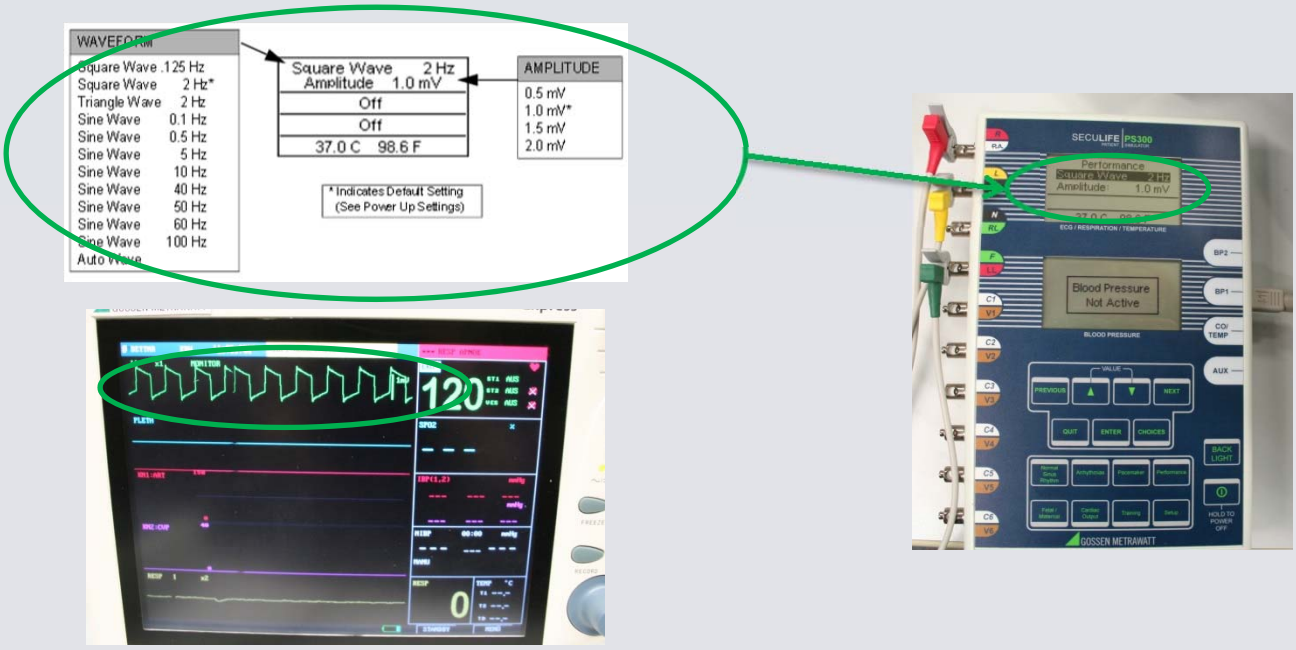
Abbreviation	Arrhythmia	Description
Atrial Fib	Atrial Fibrillation	Absence of P-wave and irregular P-R interval rate (Continuous)
2nd Deg Heart Block	Second Degree Heart Block	80 BPM with increasing P-R interval for four beats (160, 220, 400, 470 ms) followed by a P wave without a QRS (Continuous)
Rt Bundle Branch Block	Right Bundle Branch Block	80 BPM with Normal P-wave and P-R interval but wider QRS complexes (Continuous)
Atrial PAC – Auto	Premature Atrial Contraction	NSR of 80 BPM with Periodic Abnormal 25 % early P waves (PAC, 7 NSR) (Continuous)
Atrial PAC – Man	Premature Atrial Contraction	NSR of 80 BPM with Periodic Abnormal 25 % early P waves (One-Time event)
PVC 1 – Auto	Standard Type 1 Premature Ventricular Contraction	NSR of 80 BPM with periodic left focus premature ventricular beats with 20 % premature timing (PVC Type 1, 9 NSR) (Continuous)
PVC 1 – Man	Standard Type 1 Premature Ventricular Contraction	NSR of 80 BPM with periodic left focus premature ventricular beats with 20 % premature timing (One-Time event)
PVC 1 Early - Auto	Early Type 1 Premature Ventricular Contraction	NSR of 80 BPM with periodic left focus premature ventricular beats with 33 % premature timing (PVC Type 1, 9 NSR) (Continuous)
PVC 1 Early - Man	Early Type 1 Premature Ventricular Contraction	NSR of 80 BPM with periodic left focus premature ventricular beats with 33 % premature timing (One-Time event)
PVC 1 R on T – Auto	R on T Type 1 Premature Ventricular Contraction	NSR of 80 BPM with periodic left focus premature ventricular beats with 65 % premature timing, placing R on the previous T (PVC Type 1, 9 NSR) (Continuous)
PVC 1 R on T – Man	R on T Type 1 Premature Ventricular Contraction	NSR of 80 BPM with periodic left focus premature ventricular beats with 65 % premature timing, placing R on the previous T (One-Time event)
Multifocal PVCS – Auto	Multifocal Premature Ventricular Contraction	NSR of 80 BPM with Type 1 and Type 2 PVCs (PVC Type 1, 2 NSR, PVC TYPE 2, 2 NSR) (Continuous)
Multifocal PVCS – Man	Multifocal Premature Ventricular Contractions	NSR of 80 BPM with Type 1 and Type 2 PVCs (PVC Type 1, 2 NSR, PVC TYPE 2) (One-Time event)
Bigeminy	Bigeminal Rhythm	NSR of 80 BPM with every other beat a Type 1 PVC (Continuous)
Run of 5 PVCs – Auto	Run of 5 Premature Ventricular Contractions	NSR of 80 BPM with periodic group of 5 Type 1 PVCs (5 PVC Type 1, 36 NSR) (Continuous)
Run of 5 PVCs – Man	Run of 5 Premature Ventricular Contractions	NSR of 80 BPM with periodic group of 5 Type 1 PVCs (One-Time event)
Vent Tach	Ventricular Tachycardia	160 BPM, No P-wave, Beats similar to Type 1 PVC (Continuous)
Vent Fib – Coarse	Ventricular Fibrillation	Irregular waveform with no real P-wave or clear R-R interval (Continuous)
Paced	Paced Rhythm	Ventricular paced beats at 75 BPM with no P-waves (Continuous)
Fetal / Maternal	Fetal/Maternal ECG	Maternal NSR at 80 BPM with Fetal Heart Rate at 120 BPM (Continuous)

ECG-Performance

The SECU**LIFE** PS200 can send performance waveforms to ECG machines in 3, 5 or 12 lead configurations. It has independent outputs for each signal lead, referenced to the right leg.

There are 11 Performance waves available for testing and verifying. The SECU**LIFE** PS200 is placed into PERFORMANCE mode by pressing the **PERFORMANCE** category key.

The display of the device and DUT will resemble the following:

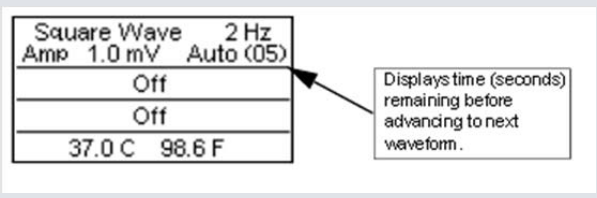


The rates and amplitudes can be selected by using **PREVIOUS**, **NEXT** to highlight the parameter to change and using **UP**, **DOWN** to scroll to the desired value. Then **ENTER** is used to accept the new setting.
Alternately, to see a submenu of all the options for a highlighted parameter use **CHOICES**. Use **UP**, **DOWN** to scroll to the desired option. Then **ENTER** is used to accept the new setting.
NOTE:
Respiration and blood pressure outputs are disabled during performance waves.

Auto Wave

If the Performance parameter is set to AUTO, the unit will automatically sequence through all of the performance waves, starting with Square Wave .125 Hz, incrementing at a fixed interval. The interval may be set in the System Setup Menu under “Auto Step Time”.

A countdown timer is shown in the display:

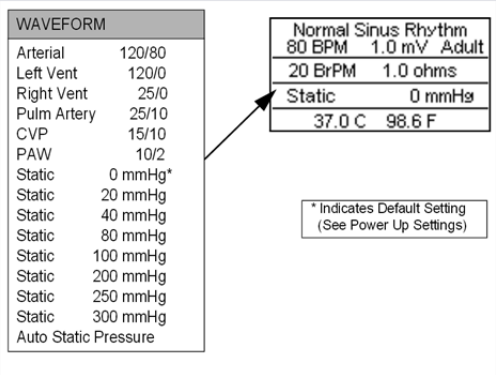


The **QUIT** key can be used to exit the Auto Mode during the sequence

BLOOD PRESSURE

NOTE:
The Transducer Sensitivity (5 uV/V/mmHg or 40 uV/V/mmHg) must be set to correlate with the monitoring equipment before simulation can begin. (See SETUP for selection information).
The SECU**LIFE** PS_{200} offers one Blood Pressure Channel and will simulate the set Blood Pressure wave during ECG waveforms where it occurs. There are 14 Blood Pressure settings available. Each of the six dynamic waveforms will synchronize with the NSR rate or arrhythmia selection.

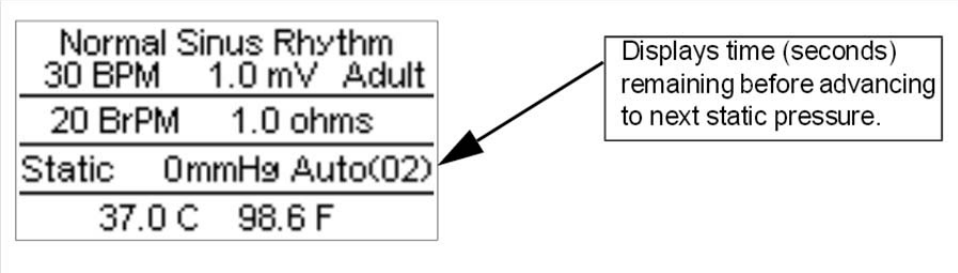
The display will resemble the following



The rates and amplitudes can be selected by using **PREVIOUS**, **NEXT** to highlight the parameter to change and using **UP**, **DOWN** to scroll to the desired value. Then **ENTER** is used to accept the new setting.
Alternately, to see a submenu of all the options for a highlighted parameter use **CHOICES**. Use **UP**, **DOWN** to scroll to the desired option. Then **ENTER** is used to accept the new setting.

Auto Static Pressure

If Auto Static Pressure is selected, the channel will automatically sequence through all of the Static Pressure settings, starting with 0 mmHg, incrementing at a fixed interval. The interval may be set in the System Setup Menu under “Auto Step Time”.

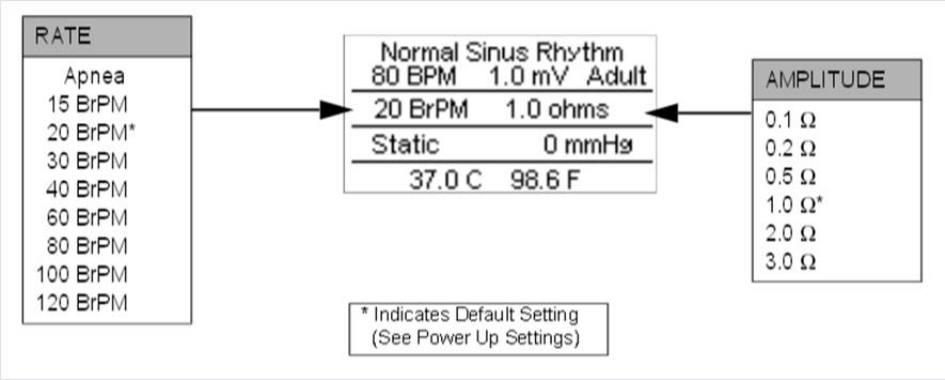


The key **QUIT** can be used to exit the Auto Mode during the sequence.

RESPIRATION

NOTE:
The delta ohm Respiration Signal can be inserted in either the LL or LA lead. The Baseline impedance can be set to either 500 or 1000 Ohms. These must be set to correlate with the monitoring equipment before simulation can begin. There are 9 rate settings available.

The display will resemble the following:



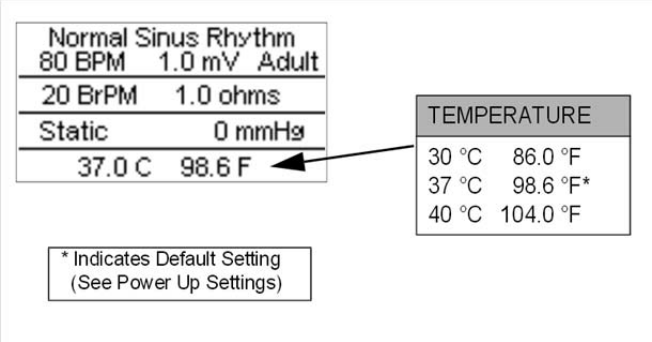
The rates and amplitudes can be selected by using **PREVIOUS**, **NEXT** to highlight the parameter to change and using **UP**, **DOWN** to scroll to the desired value. Then **ENTER** is used to accept the new setting.
Alternately, to see a submenu of all the options for a highlighted parameter use **CHOICES**. Use **UP**, **DOWN** to scroll to the desired option. Then **ENTER** is used to accept the new setting.

TEMPERATURE

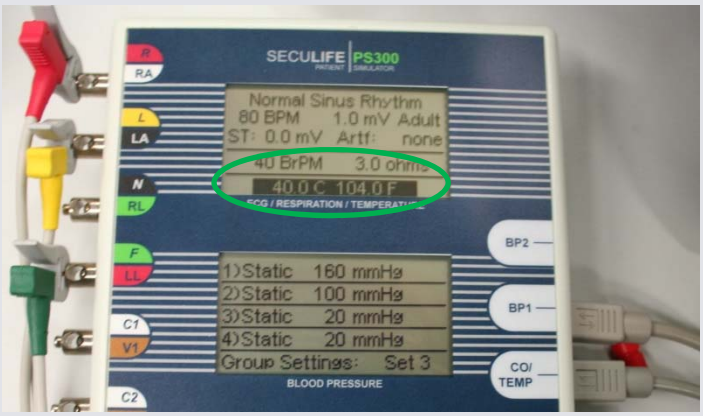
Der SECU**LIFE** PS200 simulates 3 temperatures that are independent from the rest of the functions of the unit. The temperature setting can be selected at any time. The output will simulate both YSI 400 and YSI 700 Temperature probes.

(**Note**: Both outputs are available at the output connector simultaneously.)

The display will resemble the following:



The rates and amplitudes can be selected by using **PREVIOUS**, **NEXT** to highlight the parameter to change and using **UP**, **DOWN** to scroll to the desired value. Then **ENTER** is used to accept the new setting.
Alternately, to see a submenu of all the options for a highlighted parameter use **CHOICES**. Use **UP**, **DOWN** to scroll to the desired option. Then **ENTER** is used to accept the new setting.



Display on the SECU**LIFE** PS200 and the DUT

SPO_2 (Option)

The SECU**LIFE** PS_{200} has the ability to drive an external SpO_2 module. This module (SECULIFE OX) accepts the FingerSim family of SpO_2 finger simulators (fingers are available with SpO_2 of 80, 90 and 97 %). The output pulses the fingers at the NSR BPM rate (up to 180 BPM). The output is off in Arrhythmia and Performance Modes.

The module plugs directly into the AUX (7 pin mini din) connector and is powered from the SECU**LIFE** PS_{200}. The output is only functional when the unit is powered from the Battery Eliminator provided with the SECULIFE OX Module, since the batteries do not have enough power to run this option.

The output is enabled and disabled in the Setup Output screen.

GMC INSTRUMENTS

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CAMILLE BAUER