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Introduction

Thank you for choosing “high5@home”. We are confident that you have made an excellent choice and will enjoy using this product.

Before using the product for the first time, please read the operating instructions carefully to ensure trouble-free operation.

By purchasing “high5@home” from BWO Systems AG, you have acquired one of the safest access control solutions currently available on the market, offering the highest levels of quality and performance.

Installing the software is quick and easy using our app on your device, such as a smartphone or tablet. In addition to access to the “high5@home” app, you will receive a sensor case, which serves as the reader for your key—your hand—and a small computer, also known as the “controller”. The controller manages and stores access permissions and user data.

The advantage over other access control solutions lies—quite literally—in your hand. “high5@home” uses your unique hand vein pattern as a key that cannot be copied. Using the infrared camera supplied in the sensor case, you can register up to 30 different people and store them as authorised users in the controller via our app.

Please note that the hand vein pattern changes until approximately the age of eight. After that, it remains the same throughout a person’s life. Therefore, children under the age of eight whose hand was registered some time ago may not be recognised immediately. This may mean that they need to make several attempts to open the door. Re-registering the hand significantly improves recognition.

The benefits of hand vein biometrics include enhanced security due to its extremely high resistance to forgery, as well as contactless and versatile use. In addition, you will never lose your keys again—because you will no longer need them.

The operating instructions explain step by step how to prepare the solution for use and operate it via the app. To ensure proper installation, we recommend seeking advice from a qualified electrician or installer, or having the installation carried out by a professional.

Applications

The “high5@home” solution can be used for one to four of the following applications:

- Entrance door
- Garage
- Letterbox
- Safe
- Wine cellar
- Shoe cabinets
- Home gym
- Other

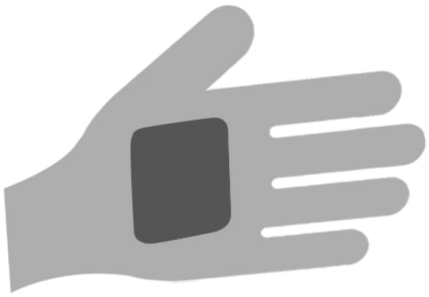
The “high5@home” solution is designed for a maximum of four applications. An application could be, for example, opening a door or garage. If you would like to cover multiple applications with one system, please contact us. For this purpose, we offer the HighFiveForAccess solution.

Example:

You install the sensor case with the sensor at your garage. The controller is located either in the garage or inside the house and is connected to the following four access points:

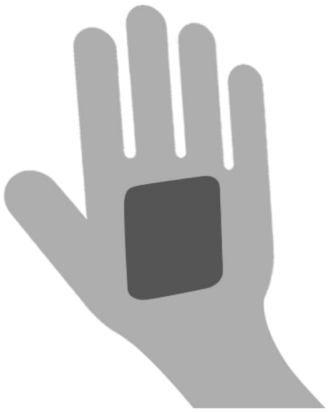
1. Garage door
2. Letterbox
3. Gate leading to the property/house
4. Entrance door to the house

You can now assign the four different access points to the respective hand positions as follows:



1. The garage door opens using:
   Right hand (fingers pointing to the right)

2. The letterbox opens using:
   Right hand (fingers pointing upwards)



3. The gate leading to the property/house opens using: Left hand (fingers pointing upwards)

4. The entrance door to the house opens using:
   Left hand (fingers pointing to the right)

To use the four different “keys”, you must create four users in the app for the respective access points—for example, “Susanne Garage, Susanne Entrance Door, Susanne Letterbox and Susanne Gate” (see “System Configuration” on page 12).

Package Contents

1) 1 x Controller
Stores and processes user data. The controller is a small "computer" that controls the lock and should always be installed or mounted in a protected area (inside the house, behind the gate, inside the safe or cabinet, etc.).
The controller sends an electrical signal to the electronic lock, causing it to open. This signal is transmitted to the opening mechanism via an electrical cable.

2) 1 x Sensor
Reads the hand vein pattern and securely transmits the encrypted result to the controller for processing.

3) 1 x USB-cable (5m)
Provides power and data connectivity for the sensor
(see "Connector Pin Assignment" on page 25).

4) 1 x power supply unit
Supplied with a two-pin 12 V connector (green), four feed-through connectors and one 220 V mains plug.

5) (Optional) 1x USB-Dongle
USB Bluethooth dongle USX40032

6) Smartphone-App
The high5@home app is available from your device's app store.

Hardware – Installation

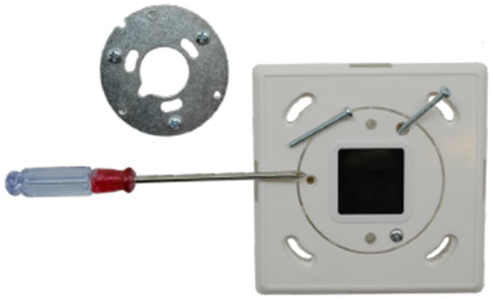
Follow the instructions below to set up your “high5@home” system.

Any defects caused by incorrect or improper installation or commissioning are excluded from the warranty.

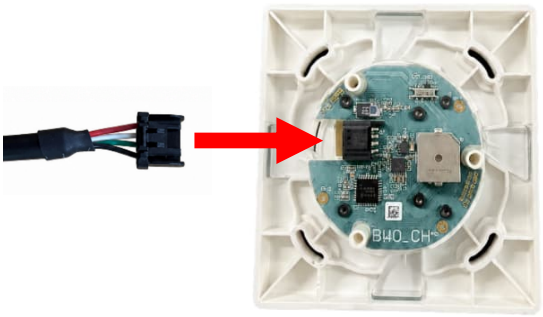
The USB cable must not be interrupted and must provide a continuous connection between the sensor and the controller.

Preparing the sensor housing for installation and connection to the controller

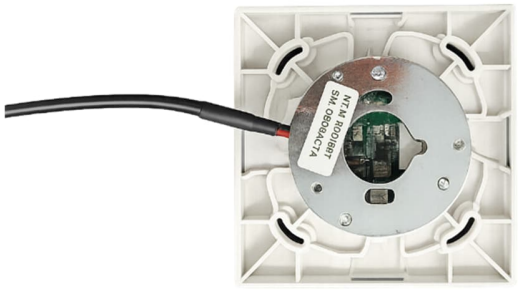
Remove the round metal mounting plate from the sensor housing and turn the sensor housing over so that the back is facing upwards.



Take the supplied cables and insert the white ends of both connection cables into the corresponding white Molex sockets (5-pin or 6-pin). Push them in fully to ensure that the cable connections are secure. See “Connector Pin Assignment” on page 25.



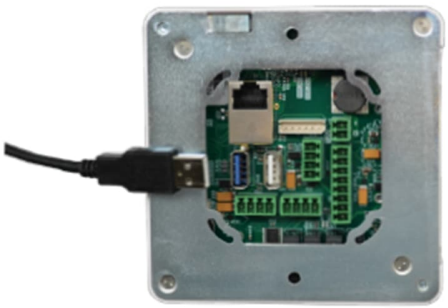
Reattach the mounting plate to the sensor housing.



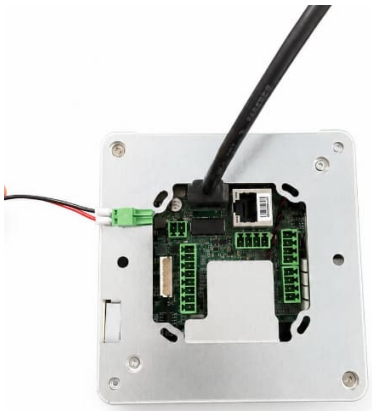
Instructions for connecting the controller to the installed sensor housing

Please ensure that the controller is securely screwed onto the mounting plate. Before installation, the mounting plate must be fitted to a flush-mounted box in the protected area.

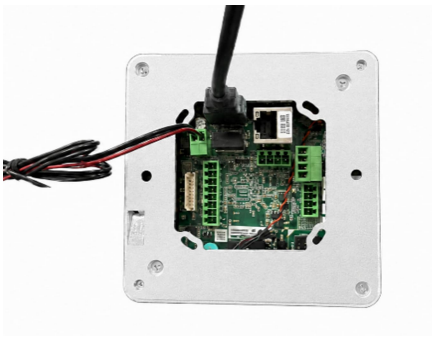
Now place the controller on its closed side so that the open side is facing upwards. Connect the USB cable to the blue USB port inside the controller.



Connect the supplied power cable (two-pin connector) to the controller's power connection.



Your wiring should now look like this: Two cables are connected to the controller—one leading to the sensor housing and the other to the 12 V power supply unit.

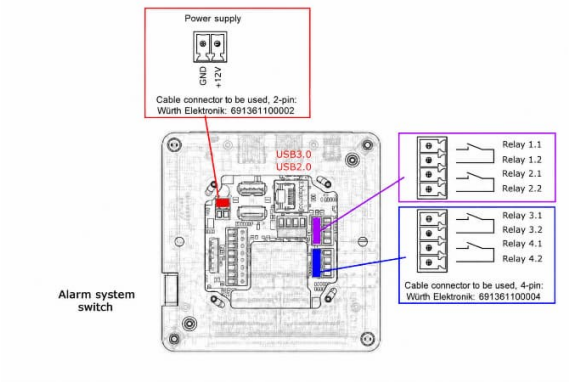


Connect the relay or relays to your door control system. To do this, you will need a power cable that transmits the signal to the door, gate or other access point. This cable is usually supplied with the door and is typically a low-voltage cable.

Important:
The lock or latch in the door leaf or door frame must have its own power supply. The relay itself does not supply power.

Tip for experts:
The controller is powered by a 12 V supply. If the lock also requires 12 V, power can be branched directly from the cable supplying the controller to the relay. This requires electrical expertise and the appropriate accessories.

Important:
The controller's power supply must not be affected. Please consult your electrician regarding the power supply for electronic doors, garage doors and other access points.



Connect the controller’s power cable to the supplied power supply unit.

To start up your system, connect the controller to the power supply.

- Plug the supplied power supply unit into a 220 V mains socket.
- The sensor housing should now light up and beep to confirm that the system is powered on.

Setting Up the controller via the “high5@home” app

Using a Charging Cable

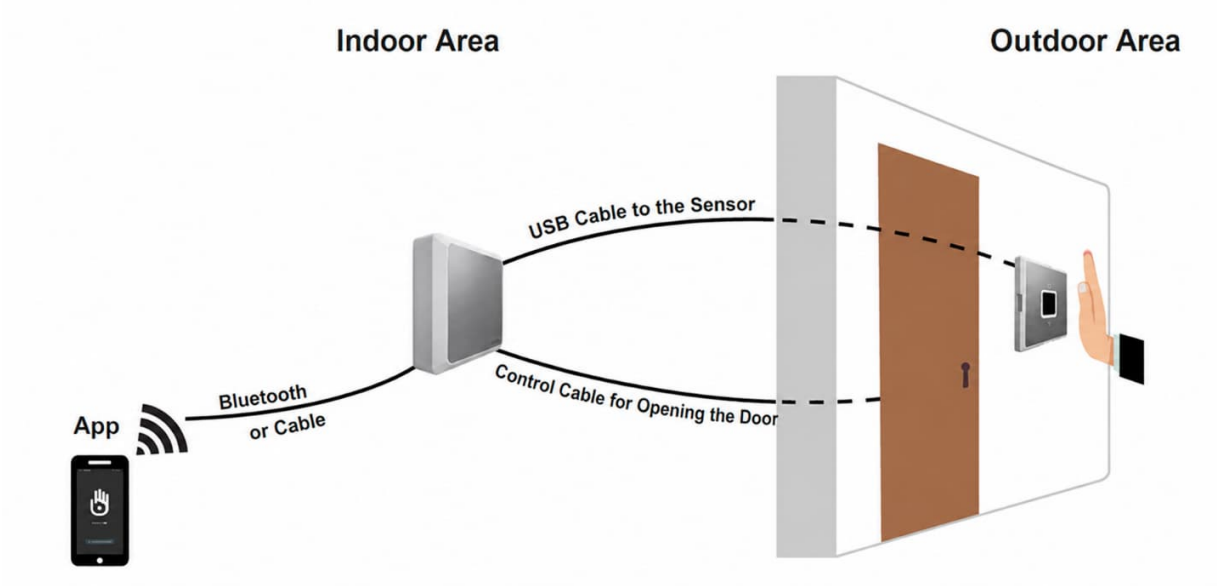
Connect your smartphone to the controller using your smartphone charging cable (USB to Lightning, USB-C, Mini-USB, etc.). Insert the USB connector into an available USB port on the controller.

Via Bluetooth

As an alternative, you can establish a wireless connection using the supplied USB Bluetooth dongle. Instead of the cable, connect the Bluetooth dongle to the white USB port on the controller’s circuit board and leave it permanently connected.

If the Bluetooth dongle is inserted after the controller has already been switched on, the controller must be restarted.

Implementation



System Configuration

Follow the instructions below to configure your “high5@home” application.

Preparing Your Smartphone / Tablet	• The “high5@home” app requires a smartphone running Android 12, iOS 16 or later.
Installing the Application	Download the app from the relevant app store and install it on your smartphone or tablet.

Initial Login

When accessing the controller of a new system for the first time, for example after initial setup, authentication using a hand vein pattern is not required because no users have been registered yet.

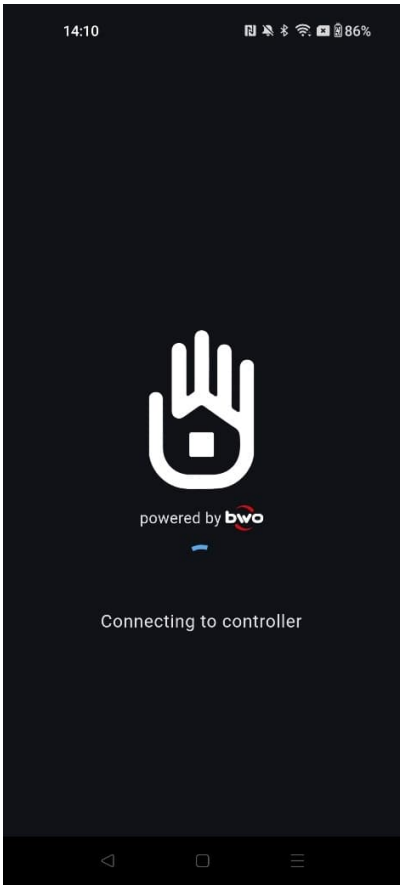
1. **Establish a connection**
   Connect your smartphone to the controller via USB cable or Bluetooth. The app automatically detects that the controller does not yet contain any users.
2. **Direct access**
   The app opens without requiring additional authentication. You can now create users and register hand vein patterns (see “Creating a User”).

Note:
The serial number is not required for this initial login, as no security settings are active yet.

Login with another device

If you access an already configured controller using a different smartphone, authentication via hand vein recognition and entry of the controller's serial number are required for security purposes.

1. **Establish a connection**
   Connect to the controller via USB or Bluetooth.
2. **Identification via hand vein recognition**
   The app prompts a registered user to verify their identity using their stored hand vein pattern.
3. **Register the new device**
   After successful identification, the app requests the controller's serial number. This must be entered manually.
4. **Save the device**
   After the serial number has been entered, the new device is permanently registered with the controller. You will not need to enter it again for future access unless the controller has been reset.



User Overview

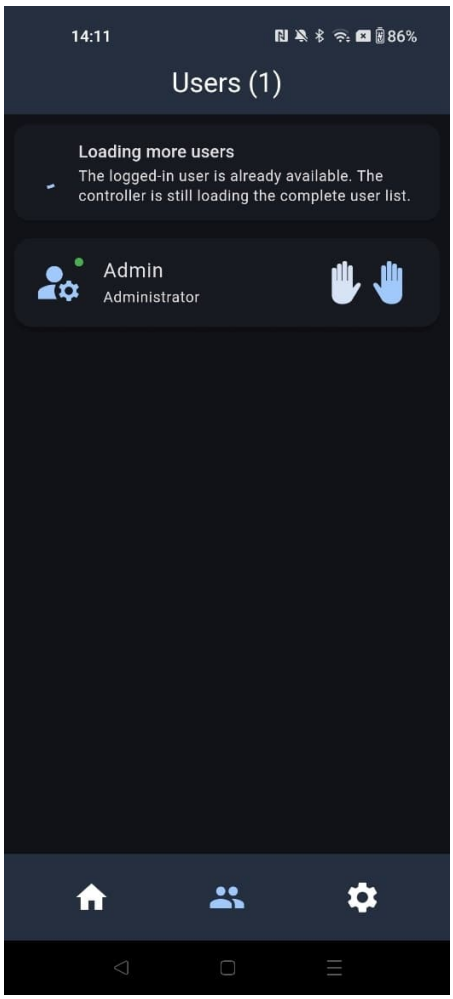
After launching the app, you will automatically see an overview of all registered users who have access to the system.
This view displays:

1. A list of all registered users, such as family members or suppliers
2. The total number of users created, shown in the app's header

Functions of the user overview:

- **Removing a user:** To remove someone from the system, swipe the relevant entry to the left or right. This deletes the user from the controller.
- **Refreshing the user list:** To ensure that the latest data is loaded from the controller for example, after changes were made on another device swipe down from the top of the list. The app reconnects to the controller and loads the latest information.

Note:
This overview is only used to view and manage registered users. The next section explains how to add a new user.

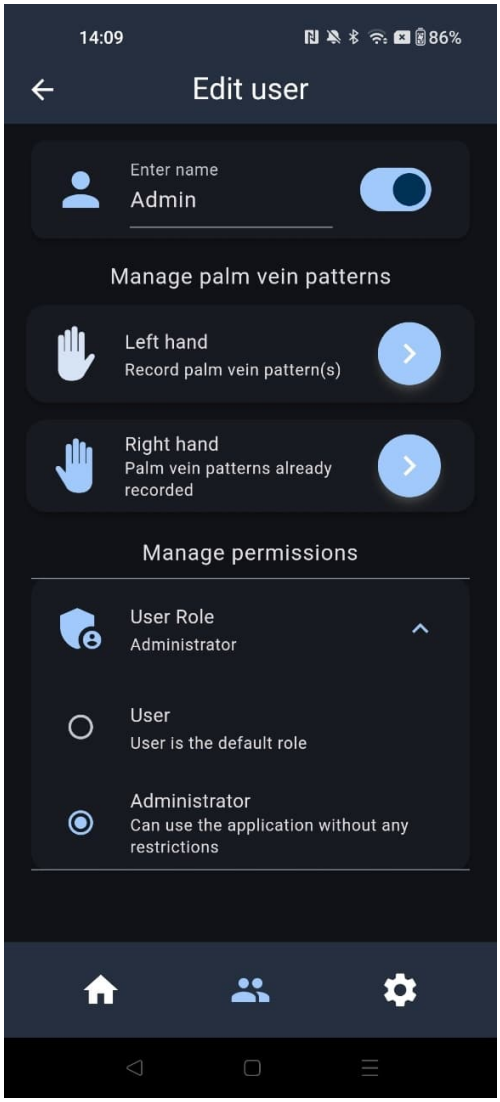


Adding a user

To grant another person access, you can create a new user in the app.
This can be done in a few simple steps:

1. **Enter a name**
   Tap the plus icon in the user overview. A new page titled “Create New User” will open.
   - Enter a name, for example, “Sandro”.
   - Confirm the entry using the keyboard to create the user.
   - The app automatically switches to editing mode for this user.
2. **Activate or deactivate the user**
   A toggle switch to the right of the name field allows you to activate or deactivate the user.
3. **Register a hand vein pattern**
   Below the role, you will see two buttons—one for the left hand and one for the right hand.
   - Select the desired hand.
   - Three empty fields will then appear (Vein Patterns 1–3), each of which can store one pattern.

Note:
Up to three patterns can be registered per hand to improve recognition, for example when using different hand positions.



4. **Assign a Role**
   Below, you will find a selection field labelled “User Role”.

- New users are automatically assigned the “User” role.
- The role can only be changed—for example, to “Administrator” or “User Manager”—after a hand vein pattern has been registered and authenticated.
- Authentication is carried out later by logging in using the hand vein pattern.

5. **Register a Hand Vein Pattern**
   Tap “Hand Vein Pattern 1” to begin the registration process.

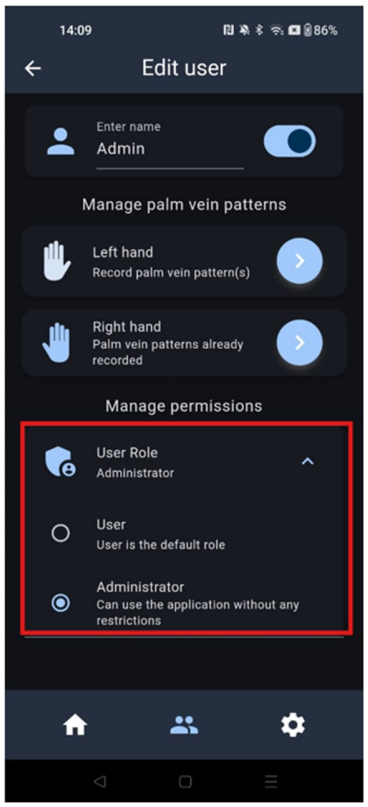
Registration process:

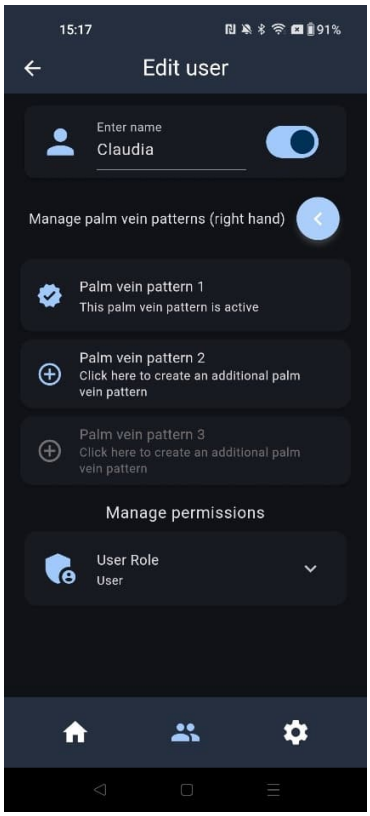
- The app provides clear instructions on how to position your hand correctly above the sensor.
- Each hand vein pattern must be scanned twice.
- After the first scan, briefly remove your hand and then place it above the sensor again.
- Once both scans have been completed successfully, the pattern is saved automatically.

Correct hand positioning:

- Hold your hand flat and relaxed above the sensor.
- Your palm should be parallel to the sensor surface.
- Your middle finger must be aligned with the sensor’s centre line.
- Maintain a distance of approximately 5 cm from the sensor surface.
- Spread your fingers slightly and naturally.

Tip:
If a user is frequently not recognised correctly, a second or third pattern of the same hand can be registered using a slightly different hand position, such as a different angle or placement.

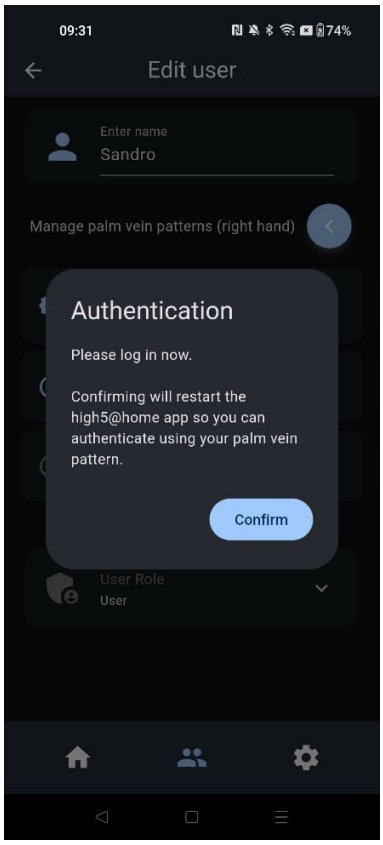




Note:
If you want to use multiple access points, such as the entrance door and garage door, we recommend registering a different hand orientation for each one—for example, with the hand rotated by 90°. The app recognises these different positions even though the symbol displayed in the user interface remains the same.

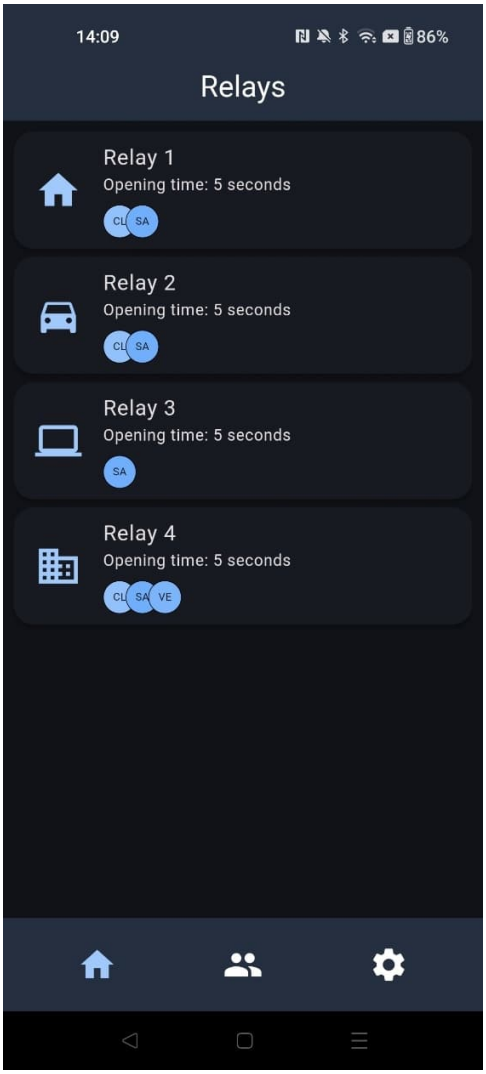
6. **Return to the User Overview**

- After registration, you can return to the user overview.
- After registration of the first user you will then be asked to authenticate using your hand vein pattern.
- If you confirm, the app connection will be disconnected, and you can log in again immediately—this time as a registered user.
- If you decline, you can register additional users first. However, the app will request authentication again each time a new user is added.



Relay Overview

In the bottom navigation bar, you will find the relay overview icon on the far left (house icon). Tap it to open an overview of the available access points.



Relay Overview Layout
This view displays all four available relays, regardless of whether users have already been assigned to them.

- Each relay represents a possible access point, such as the entrance door, garage or letterbox.
- These relays are permanently integrated into the system and cannot be deleted or deactivated.

Relay Cards
Each relay is displayed as a separate card (relay card), showing:

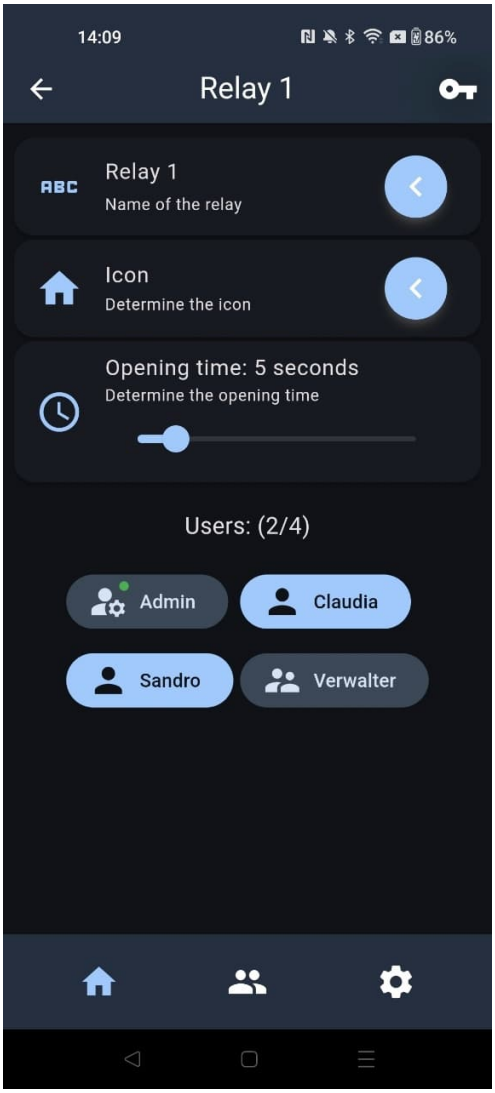
- The current name of the relay, for example, “Entrance Door”.
- A list of all users assigned to this access point.

Note:
Users are displayed below the corresponding relay card.

Editing a Relay:
The available functions are described in the next section.

Editing a Relay

When you tap one of the four relay cards in the relay overview, the detailed view of the selected relay opens. Here, you can configure all settings for this access point.



1. **Activate the Relay Directly**
   A key icon is located in the top-right corner. Tap it to activate the relay immediately. The access point opens and then closes automatically after the configured period. An audible click indicates that the relay has been triggered.

Note:
This function is useful for testing or manually opening an access point without using hand vein recognition.

2. **Relay Name**
   Below the title “Relay 1”, you will see the current name of the relay.
   - Tap “Rename” to give the access point a custom name, for example, “Entrance Door”.

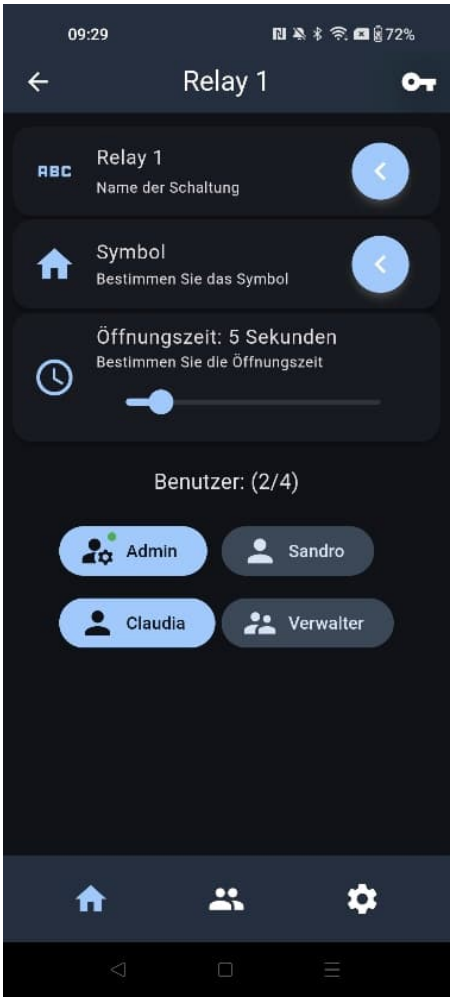
3. **Select an Icon**
   Below this, tap “Change” to select a suitable icon for the access point. This makes it easier to identify in the overview.

4. **Set the Opening Time**
   The opening time determines how long the relay remains active after an authorised user has been recognised.
   - Use the slider to set a duration ranging from a few seconds up to 30 seconds.

Tip:
Adjust the duration to suit the relevant access point, for example, use a longer opening time for a garage door and a shorter one for a standard door.

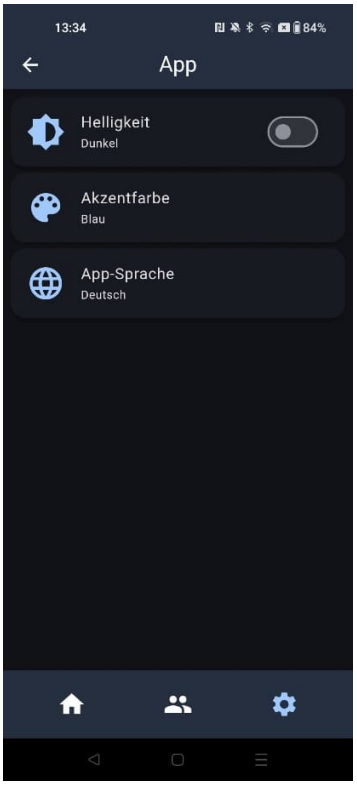
5. **Assign Users**
   At the bottom of the screen, all users registered in the system are displayed as buttons.
- Tap a button to assign the corresponding user to the relay.
- If the button is highlighted in blue, the user has access and can open this access point using their hand vein pattern.
- Tap the same button again to remove the assignment.

Note:
Only users with a registered hand vein pattern can use a relay.



Settings Overview

The settings can be accessed via the gear icon on the far right of the bottom navigation bar. Tap it to open the settings overview, which is divided into three sections.



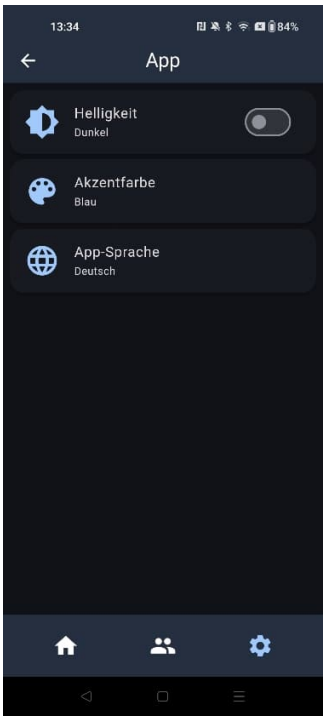
1. **App Language & Display**
   Here, you can configure the general settings of the high5@home app. Available options may vary depending on the app version and device:
   - Change the language (German/English)
   - Select the display mode (light/dark)
   - Configure the app's behaviour in the event of errors or interruptions.

   Further information can be found in the "Managing Settings" section of this manual.

2. **Controller Functions & Settings**
   The controller settings are only visible to users with the appropriate permissions, such as administrators. Important controller functions can be managed directly through the app.

App Settings

The following options are available:



1. **Change the Display Mode**
   This setting allows you to change the app's appearance. You can choose between light and dark mode.

2. **Select an Accent Colour**
   Here, you can select an accent colour. A total of 16 colours are available.

3. **Change the Language**
   You can switch between English and German.

Controller Settings

The following options are available:

1. **Change the Operating Mode**
   The controller can be operated in three different modes:

Mode	Characteristics
UltraSecure Mode	Maximum security
Secure Mode	Enhanced security
Performance Mode	Greater convenience

Caution:

Changing the operating mode requires all hand vein profiles to be registered again. Only change the mode when necessary.

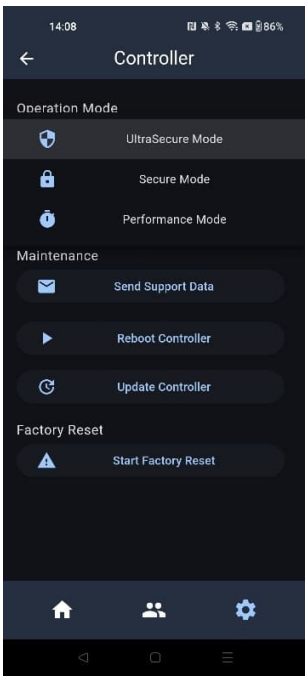
2. **LED Configuration**
   Specify which LEDs on the sensor housing should light up:
   - Enable or disable the outer LEDs
   - Enable or disable the inner LEDs

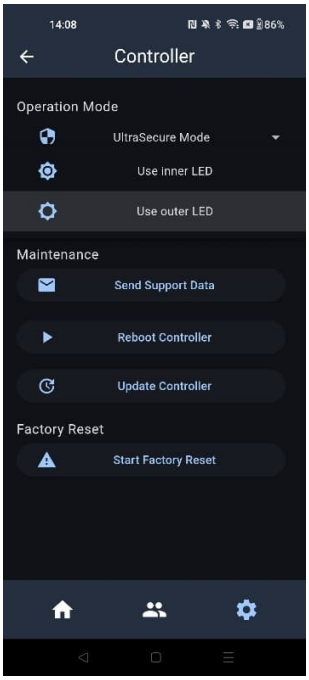
This setting affects the visual feedback during hand recognition.

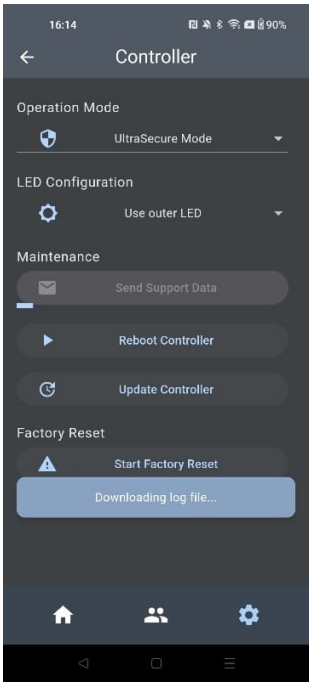
3. **Send Support Data**
   This function allows you to send the controller's log entries to technical support:
   - The file is generated automatically.
   - An email application must be installed on the smartphone.
   - The log entries are attached to the email. This function helps the support team troubleshoot technical issues.

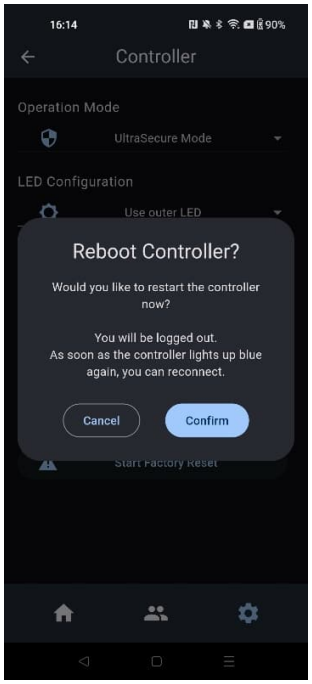
4. **Restart the Controller**

This function performs a soft restart of the controller. It is useful if the controller no longer responds as expected.

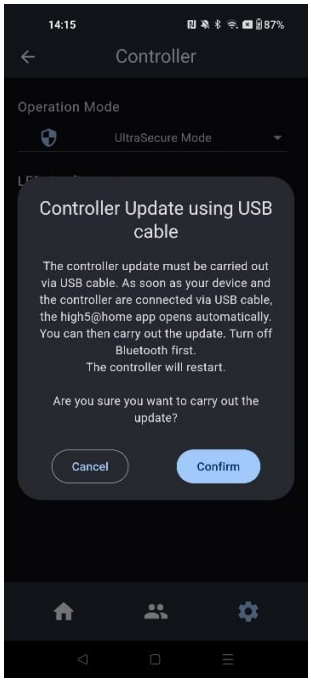








5. **Update the Controller**
   This function checks whether a newer version of the controllersoftware is available.
   - If a newer version is available, you will be prompted to install the update.
   - The update is installed automatically after confirmation.
   - We recommend connecting the smartphone to the controller via USB cable rather than Bluetooth when performing the update.



Note:

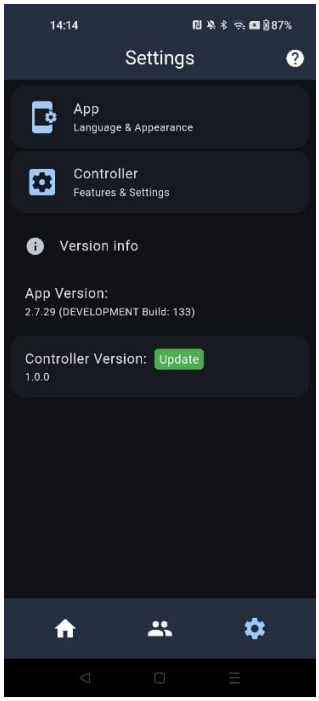
Only the controller software is updated. The controller firmware is not affected.

2. Version Information

At the bottom of the settings menu, you will find information about the software versions currently in use:

- App Version: Displays the installed version of the high5@home app.
- Controller Version: Displays the installed firmware version of the controller.

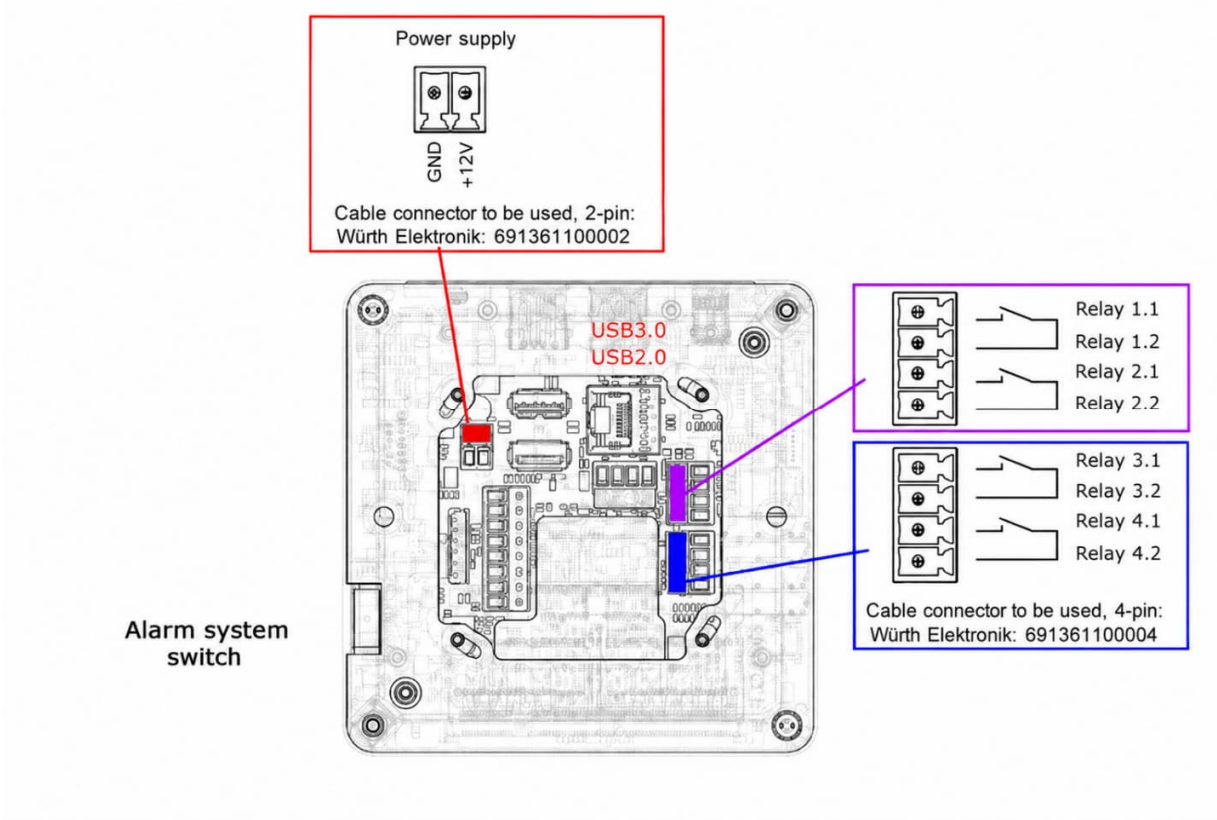
This information is particularly useful when performing updates or contacting technical support.



Appendix

Operation

When using the “high5@home” solution, the controller always switches all configured access points to “open” simultaneously. It is not possible to programme a delay. For example, you cannot configure the garage door to open first and the entrance door approximately two minutes later. However, you can specify how long the garage door and entrance door remain open.



Example:

If it takes approximately 15 seconds to walk from the garage to the entrance, you can activate the circuit for 15 seconds, giving you enough time to enter the house. (Caution: Please check whether your lock can withstand continuous activation.)

For a separate access point, such as the entrance to the house, we recommend installing an additional “high5@home” solution. This could control access to the house and, if required, other access points inside it.

The maximum distance between the controller and the sensor is five metres.

Explanation of the Authorisation System

The high5@home controller can be operated in three different modes. These modes determine who can access the controller via the app and which changes they are permitted to make.

1. User-Only Mode

- In this mode, all registered users have the same permissions.
- Every user can use the app to:
    - Create new users
    - Assign or edit relays
    - Change settings
- There are no restrictions or different user roles.

Suitable for:

Private households or simple environments without specific access control requirements.

2. Administrator Mode

- As soon as a user is assigned the Administrator role, the authorisation system changes completely.
- Only the administrators can access the app.
- All other users with the “User” role can no longer log in or make any changes.

Suitable for:

Installations where only one central person, such as the homeowner, is permitted to change the configuration.

3. Administrator + User Manager Mode

- In this advanced mode, a User Manager role is available in addition to the Administrator role.
- The administrator continues to have full access to all functions.
- The user manager has limited permissions:
    - They may only manage relays assigned to them by the administrator.
    - They may only manage users who are assigned exclusively to the same relays.
    - They may add, edit or delete these users.
    - They may not change controller settings or execute system commands.

Suitable for:

Apartment buildings, small businesses or situations requiring decentralised management for example, a caretaker with restricted access.

Important:

- The administrator always has unrestricted access, regardless of how many additional roles have been assigned.
- The User Manager role is optional and must be specifically assigned by the administrator.

Function	**User Mode**	**Administrator Mode**	**Administrator + User Manager Mode**
Access the app	All users	Administrator	Administrator and User Manager (restricted)
Create users	All users	Administrator	Administrator and User Manager (restricted)
Edit/delete users	All users	Administrator	Administrator and User Manager (restricted)
Modify relays	All users	Administrator	Administrator and User Manager (restricted)
Assign users	All users	Administrator	Administrator and User Manager (restricted)
Change app settings	All users	Administrator	Administrator and User Manager
Change controller settings	All users	Administrator	Administrator only

Key & Explanation:

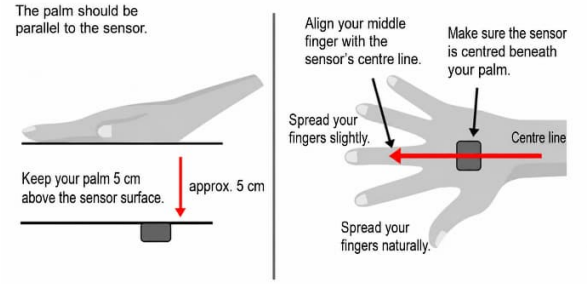
- User Only
  If no administrator has been assigned in the system, all registered users have full access to the app and all settings.
- Administrator
  As soon as an administrator has been assigned, only the administrator can make changes via the app. All other users with the “User” role no longer have access to the app.
- User Manager
  This role is assigned in addition to the Administrator role and has restricted permissions:
  - Access is limited to relays assigned by the administrator.
  - User managers may only manage users assigned exclusively to the same relays.
  - They may not execute system commands, such as resetting the system.
  - They may not assign roles or change global settings.

Using the Hand Vein Sensor / Hand Positioning

Place your hand flat and relaxed on a level surface, such as a table. Then hold it above the sensor so that the sensor is positioned beneath the centre of your palm. See illustration:

Distance from the Sensor

Align your middle finger with the centre line of the sensor. Keep your fingers spread and maintain a distance of 3 to 7 cm from the sensor.



Using the Sensor	Hold your hand above the sensor. When your hand is positioned correctly, the access point opens, the LED indicator(s) light up green and a beep sounds. For additional colour codes, see “Meaning of the Colour Codes” on page 31.

Meaning of the Colour Codes

The sensor has LED indicators on the sides that display different colours when a hand approaches the sensor.

Colours displayed during identification:

- **Red:** The user was not clearly recognised.
- **Green:** The user was successfully identified.
- **Blue:** No previously registered hand vein patterns are available.
- **White:** The user was recognised but is deactivated.

Other Status Colours

- **Purple:** The controller is not connected to a device and is ready to establish a new Bluetooth connection.
- This colour should appear after the system has started successfully.
- The light switches off as soon as any user holds their hand above the sensor. This does not change the controller’s status; a connection can still be established while the LED is off.
- This colour also appears when an existing connection to a smartphone is disconnected.

- **White:** From the controller’s perspective, the Bluetooth connection was established successfully.
- **Flashing green and yellow:** A software or firmware update is in progress.
- **Solid yellow:** The device is shutting down or restarting.

Connector Pin Assignment

The supplied cable must be configured as shown below.

Sensor Cable (USB)

This requires the USB-A cable and the 5-pin Molex connector.
(Viewed from left to right, with the connector holes visible.)

Red	Pin 1
White	Pin 2
Green	Pin 3
Black	Pin 4

Personal Notes