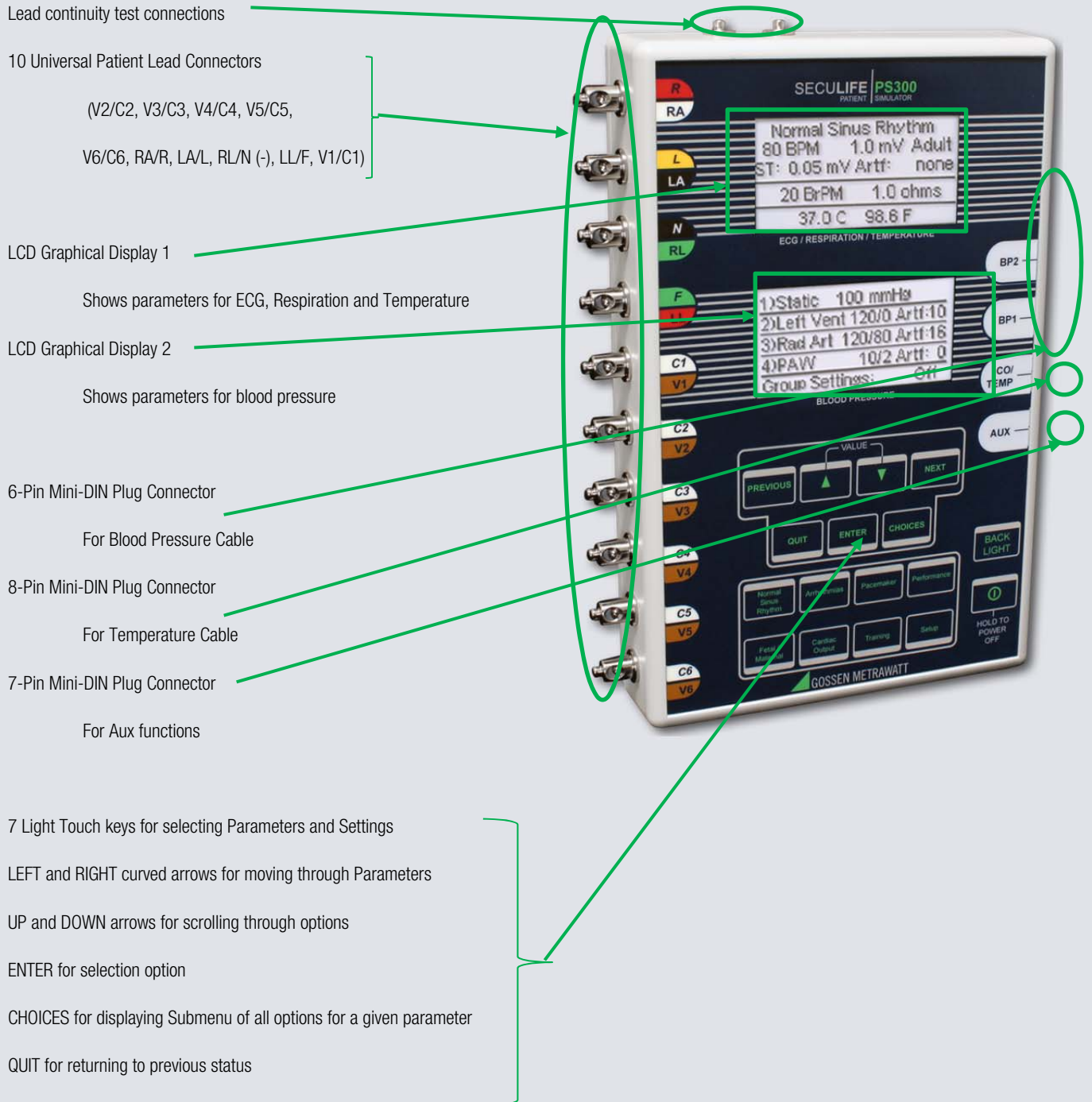


QUICK SETUP GUIDE

SECULIFE PS₃₀₀



The Model SECULIFE PS300 is an easy-to-use patient simulator in which all parameters can be selected through a graphic display. Autosequences for BDM and printing can be selected. 10 Patient connections are available. An extension to SpO2 function is possible. Two channels for blood pressure and 49 arrhythmias are available.



8 Light touch keys for category selection:

Normal Sinus Rhythm, Arrhythmias, Pacemaker, Fetal/Maternal,
Cardiac Output, training, Performance, Setup

Back Light Key

Power key

Power eliminator jack



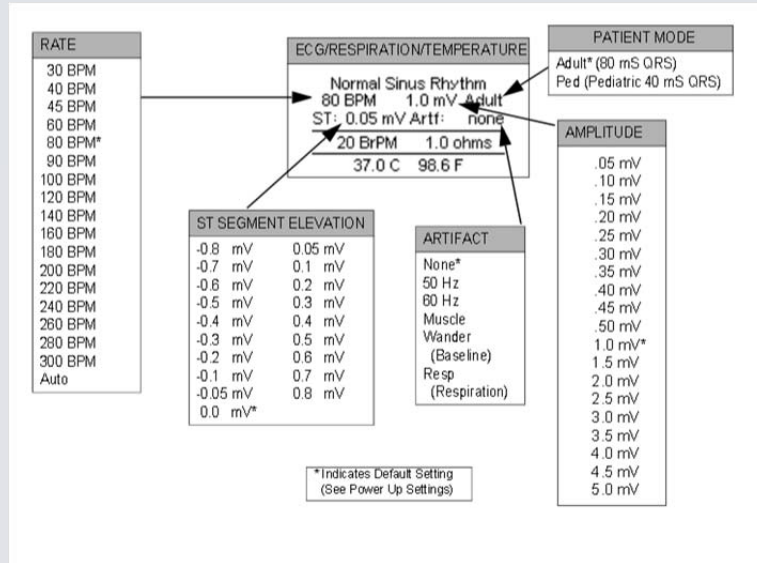
ECG – NORMAL SINUS RHYTHM

The SECULIFE PS₃₀₀ can send waveforms to ECG machines in 3, 5 or 12 lead configurations. It has independent outputs for each signal lead, referenced to the right leg. Normal Sinus Rhythm (NSR) occurs when the heart beat is normal, beating at a rate between 50 and 100 BPM with a standard QRS waveform shape and height.

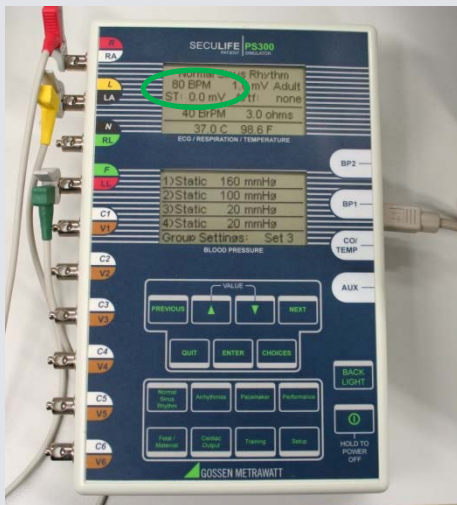
The SECULIFE PS₃₀₀ simulates the NSR with a default pulse of 80 BPM, amplitude of 1.0 mV on Lead II, P-R interval of 160 milliseconds, no Artifact and no ST Segment elevation.

The SECULIFE PS₃₀₀ is placed into NSR mode by pressing the **NORMAL SINUS RHYTHM** category key.

The display will resemble the following:



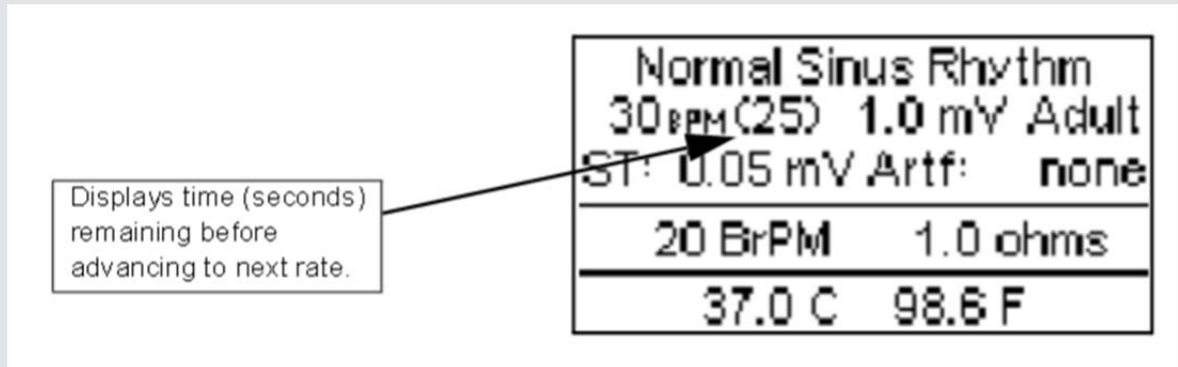
The rate, amplitude, adult/pediatric, artifact and ST elevation or depression can be selected by using **PREVIOUS**, **NEXT** to highlight the parameter to change and using **UP**, **DOWN** to scroll to the desired value. Then **ENTER** is used to accept the new setting. Alternately, to see a submenu 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 the SECULIFE PS₃₀₀ and the 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 **QUIT** key can be used to exit the Auto Mode during the sequence.

NOTE:

ST Elevation or Depression is only active in Adult NSR at or below 180 BPM.

ECG- ARRHYTHMIAS

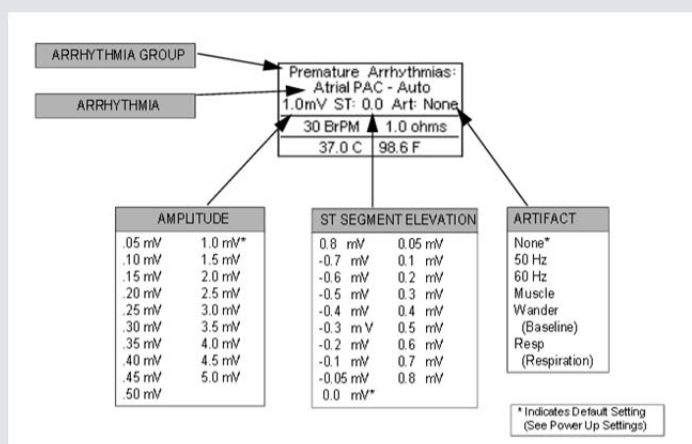
The SECULIFE PS₃₀₀ can send Arrhythmia waveforms to ECG machines in 3, 5 or 12-lead configurations. It has independent outputs for each signal lead, referenced to the right leg.

There are 36 Arrhythmias available that model abnormal heartbeats. The SECULIFE PS₃₀₀ is placed into ARRHYTHMIA mode by pressing the ARRHYTHMIAS category key.

The top portion of the display shows the currently enabled arrhythmia group and selection, selectable from:

Premature	Supraventricular	Ventricular	Conduction
Atrial PAC - Auto*	Atrial Fib - Coarse	Pair of PVCs - Auto	1 st Deg Heart Block
Atrial PAC - Man	Atrial Fib - Fine	Pair of PVCs - Man	2 nd Deg Heart Block
Nodal PNC - Auto	Atrial Flutter	Run of 5 PVCs - Auto	3 rd Deg Heart Block
Nodal PNC - Man	Atrial Tach	Run of 5 PVCs - Man	Rt Bundle Branch Block
PVC 1 - Auto	Paroxysmal Atrial Tach	Run of 11 PVCs - Auto	Lf Bundle Branch Block
PVC 1 - Man	Supravent Tach	Run of 11 PVCs - Man	
PVC 1 Early - Auto	Sinus Arrhythmia	8 PVCs per Min	
PVC 1 Early - Man	Missed Beat - Auto	12 PVCs per Min	
PVC 1 R on T - Auto	Missed Beat - Man	24 PVCs per Min	
PVC 1 R on T - Man	Nodal Rhythm	Freq Multifocal PVCs	
PVC 2 - Auto		Bigeminy	
PVC 2 - Man		Trigeminy	
PVC 2 Early - Auto		Vent Tach	
PVC 2 Early - Man		Vent Fib – Coarse	
PVC 2 R on T - Auto		Vent Fib – Fine	
PVC 2 R on T - Man		Asystole	
Multifocal PVCs - Auto			
Multifocal PVCs - Man			

Display:



The grouping, arrhythmias and amplitude 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:** While in the Arrhythmia Group choice screen, the **CHOICES** key may be used for a second time to jump directly to the arrhythmias choices for that group.

Auto/Manual

There are 12 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 **ENTER** is depressed. In the Auto versions, the arrhythmia is automatically triggered periodically.

The following is a brief description of how the SECULIFE PS₃₀₀ simulates the available Arrhythmias:

PREMATURE		
Abbreviation	Arrhythmia	Description
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)
Nodal PNC –Auto	Premature Nodal Contraction	NSR of 80 BPM with Periodic Abnormal 25 % early Nodal beat (PNC, 7 NSR) (Continuous)
Nodal PNC –Man	Premature Nodal Contraction	NSR of 80 BPM with Periodic Abnormal 25 % early Nodal beat (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)
PVC 2 –Auto	Standard Type 2 Premature Ventricular Contraction	NSR of 80 BPM with periodic right focus premature ventricular beats with 20 % premature timing (PVC Type 2, 9 NSR) (Continuous)
PVC 2 –Man	Standard Type 2 Premature Ventricular Contraction	NSR of 80 BPM with periodic right focus premature ventricular beats with 20 % premature timing (One-Time event)
PVC 2 Early –Auto	Early Type 2 Premature Ventricular Contraction	NSR of 80 BPM with periodic right focus premature ventricular beats with 33 % premature timing (PVC Type 2, 9 NSR) (Continuous)
PVC 2 Early –Man	Early Type 2 Premature Ventricular Contraction	NSR of 80 BPM with periodic right focus premature ventricular beats with 33 % premature timing (One-Time event)
PVC 2 R on T –Auto	R on T Type 2 Premature Ventricular Contraction	NSR of 80 BPM with periodic right focus premature ventricular beats with 65 % premature timing, placing R on the previous T (PVC Type 2, 9 NSR) (Continuous)
PVC 2 R on T –Man	R on T Type 2 Premature Ventricular Contraction	NSR of 80 BPM with periodic right 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)

SUPRAVENTRICULAR		
Abbreviation	Arrhythmia	Description
Atrial Fib – Coarse	Atrial Fibrillation	Absence of P-wave, irregular P-R interval rate and a high level signal (Continuous)
Atrial Fib – Fine	Atrial Fibrillation	Absence of P-wave, irregular P-R interval rate and a low level signal (Continuous)
Atrial Flutter	Atrial Flutter	Repeating sequence of 5 atrial beats and 1 ventricular beat for twelve seconds, followed by a repeating sequence of 3 atrial beats and 1 ventricular beat for six seconds, followed by a repeating sequence of 2 atrial beats and 1 ventricular beat for six seconds (Continuous)
Atrial Tach	Atrial Tachycardia	160 BPM (Continuous)
Paroxysmal Atrial Tach	Paroxysmal Atrial Tachycardia	160 BPM for five seconds 80 BPM for ten seconds (Continuous)
Supravent Tach	Supraventricular Tachycardia	200 BPM (Continuous)
Sinus Arrhythmia	Sinus Arrhythmia	Normal beats at a fluctuating rate from 60 BPM to 100 BPM (Continuous)
Missed Beat – Auto	Missed Beat	NSR of 80 BPM with a missed beat (Missed Beat, 36 NSR) (Continuous)
Missed Beat – Man	Missed Beat	NSR of 80 BPM with a missed beat (One-Time Event)
Nodal Rhythm	Nodal Rhythm	60 BPM with very short P-R interval (Continuous)

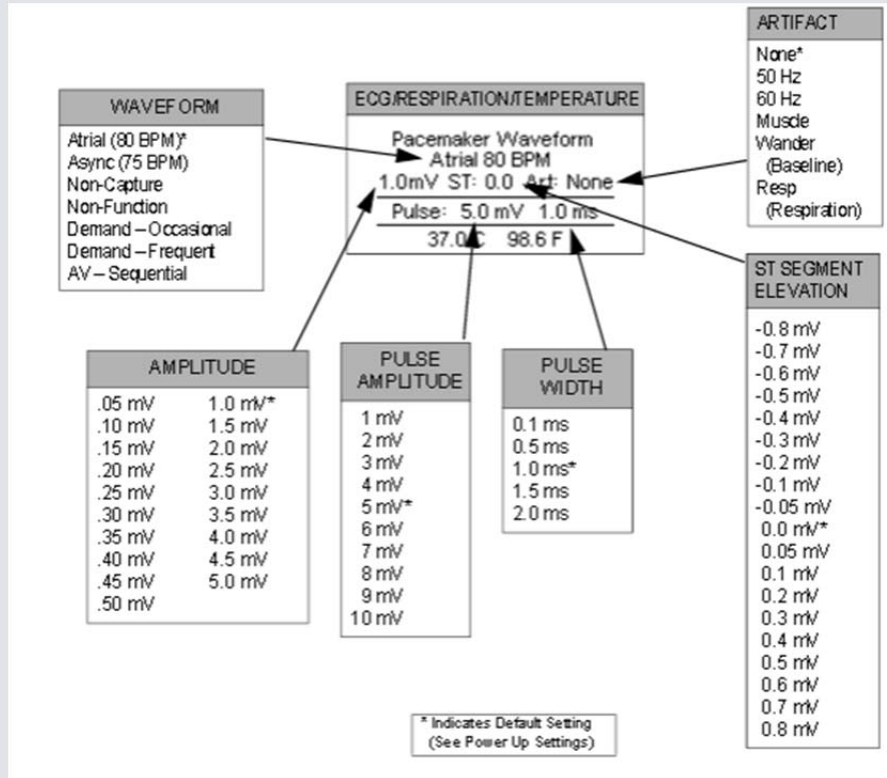
VENTRICULAR		
Abbreviation	Arrhythmia	Description
Pair of PVCs – Auto	Pair of Premature Ventricular Contractions	NSR of 80 BPM with Periodic Group of 2 Type 1 PVCs (2 PVC Type 1, 36 NSR) (Continuous)
Pair of PVCs – Man	Pair of Premature Ventricular Contractions	NSR of 80 BPM with Periodic Group of 2 Type 1 PVCs (One-Time Event)
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)
Run of 11 PVCs – Auto	Run of 11 Premature Ventricular Contractions	NSR of 80 BPM with periodic group of 11 Type 1 PVCs (11 PVC Type 1, 36 NSR) (Continuous)
Run of 11 PVCs – Man	Run of 11 Premature Ventricular Contractions	NSR of 80 BPM with periodic group of 11 Type 1 PVCs (One-Time event)
6 PVCs per Min	6 Premature Ventricular Contractions per minute	NSR of 80 BPM with 6 Type 1 PVCs per minute (Continuous)
12 PVCs per Min	12 Premature Ventricular Contractions per minute	NSR of 80 BPM with 12 Type 1 PVCs per minute (Continuous)
24 PVCs per Min	24 Premature Ventricular Contractions per minute	NSR of 80 BPM with 24 Type 1 PVCs per minute (Continuous)
Freq Multifocal PVCs	Frequent Multifocal Premature Ventricular Contractions	NSR of 80 BPM with every fourth beat being an alternating Type 1 and Type 2 PVC (Continuous)
Bigeminy	Bigeminal Rhythm	NSR of 80 BPM with every other beat a Type 1 PVC (Continuous)
Trigeminy	Trigeminal Rhythm	NSR of 80 BPM with every third beat a Type 1 PVC (Continuous)
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 and a high signal level (Continuous)
Vent Fib – Fine	Ventricular Fibrillation	Irregular waveform with no real P-wave or clear R-R interval and a low signal level (Continuous)
Asystole	Asystole	Flat line signal (Continuous)

CONDUCTION		
Abbreviation	Arrhythmia	Description
1st Deg Heart Block	First Degree Heart Block	80 BPM with a long P-R interval of 250 ms (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)
3^d Deg Heart Block	Third Degree Heart Block	80 BPM with P wave rate of 80 BPM and QRS rate of 30 BPM (Continuous)
Rt Bundle Branch Block	Right Bundle Branch Block	80 BPM with Normal P-wave and P-R interval but wider QRS complexes (Continuous)
Lf Bundle Branch Block	Left Bundle Branch Block	80 BPM with Normal P-wave and P-R interval but wider QRS complexes (Continuous)

ECG-PACEMAKER

The SECULIFE PS300 can send paced 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 7 paced simulation signals available which model when the heartbeat is accompanied by a pacemaker. The SECULIFE PS300 is placed into PACEMAKER mode by pressing the category key.

The display will resemble the following:



The pacemaker rhythms and signals 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.

The following is a brief description of how the SECULIFE PS300 simulates the available pacemaker Waveforms:

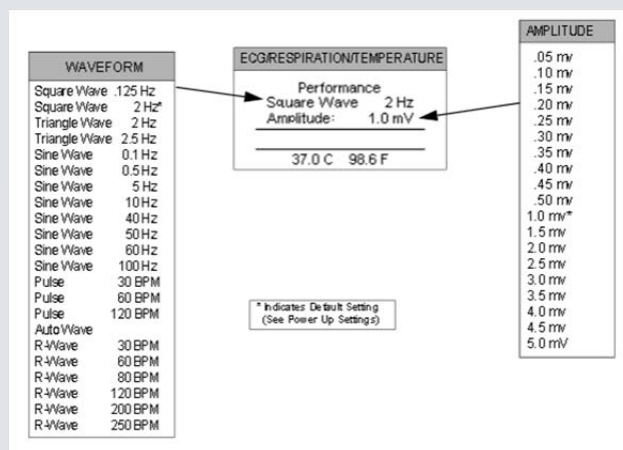
PACEMAKER		
Abbreviation	Waveform	Description
Atrial Pacer	Atrial Pacemaker Wave	80 BPM with Pacer Pulse at the start of each P wave
Asynchronous	Asynchronous Pacemaker Wave	75 BPM with Pacer Pulse at the start of each QRS wave and no P wave
Non-Capture	Ventricular Pacemaker Wave with Periodic Non-Response	75 BPM Ventricular Paced beats with every tenth beat not responding
Non-Function	Ventricular Pacemaker Wave with no Heart Response	75 BPM Ventricular Paced beats with no heart response
Demand – Occasional	Demand Pacemaker Wave with Occasional Sinus Beats	20 NSR beats followed by 20 Ventricular Paced beats
Demand – Frequent	Demand Pacemaker Wave with Frequent Sinus Beats	40 NSR beats followed by 40 Ventricular Paced beats
AV – Sequential	AV-Sequential Pacemaker Wave	75 BPM with Pacer Pulse at the start of both the P and QRS waves

ECG-PERFORMANCE

The SECULIFE PS300 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.

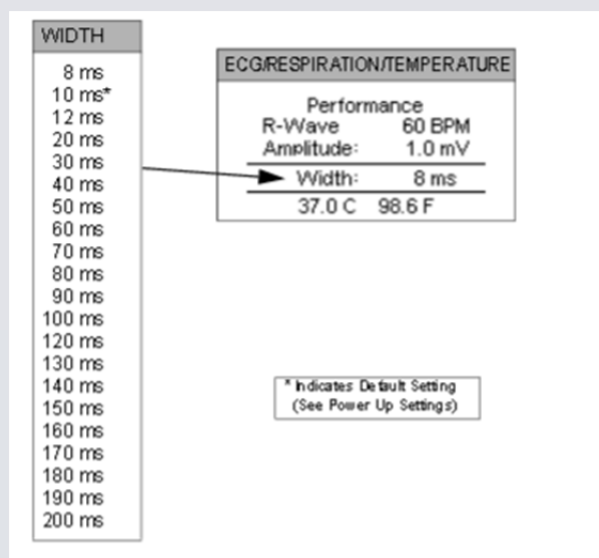
There are 15 Performance waves and 6 R-waves available for testing and verifying. The SECULIFE PS300 is placed into PERFORMANCE mode by pressing the **PERFORMANCE** category key.

The display will resemble the following:



R-Wave:

When one of the 6 R-Wave waveforms is selected, the display changes to allow the setting of the width.



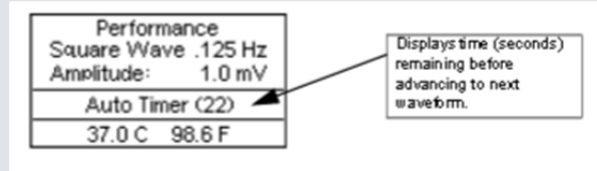
These widths can be selected by using **PREVIOUS**, **NEXT** to highlight the parameter to change and using **UP**, **DOWN** to scroll to the desired value. Then **ENTER** is used to accept the new setting.

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.

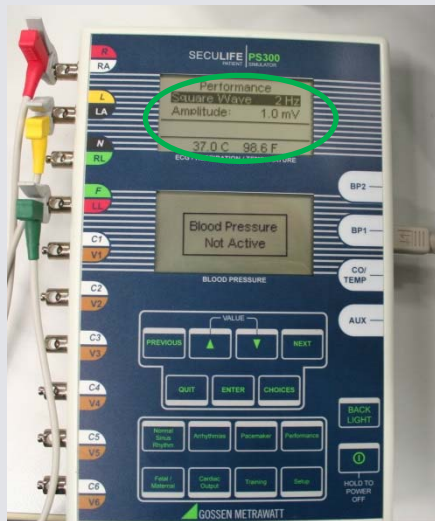
Auto Wave

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.



Display of the SECULIFE PS300 and the DUT

BLOOD PRESSURE

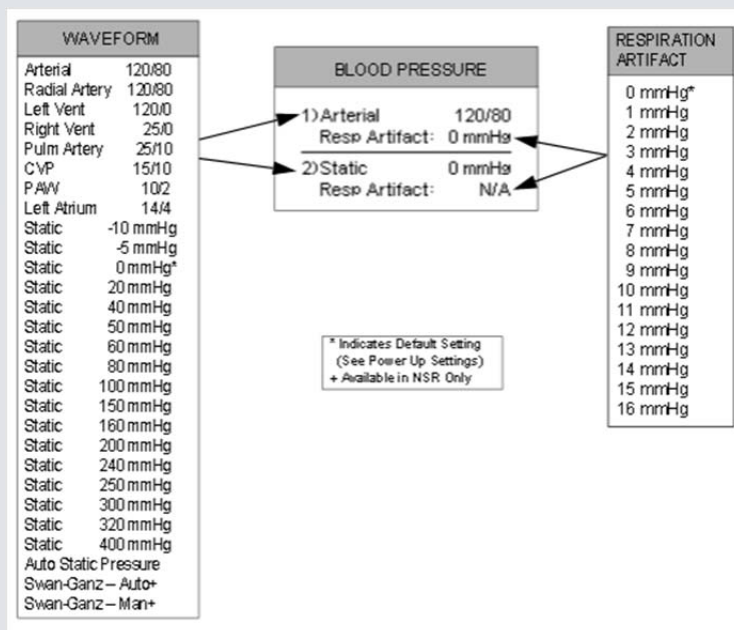
NOTE:

The Transducer Sensitivity (5 or 40 $\mu\text{V}/\text{mmHg}$) must be set to correlate with the monitoring equipment before simulation can begin. (See SETUP for selection information). The SECULIFE PS300 series offers two Blood Pressure Channels and will simulate the set Blood Pressure wave during ECG waveforms where it occurs.

There are 16 Blood Pressure settings available, 17 static and 8 dynamic. Each of the dynamic waveforms will synchronize with the NSR rate or arrhythmia selection.

Both an automatic and manual Swan-Ganz simulation are also available.

The PS300 dual blood pressure display will resemble the following:



These settings 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.

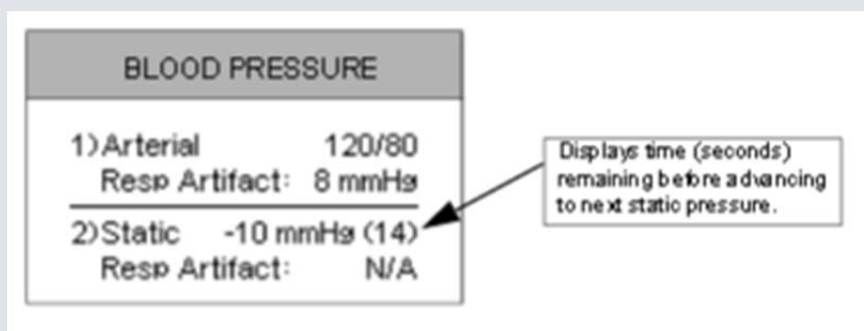
Alternately, to see a submenu of all the options for a highlighted parameter use **CHOICES**. Use **UP**, **DOWN** to scroll to the desired option. Then **ENTER** is used to accept the new setting.

Auto Static Pressure

If Auto Static Pressure is selected, the channel will automatically sequence through all of the Static Pressure settings, starting with -10 mmHg, incrementing at a fixed interval. The interval may be set in the System Setup Menu under "Auto Step Time".

NOTE:

Each channel can be set independently.



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

SWAN-GANZ

The Swan-Ganz simulation is a special feature that will run the typical sequence for a Swan-Ganz catheter. This can be done either manually, with the user triggering each step, or automatically, with the unit continuously running the sequence with each step at a fixed time interval.

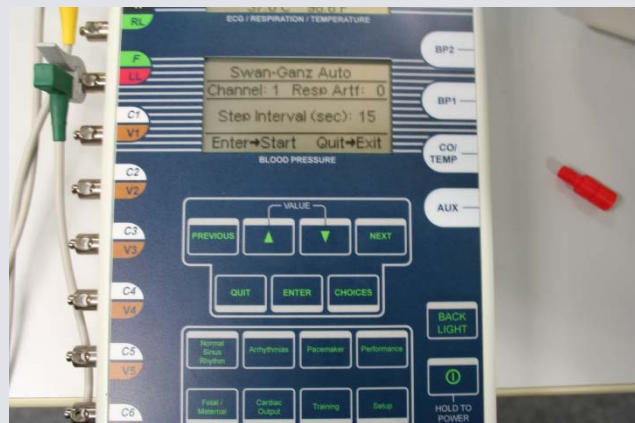
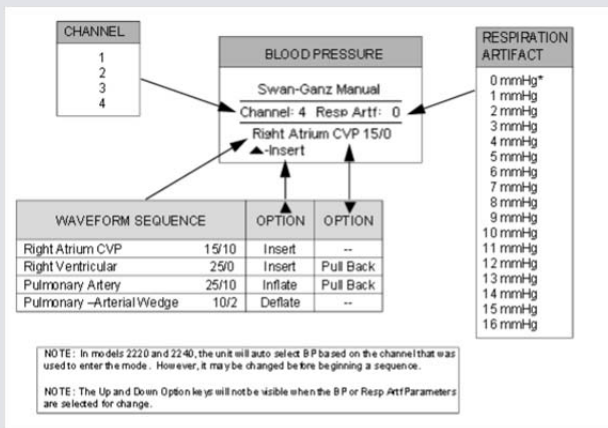
The sequence may be run on any channel while in the Normal Sinus Rhythm screen, but only on one channel at a time.

The sequence can be activated by using **PREVIOUS**, **NEXT** to highlight the appropriate channel then using **UP**, **DOWN** to scroll to the desired option. Then **ENTER** is used to select the Swan-Ganz – Man or Swan-Ganz – Auto waveform. When either of these waveforms is selected, a special screen will be displayed to step through the specific Swan-Ganz information.

Manual

In the Swan-Ganz – Man mode, the user controls the sequence using the **UP**, **DOWN** keys. (The functions of the keys vary with the steps. The display will indicate the current options on each screen.)

The following is a typical screen:



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

Automatic:

In the Swan-Ganz – Auto mode, the unit continually runs the sequence. The time remaining before proceeding to the next step is counted down the display.

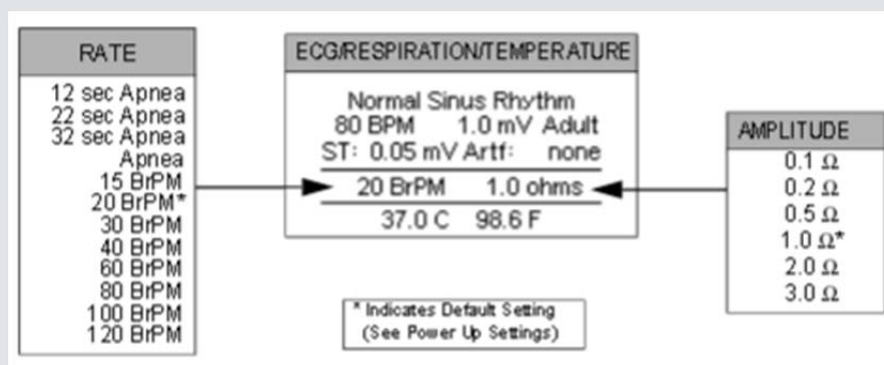
RESPIRATION

NOTE:

The delta ohm Respiration Signal can be inserted in either the LL or LA lead. The Baseline impedance can be set to 500, 1000, 1500 or 2000 Ohms. These must be set to correlate with the monitoring equipment before simulation can begin.

There are 12 rate settings available (9 BrPM rates, Apnea (0 BrPM) and 3 timed Apneas).

The display will resemble the following:

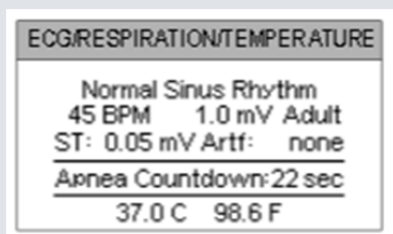


These rates and Amplitude (Impedance variation) can be selected by using **PREVIOUS**, **NEXT** to highlight the parameter to change and using **UP**, **DOWN** to scroll to the desired value. Then **ENTER** is used to accept the new setting. Alternately, to see a submenu of all the options for a highlighted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

Timed-Apnea:

To trigger a one time event Apnea for one of the specific periods (12, 22 or 32 seconds), simply highlight the desired period and press **ENTER**.

The Respiration display will change as shown in the following typical display:



The display will count down the Apnea period and then revert to the previous BrPM setting, display and output.

The countdown may be manually cancelled with the **QUIT** key.

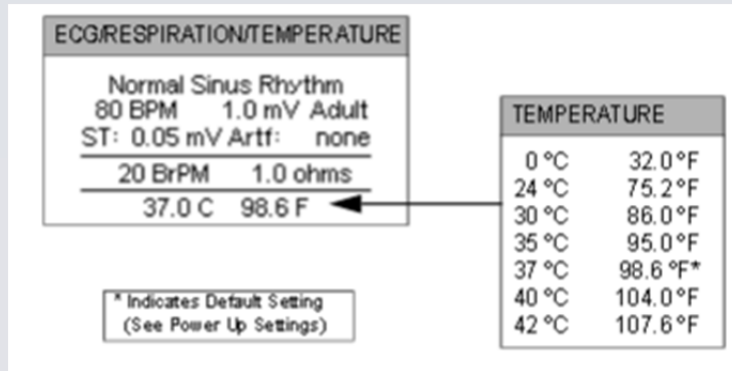
TEMPERATURE

The SECULIFE PS300 simulates 7 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:



These temperatures 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 the SECULIFE PS300 and the DUT

SPO₂ (Option)

The SECULIFE PS300 has the ability to drive an external SpO2 module. This module (SECULIFE OX) accepts the FingerSim family of SpO2 finger simulators (fingers are available with SpO2 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 PS300. 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

 **GOSSEN METRAWATT**

 **CAMILLE BAUER**