USER MANUAL

Sauermann Pilot App

CE

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1. Warning and safety instructions

1.1 Exclusions and restrictions of liability

The application operation is under the exclusive customer or user entity responsibility, who acknowledges using this system at his/her own risks. The customer or user entity explicitly excludes Sauermann and every other company through which it could have been sold of any kind of responsibility or warranty regarding any direct, indirect, accidental, consecutive or non-consecutive damage that could have been subjected, for some or all, by partial or total non-respect, voluntary or involuntary, of recommendations, conditions and prerequisites indicated hereafter.

1.2 Exclusions and warranty limitations

Sauermann guarantees that the application, which is made available for the customer or user entity through digital content such as a downloaded link as indicated in our commercial documents, are in a state enabling its correct installation and operation. Within the limits of the law, this warranty is exclusive. Therefore, we do not guarantee the application operation after its availability to the customer or user entity of this digital support or downloaded link. There is no other explicit or implicit guarantee regarding the application merchantability and fitness for a particular purpose. The customer or user entity acknowledges accepting all the present guarantee limitations or exclusions.

1.3 Symbols used

For your safety and in order to avoid any damage of the device, please follow the procedure

described in this user manual and read carefully the notes preceded by the following symbol:

The following symbol will also be used in this user manual:

Please read carefully the information notes indicated after this symbol.

2. Download the app and create an account

2.1 Download the Sauermann Pilot app

- Download the app for smartphone for free from Apple App Store and Google Play Store.
  Or
- Scan the QR code below.
- Install the app on your device.

ⓘ   Minimum required versions to install and use the app: Android 11.0, iOS 15, BLE 5.0*
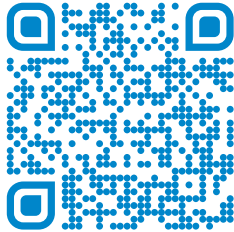
Download Sauermann Pilot App

*Can work with BLE4.0 but the wireless range will be downgraded

2.2 Create a Sauermann account and launch the app

When you first connect, you have to create a Sauermann account. This step is necessary to use the application.

ⓘ   The smartphone must be connected to the internet to create a Sauermann account.

ⓘ   If you have other applications from Sauermann that requires an account, such as Sauermann Combustion App you can use the same Sauermann account to login to all Apps.

- Launch the app.
- Tap **"User settings"** at the top left of the screen.
- Tap **"Log in"** at the bottom of the screen.
- Tap **"New account"**.
- Enter your first and last names.
- Enter an valid email address and confirm it.
- Choose a password and confirm it.
- Tap **"Register"**.
- Tap **"Accept"** to accept the End User Licence Agreement.
- A verification email is sent, open it and clink the link to verify your email address.
- Back to the Sauermann Pilot app and enter your user name and password.
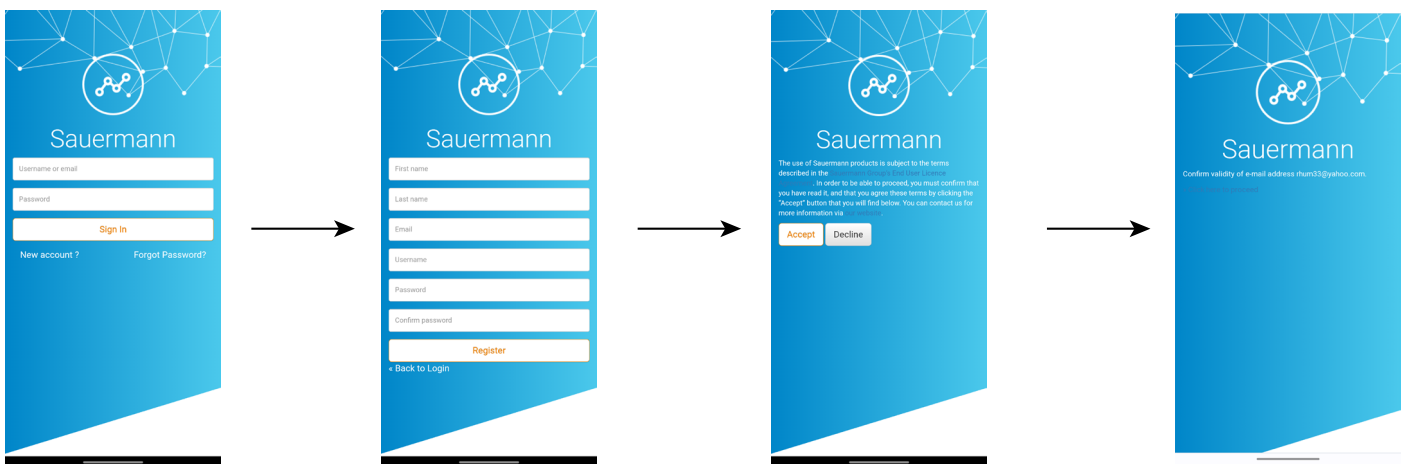
Once the account is created, enter your email address and password for further connections when required.

Tip: Save the User name and Password in your phone, for example in Apple Password manager or Google Passwords Manager for quick access.

3. Connect the manifold and search for manifold

The manifold can be connected via the app through wireless connection.

First, activate your wireless connection on your smartphone.

The wireless connection is activated by default on the manifold. If not, follow the following steps to activate it:

- Turn on your manifold.
- Go to **"Wireless connection"** line and press OK.
- Press OK on **"Wireless"** line to set it to ON.

- Launch the app.
- Tap **"Devices"** on the bottom of the screen.
- Tap **"Scan for devices".**
  The list of detected devices appears with their names and serial numbers.
- Tap the required manifold.
- After a few seconds, the manifold is connected to the smartphone.
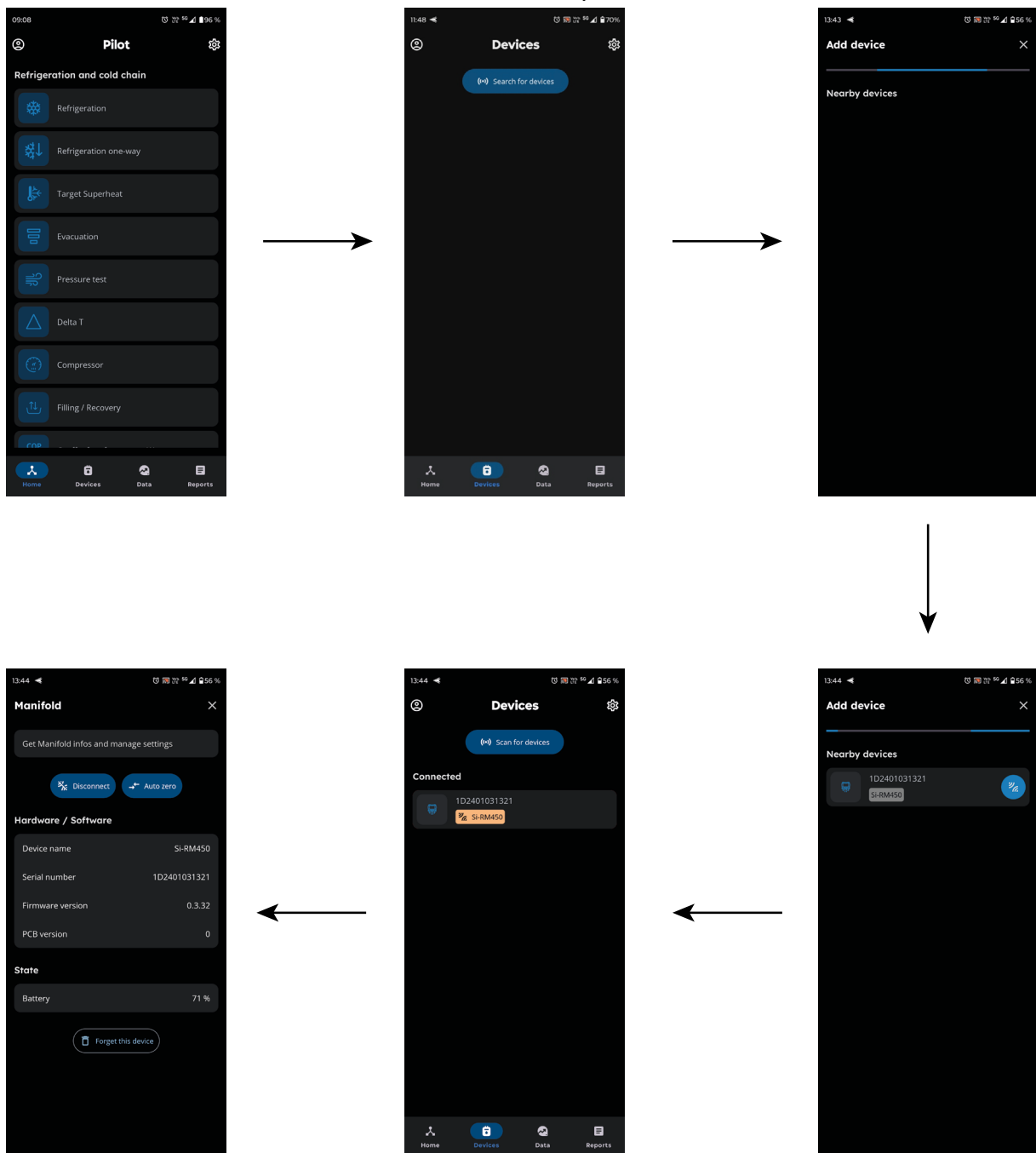
For wireless probes such as the Si-RT7 Wireless temperature clamp and Si-RV4 Wireless vacuum probe repeat the process above.

Wireless probes have to be paired to the Si-RM350 / Si-RM450 Digital refrigerant manifold and the Sauermann Pilot App separately.

The Si-RM350 / Si-RM450 manages a whitelist of previously paired / connected wireless probes for fast re-connection. The Sauermann Pilot App manages its own whitelist of previously connected wireless probes for fast and automatic re-connect. If a manifold / probe has previously been paired is on and in range the App will automatically re-connect.

From the last screen, several actions are possible:
- Update the manifold or the probe if a new firmware is available
- Temporarily disconnect the manifold or the probe from the Sauermann Pilot App: tap **"Disconnect"** button
- Perform an autozero (Si-RM350 / Si-RM450, Si-RP4 and Si-RV4): tap **"Auto zero"** button
- Permanently forget the device: tap **"Forget this device"** button.
- Reset to factory settings the Si-RM350 or Si-RM350: tap **"Factory reset"**.

This last screen also gives information about the manifold or the pobe:
- Device name
- Serial number
- Firmware version
- PCB version

In case of a trouble with your device and when contacting the after-sale service or the hotline, this information will be useful.

The battery status is also indicated.

For all probes, the **"Usage"** line allows you to select a use for the probe based on its parameters.

The Sauermann Pilot App allows to create a database of customers with their different sites and equipments.

4.1 Create a customer

- Tap on the top left of the screen.
- Tap **"Customer database".**
- Tap **"Add customer"** button.
- Fill in customer fields.
- Tap **"Save"** button.
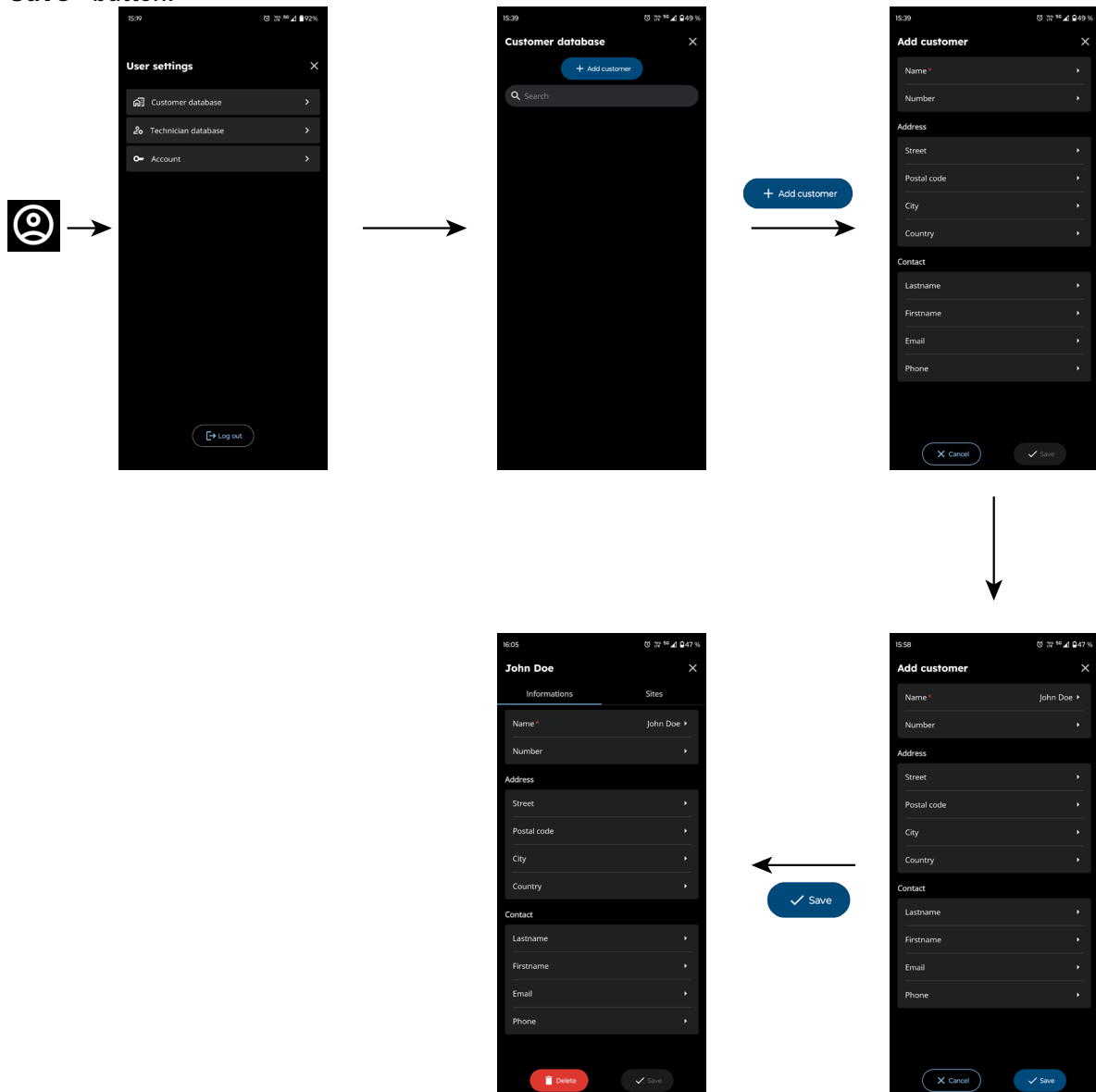
4.2 Add sites to a customer

Some sites such as facilities, production sites, ... can be added and linked to a customer.
From the customer database:

- Tap **"Customer database".**
- Tap the required customer name.
- Tap **"Sites"** on the top right of the screen.
- Tap **"Add site"** button.
- Fill in site fields.
- Tap **"Save"** button.
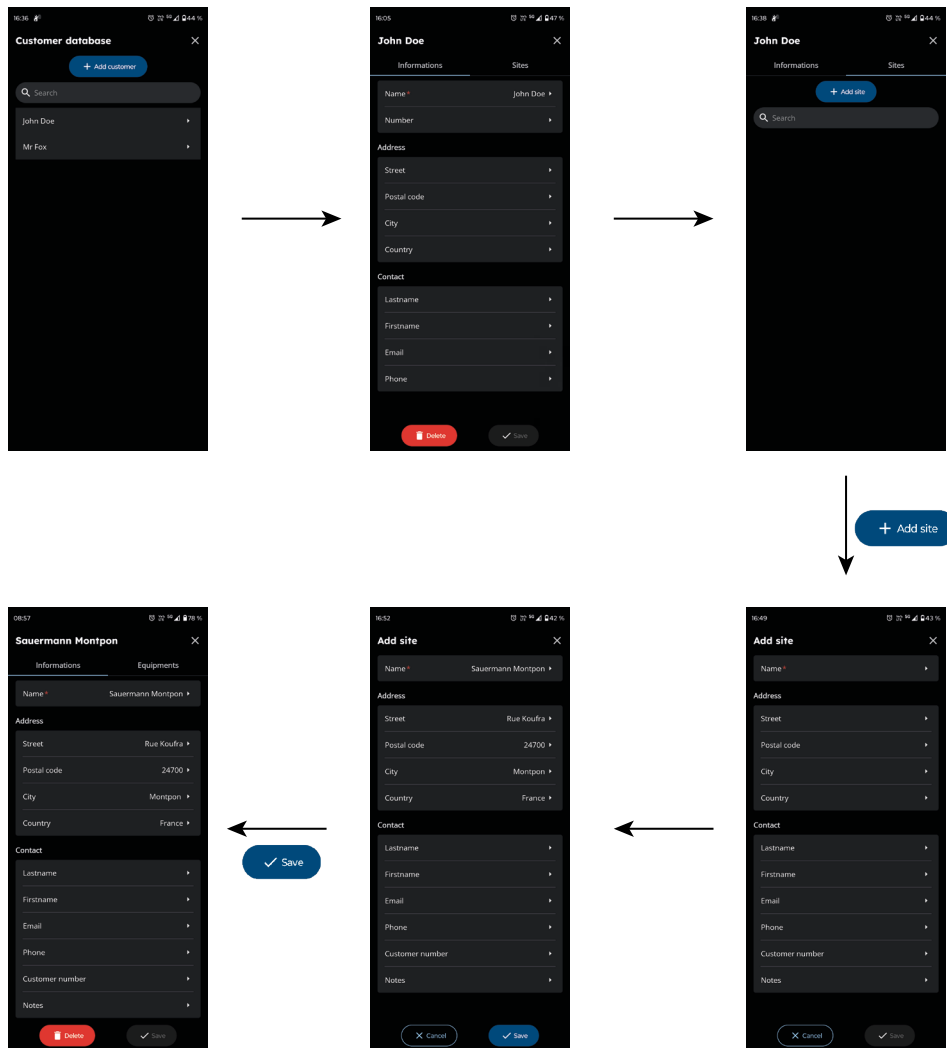
4.3 Add equipments to a site

Some equipments such as air conditioners, ... can be added and linked to a site.
From the sites database:
- Tap the required site name.
- Tap **"Equipments"** on the top right of the screen.
- Tap **"Add equipment"** button.
- Fill in equipment fields.
- Tap **"Save"** button.
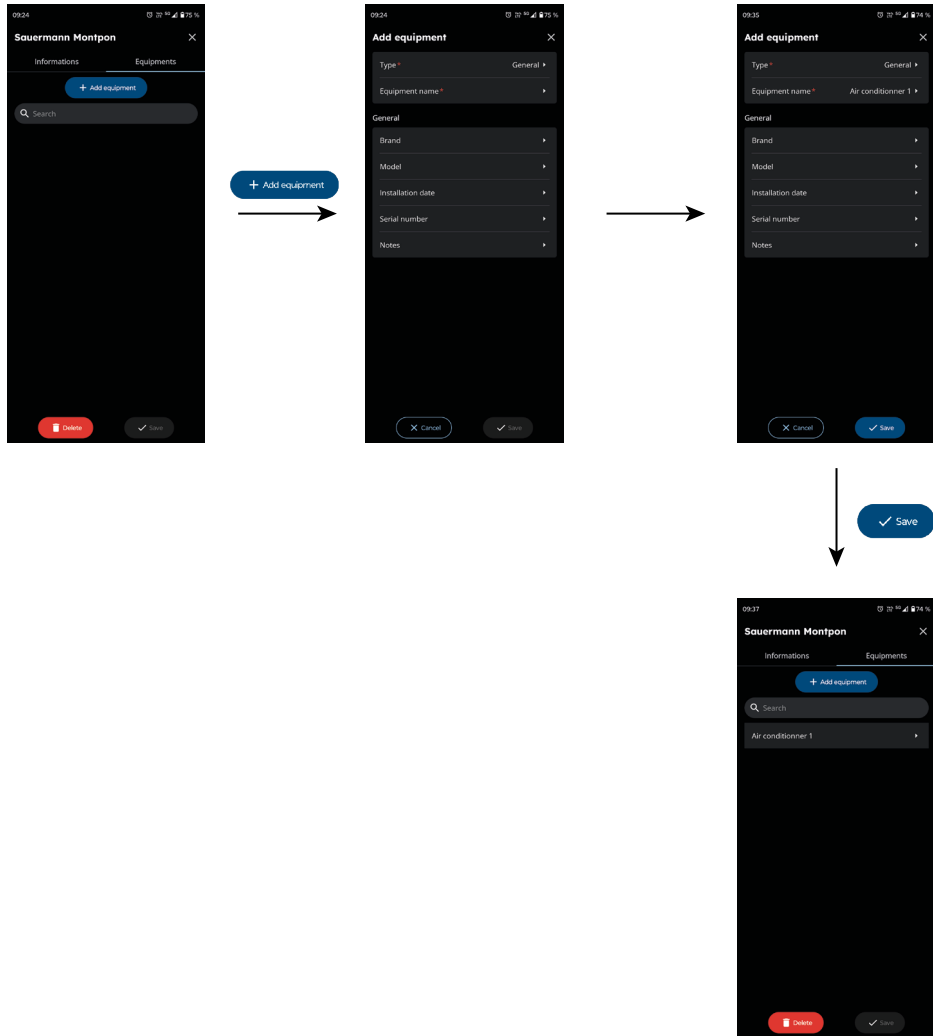
Manage customer database

The Sauermann Pilot App allows to add some technicians that work on different HVACR domains.

5.1 Add technicians

- Tap ⊚ on the top left of the screen.
- Tap **"Technician database"**.
- Tap **"Add technician"** button.
- Fill in technician fields.
- Tap **"Save"** button.

The refrigeration test allows to measure and calculate the following parameters:
- Low pressure / High pressure
- Refrigerant evaporator temperature
- Pipes temperatures
- Superheating temperature
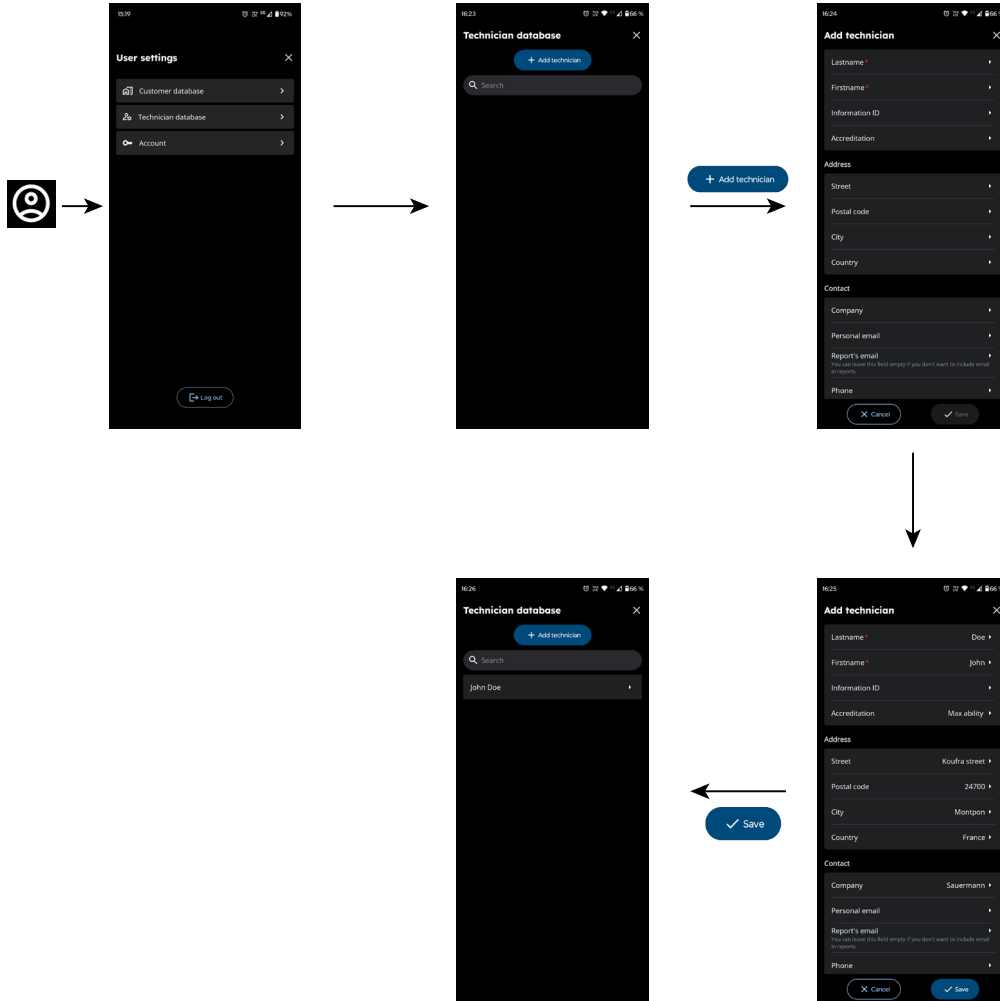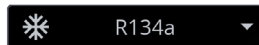- Subcooling temperature
- Refrigerant condensor temperature

From the Refrigeration and Cold Chain menu:
- Tap **"Refrigeration"**.
- Make the necessary adjustments to perform the test:
  - **Source of measures:** Select the source of measures for T1 and T2 temperatures, low pressure and high pressure.
  - **Units:** Select the unit for temperature, pressure and atmospheric pressure.
  - **Pressure:** Define whether pressure is relative or absolute. If absolute is selected, enter the atmospheric pressure.
  - **Heat loss compensation:** Enable or disable the heat loss compensation. If it's enabled, select the wired temperature probe used.
  - **Table and chart:** Select which value will be displayed on table and charts. Four measurements can be displayed (with two different units).

    ⓘ   When a manifold is connected to the application, it is possible to synchronise data from the manifold to the application: measurement source, units, pressure, compensation, pipe temperature.

- Tap ☑ at the top right of the screen to validate.

- Select the refrigerant pressing the gas selection button: ❄ R134a ▼

ⓘ Optionally add Customer information and Technican. This information can also be added / edited later on.

7. One-way refrigeration test

Refrigeration one-way test is useful for a quick test when you do not wish to connect both Low pressure and High pressure, but only one pressure and you want to control if you are measuring Subcooling or Superheat especially for gliding refrigerants. The one-way refrigeration test allows to measure and calculate the following parameters:
- High pressure OR Low pressure
- Refrigerant condensor temperature OR Refrigerant evaporator temperature
- Pipes temperatures
- Subcooling temperature OR Superheating temperature

From the Refrigeration and Cold Chain menu:
- Tap **"Refrigeration one-way"**.
- Configure the settings to perform the test:
  - **Source of measures:** Select the source of measures for T2 temperatures, low pressure or high pressure.
  - **Units:** Select the unit for temperature, pressure and atmospheric pressure.
  - **Pressure:** Define whether pressure is relative or absolute. If absolute is selected, enter the atmospheric pressure.
  - **Heat loss compensation:** Enable or disable the heat loss compensation. If it's enabled, select the temperature probe used.
  - **Table and chart:** Select which value will be displayed on table and charts. Four measurements can be displayed (with two different units).
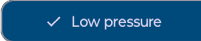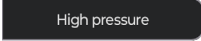
    ⓘ When a manifold is connected to the application, it is possible to synchronise data from the manifold to the application: measurement source, units, pressure, compensation, pipe temperature.

- Tap ✓ at the top right of the screen to validate and display measurements.
- Select the refrigerant pressing the gas selection button: [❄ R134a ▼] .
- Tap [✓ Low pressure] or [High pressure] to switch low pressure and high pressure.

The Pilot app allows to calculate the target superheat.

> ⓘ To calculate this value, dry bulb temperature and wet bulb temperature can be manually entered or measured by temperature probes for the dry bulb temperature and by psychrometer probes for the wet bulb temperature. Two temperature probes such as Si-RT2, Si-RT5 or Si-RT7 and two psychrometer probes such as Si-TH4 are needed.

From the Refrigeration and Cold Chain menu:
- Tap **"Target Superheat"**.
- Configure the settings to perform the test:
  - **Superheat:** Select the source of measures for dry bulb temperature and for wet bulb temperature.
    - **Dry bulb temperature:** activate the **"Auto dry bulb temperature"** button and select a temperature probe (Si-RT2, Si-RT5 or Si-RT7) or do not activate **"Auto dry bulb temperature"** button and enter manually the temperature.
    - **Wet bulb temperature:** activate the **"Auto wet bulb temperature"** button and select the Si-TH4 psychrometer probe or do not activate **"Auto wet bulb temperature"** button and enter manually the temperature.
  - **Source of measures:** Select the source of measures for T1 and T2 temperatures, low pressure and high pressure
  - **Units:** Select the unit for temperature, pressure and atmospheric pressure.
  - **Pressure:** Define whether pressure is relative or absolute. If absolute is selected, enter the atmospheric pressure.
  - **Heat loss compensation:** Enable or disable the heat loss compensation. If it's enabled, select the temperature probe used.
  - **Table and chart:** Select which value will be displayed on table and charts. Four measurements can be displayed (with two different units).
    > ⓘ When a manifold is connected to the application, it is possible to synchronise data from the manifold to the application: measurement source, units, pressure, compensation, pipe temperature.

- Tap ☑ at the top right of the screen to validate and display measurements.

- Select the refrigerant pressing the gas selection button: ❄ R134a ▼

The Evacuation function allows to eliminate other gases and humidity from the refrigeration circuit.

ⓘ The Si-RV4 vacuum probe is mandatory to perform this measurement.

From the Refrigeration and Cold Chain menu:
- Tap **"Evacuation"**.
- Configure the settings to perform the test:
    - **Evacuation:** Enter the target value and the max decay target value.
    - **Source of measures:** Select the source of measures for temperature and vacuum.
    - **Units:** Select the unit for temperature, vacuum and atmospheric pressure.
    - **Pressure:** Define whether pressure is relative or absolute. If absolute is selected, enter the atmospheric pressure.
    - **Heat loss compensation:** Enable or disable the heat loss compensation. If it's enabled, select the temperature probe used.
    - **Table and chart:** Select which value will be displayed on table and charts. Four measurements can be displayed (with two different units).

        ⓘ When a manifold is connected to the application, it is possible to synchronise data from the manifold to the application: measurement source, units, pressure, compensation, pipe temperature.

- Tap ✓ at the top right of the screen to validate and display measurements.

10. Pressure test

The pressure test allows to check if there are any leaks in the system. To perform this test, the system pressure and the ambient temperature will be measured over a period of time.

From the Refrigeration and Cold Chain menu:
- Tap **"Pressure test"**.
- Configure the settings to perform the test:
  - **Pressure test:** Activate or not the temperature compensation.
  - **Source of measures:** Select the source of measures pressure and temperature.
  - **Units:** Select the unit for temperature, pressure and atmospheric pressure.
  - **Pressure:** Define whether pressure is relative or absolute. If absolute is selected, enter the atmospheric pressure.
  - **Heat loss compensation:** Enable or disable the heat loss compensation. If it's enabled, select the temperature probe used.
  - **Table and chart:** Select which value will be displayed on table and charts. Four measurements can be displayed (with two different units).

    ⓘ When a manifold is connected to the application, it is possible to synchronise data from the manifold to the application: measurement source, units, pressure, compensation, pipe temperature.

- Tap ✓ at the top right of the screen to validate and display measurements.

11. Delta T measurement

The delta T measurement allows to measure the temperature difference between T1 and T2.

ⓘ Two temperature probes are needed to perform this measurement. We recommend using Si-RT2, Si-RT5 and/or Si-RT7 temperature probes.

From the Refrigeration and Cold Chain menu:

- Tap **"Delta T"**.
- Configure the settings to perform the test:
  - **Source of measures:** Select the source of measures for temperature.
  - **Units:** Select the unit for temperature and atmospheric pressure.
  - **Pressure:** Define whether pressure is relative or absolute. If absolute is selected, enter the atmospheric pressure.
  - **Heat loss compensation:** Enable or disable the heat loss compensation. If it's enabled, select the temperature probe used.
  - **Table and chart:** Select which value will be displayed on table and charts. Four measurements can be displayed (with two different units).

    ⓘ When a manifold is connected to the application, it is possible to synchronise data from the manifold to the application: measurement source, units, pressure, compensation, pipe temperature.

- Tap ☑ at the top right of the screen to validate and display measurements.

The compressor test function allows to check that the compressor of the refrigeration system is operating correctly (depending on the inlet and outlet temperatures).

(i) Three temperature probes are needed to perform this measurement. We recommend using Si-RT2, Si-RT5 and/or Si-RT7 temperature probes. Minimum one Si-RT7 will be necessary.
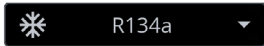
From the Refrigeration and Cold Chain menu:
- Tap **"Compressor"**.
- Configure the settings to perform the test:
  - **Source of measures:** Select the source of measures for T1, T2 and T3 temperatures, low presure and high pressure.
  - **Units:** Select the unit for temperature, pressure and atmospheric pressure.
  - **Pressure:** Define whether pressure is relative or absolute. If absolute is selected, enter the atmospheric pressure.
  - **Heat loss compensation:** Enable or disable the heat loss compensation. If it's enabled, select the temperature probe used.
  - **Table and chart:** Select which value will be displayed on table and charts. Four measurements can be displayed (with two different units).

    (i) When a manifold is connected to the application, it is possible to synchronise data from the manifold to the application: measurement source, units, pressure, compensation, pipe temperature.

- Tap ✓ at the top right of the screen to validate and display measurements.
- Select the refrigerant pressing the gas selection button: ❄ R134a ▼

ⓘ For the filling function, a Si-RS1 digital refrigerant scale is needed.

From the Refrigeration and Cold Chain menu:
- Tap **"Filling / Recovery"**.
- Configure the settings to perform the test:
  - **Filling / Recovery:** Select the filling function or recovery function. If **"Filling"** is selected, enter the target type and the target value.
  - **Source of measures:** Select the source of measure for low pressure, high pressure, T1 and T2 temperatures and weight.
  - **Units:** Select the unit for temperature, pressure, atmospheric pressure and weight.
  - **Pressure:** Define whether pressure is relative or absolute. If absolute is selected, enter the atmospheric pressure.
  - **Heat loss compensation:** Enable or disable the heat loss compensation. If it's enabled, select the temperature probe used.
  - **Table and chart:** Select which value will be displayed on table and charts. Four measurements can be displayed (with two different units).

    ⓘ When a manifold is connected to the application, it is possible to synchronise data from the manifold to the application: measurement source, units, pressure, compensation, pipe temperature.

- Tap ☑ at the top right of the screen to validate and display measurements.

The manifold app allows to calculate the COP (coefficient of performance) for an installation using water or air and the EER (Energy Efficiency Ratio).

14.1 Coefficient of performance

From the Refrigeration and Cold Chain menu:
- Tap **"Coeff. of performance - Water"** or **"Coeff. of performance - Air"**.
- Enter manually the following parameter to calculate the COP:
  - Voltage: between 0 and 1000 V
  - Intensity: between 0 and 1000 A
  - Flow rate: between 0 and 10000 m³/h
  - Delta T: between -200 and 200 °C (-328 to 392 °F)
  - Phase cos(phi): between 0 and 1
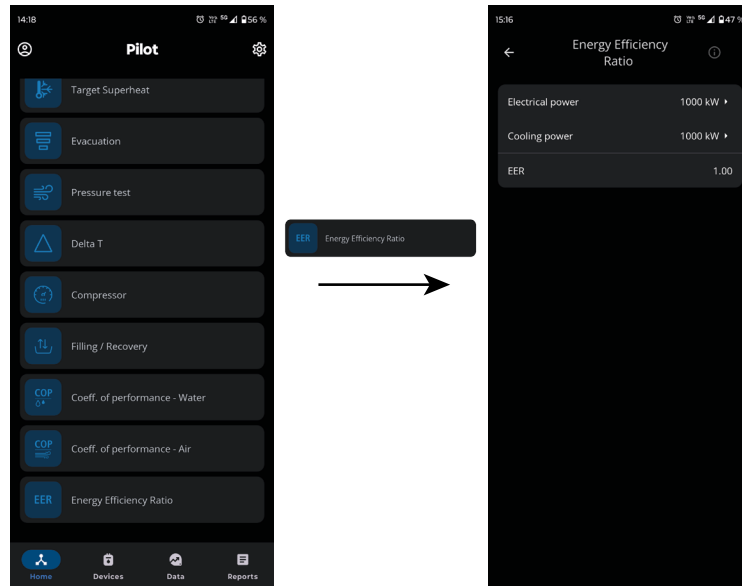 - Thermal coefficient: between 0 and 1 Wh/m3.°C

ⓘ The thermal coefficient for water is 1161.00Wh/m3.C, and is not modifiable.
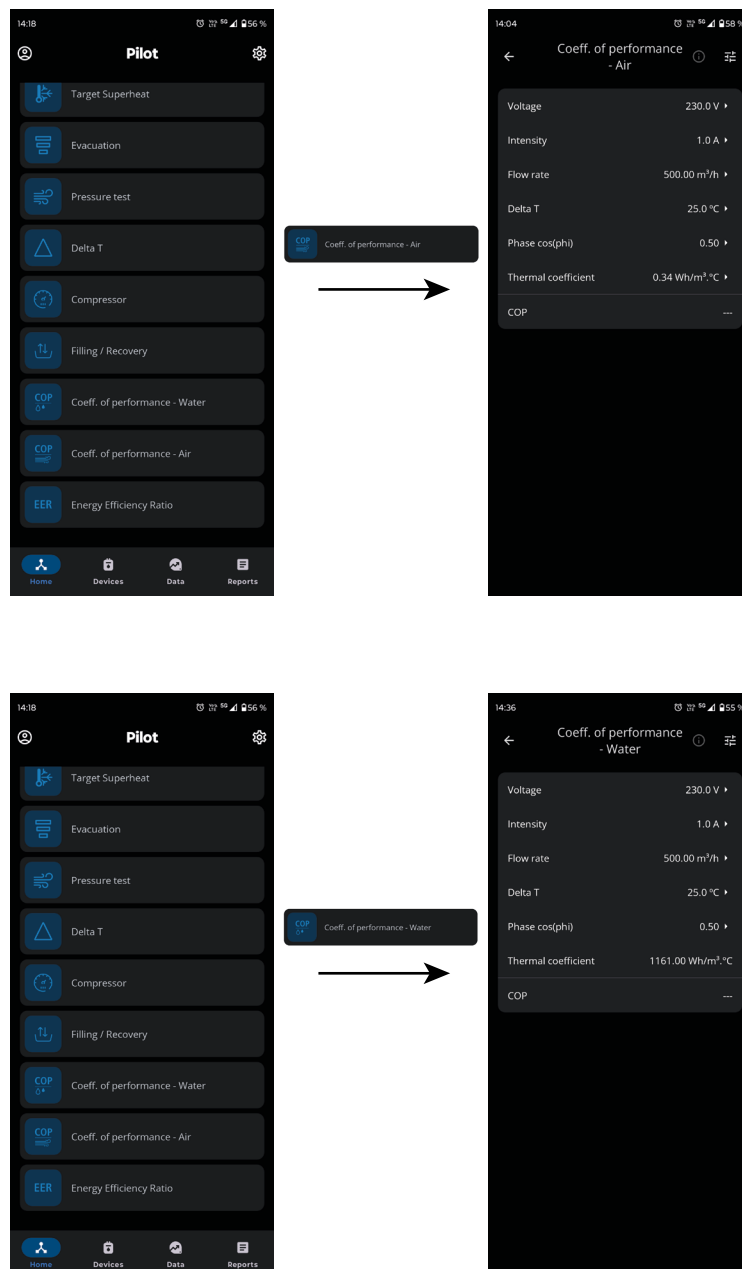
14.2 Energy Efficiency Ratio

From the Refrigeration and Cold Chain menu:
- Tap **"Energy Efficiency Ratio"**.
- Enter manually the following parameter to calculate the EER:
    - Electrical power: between 0 and 10000 kW
    - Cooling power: between 0 and 10000 kW

15.1 Access to data saved in Sauermann Pilot app

When data has been saved via the app, you can find them in the **"Data"** menu.
From the Refrigeration and Cold Chain menu:
- Tap **"Data"** at the bottom of the screen.
- Select **"App"**.
  Folders with date of datasets are displayed. It's also possible to sort data by customer or measure.
- Tap the required folder of the dataset.
- Tap the dataset time to view data.
  Dataset table is displayed.

  From this window, it is possible to display data as graph by clicking on ⌂ *and to display information about the dataset by clicking on* ⓘ *.*

15.2 Access to data saved in the Si-RM350 / Si-RM450 manifold

It's possible to retrieve data from the Si-RM350/Si-RM450 manifold, you can find them in the **"Data"** menu.
From the Refrigeration and Cold Chain menu:
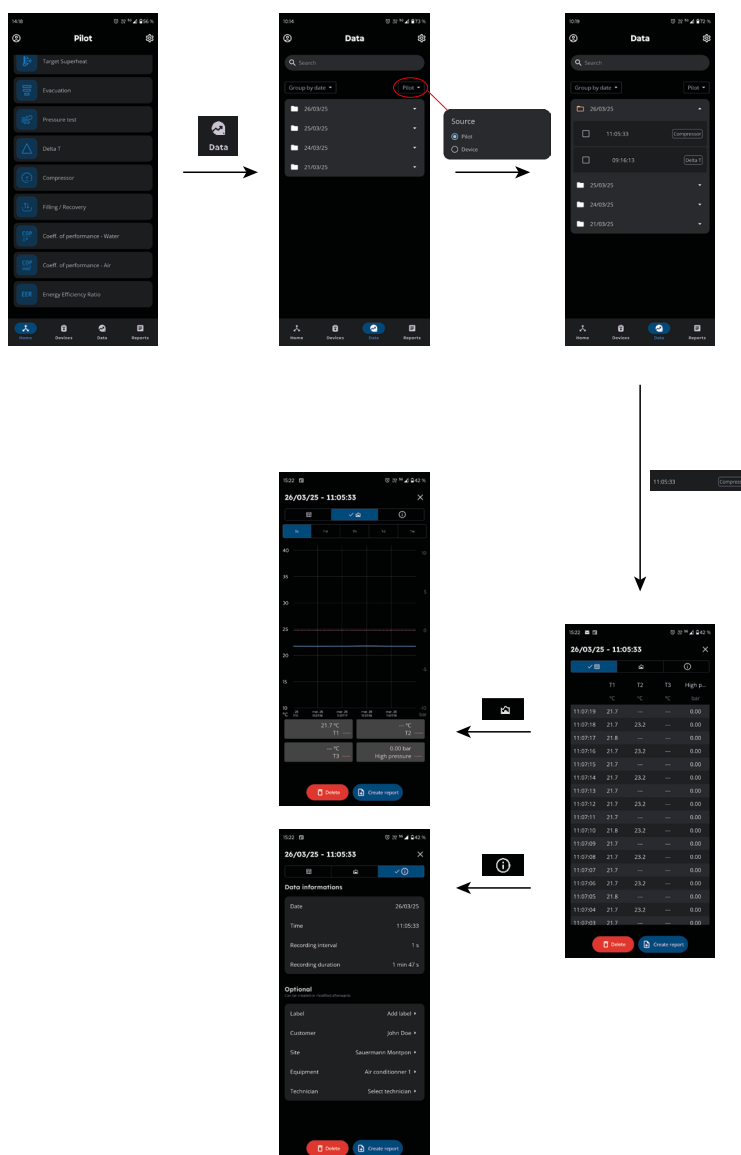- Tap **"Data"** at the bottom of the screen.
- Select **"Device"**.

Folders with date of datasets are displayed. It's also possible to sort data by customer or device.
- Tap the required folder of the dataset.
- Tap the dataset time to view data.
Dataset table is displayed.

From this window, it is possible to display data as graph by clicking on *and to display information about the dataset by clicking on* *.*

15.3 Export datasets

It is possible to export data saved in pdf and csv formats.
- Tap **"Create report"** button on the bottom right from data, table or graph screens.
The report creation screen opens.
- Select the format: pdf or csv.
- Add a label.
- Select a customer, a site, an equipment and/or a technician if needed.
- Add a comment if needed.
- Add a logo (Default logo: Sauermann)
- Add signatures if needed.
- Add pictures if needed.
- Tap **"Create report"**.
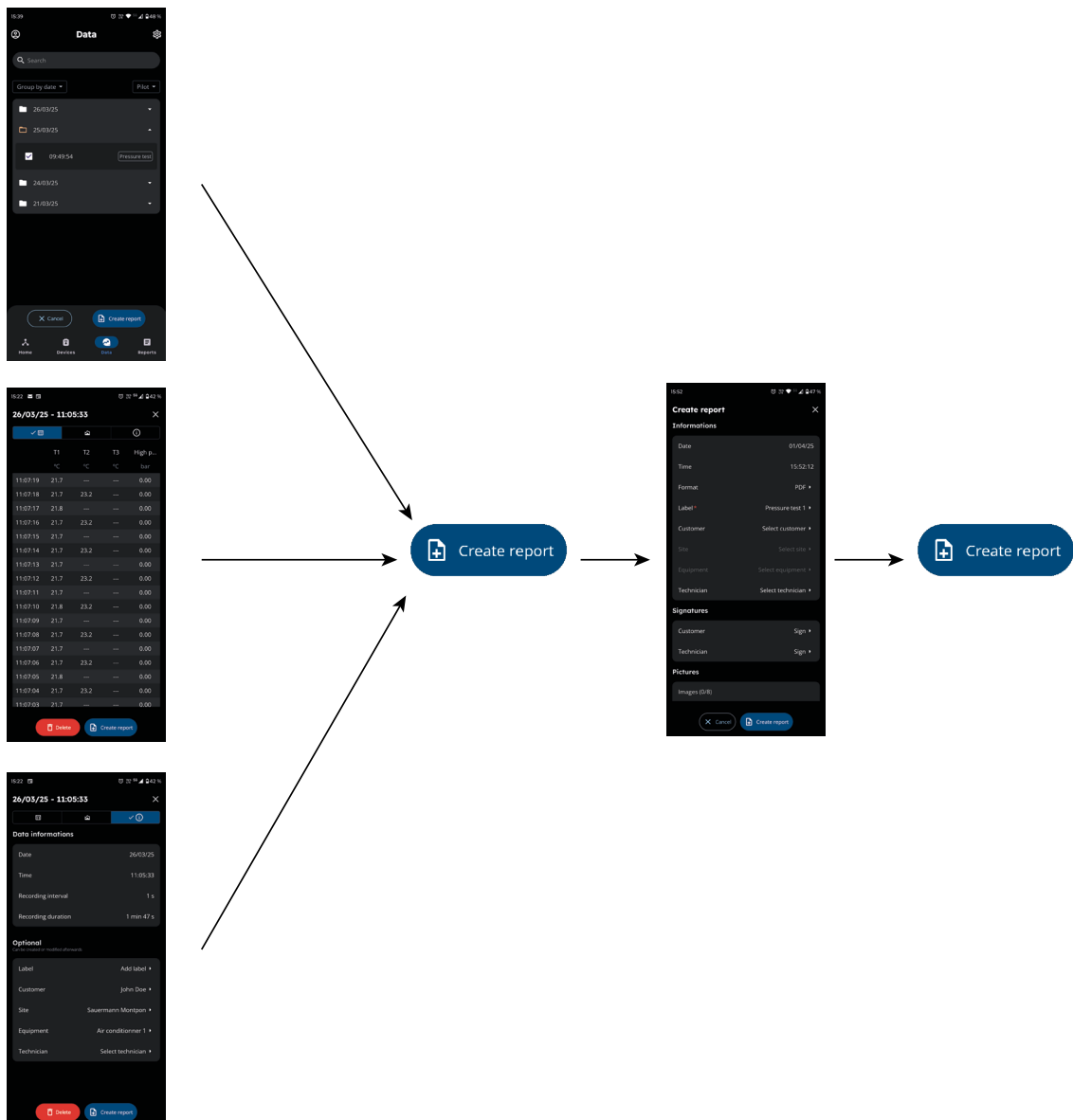
Once reports have been saved:
- Tap **"Reports"** at the bottom right of the screen.
- Tap the required report.
  If it's a pdf report, the report opens. You can then delete it or share it.
  If it's a csv report, you can delete it or share it.

(i) For filling/recovery tests, only csv report can be created.

16. Troubleshooting diagnostics

The Sauermann Pilot App allows to help you in case of troubleshooting with your installation.
From the Refrigeration and Cold Chain menu:

• Tap ⚙.

• Tap **"Refrigeration and cold chain"** in **"Troubleshooting"** part.

• Answer by YES or NO to questions asked by the Sauermann Pilot App.
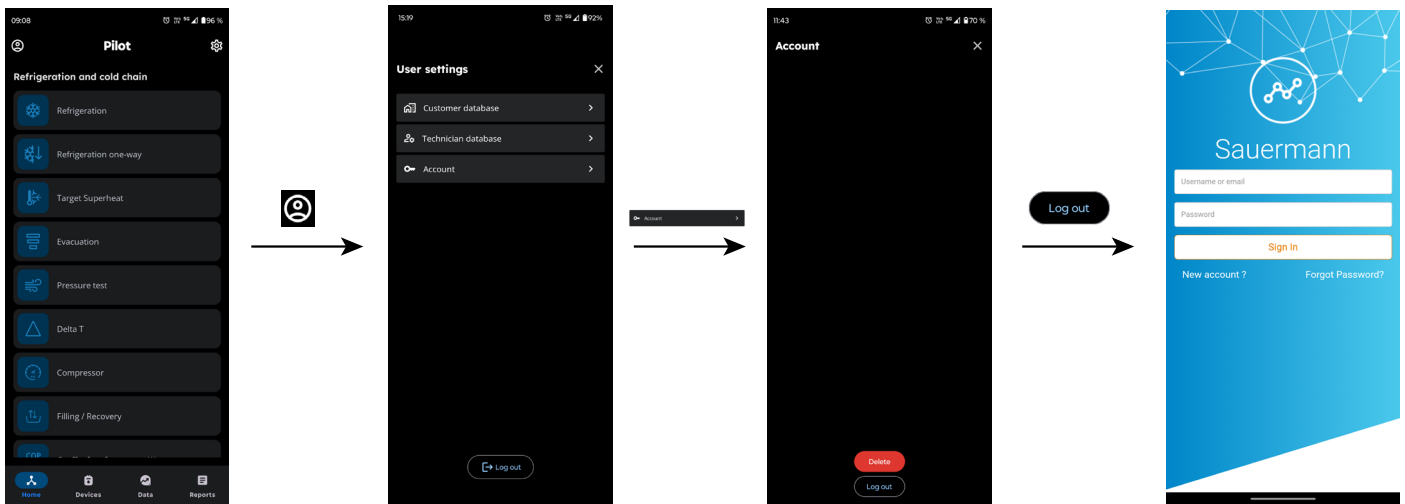 *The application will propose a solution to the troubleshooting encountered.*

Solutions proposed by the Sauermann Pilot App
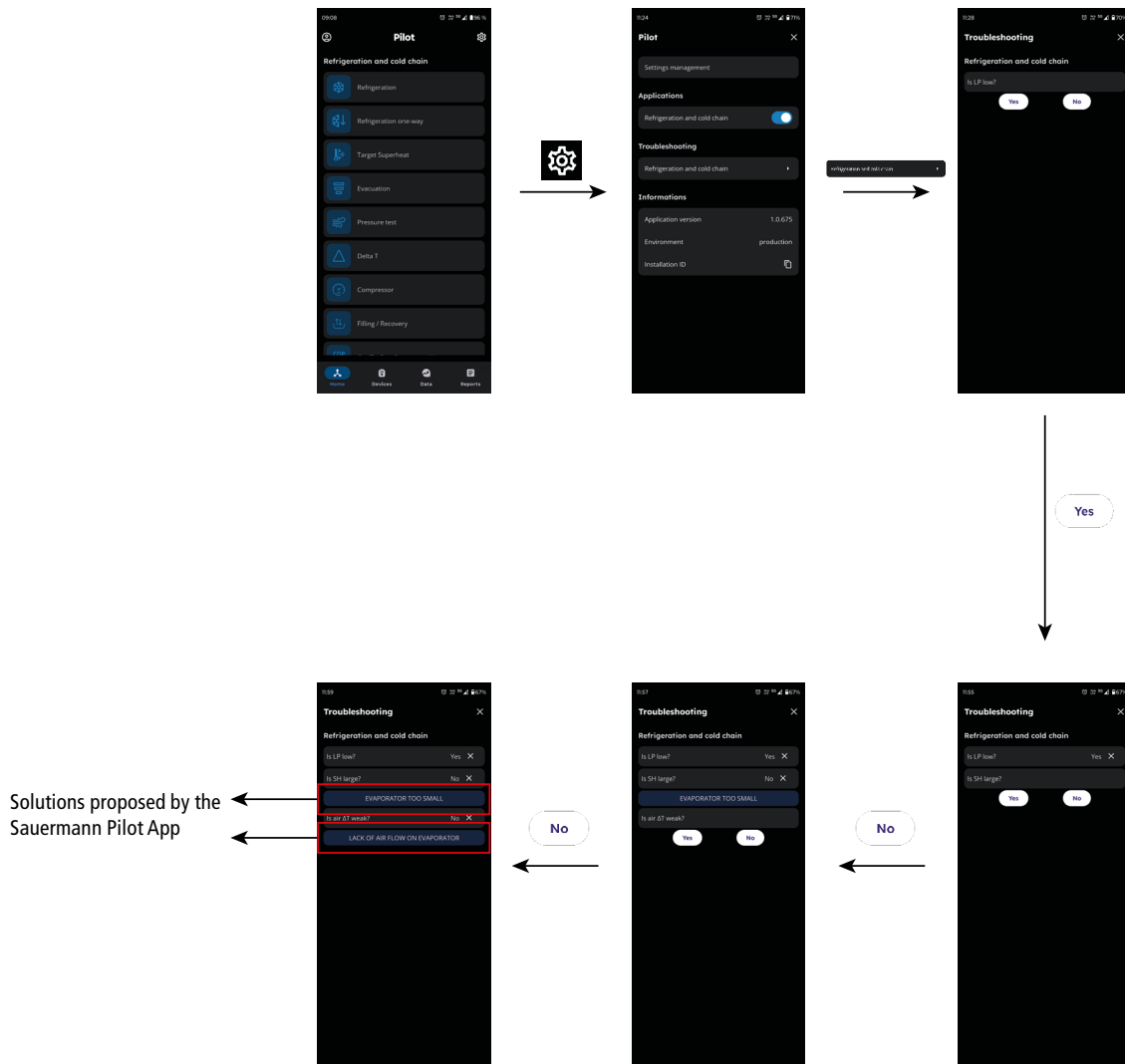
To log out from the app:

• Tap ⊚ .

• Tap **"Log out"**.

⚠ **You will no longer be connected to the app. The email and password will have to be re-entered to log in to the app.**
It is not necessary to log out each time you close the app.
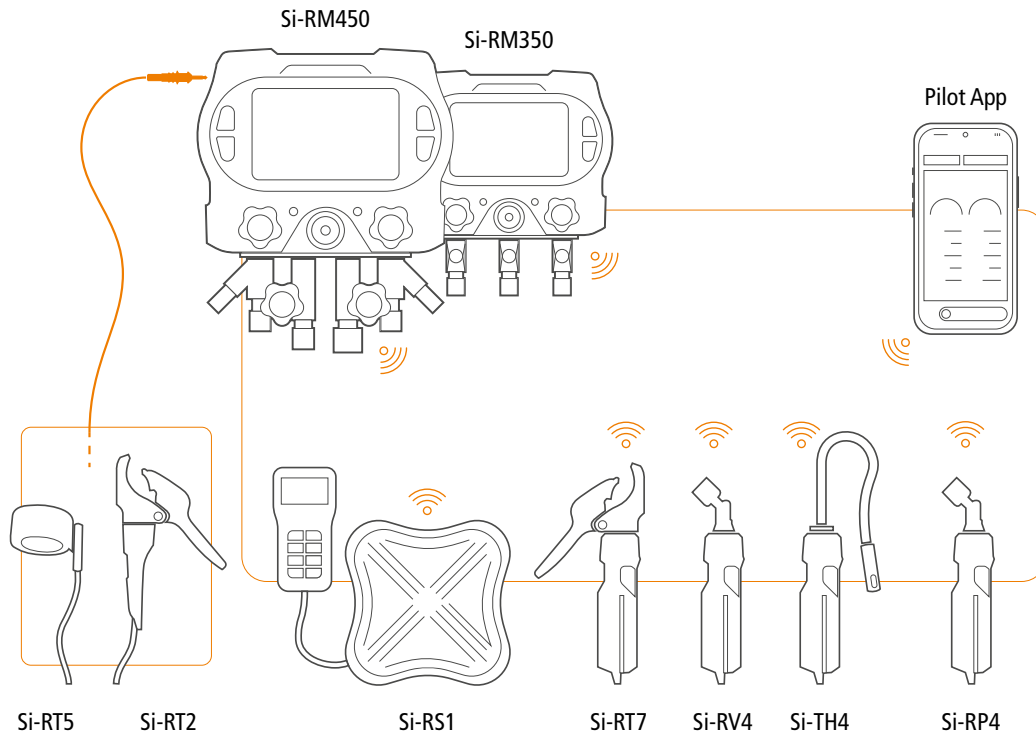

To delete your Sauermann account:

• Tap ⊚ .

• Tap **"Account"**.

• Tap **"Delete"**.

⚠ **Your Sauermann account bill be deleted. You will have to create a new one.**

18.1 Overview

Si-RM450

Si-RM350

Pilot App

Si-RT5   Si-RT2   Si-RS1   Si-RT7   Si-RV4   Si-TH4   Si-RP4

18.2 Accessories

Designation	Sales reference	Description
ACC25830	25830	2x connectors for system with R410 and R32. 1/4″MFL to 5/16″FFL
Si-RM6	26141	Extension cable 5 meters length for temp clamp.
Si-RS1	28153	Scale. Measurement range up to 110 kg (243 lbs). Wired remote with display. Wireless connection to manifold. Supplied in hard plastic case.
Si-RVP1-220V	28154	220 V, 85 l/min vacuum pump. 2-stage. Refrigerants: A2L. Ultimate vacuum: 15 microns.
Si-RVP3-220V	28156	220 V, 170 l/min vacuum pump. 2-stage. Refrigerants: A2L & A3. Ultimate vacuum: 15 microns.
Si-RVP1-110V	28155	110 V, 3 CFM vacuum pump. 2-stage. A2L refrigerants. Ultimate vacuum: 15 microns.
Si-RVP2-110V	28157	110 V, 6 CFM vacuum pump. 2-stage. Suitable for A2L. Ultimate vacuum: 15 microns.

Sauermann Industrie
ZA Bernard Moulinet
24700 Montpon
France
T. +33 (0)5 53 80 85 00
services@sauermanngroup.com

Sauermann NA Corp.
1200 Veterans Memorial Hwy,
Suite 100,
Hauppauge, NY 11788
USA
T. +1 631-234-7600
services@sauermanngroup.com

Sauermann GmbH
Leibnizstraße 6
D – 74211 Leingarten
T. +49 (0)7131/399990
F. +49 (0)7131/399992
info.germany@sauermanngroup.com

Sauermann UK
Units 7-9, Trident Business Park
Amy Johnson Way
Blackpool - FY4 2RP
T. +44 (0) 870 950 6378
F. +44 (0) 870 950 6379
info.uk@sauermanngroup.com

Sauermann Italia srl SU
Via Golini 61/10
40024 Castel S.Pietro Terme (BO)
T. (+39)-051-6951033
F. (+39)-051-942254
info.italy@sauermanngroup.com

Sauermann Ibérica
C/Albert Einstein 33.
Planta 3. P. I. Santa Margarida II-
08223 Terrassa (Spain)
T. +34 931 016 975
services@sauermanngroup.com

Sauermann Australia
1/36 Campbell Avenue, Cromer ,2099,
NSW, Sydney
T. (+612) 8880 4631
services@sauermanngroup.com

Sauermann Shanghai
General Equipment Manufacturing'
CO LTD
1 Changxu Road' Building 1
Jiading Shanghai 201808
CHINA
T. (+86) 137 7436 8047

⚠ BE CAREFUL! Material damages can happen, so please apply the precautionary measures indicated.

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