



MW57 Pediatric Lung Sound Auscultation Trainer

● Product Supervision
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Instruction Manual

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■ Before use

MW57 Pediatric Lung Sound Auscultation Simulator is designed for medical education training. Please do not use the product for other purposes. Any other use not in accordance with the instructions on this manual as well as on the help menu in the system is strongly discouraged. The manufacturer holds no responsibility for any accidents or damages resulting from such use.

For questions regarding this simulator, please contact our distributor in your area or Kyoto Kagaku. The contact information can be found on the back cover of this manual.

■ Features

- Sounds are recorded from actual patients and are reproduced by using a high quality sound system.
- An actual stethoscope can be used.
- Sounds are distributed from five anterior and six posterior sites simultaneously.
- 20 lung sound cases: with and without heart sounds.
- Up to five simulators can be controlled by one wireless tablet.
- The error indicator system facilitates maintenance of the system to keep “Pediatric LSAT” in its best condition.

■ Skills

Pediatric lung sounds auscultation

Supply voltage: AC100-240V 50/60Hz 450VA

Altitude: 2.000 meters above sea-level

Environmental conditions: 5°C.to 40°C.

Relative humidity: Less than 80%(no condensation)

Overvoltage Category: 2

Pollution Degree: 2

Power cord supply: Do not use power supply cords other than the one included in the original set.

Clean-up: Clean the simulator with water or mild detergent. Clean the manikin with water or mild detergent and coat with baby powder. Be careful not to apply water or detergent on the internal machinery.

 DOs and DON'Ts
DOs

● **Operate the system under the designated circumstances**

Power input: AC100V~240V plus or minus 10%, 50Hz/60Hz
 Temperature range: between 0 degrees C and 40 degrees C (no congelation)
 Relative humidity; between 0%to 80% (no condensation)
 *Connecting to power source outside of the designated range may lead to fire.

● **Safe disposition**

To avoid short circuit, do not run the simulator set above a power receptacle.

● **Handle the power plug and cord observing following precautions**

1. Clean the head of the plug periodically.
 2. Plug in the plug to the outlet firmly to the end.
 3. Always hold the plug when unplugging. Do not pull the cable.
 4. Do not force to bend, twist the cable and avoid scratching or cutting on it.
 5. Unplug the power cord when the simulator is not in use.
 6. Remove any dust that has accumulated on the power plug and insert the plug completely into the power socket.
- Failing to follow the above precautions can result in damage in the plug and the cable, constituting risk of fire or shock.

● **When the electric parts get warm or produce smoke, immediately turn off the power and unplug from the power source**

Risk of fire. Contact your distributor or the manufacturer for repair.

● **Handle with care**

The materials for the models are special compositions of soft resin. Please handle them with utmost care at all times.
 Clean the manikin with water or mild detergent and coat with baby powder. Be careful not to apply water or detergent on the internal machinery.
 Transport the simulator with caution. Hold the simulator by the handles when transporting. Do not hold the simulator by the torso manikin.

● **Storage**

Store the simulator at room temperature, away from heat, moisture and direct sunlight.
 Storage under the temperature above 50 degrees C may reduce the performance quality of the simulator.

● **Use the simulator in quiet environment**

● **Follow the instructed shutting down procedures**

Shut down the computer first. Do not turn off the power or unplug the power cord without shutting down the program. Misuse may lead to damages.

DON'Ts

● **Do not disassemble or open electric or precision components**

Do not remove or alter cable connections in the inner machinery. Connection cables and their settings have been preset; changes to the set up may lead to malfunctions or damages to the simulator. Also, do not open up or disassemble the housing for electric parts or precision components.
 Refrain from opening up any lids, caps or covers for such area, and never run the system while any of such covers are open.
 *Never disassemble the electric components, power plug and cable as it may create a risk of fire, shock or injury. Contact your distributor or the manufacturer for repair.

● **Never wipe the product and components with thinner or organic solvent**

● **Ink marks on the soft surface won't be removable** Don't mark on the product and components with pen or leave any printed materials in contact with their surface.

● **Do not give shocks**

The electric components are precision instruments. Strong shocks or continuous vibration may cause breakages of its internal structure.

● **Do not run the system continuously over 2 hours**

Take at least 30 minutes shutdown, turning off the power, every 2 hours.

● **Do not wet the electric components**

Do not pour or spill water or liquid detergent over the electric components, power cable and power plug. Running the system while the electric components are wet may create a shock hazard or a risk of fire.

● **Do not handle the power plug with wet hands**

Risk of shock.

● **No fire**

Do not put the product close to fire. It may lead to discoloration or deformation of the product as well as short circuit, creating a risk of fire.

● **Do not install other software onto the computer**

It may lead to system malfunctions.

Discoloration of the surface may occur after a long period of time. Discoloration does not affect the function and performance of the simulator.

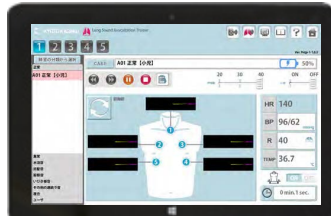
■ Set includes

Before you first use "Pediatric LSAT", ensure all components listed below are included in the unit.

A



B



A : 1 pediatric LSAT unit
(with respiratory torso manikin,
separable into 2 parts)

B: 1 control PC
1 power cable for control PC

C : 1 AC adapter

D : 1 power strip

E : 1 LAN cable (0.5m, 1.5m, 10m)

F : 1 LAN adapter

G : 1 LAN HUB/ AC adapter

H : 1 external speaker(1 sound cable incl.)

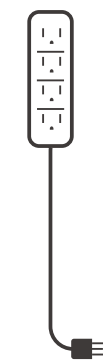
I : 1 Pediatric LSAT T-shirt

instruction manual
built-in help file of software operation

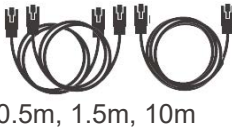
C



D

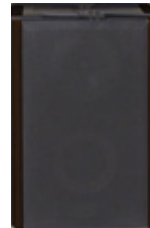


E



0.5m, 1.5m, 10m

H



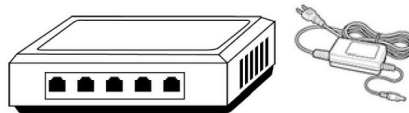
I



F

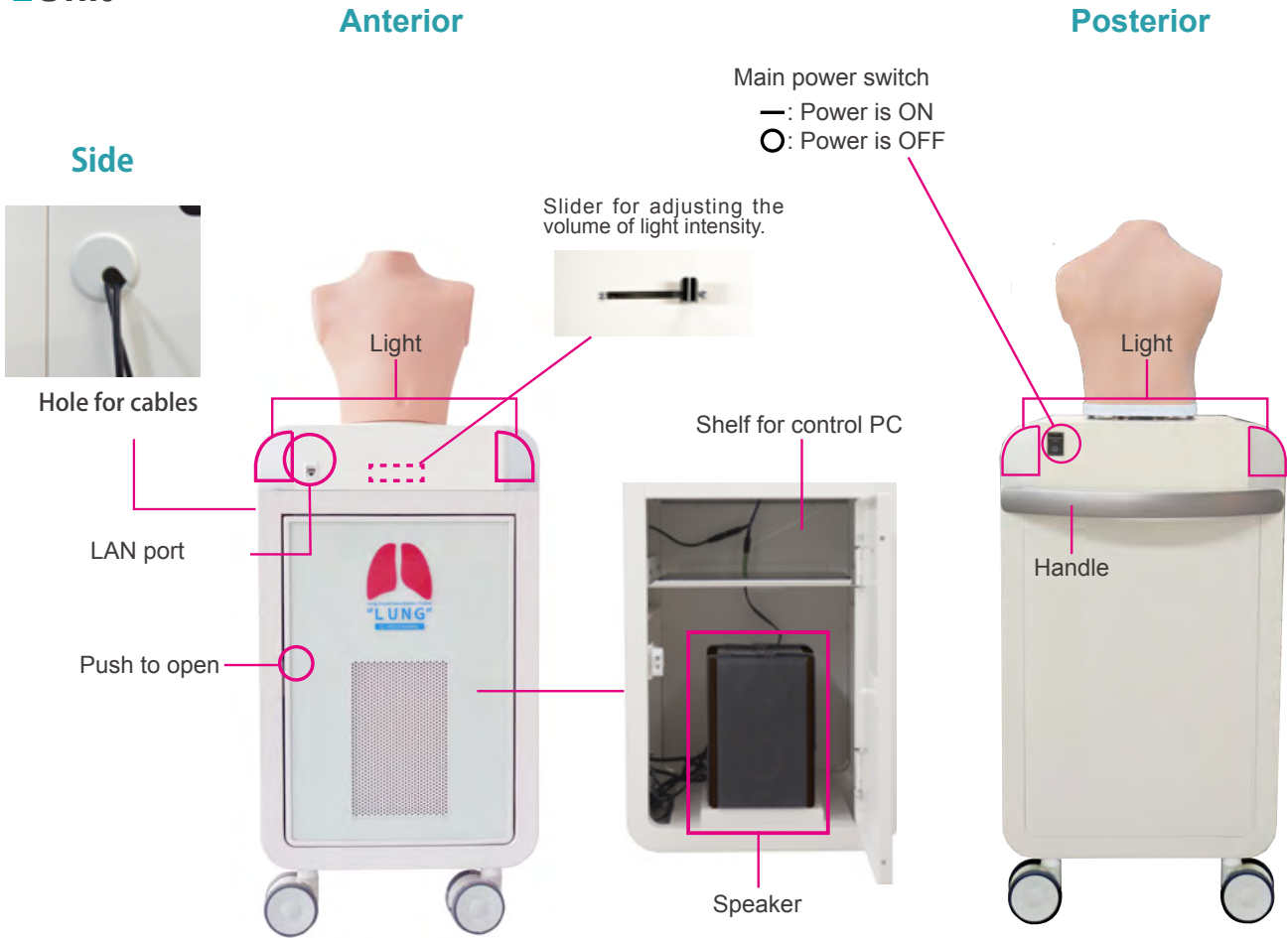


G

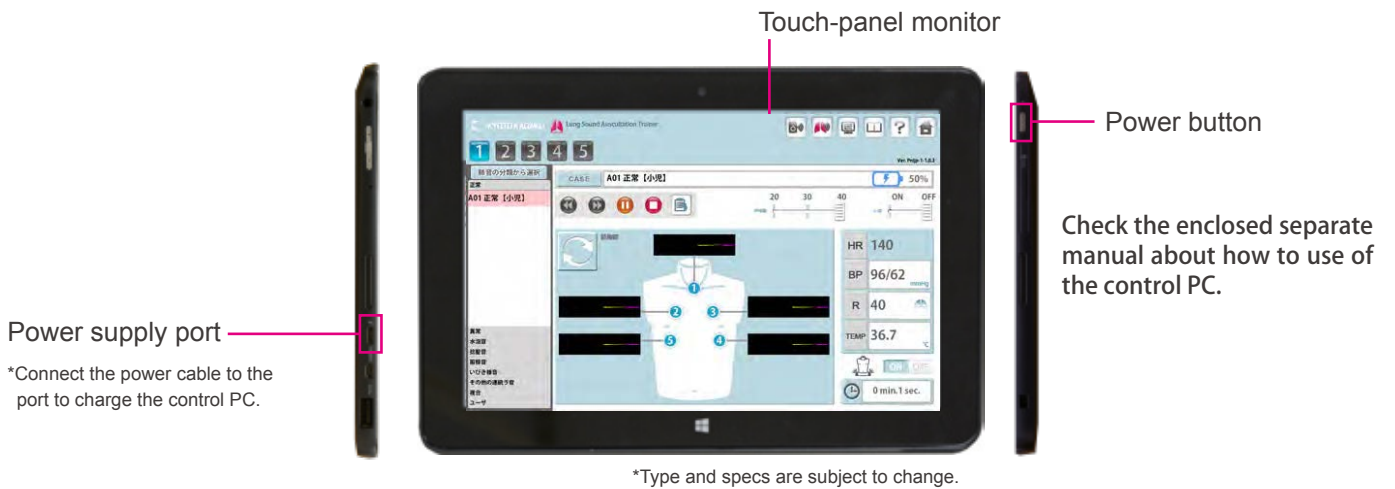


*Type and specs are subject to change.

■ Unit



■ Control PC

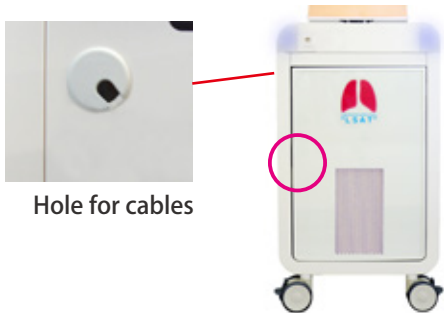


NOTES

Posterior and anterior sound can be played simultaneously.

Installation of external speaker

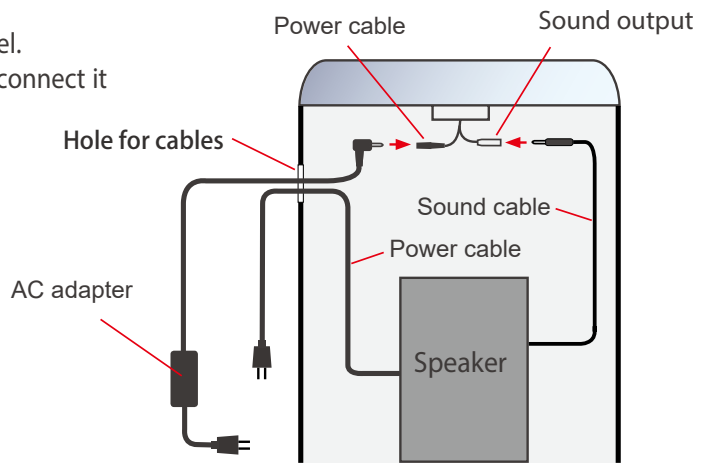
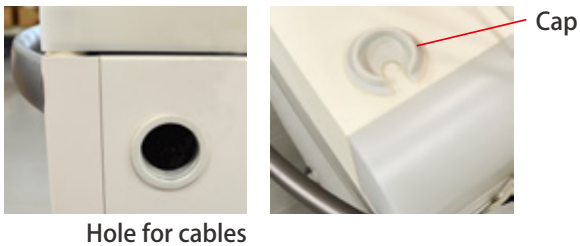
- 1 Press the red circled area to open. Find two fixing belts at the floor of the housing and unbuckle them.



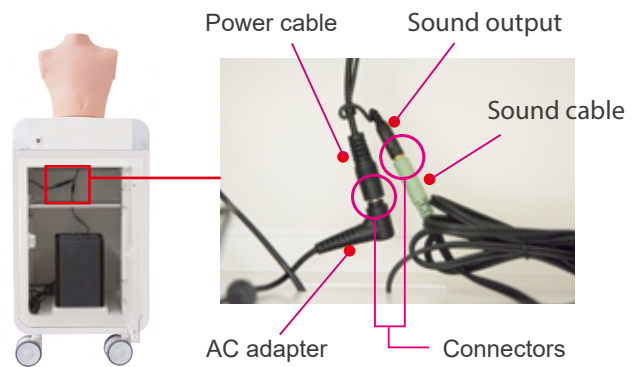
▼ Inside



- 2 Remove the cap of the hole for cables in the side panel. Pass the cable of AC adapter through the hole then connect it to the power cable at the upper area of the housing.



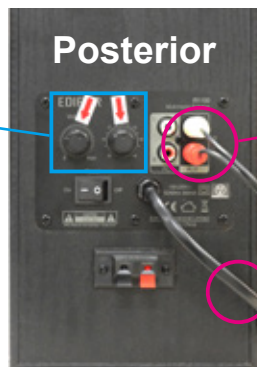
- 3 Connect the speaker and the sound output by the sound cables for the speaker. The jacks of the speaker are at its back. Pass the power cable of the speaker through the hole on the side panel and then connect it to the power strip.



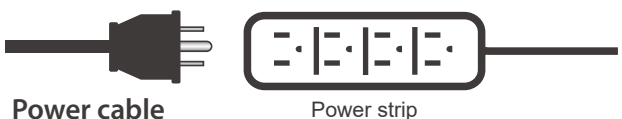
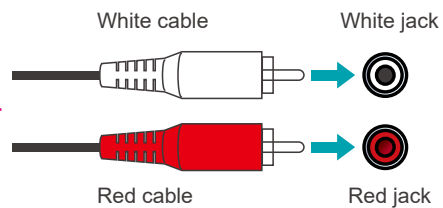
- 4 Adjust the sound volume to the position indicated by arrow marks.



*The position of the arrow marks may vary depending on the unit.



Sound cable



- 5 Buckle and pull the belt tightly to secure the speaker in place.



CAUTION

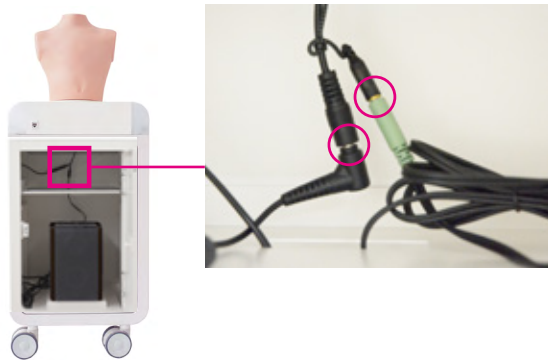
Ensure that the antennas are connected firmly to the main unit before use, or they might come off accidentally.

POINT

The torso manikin is able to be separated.

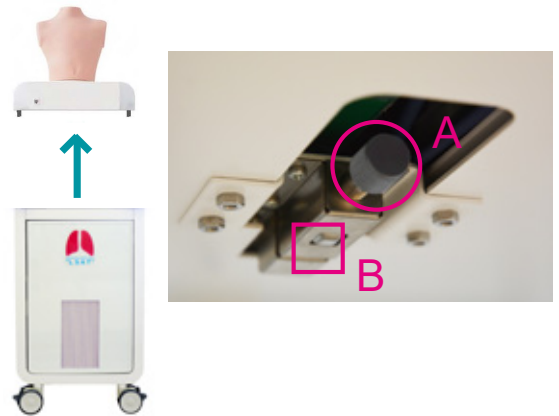
1

Detach connection cables marked with red circles.



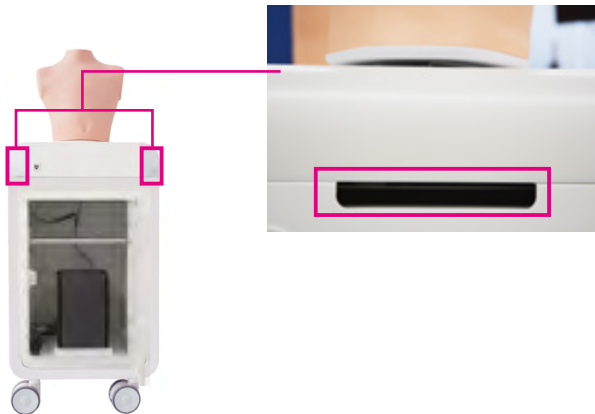
2

To separate : Push **B** button
To attach : Push **A** knob



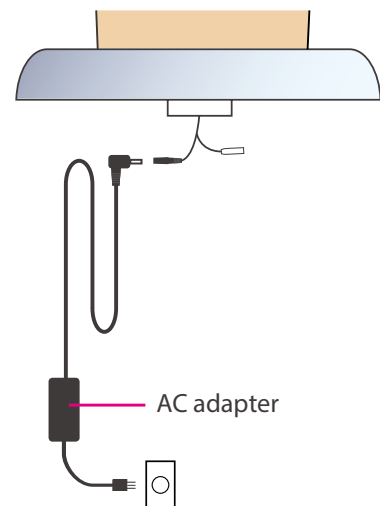
3

Hold the simulator by the handles at both sides when separating.



4

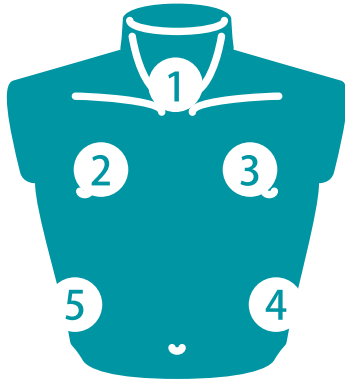
Connect unit to AC adapter to start using.



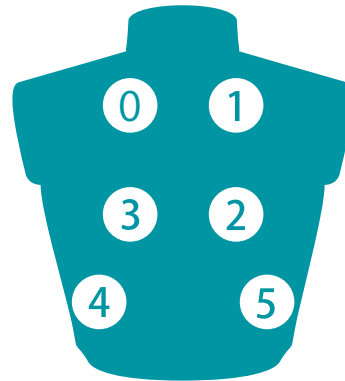
NOTES

Keep the unit attached to base unless used separately.

■ Auscultation sites



Anterior



Posterior

- 1. trachea
- 2. upper right lung field
- 3. upper left lung field

- 4. lower left lung field
- 5. lower right lung field

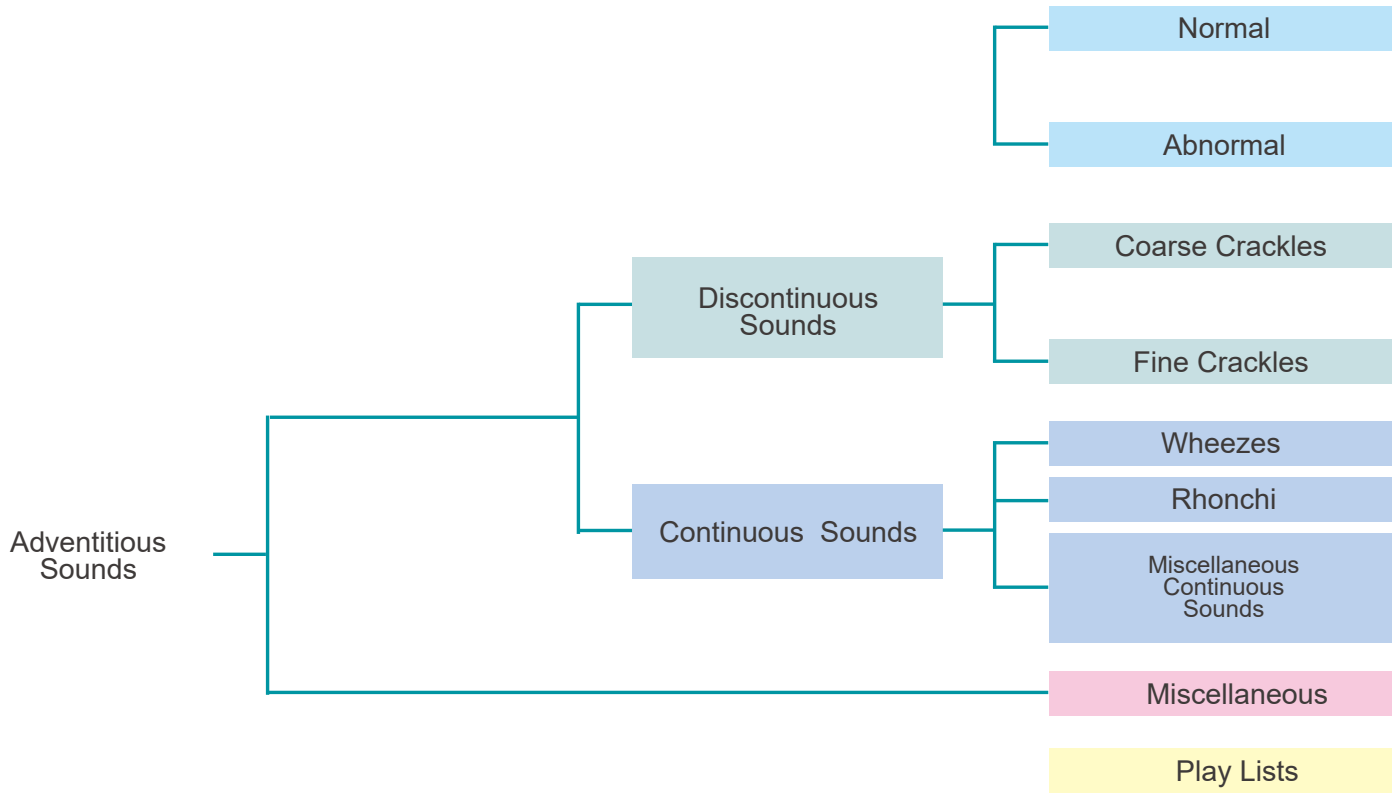
- 0. upper left lung field
- 1. upper right lung field
- 2. middle right lung field
- 3. middle left lung field

- 4. lower left lung field
- 5. lower right lung field

■ Cases 20 lung sound cases

Normal	Abnormal
A01 standard	B01 weak: left lower area B03 weak: left whole area B05 weak: right lower area B07 weak: right whole area
Coarse Crackles	Fine Crackles
C01 right lower area C03 both lower area C05 left lower area C07 both upper area C09 whole area C11 right upper area	D01 both lower area D03 whole area
Wheezes	Rhonchi
E01 trachea and upper area E03 whole area	F01 trachea and upper area F03 whole area
Miscellaneous continuous sounds	Miscellaneous (combined cases)
G01 stridors	H01 coarse crackles and rhonchi H03 fine crackles and wheezes

■ Classification of lung sounds

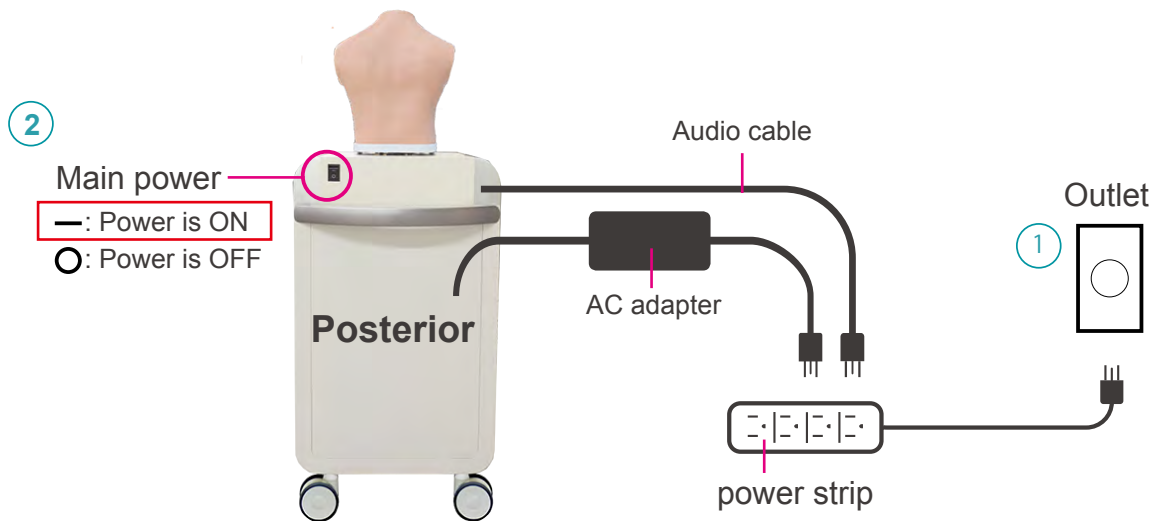


<p>Classification of lung sounds</p>	<p>The American Thoracic Society developed a rational and clinically useful classification based on acoustic analysis of tape recordings and introduced the nomenclature. With this approach, lung sounds are categorized as continuous (wheezes, rhonchi, or stridor) or discontinuous (crackles). Crackles are further identified as fine or coarse. The terms “lung sounds” and “breath sounds” are usually used synonymously.</p>
<p>Adventitious sounds</p>	<p>Adventitious lung sounds are superimposed on the breath sounds in certain circumstances and usually indicate disease. They are categorized as continuous (wheezes, rhonchi, or stridor) or discontinuous (crackles). Crackles are further identified as fine or coarse.</p>
<p>Discontinuous sounds</p>	<p>Discontinuous adventitious lung sounds are intermittent, nonmusical, and brief (duration of less than 25ms) noises. They may be fine crackles (relatively high-pitched sounds usually heard at the end of inspiration as air enters the acinar unit) or coarse crackles (the low-pitched, bubbling sounds that result from the accumulation of secretions in larger bronchi and trachea).</p>
<p>Continuous sounds</p>	<p>Continuous adventitious lung sounds are usually louder than the underlying breath sounds. The word “continuous” in this context implies duration of more than 250ms rather than meaning a sound that continues throughout the respiratory cycle. Continuous sounds may be wheezes, rhonchi, or stridor.</p>

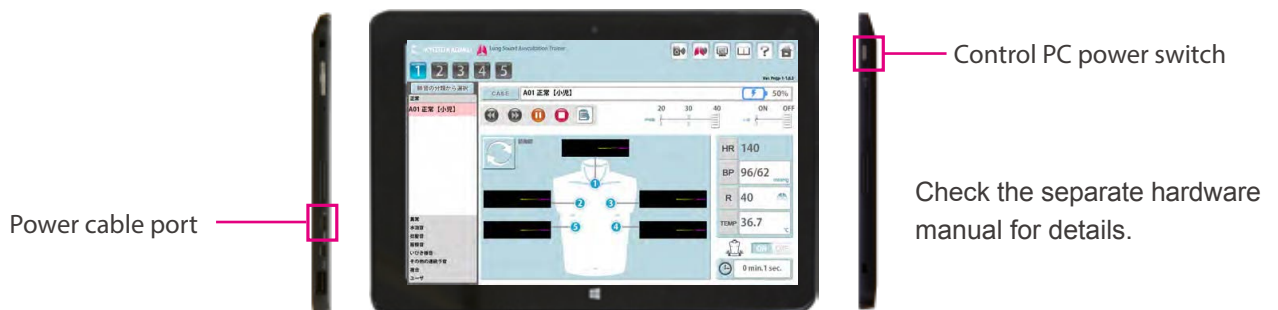
IMPORTANT

When starting up the system follow the sequence of actions instructed below so that the wireless connection works correctly. The unit may not work correctly when turned on with a different order.

- 1 Connect the power cable to the outlet.
- 2 Turn on the control system's main power.



- 3 Turn on the control PC power.

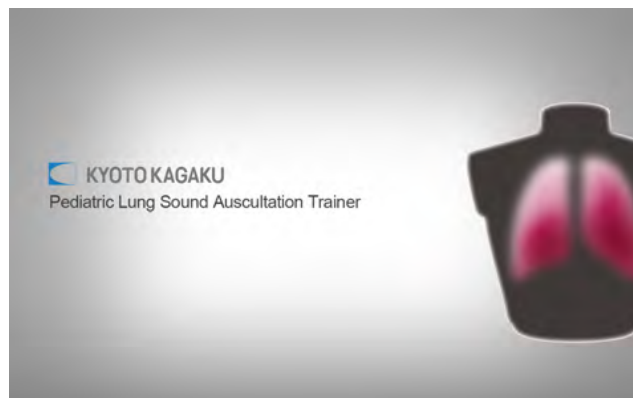


NOTES

Before starting, be sure to charge the battery of the control PC. In case that the battery is low or empty, charge it by connecting the power cable of the control PC. The system can be used with the control PC being connected to the power.

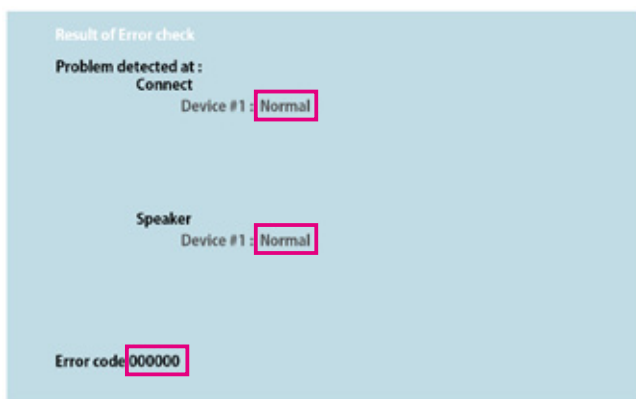
1 Error indicator system

When activating Simulator "Pediatric LSAT", errors are checked automatically.



2 Error indication results

After the error indication, the following screen shows up. Make sure that all results are normal. If error was detected, contact your local distributor or Kyoto Kagaku with the error code.

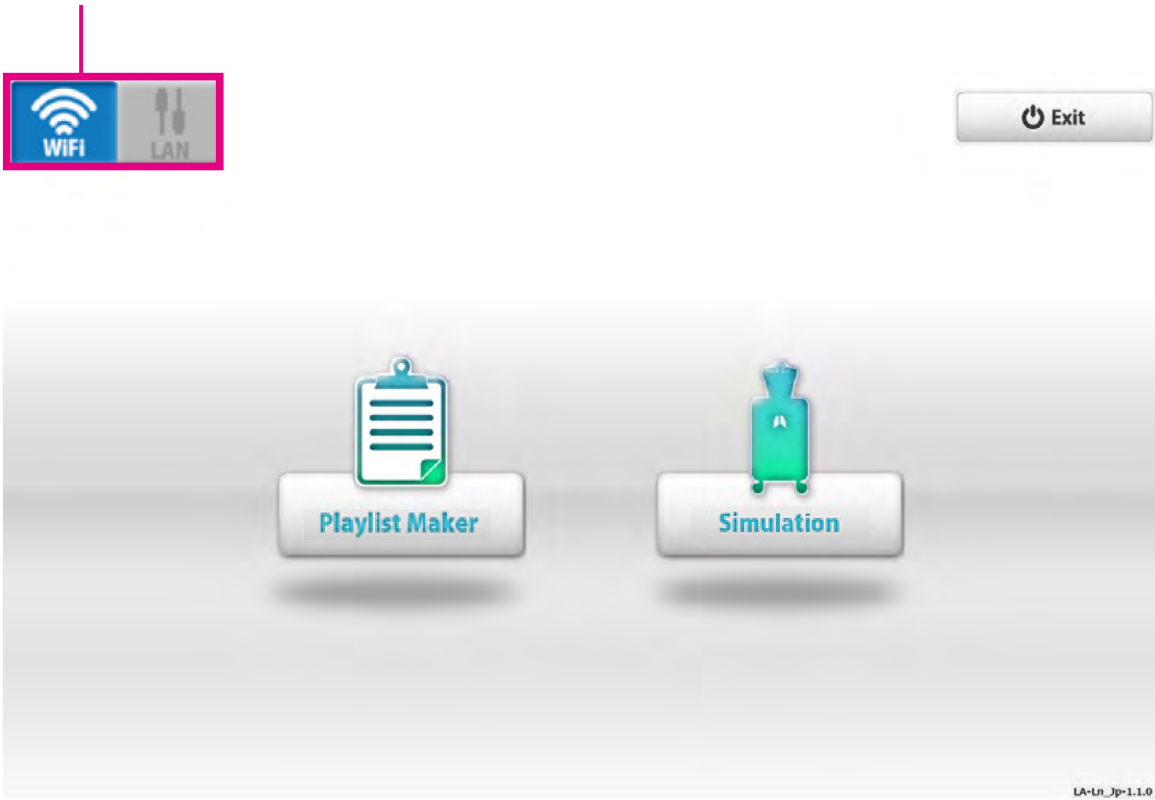


NOTES

Do not operate the control PC while the error indicator system is working.

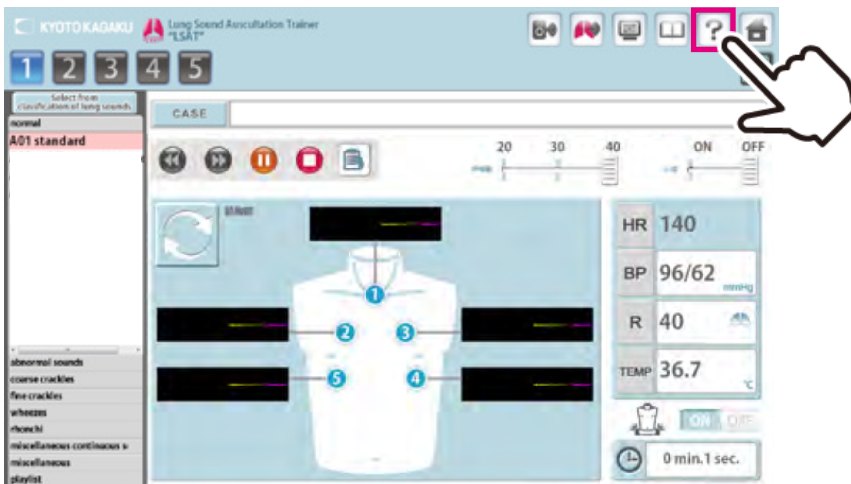
1 Check the connection of wireless systems

Check the icon of the wireless connection. * Default is set to *wireless*.



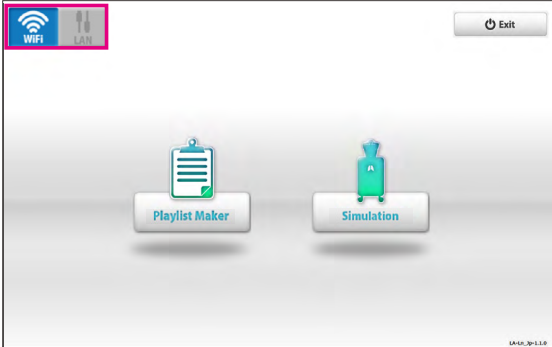
NOTES

The softwares include help menu for how to use the simulator. Tap the help menu for more details which are not described in this manual.



2 Start up simulation software

From top menu, select "Pediatric LSAT Simulation" or "Playlist Maker".



NOTES Please wait until the next page shows up.

Softwares



■ Pediatric LSAT Simulation Software

All functions of Pediatric LSAT are operated by this software.



■ Pediatric LSAT Playlist Maker

"Playlist" of cases can be created.

To create a playlist,

- 1) Use the Playlist Maker. Select cases, set their sequence and running time for each, then name and save the list.
- 2) Save a session as a playlist on Pediatric LSAT Simulation software. In the Playlist maker, data of recorded playlists can be edited and modified.

3 Select units to operate

Tap the units to operate and then tap "OK."



Above image shows the example of five units operation. Only the units connected to the PC appear on the screen.

The button color indicates the status of each unit.



"Blue": The units selected by this PC.



"Green": The units already connected by another PC and not available to this PC.



"Gray": The units unselected.



Active (Power and WIFI are on)



Inactive

1 Simulation Software

Error indication has been completed, the simulation software is ready to begin.

The screenshot shows the 'Simulation Software' interface. At the top, it displays 'KYOTO KAGAKU Lung Sound Auscultation Trainer' and 'Ver. Pnien-1-1.0.3'. The interface includes several key components:

- Unit number:** A row of buttons labeled 1, 2, 3, 4, 5.
- Classification of lung sounds:** A dropdown menu currently set to 'normal'.
- Cases:** A list of sound types including 'abnormal sounds', 'coarse crackles', 'fine crackles', 'wheezes', 'rhonchi', 'miscellaneous continuous sounds', and 'complications'.
- Control buttons:** A set of icons for navigation and control.
- Case name:** A text field containing 'A01 Normal'.
- Volume settings:** Sliders for 'Volume setting of external speaker' and 'Volume setting of respiratory sound'.
- Respiratory rate setting:** A slider set to 40, with 'Heart Sound' ON/OFF toggle.
- Heart rate, Blood pressure, Respiratory rate, Temperature:** Digital readouts showing HR 140, BP 96/62 mmHg, R 40, and TEMP 36.7 °C.
- Light switch (ON/OFF):** A toggle for a light function.
- Time lapse:** A display showing '0 min. 2 sec.' for manual setting.
- Switching:** A button to switch between 'Anterior' and 'Posterior' views of a human torso diagram.
- Switch to display on main monitor screen (ON/OFF):** A toggle for the main monitor display.
- Additional controls:** 'Save to playlist', 'Case information', 'Help menu', and 'Home' buttons.

2 Playlist Maker

The screenshot shows the 'Playlist Maker' interface. It features a 'Case Choice' list on the left and a main playlist table on the right.

Case Choice List:

- norami
- Abnormal
- Coarse Crackles
- Fine Crackles
- Wheezes
- Rhonchi
- F01 rhonchi: trachea/uppe
- F03 rhonchi: trachea/uppe
- F05 rhonchi: with an inspir
- F07 rhonchi: whole thorax
- Miscellaneous Continuous Sounds
- Miscellaneous

Playlist Table:


Name	Content	Time
1	A01 standard	10min
2	A03 mildly strong sounds	20min
3	A05 mildly rapid	Manual
4	F01 rhonchi: trachea/upper area	Manual
5	A01 standard	10min

Additional Features:

- Buttons:** 'Add cases to playlist', 'Open a playlist', 'Create a new playlist', 'Overwrite and save', 'Save', 'Delete a playlist', 'Case explanation', 'Help file', 'Home'.
- Case name and Running time:** Fields for editing the selected case.
- Notes:** A text area for adding notes to the case.
- Navigation:** 'Scroll up playlist', 'Scroll down playlist', 'Copy a case', and 'Delete a case' buttons.

Multi-unit operation

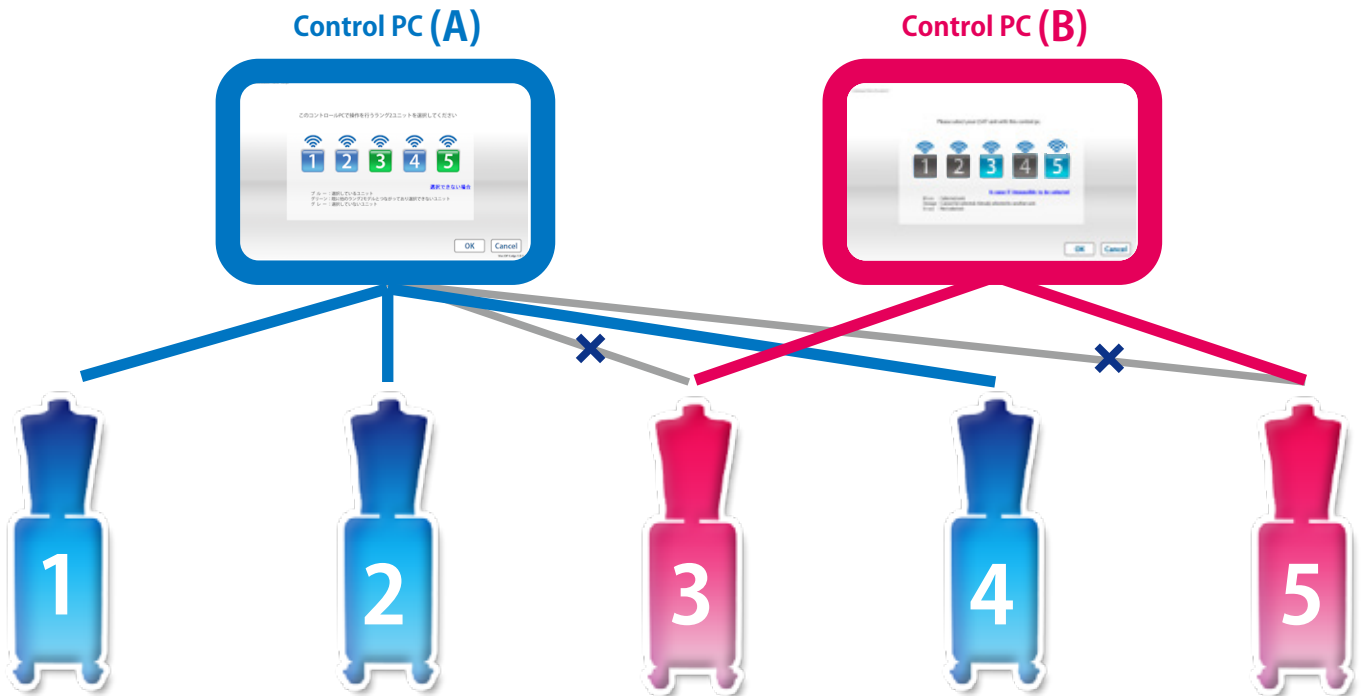
Up to 5 units can be operated by one control PC.

Setting process varies between unison operations and multiple case operations. For details see incorporated HELP menu by tapping on the  mark on the top right of the screen.



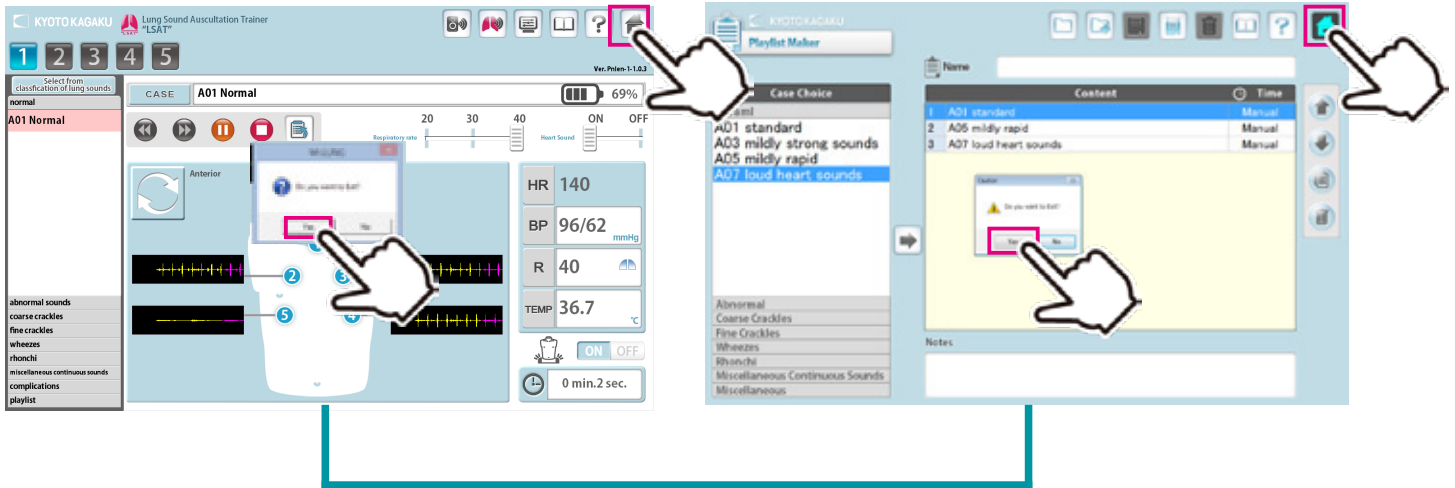
One simulator unit (torso) can be selected by only one control PC at a time. The connections are established in the order of selecting the units.

For example, while units #3 and #5 are selected by control **PC B**, the control **PC A** cannot select these units. To connect them to control **PC A**, these units need to be unselected by control **PC B**.



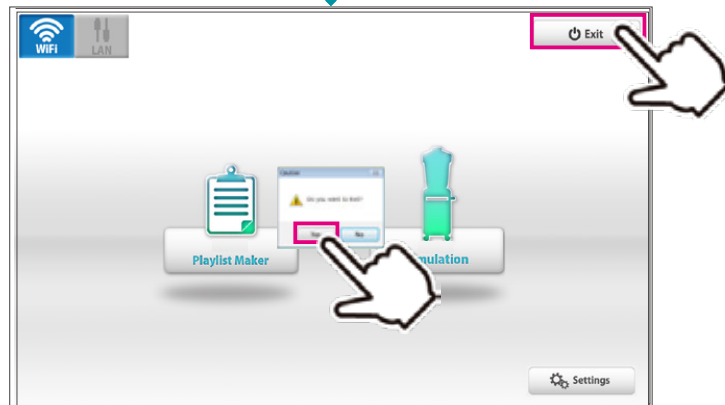
1 Exit software

Tap on the "Home" icon at the right top.
"Do you want to exit?" message appears, select "Yes."



2 Turn off the control PC power

Tap on the "Exit" icon at the top menu.
"Do you want to exit?" message appears, select "Yes."



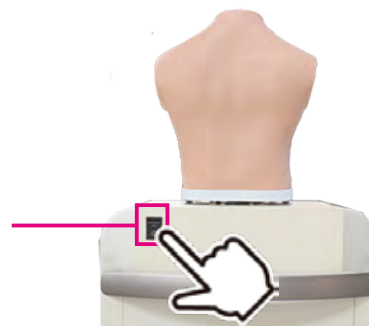
3 Turn off the control system's main power

Turn off control system's main power on the back of unit.

Control system's main power

— : Power is ON

○ : Power is OFF



Cases	Causes	Solutions
Unable to connect with wireless or unstable connection	Network interference occurred.	→ Case: Unable to Boot The Main Unit (→ P.19)
	There are physical obstructions for wireless connection or control PC is too far from the unit.	Clear the obstructions or close the control PC to the unit.
Unable to boot the main unit with wireless connection	Power cable of the unit is not connected.	Connect the power cable.
	The main power of the unit is off.	Turn on the main power of the unit.
	Network interference occurred.	→ Case: Unable to Boot The Main Unit (→ P.19)
	Others	
Unable to select the units which liked to boot	The control PC does not correspond to the unit.	Use the control PC corresponding to the unit.
	The main power of the unit is off	Turn on the main power of the unit.
	Power cable of the unit is not connected.	Connect the power cable.
	Network interference occurred.	→ Case: Unable to Select The Units (→ P.20)
	Others	
The session automatically shuts down with the message of "Connection Error", and then the connection becomes unavailable.	Network interference occurred.	→ Case: The Error Occurs During The Session (→ P.21)
Unable to hear the respiratory sound from the manikin	Volume setting of the respiratory sound is "0"	→ Volume Setting of The Respiratory Sound
	Speaker connection may have problems.	→ Contact Us
Unable to hear the heart sound from the manikin	Volume setting of the heart sound is "0"	→ Volume Setting of The Heart Sound
	Speaker connection may have problems.	→ Contact Us
Unable to hear the sound from the external speaker	Volume setting of the external speaker is "0"	→ Volume Setting of The External Speaker's Sound
	Speaker connection may have problems.	→ Contact Us

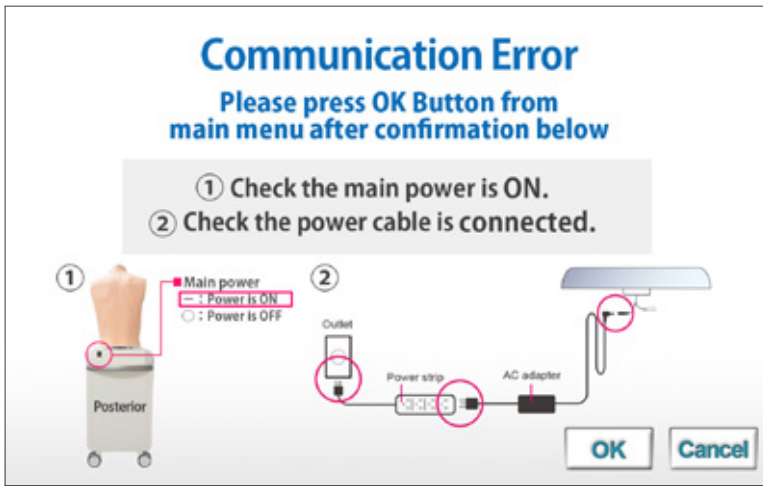
Unable to boot the main unit

Attention

For the multi-unit operation, **be sure the control PC's own main unit is turned on.** The control PC is unable to operate when its own main unit is turned off.

■ Case:

The screen shows the sign below repetitively and does not work despite several trials.

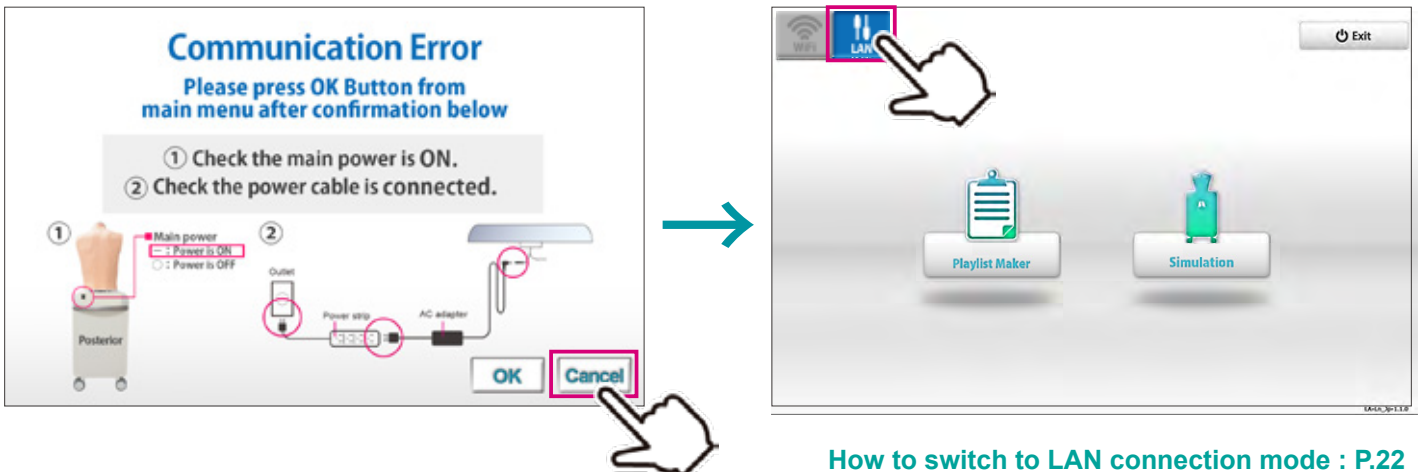


■ Cause and Solution 1:

1. The main units are not connected to power source.
→Connect the cable to power source and turn on the main unit.
2. The main units are not turned on.
→Turn on the main units.
3. Interference from other wireless network
→Follow the solution 2 below.

■ Solution 2:

Tap "Cancel" to go back to the top page and try with LAN connection mode.



How to switch to LAN connection mode : P.22

Unable to select the units

Attention

For the multi-unit operation, **be sure the control PC's own main unit is turned on.** The control PC is unable to operate when its own main unit is turned off.

■ Case:

Units are unable to be selected.



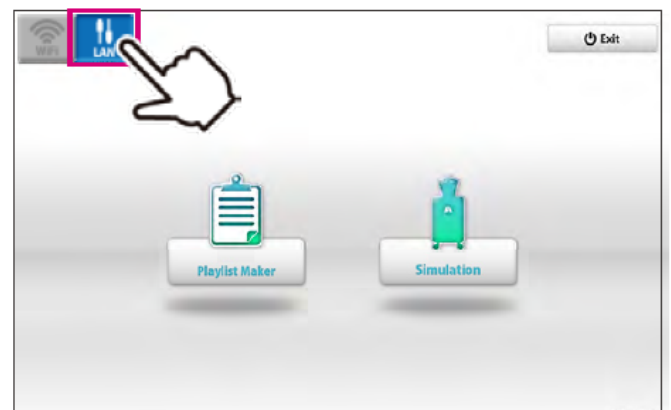
The connection indicator is gray on the unit.

■ Cause and solution:

1. The main units are not connected to power source.
→Connect the cable to power source and turn on the main unit.
2. The main units are not turned on.
→Turn on the main units.
3. Interference from other wireless network
→Follow the solution 2 below.

■ Solution 2:

Tap "Cancel" to go back to the top page and try LAN connection mode.

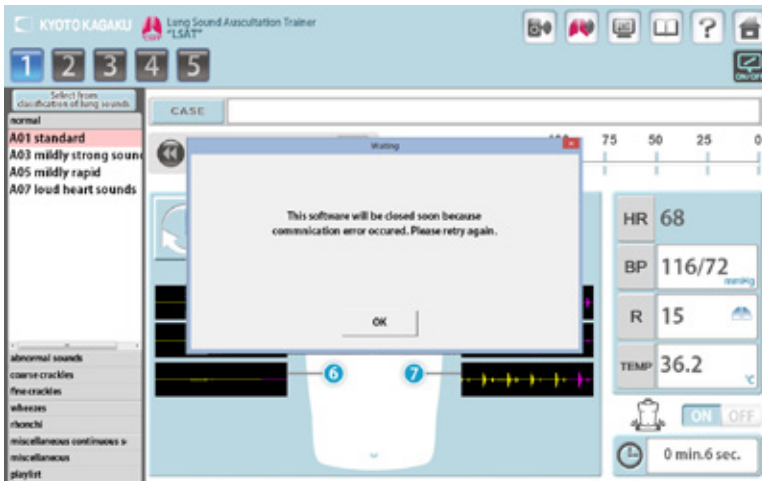


How to switch to LAN connection mode: P.22

Error occurs during the session

■ Case:

The software is automatically closed with the error message below.

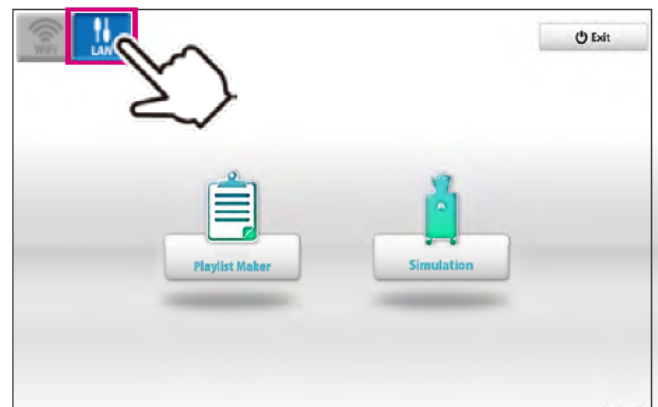


■ Cause:

Wireless network is confused around the models.

■ Solution:

Try LAN connection mode.



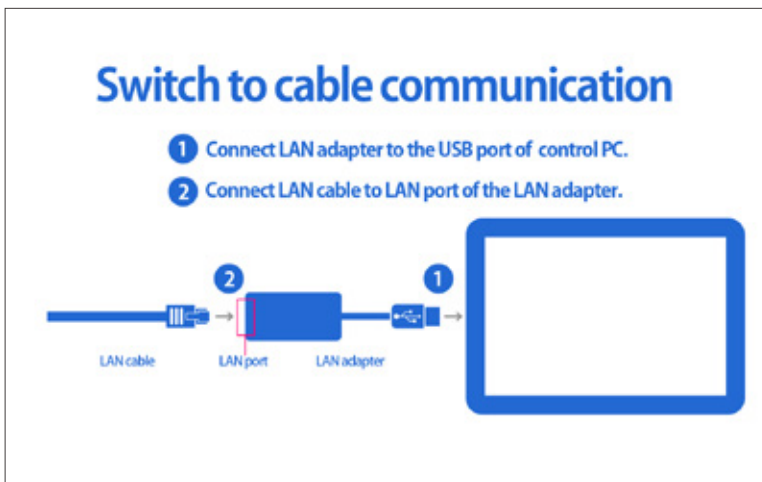
How to switch to LAN connection mode: P.22

Error occurs during the session

- 1 Tap the network icon on left upper display to switch the connection mode.



- 2 Connect the control PC to the LAN cable from the main unit .



Attention

Regarding multi-unit operation with the LAN connection mode, check the attached paper.



Caution

Do not mark on the model and its components with a pen or leave printed materials in contact with the model surface. Ink marks on the model are not removable.

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