



## USER GUIDE v3.1

# PacerMan<sup>®</sup>

System Set Up

Software Installation

Troubleshooting



  
**SIMULAB**  
ALMOST HUMAN

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## System Overview



**PacerMan**® is the only high-fidelity simulator for immersive transvenous pacing—from needle insertion to capture and using all the clinical equipment. The system offers a one of a kind opportunity to practice the entire procedure—including identifying intrinsic bradycardias, assessing intracardiac waveforms, troubleshooting oversensing and undersensing, and manipulating output and rate with a pacing generator.

### SKILL DEVELOPMENT

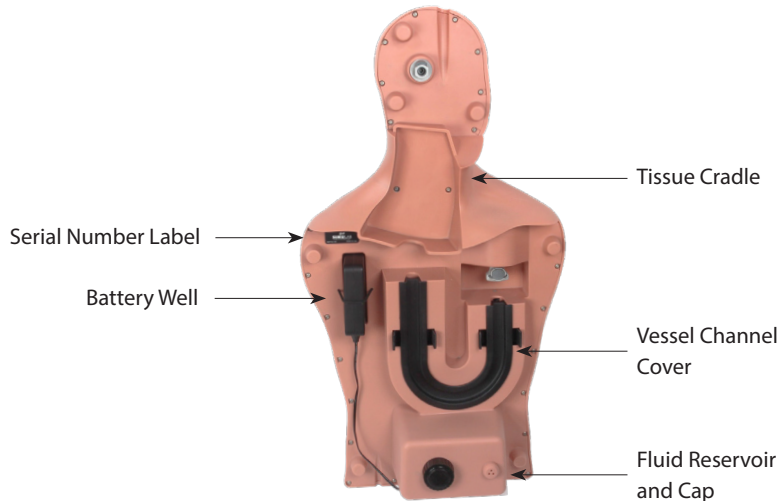
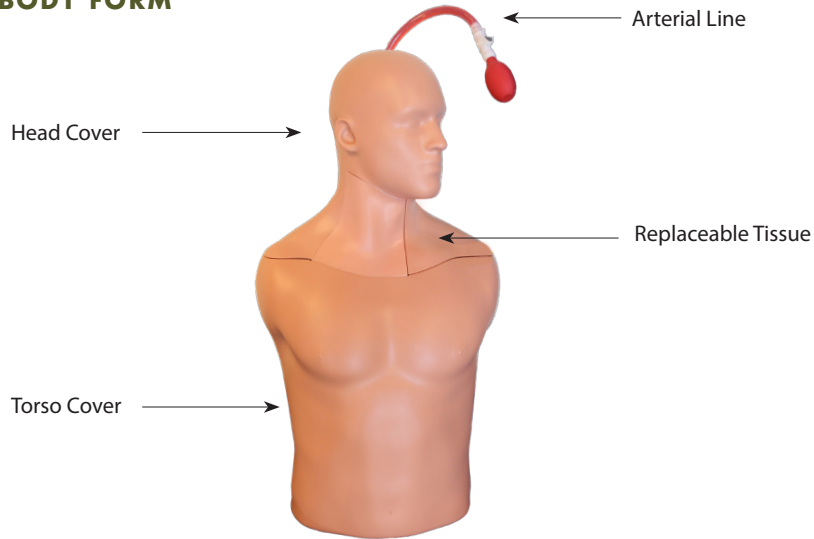
- ▶ Train both synchronous (fixed) and asynchronous (demand) pacing modes
- ▶ Learn to manipulate the pacing generator and interact with your procedural kit.
  - » Gain and lose capture
  - » Refine output and rate in real-time
- ▶ Improve procedural performance through instructor led competencies and self directed repetition.
- ▶ Practice decision making based on outcome options.
- ▶ Train using blind and ECG guided techniques.
- ▶ Increase team engagement with scenario based learning.

### COMPONENTS AND ACCESSORIES

Body Form	OEM Extension Cable
Replaceable Tissue	Universal Extension Cable
Head Cover	Drain Tube with Stop Clip
Torso Cover	Venous Fluid Mixing Bottle
Fluid Reservoir Cap	SimuSensor Venous Blood Concentrate
Vessel Channel Cover	Simulated Arterial Blood
Simulated Extension System	Fill Port with Funnel
Body Form to USB Cable	Arterial Hand Pump
Wall Power Supply	Fill Line
Battery Charger	Carrying Case
Battery Pack	Thumb Drive with Software & User Guide

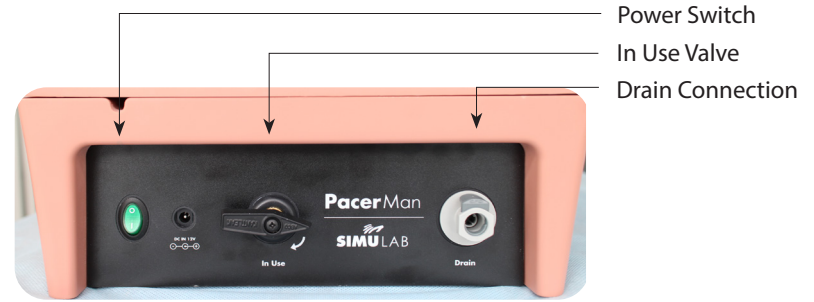
# System Components

## BODY FORM

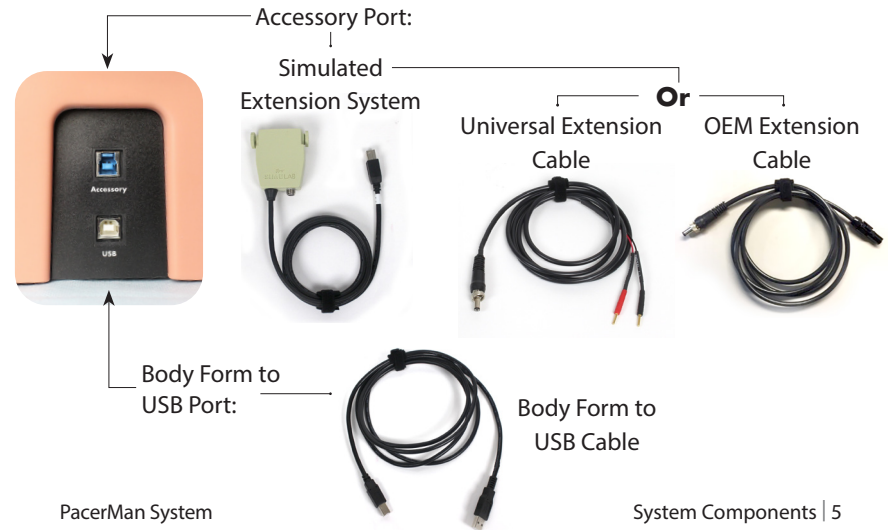


# System Components (continued)

## POWER & DRAIN INTERFACE PANEL

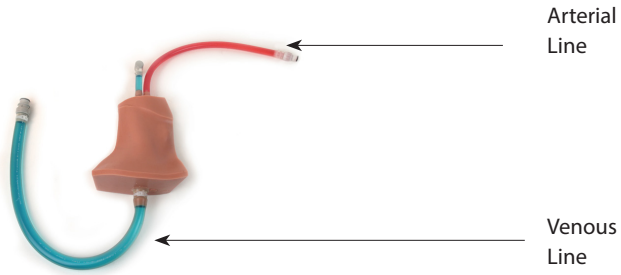


## COMMUNICATION PANEL



## System Components (continued)

### REPLACEABLE TISSUE



### PACERMAN SOFTWARE

The software application is located on the included thumb drive. The PacerMan Transvenous Pacing Software and the PacerMan Right Heart Catheterization are two separate applications, and will need to be downloaded separately.

Also located on the thumb drive is a system user guide file and a Simulab catalog.

### FLUID ACCESSORIES



- 1 Simulated Arterial Blood
- 2 SimuSensor Venous Blood Concentrate
- 3 Venous Fluid Mixing Bottle
- 4 Fill Port with Funnel
- 5 Drain Tube with Stop Clip
- 6 Arterial Hand Pump
- 7 Fill line

## Quick Start Guide

- 1 Load the PacerMan software onto your PC or laptop. If your system came with a PC, it is already installed and ready for you to use.
- 2 Insert the replaceable tissue and fill up the fluid reservoir.
- 3 Connect body form to computer and power source.
- 4 Connect the body form to the pacing generator using the Simulated Extension System.
- 5 Turn on power switch, and then turn the valve to the IN USE position.
- 6 Launch PacerMan software.
- 7 Choose Instructor or Student Mode.
- 8 If using Instructor Mode, set scenario parameters and then click begin.
- 9 You'll hear the system self-calibrate and the status window will close, opening the monitor page.

**NOTE:** If any status items display "NO" check your connection or see System Callibration on page: 21.

- 10 Turn on the vitals you want to present by toggling to the "ON" position

Your PacerMan System is ready to go.

# System Set Up

If you are installing the PacerMan on a PC other than the one it came with, follow these instructions. Make sure your computer has an Internet connection. The software requires USB and Bluetooth drivers to be installed when you use the PacerMan System for the first time.

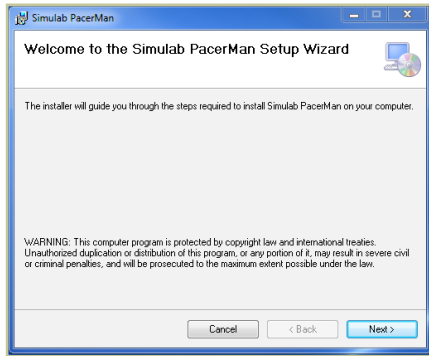
## REQUIREMENTS FOR SOFTWARE INSTALLATION

- › Window 7 or higher
- › 512 MB RAM
- › Disk Space required if .net 4.5 is not already installed. If it is already installed, then it requires less than 2MB of disk space

**IMPORTANT NOTE:** Install the PacerMan Software on your PC before connecting the PacerMan System Body Form to your computer. If your system came with a PC, it is already installed for you and you can skip to step #2

## 1 INSTALL SOFTWARE

Insert the Thumb Drive click on the file: Simulab PacerMan.msi. The following window will open. Click Next.



## Install Software (continued)

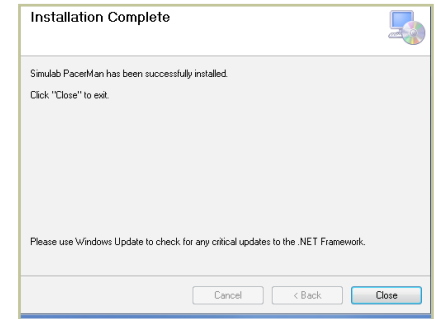
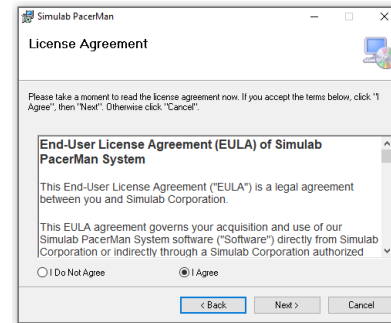
Select the destination folder for installation. Choose the default location or navigate to the desired location. Then click "Next".

Click "Next" and proceed with the software installation.

Software installation will begin. Note: if you click "Cancel" on this screen it will end the installation.

Once your software is successfully installed, the "Installation Complete" screen will appear. Click "Close" and now the PacerMan set-up CD can be removed from the disk drive. Please restart your computer before proceeding.

You will be prompted to agree to the License Agreement. Please read through the agreement, and click Agree.



## 2 Set up Bluetooth Connection

Ensure your PC is connected to the Internet the first time you connect to Bluetooth so the Bluetooth device driver can be properly installed. This will happen automatically in the background when the system is first paired.

To make PacerMan Bluetooth discoverable:

- › Connect to wall or battery power
- › Turn Power Switch ON
- › Disconnect USB to Body Form Cable

Each PacerMan has a serial number that is a unique identifier and will be displayed in the discoverable device name. The Serial number can be found on a label under the PacerMan body form cover.



The PacerMan and PC will usually automatically connect anytime the two devices are in range of each other when the Body Form is turned on, and the USB cord is not connected to the body form.

Connection may take up to 30 seconds after PacerMan has been turned on and discoverable.

**NOTE:** If using multiple PacerMan Systems in the same room, make sure to properly pair each individual PC with the intended PacerMan body form serial number.

## Bluetooth Connection (continued)

### In Windows 7

1. Turn on your PacerMan System
2. Select the Windows Start button > Devices and Printers.
3. Select Add a device > select the PacerMan > Next.
4. Follow any other instructions that might appear.

### In Windows 8.1

1. Turn on your PacerMan System
2. Select the Start button > type Bluetooth > select Bluetooth settings from the list.
3. Turn on Bluetooth > select the PacerMan > Pair.
4. Follow any instructions that might appear.

### In Windows 10

1. Turn on your PacerMan System
2. Type Bluetooth in search bar, next to Start Button > Select Bluetooth settings
3. Ensure Bluetooth is toggled on > Select "add a device" > Select Bluetooth
4. Select PacerMan to pair, follow any instructions that might appear.

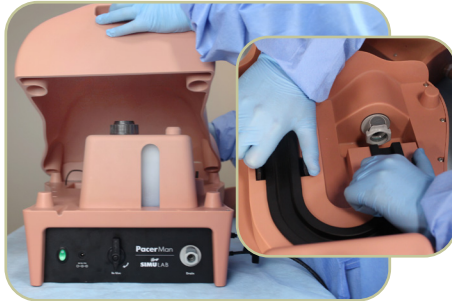
### 3 UNPACK AND INSPECT

Check to make sure all of the parts listed in the System Components section are in the case. Contact Simulab for assistance if anything is missing or damaged.

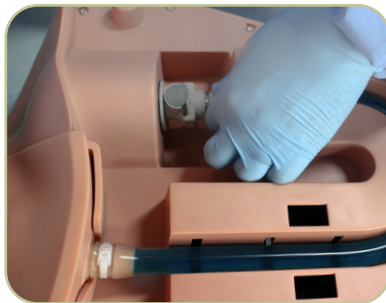


### 4 INSTALL TISSUE

Remove the torso and head covers from the body form. Then take off the black vessel channel cover by using the finger clips to gently lift off.

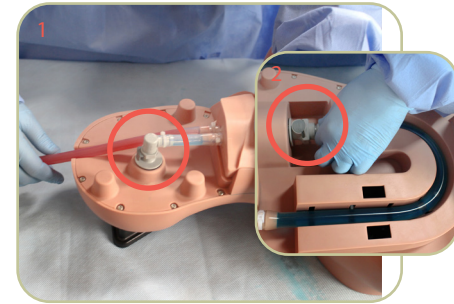


Place the replacement tissue in the cradle, and lay the venous line into the channel.



### Install Tissue (continued)

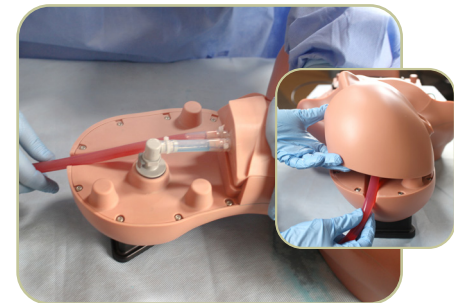
Connect the tissue in the two places shown. Make sure it's snapped securely into both ends.



Replace the vessel channel cover, ensuring it snaps into place.

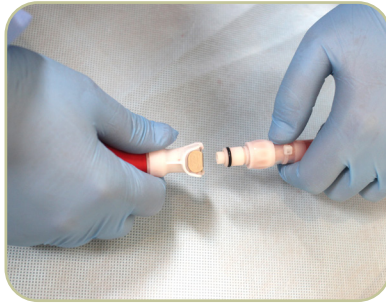


Lay the arterial line into the channel in the head area and replace the head cover.



## Install Tissue (continued)

To create an arterial pulse, attach the pulse bulb to the artery (red line). It is pre-filled with red simulated blood. If air gets into the pulse bulb, you'll need to refill it. Please see "Refilling the Pulse Bulb" on page 28.  
NOTE: When removing the pulse bulb, do so over a paper towel, as there will be a small release of fluid.



## 5 PREPARE FLUID SYSTEM

Mix SimuSensor Venous Concentrate (blue) with water in the Fluid Mixing Container by following these steps:

### MIXING RECIPE:

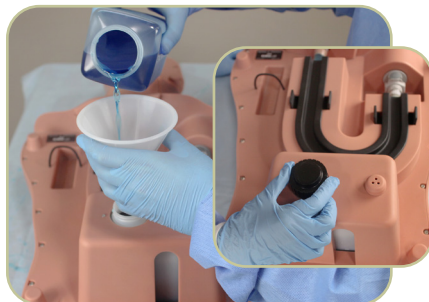
1. Fill water up to the 30 oz line
2. Add 2 oz of the Blue SimuSensor Venous Concentrate up to top line.
3. Shake to mix.



**Concentrate (2 oz)**  
**Water (30 oz)**

Fill up the fluid reservoir using the funnel and be sure to keep an eye on the fluid level. Then replace the reservoir cap.

**NOTE:** The fluid reservoir holds approximately 24 oz when it's empty.



## Prepare Fluid System (continued)

Replace the head and torso cover.



## 6 CONNECT TO POWER

PacerMan is powered by battery or wall power. To connect the battery, place it in the battery well that's located under the torso cover.



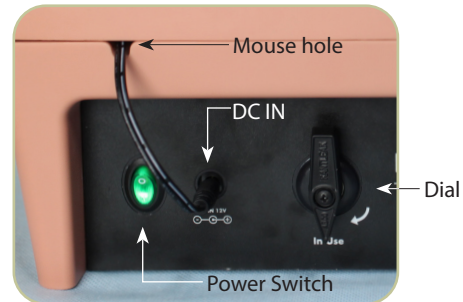
Put the torso cover back on and the cord will fit through the mouse hole as shown. Plug the battery cord into the port labeled DC IN on the panel.

For wall power, plug the Wall Power Supply into the DC IN port and plug the other end into the wall.

Then turn the power switch on and turn the Valve to the IN USE position.

### NOTE:

The System requires the valve to be in the "In Use" position while using the System.





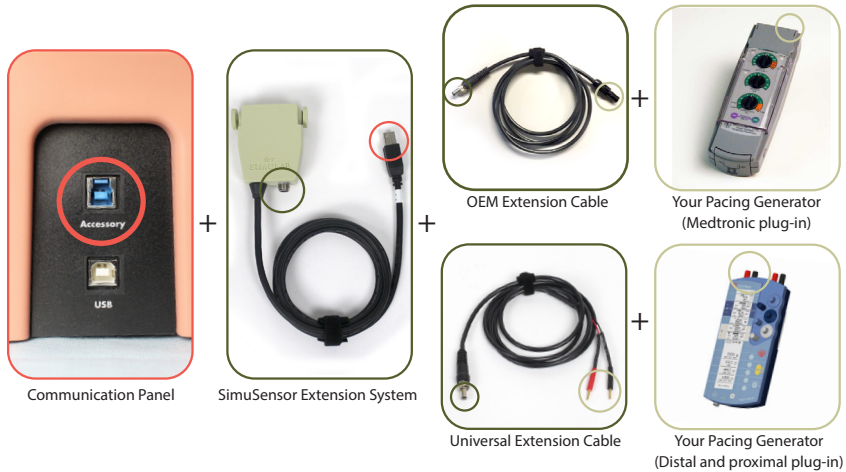
## 7 BODY FORM TO PC

Connect PacerMan with your computer using the Body Form to USB cable. Simply plug one end into the port labeled “USB” and the other end into your laptop or PC. Or use Bluetooth connection.



## 8 CONNECT PACERMAN TO YOUR PACING GENERATOR

The SimuSensor Extension System connects your pacing generator with the PacerMan Body Form. It has one cable to fit most Medtronic pacing generators and another universal cable for those with only distal and proximal plug-ins.



## System Set-up Checklist

- Tissue:** Ensure tissue is connected properly. See “Install Tissue” on page: 12.
- Fluid:** Ensure tank is filled. See “Prepare Fluid System” page: 14.
- Extension System:** Ensure the Extension System is connected. See “Connect PacerMan to your Pacing Generator” on page: 16.

# PacerMan Software Guide

## 1 LAUNCHING PACERMAN SOFTWARE

The first time you connect the PacerMan body form to the PC a driver will install. This requires a connection to the Internet and will happen in the background.

Launch the PacerMan software by double-clicking on your desktop icon through the Start Menu, or in the directory where your software was installed.

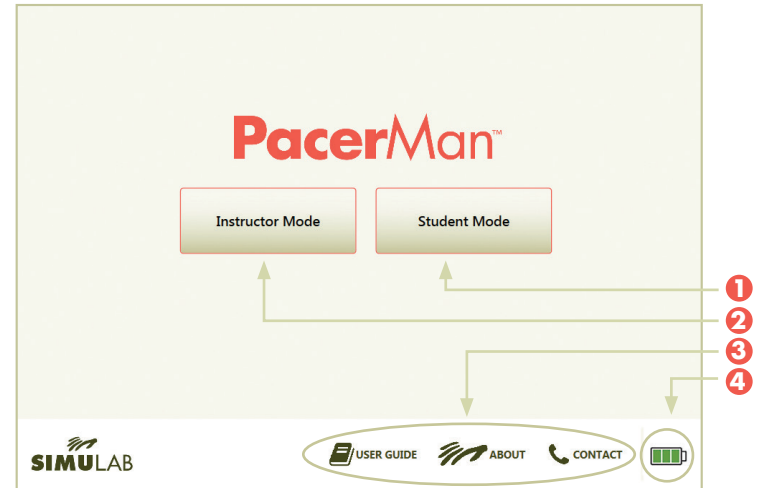


The PacerMan System Home Page will open and you will be ready to begin.



## 2 PacerMan System Home Page

From the home page, choose to operate PacerMan in the Instructor Mode or Student Mode.



- 1 Instructor Mode:** Allows you to select a scenario set up by choosing multiple outcomes for transvenous or transcutaneous pacing.
- 2 Student Mode:** Automatically initiates a unique scenario to allow for independent learning.
- 3 User Support:** The User Support Section contains links providing help with troubleshooting, how to contact the Simulab Customer Care team and specifics about your PacerMan Software version.
- 4 System Power Indicator:** This indicator will alert you to the system power status.

### 3 Instructor Mode Scenario Setup

Next, the system will prompt you to set up your scenario parameters:

The screenshot shows a 'Scenario Setup Window' with three main sections:

- INTRINSIC CARDIAC RHYTHM:** RHYTHM dropdown set to '2<sup>nd</sup> Degree Heart Block – Mobitz II', RATE (BPM) set to '35 BPM'.
- TRANSCUTANEOUS SETTINGS:** CAPTURE OUTCOME dropdown set to 'Successful', CAPTURE THRESHOLD dropdown set to '50 mA'. A red 'ON' toggle is visible.
- TRANSVENOUS SETTINGS:** OUTCOME dropdown set to 'Successful', CAPTURE THRESHOLD dropdown set to '7 mA', SENSITIVITY THRESHOLD dropdown set to '12 mV'.

A 'Begin' button is located at the bottom right of the window. Red numbered arrows (1-4) point to the RHYTHM dropdown, the CAPTURE OUTCOME dropdown, the CAPTURE THRESHOLD dropdown, and the Begin button respectively.

1 **Intrinsic Cardiac Rhythm:** Choose an option from the dropdown menu for both rhythm and rate

2 **Transcutaneous Settings:** (Optional) Choose successful capture threshold and outcome settings - toggle on/off for panel visibility.

3 **Transvenous Pacing Settings:**

**Capture Threshold:** Decide what a successful mA output will be to gain capture.

**Sensitivity Threshold:** Decide the minimum intrinsic ventricular intracardiac signal amplitude (mV) require to inhibit or trigger the external pacemaker

**Outcome:** What outcome will the first pass of the catheter present?

4 **Click Begin.** The calibration for both the system and the pacemaker will begin

### 4 System & Pacemaker Calibration

The **System Calibration** starts when you choose Instructor or Student Mode and press begin. It automatically checks your system status and primes the tissue fluid system.

The screenshot shows a 'PACERMAN SYSTEM CALIBRATION' window with the following status:

- Tissue Installed: Yes
- Fluid Filled: Yes
- Accessory Connected: Yes
- System Calibration: Calibrating 0%

A 'Begin' button is located at the bottom right. A 'NOTES' section contains the following instructions:

- Remove Pacing Wire before starting Calibration
- Do not turn off system during calibration
- If any status delivers a NO response, please resolve the issue to begin calibration
- See User Guide for more detailed instruction

If any status items respond with “No”, you’ll need to check to see if the item was installed correctly. Simply refer back to installation instructions for each item. Once install is correct, select the BEGIN button to start the system calibration. This is to ensure your system is set to perform properly.

Next you will arrive at the **Pacemaker Calibration** window. This calibration will ensure that the PacerMan System communicates with your own pacing generator. This will allow you to use any temporary pacemaker that your program wants to use for your training.

To calibrate your pacemaker, put your device in **VVI mode** and:

- Set the rate to **80 ppm**
- Set the output on your generator to **5 mA**
- Set the sensitivity threshold on your generator to **3 mV**
- Press **BEGIN** and the calibration will take place automatically.

The screenshot shows a 'PACEMAKER DEVICE CALIBRATION' window with the following settings:

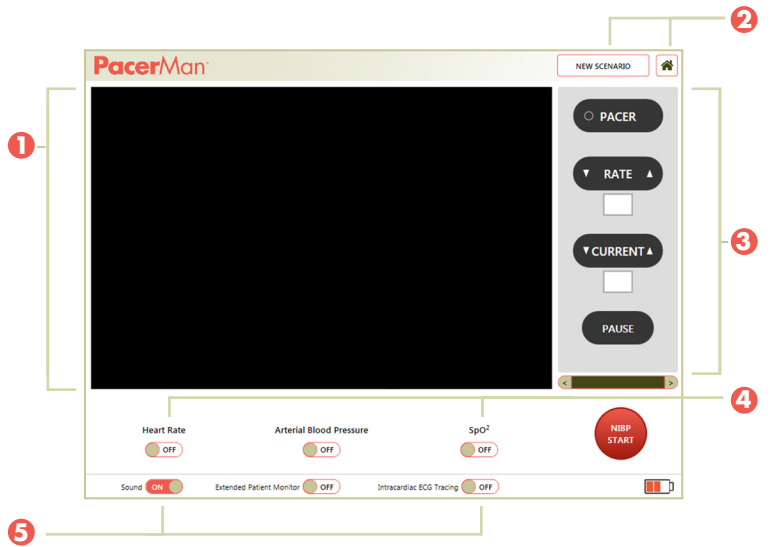
- Mode: VVI
- Rate (ppm): 80
- Output (mA): 5
- Sensitivity (mV): 3
- Adapter Connected: Yes
- Pacemaker Rate (80): Yes

A progress bar for calibration is shown at 0%. A 'Begin' button is located at the bottom right. A 'NOTES' section contains the following instructions:

- Calibration will timeout after 90 seconds if calibration fails
- Calibration will not work in any mode besides VVI
- Ensure the cord attached to Adapter is screwed tight

## 5 Monitor Page

Next, the Monitor Page will open. Choose your vital options and monitor views.



### Monitor Page Guide

- 1 Patient Monitor**
- 2 New Scenario and Home Buttons**
- 3 Transcutaneous Pacing Panel:**  
Panel will only be visible if toggled on in the initial settings panel
- 4 Patient Vitals:**  
Heart Rate, Arterial Blood Pressure, SpO<sub>2</sub>, NIBP
- 5 Additional Functionality Bar:**  
Sound, Extended Patient Monitor, Intracardiac ECG Tracing

## Monitor Page (continued)

### PATIENT VITALS

To turn on the individual patient vitals move the toggle to the "ON" position.



**Heart Rate:** Will present the patient heart rhythm.

**Arterial Blood Pressure:** Will display the pressure waveform and reading.

**SpO<sub>2</sub>:** Will display the pressure waveform and reading.

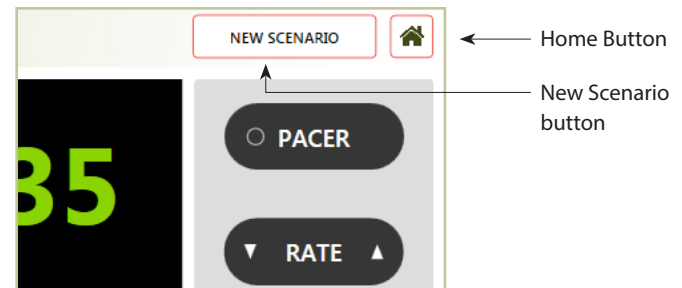
**NIBP Start Button:** The NIBP Start Button will simulate an inflation of the blood pressure cuff. The reading will match patient state, and adjust when recycled.

### NEW SCENARIO

After each student training, remove the pacing lead from the body form and press the New Scenario button. This brings you to the Scenario setup window and allows the instructor to reset the scenario parameters.

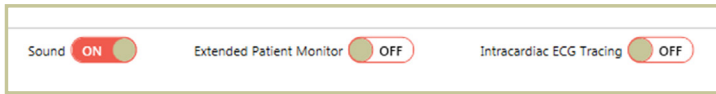
Press the Home button to return to the home page.

**NOTE:** Ensure the pacing lead is not in the system when you start a new scenario.



## Monitor Page (continued)

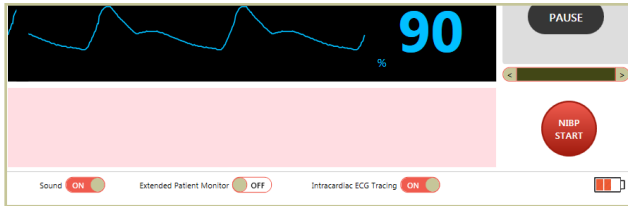
### ADDITIONAL FUNCTIONALITY BAR



**Sound:** Turn on the sound toggle to enable sound functionality.

**Extended Patient Monitor:** Allows for the extension of the patient monitor to a second monitor when toggled "ON". To properly extend the screen to a second monitor in your PC. Go to Control Panel » Display » Screen Resolution or Screen Appearance and set to "Extend this display".

**Intracardiac ECG Tracing Toggle:** The PacerMan software will display an Intracardiac ECG Tracing on the Monitor Page. The ECG tracing responds to proper clinical interaction with the pacing catheter pins and extension system. Click the toggle to "ON" to open.

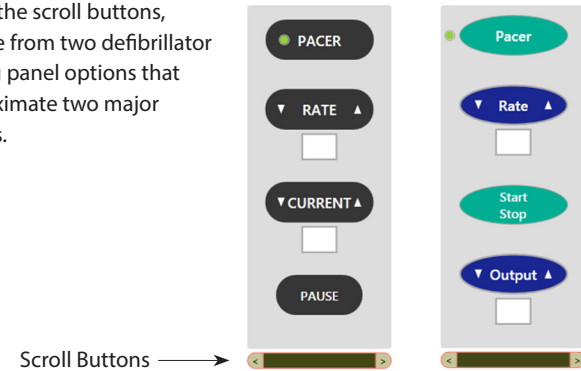


**NOTE:** To view ECG data the distal (-) pin must be removed from the Simulated Extension System, and the proximal (+) pin inserted into the proximal port. This will simulate connecting the distal pin to the ECG machine with the alligator clip.

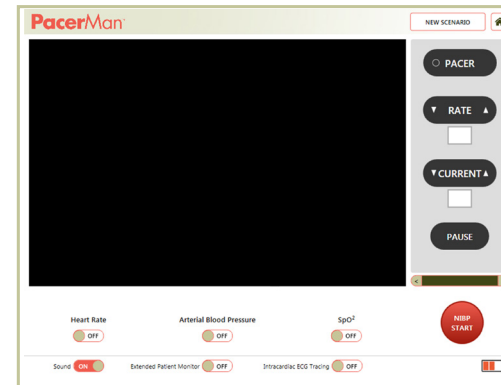
## Monitor Page (continued)

### DEFIBRILLATOR INTERFACE OPTIONS

Using the scroll buttons, choose from two defibrillator pacing panel options that approximate two major brands.



If you choose Transcutaneous Pacing in the initial set up window, you'll see the Main Interface Page will open and display the patient monitor with a simulated defibrillator window.



- ← **Pacer:** Turn on
- ← **Rate:** Adjust rate (displayed in field)
- ← **Current:** Adjust current (displayed in field)
- ← **Pause:** Momentarily stop pacing
- ← **Scroll:** Adjust defibrillator display

### Choose Your Procedural Option:

- Transcutaneous Pacing**
- Blind Approach**
- ECG-Guided Approach**
- Pacemaker Sensitivity Training**

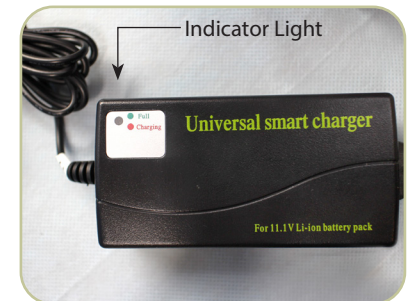
## Maintenance and Storage

### 1 BATTERY CHARGING

Plug Battery pack into battery charger. Then plug the battery charger into the wall.

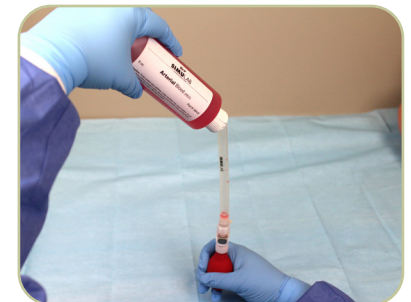


A red indicator light means it's still charging, and a green light means the battery is fully charged.



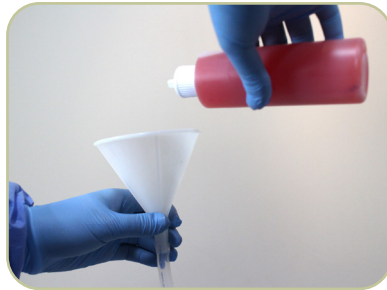
### 2 REFILLING THE PULSE BULB

To refill the pulse bulb, connect the fill line to the bulb and slowly add more red fluid.



## Refilling the Pulse Bulb (continued)

Gently squeeze the pulse bulb to add fluid. When the bulb will not take any more fluid and all air bubbles have risen, disconnect the fill. Pour remaining fluid back into the bottle.



The pulse bulb can then be reconnected to the vessel.

The body form is now ready for use.



### 3 DRAINING THE SYSTEM

Drain the system for storage whenever the system will not be used for over 24 hours.

Attach the drain tube to the drain port on the Power and Drain Interface Panel; make sure the clamp is closed.

NOTE: Insert the drain tube into the mixing container, relock clamp and remove drain tube.



## Draining the System (continued)

Turn the In Use Valve counter-clockwise as demonstrated.



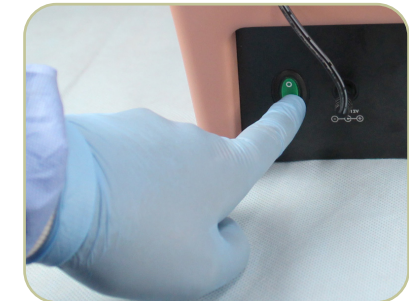
Place the mixing container under the drain line and release the clamp; the system will fully drain.



Finally, remove the drain line; seal the mixing container for storage.

### 4 POWER DOWN THE SYSTEM

Turn System Power button to the "OFF" position and disconnect from battery or wall power.



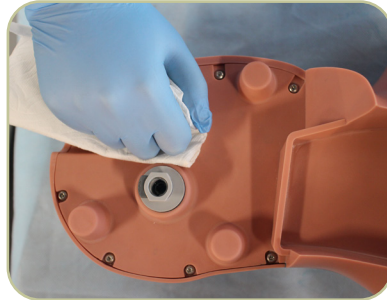
## Power Down the System (continued)

Turn the In-Use Valve back to the "IN-USE" position.



## 5 CLEANING THE SYSTEM

Take head and torso cover off and thoroughly clean with rubbing alcohol, especially where fluid pools near connection ports to prevent staining.



## 6 PACKING AND STORING

To store the system, check to make sure all the system components are in the carrying case.

When repacking the body form, make sure the base is positioned opposite from the case's handle. This protects the body form's electronics from damage.



## Packing and Storing (continued)

Store replaceable tissues in a plastic zip lock bag. This will contain any excess fluid released and prevent evaporation of fluid.





# Troubleshooting

## SYSTEM SETUP

Inquiry	Solution	Page
<b>What is the purpose of the accessory port?</b>	The Simulated Extension System Cable plugs into the accessory port on the communication interface panel.	16
<b>How do I connect PacerMan to my pacing generator?</b>	PacerMan connects to the pacing generator via the Simulated Extension System.	16
<b>Should I use the OEM Extension or Universal Extension Cable?</b>	The OEM Extension Cable works with most Medtronic models.	16
<b>How do I prepare the SimuSensor Venous concentrate?</b>	Fill water to the 31oz line of the mixing container. Add 2 oz of the fluid concentrate. Mix.	14

## POWER

Inquiry	Solution	Page
<b>What should I do if the battery's not working?</b>	Check battery for charge and recharge if needed.	15
<b>How can I tell how much power is available?</b>	Look at the System Power Indicator in the lower right hand corner of the home page.	19
<b>How do I switch from battery to wall power?</b>	The battery/wall power cords share a port on the drain interface panel.	15

# Troubleshooting (continued)

## BLUETOOTH

Inquiry	Solution	Page
<b>How do I connect PacerMan to Bluetooth?</b>	Pair the PacerMan Bluetooth with your PC according to your PC instructions.	10
<b>PacerMan is not discoverable.</b>	Check to see if the USB cable is plugged into the body form and unplug it. Then try again.	10
<b>How do I identify the PacerMan device in my Bluetooth devices window on my PC?</b>	The Bluetooth device displays a serial number that uniquely identifies each PacerMan body form to the Bluetooth signal. The serial number is located under the torso cover.	10
<b>What if I have two systems in one room that I want to connect to two separate PCs?</b>	Ensure each PC pairs with the intended PacerMan Body Form by pairing with the device uniquely identified in the discoverable devices section.	10

## SYSTEM CALIBRATION WINDOW

Inquiry	Solution	Page
<b>Calibration stopped during mid-cycle.</b>	All system components must be set up properly. Check the window for a NO response and resolve the item. Calibration will then automatically continue.	21

### SYSTEM CALIBRATION WINDOW (continued)

Inquiry	Solution	Page
<b>“Tissue Installed” is getting a NO response during calibration.</b>	Make sure tissue is installed properly. Check both connections and ensure the vessel channel cover has been replaced.	12
<b>“Fluid Filled” is receiving a NO response during calibration.</b>	Make sure the fluid reservoir is at least 3/4 of the way full.	14
<b>“Extension System” is receiving a NO response during calibration.</b>	Make sure the Simulated Extension System is plugged into the accessory port.	16

### TISSUE

Inquiry	Solution	Page
<b>The tissue is bleeding.</b>	This may indicate the tissue requires replacement soon. You can try reducing the fluid reservoir to 3/4 full. Or check to see if the Tuohy Borst Adaptor is on the Cordis. If so, remove or loosen it, because it may leave the Cordis diaphragm open and allow flowback of venous fluid.	--
<b>There is no flashback upon needle insertion.</b>	Flashback will occur when the vessel is filled with fluid. Initiate a new calibration cycle by returning to the Home Page or pressing the New Scenario Button to fill the tissue.	--
<b>Tissue does not fill during calibration?</b>	Ensure the In Use Valve is in the “IN USE” position. Press the New Scenario button and initiate a new calibration.	--

### ULTRASOUND IMAGE

Inquiry	Solution	Page
<b>What anatomy is visible under the ultrasound?</b>	The Clavicle, Internal Jugular, the Carotid Artery and the Sternocleidomastoid are visible under ultrasound. To pulsate the artery, use the arterial hand pump.	--
<b>Ultrasound Image is unsatisfactory.</b>	Turn up the gain or decrease the ultrasound frequency to improve the image.	--
<b>Image appears white.</b>	Make sure the arterial line and arterial pulse bulb are filled correctly.	28
<b>Image appears compromised.</b>	Initiate a new calibration by returning to the Home Page, or pressing the New Scenario button. If there are bubbles in the vein they will be cleared with a new calibration.	--

### SOFTWARE

Inquiry	Solution	Page
<b>I’m not able to get capture.</b>	Make sure the proximal pin (+) and distal (-) pins are inserted into the appropriate ports on the Simulated Extension System	--

**SOFTWARE (continued)**

Inquiry	Solution	Page
<b>I'm still not getting capture.</b>	Make sure the pacing generator is turned on, in asynchronous mode and at a output setting higher than the setting chosen as the threshold. The system requires it to be properly connected, turned on, and delivering current (mA) to properly gain capture.	--
<b>I'm getting intermittent capture.</b>	To resolve intermittent capture and breakthrough intrinsic beats, raise the ventricular output (mA) on the pacing generator.	--
<b>There are no ECG Rhythms on the Intracardiac ECG Tracing.</b>	The ECG tracing requires that the distal (-) pin be removed from the extension system and the proximal (+) pin properly placed in the proximal port of the extension system. Simulate connecting the distal pin to the ECG with the kit provided alligator clip.	--
<b>There are still no ECG Rhythms on the Intracardiac ECG Tracing.</b>	The system may require a recalibration. Remove the pacing lead, return to the Home Page or press the New Scenario button to initiate a new calibration. Ensure that the pacing lead is NOT IN THE BODY FORM during any recalibration.	24
<b>That didn't work and there are still no ECG Rhythms on Intracardiac ECG Tracing.</b>	Ensure the vessel channel is properly locked into place.	13

**SOFTWARE (continued)**

Inquiry	Solution	Page
<b>The Body Form will not connect to the PC.</b>	Unplug or disconnect the PacerMan body form from your PC. Close the application. Before opening the software application, plug the USB cord into the body form and into your PC. Or connect via Bluetooth, then once connected, open the software. If required, restart the PC.	10 & 16

**CLEANING AND MAINTENANCE**

Inquiry	Solution	Page
<b>Can I leave fluid in the system?</b>	The system should be drained after use and before storing.	28
<b>How do I clean the body form?</b>	Gently wipe the PacerMan body form with water or rubbing alcohol to prevent minor blue staining. Be sure to clean areas near connection ports where fluids can pool and cause staining.	30

**PACEMAKER DEVICE CALIBRATION WINDOW**

Inquiry	Solution	Page
<b>“Device Connected” is getting a NO response</b>	Make sure the Simulated Extension System (PMP-1006) is plugged into the accessory port	--
<b>“Pacemaker Rate (80)” is getting a NO response</b>	Make sure the pacemaker is plugged into the Simulated Extension System (PMP-1006) and the Pacemaker is set to VVI mode at a rate of 80 ppm	--
<b>“Warning PaceMaker Calibration Failed” window appears</b>	The calibration times out due to not meeting the calibration criteria. Please check all connections and ensure that the sensitivity threshold is set to 3 mV	--

**SENSITIVITY TRAINING SOFTWARE**

Inquiry	Solution	Page
<p><b>Sensitivity threshold is a different value than selected.</b></p> <p><i>Example:</i> Sensitivity threshold value = 12 mV, but when finding the threshold with the pacemaker, it is 16 mV</p>	Please return to the Home Page and start a new scenario. This will allow you to recalibrate the pacemaker. On the Pacemaker Device Calibration Window please ensure that the pacemaker is set to VVI mode with the proper settings.	--
<b>Sense light on pacemaker is blinking twice, quickly</b>	The sensitivity value is set too low, (oversensing) and it is detecting the T-wave. Raise the sensitivity value on the pacemaker to sense only the R-wave/	--
<b>Pacemaker is not sensing any intrinsic waveforms</b>	<ol style="list-style-type: none"> <li>1. Ensure that the lead is placed far enough into the body form to make it to the right ventricle (approx. 35-40 cm)</li> <li>2. Ensure the pacemaker is in VVI mode and that the sensitivity is set lower than the sensitivity threshold (undersensing)</li> </ol>	--

# Maintenance and Support Agreement

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## **WARRANTY**

Simulab is pleased to offer a 30-day money back guarantee on the PacerMan™ System and Replaceable Tissue. If for any reason, within the first 30 days of receipt of PacerMan, you are not satisfied with your purchase, please contact your Sales Representative to return the System.

With your purchase, you are also eligible for a 90-day warranty and a maintenance agreement, which are both outlined below. If you have any questions, please contact Customer Service or your Sales Representative at 206-297-1260 or 866-400-1260.

## **90-DAY WARRANTY**

Simulab offers a 90-day warranty on all parts of the PacerMan System assuming reasonable wear and tear with the exception of any used replaceable tissues. For warranty claims, please contact Customer Service for an RMA request and ship the part or entire system back to Simulab Corporation for replacement or refurbishment.

The customer is responsible for freight costs back to Simulab and Simulab will pay return shipment to the customer.

## **WARRANTY DISCLAIMER**

The PacerMan System should be shipped in its original packaging or an equivalent box and its soft-sided carrying case with foam. Shipping PacerMan in the soft sided bag only is not advised, and may void the maintenance agreement. For annual refurbishment, Simulab will provide to the customer a shipping box at no charge.

# Maintenance and Support Agreement (continued)

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## **MAINTENANCE AND SUPPORT AGREEMENT**

The maintenance and support program allows for repair of any part of your PacerMan System, should it break with the exception of the replaceable tissue. It also covers software support and updates. This agreement does not cover any lost parts or accessories nor does it cover damage outside normal wear and tear.

If any portion of the system is showing wear and tear, Simulab will refurbish it annually as a part of this program. Refurbishment under this agreement will be completed at Simulab's facility in Seattle, Washington, USA at the customer's request.

## **ANNUAL REFURBISHMENT (INITIATED BY CUSTOMER)**

To receive system refurbishment, please contact Customer Service for an RMA number. Customer Service will also provide instructions on how and what to return to initiate this process.

Production time is four weeks upon receipt of materials. Expedited freight is available upon request and a quote will be provided. The customer is responsible for all freight costs associated with replacement or refurbishment.

Simulab will refurbish the system to as close to "like new" condition as possible. If a component cannot be repaired due to damage outside of normal wear and tear, Simulab will contact the customer with available options.

# Replacement Parts Catalog

To reorder replacement parts go to [www.simulab.com](http://www.simulab.com).

PacerMan Replaceable Tissue (PMT-10)



Carrying Case (PMP-1001)



Head Cover (PMP-1003)



Torso Cover (PMP-1002)



Fluid Reservoir Cap (PMP-1004)



Vessel Channel Cover (PMP-1005)



# Replacement Parts Catalog (continued)

Simulated Extension System PMP-1006



Body form to USB Cable (PMP-1007)



Wall Power Supply (PMP-1008)



Battery Pack (PMP-1009)



Battery Charger (PMP-1010)



OEM Extension Cable (PMP-1012)



## Replacement Parts Catalog (continued)

Universal Extension Cable (PMP-1013)



Drain Tube with Stop Clip (PMP-1011)



Venous Fluid Mixing Bottle (PMP-1014)



SimuSensor Venous Blood Concentrate (SSV-16)



Simulated Arterial Blood - 8 oz (MA-8)



Fill Port with Funnel (CLP-1004)



## Replacement Parts Catalog (continued)

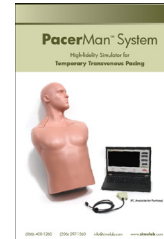
Fill Line (CLP-1003)



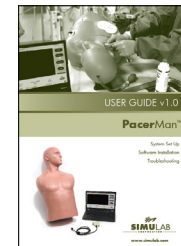
Arterial Hand Pump (CLP-1008)



PacerMan Software Kit (PMP-1015)



User Guide (PMP-1015)





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PMP-1015