

User manual



V20.4

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Introduction

SimHEART is a Progressive Web App that runs in the browser, making it compatible with any device that has internet access and a browser. On mobile devices (smartphones, tablets, etc.), simHEART can be installed on the home screen and used as a full-screen app that is indistinguishable from a native app. Additionally, simHEART requires only a very low internet speed to function, making it easy to use even in areas with a weak internet connection.

Requirements

Browser Safari (from iPadOS 17), Firefox or Chrome

Other browsers may work but are not officially supported.

Internet min. 50 kbit/s (4 Mbit/s recommended)

simHEART is tested on the following devices:

- iPhone 18 Pro, XR
- iPad 10.9 (10th and 11th generation)
- iPad Pro 10.5, 12.9 (4th and 5th generation)
- Windows 11 Firefox and Chrome

Installation

SimHEART can be installed on mobile devices as a web application on the home screen and used in full-screen mode. In this form, it is virtually indistinguishable from a native app.

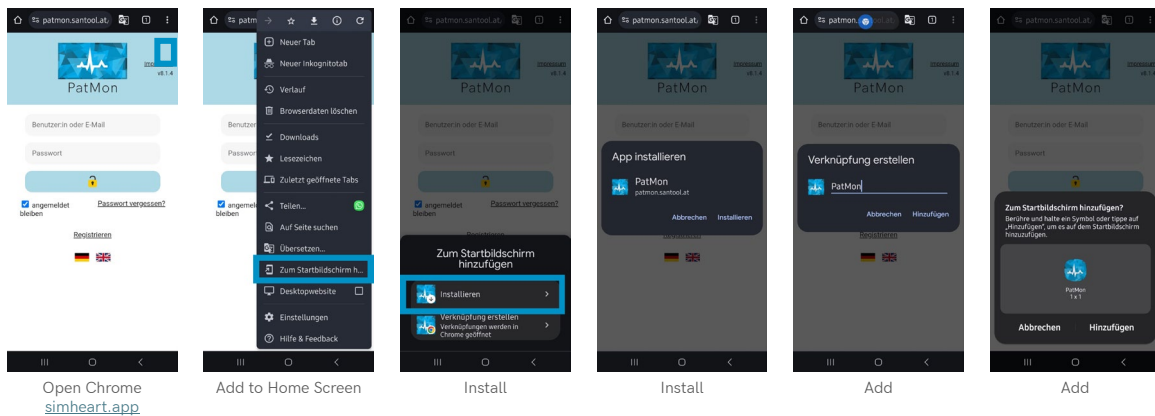
iOS and iPadOS

iOS and iPadOS 26 and above



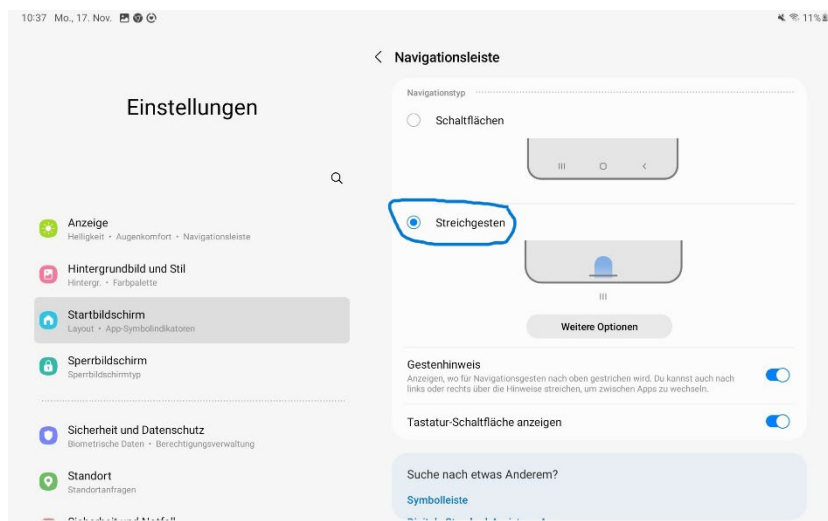
<https://youtu.be/QjdRQd-wknQ>

Android

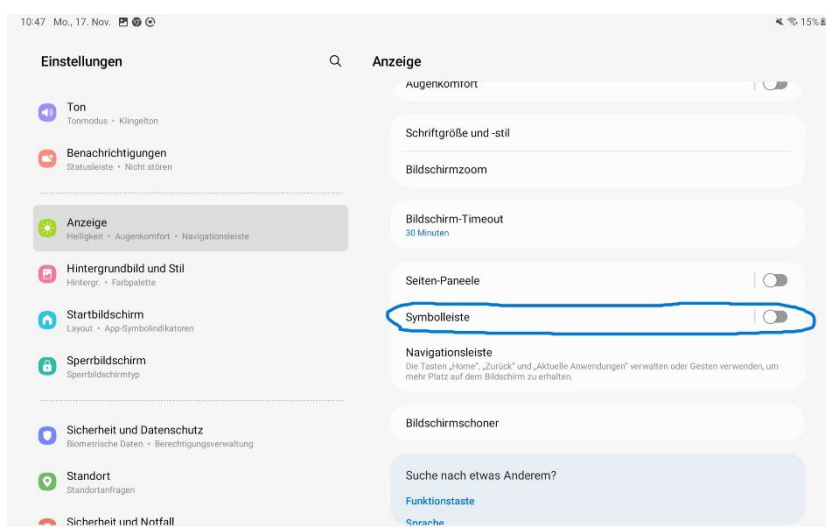


Additionally, further settings may be required for applications to be displayed in full-screen mode.

- Settings > Toolbar: disable



- Settings > Home screen > Navigation bar: enable swipe gestures



Preloading images & sounds

To make sure simHEART works reliably even with a weak internet connection, all required images and sounds can be loaded into the web app cache in advance. To do this, open the Settings menu item.

Settings



Then tap the "Load images & sounds" button. As long as not all content is available offline, a red icon with the note "Not all media available offline" is shown.

Load images & sounds

Load images and sounds into the web app cache once, so they are available offline and use less data later.

✗ Not all media available offline

As soon as loading is complete, the display changes to a green check mark with the note "Already downloaded, available offline". From then on, all images and sounds are available even without an internet connection.

Load images & sounds

Load images and sounds into the web app cache once, so they are available offline and use less data later.

✓ Already downloaded, available offline

License management

Each customer has its own license management access. It does not use a seat. You set it up with the invitation link from the e-mail (usable once, valid for 14 days). After that, you find the "License management" tile in the main menu.

At the top you see your contract with the next invoice and the price, and the links to the user manual and the installation video.

"Users and licences" shows for each license how many seats are possible, used and free. "Control in use" shows how many people are running a simulation right now.

Only as many people can simulate at the same time as there are licences. Otherwise the control shows "all licences in use" when you press Start.

Customer Demo EMS				
Next invoice 01.01.2027				
Gross price 1,190.00 EUR				
Net price 1,000.00 EUR				
Change contract Cancel contract				
Installation				
📄 Installation Guide (EN)				
▶ installation video				
Users and licences				
	possible	used	free	Control in use
Basic	2	1	1	0 / 2
Pro	3	2	1	0 / 3
Deactivated accesses do not use up a seat.				

Sharing

If you have at least two seats, you decide here what users see of each other:

- Telemedicine: they can find each other in telemedicine.
- Library, scenarios, BGA and POCUS samples: they see each other's entries and can use them. Only the person who created an entry can change or delete it.

Scenario categories

Here you choose which categories of ready-made scenarios your users see in the control and in the scenario editor.

Create new user

1. Enter user name, e-mail address, license and password. "Suggest password" creates a secure password.

2. Tap "Create".

The new person automatically receives their user name and the installation guide by e-mail. The password is not included, so please pass it on personally.

The e-mail address is only used to reset the password and may be used for several accounts. Creating a user requires a running contract and a free seat.

Sharing

- ☒ Users see each other in telemedicine
- ☒ Users see the library entries, scenarios, BGA and POCUS samples of the other users

Save

Scenario categories

Ready-made scenarios of these categories appear for all users of this customer in the control and in the scenario editor.

- ☒ NotSan Ausbildung DE

Save

▼ Create new user

User *

E-mail *
Only used to reset the password. The same e-mail may be used for several accounts — only User matters when logging in.

License

Password *

 ☐ Show password
At least 10 characters, including at least one number and one letter.

The new person automatically receives their user name and the installation guide by e-mail. The password is not included – please pass it on personally.

Managing users

Tap a user to open the details. There you can:

- change the license
- reset the password
- deactivate or reactivate the access

Deactivated accesses do not use up a seat.

Users can also reset their password themselves via "forgot password" on the login page.

▼ anna.demo
anna@example.invalid

Useranna.demo

E-mailanna@example.invalid

LicensePro (1 free)

Save

Reset password

Password

Repeat password

Suggest passwordShow password

At least 10 characters, including at least one number and one letter.

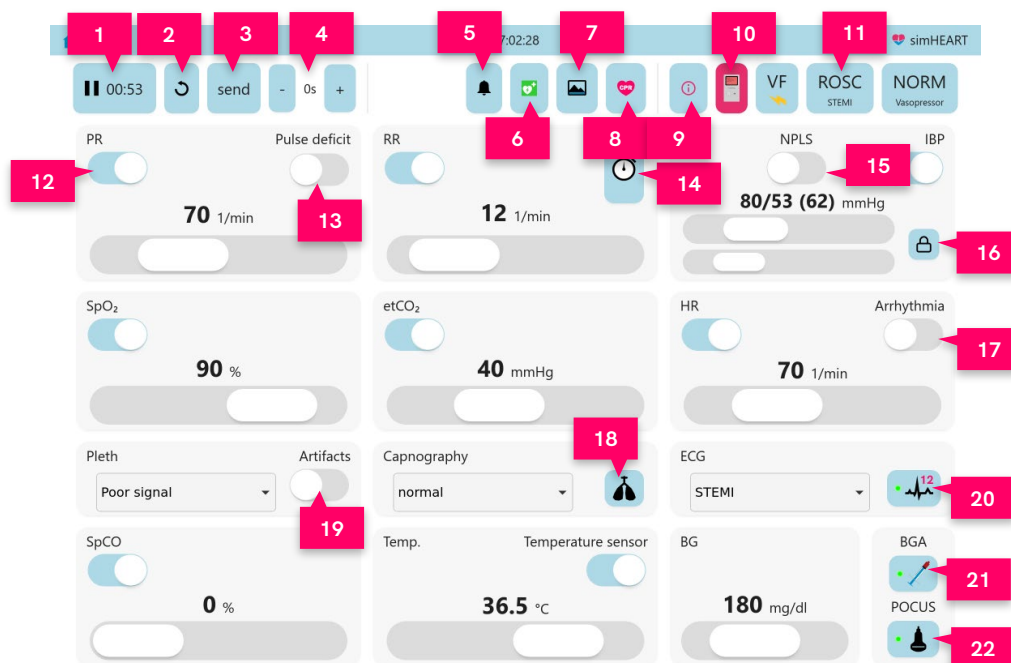
The password can also be reset by the user via 'forgot password' on the login page.

Save

Access

Deactivate

Control



1 Start/Pause

Starts and pauses the scenario.

2 Reset

Ends the scenario and resets all parameters to their defaults.

3 Send

Sends all preset parameters. The send button can also be disabled in the settings.

4 Fade

Creates a smooth transition when parameters change.

5 Alert

Triggers an alert on the monitor.

6 Defi electrodes attached

Also activates HR (if it is not activated)

7 Media library

Shows images from the media library on the monitor.

8 CPR artifact

A pleth and IBP artifact can also be enabled in the settings.

9 Scenario info

Shows the alert message, the scenario comment and the part comments (see "Scenario info"). The button only appears if the scenario contains such texts.

10 Alert the pager

Clicking the pager button sends an alert to the pager.

11 Scenario buttons

Clicking a button manually activates the scenario part assigned to it.

12 Activate parameter

Activates or deactivates a parameter

13 Pulse deficit

The pulse deficit lets you set PR and HR independently.

14 RR timer

Determines the real RR by tapping the button.

15 NPLS

Activates a non-pulsatile IBP and pleth curve (e.g. during eCPR). As soon as NPLS is activated, the blood pressure can no longer be changed via the scenario buttons.

16 Systole and diastole independent

When the lock is open, systole and diastole can be set independently.

17 Arrhythmia

Creates an arrhythmia in the ECG and pleth curve.

18 Lung

Sets all lung parameters relevant for ventilation.

19 Artifacts

Creates artifacts in the pleth curve.

20 ECG library

Selects the 12-lead ECG from the ECG library.

21 BGA

Sets the blood gas analysis.

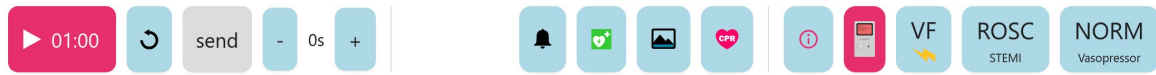
22 POCUS

Sets the point-of-care ultrasound.

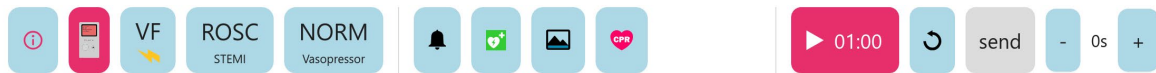
Time menu

The send button and the fade function can be disabled in the settings. Resetting the fade time to 0 s after sending can also be disabled in the settings. Left-handed mode is enabled by default.

Left-handed mode

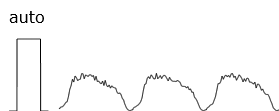


Right-handed mode



CPR artifact

The CPR artifact always creates artifacts in the ECG curve.



Pleth and IBP artifacts can also be enabled in the settings.

Requirements for pleth artifacts

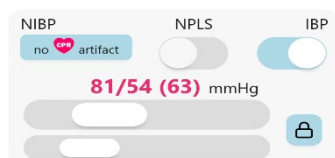
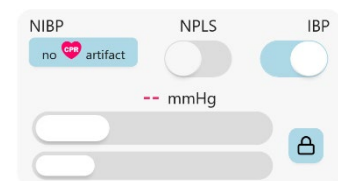
- PR activated
- PR set to 0 or --, or pleth set to "No signal"

Requirements for IBP artifacts

- IBP activated
- Artifact blood pressure greater than 0

Artifact blood pressure

As soon as the blood pressure is set to 0 (arrest situation), a new button appears and the color of the blood pressure value changes.



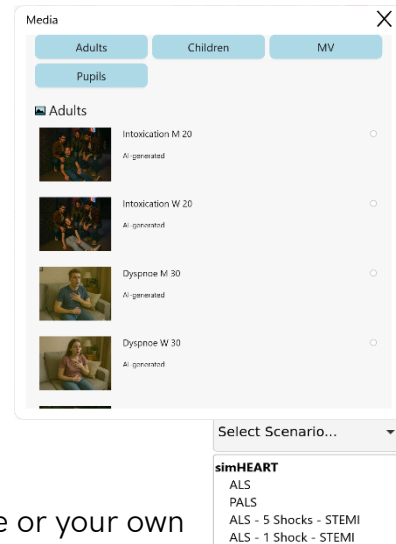
From then on, the artifact blood pressure can be set. This blood pressure only exists while the CPR artifact is switched on. The blood pressure artifact can be switched off (e.g. at ROSC) with the "no CPR artifact" button. If a scenario button has a blood pressure above 0, pressing the button (or its automatic activation) also switches the blood pressure artifact off automatically. NPLS (non-pulsatile IBP curve) cannot be activated while the CPR artifact is active.

Media library

The media library lets you show images on the monitor. It contains many ready-made, AI-generated first impressions of patients and accident vehicles. You can also upload your own images. More on this on p. 14.



To stop showing the image, simply click the media button again.



Scenario buttons

Before starting the scenario, you can select a ready-made or your own scenario. simHEART includes an ALS and a PALS scenario by default, which cover all common resuscitation rhythms. You can also create your own scenarios. More on scenarios on p. 15.



If the pager is enabled in the scenario, the pager button appears; clicking it sends an alert to the pager. More on the pager on p. 15.

In the selection, the scenarios supplied with simHEART appear under "simHEART". Further ready-made scenarios are grouped into categories marked with a folder icon. Which categories you see is set in the license management (see "License management").

If sharing is switched on in the license management, the selection also contains the group "Scenarios of colleagues". You can use these scenarios, but only the person who created them can change or delete them.

If there are more scenario buttons than fit into one row, you can scroll the row sideways.

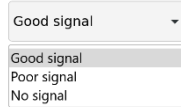
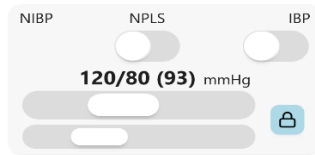
Scenario info



The Scenario info button appears in front of the pager button as soon as the scenario contains an alert message, a scenario comment or a comment on one of its parts. Tapping it opens a box with the scenario name, the pager alert message, the scenario comment and the comments of all parts.

As soon as a part is activated, by tapping its button or by an automation, its comment is highlighted in blue and the box scrolls to it. To close the box, tap outside it or tap the Scenario info button again.

NIBP and pleth signal



The pleth signal is coupled to the systolic blood pressure. The limits can be changed by selecting the patient mode in the scenarios.

Adult	Poor signal	≤ 90 mmHg syst.
	No signal	≤ 60 mmHg syst. or NPLS
Pediatric	Poor signal	≤ 80 mmHg syst.
	No signal	≤ 50 mmHg syst. or NPLS
Neonate	Poor signal	≤ 70 mmHg syst.
	No signal	≤ 40 mmHg syst. or NPLS

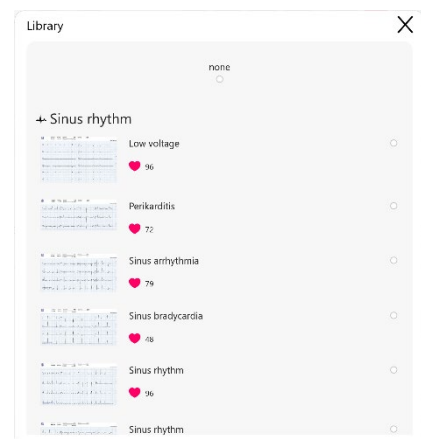
The coupling between blood pressure and pleth signal is not active for the artifact blood pressure (p. 10).

ECG library

The ECG library contains a very large number of ECGs, each sorted under its matching base rhythm. If no ECG is selected, the list automatically scrolls to the ECGs of the base rhythm currently set. After you select an ECG, its heart rate is applied automatically and set as HR. You can also upload your own ECGs.



The green light shows whether an ECG is currently active.



HR = 6-lead ECG
(no 12-lead printout possible)



HR + 12 = 12-lead ECG

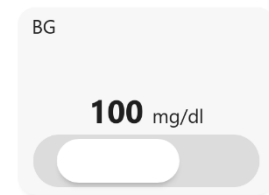
send

After selecting the ECG, don't forget to press the send button (if it is enabled) so that the ECG can be shown on the monitor.

More on the ECG library on p. 14.

BGA

You can quickly load a blood gas analysis (BGA) from the existing or your own BGA samples. You can also adjust every value individually.



The glucose values are synchronized with the BG parameter.



The green light shows whether a BGA is currently active. It turns on once a pH value has been set.



The media button shows the BGA printout directly on the monitor.



After selecting the BGA, don't forget to press the send button (if it is enabled).

More details on the BGA on p. 15.

POCUS

To quickly assign ultrasound loops to all body regions, you can use predefined samples as well as your own. You can also assign an individual ultrasound loop to each body region.



When an ultrasound loop is selected, the media buttons show it directly on the monitor or in POCUS (Point of Care). To stop showing it, simply click the button again. Whether the loop is shown on the monitor or in POCUS (PoC) can be set in the settings.

Heart In addition, the selected body region is underlined, and clicking it shows the corresponding ultrasound loop.



The green light shows whether ultrasound loops are currently assigned. It turns on once the first loop has been set.



After selecting, don't forget to press the send button (if it is enabled).

More details on POCUS on p. 15.

Lung

Here you can set all lung parameters relevant for ventilation. You can also connect and disconnect the ventilation tube.

The "dyssynchrony" checkbox makes the patient breathe against the ventilator, which shows in the capnography curve.

The buttons let you quickly select preset conditions.

Training protocol

To get a training protocol after resetting (U) a scenario, this function must be enabled in the settings. The protocol can then be downloaded as a PDF. It contains the initial settings, all changes sent to the monitor afterwards and actions on the monitor such as shocks, AED analyses, etc.

If a token is entered in the settings, the protocol can also be transferred to various debriefing programs.

Library

In the library you can upload your own image files.

The types Media, ECG and POCUS are currently available. The images then appear under "my" entries in the respective areas (e.g. ECG library). Only JPG, PNG and GIF files can be uploaded. The maximum file size is 5 MB. You can currently upload up to 50 files.

Depending on the selected type, additional options may appear.

For an ECG, you can select the base rhythm, the heart rate and whether an arrhythmia is present.

For POCUS, the body region must be selected.

BGA samples

In BGA samples you can enter individual BGAs, which then appear in the control under “my BGAs”.

- 1 **cHCO₃⁻ is calculated automatically**
Formula: $0.03 \times pCO_2 \times 10^{(pH-6.1)}$
- 2 **cSO₂ is calculated automatically**
Formula: $100(X_3 + 150X) / (X_3 + 150X + 23400)$
 $X = pO_2 \times 10^{(0.48(pH-7.4)-0.0013(cHCO_3-25))}$
- 3 **AGap is calculated automatically**
Formula: $Na - (Cl + cHCO_3)$
- 4 **cHgb is calculated automatically**
Formula: $(Hct / 100) \times 34$
- 5 **Glu is synchronized with the BG in the control, and mg/dL is converted to mmol/L automatically**
Formula: $mg/dL \times 0.0555 = mmol/L$
- 6 **BUN/Crea is calculated automatically**
Formula: $BUN / Crea$

The screenshot shows a form for entering BGA samples. It includes fields for 'new' and 'comment'. Below is a table with columns 'parameter', 'value', and 'unit'. The 'sample type' is set to 'venous'. The parameters listed are pH, pCO2, pO2, COHb, cHCO3-, BE(ef), cSO2, Na+, K+, Ca++, Cl-, AGap, Hct, cHgb, glu, lac, and BUN. Red numbered callouts (1-6) point to the following parameters: 1 points to cHCO3-, 2 points to cSO2, 3 points to AGap, 4 points to cHgb, 5 points to glu, and 6 points to BUN.

parameter	value	unit
pH		
pCO2		mmHg
pO2		mmHg
COHb		%
cHCO3-		mmol/L
BE(ef)		mmol/L
cSO2		%
Na+		mmol/L
K+		mmol/L
Ca++		mmol/L
Cl-		mmol/L
AGap		mmol/L
Hct		%
cHgb		g/dL
glu		mg/dL
glu		mmol/L
lac		mmol/L
BUN		mg/dL

Below the table is another section with 'new' and 'comment' fields, followed by a table with 'POCUS region' and 'Library' columns. The POCUS regions listed are TEE, Heart, Aorta, Inferior vena cava, Left lung, Right lung, Abdominal aorta, Spleen & Kidney, Liver & Kidney, Lower abdomen, Left femoral vein, and Right femoral vein.

POCUS samples

In POCUS samples you can configure an individual patient condition, using the ready-made ultrasound loops or your own. Once the sample is saved, it appears in the control under “my POCUS samples”.

Scenarios

In Scenarios you can create and edit the scenario buttons (parts). The buttons can be preconfigured with every parameter that can be set in the control. Automations are possible too, e.g. an automatic button click after a number of shocks, a number of analyses or a period of time.

The screenshot shows a 'Scenario' dropdown menu with the text 'Select Scenario...' and a 'NEW' button.

After clicking “NEW” you can give the scenario a name, which then appears in the scenario selection of the control (see “Scenario buttons”).

Scenario name ✕

Patient mode Adult ▼

Ideal weight kg

☒ Pager

☒ Pacer [mA]

☒ Load the first scenario part at startup

comment

The patient mode currently changes the coupling between blood pressure and pleth signal. The table on p. 12 lists the limits.

Clicking Pager activates the pager, and you can enter an alert message. As soon as the pager is active, the red pager button appears in the control.



The pacer auto capture current can be defined here. Once the scenario is selected, the HR follows

the pacer as soon as this current is exceeded.

If the last checkbox is enabled, the first scenario part is loaded immediately.

The ideal weight of the patient applies to the whole scenario and is used for the ventilation parameters.

In the comment field you can describe the case, e.g. the alarm and the patient history. The comment is shown in the scenario info of the control (see "Scenario info"). Every scenario part also has its own comment field.



Scenario part

One scenario part = one scenario button.

The screenshot shows a form for creating a scenario part. It includes fields for:

- 1** Button name (ROSC)
- 2** Name small (STEMI)
- 3** Fade (5 s)
- 4** Shock automation (after 1 shocks)
- 5** Analysis automation (after # analyses)
- 6** Time automation (after # s)
- 7** Sort part (up/down arrows)
- 8** Delete part (X button)
- 9** Scenario button preview (ROSC STEMI)
- 10** BGA samples (BG & BGA dropdown)
- 11** or survivable rhythm (checkbox)
- 12** ECG library (STEMI inferior - I dropdown)
- 13** Lung (dropdown)
- 14** POCUS (dropdown)
- 15** Comment (text area)

 Other visible fields include RR (1/min), SpO2 (%), SpCO (%), PR (1/min), HR (1/min), NIBP (mmHg), Temp. (°C), etCO2 (mmHg), ECG (STEMI), Pleth (Poor signal), Capnography, and a Start/Pause button showing 00:53.

1 Button name

To keep the button from getting too wide, the field is limited to 7 characters. Item 9 shows the button preview as soon as you start typing.

2 Name small

To keep the button from getting too wide, the field is limited to 12 characters. If nothing is entered here and a shockable rhythm is selected, a lightning symbol appears.

3 Fade

Same as the fade function in the control.

4 Shock automation

Triggers an automatic button click (the scenario part is applied in the control) after a set number of shocks.

5 Analysis automation

Triggers an automatic button click (the scenario part is applied in the control) after a set number of AED analyses. On the C3 monitor in manual mode, shocks and clicks on "Cont. CPR" count as analyses.

6 Time automation

Triggers an automatic button click (the scenario part is applied in the control) after a set time. The time refers to the scenario time shown on the Start/Pause button.

00:53

7 Sort part

8 Delete part

Deletes the part.

9 Scenario button preview

Shows a preview of how the button will look in the control.

10 BGA samples

Selects one of the ready-made or your own BGA samples

11 or survivable rhythm

If this option is enabled, the rhythm in the control is only changed if a non-survivable rhythm is set (e.g. ventricular fibrillation). If, for example, a STEMI is set as the rhythm in the control, it stays and is not changed.

12 ECG library

Selects one of the ready-made or your own 12-lead ECGs.

13 Lung

Selects a lung condition relevant for ventilation.

14 POCUS samples

Selects one of the ready-made or your own POCUS samples.

15 Comment

Telemedicine

The telemedicine function lets you simulate a telemedicine call realistically.

Telemedicine views

There are two different views:

1. Telemedicine Provider (for those giving help, e.g. tele-emergency physicians)

- Optimized for notebooks or large tablets, as otherwise not all information can be shown at a glance

Telemedicine Provider



found in the main menu

2. Telemedicine (for those receiving help, e.g. paramedics)

- Works best on a smartphone or tablet

Telemedicine



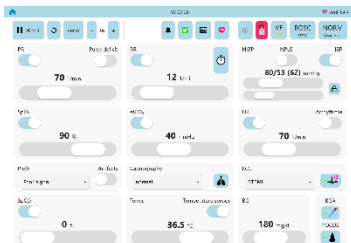
found in the Point of Care menu

Those receiving help can send messages and images via the chat and start a voice or video call (e.g. via WhatsApp or Signal).

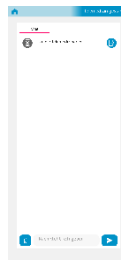
Next to the chat, the provider sees the same monitor data as the person receiving help sees on their monitor.

Requirements for simulating a telemedicine scenario

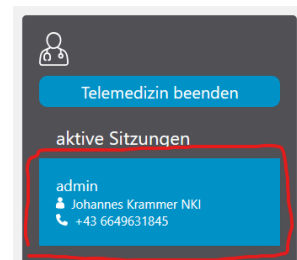
Simulating a telemedicine scenario takes the following three steps:



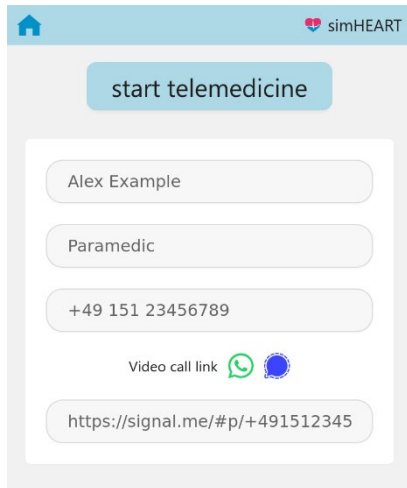
Start the simulation in the control



Start a session in Telemedicine (in the Point of Care menu)



Join the session in Telemedicine Provider (in the main menu)



start telemedicine

Alex Example

Paramedic

+49 151 23456789

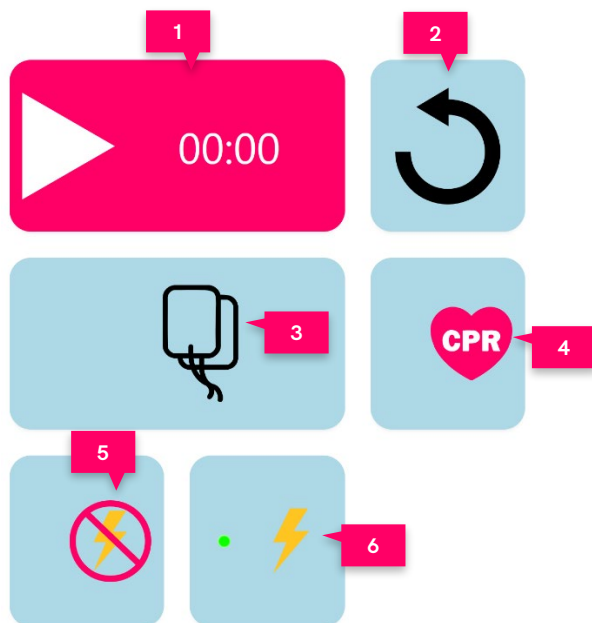
Video call link  

<https://signal.me/#p/+491512345>

Before starting a session, you can optionally enter your name, qualification and phone number.

If a phone number is entered, clicking the WhatsApp or Signal icon creates a video call link.

AED Control



1 Start/Pause

Starts and pauses the scenario.

2 Reset

Ends the scenario and resets everything to the defaults.

3 Defi electrodes attached

4 CPR artifact

On the AED CR2, this leads to an analysis during which the patient must not be touched.

5 Not shockable

6 Shockable

Troubleshooting

Problem

Sound problems after the device was locked for a long time

If the iPad was locked for a long time while the scenario stayed active, sound problems can occur.

Changes were made in the settings but have no effect in the respective application (e.g. monitor, control, etc.)

Solution

Restart the simulation in the control (U) after every longer device lock.

Open the application again. Changes in the settings are only loaded and applied when the application is opened.

Contact

If you have questions or problems regarding simHEART, feel free to contact our support team at any time. Response time is usually a few hours.

simHEART GmbH

Phone: +49 88 22 82 407 60

Email: support@simheart.de