

EDUCATIONAL MEDICAL SIMULATION DEVICE

Simulation Defibrillator

User Manual

Educational Digital Simulation Defibrillator — A Wired Paddle System for the Safe Teaching of Defibrillation, Cardioversion and Pacing Skills in Advanced Life Support Training



Contents

1 General Overview	1
1.1 About the Product	1
1.2 Key Features	1
2 Safety Warnings	2
Safety Symbols	2
Critical Warnings	2
Electrical and Mechanical Safety	2
3 Box Contents	3
4 Device Overview	3
5 Technical Specifications	4
5.1 General	4
5.2 Battery and Charging	4
6 Instructions for Use	5
6.1 Power On / Off	5
6.2 Patient Monitor Interface	5
6.3 LED Status Indicators	6
6.4 Wireless Connection	6
6.5 Defibrillation Workflow	7
7 Charging and Battery	10
8 Maintenance and Cleaning	10
9 Troubleshooting	11
10 Technical Support	11

1. General Overview

1.1 About the Product

The **SimClever Simulation Defibrillator** is an educational device designed for the safe teaching of defibrillation, synchronized cardioversion and external pacing skills in a simulation environment during advanced life support training. The device consists of a defibrillator main unit and an Apex / Sternum paddle pair connected to it by cable. The Patient Monitor is sold separately as a product that works together with the defibrillator and provides the system's visual interface. The device does NOT generate real electrical energy (shock); all charge, discharge, cancel and pacing actions are simulated visually and audibly on the Patient Monitor.

1.2 Key Features

- ✓ Fully functional simulation defibrillator that works together with the Patient Monitor (Patient Monitor sold separately)
- ✓ Wired Apex / Sternum paddle pair — yellow charge and red discharge buttons
- ✓ Manual defibrillation, synchronized cardioversion (SYNC) and external pacing (PACE) modes
- ✓ Adjustable energy level (J) and pacing rate (ppm)
- ✓ Dual-safety discharge: a discharge is simulated when the red buttons and the pressure buttons under the paddles are triggered at the same time
- ✓ Safe cancel: the charge is dumped when both red buttons are pressed simultaneously without pressing the paddles onto the manikin
- ✓ Wireless communication with the Patient Monitor — range up to 30 meters in an unobstructed environment
- ✓ Delivers no real electricity — for training and simulation purposes only
- ✓ Built-in rechargeable battery; more than 12 hours of continuous use on a full charge
- ✓ USB Type-C charging input (compatible with a 5 V / 1 A power adapter)

2. Safety Warnings

Safety Symbols

The table below summarizes the meanings of the safety symbols used on the product label and in this manual.

Symbol	Meaning	Description
CE	CE Conformity Mark	Complies with European Union safety and health requirements.
	Read the User Manual	Read the entire manual before using the device.
	General Warning	Pay attention to conditions that may cause injury or device damage.
	Do Not Dispose of with Household Waste	Hand it in at a separate collection point as electronic waste.
	Manufacturer	RISE – SimClever Education, Rize / TÜRKİYE.

Symbol	Meaning	Description
	Operating Temperature	Use the device within the 21–50 °C range.
	Keep Dry	Do not immerse the device and paddle surfaces in water; protect them from moisture.
	Indoor Use Only	Do not use outdoors or in wet environments.
	Rechargeable Battery	The device contains a rechargeable battery. Do not puncture, crush or throw it into fire.
	USB Type-C Charging Input	Use only a 5 V / 1 A approved power source.
	Not for Clinical Use	For simulation training purposes only; cannot be used on real patients.
	Wireless Connection	The device uses a wireless connection between the paddles and the Patient Monitor.

Critical Warnings

CRITICAL WARNING

- This device is a simulation defibrillator and does not, under any circumstances, generate real electrical energy (shock). It is designed for training, simulation and demonstration purposes only.
- The device is not a medical diagnostic or treatment tool. It does not provide direct advice for any medical condition and does not replace professional medical care.
- DO NOT USE it in medical applications outside simulation training, on real patients, or in an actual cardiac arrest event.
- Do not apply the paddle surfaces to a real patient's chest wall; the device is designed to be used on a training manikin.
- Real patient care must be performed using appropriate medical devices and procedures.

Electrical and Mechanical Safety

WARNING

- Charge the device only with a 5 V / 1 A approved USB Type-C power source. Do not exceed the specified values.
- Make sure the device and paddles do not overheat during charging.
- Do not leave the device in excessively hot or cold environments. The optimum operating temperature is between 21–50 °C.
- Do not make permanent markings on the paddle surfaces; the APEX and STERNUM labels are used as a reference for training accuracy.
- Do not drop the device; do not carry the paddles by hanging them from the connection cable.

3. Box Contents

#	Item	Qty
1	Simulation Defibrillator Main Unit	1
2	Wired Paddle Pair (APEX + STERNUM, with connection cable)	1
3	Red Carrying Case (with right and left compartments)	1
4	USB Type-C Charging Cable	1
5	5 V / 1 A Approved Power Adapter	1
6	User Manual	1

Device rear label: model name, serial number, manufacturer information and CE mark.

4. Device Overview

The main components of the device are listed in the table below. The Patient Monitor is sold separately as a product that works together with the defibrillator; the table below lists only the components included in the defibrillator package.

#	Component	Description
1	Main Unit	The module housing the defibrillator's control electronics and battery. It communicates wirelessly with the Patient Monitor.
2	APEX Paddle	Connected to the main unit by the connection cable. It has a yellow charge button and a red discharge button; on its underside there is a hidden safety button triggered by the user applying pressure.
3	STERNUM Paddle	A twin paddle with the same layout as the APEX, connected to the main unit by cable. Its red discharge button works simultaneously with the APEX; the pressure button underneath provides dual safety.
4	Power Switch and Indicator LED	The on/off switch on the main unit and the LED that indicates the device status.
5	USB Type-C Charging Input	The port through which the device is charged. Used only with a 5 V / 1 A approved adapter.
6	Carrying Case	The red compartmented case positioned on the sides of the main unit; the paddle pair and accessories are stored here.

Patient Monitor screen (sold separately): selected energy level (e.g. 200 J), CHARGE · CANCEL · SYNC · PACE buttons, ECG · SpO₂ · CO₂ waveforms and real-time battery percentage.

5. Technical Specifications

5.1 General

Specification	Value
Operating modes	Manual Defibrillation · Synchronized Cardioversion (SYNC) · External Pacing (PACE)
Energy range	1 – 360 J (simulation only; no real energy is generated)
Pacing rate	30 – 180 ppm (adjustable)
Connection type	Wireless (Bluetooth) with the Patient Monitor; the paddles are connected to the main unit by cable.
Effective wireless range	10 – 30 meters in an unobstructed environment

5.2 Battery and Charging

Specification	Value
Battery type	Built-in rechargeable battery
Continuous operating time	More than 12 hours of continuous use on a full charge (may vary depending on the Patient Monitor tablet)
Full charging time	Approximately 3 hours
Input voltage	5 V (USB Type-C)
Charging current	1 A
LED during charging	Lights green as long as the charging cable is connected; turns off when the cable is removed. The charge level is not indicated by the LED.
Low battery behavior	At a critical level the blue LED blinks rapidly and the device shuts down automatically.

6. Instructions for Use

6.1 Power On / Off

🔌 **Powering On the Device:** Set the main unit's power switch to the ON position. The indicator LED lights blue and, after a short start-up period, the device is ready for use. Then turn on the Patient Monitor.

🔌 **Powering Off the Device:** Set the main unit's power switch to the OFF position. The indicator LED turns off and the device shuts down safely.

NOTE

Start-up check: When the device is turned on, the blue LED lights and the device becomes ready for use after a short start-up period. The device is ready for use in approximately 5–10 seconds.

If the blue LED starts blinking rapidly, the battery level is critically low; in this case the device will shut down automatically shortly afterward. Charge the device.

6.2 Patient Monitor Interface

The Patient Monitor application presents a classic defibrillator/monitor interface on the tablet screen. The main screen sections are described in the table below.

Section	Description
ECG Waveform	The top panel shows the green ECG trace and the heart rate (HR) in real time.
SpO ₂ and CO ₂ Panels	Pulse oximetry and capnography simulation in blue (SpO ₂) and yellow (CO ₂).
Energy (J) Selector	Energy is set between 1–360 J with the arrow keys in the top-right corner (e.g. 200 J).
CHARGE Button	Large orange button; when pressed, the paddles are charged to the selected energy level.
CANCEL Button	Allows the charged energy to be safely dumped.
SYNC OFF / ON	Turns synchronized cardioversion mode on/off. When ON, the discharge is synchronized to the ECG R wave.
PACE Panel	External pacing mode; includes the ppm value and start/stop controls.
Probe Not Connected	The label at the bottom right. When tapped, nearby devices are scanned and the device beginning with RTCDEFI is selected from the list and connected.

6.3 LED Status Indicators

LED Status	Meaning
● Blue (Solid)	Device is on and ready for use.
● Blue (Fast Blinking)	Critically low battery — the device will shut down automatically shortly. Charge the device.
● Green (Solid)	The charging cable is connected. The LED turns off when the cable is removed; the charge level is not indicated by the LED.
○ LED Off	Device is off or the battery is fully depleted.

6.4 Wireless Connection

The device communicates wirelessly with the Patient Monitor application running on the tablet. The paddles' button states and the battery level are reflected on the screen in real time.



Establishing a Connection: Start scanning by tapping the “Probe not connected” label at the bottom right of the tablet screen. Tap the device name beginning with RTCDEFI (e.g. RTCDEFI00100) shown in the list and press the “Connect” button.

- Pairing happens automatically; no password or code entry is required.

NOTE

Before connecting, make sure the device is on (blue LED lit) and ready, that the Patient Monitor's Bluetooth is enabled, and that you are within 10 meters of the device. If there is more than one defibrillator in the same environment, make sure you select the correct device using the serial number (S/N) on the back of the device.

6.5 Defibrillation Workflow

The following steps show the standard simulation flow from powering on the device to after discharge. All actions are simulated visually and audibly on the Patient Monitor; no real electrical energy is generated.

Step 1 — Powering On the Device and Starting the Patient Monitor

Set the main unit's power switch to the ON position and verify that the indicator LED lights blue. Then turn on the Patient Monitor. When the Patient Monitor is turned on, default signals appear on the ECG, SpO₂ and CO₂ panels; the current energy level (e.g. 200 J) is shown in the top-right corner and the “Probe not connected” warning at the bottom right.

Step 2 — Scanning and Connecting to the Device

Tap the “Probe not connected” label at the bottom right of the Patient Monitor screen. Nearby devices are listed in the scan window that opens. Select the device name beginning with “RTCDEFI” (e.g. RTCDEFI00100) from the list and tap the “Connect” button. Once the connection is established, the bottom-right label turns green and the paddles' battery percentage is displayed in real time.

WARNING

If no device is found after the scan completes, be sure to try scanning again. You can restart the search by tapping the “Probe not connected” label again. In this case, also make sure the device is ready with the blue LED lit and that the Patient Monitor's Bluetooth is on.

Step 3 — Setting the Energy Level and Charging

Set the desired energy value (e.g. 200 J) using the arrow keys on the energy selector in the top-right corner of the Patient Monitor screen. If synchronized cardioversion is to be performed, tap the SYNC button to switch the mode to ON (the discharge is synchronized to the ECG R wave). Then press the yellow charge button on the paddle or the orange [CHARGE] button on the Patient Monitor. A progress indicator appears on the screen during charging and a characteristic alert sound plays when charging is complete.

i NOTE

Virtual charge: The device does not store real energy. During “charging,” only the Patient Monitor application simulates the charge audibly and visually.

Step 4 — Discharge or Cancel

After the paddles are charged, you have two options:

- **DISCHARGE:** Place the paddles on the manikin at the APEX (left mid-axillary line) and STERNUM (below the right clavicle) positions. The hidden pressure buttons on the underside of the paddles are triggered by applying pressure to the manikin surface; at the same time, also press the red discharge buttons on both paddles. When all four buttons (2 red + 2 pressure) are detected simultaneously, the discharge simulation runs: a “DISCHARGE” message appears on the screen, the characteristic discharge sound plays, and the ECG trace is momentarily affected.
- **CANCEL:** You can dump the charge by tapping the [CANCEL] button on the Patient Monitor screen. Alternatively, without placing the paddles on the manikin, if you press only the red buttons on both paddles at the same time (without triggering the pressure buttons), the charge is safely cancelled.

⚠ CRITICAL WARNING

- For a discharge to occur, the red buttons on both paddles and the hidden pressure buttons on both paddles must be triggered at the same time. This dual-safety mechanism prevents an accidental shock simulation.
- When only the two red buttons are pressed at the same time (without triggering the pressure buttons), the system interprets this as a safe cancel command and dumps the charge.
- Although the device does not generate real electrical energy, do not point the paddles at people or animals; use them only on the manikin.

Step 5 — Synchronized Cardioversion (SYNC)

In atrial fibrillation, atrial flutter or monomorphic ventricular tachycardia scenarios, tap the [SYNC OFF] button on the Patient Monitor to switch the mode to ON. In this mode, when the red buttons are pressed after [CHARGE], the discharge does not occur instantly; the system waits for the next R wave and simulates the shock synchronously. After a single discharge, the mode turns off automatically in accordance with clinical protocols.

Step 6 — External Pacing (PACE)

In bradyarrhythmia scenarios, tap the [PACE] panel on the Patient Monitor. Set the ppm value (e.g. 40 ppm) and the mA output, then tap the [START] button to begin the external pacing simulation. Pacing spikes are displayed on the ECG trace and a rhythm simulation matching the selected rate runs. Pacing is ended with the [STOP] button.

i NOTE

If the connection is lost, check the Patient Monitor's Bluetooth and that the device is ready with the blue LED lit. Once the problem is resolved, reconnect via the Patient Monitor; the settings (energy, mode) are not reset.

7. Charging and Battery

- Connect the device to a 5 V / 1 A approved power source using a USB Type-C cable.
- The indicator LED lights green as long as the charging cable is connected; it turns off when the cable is removed. The charge level is not indicated by the LED.
- Full charging time is approximately 3 hours.
- A full charge provides more than 12 hours of continuous use. This duration may vary depending on the battery life of the Patient Monitor tablet used with it.
- The battery level can be seen as a percentage in the bottom-right corner of the Patient Monitor.
- At a critically low battery level the blue LED blinks rapidly and the device shuts down automatically; be sure to charge it in this case.

WARNING

Use only a 5 V / 1 A approved power source. High-current or incompatible adapters may shorten battery life or pose a safety risk. If a short circuit occurs at the charging input, the device automatically enters protection mode.

8. Maintenance and Cleaning

Area	Instruction
Main Unit and Case	Wipe with a lightly damp cloth. Do not use solvents such as alcohol, acetone or thinner.
Liquid Contact	Do not immerse the device and paddles in water; do not place them in a sterilizer or dishwasher.
Storage	Store the device in a dry, shaded environment between 5–35 °C, inside the carrying case.

CRITICAL WARNING

- DO NOT WIPE the paddle surfaces or any part of the device with alcohol, isopropyl alcohol, disinfectant, acetone, thinner or other solvent-based cleaners. Such products cause permanent damage to the paddle surface and the plastic body.
- Use only a lightly damp, solvent-free cloth for cleaning.

9. Troubleshooting

Problem	Solution
Device does not turn on	Charge for at least 30 minutes (full charge ~3 hours). Verify that the green LED is lit during charging.
The Patient Monitor does not see the device	Turn on the Patient Monitor's Bluetooth, make sure the device is within 10 meters, and repeat the scan by tapping the "Probe not connected" button again.

Problem	Solution
It does not charge when the charge button is pressed	Verify that the connection appears green. If the connection has dropped, reconnect to the device via the Patient Monitor.
Discharge does not occur	Make sure the pressure buttons on the underside of the paddles are in contact with the manikin surface with enough pressure; both red buttons must be pressed at the same time.
The charge is cancelled unintentionally	Be careful not to touch the red buttons before placing the paddles; pressing the two red buttons at the same time, independently of the pressure buttons, is the cancel command.
The connection keeps dropping	Turn the device off and on and reconnect via the Patient Monitor (saved settings are preserved).
Blue LED blinks rapidly / the device shut itself down	The battery is at a critical level. Charge the device by connecting it to a 5 V / 1 A adapter with a USB Type-C cable.
Pacing spikes are not visible	Check that the PACE panel is ON and that the ppm and mA values are greater than zero.

10. Technical Support

Channel	Information
⊕ Web	simclever.com
✉ E-mail	info@simclever.com
☎ Phone	+90 552 879 75 62
◆ Address	Fener Mah. Atatürk Cad. No:28/2 Kat:7 Merkez/Rize, TÜRKİYE

Document Version 1.0 • Last Updated: May 2026

© 2026 RISE – SimClever Education. All rights reserved.