OPERATOR'S MANUAL

HeartOn T16

AED Trainer

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Tables

Configuration of AED Trainer

The following table identifies AED trainer configurations and how they are indicated. The reference number and serial number are located on the back of the AED trainer.

Model	Description
HeartOn T16-D	Chest Type Action Icon Switchable between Semi-Automatic and Fully-Automatic
HeartOn T16-G	Icon Type Action Icon Switchable between Semi-Automatic and Fully-Automatic

Features of AED Trainer

- The AED trainer provides simulated shock delivery. It has no high-voltage capabilities, ensuring safety during training.
- The AED trainer can be used with the infrared remote control. The remote control gives the instructor the ability to alter training scenarios while in progress, to test student response.
- The AED trainer is pre-configured with 10 standard scenarios that simulate realistic sudden cardiac arrest episodes and 3 custom scenarios which can be changed by user.
- The Semi-Automatic or Fully-Automatic can be switched by pressing the MEDIANA OPTION button on the remote control.
- The shockable rhythm or non-shockable rhythm can be simulated immediately by using the remote control.
- The AED trainer software lets user configure the custom scenario.
- The micro SD card is required to change the custom scenarios.

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Description of the AED Trainer

Top and Right Panel Components

<Chest Type>   <Icon Type>
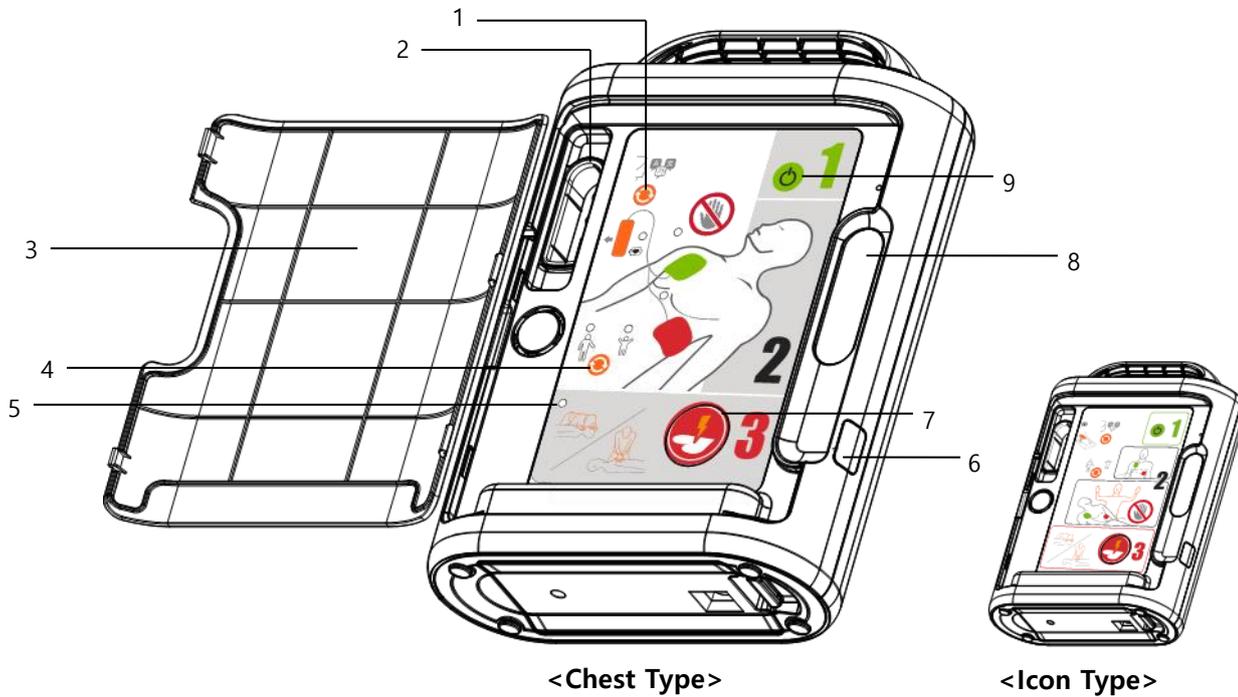
Figure 1. HeartOn T16: Top and Right Panel Components

Rear Panel Components

<With a Battery>   <Without a Battery>
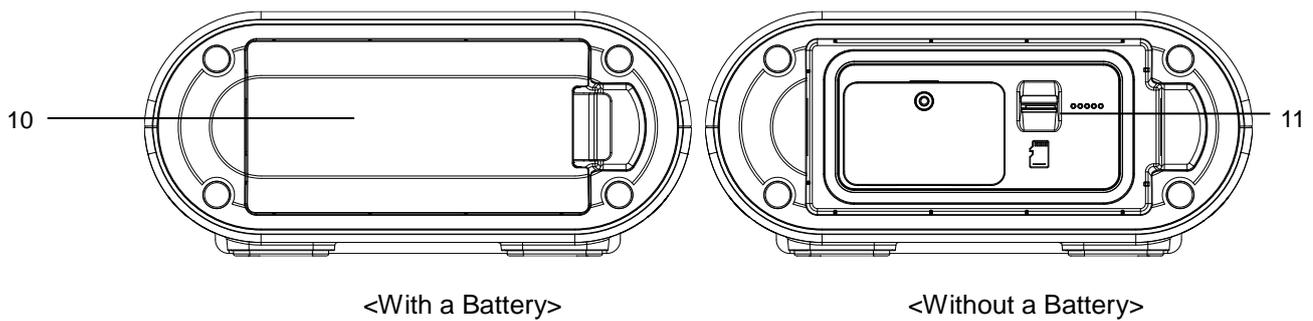
Figure 2. HeartOn T16: Rear Panel Components

Table 1. HeartOn T16 Panel Components

1	Select language button	User can select the desired language among three different languages by pushing the select language button.
2	Pad connector	Pad connector links the pads.
3	Cover	Cover is used to protect the action icon, the patient mode switch button, the power button, the select language button and the shock button.
4	Patient mode switch button	After user distinguish the patient according to patient type, select the patient mode between adult and pediatric (infant-child) patient mode by pushing the patient mode switch button.
5	Indicator LED	The indicator LED flashes red LED near the relevant action icon.
6	Infrared communication port	Infrared communication port is used to communicate with the remote control.
7	Shock button	When preparation for electric shock is completed, the shock button will flash. In Semi-Automatic mode, the AED trainer delivers the shock if the shock button is pressed.
8	Status indicator	Status indicator displays the AED status, the temperature status, the battery status and the PADS status.
9	Power button	Power button is used to On/Off the power.
10	Battery charge pack	To charge the battery by using DC adapter.
11	SD card port	Update the custom scenarios and software.

Action Icon
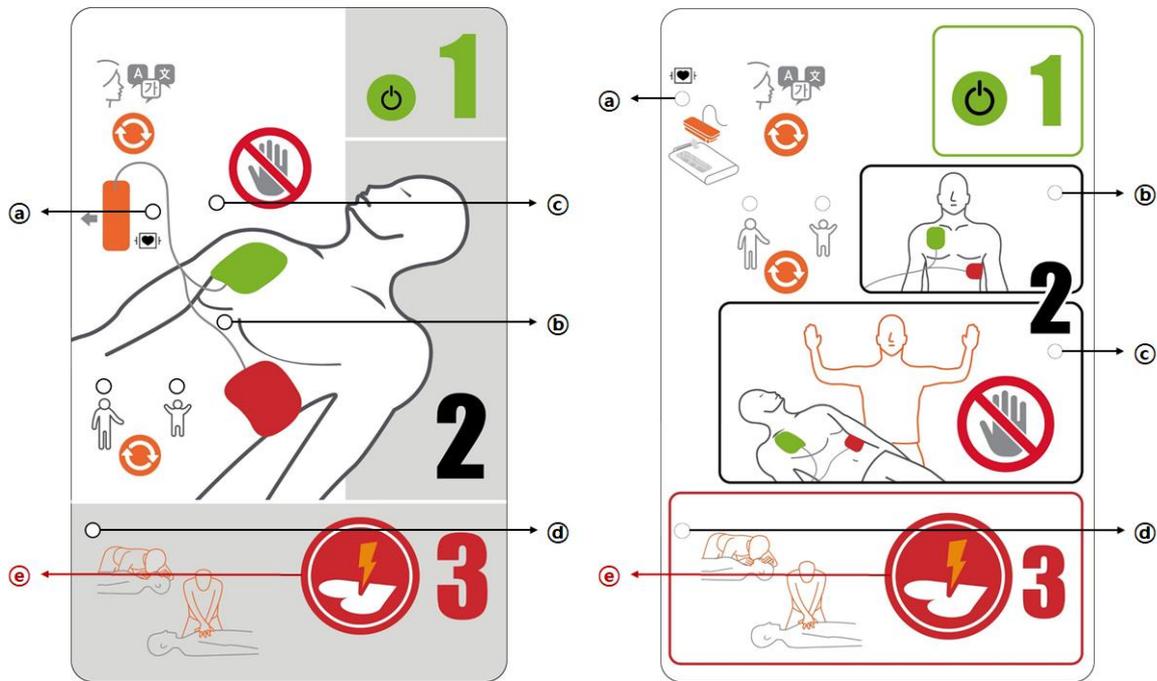
Figure 3. HeartOn T16 Action Icon (Left: Chest type, Right: Icon type)

Table 2. HeartOn T16 Voice Prompt

Action icon	Voice prompt
ⓐ	**If the pad is not inserted, you will hear the voice prompt:** • "Plug in pads. Insert connector firmly." *Note: If the pad is disconnected during CPR, the AED Trainer move to the pads disconnected icon after completing the CPR*
ⓑ	• "Remove clothes from the patient's chest. Place pad exactly as shown in the picture. Press pads firmly to patient's bare chest."
ⓒ	**Shockable Rhythm Scenario:** • "Do not touch the patient." • "Analyzing and Charging" • "Shock advised." **Non-Shockable Rhythm Sceanario:** • "Do not touch the patient." • "Analyzing and Charging" • "No shock advised.
ⓒ, ⓔ	**Semi-Automatic:** • "Press the flashing button now." • "Shock delivered." or • "Press the flashing button now." • "Shock button not pressed."

Action icon	Voice prompt
	Fully-Automatic: • "Shock will be delivered." • "Do not touch the patient." • "Three, Two, One." • "Shock delivered." or "Shock cancelled."
ⓓ	**When the electric shock is delivered, you will hear the voice prompts:** (1) CPR Feedback option is disabled: • "It is safe to touch the patient." • "Begin CPR." (2) CPR Feedback option is enabled: • "It is safe to touch the patient." • "Place CPR device in center of patient's chest and begin CPR." **When the electric shock is not delivered, you will hear the voice prompts:** (1) CPR Feedback option is disabled: • "It is safe to touch the patient." • "If needed begin CPR." (2) CPR Feedback option is enabled: • "It is safe to touch the patient." • "If needed, Place CPR device in center of patient's chest and begin CPR."

Remote Control

Figure 4. AED Trainer Remote Control

Table 3. AED Trainer Remote Control

Symbols	Description
	The LED flashes when the button is pressed.
	Select one of the 10 standard scenarios and play it.
	Select one of 3 custom scenarios and play it.
	Adjust speaker volume.
	Shockable rhythm scenario play button
	Non-shockable rhythm scenario play button
	Poor pad condition recovery button
	Shock cancellation condition button
	Poor pad condition button
	Not used in HeartOn T16
	Battery condition change button
	Error condition button
	Resumption button
	Freeze button
	MEDIANA OPTION button for Semi-Automatic and Fully-Automatic switching.
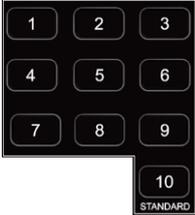
Battery Operation

Note: The AED trainer and battery charge pack should be combined to operate the AED trainer.

Charging the Battery

To charge the internal rechargeable battery of the AED trainer, follow the procedures below.

1. Connect the DC adapter to the DC port.
2. Plug the male connector end of the DC adapter into the power outlet.
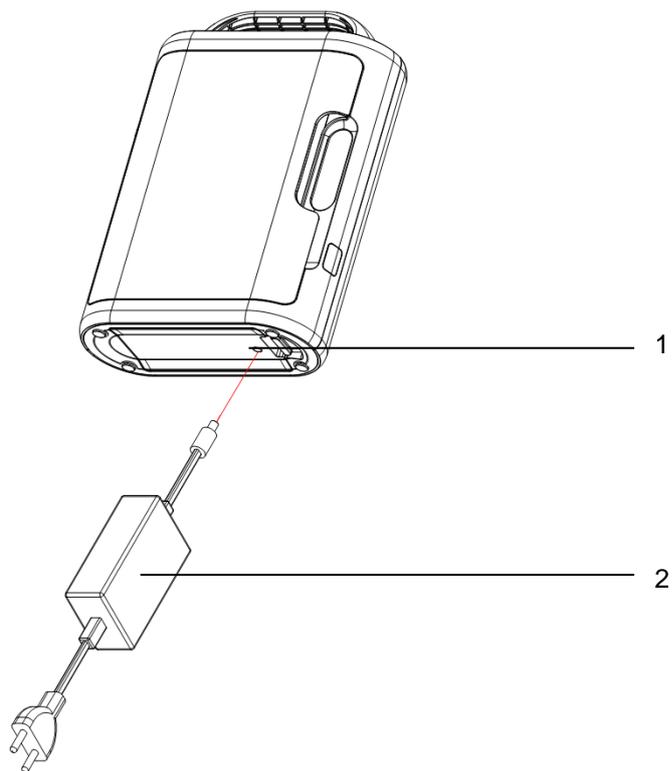
1. DC port
2. DC adapter

Figure 5. DC Adapter Connection

Battery Status Indication

The battery status icon in the status indicator indicates the battery condition. Refer to Table 4.

Table 4. The AED Trainer Battery Status Icon

Battery Status Icons	Indication	Battery Status
🔋	Battery status icon flashes	Fully charged with DC adapter connected
🔋🔋	Constantly display	In use (Not fully charged)
🔋	Battery status icon flashes	Low battery

Note: The fully charged battery will provide about 10 hours or more of operating time.

Note: If the battery is fully charged and the battery status icon flashes, you can disconnect the DC adapter from the AED trainer since the battery charge is completed.

Note: When the low battery icon flashes, the battery must be charged or connected to DC adapter to avoid any unintended power off.

Using the AED Trainer

The AED trainer provides 10 standard scenarios that simulate realistic sudden cardiac arrest episodes and 3 custom scenarios which can be changed by user.

Operating the AED Trainer

1. Press the power button on the AED trainer to power on.
2. If the AED trainer is turned on, the Shockable Rhythm scenario is started automatically.
3. To change the scenario during other scenario simulation, press the desired scenario number on the remote control then a selected scenario will be started automatically.
4. The volume can be controlled by 10 steps. The last setting will be stored and maintained even if the AED trainer has been turned off.

Function of remote control

The shockable rhythm scenario is simulated to deliver the shock and perform CPR.

The non-shockable rhythm is simulated. The CPR scenario is simulated without shock delivery.

The poor pad condition is recovered to the good pad condition.

The shock cancellation condition is simulated. The shock can be cancelled during analyzing the rhythm (Shockable Rhythm or Non-Shockable Rhythm) or delivering shock step by pressing this button.

The poor pad condition is simulated.

Not used in HeartOn T16

The battery condition is converted. When the AED trainer displays real battery level on the status indicator, the low battery condition is simulated by pressing this button. When the AED trainer simulates the low battery condition, the critical low battery condition is simulated by pressing this button. When the AED trainer simulates the critical low battery condition, the real battery level is displayed by pressing this button. The default setting is displaying real battery level.

The error condition is simulated. The AED trainer is operates in normal conditions, the temperature status indicator is displayed by pressing this button to indicate that the temperatures is outrange. When the temperature status indicator is displayed, the AED trainer failure condition is simulated by pressing this button. When the AED trainer simulates failure condition, the AED trainer back to the normal condition by pressing this button.

Resume the audible activity from the point at which it was paused.

Pause all audible activity in the AED trainer.

Control the electric shock. The Semi-Automatic or Fully-Automatic can be switched by pressing the MEDIANA OPTION button on the remote control.

Standard Scenario

The standard scenario is configured with 10 scenarios based on basic scenario; Shockable Rhythm and Non-Shockable Rhythm and can be selected by using the remote control. Refer to Table 5 and Table 6 for more information about each scenario.

Table 5. Basic Scenario

Step	Shockable Rhythm Scenario	Non-Shockable Rhythm Scenario
1	Checking connection of pads	Checking connection of pads
2	Confirming the patient mode ("Adult mode" or "Pediatric mode")	Confirming the patient mode ("Adult mode" or "Pediatric mode")
3	Attaching pad	Attaching pad
4	Playing the Shockable Rhythm Scenario	Playing the Non-Shockable Rhythm Scenario
5	Electric shock	CPR
6	CPR	

Note: If the final step is completed in each scenario, corresponding scenario is played again from the beginning.

Note: When the pads are not connected during scenario simulation, the audio prompt sounds repeatedly to ask the pads is inserted.

Note: If replacing pads condition is simulated, the voice prompt, "Replace pads.", is played before step two.

Note: If the low battery condition is simulated or battery is low in real, the voice prompt, "Low battery, insert fresh battery", is played.

Note: If the pads are inserted already before step one, it starts right from step two.

Note: Each time the patient mode switch button is pressed, except during CPR, users can hear the voice prompt according to the selected patient mode; "Adult mode" or "Pediatric mode"

Note: After step three voice prompt, step four is started in about eight seconds later to attach the pads to the dummy.

Note: If step three (attaching the pads) is done before in a same scenario, step three is skipped and step four is played.

Note: If user want to play step three again in a same scenario, enter the scenario once again by using remote control. (In this case, scenario will be started again from the first step), or disconnect the pads to the AED trainer and wait for the voice prompt; "Plug in pads. Insert connector firmly." After that voice prompt comes out and the pads are connected to the AED trainer, the AED trainer will play step two and three in order.

Note: If the pads connector is disconnected to the AED trainer or the patient mode is changed during the step four or five, the voice prompt, "Shock cancelled", is played.

Note: In Semi-Automatic mode, if the shock button is not pressed for more than 20 seconds in the step five, the step six will be played.

Note: The AED trainer instructs CPR depending on the setting, default value is 5 cycles of CPR, each cycle includes 30 times of chest compression and 2 times of rescue breaths. CPR performance option can be changed by using the AED trainer software.

Table 6. Standard Scenario

Standard Scenario	Description
1	A. Shockable Rhythm Scenario x 1 B. Non-Shockable Rhythm Scenario x 1
2	A. Shockable Rhythm Scenario x 3 B. Non-Shockable Rhythm Scenario x 1
3	*Poor pad condition A. Shockable Rhythm Scenario x 1 B. Non-Shockable Rhythm Scenario x 1
4	A. Shockable Rhythm Scenario x 1 B. Non-Shockable Rhythm Scenario x 1 C. Shockable Rhythm Scenario x 1
5	A. Non-Shockable Rhythm Scenario x 1
6	A. Shockable Rhythm Scenario x 2 B. Non-Shockable Rhythm Scenario x 1
7	A. Shockable Rhythm Scenario x 2 B. Non-Shockable Rhythm Scenario x 2 C. Shockable Rhythm Scenario x 1
8	*Poor pad condition A. Shockable Rhythm Scenario x 2 B. Non-Shockable Rhythm Scenario x 1
9	A. Shockable Rhythm Scenario x 1
10	*Low battery condition A. Shockable Rhythm Scenario x 1 B. During A, the shock cancellation condition is simulated at least one time. C. Non-Shockable Rhythm Scenario x 1

Note: If the final step is completed in each scenario, corresponding scenario is played again from A.

Custom Scenario

To change the scenario configuration, the user can customize the scenario of the AED trainer by using the AED trainer software on a PC. When the AED trainer is initially turned on, the custom scenario is set to the default custom scenario as Table 7.

Table 7. Default Custom Scenario

Custom Scenario	Description
1	A. Shockable Rhythm Scenario x 4 B. Non-Shockable Rhythm Scenario x 1
2	*Poor pad condition *CPR before A A. Shockable Rhythm Scenario x 2 B. Non-Shockable Rhythm Scenario x 1 C. During B, the shock cancellation condition is simulated at least one time.
3	* Low battery condition A. Shockable Rhythm Scenario x 2 B. Non-Shockable Rhythm Scenario x 1 C. Shockable Rhythm Scenario x 2

Note: If the final step is completed in each scenario, corresponding scenario is played again from A.

Preparation for changing the custom scenario

The following items are required to change the custom scenario.

1. Micro SD card
2. AED trainer software (custom scenario program: for HeartOn T16)
3. PC including as below specifications or more:
   - Windows XP(SP3)
   - Pentium 1 GHz
   - 512 MB RAM
   - USB 2.0 connector or Micro SD card slot

Note: The PC is not supplied by Mediana.

Note: The micro SD card and the AED trainer software can be supplied by the local distributor.

Changing the custom scenario

1. Open the AED trainer software, "HeartOn T16 Update File Builder.exe", to change the custom scenario.
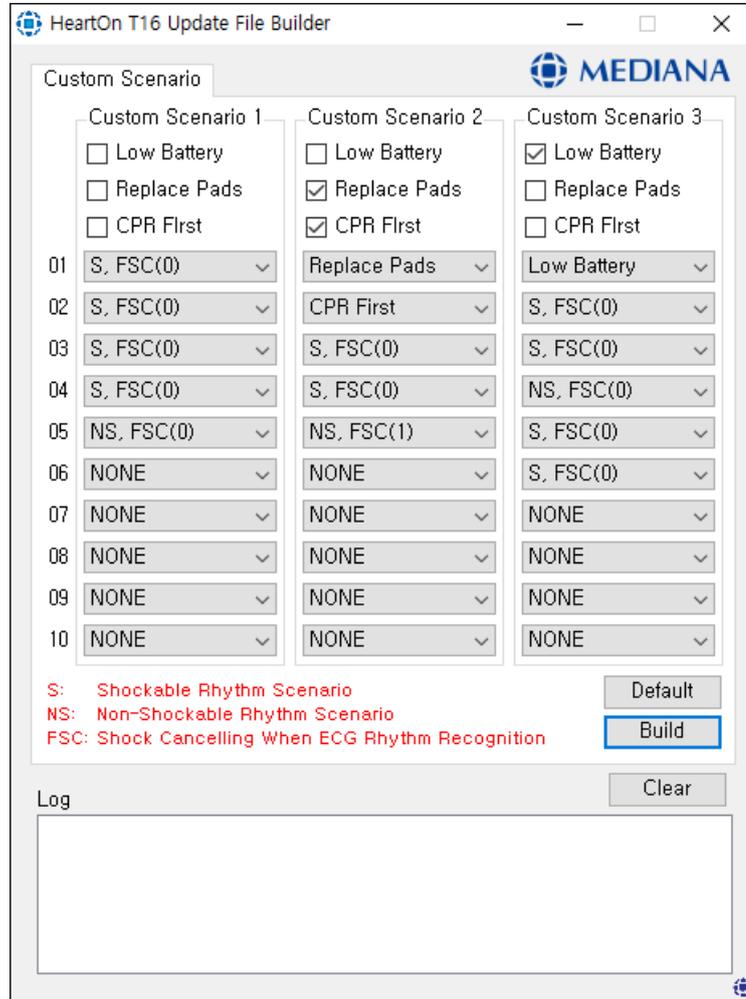
Figure 6. HeartOn T16 Update File Builder Window

2. Click the **Custom Scenario Tab** and set the Custom Scenario value.
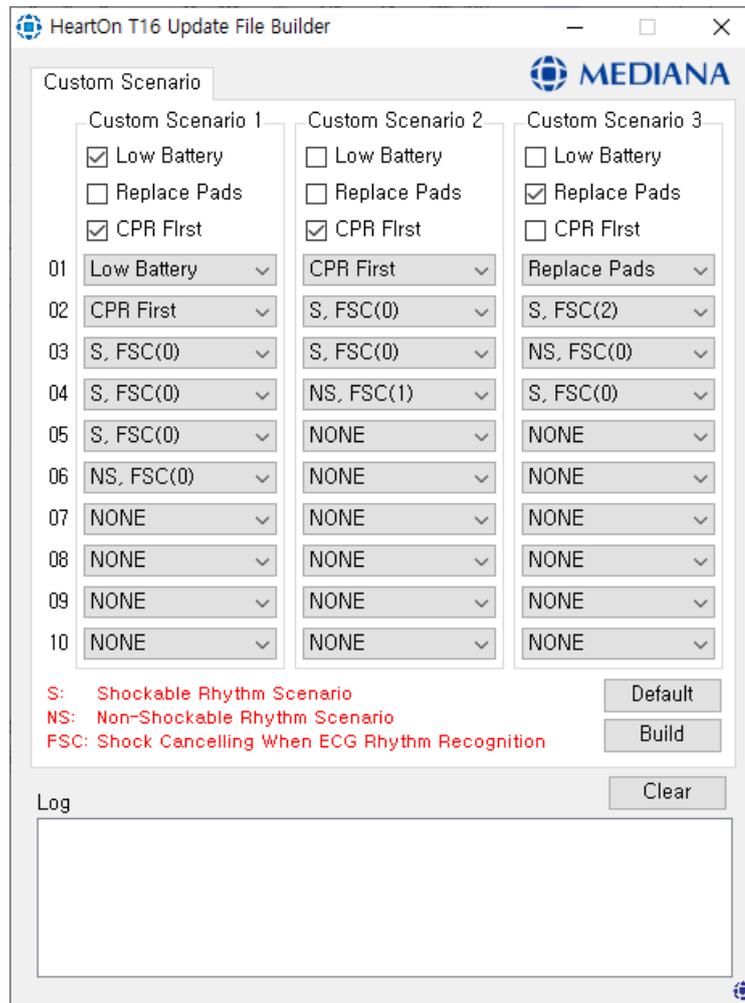
Figure 7. Custom Scenario Setting Window 1

3. Click the **Build Button** and confirm the message, "Custom scenario update file successfully create.", is displayed.
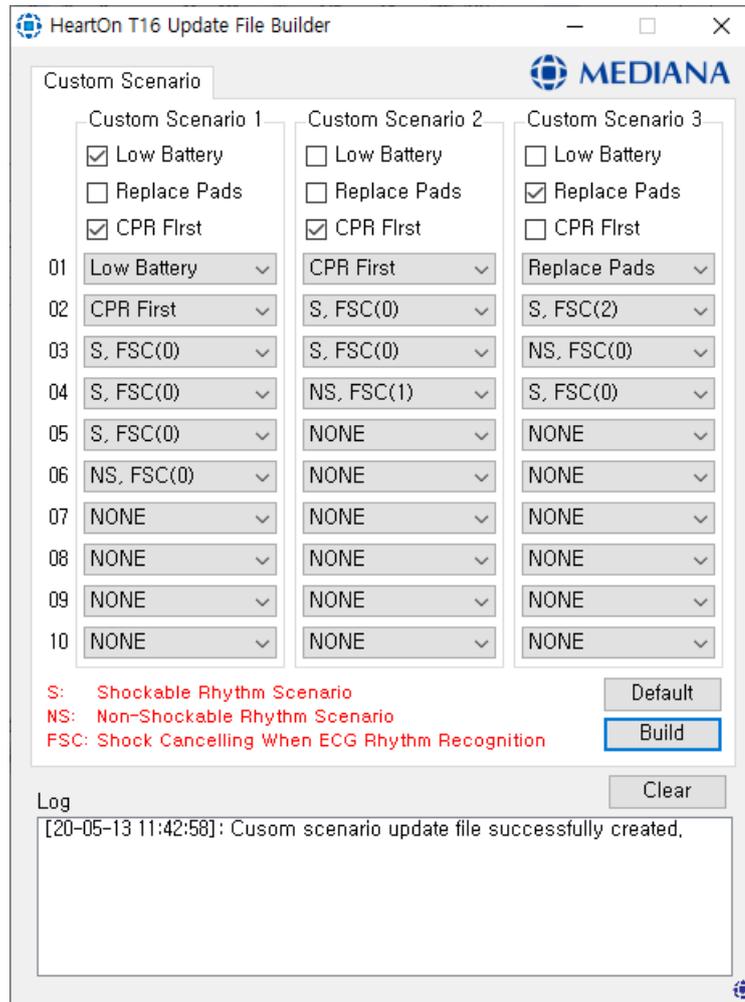
Figure 8. Custom Scenario Setting Window 2

4. Confirm the "T16 Custom Scenario Update.MUF" file is created in the path where the "HeartOn T16 Update File Builder.exe" file is located.
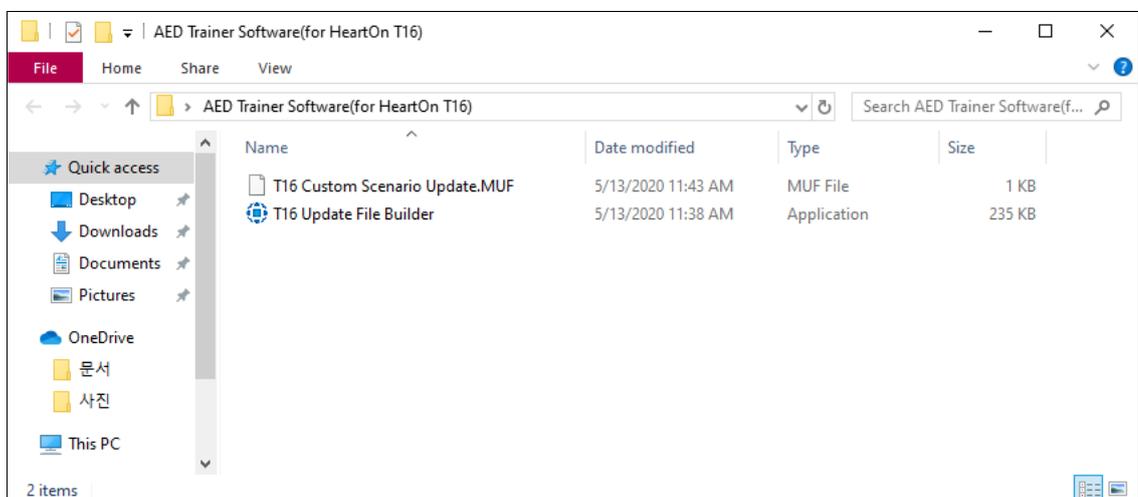
Figure 9. "T16 Custom Scenario Update.MUF" file

5. Connect the micro SD card to the PC, create the "Update" folder in the top level directory and copy the T16 Custom Scenario Update.MUF" file in the "Update" folder.
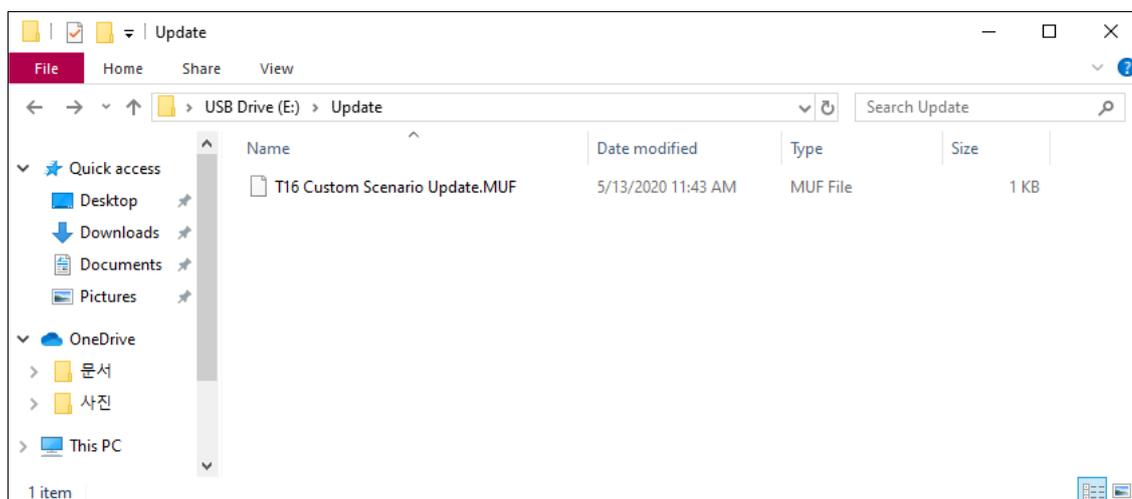
Figure 10. Connecting the micro SD card

6. Insert the micro SD card to the AED trainer refer to Figure 2 and Table 1, and turn on the AED trainer. If all procedures are conducted properly, the AED trainer will automatically perform the update.
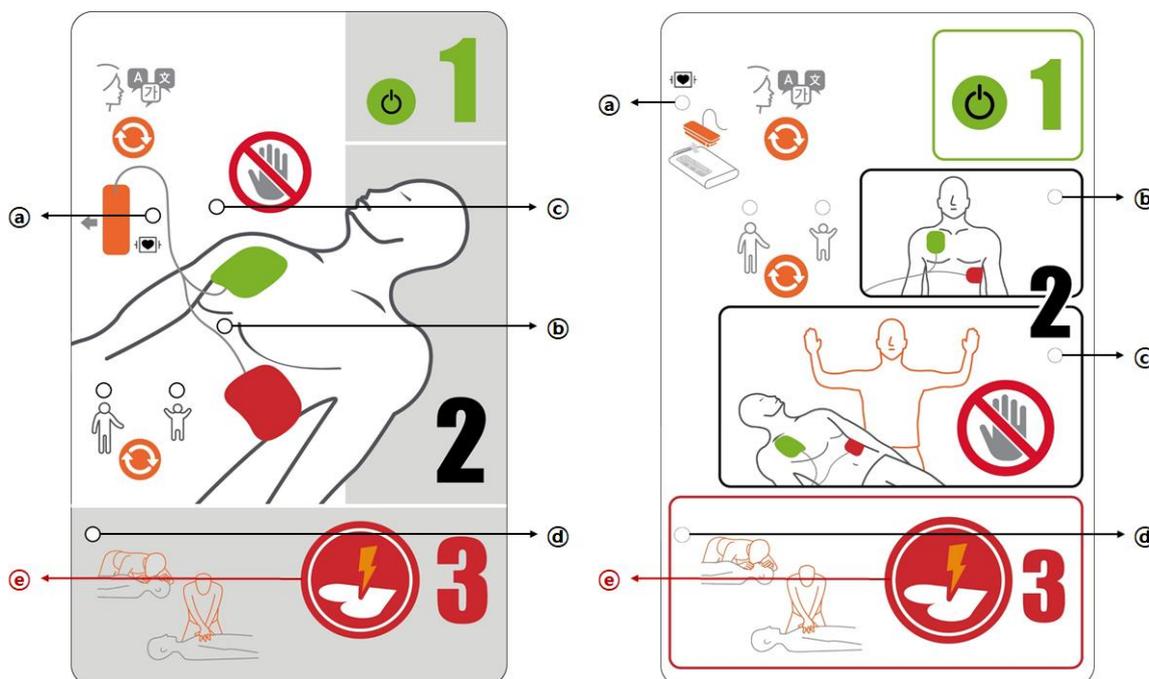
Figure 11. HeartOn T16 Action Icon (Left: Chest type, Right: Icon type)

Note: The AED trainer flashes the action icon ⓑ~ⓔ twice in one second interval to inform the user update is ongoing.

Note: The AED trainer blinks the action icon ⓑ~ⓔ and beeps 4 times to inform the user update is completed.

Note: When the update is completed, the update file in the micro SD card is deleted and the AED trainer is turned off automatically.

7. When the update is completed, turn on the AED trainer and then confirm the setting of the custom scenario by pressing the *Play Button* on the remote control.

Figure 12. Custom Scenario Buttons

CPR Feedback Module

CPR Feedback Module helps the user can perform CPR effectively when the CPR Feedback Module is connected to the AED trainer. In case of using the CPR Feedback Module, follow the steps below to conduct CPR.

1. Refer to Figure 13, connect the pads connector to the CPR Feedback Module.
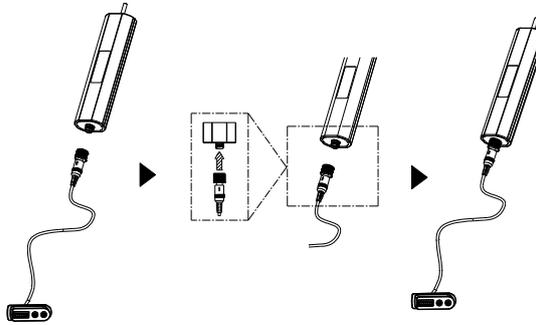
Figure 13. Connecting the CPR Feedback Module

2. Place the CPR Feedback Module in the center of the dummy's chest as shown in Figure 14.
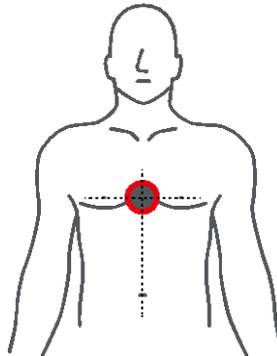
Figure 14. Place the CPR Feedback Module

3. Connect the pads connector connected to the CPR Feedback Module to the AED Trainer.
4. If the AED trainer instructs CPR, place hands on the center of the CPR Feedback Module and press it according to beep sound.
5. Perform the CPR according to the voice prompt of the AED trainer.

   In case of CPR with the CPR Feedback Module, depending on the pressing speed and strength user will hear the voice prompts:
   - "Press slower."
     CPR feedback: compression rate is too fast. Do chest compression in accordance with the beep sound.
   - "Press faster."
     CPR feedback: compression rate is too slow. Do chest compression in accordance with the beep sound.
   - "Press softer."
     CPR feedback: compression depth is too deep. Decrease the strength.
   - "Press harder."
     CPR feedback: compression depth is too shallow. Increase the strength.

In case of CPR with the CPR Feedback Module, depending on the pressing speed and strength you will hear the complex voice prompts:

- "Press slower and softer."
  CPR feedback: compression rate is too fast and compression depth is too deep. Do chest compression in accordance with the beep sound and decrease the strength.
- "Press slower and harder."
  CPR feedback: compression rate is too fast and compression depth is too shallow. Do chest compression in accordance with the beep sound and increase the strength.
- "Press faster and softer."
  CPR feedback: compression rate is too slow and compression depth is too deep. Do chest compression in accordance with the beep sound and decrease the strength.
- "Press faster and harder."
  CPR feedback: compression rate is too slow and compression depth is too shallow. Do chest compression in accordance with the beep sound and increase the strength.

In case of CPR with the CPR Feedback Module, if the compression rate is not constant you will hear the voice prompts:

- "Press consistently."
  CPR feedback: compression rate is no consistency and compression depth is no consistency. Maintain the pressing speed and strength consistently.

In case of CPR with the CPR Feedback Module, if the chest compression status is well you will hear the voice prompts:

- "Good compressions."
  CPR feedback: compression rate is good and compression depth is good. Keep the pressing speed and strength.

In case of CPR with the CPR Feedback Module, if the user does not perform the CPR using CPR Feedback Module even though the AED trainer instructs to perform the CPR, you will hear the voice prompts:

- "Place CPR device in center of patient's chest and begin CPR."

*Note: It is required the extra pads connector for CPR Feedback to use the CPR Feedback Module. For more information, refer to the **List of Components**.*

Maintenance

To clean the AED trainer, wipe the AED trainer with a soft cloth that has been dampened by one of the following:

- Soapy water
- 70% Isopropyl alcohol

Do not immerse any part of the AED trainer in water or any type of fluid. Contact with fluids may seriously damage the device or cause fire or shock hazard.

Do not clean the AED trainer with abrasive materials, cleaners or solvents.

Specification

Characteristic

- Name: AED (Automatic External Defibrillator) Trainer
- Model: HeartOn T16-D, HeartOn T16-G
- Power
  1) DC 10.8V / 3400mAh, 3cell Li-ion rechargeable Battery
  2) DC 15V / 1500mA, DC adapter
- Static Current : < 5uA
- Maximum Current : < 500mA
- Size: 200mm × 286.5mm × 90mm
- Weight: 1.3kg (including the battery, excluding the pads)

Environmental Conditions

Operation
- Temperature: 0 to 43°C (32 to 109.4°F)
- Relative Humidity: 5 to 95% Non-condensing
- Altitude: 0 to 4,575 m

Storage
- Temperature: -20 to 60°C (-4 to 140°F)
- Relative Humidity: 5 to 95% Non-condensing
- Altitude: 0 to 12,192 m

Remote control
- Power: DC 3V / Coin cell battery
- Static Current : < 5uA
- Maximum Current : < 10mA

List of Components

Standard Accessories	Qty
HeartOn T16 (including internal battery)	1
Remote Control	1
Training pads cable (excluding the CPR Feedback)	1
Training Pads (can be used about 100 times)	1
Operator's Manual	1
DC Adapter	1
Optional Accessories	**Qty**
Micro SD card	1
AED Trainer Software	1
CPR Feedback Module	1
Training pads cable (including the CPR Feedback)	1
Soft Carry Case (Nylon Bag)	1