User Manual

Senseair Salus

Test and diagnostic tool for
handset of Senseair alcohol screener products

General

Senseair Salus performs health checks of the alcohol sensor to verify that the high requirements on alcohol level measurements are met.

Table of contents

Safety Instructions

NOTE!
Follow the instructions given in this User manual.
All use of Senseair Salus requires full understanding and respect of the instructions. The tool is only intended for use specified in this manual.

The symbol indicates a hazardous situation which, if not avoided, could result in personal injury or damage to the instrument. It can also be used to warn of improper uses.

1 Included parts in Senseair Salus service bag


Service bag


Senseair Salus


Power adapter


Power cable

2 Parts to Bring to a Service

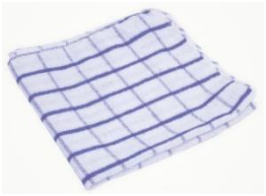
Computer, Windows operating system required

Note: Computer needs to be connected to internet in order to send the report to the given e-mail address.


Replacement Handset for Senseair Workplace (Optional)


New filter *


Cleanser


Cleaning cloth

*We recommend gloves and tweezer when removing the old filter, to avoid hygiene concerns.

3 Overview

The critical parts of the service are automatic. Other parts require the operator's actions and input. Senseair Salus application is presented in the Senseair Salus program where the operator will step by step go through all the steps required to perform a complete service.

After a service is completed, a report will be generated and sent to the e-mail address given by the operator.

3.1 Senseair Salus

1. Lid
2. Snap lock
3. Chamber lid snap lock
4. Chamber lid
5. Sunrise calibration
6. Status LEDs
7. Reset
8. N/A
9. Chamber
10. Ribbon
11. Handset connector
12. Computer connection USB-C
13. Laptop shows salus application

Status LEDs:

Va	- access box GPIO signal 1 analogue voltage output enabled
Vb	- access box GPIO signal 2 analogue voltage output enabled
Status	- Salus firmware status; blinks 1 time per second in normal operation mode, 5 times per second in bootloader mode
12V	- external 12V voltage supply status; always on if 12V is present
5V	- internal 5V voltage supply status; always on if 5V is present
3.3V	- internal 3.3V voltage supply status; always on if 3.3V is present
CAN err	- CAN bus error condition; Salus will not be able to transmit data on CAN bus

1. Handset, permanently connected
2. Access box
3. +12V ext. supply
4. Access box, I/O and relays

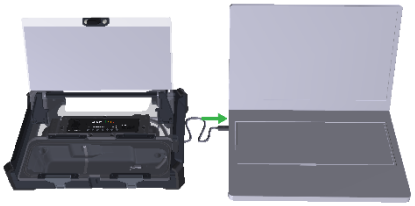
3.2 Handset

1. Inlet with filter
2. RFID reader
3. Display
4. Button

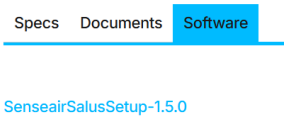
4 Getting Started

1. OPEN LID

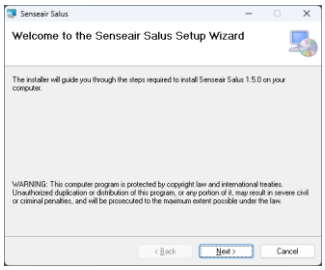
2. CONNECT POWER CABLE TO SALUS



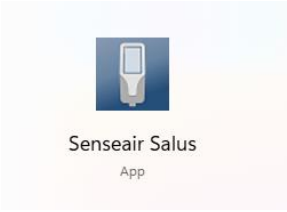
3. CONNECT USB-C CONNECTOR TO COMPUTER



4. DOWNLOAD SALUS APPLICATION FROM www.senseair.com/product/senseair-salus/



5. FOLLOW INSTALLATION INSTRUCTIONS



6. OPEN START MENU AND CLICK SENSEAIR SALUS – SALUS APPLICATION WILL START

7. FILL IN OPERATOR PROFILE

8. TAP START SERVICE BUTTON AND FOLLOW THE INSTRUCTION IN SALUS APPLICATION TO PERFORM THE SERVICE

5 Setup

The unit to be serviced will need to be disconnected from the current installation.

First of three steps in Setup is to clean the handset and change filter. Thereafter the exterior is examined for damages. Last step is installing the handset in the chamber and let Salus establish a connection. Once that is done you can move on to next phase.

5.1 Clean the Handset and Change Filter

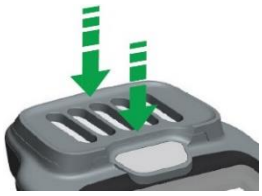
Clean the handset with a damp cloth and mild non-alcoholic detergent. Thereafter change the filter. We recommend gloves and tweezer when removing the old filter, to avoid hygiene concerns. Confirm that the handset is cleaned and that the filter is exchanged to move to the next step.

1. REMOVE INLET CAP

Snap off the inlet cap.

2. REPLACE FILTER

Remove used filter and mount new filter.



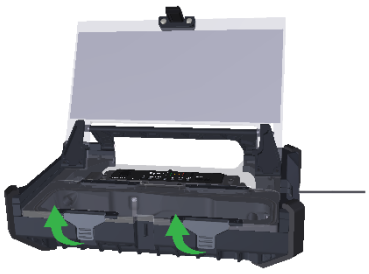
3. RESTORE INLET CAP

Snap the inlet cap back in place with a gentle press.

5.2 Examine the Handset Exterior

Check for any damage to the exterior of the handset. Confirm if the damage is critical to your daily operation. i.e. if the damage hinders you from using the handset in your daily operation. If answered yes, the Salus application will recommend the handset to be replaced irrelevant if it passes all other service steps.

5.3 Connect the Handset and Install in Chamber



1. OPEN CHAMBER LID

Pull the two chamber lid snap locks towards you.

2. CONNECT HANDSET TO SALUS

Connect handset to the handset connector inside the chamber.

3. PLACE HANDSET IN CHAMBER

Place the handset inside the chamber and leave the lid open.

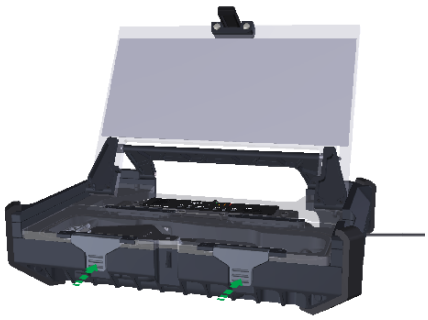
6 Service

For a reliable service, make sure that no open containers with alcohol are present nearby the service equipment. If the alcohol sensor is mounted in an enclosed area where a lot of people have been around, please ventilate the area as much as possible for a few minutes before performing a service.

6.1 Test Handset Button

Wait until the handset display instructs you to press the button. Then press the handset button. If no button press is detected, confirm if the malfunction is critical to your daily operation. i.e. if that malfunction hinders you from using the handset in your daily operation. If answered yes, Salus application will recommend the handset to be replaced irrelevant if it passes all other service steps.

6.2 Close the Chamber Lid



1. CLOSE CHAMBER LID

Snap the two chamber lid snap locks back in place with a gentle press.

6.3 Test Sound, LED and Display

Answer the questions asked by Senseair Salus regarding sound, LED and display. If answered no, confirm if the malfunction is critical to your daily operation. i.e. if that malfunction hinders you from using the handset in your daily operation. If answered yes, Salus application will recommend the handset to be replaced irrelevant if it passes all other service steps.

6.4 Prepare Device for Interior Test

Check that the chamber lid is closed and wait until stable CO2 is reported. This may take a few minutes.

6.5 Let Senseair Salus Run Interior Tests

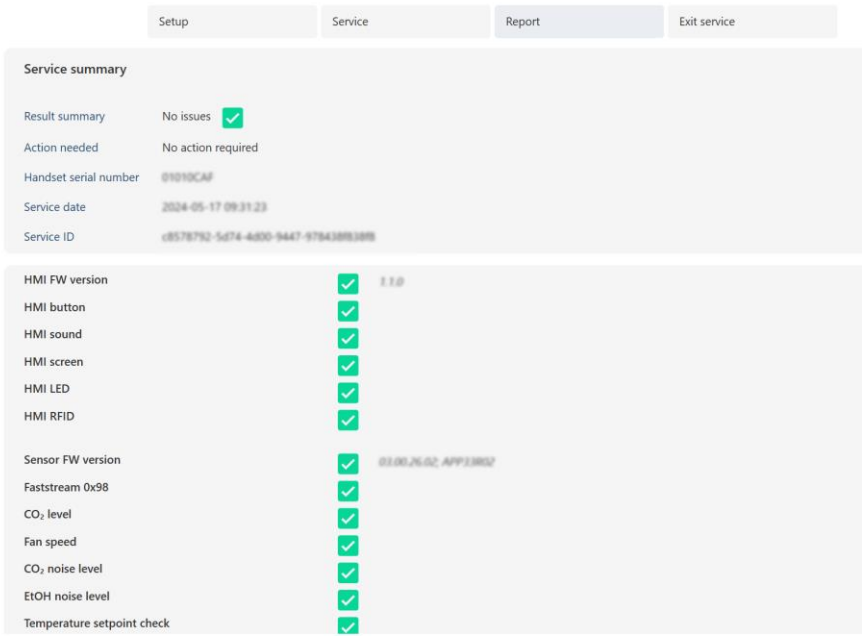
In this step Salus is running the automatic diagnosis and checks if all internal parts of the handset are working as they should. Please wait while the automatic tests are running. This may take a few minutes.

7 Report

The report will appear on the screen. Note that the report is not completed and sent to the operator's e-mail until the service is completed via fulfilling the next phase Exit Service.

7.1 Service Summary

Information about the service will appear on the computer screen.



7.2 Additional Comments

Additional comments can be included in the report. Information about the service operator as given when getting started is also presented and included in the report.

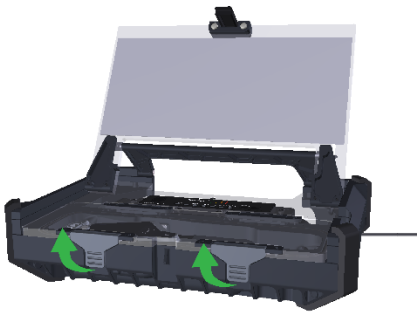
7.3 Test Result Overview

The table below gives an overview of the possible test results and the recommended action given by Senseair Salus.

Check in Salus application	Verified by	Possible outcome	Recommended action if check fails
Cleaning and change filter	Operator	Salus is not allowing continuation if operator doesn't confirm that this step is performed.	Not applicable.
Examine the handset exterior	Operator	No damages or existing damage with confirmation of criticality to every day's operation associated with a comment section to be filled by the operator. The comments will be documented in the report.	The operator takes the decision if handset damage is critical to every day's operations. If answered yes, the handset will need to be replaced.
Test handset button (HMI button)	Salus	Ok or failure	The operator checks if handset button is used by the customer. If so, the handset must be replaced. Most likely this fault would have been reported by the customer before service.
Test sound (HMI sound)	Operator	Ok or failure	The operator checks if sound is critical for the customer. If so, the handset must be replaced. Most likely this fault would have been reported by the customer before service.
LED (HMI LED)	Operator	Ok or failure	The LED colors are not used by Senseair alcohol scrrener products for any interaction with the user. It is therefore not crucial that this is working. The operator decides if it is critical to every day's operations. If answered yes, then the handset will then need to be replaced
Display (HMI screen)	Operator	Ok or failure	The operator decides if it is critical to every day's operations. If answered yes, then the handset will then need to be replaced. Most likely this fault would have been reported by the customer before service.
RFID reader (HMI RFID)	Salus	Ok or failure	The operator checks if the RFID reader is used by the customer. If so, the handset must be replaced. Most likely this fault would have been reported by the customer before service.
Prepare interior test: stable CO_2	Salus	Salus is not allowing continuation if stable CO_2 cannot be met.	Reopen chamber lid. Secure ambient air around the tool. Close the chamber lid again and make sure that it closes tightly so that no air can enter the chamber. If that kept happening three consecutive times in a row then the operator is prompted to return the Senseair Salus and order a new unit.
Interior test: Fan speed	Salus	Ok or failure	The handset should be replaced.
Interior test: CO_2 level	Salus	Ok or failure	The handset should be replaced.
Interior test: CO_2 noise level	Salus	Ok or failure	The handset should be replaced.
Interior test: EtOH noise level	Salus	Ok or failure	The handset should be replaced.
Interior test: Temperature setpoint check	Salus	Ok or failure	The handset should be replaced.
Interior test: Faststream 0x98	Salus	Ok or failure	The handset should be replaced.
HMI FW version	Salus	HMI firmware version is presented or is not presented.	No action needed. It is possible to upgrade to later released firmware, see 10.1.
Sensor FW version	Salus	Sensor firmware version is presented or is not presented.	No action needed. It is possible to upgrade to later released firmware, see 10.1.

8 Exit Service

The service is complete, and handset should be disconnected from Salus and reinstalled at customer installation if test result recommended that. The report will be sent to the e-mail address given on the main page when starting the service.



1. OPEN CHAMBER LID

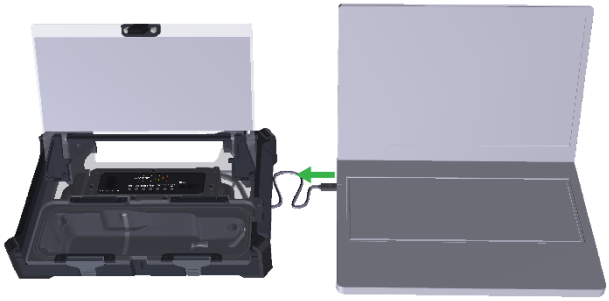
Pull the two chamber lid snap locks towards you.

2. LIFT HANDSET

Pull the ribbon towards you to lift the handset out of the chamber.

3. DISCONNECT HANDSET

Disconnect the handset connector from the handset



4. DISCONNECT COMPUTER

5. DISCONNECT SALUS

9 Safety Precautions

- Do not open the case of the service tool as it contains sensitive components. The warranty expires if the tool is opened.
- Avoid placing the tool in direct sunlight for extended periods of time.
- Avoid exposing the tool to moisture. If liquid has been spilled on the unit, let it dry before use.
- Do not switch on the tool if liquid has leaked into any connection ports. Contact Senseair AB.
- Minimise interference by keeping electronic transmitters, such as mobile phones, away from the system.
- Do not connect the tool to any electrical instruments without consulting Senseair AB.

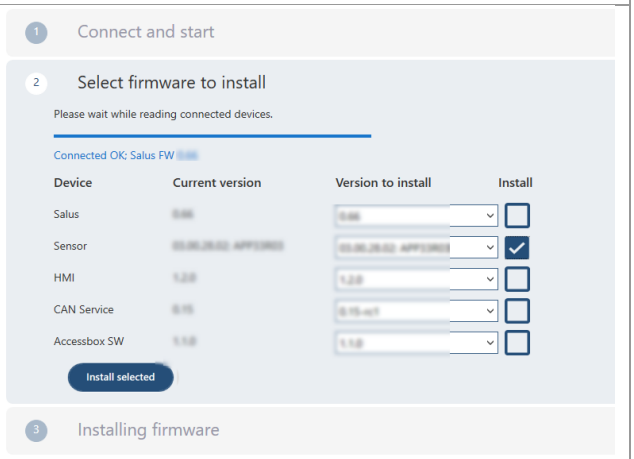
10 Additional features

Senseair Salus offers some additional features.

10.1 Firmware update

Senseair Salus can perform updates on a connected handset, access box and on itself. Follow these steps to make such an upgrade.

Note: Computer needs to be connected to internet in order to download firmware updates.

On page / in step	Perform these actions	Guide
Main page	Press **Firmware update**	
Step 1 Connect and Start	Press **Continue** after connecting the handset.	If only update on Salus itself press **Continue** without connecting a handset.
Step 2 Select firmware to install	1. Select the desired firmware version to install in the **Version to install** dropdown 2. Check the corresponding **Install** checkbox. 3. Press **Install selected**	
Step 3 Installing firmware	Wait for the installation and press **Finish** to go back to the main page.	

10.2 Start reference CO_2 calibration

These features are for certified users to perform.