# SimPad

LAERDAL

Directions for Use




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helping save lives

**CONTENTS**



For troubleshooting and detailed instructions related to specific items, refer to www.laerdal.com/simpad

## SIMPAD SYSTEM OVERVIEW

The SimPad System is an easy-to-use, wireless tool that performs relevant medical simulation training, including debriefing, in various user settings. With its large, intuitive touch screen design, SimPad is virtually a "Pick up and Play" experience, allowing you to deliver simulation-based education, easily and efficiently. There are two ways to control simulations: Automatic Mode and Manual Mode. This allows you to customize simulations to meet your specific needs.

The SimPad System is compatible with a broad range of Laerdal products including manikins, patient simulators, and task trainers as well as standardized patients.


## SIMSTORE

SimStore is the place to find quality educational content and materials for users of all levels and backgrounds.

**http://www.mysimcenter.com**

In SimStore you'll find resources for every step of the simulation experience, from full curricula and stand-alone scenarios, to building blocks like trends, handlers, and multimedia. SimStore takes efficiency to a new level, allowing you to spend less time developing or purchasing content and more time improving educational outcomes.

**Visit our SimStore to find:**

- Immediate online access to world wide, validated content
- Standardized and repeatable training measures
- Easy search, find, and pay navigation
- Flexibility to purchase only what you need

SIMPAD SYSTEM INCLUDES:

SimPad

Link Box


Li-Ion Battery


AC adapter x 2


Manikin
Adapter Cable


Manikin Strap

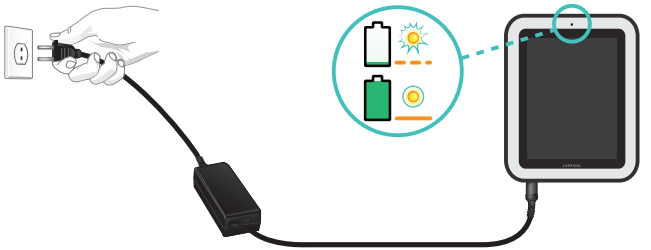

Wrist Strap


USB Cable

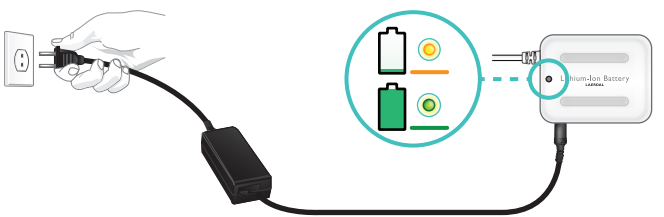

SimPad Sleeve

- SimPad : Operator's remote control
- Link Box: Connects to and controls the patient simulator
- Li-Ion Battery: Battery power for Link Box
- AC Adapter: Power and charger for SimPad and Link Box
- Manikin adapter cable: Connects Link Box to patient simulators
- Manikin Strap: Attaches Link Box and battery to patient simulator
- USB Cable: Attaches SimPad to PC for updates and downloads
- SimPad Wrist Strap
- SimPad Sleeve: Protective case for SimPad

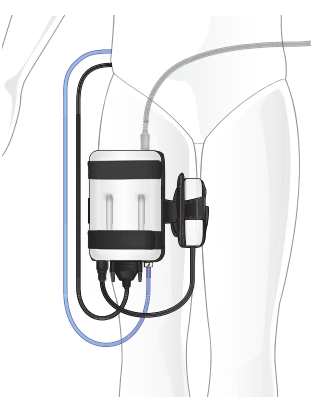
## 1. CHARGE THE BATTERY



• Connect SimPad to one of the AC adapters and plug into a wall outlet.
The battery is fully charged when the LED on SimPad shows a steady yellow light.

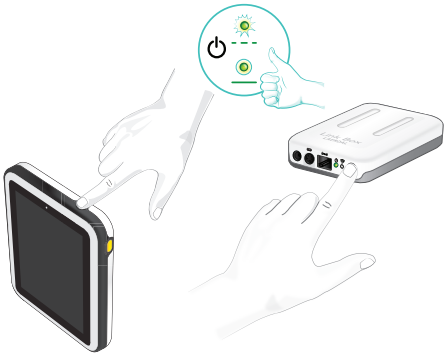



• Connect the Li-Ion battery to one of the DC adapters and plug into a wall outlet.
The battery is fully charged when the LED on the battery shows a steady green light.



## 2. CONNECT LINK BOX TO THE MANIKIN

- Connect the manikin cable to the Link Box.
- If it is an older version manikin, use cable adapter included in the package.
- Connect the BP tube (if applicable for this manikin) to the BP tube input on the Link Box.
- Connect the Li-Ion battery to the Link Box. It is possible to connect two batteries.
- If desirable, connect the DC adapter to the Link Box.
- Use the included manikin strap to attach the Link Box and battery to the manikin.



### 3. TURN ON LINK BOX AND SIMPAD

- Turn on both units by pressing the ON button marked ⏻ for at least half a second.
- Release the button when the LED starts blinking green. First start up may take a few minutes.
- When the Link Box is ready, the ON light will turn steady green.
- Follow the instructions on the display to select language and other preferences.

### 4. STARTING SIMPAD FOR THE FIRST TIME

The first time SimPad is turned on, it will prompt for the following configurations:

- Select language
- Set time and date
- Enter SimPad name
- Enter Link Box name

All these configurations may be altered later.

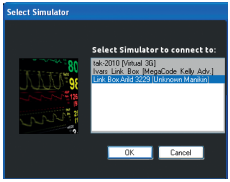
### 5. CONNECTION BETWEEN SIMPAD AND LINK BOX

SimPad communicates with the Link Box using WiFi. When the units are turned on for the first time they will set up an ad hoc network called SimLink. If no other Link Boxes are visible on the default SimLink network, the SimPad will pair with the Link Box, remember the pairing, and reconnect when units are turned on again.

- Connection to SimPad is indicated on the Link Box with a blue light in the WiFi LED.


- Connection to the Link Box is indicated in the upper right corner of SimPad's screen with a Manikin symbol.

### 6. CONNECTING A SIMULATED PATIENT MONITOR




- Ensure the monitor PC and the SimPad System are connected to the same network. See "Connections" chapter for details on network connections.
- Select the appropriate Link Box from the manikin connection menu.
- To minimize WiFi traffic, it is recommended to connect the patient monitor to the Link Box using a direct network cable connection.

SIMPAD

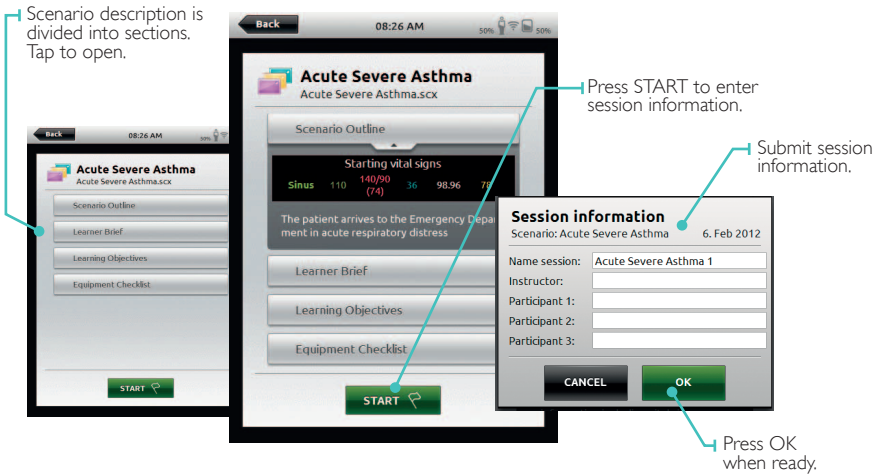
SimPad is the new remote control for your medical training simulator.
Control simulation sessions directly from the touch screen by simply tapping the icons.

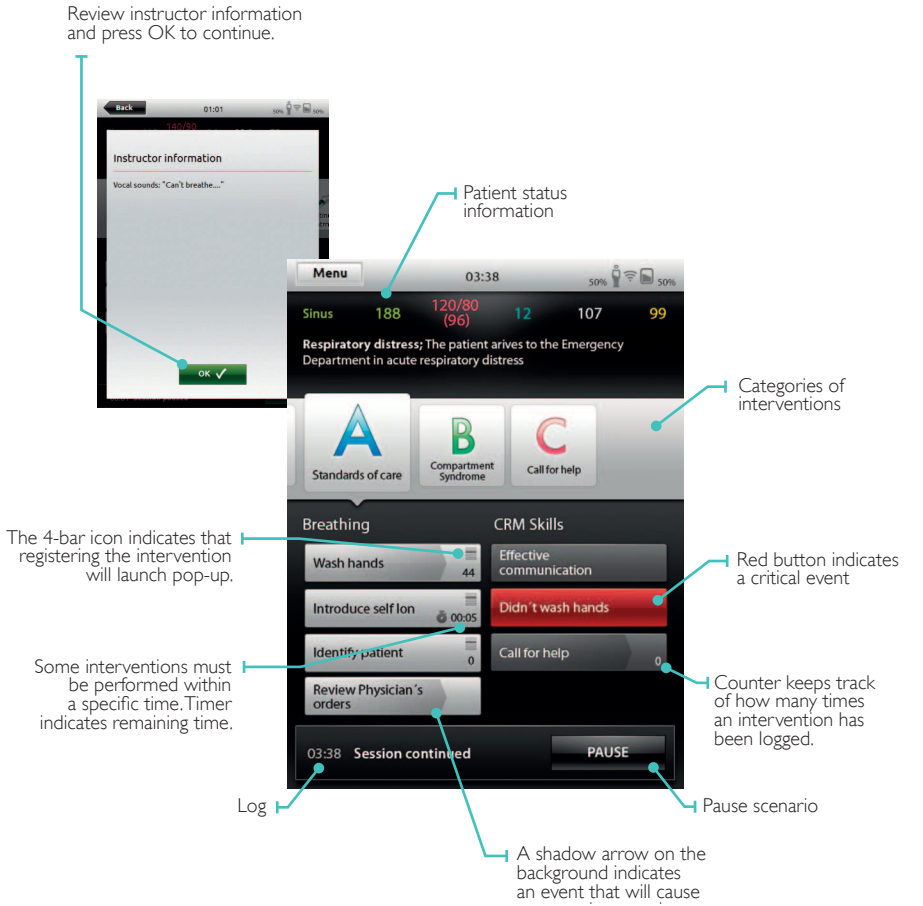

Starting applications takes some seconds.

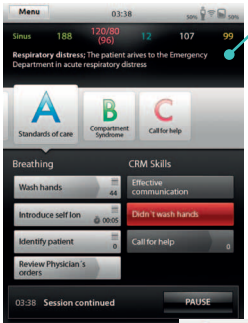
## RUN AUTOMATIC MODE

When running a scenario in Automatic Mode, the only task required by the instructor is to log the participant's actions. These events logged, as well as the events detected by the patient simulator, will drive the scenario forward. All events are registered in the log for post-event debriefing and analysis.

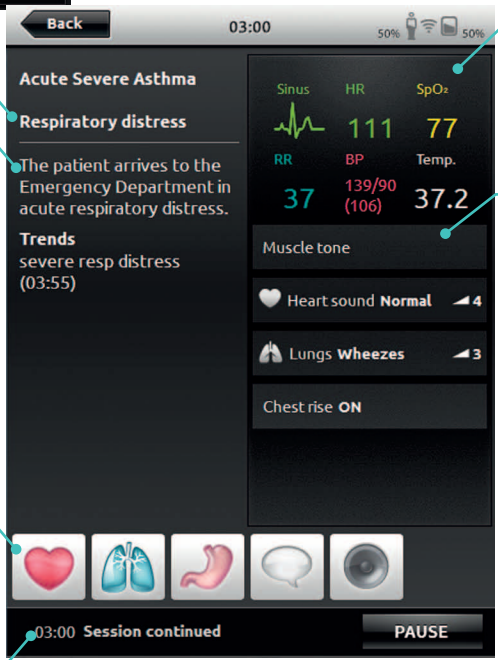
Start by selecting a scenario from one of the scenario folders.


Review instructor information and press OK to continue.
Back
01:01
Instructor information
Vocal sounds: "Can't breathe..."
OK
Patient status information
Menu
03:38
Sinus
188
120/80 (96)
12
107
99
Respiratory distress; The patient arives to the Emergency Department in acute respiratory distress
Categories of interventions
Standards of care
Compartment Syndrome
Call for help
Breathing
CRM Skills
The 4-bar icon indicates that registering the intervention will launch pop-up.
Wash hands
44
Effective communication
Red button indicates a critical event
Introduce self Ion
00:05
Didn´t wash hands
Some interventions must be performed within a specific time. Timer indicates remaining time.
Identify patient
0
Call for help
0
Counter keeps track of how many times an intervention has been logged.
Review Physician´s orders
03:38
Session continued
PAUSE
Log
Pause scenario
A shadow arrow on the background indicates an event that will cause progress in scenario.




Touch anywhere on patient area to display more patient state information.




Current patient state

Patient state information

Access to vital signs adjustments

Abnormal parameter values are displayed in this area.

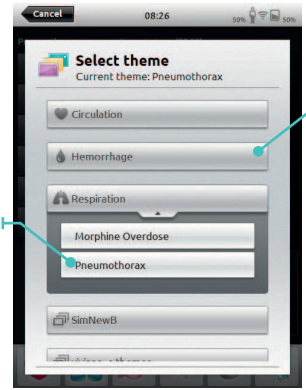
Select other parameters to adjust.

Log


To end a session go to Menu
End session
View Log option will open current session log using Log Viewer.
Menu
03:38
Sinus
188
120/80 (96)
12
107
99
Respiratory distress; The patient arives to the Emergency Department in acute respiratory distress
A
Standards of care
B
Compartment Syndrome
C
Call for help
Breathing
CRM Skills
Wash hands
Effective communication
Introduce self Ion
Didn't wash hands
Identify patient
Call for help
Review Physician's orders
03:38 Session continued
PAUSE
Back
08:26 AM
Acute Severe Asthma
Acute Severe Asthma.scx
Continue manual mode
Preferences
End scenario
Scenario ended
Last scenario: Acute Severe Asthma
Your log has been saved!
View log
Resume session
New session
Quit
Menu
08:26 AM
Acute Severe Asthma
6th Feb 2012
24 mins
Toggle on / off the amount of information displayed.
00:00 Session started
00:00 Lifecycle activated: Respiratory distress
00:20 HR 110
01:50 " Most patients that are having difficulty breathing will prefer an upright position. This "tripod" position eases the work of breathing and decreases their anxiety. "
02:20 Wash hands
03:01 Introduce self
04:02 BP 140/90 (106)
05:03 Session paused
Add comment

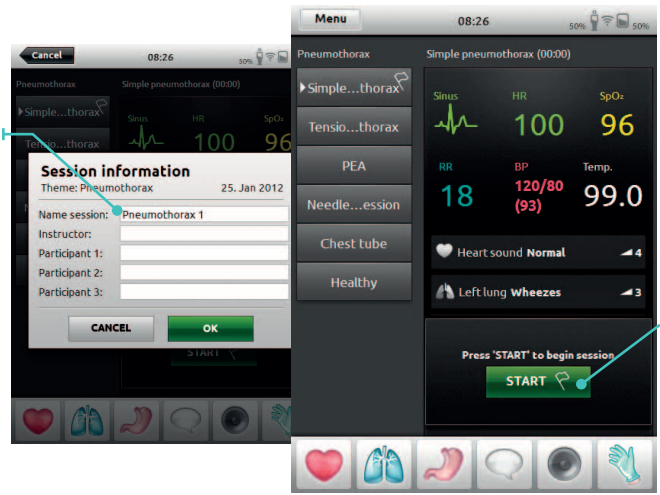
## RUN MANUAL MODE

When running a scenario in Manual Mode, the instructor's task is to control the clinical state of the patient simulator, as well as logging the participant's actions. The instructor can plan scenarios using predefined themes that include various patient states.




Folder of Themes. Tap to open.

Select Theme for simulation.

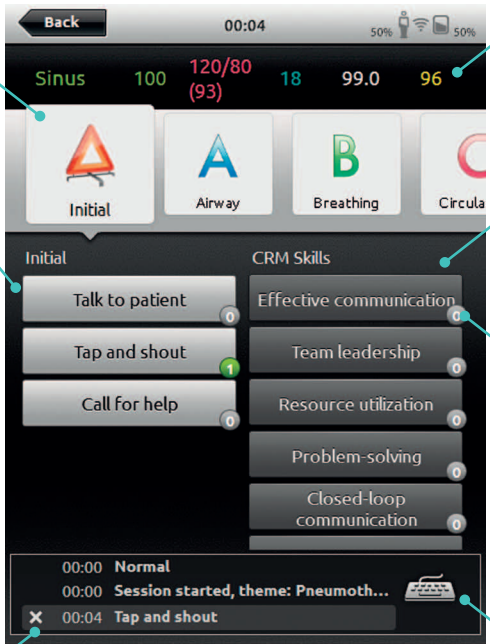



Information about session entered here will be added to log.

Tap START when ready.


Waiting states
Current state
Time since current state was activated
White arrow indicates last activated state.
Flag indicates start state
Overview of the current patient condition, vital signs of patient.
Abnormal values displayed in this area
Collapse mini-log
Select other parameters to adjust
End or pause session
Time since session started
Toggle on / off shock activation
Set the transition time
Tap to prepare a state for activation
Activate all parameters at once
Tap to expand waiting state
The expanded state shows all parameters in the queue, ready to be activated.
Register participant's interventions.
Menu
00:02
Pneumothorax
Simple pneumothorax (00:02)
Simple...thorax
Tensio...thorax
PEA
Needle...ession
Chest tube
Healthy
Sinus
HR
100
SpO2
96
RR
18
BP
120/80 (93)
Temp.
99.0
Heart sound Normal
Left lung Wheezes
00:00 HR: 100
00:00 Normal
00:00 Session started, theme: ...
PAUSE
END
ACTIVATE
Menu
00:01
Pneumothorax
Simple pneumothorax (01:53)
Tensio...thorax
PEA
Needle...ession
Chest tube*
Sinus
Man
100
14
98
99.0
Gap ON
5
ACTIVATE
HR
100
SpO2
96
RR
18
BP
120/80 (93)
Temp.
99.0
Heart sound Normal
Left lung Wheezes
00:00 HR: 100
00:00 Normal
00:00 Session started, theme: ...
PAUSE
END

## REGISTERING INTERVENTIONS




Categories of associated interventions

Access to vital signs adjustments

Interventions of the open category

Interventions always displayed

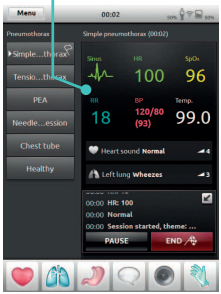
Counts interventions logged

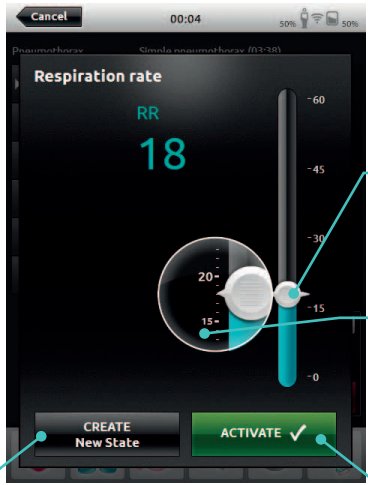
Add comment

Undo last registration

## ADJUSTING PARAMETERS MANUALLY

Tap the large coloured values in the main view, (e.g. respiration rate) to adjust the value.



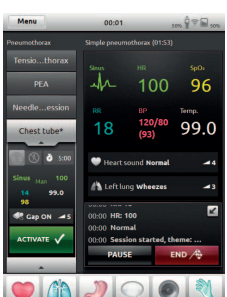




Hold finger over slider to access the fine-adjustment magnifying bubble.

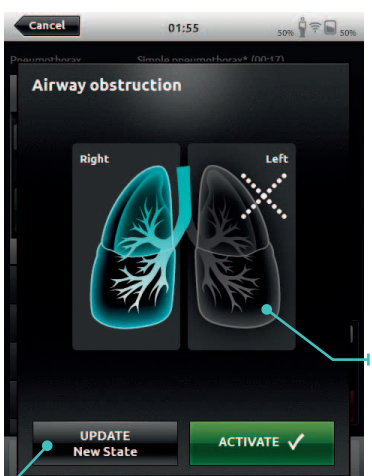
Move finger into the bubble and adjust the parameter in small increments.

Create a new state with the adjusted parameter.

Activate the new value.




Select a parameter from the menu.

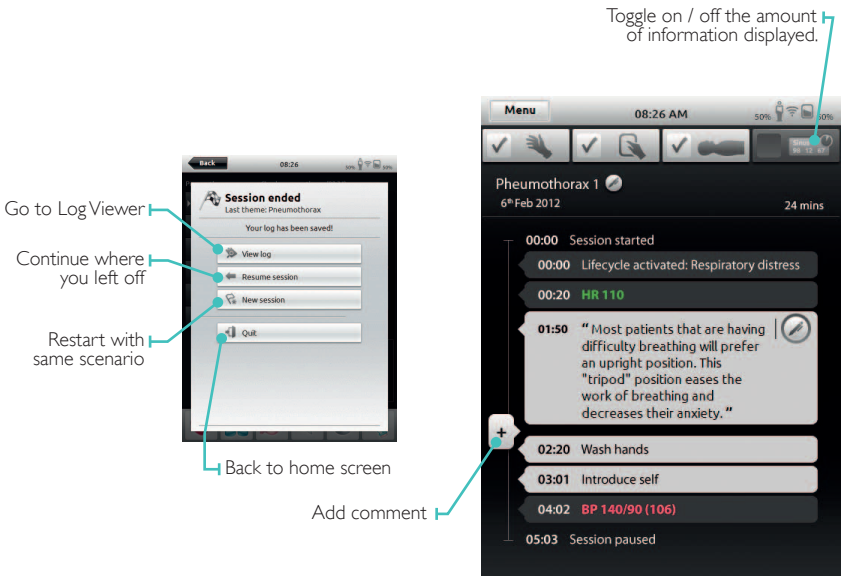



Tap to set desired condition.

Update the currently open waiting state.

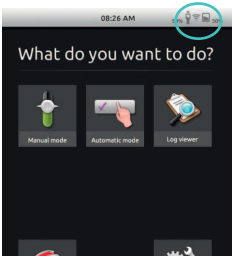
## VIEW LOG

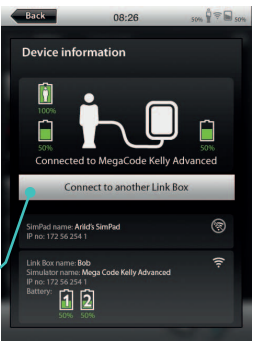
Open Log Viewer from the home screen or when ending a session.
To end a session, go to Menu and press End session.



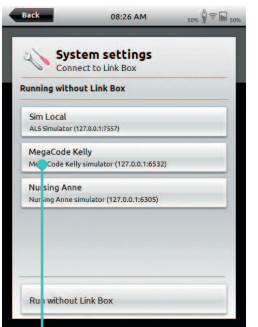
## CONNECTING SIMPAD TO ANOTHER LINK BOX

SimPad can only be connected to one Link Box at a time. A Link Box can only be connected to one SimPad at a time. SimPad will remember the Link Box it was last connected to, and try to re-establish this connection the next time it is turned on. To connect SimPad to a different Link Box, touch the connection information field in the upper right corner.




Select Connect to another Link Box.




Select new Link Box or choose to run without Link Box.

## CONNECTING ON A NETWORK

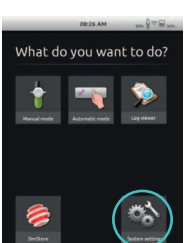
Out of the box, SimPad and Link Box will connect to the SimLink ad hoc network. They may however be used on a wired Ethernet network, or a WiFi network. SimPad and Link Box may also be connected directly to each other using a standard network cable.

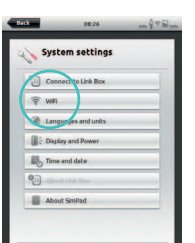
### 1. CONNECTING ON WIRED ETHERNET NETWORK

Simply connect SimPad and Link Box to network outlets. The network needs to have DHCP service. Connection by wire is indicated in the upper right corner of SimPad. It is possible to be on a wired network and a WiFi network simultaneously.


### 2. CONNECT TO A WIFI NETWORK

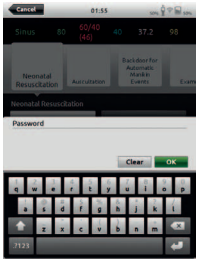
System settings – WiFi

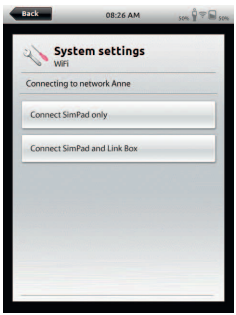



If you are moving the Link Box to another wireless network, Link Box and SimPad must be connected to a wired network or connected to each other by a network cable during the connection process.


Select the desired WiFi network from the list and enter the network password.

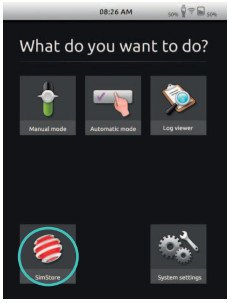


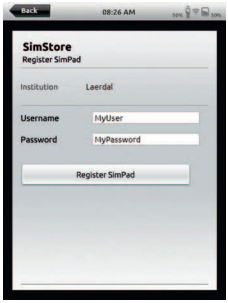




Then select the device you want to move to the new network.

## REGISTERING SIMPAD ON SIMSTORE

To register SimPad on SimStore, it needs to be connected to a network with internet, either via wired Ethernet or a WiFi network.

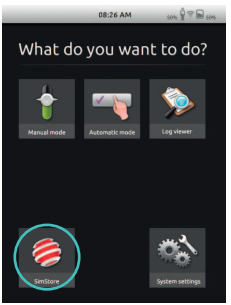


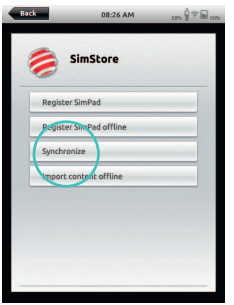




- Touch the SimStore Icon on the start screen.
- Select institution, enter username and password and touch register.
- SimPad identifier will then automatically be transferred to SimStore and the device is registered on the selected account.

## SYNCHRONIZING SIMPAD WITH SIMSTORE

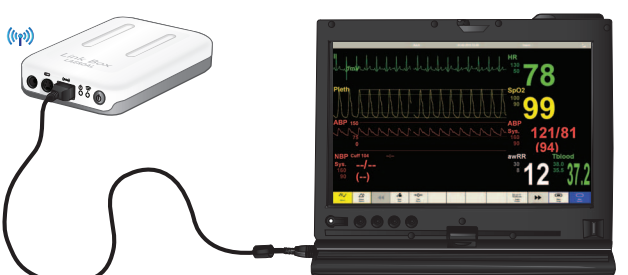
After SimPad has been registered on SimStore, the SimStore Icon on the start screen becomes a Synchronize selection. Synchronize will download scenarios assigned to this SimPad on SimStore. Administration of the SimPad and purchasing of scenarios on SimStore must be done from a PC.




## PATIENT MONITOR

SimPad System can work with a Laerdal Simulated Patient Monitor. The patient monitor can show ECG, SpO2, BP, Respiration rate, and Temperature from the SimPad.




The Monitor software needs to connect to the desired Link Box through a network connection, wired or wireless.

When the PC is set up on the same network as the Link Box, start the Patient Monitor software on the PC and select the desired Link Box from the selection dialogue.

The monitor software will remember its last connection, and try to reconnect to the same Link Box the next time it is started.

To change to another Link Box, select "Connection Settings" from the Main Setup menu.

### THEME EDITOR

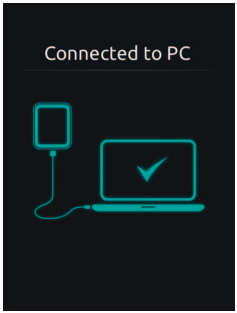
The Theme Editor is a PC software tool for creating Themes for the SimPad system. The Theme Editor allows you to easily make new Themes with States and Interventions. The Theme Editor can be loaded from www.laerdal.com/simpad.

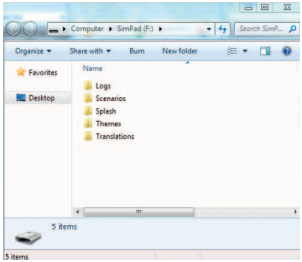
### SIMDESIGNER

SimDesigner is a PC software tool for creating Scenarios for the SimPad System. SimDesigner allows you to make new Scenarios with States and Interventions, Trends and Handlers. SimDesigner can be loaded from www.laerdal.com/simpad.

### TRANSFERRING LOGS, THEMES AND SCENARIOS TO / FROM A PC

Connect SimPad to the PC using the included USB cable.




- Save new Scenarios in the Scenarios folder.
- Save new Themes in the Themes folder.
- Upload logs from the Logs folder.

Disconnect the USB cable from the SimPad when transfers are finished.

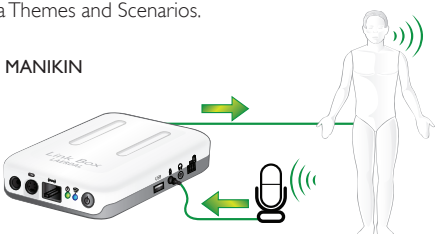
*Note: If SimPad is turned off, the battery can be charged from the USB connection. This charging is slower than if it is connected to the included DC adapter.*

## SOUND

### VOCAL SOUNDS

Vocal sounds from the patient simulator such as crying, moaning etc. can be activated from the SimPad directly or via Themes and Scenarios.

### TALKING THROUGH THE MANIKIN



### 1. NO HEADSET

The Link Box has a microphone input where you can plug in a standard computer microphone or another sound source. When only this microphone is plugged in, the input from the microphone will be routed to the manikin.

### 2. HEADSET

Alternatively a headset can connect to SimPad to create two-way communication between the operator and the simulator and surroundings.
Plug an analogue headset (4 pin jack) into the SimPad. The microphone of the headset will now be routed to the manikin. If a microphone is connected to the Link Box as in alternative one, this microphone will now be routed to the headset.

The yellow button on the SimPad can be configured in the Preferences menu to enable and disable the input from the headset.

The headset output on the Link Box duplicates the sound to the manikin. It can be used to improve the sound by adding additional speakers around the manikin.

## LAERDAL LI-ION BATTERY

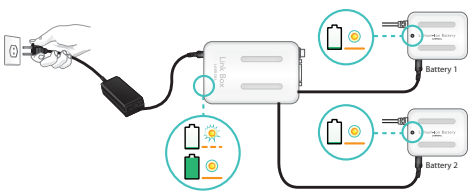
It is possible to connect two Laerdal Li-Ion batteries to the Link Box.

When the Link Box is powered on, the batteries are discharged in parallel. The remaining capacity in each battery will be displayed in the SimPad.

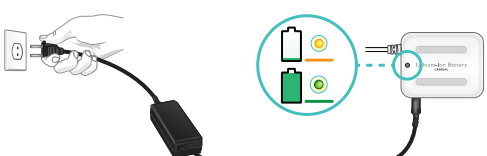
## BATTERY CHARGING

The batteries can be charged through the Link Box when the Link Box power is turned off and the Link Box is connected to the AC adapter.

During charging, the Link Box ON indicator will blink with a yellow light, and the LED indicators on the batteries will show a steady yellow. When the batteries are fully charged, voltage to the batteries will be turned off and the indicator on the Link Box will show steady yellow.




Alternatively, a battery can be charged by connecting it directly to the AC adapter.



During charging, the LED indicator on the battery will show a steady yellow. When the battery is fully charged, the LED indicator shows steady green.

*WARNINGS: Do not use the Laerdal Li-Ion Battery for other purposes than specified. Use only the AC charger adapter supplied with the product.*
*Do not use the battery in temperatures above what is specified in this Directions for Use.*
*Do not heat or incinerate. Do not crush the battery. Do not short circuit the battery contact.*
*Do not immerse in water. The battery must be recycled and disposed of in accordance with local rules.*

## SAFETY INSTRUCTIONS

For your protection please, read these safety instructions completely before connecting the equipment to the power source. Carefully observe all warnings, precautions and instructions both on the apparatus and in these operating instructions. Retain this manual for future reference.

## USER ENVIRONMENT

Protection against dust and moisture according to IP 22. Do not use this product at altitudes higher than 3000m asl. Do not use the product in ambient temperatures above 35°C (95°F) and below 0°C (32°F).Relative humidity (RH) must be between 10% to 90%.

## WATER AND MOISTURE

Do not operate the apparatus under or near water—for example near a bathtub, kitchen sink, or laundry tub, in a wet basement, near a swimming pool or in other areas with high humidity.

- Never install jacks for communication cables in wet locations.
- Do not operate the product with wet hands.

## CLEANING

Unplug the apparatus from communication lines, mains power outlet or any power source before cleaning or polishing. Do not use liquid cleaners or aerosol cleaners. Use a lint-free cloth lightly moistened with water for cleaning the exterior of the apparatus.

## LIGHTNING

Never use this apparatus, or connect/disconnect communication cables or power cables during lightning storms.

## DUST

Do not operate the apparatus in areas with a high concentration of dust.

## SERVICING

Do not attempt to service the apparatus yourself. Opening or removing covers may expose you to dangerous voltages or other hazards, and will void the warranty. Refer all servicing to qualified service personnel.

## INTERNAL BATTERY IN SIMPAD

### CAUTION

If the internal battery packs in SimPad is mishandled, the battery pack can burst, cause a fire or even chemical burns. Observe the following cautions:

- Use only the SimPad battery with SimPad.
- Do not expose to high temperatures, such as in direct sunlight or in a car parked in the sun.
- Replace only with the same type of battery.
- Be sure to charge SimPad using only the supplied battery charger or a recommended charging device that can charge the batteries.
- Keep SimPad dry.
- Dispose of used battery pack promptly and according to local legislations.

### DANGER

- Do not disassemble, crush, puncture, or short external contacts or and do not allow metal objects to come into contact with the battery terminals.
- Do not try to repair the battery, it may cause explosion.
- Do not incinerate or dispose of in fire, the battery may explode or release toxic materials.
- Do not dispose of in water.
- Do not handle damaged or leaking Li-Ion batteries.

## POWER CONNECTION AND HAZARDOUS VOLTAGE

The product or its accessories may have a hazardous voltage inside.

- Never attempt to open this product, or any peripherals connected to the product, if this action requires a tool.
- This product should always be powered from an earthed power outlet.
- If any parts of the product have visual damage, never attempt to connect main power, or any other power source, before consulting service personnel.
- Route the power cord to avoid it being walked on or pinched by items placed upon or against it. Pay particular attention to the plugs, receptacles and the point where the cord exits from the apparatus.
- Do not tug the power cord.
- If the provided plug does not fit into your outlet, consult an electrician.

## INDUSTRY CANADA RULES

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Ce dispositif est conforme à la norme CNR-210 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

## ACCESSORIES

Use only accessories specified by the manufacturer, or sold with the apparatus.

The RJ-45 jack is not used for telephone line connection.

## FCC STATEMENT

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Consult the dealer or an experienced radio/TV technician for help.

The use of shielded I/O cables is required when connecting this equipment to any and all optional peripheral or host devices. Failure to do so may violate FCC rules.

**IMPORTANT** *Changes or modifications not covered in this manual must be approved in writing by the manufacturer's Regulatory Engineering Department. Changes or modifications made without written approval may void the user's authority to operate this equipment.*

CANADIAN ICES-003 STATEMENT

This Class B digital apparatus meets all of the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

CE COMPLIANCE STATEMENT

Laerdal Medical AS hereby declares that when carrying the CE-mark, this product is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Li-Ion batteries should be recycled.

**Li-Ion**

WEEE

Waste Electrical and Electronic Equipment

This appliance is marked according to the European directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product.

The symbol on the product, or on the documents accompanying the product, indicates that this appliance may not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. Disposal must be carried out in accordance with local environmental regulations for waste disposal.

For more detailed information about treatment, recovery and recycling of this product, please contact your local city office, your household waste disposal service or Laerdal representative.

LIMITED WARRANTY

Please refer to the Laerdal Global Warranty statement, and for more information see:

**www.laerdal.com**

Product specifications are subject to change without notice.

## SPECIFICATIONS

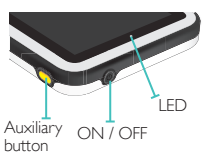
| | |
|---|---|
| Operating temperature | 0°C to +35°C (32°F to 95°F), Humidity 5 – 90% R.H. non-condensing |
| Storage temperature | -20°C to +60°C (-4°F to +140°F) |
| IP Classification | IP32 |
| Cleaning | Wipe units with a damp soft cloth with household soap water |

## SIMPAD

| | |
|---|---|
| Size | 158 x 126 x 25 mm (6,22'' x 4,96''x 0,98'') |
| Weight | 450 g (1 lb) |
| LCD display: | High Resolution Color LCD display, 5.7'', 480 x 640 pixels |
| Battery type: | Li-Ion 3.7V, capacity: 16 Wh |
| Battery time: | 3 - 4 hours continuous use with 50% display brightness. |
| Battery charging: | DC input 12V 0,7A max.<br>USB OTG input, 5V 500 mA max |
| Charging time: | 10 – 80%, approximately 50% / hour from DC input 80% - 100% , 1 hour |
| Communication | WiFi 802.11b/g (2.4GHz). Ethernet 10/ 100 MB |

## OPERATION: ON – OFF BUTTON:

| |
|---|
| Press for 0,5 seconds to turn unit on (LED start blinking green) |
| Short press while unit is on:Turn display on and off |
| Press 0,5 seconds to turn unit off (confirm on screen) |
| Press and hold for more than 5 seconds to force unit off |



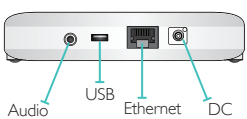

**AUXILIARY BUTTON:** See Preferences menu to select function.

## LED:

| |
|---|
| Unit off and charging: Blinking yellow light when charging, Steady yellow light when charged. |
| Unit starting and shutting down: Blinking green light. |
| Unit on: Steady green light |
| Power on when battery too low: Blinking red light (5 blinks) |
| Error, needs service: Steady red light |

## CONNECTIONS:

| |
|---|
| DC input: 9 – 15 V DC, 2 A max, + on center pin. |
| Ethernet: RJ45 connector |
| USB: USB on the go input / output. |
| Audio: 3,5 mm audio jack with TRRS input. Microphone on sleeve (compatible with iPhone headset). |

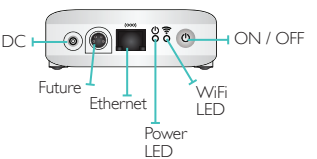


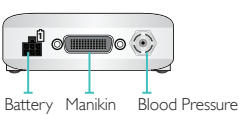
## LINK BOX

| | |
|---|---|
| Size | 140 x 90 x 30 mm (5,51'' x 3,54''x 1,18'') |
| Weight | 200 g (0,44 lb) |
| Communication | WiFi 802.11b/g (2.4GHz) |
| Ethernet | 10/ 100 MB |

## OPERATION:

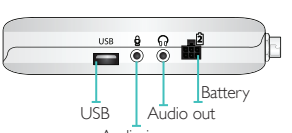
| ON / OFF BUTTON: |
|---|
| 1. Press for 0,5 seconds to turn unit on (LED start blinking green). |
| 2. Press 0,5 seconds to turn unit off (confirm on screen). |
| 3. Press and hold for more than 5 seconds to force unit off. |
| **POWER LED:** |
| 1. Unit off and charging: Blinking yellow light when charging, Steady yellow light when batteries charged. |
| 2. Unit starting and shutting down: Blinking green light. |
| 3. Unit on: Steady green light. |
| 4. Error, needs service: Steady red light. |
| **WIFI LED:** |
| 1. Connected to a network: Steady green. |
| 2. Connected to a Link Box: Steady blue. |




## CONNECTIONS

| |
|---|
| DC input: 9 – 15 V DC, 3,3 A max, + on center pin. |
| Ethernet: RJ45 connector. |
| Future: Connector for future use. |
| Manikin: Power and signals to manikin. Pulse, sounds etc. |
| Battery #1: Connector for Laerdal Li-Ion Battery. |
| Blood Pressure: Cuff pressure input: 0 – 300 mm Hg. |
| USB: USB A input / output. |
| Audio in: 3,5 mm jack with TRS input. Line in or microphone level. |
| Audio out: 3,5 mm jack with TRS output. Line out level. |
| Battery #2: Connector for Laerdal Li-Ion Battery. |



## LI-ION BATTERY

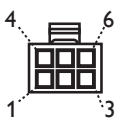
| | |
|---|---|
| Battery type | Li-Ion, 4 cells |
| Cell type | LIC18650-22PC |
| Voltage | 7,2 V nominal |
| Capacity | 4,4 Ah typical (32 Wh) |
| Size | 98 x 78 x 28,1 mm (3,86" x 3,07" x 1,11") |
| Weight | 270 g (0.6 lb) approximately. |
| **BATTERY CHARGING** | |
| Charging voltage input | 9 – 15V DC, 1,6 A max |
| Charging method | Constant Current + Constant Voltage |
| Constant current | 1.33A typ. |
| Expected cycle life | 700 cycles for ≥ 1400mAh (cell) |
| Charging time: | 0 – 80 %: 30 % per hour<br>80% - 100%: 1 hour. |
| **CHARGING INDICATOR** | 1. The charging indicator is only active when there is a charging voltage present.<br>2. Charging: Steady yellow light<br>3. Charged: Steady Green light. |

## CONNECTORS

Connector tail for battery out and charging:
Pin out:

| PIN | DESCRIPTION |
|---|---|
| 1 | Battery data |
| 2, 5 | Battery + |
| 3, 4, 6 | Battery - |
| **DC INPUT CONNECTOR FOR BATTERY CHARGING** | |
| Connector type: | DC-plug receptacle with 2 mm center pin, + on center pin |
| Input voltage level: | 9V – 15V DC |

(Front view of plug)



SimPad System has the same ECG library as SimMan 3G and other Laerdal simulators.

The available rhythms and rhythm parameters may vary from simulator to simulator.

## AVAILABLE ECG IN SIMPAD SYSTEM:

| BASIC RHYTMS | RATES ADULT AND CHILD | RATES INFANT | EXTRA-SYSTOLES |
|---|---|---|---|
| Sinus | 20 - 200 | 20- 240 | PVC<br>PVC RonT<br>Couplet PVC<br>PAC/PJC |
| WPW | 20 - 200 | 20- 240 | |
| Hyperkalemia | 20 – 200 | 20- 240 | |
| Long QT | 20 - 200 | 20- 240 | |
| Ischemia | 20 - 200 | 20- 240 | |
| Inferior AMI, ST elevation | 20- 200 | 20- 240 | |
| LBBB | 20- 200 | 20- 240 | |
| RBBB | 20- 200 | 20- 240 | |
| Atrial Tachycardia | 140 – 260 | 90 - 320 | |
| SVT | 140 – 260 | 90 - 320 | |
| Atrial Flutter | 75, 100, 150 | 75, 100, 150 | |
| Atrial Fibrillation | 50 - 240 | 50 - 240 | |
| Junctional | 40 - 220 | 40 - 220 | |
| 1° AV-Block | 20 – 135 | 20 – 135 | PVC<br>PVC RonT<br>Couplet PVC<br>PAC/PJC |
| 2° AV Block type #1 | 3:2,4:3, 5:4 | 3:2,4:3, 5:4 | |
| 2° AV Block type #2 | 4:3, 3:2, 2:1 | 4:3, 3:2, 2:1 | PVC<br>PVC RonT<br>Couplet PVC |
| 3° AV Block | 10 - 50 | 20 - 100 | |
| Ventricular Tachycardia (VT) | 120 - 240 | 120 - 320 | |
| Torsade de pointes | 180 | 180 | |
| Idioventricular | 10 - 100 | 14 - 100 | |
| V. Fib. | 0.1 – 1 mV | 0.1 – 1 mV | |
| Asystole | | | |
| Ventricular Standstill | | | |
| Ventricular Pacemaker | 50 – 150 | 50 – 150 | |

| BLOOD PRESSURE | |
|---|---|
| Pressure range | 0 - 300 mmHg |
| Accuracy | +/- 4 mmHg |
| Calibration | Pressure sensor must be calibrated to sphygmomanometer. See Preferences menu. |
| PULSE | |
| Available pulses | Carotid, Brachial, Radial and Umbilical (SimNewB)<br>Only 3 pulses can be palpated simultaneously. (Power considerations). |
| Palpated BP | Radial pulse turns off at systolic BP.<br>Brachial pulse turns off at 20 mmHg, to prevent noise generation in auscultation area. |

| | ADULT MANIKIN | CHILD MANIKIN | INFANT MANIKIN |
|---|---|---|---|
| Default Blood Pressures (mmHg) | 120/80 | 100/70 | 94/66 |

## ADULT PULSES ARE AUTOMATICALLY ADJUSTED TO BP AS FOLLOWS:

| SYSTOLIC BP | CAROTID PULSE | RADIAL/BRACHIAL PULSE |
|---|---|---|
| >= 88 | Normal | Normal |
| < 88 | Normal | Weak |
| < 80 | Normal | Absent |
| < 70 | Weak | Absent |
| < 60 | Absent | Absent |

Infant pulses are automatically set to absent when Systolic BP is below 10 mm Hg. Otherwise Infant pulses are normal.

## HEART SOUNDS:

Heart sounds are synchronized to ECG.

| HEARTSOUNDS: | ADULT MANIKIN | CHILD MANIKIN | INFANT MANIKIN |
|---|---|---|---|
| Normal | • | • | • |
| Aortic Stenosis | • | • | • |
| Austin Flint Murmur | • | • | • |
| Mitral Valve Prolapse | | • | |
| Systolic Murmur | • | • | • |
| Diastolic Murmur | • | | |
| Friction Rub | • | | |
| Opening Snap @70 msec | • | | |
| Stills Murmur | | • | • |
| Atrial Septal Defect (ASD) | | • | • |
| VentricularSeptal Defect (VSD) | | • | • |
| Pulmonary Stenosis | | | • |

## LUNG SOUNDS:

Lung sounds are synchronized to breathing rates, adjustable from 0 – 60 breaths / min.

| LUNG SOUNDS: | ADULT MANIKIN | CHILD MANIKIN | INFANT MANIKIN |
|---|---|---|---|
| Normal Breath Sounds | • | • | • |
| Fine Crackles | • | • | • |
| Coarse Crackles | • | • | • |
| Pneumonia | • | • | • |
| Wheeze | • | • | • |
| Stridor | • | • | • |
| Pleural Rub | • | | |
| Rhonchi | • | • | • |

## BOWEL SOUNDS:

| BOWEL SOUNDS: | ADULT MALE | ADULT FEMALE | CHILD MANIKIN | INFANT MANIKIN |
|---|---|---|---|---|
| Normal | • | • | • | • |
| Borborygmus | • | • | • | • |
| Hyperactive | • | • | • | • |
| Hypoactive | • | • | • | • |
| Fetal Normal 140 BPM | | • | | |
| Fetal Brady 100 BPM | | • | | |
| Fetal Tachy 200 BPM | | • | | |
| No sound | • | • | • | • |

## VOCAL SOUNDS:

Vocal sounds are adjusted for age and gender of manikin.

| MALE MANIKIN | FEMALE MANIKIN | CHILD MANIKIN | INFANT MANIKIN |
|---|---|---|---|
| Vomit | Vomit | Vomit | Cry |
| Cough | Cough | Cough | Cough |
| Moan | Moan | Moan | Content |
| SOB Breathing | SOB Breathing | SOB Breathing | Hickups |
| Scream | Scream | Scream | Scream |
| Yes | Yes | Yes | |
| No | No | No | |

User defined vocal sounds can replace the included vocal sounds.
Sound format for user defined sound files must be raw format 16KHz, 16 bits signed, little endian.

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20-05299 Rev A

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