sauermann®

USER MANUAL

Si-Manifold App
Application for Si-RM3, Si-RM13 and Si-RV3

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Before using the device, please read carefully this user manual. It delivers important information about the device operating, maintenance and reprocessing.

1.1. Use

- Interior or exterior use.
- This device has been developed for the pressure and temperature measurements and settings on stationary or mobile refrigeration equipment. It must not be used in any other purpose.
- This device has been developed, produced and sold exclusively to trained and qualified experts in the field of HVACR. Appropriate training is necessary in order to guarantee a riskless use of this instrument. Sauermann is not responsible for any possible accident during its use.
- In case of improper use, gases leak can occur and be dangerous towards the user or the environment. Please always use the device in accordance with its intended use and within parameters described in the technical features in order not to compromise the protection ensured by the devices.
- When installing the device, the safety of the system integrating the device is the responsibility of the system assembler.
- Only the accessories provided with the device or available as an option must be used.
- Maximum operating pressure: 60 bar (945 psi)
- Do not use the device if it is damaged or if it operates abnormally. Inspect the device before every use. In case of doubt, please contact the Sauermann's After-sales service.
- Always wear protective glasses and gloves when using the Manifold in order to protect your eyes and skin when operating refrigerant gases. The vapours of refrigerant gases are extremely cold. Do not expose your skin to these vapours.

1.2. Warning

- Do not authorise pressures beyond the device limits. Please refer to the technical features described in this user manual.
- Never use a refrigerant gas that is not listed in the refrigerant gases menu of the application. Several refrigerant gases have been excluded for safety reasons. Use of other unapproved gases can damage the device.
- The refrigerant gases database of the application includes refrigerant gases classified as inflammable. If these gases are selected, the operator must compulsory have an additional training or qualification. Please consult the competent legal authorities and fully respect their directives.
- The device must not be exposed to rain or any other humid environments (> 80 %RH).
- Do not use the device next to explosive gases, vapour or dust.
- The device must not be used in ATEX zones according to applicable standards.
- In any case the device can be used as a pressure regulator, especially using the N2 nitrogen.
- The device must not be used with the ammoniac refrigerant gas (NH_3 / R717).
- Do not use this device on systems containing chemical leaks clogging. They can break into the device and dry inside the instrument causing irreversible damages.
- Do not perform contact measurements on non-insulated or under voltage parts.
- Do not store the device with solvents. Do not use desiccants.
- The device does not contain any internal part repairable by the user. Do not open the device. The maintenance must be

performed by Sauermann only.

- If the device falls or in case of similar inconveniences, the hoses for refrigerants can break. The stop valves can be damaged too and create internal damages than can not be identified from the outside. Therefore, the hoses for refrigerants must be replaced every time the device falls or similar mechanical load. Please send back the device to Sauermann After-sales service for a technical check and to ensure your own safety.
- This device allows to connect several inputs, including electrical and mechanical ones. Be careful in order to avoid any risk of electrical shock. Do not use the device if you are not able to detect any electrical failure.

1.3. Environment protection

- The refrigerant gases can affect the environment. Please apply the environmental current regulations.
- Send back the device at its end of working life in a waste collection centre for electrical and electronic components (according to local regulations), or send it back to Sauermann to ensure a required waste collection in the respect of the environment.

This user manual describes the Si-Manifold application operating with the Si-RM3, the Si-RM13 Manifold and the Si-RV3 vacuum probe.

2.1. Minimum required versions

In order to ensure the application operation, the device requires the following minimum versions:

- Android 4.4
- IOS 8.0
- BLE 4.0

2.2. Operating modes

The Manifold indicates the operating high and low pressures and temperatures of a refrigerating plant. It also allows maintenance and troubleshooting on the equipment fluid circuit.
According to the type of probe it is necessary to select an operating mode in the application.
These operating modes are:

- Manifold mode: used with Si-RM3, Si-RM13 and the temperature clamps
- Vacuum probe mode: used with Si-RV3 and Si-RM3 low pressure and Si-RM13 low pressure
- Tightness mode: used with Si-RM3 high pressure and Si-RM13 high pressure

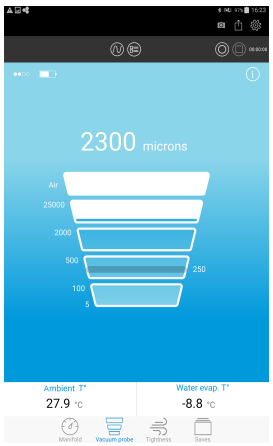
➢ Press

,

or

to access the required mode.

Manifold mode



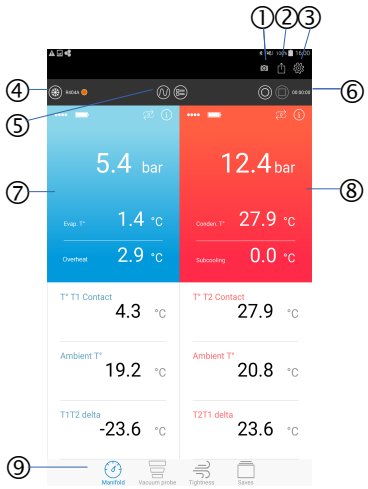
Vacuum probe mode

Tightness mode

2.3. Screens description

2.3.1. Manifold screens

In Manifold mode, the screen will be different according to the mobile or tablet orientation.



Portrait mode

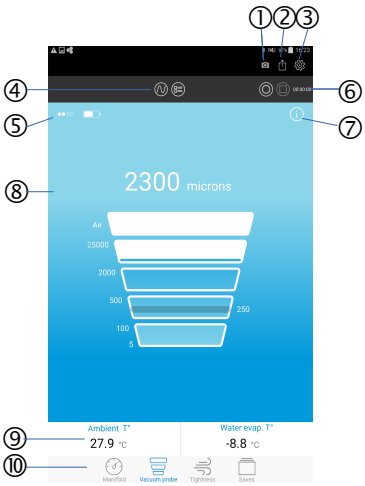
1. Perform a screenshot
2. Create and export a report
3. Access to the application configuration parameters
4. Name of the selected gas and access to the gases list
5. Display different views: table or graph
6. Save, pause, stop a dataset
7. Measured or calculated parameters with the low pressure probe
8. Measured or calculated parameters with the high pressure probe
9. Access to the measuring modes and saves

Landscape mode

1. Wireless connection reception and battery levels
2. Perform an auto-zero, access to the connected probe information

2.3.2. Vacuum probe screens

With the Si-RV3 vacuum probe:



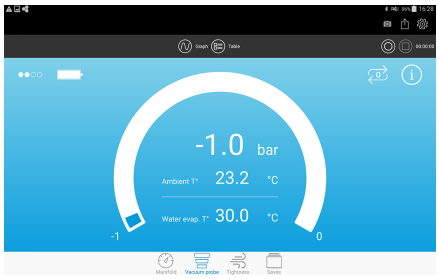
Portrait mode

1. Perform a screenshot
2. Create and export a report
3. Access to the application configuration parameters
4. Display different views: table or graph
5. Wireless connection reception and batteries level
6. Save, pause, stop a dataset
7. Access to the connected probe information
8. Vacuum probe measurements
9. Fixed values
10. Access to the measuring modes and saves

Landscape mode

With the Si-RM3 low pressure probe:

Portrait mode



Landscape mode

1. Perform an auto-zero, access to the connected probe information

2.3.3. Tightness screens

Portrait mode

1. Perform a screenshot
2. Create and export a report
3. Access to the application configuration parameters
4. Display different views: table or graph
5. Wireless connection reception and batteries level
6. Save, pause, stop a dataset
7. Perform an auto-zero, access to the connected probe information
8. Pressure probe measurements
9. Access to the measuring modes and saves

Landscape mode

3.1. Si-RM3 / Si-RM13

Pressure	
Pressure valves	2 valves
Measuring range	From -1 to 60 bar (-14 to 870 psi)
Pressure sensing accuracy*	±0.5% of full scale
Available units	psi, MPa, kPa, bar, foot of head
Resolution	0.1 psi, 0.001 MPa, 1 kPa, 0.01 bar, 1 foot of head
Overload	65 bar (943 psi)
Burst pressure	150 bar (2175 psi)
Operating temperature (handle)	From -20 to 50°C (-4 to 122°F)
Storage temperature (handle)	From -20 to 60°C (-4 to 140°F)

Temperature	
Number of probe	2 clamp probes
Temperature sensors	High accuracy NTC thermistors
Temperature sensor range**	From -40 to 150°C (-40 to 302°F)
Temperature accuracy*	±1.3°C (±2.4°F)***
Maximum operating temperatures	Jaws: 150°C (302°F) - Cable: 105°C (221°F) - Handle : 90°C (194°F)
Available units	°C, °F, K
Resolution	0.1°C, 0.1°F, 0.1 K
Pipes diameter	From 6 to 42 mm (0.2'' to 1.7'')
Cable	2 m length with strengthened Jack connector 3 points, Ø3.2 mm, in PVC, max. temperature 105°C (221°F)
Operating temperature (handle)	From -20 to 50°C (-4 to 122°F)
Storage temperature (handle)	From -20 to 60°C (-4 to 140°F)

Device	
Environmental conditions of use	Hygrometry: in non-condensing condition (< 80% RH) Maximum altitude: 2000 m (6561') Non-corrosive or combustible gases
Battery life	250 h (for one measurement every seconds @ 20°C / 68°F)
Wireless connection	Class 1 BLE 4.2
Wireless connection range	Up to 30 m (98 ft) - Depending on smartphone and tablet wireless connection radio strength.
Superheat and subcooling	Automatically calculated by the Manifold app
Refrigerant database	126 refrigerant gases Measurable products: CFC, HFC, HCFC, N, CO_2, H_20
Connections	To installation: female ¼" FFL with Schrader® depressor To flexible: male ¼" MFL with Schrader® valve
Standards	2011/65/EU RoHS II; 2012/19/EU WEEE; 2014/30/EU EMC; 2014/53/EU RED

** All accuracies specified in this document were conducted under laboratory conditions & can be guaranteed for measurement carried out in the same conditions, or carried out with calibration compensation.*

*** The temperature only concerns the sensors operating range, do not use the handle or cables outside the indicated temperature.*

**** The temperature accuracy is given for the -20 to 80°C (-4 to 176°F) range.*

3.2. Si-RV3

Vacuum

Measurement and discharge valves	2 valves
Measuring range	From 5 to 25,000 microns
Pressure sensing accuracy*	±10% of the measured value ±10 microns**
Available units	micron, Pa, hPa, mbar, Torr, mmHg, inHg, inH_2O
Resolution	1 micron from 0 to 1000 microns 10 microns from 1000 to 2000 microns 100 microns from 2000 to 10,000 microns 500 microns from 10,000 to 25,000 microns
Overload	10 bar (145 psi)
Burst pressure	27.5 bar (400 psi)
Operating temperature	From -10 to 50°C (-4 to 122°F)
Storage temperature	From -20 to 60°C (-4 to 140°F)

Device

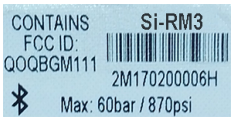
Environmental conditions of use	Hygrometry: in non-condensing condition Maximum altitude: 2000 m (6561') Non-corrosive or combustible gases
Battery life	250 h (for one measurement every three seconds @ 20°C / 68°F)
Wireless connection	Class 1 BLE 4.2
Wireless connection range	Up to 30 m (98 ft) - Depending on smartphone and tablet wireless connection radio strength.
Connections	To installation: female ¼" FFL with Schrader® depressor To flexible: male ¼" MFL with Schrader® valve
Standards	2011/65/EU RoHS II; 2012/19/EU WEEE; 2014/30/EU EMC; 2014/53/EU RED

**All accuracies specified in this document were conducted under laboratory conditions & can be guaranteed for measurement carried out in the same conditions, or carried out with calibration compensation.*

***The pressure accuracy is given for the 100 to 2000 microns range.*

4.1. Si-RM3 / Si-RM13

1. Female connector ¼" FFL with Schrader® depressor
2. Identification label (see below)
3. Male connector ¼" MFL with Schrader® valve
4. Cap
5. Input for temperature clamp probe
6. Operating led
7. On/Off button



Example of label

4.2. Si-RV3

1. Female connector ¼" FFL with Schrader® depressor
2. Identification label (see below)
3. Male connector ¼" MFL with Schrader® valve
4. Cap
5. Operating led
6. On/Off button

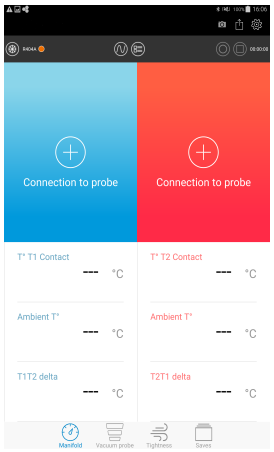
Example of label

5. Pair the probes

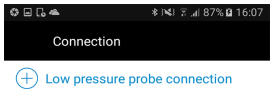
Before using the Si-RV3, Si-RM3 probes and temperature clamps with the Si-Manifold application, it is compulsory to pair the probes for their first use.
Follow the following procedure to pair a probe. The following procedure is described using the Si-RM3 low pressure probe as example.

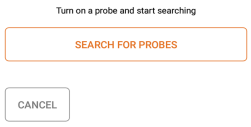
- Launch the application from the smartphone or the tablet.

The following screen is displayed.

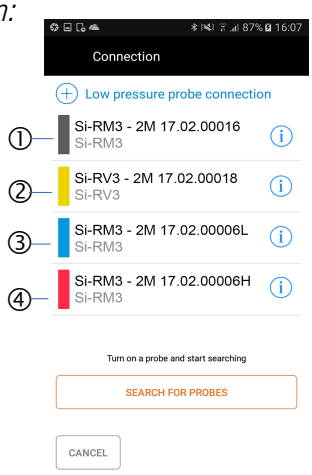


- Press **"Connection to probe"** on the left-hand corner of the screen.
The following screen is displayed.





- Turn on the low pressure probe of the Si-RM3 for a few seconds.
The green light of the probe quickly blinks.
- Press **"Search for probes"**.
This step takes a few seconds. The application searches for turned-on-probes next to the device and then displays them on the screen:

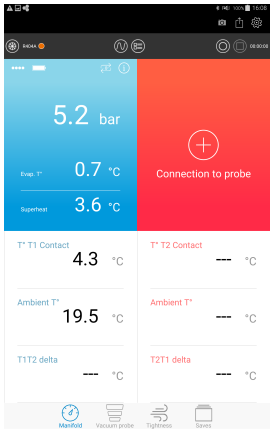


1. Grey: indicates a Si-RM3 probe
2. Yellow: indicates a Si-RV3 probe
3. Blue: indicates a low pressure probe
4. Red: indicates a high pressure probe

➢ Select the probe to pair and then press **"Pair"** on the right-hand corner of the screen.

Pairing is a compulsory step only for the first use. If **"Always link this probe to the low pressure"** is activated, the probe is directly displayed.

Immediately, the measured values are displayed on the screen and the green light of the probe blinks slowly.



Follow the same procedure for the high pressure probe of the Si-RM3 and the vacuum probe of the Si-RV3.

In case of a connection loss with the probe, the following message is displayed:"..."

The probe stores automatically the 60 last measured values in its buffer memory.

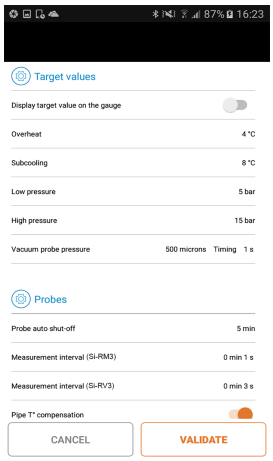
Come closer to the probe with the smartphone or the tablet. The application launches an automatic research of the probe. When the connection is restored, the measurements carry on.

Before performing a measurement, it is possible to set different parameters in the application. These settings concern:

- the target values
- the probes
- the operator
- the units

From this screen, it is also possible to consult the user manual, the application version and the licences.

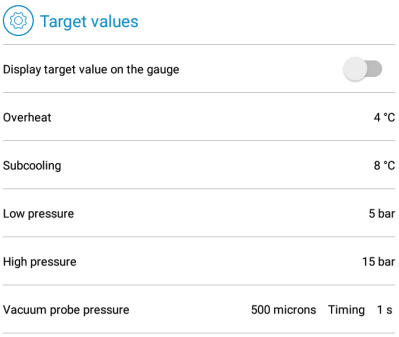
➢ Press **"Parameters"** in the right-hand corner of the screen.
The following screen is displayed.



6.1. Set the target values

This part allows users to set the values that will be materialised on the application.
In Manifold mode:

➢ Activate the display of the target values by pressing the button.
➢ Set the target value for the overheat between 0 and 60°C (32 and 140°F).
➢ Set the target value for the subcooling between 0 and 60°C (32 and 140°F).
➢ Set the target value of the low pressure between -1 and 60 bar (-14 and 870 psi).
➢ Set the target value for the high pressure between 0 and 60 bar (-0 and 870 psi).



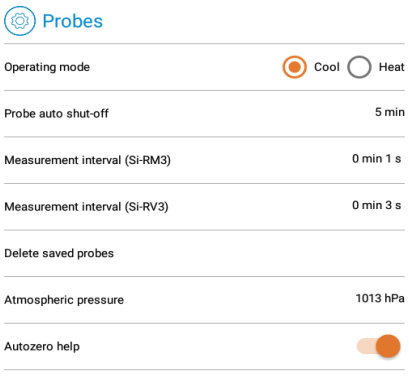
In Vacuum probe mode:

➢ Set the target value for the vacuum pressure between 5 and 25 000 microns then set the delay time, i.e. how long the pressure stays at this defined target value until the **"Target reached"** message is displayed above the measured value.

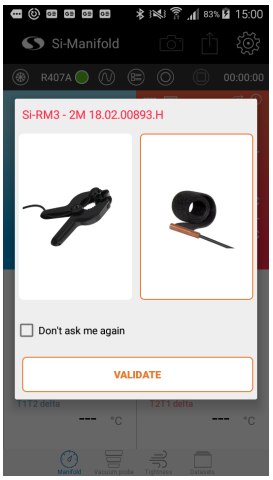
6.2. Set the probes

In the **"Probes"** part:

➢ Select the operating mode: summer or winter.
➢ Select a time before the probe auto shut-off between 1 minute and 4 hours.
➢ Set the measurement rate between 1 second and 2 minutes.
➢ Delete the saved probe: delete all the probes that have been paired with the application.
➢ Inform the atmospheric pressure value between 600 and 1200 hPa (17 and 35 inHg).
➢ Activate the visual assistance of the auto-zero: activated, this function allows to automatically ask if an autozero must be performed before a measurement.



6.3. Set the temperature probes

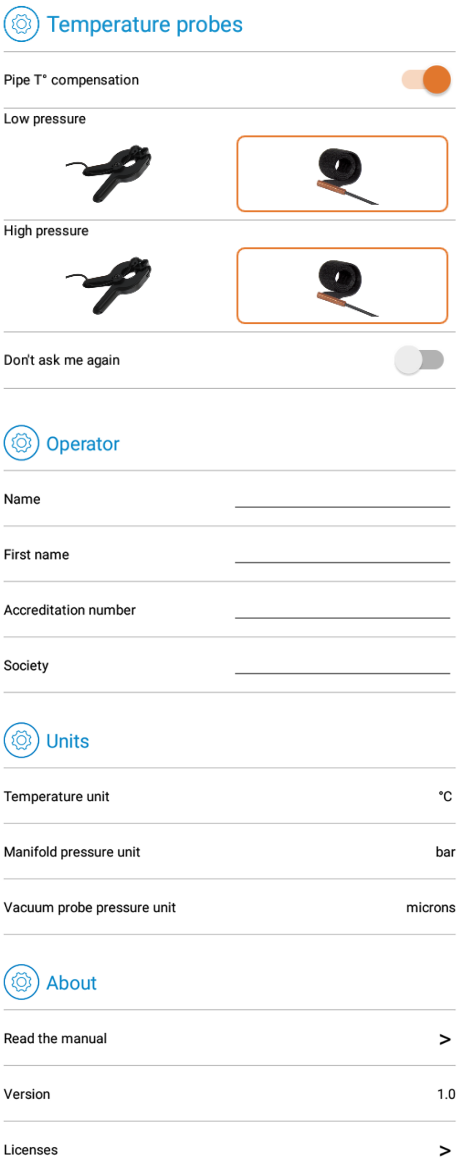


When pairing a Manifold probe, the following screen displays:

- Select the temperature probe type: temperature clamps or Velcro® probe for high diameter pipes.
- To not display this message again, tick "Don't ask me again".
- Press validate.

In **"Temperature probes"** part:

- Activate the pipe temperature compensation: activated, this function allows to take into account the ambient temperature and the pipe temperature to get the refrigerant fluid temperature.
- Select the type of probe used:
  - temperature clamps
    or
  - Velcro® temperature probe for high diameter pipes.
- Tick "Don't ask me again" to memorize the selected probe.
- Untick "Don't ask me again" to reactivate the automatic display of this message.



6.4. Set the operator

In the **"Operator"** part:

- Inform a name in the **"Operator name"** field.
- Inform an accreditation number in the **"Accreditation number"** field.
- Inform the name of the society.

6.5. Set the units

In the **"Units"** part:

- Select the temperature unit: °C, °F or K
- Select the pressure unit for the Manifold and Tightness modes: bar, psi, Mpa, kPa or Feet of head
- Select the pressure unit for the Vacuum mode: microns, mmHg, Torr, mbar, hPa, inH_2O, inHg, or Pa

6.6. About

This part allows to obtain information about the application:

- User manual
- Application version number
- User licences

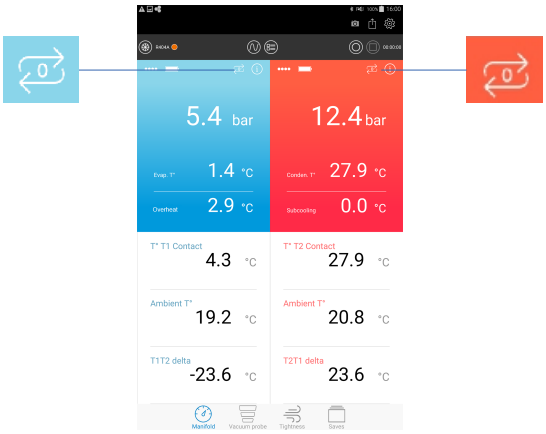
Before any measurement with the Manifold, perform an auto-zero of the probe in open air.

Only a trained and qualified technician can perform the following operations.

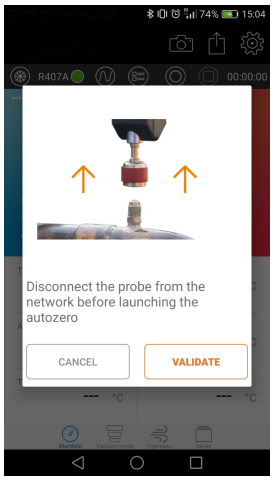
The Manifold or Vacuum probe must be paired with the application (see previous chapter).

7.1. Perform an auto-zero in open air

Before any measurement with the Manifold, perform an auto-zero of the probe **in open air**.
From the measurement screen:



- Press to perform an auto-zero of the low pressure probe.
  A message is displayed to confirm the autozero.
- Press **"YES"**.
  A message with a picture is displayed indicating that the probe must be disconnected from the network before launching the autozero.



- Press **"Validate"** to perform the autozero.
- Press to perform an auto-zero of the high pressure probe.

7.2. Carry out a measurement with the Manifold

- Activate the **"Manifold"** mode by pressing

For pressure measurements:

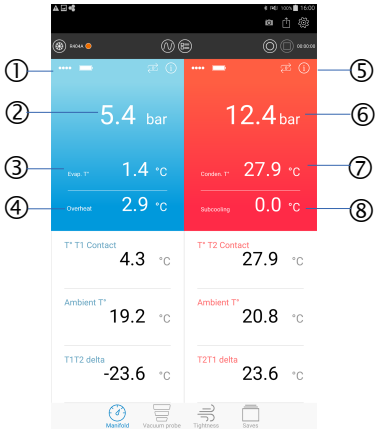
- Connect the low pressure probe on the equipment to verify.
- Connect the high pressure probe on the equipment to verify.

➢ Read the measured values on the application.

For the temperature measurements:

➢ Connect the temperature clamp on the pressure probe.

➢ Position the temperature clamp on the pipe.



Portrait mode

1. Low pressure probe measured or calculated values
2. Circuit low pressure measurement
3. Evaporation temperature: calculated value depending on the selected refrigerant gas
4. Overheat: calculated value corresponding to T° T1 contact – evaporation T°
5. High pressure probe measured or calculated values
6. Circuit high pressure measurement
7. Condensation temperature: calculated value depending on the selected refrigerant gas
8. Subcooling: calculated value corresponding to
9. Condensation T° – T° T2 contact

Landscape mode

1. T° T1 contact: contact temperature probe 1
2. Ambient T°: ambient temperature probe 1
3. T° T2 contact: contact temperature probe 2
4. Ambient T°: ambient temperature probe 2

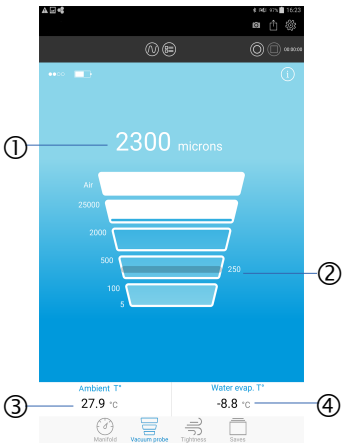
7.3. Perform a measurement with the Vacuum probe

➢ Activate the **"Vacuum probe"** mode by pressing

➢ Connect the Vacuum probe or the low pressure probe on the equipment to verify.

➢ Read the measured values on the application.

Example with a Vacuum probe:

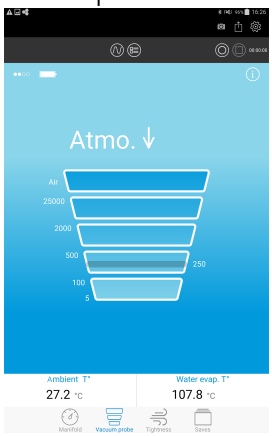


Portrait mode

1. Vacuum measurement
2. Indication of the defined target value
3. Ambient T°: ambient temperature
4. Water evap. T°: water evaporation temperature

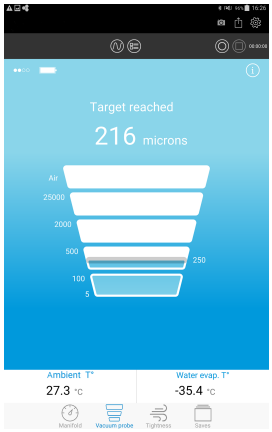
Landscape mode

If the Vacuum probe is connected but that the measured values are beyond the measuring range, **"Atmo ↓"** is displayed:



Landscape mode

When the target value is reached, the message **"Target reached"** is displayed:



Portrait mode

Landscape mode

Example with a Si-RM3 low pressure probe:

Portrait mode

Landscape mode

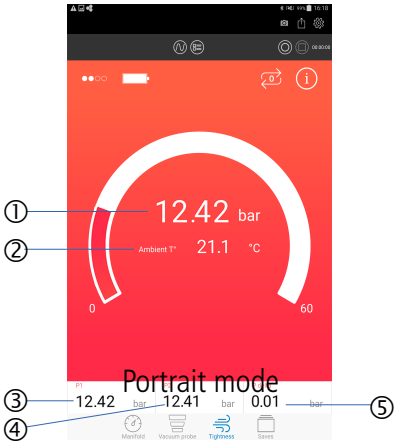
1. Measured value by the low pressure probe

7.4. Perform a tightness measurement

With a Manifold probe, it is possible to perform a tightness measurement on the equipment to verify.

➢ Activate the **"Tightness"** mode by pressing

- Connect the Si-RM3 high pressure probe on the equipment to verify.
- Read the measured values on the application.



Portrait mode

1. Value measured by the high pressure probe
2. Ambient T°: ambient temperature
3. P1: measured value of pressure when launching the record
4. P2: measured value of pressure when stopping the record
5. Delta P: calculated value corresponding to P1 – P2

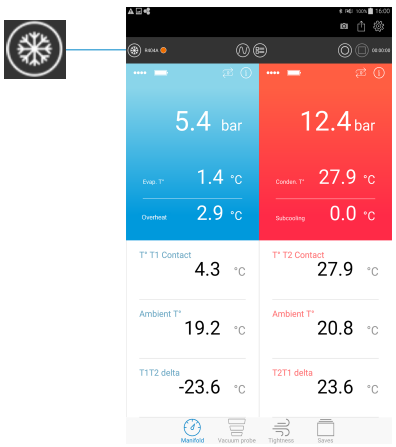
Landscape mode

8. Select a refrigerant gas

The application contains the 126 following refrigerants:

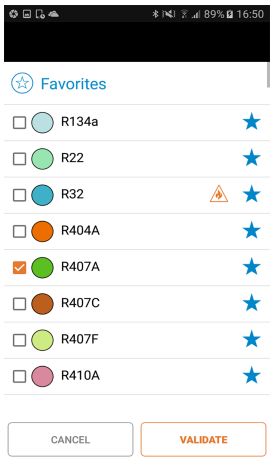
R12	R227ea	R410A	R444A	R601a	R-407D	R-441A
R13	R236ea	R413A	R445A	R718	R-407E	R-444B
R13b1	R236fa	R414B	R448A	R723	R-410B	R-446A
R14	R245fa	R416A	R449A	R744	R-411A	R-447A
R22	R290	R417A	R450A	R744A	R-411B	R-501
R23	R401A	R417C	R452A	RE170	R-412A	R-504
R32	R401B	R420A	R453A	R-11	R-414A	R-507A
R41	R402A	R421A	R455-A	R-21	R-417B	R-508
R114	R402B	R422A	R50	R-113	R-418A	R-508A
R123	R403B	R422B	R500	R-115	R-419A	R-509
R1150	R404A	R422C	R502	R-116	R-419B	R-509A
R1234yf	R406A	R422D	R503	R-124	R-421B	R1233zd
R1234ze	R407A	R424A	R507	R-141b	R-422E	
R125	R407B	R427A	R508B	R-143a	R-423A	
R1270	R407C	R434A	R511A	R-218	R-425A	
R134a	R407F	R437A	R513A	R-245ca	R-426A	
R142b	R408A	R438A	R600	R-401C	R-428A	
R152a	R409A	R442A	R600a	R-403A	R-439A	
R170	R409B	R443A	R601	R-405A	R-440A	

From the **"Manifold"** measurement screen:



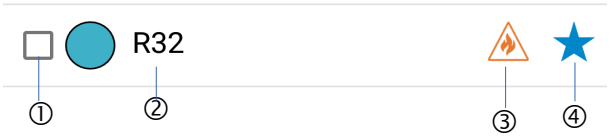
➢ Press to display the refrigerant gases list.

The following screen is displayed. The bookmarked refrigerants are displayed on top of the list and in alphabetical order.



- Tick the box of the required refrigerant.
- Press **“Validate”.**

Signification of the several elements relative to the refrigerants:



1. Box to tick to select the refrigerant
2. Name of the refrigerant
3. Indicates that the refrigerant is flammable
4. If the star is empty: press it to bookmark the refrigerant.
   If the star is full, press it to remove the bookmark on the refrigerant.

It is possible to bookmark up to 10 refrigerants.

It is possible to launch a record of the measured values, make a pause, stop the record and save it.

9.1. Activate the record, make a pause, stop, save

All these actions are available thanks to the buttons on top of the measurement screen:

- Activate the values record
- Make a pause on the record
- Stop the record

Once the record activated, a chronometer is displayed on top of the screen.

Press **"Stop"** to stop the record. The application asks a confirmation to stop the record: select **"Yes"** or **"No"**.

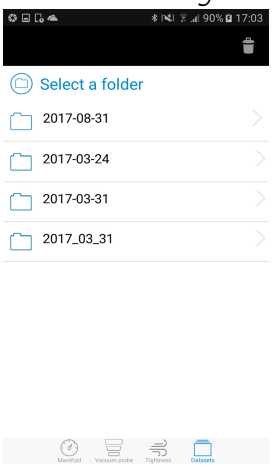
If Yes, the application asks to save the dataset:
- If No: the application restores the measurement screen.
- If Yes: the dataset is saved in the mobile device.

If No, the application restores the measurement screen.

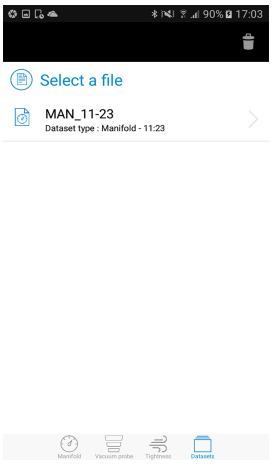
9.2. Access to the saves

➢ Press **"Saves"** at the bottom of the screen.

The following screen is displayed with the folders containing the saved datasets classified by date.



➢ Select the required folder.
The following screen is displayed with the saved datasets.

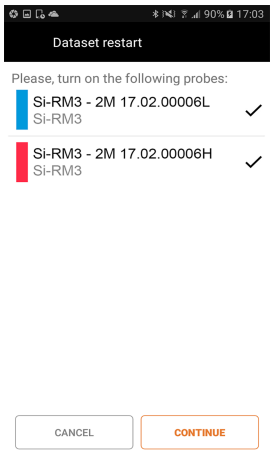


➢ Select the required dataset.
The application displays the dataset.
Then it is possible to:
- resume the measurements (see chapter 9.3)
- export the dataset (see chapter 9.4)

9.3. Resume the measurements from a dataset saved

From the saved datasets screen:

➢ Select the required dataset from which the measurements must restart.
➢ Press button.
The application displays the probes used during previous measurements.
➢ Turn on the probes.
The application and probes connect to each other. The following screen is displayed:



➢ Press **"Continue"**.
The application returns to the measurements screen and the chronometer restarts when it stopped.

When probes and application are connected each other, an autozero will be asked if the "Autozero help" parameter has been activated.

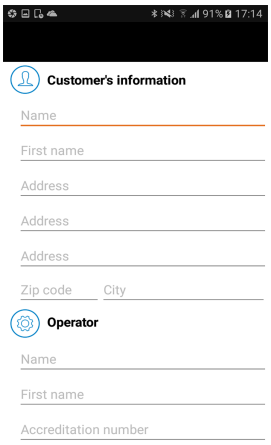
9.4. Export the records

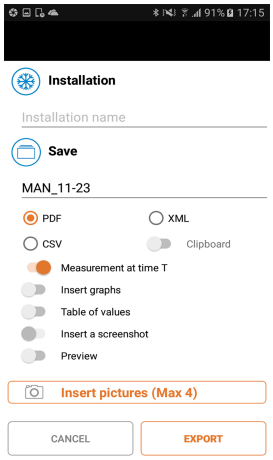
When a dataset is saved in the mobile device or when a current dataset is stopped, it is possible to export it in PDF, XML, CSV format or export it directly in the clipboard.

To export a dataset without saving it beforehand:

➢ Stop the dataset by pressing **"Stop"**

➢ Press **"Export"** on top of the screen
The following screen is displayed:





- Fill in the fields.
- Select the format: PDF, CSV, XML or clipboard.
- Select or not to add graphs, tables of values, screenshots, photos.
- Press **"Export"**

The files are exported in a folder created automatically called "Si-Manifold" located at the root of the mobile device.

To export a dataset saved in the device:

- Select the required dataset (see 9.2 for the saved datasets management) then follow the previous procedure.

To display a dataset saved in the device:

- Press **"Saves"** at the bottom of the screen.

The screen with the saved datasets list is displayed.

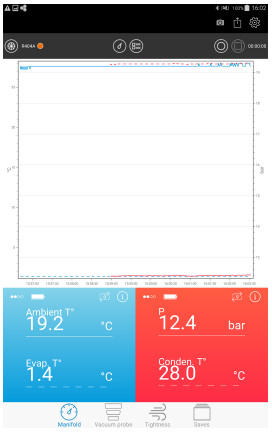
10. Display the different views of the measured values

It is possible to display the measured values according to three different views:

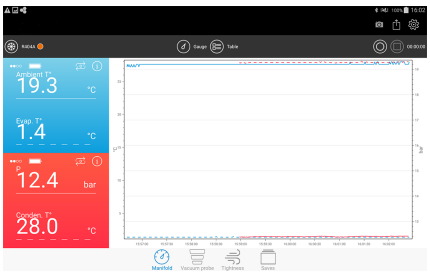
- **"Gauge"** view
- **"Graph"** view
- **"Values table"** view

10.1. Display the "Graph" view

➢ Press
The following screen is displayed.



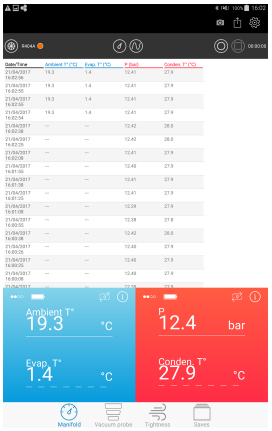
Portrait mode



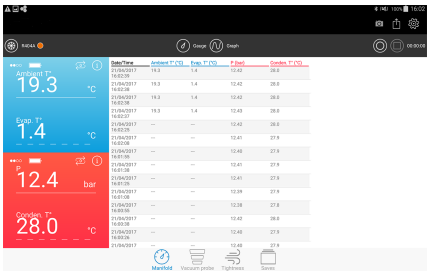
Landscape mode

10.2. Display the "Values table" view

➢ Press
The following screen is displayed.



Portrait mode



Landscape mode

10.3. Display the “Gauge” view

➢ Press

The following screen is displayed.

Portrait mode

Landscape mode

10.4. Select the values to display

It is possible to select the values to display.

The values selection is possible only with the Manifold mode.

These values are:

- Overheat target (for the low pressure probe only)
- Sub-cooling target (for the high pressure probe only)
- Pressure target
- Pressure (real time, minimum, maximum, average)
- Contact temperature (real time, minimum, maximum, average)
- Ambient temperature (real time, minimum, maximum, average)
- Delta T1T2
- Overheat (minimum, maximum, average) for the low pressure probe only
- Sub-cooling (minimum, maximum, average) for the high pressure probe only
- Evaporation temperature (real time, minimum, maximum, average)
- Condensation temperature (real time, minimum, maximum, average)

To display the required values:

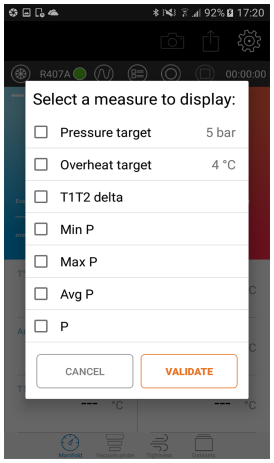
➢ Press two times on the required zone to modify the measurement to display on this location.

The list of values to display appears.

➢ Tick the box of the value to display.

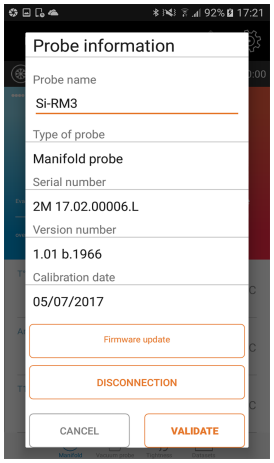
➢ For the targets: inform the target value.

➢ Press **“Validate”**.



From the measurements screen in Manifold, Vacuum probe or Tightness mode:

➢ Press ⓘ
The following screen is displayed.



This screen presents the following information:

- Name of the probe
- Type of probe
- Serial number of the probe
- Firmware version number of the probe
- Updates research for the probe

11.1. Modify the name of the probe

➢ Press the field of the probe name.
➢ Fill in the new name.
➢ Press **"Validate"**.

11.2. Update the probe

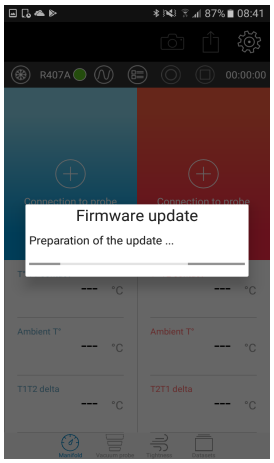
To update a probe, the tablet or smartphone must be connected to a Wi-Fi network.

➢ Press ⓘ .
The application automatically searches for available updates.

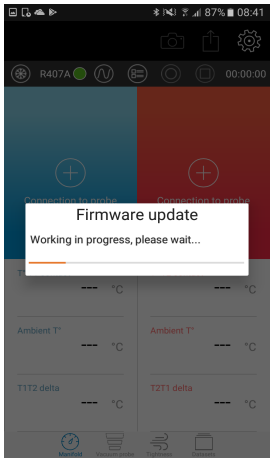
If an update is available:

➢ Press **« Firmware update »** button.
The application displays the following message: ***"The operation will takes several minutes and will prevent any measurement".***
➢ Press **"Continue"** button.
The following screen is displayed.

During this preparation step of the update, the led flashing stops.



After few seconds, the following screen is displayed and shows the update progression:



During the update, it is imperative not to disconnect the wireless connection between the probe and the smartphone or tablet.

When the update is finished, the application backs on the probe information screen and the probe flashes again.

If there is no update available: **"Firmware update"** button will be replaced by **"No update available"** button. This button will be shaded.

11.3. Disconnect the probe

From the probe information screen:

➢ Press **"Disconnection"**.
The application disconnect the probe of the device.

This operation will stop the current record of the dataset.

12.1. Change batteries

- Check that the device is turned off.
- Remove the batteries cover.
- Remove the power supply block containing batteries.
- Replace used batteries by three new AAA-LR03 1.5 V batteries.
- Put back the power supply block observing proper polarity.
- Put back the batteries cover.
- Dispose of used batteries according to your local regulations.

The device must be turned off during the batteries replacement.

In order to prevent battery leakage and damages to the coupler, it is recommended to replace batteries as soon as they are flat and to not leave them within the device.

12.2. Clean the instrument

- Use a soft cloth slightly dampened with soapy water.

Clean up is possible with isopropyl alcohol.

Do not use alcohol or solvent.

- Check regularly the cleanliness of the connections.
- The block and hoses must be free of residual oil. Use a cloth inside and compressed air outside.

Remaining fluids in the block or hoses must be recovered thanks to a fluids recovery system.

12.3. Measurement accuracy

In order to guarantee the measurements accuracy, it is recommended to yearly return the device to the Sauermann after-sales service.

13. Notes

Register now to get your additional 1 year manufacturer warranty!
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