VWR® Microbiological Air Sampler
SAS Super ISO USB

INSTRUCTION MANUAL

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710-2088

710-2087

710-2090

710-2089



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Legal address of manufacturer

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Table of contents

Legal address of manufacturer **2**

Warning **4**

Safety information **4**

References **4**

Technical features **4**

Intended use **5**

Brief instructions **6**

Installation **8**

Functions **11**

“OPTIONS” function **16**

Additional 21 CFR Part 11 Compliance Module **26**

Operations **34**

Colony Forming Unit correction factor **34**

Troubleshooting **36**

Firmware update **37**

Accessories **38**

Technical services **39**

Warranty **39**

Compliance with local laws and regulations **39**

Equipment disposal **40**

Warning

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Safety information

Please use this device only for the purposes indicated.

The device must be correctly used according to this instructions manual before starting any operation.

Any electrical cables need to be replaced immediately when damaged; never use a damaged or worn electrical cable.

Always disconnect the charger before:

- Repairing or maintenance; these operations must be carried out by qualified staff
- Cleaning the unit

Use original spare parts and accessories for any replacement.

Do not use this device in the presence of explosive gas.

Please follow the guidelines below and read this manual in its entirety to ensure safe operation of the unit.



Be aware that the voltage and frequency of the electrical system are compatible with the requirements of the battery charger.



Never use a non-OEM charger to charge the air sampler.
Use of an improper charger may damage the unit.

Carefully read this manual before operating your instrument.

References

FDA - 1987 Guideline on Sterile Drug Products produced by Aseptic Process

ACGIH - Guideline for the Assessment of Bioaerosol in the Indoor Environment

ASTM - Draft Protocol - Committee D22.05.06

USP 29 – NF 24 (1116) Microbiological Control and Monitoring of Aseptic Processing Environments

USP 797 Pharmaceutical Compounding – Sterile Preparations (2023)

EU Guide for GMP – Manufacture of Sterile Medicinal Products Control of Medicines and Inspection

CEN/TC 243 Norms for Clean Room Technology

EN17141 – Cleanrooms and associated controlled environments — Biocontamination control

ISO14698-1:2003 Cleanrooms and associated controlled environments. Biocontamination control. General principles and methods

ENGLISH

Technical features

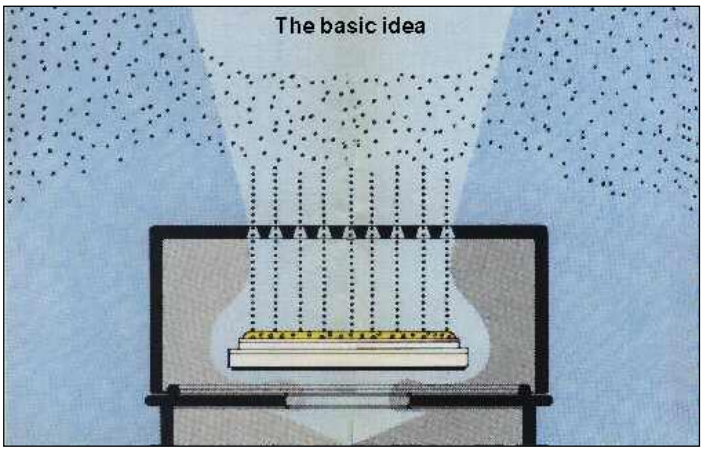
Feature	SAS SUPER ISO USB 100 Contact	SAS SUPER ISO USB 180 Contact	SAS SUPER ISO USB 100 Petri	SAS SUPER ISO USB 180 Petri
Cat. No.	710-2088	710-2087	710-2090	710-2089
Air flow	100 l/min	180 l/min	100 l/min	180 l/min
Use with	55 mm contact plates	55 mm contact plates	90 mm Petri dishes	90 mm Petri dishes
Portable	Yes	Yes	Yes	Yes
Battery	Rechargeable	Rechargeable	Rechargeable	Rechargeable
Battery life	70 000 litres	40 000 litres	70 000 litres	40 000 litres

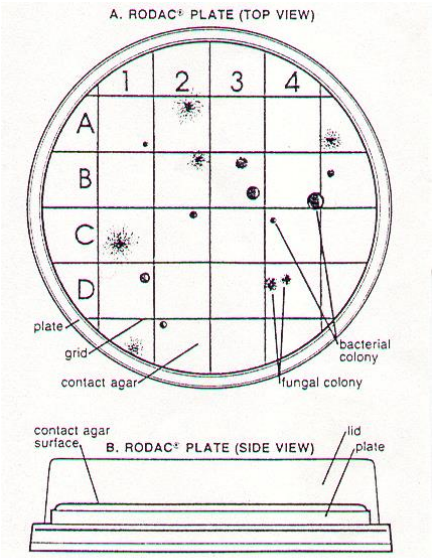
Intended use

Principle

The Surface Air System (SAS) encompasses several models which use the same principle.

Air is aspirated at a fixed speed for a variable time through a cover which has been machined with a series of specially designed small holes. The resulting laminar airflow is directed onto the agar surface of a “contact plate” (or Petri dish) containing media suitable for the microbiological examination to be performed. When the pre-set sampling cycle is completed, the plate is removed and incubated. The organisms are then visible to the naked eye and can be counted in order to assess the level of contamination.





The basic idea

The major points of the Surface Air System (SAS) are:

1. To use a simple and inexpensive “contact plate” (“RODAC”) for surface, hands or air control. These plates are very well known and easily available and can be purchased ready poured with different media.
2. To sample a known volume of air for a variable time to provide a large range of sampling volumes.
3. To aspirate air in a laminar flow pattern with sufficient velocity to impact organisms on an agar surface.
4. To accumulate data on the level of hygiene in each environment so that fluctuations can be monitored.
5. To take advantage of advanced electronics for more reliable results in different operating conditions.

6. To have the flexibility to choose between 55 mm contact plates or 90 mm standard disposable Petri dishes.
7. To apply cGLP and cGMP to air sampling operations.
8. To organise sequential sampling to obtain a more representative sample under actual operating conditions.

Models available

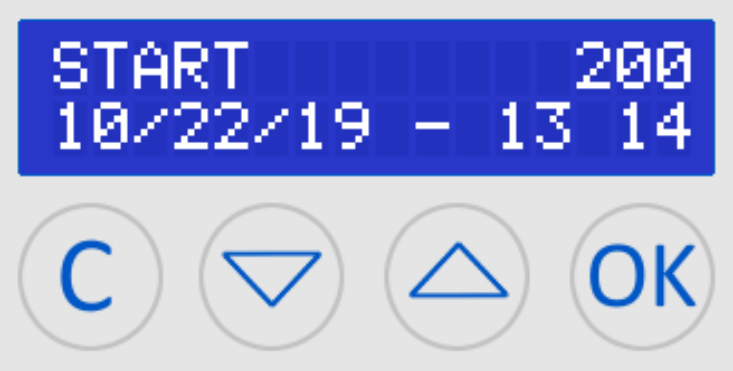
SAS SUPER ISO USB 100 and SAS SUPER ISO USB 180: Two instruments for two different applications.
The two air samplers have the same performances with the only difference being in the rate of air aspirated:
SAS SUPER ISO USB 100 = 100 litres of air per minute.
SAS SUPER ISO USB 180 = 180 litres of air per minute.
The SAS SUPER ISO USB 180 is appropriate for use in cleanrooms and other applications demanding fast sampling times. In cleanrooms, for example, it is important to test larger volumes of air, because microbial air contamination is very low. The SAS SUPER ISO USB 180 reduces the time required to obtain a sample.
Both SAS SUPER ISO USB 100 and SAS SUPER ISO USB 180 are identified as “SAS SUPER ISO USB”.

Brief instructions

Brief operating instruction for SAS Super ISO USB 100 and 180

The airflow can be seen on a digital display at the fourth automatic succession presentation each time the instrument is switched on.

1. Touch the OK button for at least one seconds to switch the instrument on.



2. Press OK to sample the same air volume as the last sampling cycle.
3. To change the volume of air, press  or  to reach “SELECT VOLUME”, then press OK and use the arrows to choose the new desired volume of air.
4. Refer to instruction manual to change settings.
5. Press OK to confirm selection.
6. Press  or  , for menu selection to modify other pre-set parameters.
7. Press OK to reach the sub menu of the chosen parameter.
8. Refer to the instruction manual to change settings.

9. Press C each time you need to end an action. The unit will then go back to its initial configuration.

10. Press C and confirm by pressing OK to switch the unit off.

Visual display

(Touch the OK button for at least two seconds).

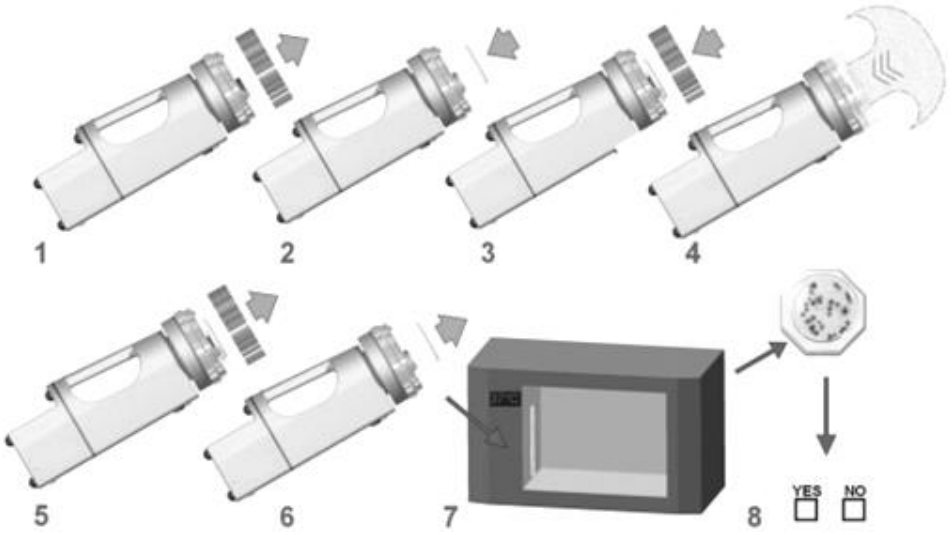
Each time the instrument is turned on, a five second visual display presentation will appear displaying the following information.

This information appears in automatic succession.



Installation

The practical use of contact plates/Petri dishes



1. Remove the aspirating head.
2. Insert an identified, closed and prepared plate and remove the plate lid.
3. Replace the aspirating head.
4. Select required volume and start the unit. The airflow is directed into the agar surface of the plate.
5. At the end of the cycle, remove the aspirating head.
6. Close and remove the plate.
7. Incubate.
8. Count the colonies, record the results on the microbiological air sampling report and read the results.

List of menus and utility sub menus

OK	Press to repeat the same volume of prior sampling (start screen) In the submenu “OK” provides confirmation of the selected action
▽ or △	Press to enter the following sub menus
C	Press to switch off (in the Main Screen), or each time you need to end an action.
SELECT VOLUME	The volume of aspirated air can be modified according to 20 programmed values
SELECT MULTI-CYC	The air sampler can be programmed (20 programmable configurations) to extend the total sampling time using “sequential interval time” sampling.
SELECT SITE	The sites of aspirating air can be selected according to a maximum of 20 programmed positions
SELECT OPERATOR	The operators of aspirating air can be selected according to a maximum of 20 programmed IDs
SET DELAY	The air sampler can be programmed to start sampling after a programmable delay (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60 minutes)
OPTIONS	To change general settings of the device. See description below
BATTERY	Press to see the battery status

OPTIONS	Press OK to change general settings of the device
	EDIT VOLUMES Volumes can be added, modified or deleted, to a maximum of 20 values
	EDIT MULTI-CYC Multiple cycles can be added, modified or deleted, to a maximum of 20 values, parameters are INTERVAL TIME, NUMBERS OF RUN, SINGLE RUN VOLUME and TOTAL RUNS; an optional ID can be activated
	EDIT SITES Sampling sites can be added, modified or deleted, to a maximum of 20 positions
	EDIT USERS Operators can be added, modified or deleted, to a maximum of 20 users
	DISPLAY RECORD To show the recorded sampling data
	STORE PDF To store the recorded sampling data in a PDF file on an USB stick
	STORE XML To store the recorded sampling data in a XML file on an USB stick
	CLEAR RECORD To clear the recorded sampling data
	SET TIME To program date and time
	SET AUTOSWITCH To disable the auto switch off
	PASSWORD PDF To lock exported PDF
	PASSWORD ADMIN To lock the device, still possible to start and stop a sampling procedure
	LOGIN To use an Operator ID for data integrity or to activate the 21 CFR Part 11 function (User Management)
	LANGUAGE To display text in different languages
	USB MODE To use the USB port with an USB Stick or USB Cable (PC connection)
	STORE CONFIG To store all configuration (Volume, Muli-Cycle, Sites, Operators…) on a USB stick
	LOAD CONFIG To load a config file of an existing Air sampler to implement all setting (Volume, Multi-Cycle, Sites, Operators,…) on a new device

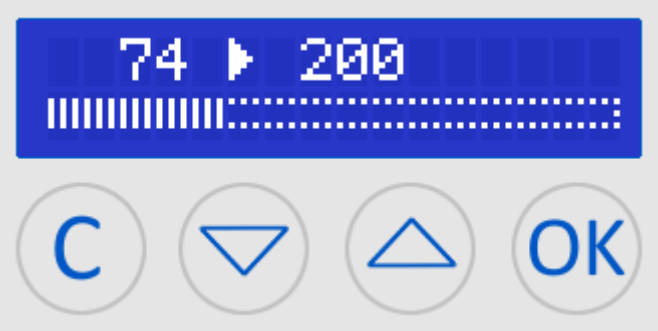
Preliminary inspection

The apparatus is subject to specific working tests before shipping, and it is carefully packed to avoid possible damages during transportation. However, a visible check should be carried out as soon as possible to determine any transit damage. This must be reported immediately. The following procedures should be followed to check that the unit is working properly.

The battery pack of the instrument must be charged for at least 5 hours before testing SAS SUPER ISO USB 100 and SAS SUPER ISO USB 180.

After OK is pressed for at least two seconds an automatic visual presentation appears (see visual display presentation paragraph).

Press OK to start air sampling with the last cycle. The motor will run until the figures in the brackets reach the same figure as displayed to the right and then it will stop. To stop the run, press C and OK.



Holder adjustment

Contact plate and the Petri dish holders can be adjusted (using a hex key) in case the available plates are slightly different in diameter from the standard 55 mm contact plate or 90 mm Petri dish.

Petri head adapter (optional)

An adapter is available in aluminium or stainless steel which allows the use of standard 90 mm Petri dishes with SAS for contact plates.

Filling 90 mm Petri dishes

We recommend filling standard disposable 90mm Petri dishes with 18-30ml of agar, depending on application. However, it is important the user confirms the actual plates used do not restrict airflow within the sampling head.

Tripod installation (optional)

The SAS SUPER ISO USB 100 and SAS SUPER ISO USB 180 can be fixed to a table/floor tripod or a wall support. The screw thread connection is located underneath the unit, between the two front feet.

Functions

Software function

Press OK for at least two seconds to switch the unit on.

The air sampler is supplied with eight programmable air volumes (“Select volume”) stored in the memory and eight Multi Mode configurations selectable by the operator.

The selection of the volume is made by pressing the “UP” or “DOWN” arrows when in the relevant sub menu.

The following volumes of air are suggested:

- Contaminated areas (communities, processing rooms, etc) 10 - 200 litres of air
- Normal areas (laboratory benches, houses, etc) 200 - 500 litres of air
- Sterile or high risk areas (cleanrooms, operating theatres, etc) 500 - 1000 litres of air

Press C to switch off (from the Main Screen), or each time you need to end an action.

To start with the same air volume as the previous sample

Press OK for at least two seconds to switch the unit on. After the visual display presentation you will see the following display with the last aspirated volume of air:



Date

Last aspirated volume of air

Time

Press OK to start air sampling with the last cycle. The motor will run until the figures in the brackets reach the same figure as displayed to the right and then it will stop.



Current aspirated volume of air with progress bar

Target volume of air

If the following display appears, the Login function is activated. Please use a User ID to login.



For further details please go to the LOGIN section in this manual.

“SELECT VOLUME” function (to start with one of the eight memorised volumes)



Switch the unit on by touching OK for at least two seconds. After the visual display presentation, you will see the following display with the last aspirated volume of air.

Select the SELECT VOLUME function by pressing the “UP” or “DOWN” arrows.



Press OK and select a volume by pressing the “UP” or “DOWN” arrows (for example 500 litres)



Press OK to select the volume and the display will show the selected volume.



Press OK to aspirate the selected volume of air. Display will flash every 4 seconds during aspirating of air.

“SELECT MULTI-CYC” function

This programme is very useful for extending the time of sampling with the purpose of obtaining a more representative environmental sample “in actual operating conditions” (very important, for example, during surgery). The total air volume to be sampled is aspirated with two or more sub volume aspirations (e.g. 1000 litres in ten runs of 100 litres at five minute intervals).

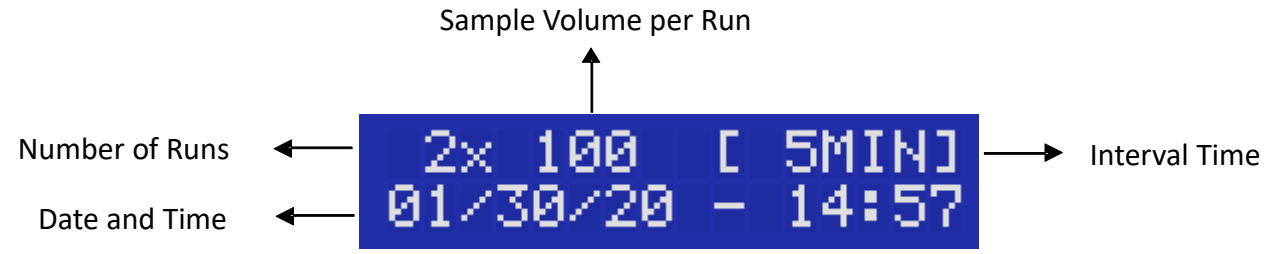
Switch on the unit by pressing the OK button for at least two seconds.

Select MULTI-CYC function by pressing the “UP” or “DOWN” arrows.

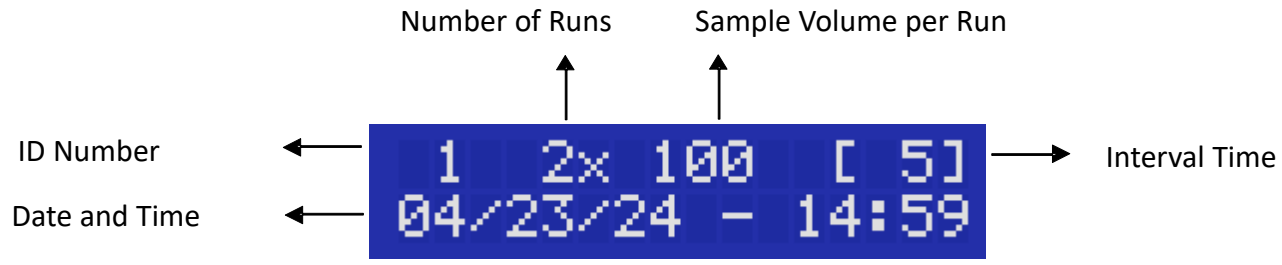


Press OK to enter the MULTI MODE function.

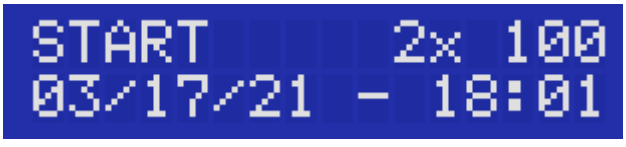
Select one of the 20 Multi Mode Programs by pressing the “UP” or “DOWN” arrows.



An optional ID (01 … 99) is shown, if this function is activated:



Press OK to select the volume and the display will show the selected volume.



Press OK to aspirate the selected volume of air. Display will flash every 4 seconds during aspirating of air.

“SELECT SITE”

This option is used to memorise the name of the site in the file “DISPLAY RECORD”. Site identification should be changed for samples taken at different sites especially if the results will be exported.

Select SITE function by pressing the “UP” or “DOWN” arrows from a maximum of 20 programmed SITES.



Press OK and select SITE by pressing the “UP” or “DOWN” arrows (for example AAAA)



Press OK to select the SITE, the display will show the selected volume.

“SELECT OPERATOR”

This option is used to memorise the name of the OPERATOR in the file “DISPLAY RECORD”. Operator identification should be changed for samples taken from different operators especially if the results will be exported.

Select OPERATOR function by pressing the “UP” or “DOWN” arrows from a maximum of 20 programmed IDs.



Press OK and select OPERATOR by pressing the “UP” or “DOWN” arrows (for example 0000)



Press OK to select the OPERATOR, the display will show the selected volume.

“SET DELAY” programme to delay instrument start

This function is used to set a delay time before the sampling cycle.

Switch the unit on by touching the OK button for at least two seconds.

Select SET DELAY function by pressing the “UP” or “DOWN” arrows.



Press OK to modify the delay time.



Select the desired delay time by pressing the “UP” or “DOWN” arrows.

The available delay times are (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60 minutes).

Press OK to confirm.

When the delay is set (for example 5 minutes), you will see the delay time on the main display.



The message “DELAY” will then flash until the selected time is reached, indicated with a status bar. Display will flash every 4 seconds during run.



“BATTERY” function

Select BATTERY function by pressing the “UP” or “DOWN” arrows.



Press OK to see the status of the BATTERY, indicated by a status bar.



“OPTIONS” function

In this programme the following SUB-MENUS are listed: Edit Volumes, Edit Multi-Cycle, Edit Sites, Edit Users, Display Record, Store PDF, Store XML, Clear Record, Set Time, Set Autoswitch, Password PDF, Password Admin, Login, Language, USB Mode, Store Config and Load Config.

Switch on the unit by pressing the OK button for at least two seconds.

Select OPTIONS function by pressing the “UP” or “DOWN” arrows.



Press OK to enter the sub menu.

“EDIT VOLUMES” function (modification of the value of a stored volume)

Using this procedure, it is possible to memorise up to eight different volumes (from 1 to 1999 litres of air).

Switch the unit on by touching the OK button for at least two seconds.

Select OPTIONS by pressing the “UP” or “DOWN” arrows

Select the EDIT VOLUMES function by pressing the “UP” or “DOWN” arrows.



Press OK to modify the volumes.

Select a volume by pressing the “UP” or “DOWN” arrows and press OK. Select a function (ADD?, EDIT?, or DELETE?) by pressing the “UP” or “DOWN” arrows and press OK.



Change the digit indicated (flashing) by pressing the “UP” or “DOWN” arrows and press OK to go to the next figure. Repeat until you reach the last digit and then confirm by pressing OK.

Note: It is always possible to edit an entry (change the values). If the total number of entries is below 20, you can add a new entry, otherwise the ADD? option not shown. You can delete entries as long as there are at least 2, otherwise the DELETE? option is not shown. The maximum air volume is 2000 litres.

“EDIT MULTI-CYC” function

This programme is very useful for extending the time of sampling with the purpose of obtaining a more representative environmental sample “in actual operating conditions” (very important, for example, during surgery). The total air volume to be sampled is aspirated with two or more sub volume aspirations (e.g. 1000 litres in ten runs of 100 litres at five minute intervals). Before entering the MULTI CYCLE programme you should, therefore, decide (a) total volume

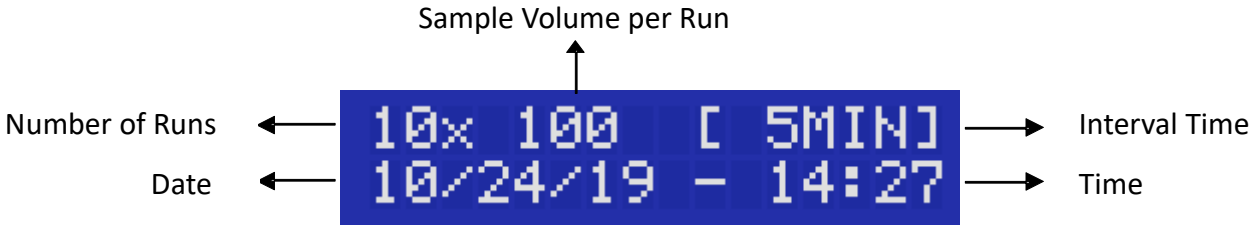
of air to be sampled onto the contact plate; (b) number of runs; (c) interval time.

Switch on the unit by pressing the OK button for at least two seconds.

Select EDIT MULTI-CYC function by pressing the “UP” or “DOWN” arrows.



Press OK to enter the MULTI CYCLE function.



Select one of the 20 possible MULTI-CYCLE Programs by pressing the “UP” or “DOWN” arrows and press OK to modify the parameters. Select a function (ADD?, EDIT?, or DELETE?) by pressing the “UP” or “DOWN” arrows and press OK.



Press OK to modify the parameters. Values are: intervals, volume per run and interval times (delay time between samples).



Change the values indicated (flashing) by pressing the “UP” or “DOWN” arrows and presses OK to go to the next value.

The maximum numbers of runs are 20.

The maximum aspirated volume per cycle is 1999 litres.

The available intervals (delay time between samples) are 5 – 10 –15 – 20 – 25 – 30 – 45 – 60 minutes.

Add ID? An optional “ID” in the range of “01… 99” can be selected to sort the multi-programs according to the IDs. Setting the ID to zero means deleting the ID. If a multi-program has such an ID then the display format will change from “5 x 200 [5 MIN]” to “1 5 x 200 [5]”, were the “1” representing the ID.



Press C for NO or OK for Yes.



Change the digit indicated (flashing) by pressing the “UP” or “DOWN” arrows and presses OK to go to the next figure. Repeat until you reach the last digit and then confirm by pressing OK.





Press OK to confirm and save the configuration.

Note: It is always possible to edit an entry (change the values), if the total number of entries is below 20 you can add a new entry, otherwise the ADD? option is not shown. You can delete entries as long as there are at least 2, otherwise the DELETE? option is not shown.

“EDIT SITES”

This option is used to memorise the name of the site in the file “DISPLAY RECORD”. Site identification should be changed for samples taken at different sites especially if the results are exported.

Select EDIT SITE function by pressing the “UP” or “DOWN” arrows.



Press OK to modify the sites.

Select a site by pressing the “UP” or “DOWN” arrows and press OK. Select a function (ADD?, EDIT?, or DELETE?) by pressing the “UP” or “DOWN” arrows and press OK.



Change the symbol indicated (flashing) by pressing the “UP” or “DOWN” arrows and presses OK to go to the next symbol. Repeat until you reach the last symbol and then confirm by pressing OK.

Note: It is always possible to edit an entry (change the values), if the total number of entries is below 20 you can add a new entry, otherwise the ADD? option is not shown. You can delete entries as long as there are at least 2, otherwise the DELETE? option is not shown.
Symbols are ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789!@#$%^&*.

“EDIT OPERATORS”

This option is used to identify the operator. This should be changed if different operators use the sampler and especially if the data will be exported. The data is recorded in the file “DISPLAY RECORD”.
Select EDIT OPERATORS function by pressing the “UP” or “DOWN” arrows.



Press OK to modify the OPERATORS.

Select an OPERATOR by pressing the “UP” or “DOWN” arrows and press OK. Select a function (ADD?, EDIT?, or DELETE?) by pressing the “UP” or “DOWN” arrows and press OK.



Change the digit indicated (flashing) by pressing the “UP” or “DOWN” arrows and presses OK to go to the next symbol.
Repeat until you reach the last symbol and then confirm by pressing OK.
Note: Symbols are 0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ!@#$%^&*.



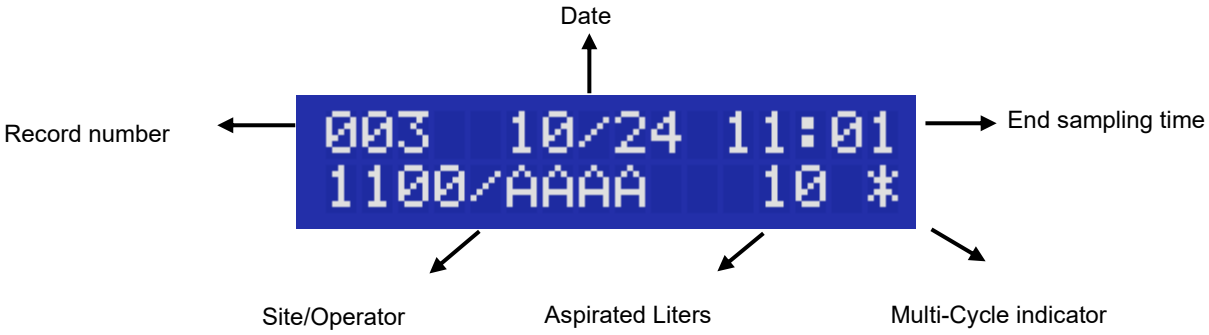
Note: It is always possible to edit an entry (change the values). If the total number of entries is below 20 you can add a new entry, otherwise the ADD? option is not shown. You can delete entries as long as there are at least 2, otherwise the DELETE? option is not shown.

“DISPLAY RECORD”

The last 1200 samples are memorised in the file “DISPLAY RECORD”. Each sample is identified in chronological date order and shows the date, time, operator, site and volume of air sampled (only after a completed run cycle).
Select DISPLAY RECORD function by pressing the “UP” or “DOWN” arrows.



Press OK to display the following data.



Indicator can show the following information:

"*" means multi run

"X" means aborted sampling

You can view all completed cycles by pressing the "UP" or "DOWN" arrows. The symbol "*" is displayed near the volume aspirated if the volume was aspirated with the Multi-Cycle mode function. An "X" will be displayed in the Data if the aspirating Run were aborted by the Operator.

Press C to exit this function.

"STORE PDF"

This option is used to export all data memorised in the "DISPLAY RECORD" as a PDF-File on a USB stick. Please insert a USB Stick (FAT32) into the USB port located on the bottom of the SAS Air sampler. When a USB Stick is recognized by the SAS Air sampler, the information "USB STICK" is shown on the screen.

Select "STORE PDF" function by pressing the "UP" or "DOWN" arrows and press OK to access this function.



Press OK to confirm and store the data on the USB Stick. If the data were successfully saved the following information appears on the display.



If no records are stored, “No Data” will be display on the screen.

Press C to exit this function.

“STORE XML”

This option is used to export all data memorised in the “DISPLAY RECORD” as a XML-File on a USB stick.
Please insert a USB Stick (FAT32) into the USB port located on the bottom of the SAS Air sampler. When a USB stick is recognized by the SAS Air sampler, the information “USB STICK” is shown on the screen.

Select “STORE XML” function by pressing the “UP” or “DOWN” arrows and press OK to access this function.



Press OK to confirm and store the data on the USB Stick. If the data were successfully saved the following information appears on the display.



Press C to exit this function.

“CLEAR RECORD”

This option is used to delete all the data memorised in the “DISPLAY RECORD”. Before starting this procedure, be sure that all stored data are not required or have been downloaded.
Select CLEAR RECORD function by pressing the “UP” or “DOWN” arrows.



Press OK to delete the data.



Press OK to confirm the deletion of data or press CLEAR to exit the function.

“SET TIME”

This option is used to program day, month, year and time of the day.



Press OK to modify the date and time.



Change the number indicated by “flashing” by pressing the “UP” or “DOWN” arrows and press OK to go to the next number.

Repeat until you reach the last number, confirm by pressing OK.

“SET AUTOSWITCH”

In order to save battery power, after 5 minutes of inactivity the instrument turns itself off (as a default setting).

With the “AUTOSWITCH” function, it is possible to disable this feature.



Press OK to access the AUTOSWITCH settings.

Select AUTOSWITCH ON or OFF by pressing the “UP” or “DOWN” arrows.

Press OK to confirm or press CLEAR to exit the function.

“PASSWORD ADMIN”

This option is used to lock all functions in the SUB-MENUS “OPTIONS” of the software with a password. Still possible to start and stop the last sampling procedure, select a VOLUME, MULTI-CYC, SITE and OPERATOR and set a DELAY. Pre-set password is 0000.



Press OK to modify the password



Select the new password (0-9) by pressing the “UP” or “DOWN” arrows.

Press the OK button to go to the next digit.



Select YES or NO by pressing the “UP” or “DOWN” arrows.

Press OK to confirm. SAS is now protected by a password.

To unlock functions and enable full functionality, select the password (0-9) by pressing the “UP” or “DOWN” arrows.

Press the OK button to go to the next digit.



Press OK to confirm, if the password is correct, all functions are unlocked.

“PASSWORD PDF”

This option is used to lock exported PDF by a password.



Press OK to modify the password



Select the new password (0-9) by pressing the “UP” or “DOWN” arrows.

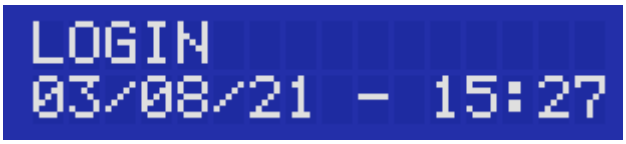
Press the OK button to go to the next digit.

Press OK to confirm. Exported PDF are now protected by a password.

“LOGIN”

This option is used to enable a user management for the SAS Air Sampler, to enable authenticity and integrity during the process of sampling.

Select function from OPTIONS.



Press OK to modify the User Management settings.







Select between OFF (LOGIN function is deactivated), Operator ID (LOGIN function is activated) and User Management.

When the LOGIN function is activated, the login screen appears right after the start-up screens of the instrument.

Here a valid operator ID from the operator ID list must be typed in.

Operator ID´s can be edited in the options menu (up to 20 operator IDs can be defined).

The options menu itself is protected by the ADMIN password. A normal operator cannot see or modify the operator list. Furthermore, the menu to select an operator ID from the operator ID list is removed.

When the User Management function is activated, the system will work in the 21 CFR Part 11 Mode, please refer to page 25 for further details.

“LANGUAGE”

Menu text can be selected choosing from 6 different languages. Different Languages are:

ENGLISH, DEUTSCH, ESPAGNOL, FRANCAIS, ITALIANO and PORTUGUES.

Select “LANGUAGE” function by pressing the “UP” or “DOWN” arrows.

Select function from UTILITY MODE programme.



Press OK to modify the language.



Change the language by pressing the “UP” or “DOWN” arrows and press OK to select the desired language; the display will then show the selected language.
Press CLEAR to exit this function.

“USB MODE”

This option is used to change the configuration of the USB Port. USB Port can be configured for the use with an USB Stick or to use an USB cable connection to a PC. A PC software “SAS Archiver” is required to have access to the SAS Air sampler via PC.

Select the USB MODE and press OK



Select USB CABLE and press OK. System will restart





SAS Super USB is now set to USB Cable Mode, an USB Stick will not be recognized by the system. To us an USB stick change the settings back to USB Stick mode.

“STORE CONFIG”

This option is used to export all configuration (Volumes, Multi-Cycles, Sites and Operators) of a SAS Air sampler by a Configuration file (config.sas) on a USB Stick. This Configuration File can be loaded on other SAS Air sampler to implement all configurations from the existing SAS Air Sampler.

Please insert a USB Stick (FAT32) into the USB port located on the bottom of the SAS Air sampler. When a USB Stick is recognized by the SAS Air sampler, the information “USB STICK” is shown on the screen.

Select “STORE CONFIG” function by pressing the “UP” or “DOWN” arrows and press OK to access this function.



Press OK to confirm and store the data on the USB Stick. If the data were successfully saved the following information appears on the display.



Press C to exit this function.

“LOAD CONFIG”

This option is used to load all configuration (Volumes, Multi-Cycles, Sites and Operators) of a SAS Air sampler by a Configuration file (config.sas) on a USB Stick.

Please insert a USB Stick (FAT32) into the USB port located on the bottom of the SAS Air sampler were the Config File (config.sas) is stored. When a USB Stick is recognized by the SAS Air sampler, the information “USB STICK” is shown on the screen.

Select “LOAD CONFIG” function by pressing the “UP” or “DOWN” arrows and press OK to access this function.



Press OK to confirm and load the config.sas file from the USB Stick. If the data was successfully loaded, the message SUCCESS appears on the display.

Additional 21 CFR Part 11 Compliance Module

General Information

The SAS SUPER ISO USB 100 and SAS SUPER ISO USB 180 air samplers are compliant with 21 CFR Part 11. They feature an electronic audit trail as well as a variety of security and monitoring functions for individual operators.

Important: To enable the 21 CFR Part 11 compliance mode USER MANAGEMENT must be selected in the LOGIN menu as described below.

The SAS ISO USB stores sample parameter information for up to 1200 sample runs in the internal memory. This memory is not removable or alterable by the user. In addition, the system generates an audit trail (log file) embedded in the system. It can be exported by all users in pdf or XML format. It accepts up to 500 entries.

Important: The sampling records and the audit trail will be overwritten once the maximum number of entries is reached. At the instrument power-on, the system provides a warning message when the sampling records or audit trail are over 90% of the allocated memory.

The recommendation is to download the files before reaching the full storage memory.

The Audit Trail records the time-tagged activities of the administrator on the users 'credentials and sampling management (user creation / user enabling / user disabling / user re-assigning / password reset /sampling records delete)

The sample parameter information maintained in the system for each run includes Run-ID, Start Date, Start time, User ID, Site/Room, Total Volume, Run abruption. The export file will also show the Report creation Date, Equipment# and Serial#.
The stored sample parameters can be cleared/deleted by the admin but cannot be edited. Further, sample parameter information of a specific sampling event cannot be selectively deleted or altered by the user. The sample parameter information stored in the internal memory of the SAS can be either output to a USB stick for further transfer or transferred to an external computer through an USB connection and optional PC based software.

List of menus and utility sub menus in the 21 CFR Part 11 Compliance Mode

Menus and submenus linked to the 21 CFR Part 11 mode are marked in blue.
For the 21 CFR Part 11 mode 3 user roles are available: Operator, Supervisor and Admin with different access to menus and sub-menus. Main menus are visible for all user roles.

SELECT VOLUME	The volume of aspirated air can be modified according to 8 programmed values
SELECT MULTI-CYC	The air sampler can be programmed (8 programmable configurations) to extend the total sampling time using "sequential interval time" sampling.
SELECT SITE	The sites of aspirating air can be selected according to a maximum of 20 programmed positions
SET DELAY	The air sampler can be programmed to start sampling after a programmable delay (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60 minutes)
OPTIONS	To change general settings of the device. See description below
BATTERY	Press to see the battery status
RECORD MEMORY	Shows the memory status bar of the Sampling records
AUDIT TRAIL	To store the Audit Trail Data on an USB Stick
OPTIONS visible for Supervisor and ADMIN only	Press OK to change general settings of the device
	EDIT VOLUMES Volumes can be added, modified, or deleted, to a maximum of 20 values
	EDIT MULTI-CYCLE Multiple cycles can be added, modified, or deleted, to a maximum of 20 values, parameters are INTERVAL TIME, NUMBERS OF RUN, SINGLE RUN VOLUME and TOTAL RUNS
	EDIT SITES Sampling sites can be added, modified, or deleted, to a maximum of 20 positions

ADMIN only	EDIT USERS USERS can be added, modified, or deleted, to a maximum of 100 users. PW reset for existing USERS. Each user must have a password associated with him/her. The password length is 6 digits with numerical characters, there must be at least 4 different numbers used, the length of a sequence like 1-2-3-… or 8-7-6-.., must not exceed 3 digits.
	EXPORT USERS The list of currently enabled users and their levels (roles) can be exported as a .csv document (access levels Supervisor and Admin)
	DISPLAY RECORD To show the recorded sampling data
	STORE PDF To store the recorded sampling data in a PDF file on an USB stick
	STORE XML To store the recorded sampling data in a XML file on an USB stick
	CLEAR RECORD To clear the recorded sampling data
	CLEAR AUDIT TR. To clear the recorded Audit Trail
	SET TIME To programme date and time
	SET AUTOSWITCH To disable the auto switch off
	PASSWORD PDF To lock exported PDF
ADMIN only	LOGIN To use an Operator ID for data integrity or to activate the 21 CFR Part 11 function (User Management)
ADMIN only	LANGUAGE To display text in different languages
ADMIN only	USB MODE To use the USB port with an USB Stick or USB Cable (PC connection)
ADMIN only	STORE CONFIG To store all configuration (Volume, Muli-Cycle, Sites, Operators…) on a USB stick
ADMIN only	LOAD CONFIG To load a config file of an existing Air sampler to implement all setting (Volume, Multi-Cycle, Sites, Operators…) on a new device

When the User Management function is activated, the login screen appears right after the start-up screens of the instrument. Here a valid User ID from the User ID list must be typed in.

User ID´s can be created, renamed, and removed by an Administrator (up to 100 operator IDs can be defined). A user can have one of three roles: Operator, Supervisor and Admin

The following security for individual operators exists:

- Admin: full access
- Supervisor: full access except user management
- Operator: access to main menu excluding the OPTIONS menu

The options menu itself is protected by the ADMIN password. A normal operator cannot see or modify the operator list. Furthermore, the menu to select an operator ID from the operator ID list is removed.

“LOGIN”

This option is used to enable a user management for the SAS Air Sampler, to enable authenticity and integrity during the process of sampling.

Select function from UTILITY MODE programme.



Press OK to modify the User Management settings.







Select between OFF (LOGIN function is deactivated), Operator ID (LOGIN function is activated) and User Management.

When the LOGIN function is activated, the login screen appears right after the start-up screens of the instrument. Here a valid operator ID from the operator ID list must be typed in.

Operator ID´s can be edited in the options menu (up to 20 operator IDs can be defined).

The options menu itself is protected by the ADMIN password. A normal operator cannot see or modify the operator list. Furthermore, the menu to select an operator ID from the operator ID list is removed.

When the User Management function is activated, the system will work in the 21 CFR Part 11 Mode.

“EDIT USERS”

This option is used to added, modified, or deleted, Users to a maximum of 100 users or to reset a PW for existing USERS. (Accessible by ADMIN only).

Select EDIT USERS function by pressing the “UP” or “DOWN” arrows.



Press OK to review the numbers of existing USERS and to modify the USERS.



Press OK and select an USER by pressing the “UP” or “DOWN” arrows and press OK.

Select a function (EDIT?, DELETE?, ADD? or RESET PASSWORD?) by pressing the “UP” or “DOWN” arrows and press OK.



Change the digit indicated (flashing) by pressing the “UP” or “DOWN” arrows and presses OK to go to the next symbol.

Repeat until you reach the last symbol and then confirm by pressing OK.

Note: Symbols are 0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ! @#$%^&*.

Press OK and select a ROLE (OPERATOR, SUPERVISOR or ADMIN) by pressing the “UP” or “DOWN” arrows and press OK. Edit will be stored and added in the Audit Trail file.



By selecting the function “RESET PASSWORD” the entire PW will be deleted. Press OK to confirm.





To create a new PW for a new user, the user must be selected after the booting of the device.
Select USER by pressing the “UP” or “DOWN” arrows, press OK.



Add a Password by pressing the “UP” or “DOWN” arrows and press OK. Change the digit indicated (flashing) by pressing the “UP” or “DOWN” arrows and presses OK to go to the next symbol.
Repeat until you reach the last symbol and then confirm by pressing OK.
Note: Symbols are 0123456789

Note: Each user must have a password associated with them. The password length is 6 digits with numerical characters, there must be at least 4 different numbers used, the length of a sequence like 1-2-3-… or 8-7-6-..., must not exceed 3 digits.



Repeat the Password by pressing the “UP” or “DOWN” arrows and press OK. Change the digit indicated (flashing) by pressing the “UP” or “DOWN” arrows and presses OK to go to the next symbol.
Repeat until you reach the last symbol and then confirm by pressing OK.



“EXPORT USERS”

The list of currently enabled users and their levels (roles) can be exported as a .csv document (access levels Supervisor and Admin).

Select EXPORT USERS function by pressing the “UP” or “DOWN” arrows.



Press OK to exported of existing USERS to an USB stick. Add an USB stick.





Press OK to confirm.



“CLEAR AUDIT TR.”

To clear the recorded Audit Trail

Select CLEAR AUDIT TR. function by pressing the “UP” or “DOWN” arrows.



Press OK to clear the existing Audit Trail file.



Press OK to confirm.

“AUDIT TRAIL”

To store the Audit Trail Data on an USB Stick

Select AUDIT TRAIL function by pressing the “UP” or “DOWN” arrows.



Press OK to export the existing data to an USB stick. Add an USB stick.



Press OK to confirm.



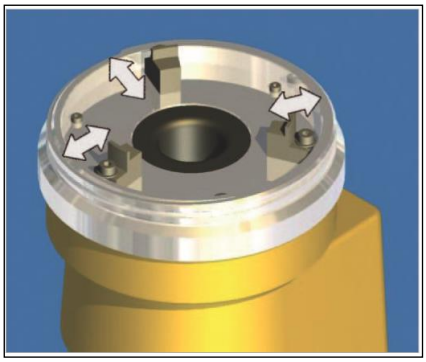
The Audit Trail Data will be stored on an USB Stick and confirmed by the system.



Operations

Adjustable plate holders

The SAS SUPER ISO USB 100 and SAS SUPER ISO USB 180 air samplers are designed for use with standard contact plates or Petri dishes.
The plate holders are adjustable to allow for different brands of plates to be fitted. Adjustable plate holders in the sampler head allow the operator to use contact plates from various sources.



Colony Forming Unit correction factor

The number of organisms counted on the surface of the dish must first be corrected for the statistical possibility of multiples particles passing through the same hole. The statistical formula is taken from work by J. Macher.
Correction Tables are given for both the 55mm standard contact head and the 90mm Petri head. The probable count (Pr) is then used to calculate the number of CFU per cubic meter of air sampled.
Example of calculation of results

$$X = \frac{Pr * 1000}{V}$$

Where:
V = Volume of sampled air = 200 litres of air
r (see table) = Colony Forming Units counted on “55 mm Contact Plates”= 67
Pr = Probable count obtained by table positive hole correction = 80
X = Colony Forming Units per 1000 litres (= 1 cubic meter) of air

So:

$X = \frac{80*1000}{200}$ 400 CFU per 1000 litres of air (1000 litres=1m^3)

To express the final result in CFU/ft^3 multiply the CFU/m^3 value by 0,02832

55mm contact plates - 90mm Petri Plates - 219 holes 1,00 mm											
r	Pr	r	Pr	r	Pr	r	Pr	r	Pr	r	Pr
1	1	38	42	75	92	112	156	149	249	186	412
2	2	39	43	76	93	113	158	150	252	187	418
3	3	40	44	77	95	114	160	151	255	188	425
4	4	41	45	78	96	115	162	152	258	189	432
5	5	42	46	79	98	116	165	153	261	190	439
6	6	43	48	80	99	117	167	154	265	191	447
7	7	44	49	81	101	118	169	155	268	192	455
8	8	45	50	82	102	119	171	156	271	193	463
9	9	46	51	83	104	120	173	157	275	194	471
10	10	47	53	84	106	121	176	158	278	195	480
11	11	48	54	85	107	122	178	159	282	196	489
12	12	49	55	86	109	123	180	160	286	197	499
13	13	50	57	87	110	124	182	161	289	198	508
14	14	51	58	88	112	125	185	162	293	199	519
15	15	52	59	89	114	126	187	163	297	200	530
16	17	53	60	90	116	127	189	164	301	201	542
17	18	54	62	91	117	128	192	165	305	202	554
18	19	55	63	92	119	129	194	166	309	203	567
19	20	56	64	93	121	130	196	167	313	204	580
20	21	57	66	94	122	131	199	168	317	205	595
21	22	58	67	95	124	132	201	169	322	206	611
22	23	59	69	96	126	133	204	170	326	207	627
23	24	60	70	97	128	134	206	171	331	208	646
24	25	61	71	98	130	135	209	172	335	209	666
25	26	62	73	99	131	136	212	173	340	210	687
26	28	63	74	100	133	137	214	174	344	211	712
27	29	64	76	101	135	138	217	175	349	212	739
28	30	65	77	102	137	139	220	176	354	213	770
29	31	66	78	103	139	140	222	177	359	214	807
30	32	67	80	104	141	141	225	178	365	215	851
31	33	68	81	105	142	142	228	179	370	216	905
32	34	69	83	106	144	143	231	180	375	217	978
33	36	70	84	107	146	144	234	181	381	218	1088
34	37	71	86	108	148	145	237	182	387	219	1307
35	38	72	87	109	150	146	240	183	393		
36	39	73	88	110	152	147	243	184	399		
37	40	74	90	111	154	148	246	185	405		

55mm contact plates - 90mm Petri Plates - 401 holes 0,75 mm											
r	Pr	r	Pr	r	Pr	r	Pr	r	Pr	r	Pr
1	1	41	43	81	90	121	144	161	206	201	278
2	2	42	44	82	92	122	145	162	207	202	280
3	3	43	45	83	93	123	147	163	209	203	282
4	4	44	47	84	E	124	148	164	211	204	284
5	5	45	48	85	95	125	150	165	212	205	287
6	6	46	49	86	97	126	151	166	214	206	289
7	7	47	50	87	98	127	152	167	216	207	291
8	8	48	51	88	99	128	154	168	217	208	293
9	9	49	52	89	100	129	155	169	219	209	295
10	10	50	53	90	102	130	157	170	221	210	297
11	11	51	54	91	103	131	158	171	223	211	299
12	12	52	56	92	104	132	160	172	224	212	301
13	13	53	57	93	106	133	161	173	226	213	303
14	14	54	58	94	107	134	163	174	228	214	305
15	15	55	59	95	108	135	164	175	230	215	307
16	16	56	60	96	110	136	166	176	231	216	310
17	17	57	61	97	111	137	167	177	233	217	312
18	18	58	63	98	112	138	169	178	235	218	314
19	19	59	64	99	114	139	170	179	237	219	316
20	20	60	65	100	115	140	172	180	239	220	318
21	22	61	66	101	116	141	173	181	240	221	321
22	23	62	67	102	118	142	175	182	242	222	323
23	24	63	68	103	119	143	177	183	244	223	325
24	25	64	70	104	120	144	178	184	246	224	327
25	26	65	71	105	122	145	180	185	248	225	330
26	27	66	72	106	123	146	181	186	250	226	332
27	28	67	73	107	124	147	183	187	251	227	334
28	29	68	74	108	126	148	184	188	253	228	336
29	30	69	76	109	127	149	186	189	255	229	339
30	31	70	77	110	128	150	188	190	257	230	341
31	32	71	78	111	130	151	189	191	259	231	343
32	33	72	79	112	131	152	191	192	261	232	346
33	34	73	80	113	133	153	192	193	263	233	348
34	35	74	82	114	134	154	194	194	265	234	351
35	37	75	83	115	135	155	196	195	267	235	353
36	38	76	84	116	137	156	197	196	269	236	355
37	39	77	85	117	138	157	199	197	271	237	358
38	40	78	87	118	140	158	201	198	272	238	360
39	41	79	88	119	141	159	202	199	274	239	363
40	42	80	89	120	142	160	204	200	276	240	365

Troubleshooting

Review the information in the table below to troubleshoot operating problems.

Problem	Cause	Solution
Unit does not start	Instrument is not turned on	Touch the OK button for at least two seconds
	Battery is low	Recharge battery
	Battery charger is not working	Check battery charger and if it needs replacing order Cat. No. 710-0993
	Battery is too old	Check battery and replace it
Unit does not react	Malfunction or USB Error	Press “C” + “OK” + “Up” simultaneously to switch of device
Battery discharges after few minutes working	Battery is low	Recharge battery
	Battery charger is not working	Check battery charger and if it needs replacing order Cat. No. 710-0993
	Battery is too old	Check battery and replace it
“LOW BATTERY” message	Battery is low	Recharge battery
“CALIBRATION EXPIRED” message	Instrument needs to be calibrated	Send the instrument to VWR International or an authorised dealer
MOTOR ERROR	Motor not working or not connected	Sent instrument to service provider
USB ERROR	USB Stick detection failed	Format the USB stick to the FAT32 file system Check USB Stick and replace it
Infrared remote switch doesn’t switch the unit on	Remote control battery is low	Replace infrared remote battery
Microbiological media is dehydrated after sampling	Media is damaged	Control expiration date of media and check that the agar is not dehydrated before sampling
	Sampling time is too long	Shorten the sampling time

Firmware update

Review the information to update the Firmware of the SAS Super ISO USB air sampler.

Press OK for at least two seconds to switch the unit on. After the visual display presentation, you will see the main screen with the last aspirated volume of air.

Save the latest Firmware version on a USB stick (SAS-ISO_RELEASE_Vxx.xx.hex) and connect the USB stick with the Air sampler. If an Admin Password is set, please confirm the Firmware update with the Admin Password.



Press OK to start the Firmware update.

The following information's will be shown during the update process - **please do not switch of the Air sampler! The system will switch off automatically.**









Remove the USB stick and press OK for at least two seconds to switch the unit on. The Firmware in now updated to the latest version and the Air sampler can be used normally. After restart is shown the instrument is switched off and on again. Then you can remove the USK stick

Accessories

Description	Cat. No.
Aspirating heads for contact plates, Ø 55 mm	
Stainless steel	710-0880
Aluminium	710-0892
Sterile daily	710-0890
Aspirating heads for Petri dishes, Ø 90 mm	
Stainless steel	710-0878
Aluminium	710-0886
Sterile daily head	710-0891
Other accessories	
Soft carrying case	710-0896
Aluminium carrying case	710-0875
Bio-Transport autoclavable carrying case	113-8185
Handle for Bio-Transport carrying case	113-8186
Floor tripod	710-0889
SAS-Holder table and wall stainless steel	710-0963
Battery charger with universal plug for both models	710-2253
Adapter* to convert contact plate model to accept 90 mm Petri dishes	710-0882
SAS stainless steel Petri head + adaptor	710-0877
SAS aluminium Petri head + adaptor	710-0879
IQ OQ PQ validation protocols for SAS Super ISO USB 100 and 180	710-0956
Infrared remote control for SAS Super ISO USB	710-0969

Technical services

Web resources

Visit the VWR website at **www.vwr.com** for:

• Complete technical service contact information

• Access to the VWR online catalogue and information about accessories and related products

• Additional product information and special offers

Contact us: For information or technical assistance contact your local VWR representative or visit. **www.vwr.com**.

Warranty

VWR International warrants that this product will be free from defects in material and workmanship for a period of two (2) years from date of delivery. If a defect is present, VWR will, at its discretion and cost, repair, replace, or refund the purchase price of this product to the customer, provided it is returned during the warranty period. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication, or from ordinary wear and tear. If the required maintenance and inspection services are not performed according to the manuals and any local regulations, such warranty will become invalid, except to the extent, the defect of the product is not due to such non-performance.

Items being returned must be insured by the customer against possible damage or loss. This warranty shall be limited to the aforementioned remedies. IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.

Compliance with local laws and regulations

The customer is responsible for applying for and obtaining the necessary regulatory approvals or other authorisations necessary to run or use the product in its local environment. VWR will not be held liable for any related omission, or for not obtaining the required approval or authorisation, unless any refusal is due to a defect of the product.

Equipment disposal



This equipment is marked with the crossed out wheeled bin symbol to indicate that this equipment must not be disposed of with unsorted waste.
Instead it's your responsibility to correctly dispose of your equipment at lifecycle end by handing it over to an authorised facility for separate collection and recycling. It's also your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect from health hazards the persons involved in the disposal and recycling of the equipment.
For more information about where you can drop off your equipment, please contact your local dealer from whom you originally purchased this equipment.

By doing so, you will help to conserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.

Thank you

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