



Operating Instructions

# AirPort MD8

Air Sampler



Please read these operating instructions  
carefully before switching the instrument  
on!

# Contents

<b>1.</b>	<b>Introduction</b>	<b>4</b>	<b>10.</b>	<b>How to use 80 mm gelatin membrane filters in the aluminum filter holder and the filter stack</b>	<b>17</b>
<b>2.</b>	<b>Safety precautions</b>	<b>5</b>	10.1.	Preparation and sterilization of the filter holder	17
<b>3.</b>	<b>EC Declaration of Conformity</b>	<b>5</b>	10.2.	Placing a filter in the filter holder	17
<b>4.</b>	<b>Unpacking and checking the equipment supplied</b>	<b>5</b>	10.3.	Removing a filter from the filter holder after sampling	17
<b>5.</b>	<b>Specifications</b>	<b>6</b>	10.4.	Using an aluminum filter stack	18
5.1.	Specifications of the AirPort MD8	6	<b>11.</b>	<b>Use of AirPort MD8 with BACTair™ culture media plates</b>	<b>20</b>
5.1.1	Power supply	7	11.1	Application	21
5.2.	Specifications of gelatin filter disposables	7	<b>12.</b>	<b>Accessories and consumables</b>	<b>23</b>
5.2.1.	Specifications of gelatin membrane filters	7	12.1	Accessories	23
5.3	Specifications of BACTair™ culture media plates	7	12.2.1	Filter consumables	24
<b>6.</b>	<b>Description of the AirPort MD8</b>	<b>8</b>	12.2.2	Consumables BACTair™ culture media plates	24
6.1	Description of the keypad	8	<b>13.</b>	<b>Warranty</b>	<b>25</b>
<b>7.</b>	<b>Operating the AirPort MD8</b>	<b>9</b>	<b>14.</b>	<b>Information and instructions on disposal</b>	<b>26</b>
7.1.	Checking and changing the parameters for the sampling procedure	9			
7.2.	Display functions during air sampling	9			
7.3.	Error messages during air sampling	10			
<b>8.</b>	<b>The service menu</b>	<b>11</b>			
8.1	Calling up the service menu	11			
8.2	Selecting basic settings for language, switch-off time and LCD contrast	11			
8.3	Calibration	11			
8.3.1	Connecting the AirPort MD8 to the calibration unit 16756	12			
8.3.2	Calibration procedure	12			
<b>9.</b>	<b>How to use gelatin filter disposables</b>	<b>13</b>			
9.1	How to fit a filter disposable to the adapter	13			
9.2.	How to remove a filter disposable with the adapter	14			
9.3.	How to remove a filter disposable without the adapter	15			
9.4.	Incubation and evaluation of collected microorganisms	16			
9.5.	Dissolving the gelatin filter prior to evaluation of collected microorganisms	16			
9.6.	Dissolving the gelatin filter after collecting viruses and phages	16			

## 1. Introduction

**Dear new user,**

Congratulations on your choice of the portable, battery operated AirPort MD8 for your microbiological air sampling! This completely new developed instrument is manufactured for quality by high standard German electrical and precision engineering.

We are sure that it will provide you with trouble-free service for many years. This addition to our line of air sampling instruments supplements the MD8 airscan, which has proved itself in practice over many years, and is particularly suitable for installation in critical areas, such as isolators, cleanrooms and operating rooms.

The AirPort MD8 is specifically designed for applications which require an easily transportable, line-independent unit, e.g. for airborne microorganism collection in the areas:

- Worker health and safety
- Hospitals and clinics
- Food and beverage industry
- Pharmaceutical industry
- Environmental protection

Please do not hesitate to contact us, should you need further information or assistance on installation or on your specific applications.

Goettingen, 2008

AirPort MD8 is an air sampler that operates according to the filtration and impaction method.

It detects airborne microbes by suctioning a defined air volume through a gelatin membrane filter or a culture medium plate filled with agar. The microorganisms present in the air volume are retained during sampling on the filter material or the BACTair™ culture media plate and can then be cultured using microbiological methods.

When airborne microorganisms are to be detected using the filtration method, the gelatin membrane filter along with the collected microbes is placed after sampling directly on a petri dish containing a suitable culture medium and incubated. The colonies that have developed are counted and indicated as the number of colony-forming units (cfu/m<sup>3</sup>).

When the airborne virus concentration is to be determined, the gelatin membrane filter must be dissolved after sampling, so that retained viruses can be cultivated in the solution and analyzed by virological or molecular biological methods. Detailed procedural information is given in the application notes "Collecting Airborne Viruses and Phages Using the Gelatin Membrane Filter Method" and "A method for detecting and enumerating airborne virulent bacteriophage of dairy starter cultures" (publication numbers SLF-4028-e and SM-4021e respectively) as well as in further publications on this topic.

In the impaction method, microbe-laden particles are impacted from the air stream directly onto the BACTair™ culture media plate attached to the air sampler. Colony-forming units of the impacted microbes will develop on the BACTair™ culture media plate during incubation.

Further details are available on request.

## 2. Safety precautions

1. The AirPort MD8 is a modern air sampling instrument for the collection of airborne microorganisms and viruses. It is intended for use with 80 mm diameter membrane filter discs having a pore size of 3 µm or for use with culture media plates (approx. 110 mm diameter). Use of smaller diameter or smaller pore size filters can result in damage to the pump.

2. Use for other than the intended purpose, or improper operation, frees the manufacturer from all liability.

3. Do not open up or make changes to the instrument. Damage resulting from such ingress or changes are not covered by the guarantee given by the manufacturer.

## 3. EC Declaration of Conformity

We hereby declare that the AirPort MD8 (order number 16757) conforms, in its design and construction, to the requirements of the following standards:

EN 50081-2 Interference March 1994  
EN 55022 Cl. B  
EN 50082-1 Interference November 1997  
EN 61000-4-2, -3, -4, -5, -6  
EN 50204

Status: March 2008

This declaration becomes invalid, when changes which have not been authorized by us are made to the instrument.

## 4. Unpacking and checking the equipment supplied

Sartorius Stedim Biotech products are very carefully packed, but despite this, damage could possibly occur during transport, so please check the equipment supplied for such damage while unpacking it. Check the equipment supplied against the following list, to ensure that everything has been correctly delivered and that nothing is left in the packaging:

The following is standardly supplied under the order number 16757:

- An AirPort MD8
- Adapter 17801 for gelatine filter disposables
- A battery charger
- Operating instructions (German | English)
- Calibration certificate

## 5. Specifications

### 5.1. Specifications of the AirPort MD8

Adjustment of the air flow rate:

An integrated propeller anemometer with opto-electronical scanning continually measures the air flow rate, which is digitally controlled.

The air flow rate can be set to either of four fixed values: 30 l/min, 40 l/min, 50 l/min (if gelatin filters are used) or 125 l/min (only for use of BACTair™ culture media plates).

The sampling volume can be either of the following fixed values: 25, 50, 100, 250, 500, 750 or 1000 liters.

The following table shows the sampling times which result from the various possible combinations of selected sampling volume and air flow rate:

Sample volume setting:	25 liters	50 liters	100 liters	250 liters	500 liters	750 liters	1000 liters
Air flow rate setting:	Sampling time in seconds						
30 l/min	50	100	200	500	1000	1500	2000
40 l/min	37.5	75	150	375	750	1125	1500
50 l/min	30	60	120	300	600	900	1200
125 l/min	12	24	48	120	240	360	480

Other sample volumes can be manually selected within the range 10 to 2000 liters in steps of 5 liters.

Display of sampling time remaining to switch-off.

Service life per battery charge:	Approx. 4 hours at 125 l/min (only if BACTair™ culture media plates are used) Approx. 4.5 hours at 50 l/min Approx. 5.5 hours at 40 l/min Approx. 8 hours at 30 l/min
Power consumption, pump and electronics:	5–14 Watt, depending on filter resistance
Noise level:	< 48 dB (A)
Weight:	Approx. 2.5 kg
Dimensions (L x W x H):	300×135×165 mm
Air inlet connector:	Bayonet-type quick connect

### 5.1.1 Power supply

Battery:	NiMH 16.8 V / 3800 mAh
Battery charger:	Plug-in unit, AC/DC adapter type FW7306
Input:	100–240 V / 47–63 Hz / 600 mA
Output:	24 V / 1000 mA
Charging time:	Approx. 4.5 hours for an empty battery

Battery charger with exchangeable plugs for worldwide use.  
The AirPort MD8 can be used for sampling during the re-charging process.

### 5.2. Specifications of gelatin filter disposables

Filter holder:	For 80 mm diameter membrane filters
Filtration area:	38.5 cm <sup>2</sup>
Material:	Cyrolite (recyclable plastic)
Max. temperature:	85°C
Dimensions:	93×16 mm

#### 5.2.1. Specifications of gelatin membrane filters

Material:	Gelatin
Nominal pore size:	3 µm
Filter diameter:	80 mm
Behaviour with water:	Soluble
Residual moisture:	Approx. 46–49%
Thickness:	Approx. 250 µm
Air flow rate per cm <sup>2</sup> :	2.2–3.2 l/min at a differential pressure of 0.05 bar
Temperature limit:	60°C
Limiting operating conditions:	Max. 30°C ambient temperature, max. 85% relative humidity
Sterilization method:	Gamma irradiation
Retention of bacteria:	99.9995% for Bac. subtilis niger at 0.25 m/s inlet velocity
Retention of viruses:	99.9% for phage T1 (coli phage) at 50% relative humidity and an inlet velocity of 0.3 m/s. 99.94% for phage T1 (coli phage) at 80% relative humidity and an inlet velocity of 0.3 m/s

### 5.3 Specifications of BACTair™ culture media plates

Material:	Polystyrene
Dimensions of the assembled BACTair™ culture media plates:	116×24 mm
Number of impaction holes:	400 holes, each with a 0.47 mm Ø
Impaction rate:	30 m/s
High retention for particles	> 0.65 µm

## 6. Description of the AirPort MD8

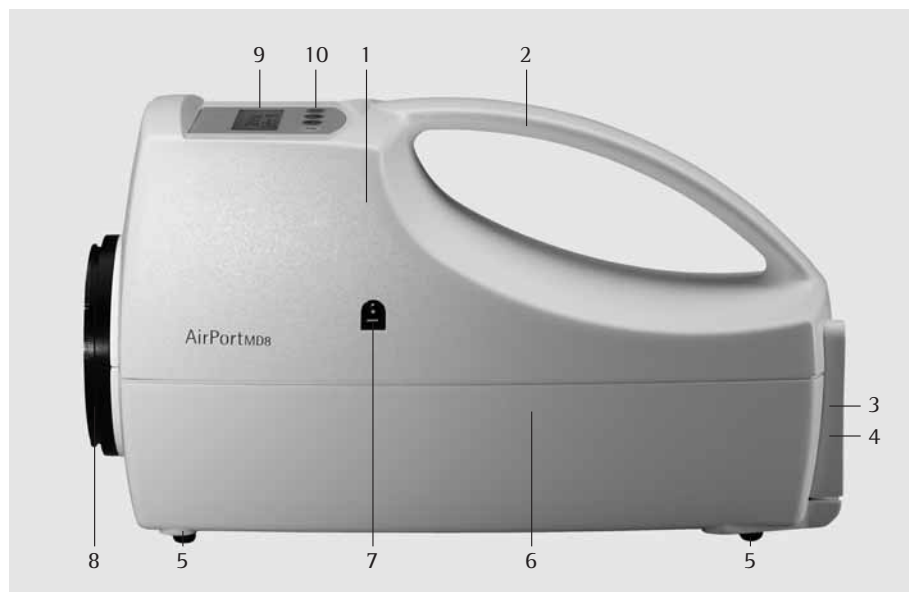


Fig. 1

The top of the plastic housing (1) of the AirPort MD8 (Fig. 1) holds the control panel with LCD display (9) and membrane-covered keypad (10) (these are described in detail in section 6.1 below), and has an ergonomically shaped handle (2) for easy carrying.

The front of the instrument has an air inlet opening (8) with a female bayonet-type connection for attaching an adapter for a gelatin filter disposable, an aluminum filter holder for an 80 mm diameter gelatin membrane filter or an adapter for a BACTair™ culture media plate. The back of the instrument has an air exhaust opening (3) with rigid fins (4) on each side of it to enable the sampler to be stood up (on a clean, level surface) and to be operated in this vertical position.

The back plate can be removed should you need to change the battery. The bottom of the instrument holds 4 rubber feet (5) which prevent slippage of the sampler when it is operated in the horizontal position.

The battery is fixed inside the sampler (6). Connection (7) in the left side of the sampler accepts the plug of the battery charger supplied (plug-in unit).



Fig. 2

In principle, a measurement can be started as soon as a gelatin membrane disposable, a filter holder 17655 with a gelatin filter (see section 10 on placing a membrane filter in the filter holder) or an adapter for a BACTair™ culture media plate has been attached to the air inlet (8).

### 6.1 Description of the keypad

The instrument is operated completely by use of the 4 keys of the membrane-covered keypad in the control panel on the top of it (Fig. 2). Entries are acknowledged via an LCD display with 2×16 characters.

The keys have the following functions:

- ↕ Selection of parameters for display and entry of values
- ↓ Decreases the value of the parameter on display
- ↑ Increases the value of the parameter on display
- I/O ON | Start | Stop



## 7. Operating the AirPort MD8

### 7.1. Checking and changing the parameters for the sampling procedure

Press the ON|Start|Stop key to switch the instrument on.

The display then shows:

Sartorius  
AirPort MD8

The instrument is ready to use.

You can now start the instrument by pressing the ON|Start|Stop key, and | or stop the measurement at any time. Press the ↓↑ key to call up further menu prompts as shown below:

Press key ↓↑

Air sampler  
Battery = xx %

The present status of the battery charge is shown as % of the full charge.

Press key ↓↑

Sampling volume xxxx l  
Flow rate xxx.x l/min

The sampling volume and current air flow rate are shown.

Press key ↓↑

Sampling volume  
Default = xxx l

Change the sampling volume by pressing key ↓ (smaller) or ↑ (higher). Select from default values 25, 50, 100, 250, 500, 750, 1000 l.

Press key ↓↑

Air flow rate  
l/min = xx

Change the flow rate (30, 40, 50, or 125 l/min) by pressing key ↓ or ↑.

Press key ↓↑

Sampling volume  
Manual = xxx l

Manually change the sampling volume in steps of 5 l by pressing the ↓ or ↑ key.

Press key ↓↑

Sartorius  
AirPort MD8

The parameter values last entered, e.g. for the last measurement previously made, remain stored after switch-off, so that a new measurement can be made using these parameters directly after switching on again.

In the operating mode "Manual sampling volume", the sampling volume selected is also stored, but must be again called up prior to measurement with key ↓↑.

### 7.2. Display functions during air sampling

The following menu prompts can be displayed during measurement:

Display shown while the instrument is carrying out a measurement:

Volume xxxx l  
Flow rate xxx.x l/min

The measured volume and the air flow rate are displayed during measurement.

Press key ↓↑

Time remaining  
xxx sec

The sampling time remaining before instrument switch-off is shown in seconds.

Press key ↓↑

Air sampler  
Battery = xx %

The present status of the battery charge is shown as % of the full charge.

When the battery charge drops to < 30%, then the following alternate every few seconds in the display:

Air sampler  
Charge battery

or

Air sampler  
Battery = xx %

When these messages appear, a few measurements can still be made, but the battery should be re-charged as soon as possible.

The volume measured in the last measurement is displayed at the end of that measurement, independently of which parameter was selected in the operating mode:

Volume xxxx l  
Flow rate xxx.x l/min

### 7.3. Error messages during air sampling

There are various errors that the air sampler can recognize for air flow settings of 30, 40 and 50 l/min (only if gelatin filters are used) and will result in an aborted measurement. At a setting of 125 l/min (if a BACTair™ culture media plate is used), the air sampler will shut off, but no error message will be displayed.

1. The installed filter is too fine or is too heavily loaded with retained particles, so that the resistance to flow is so high that the motor cannot bring the performance which would be required to reach the selected air flow rate.

After abortion of the measurement, the following appears in the display:

Filter clogged  
Press I/⏻

2.

a) The instrument has been switched on without a filter in position.

b) The installed filter is too coarse or has a tear in it. In each case, the resistance to flow is too low for the motor to bring the performance which would be required to reach the selected air flow rate.

After abortion of the measurement, the following appears in the display:

Filter defect  
Press I/⏻

3. The battery charge is too weak for the motor to reach the performance required to attain the selected air flow rate.

After abortion of the measurement, the following appears in the display:

Charge battery  
Press I/⏻

In order to be able to carry out further measurements, the battery must be re-charged (approx. 4.5 hours charging time for an empty battery) or changed.

## 8. The service menu

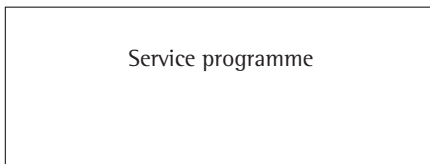
As a guard against improper entries and to protect the factory entered calibration data, call up of the service menu has been allotted a certain key combination to hinder user access.

Re-adjustments to the factory calibration should in principle only be carried out by Sartorius Stedim Biotech service personnel, unless you have a suitable calibration instrument, such as the Sartorius Stedim Biotech calibration unit 16756, at your availability.

### 8.1 Calling up the service menu

Call up the service menu by pressing key  $\downarrow\uparrow$  and holding it pressed while you, within 1 second, also press key  $I/\phi$ , then let go of the two of them.

The display shows:

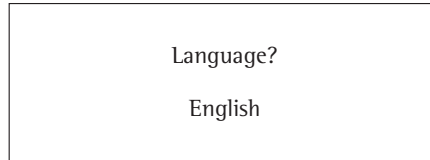


and the software version number used in the air sampler.

### 8.2 Selecting basic settings for language, switch-off time and LCD contrast

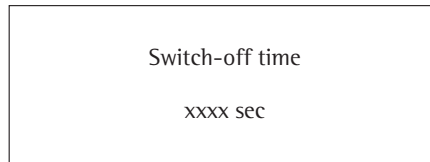
Call up the individual menu prompts as described under operating the AirPort MD8, by pressing the key  $\downarrow\uparrow$ :

Press key  $\downarrow\uparrow$



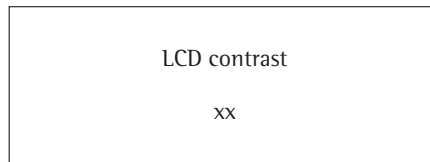
You can select German, English, French or Spanish.

Press key  $\downarrow\uparrow$



You can select the time to instrument switch-off in steps of 1 second.

Press key  $\downarrow\uparrow$



You can adjust the contrast of the LCD in single steps.

With these adjustments, you can adapt your AirPort MD8 to your application easily and without any detrimental effect on the principal functioning.

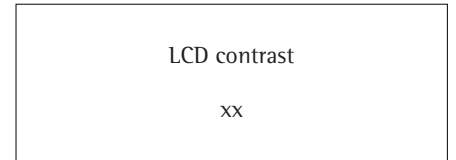
Now press the  $\downarrow\uparrow$  key to call up the display showing "Service programme" and press the ON | Start | Stop key to leave the service programme. The changed settings are thereby automatically stored.

To come back to the "Service programme" display, regardless of from which setting, you must run through the whole service menu. Individual or all parameters can be changed.

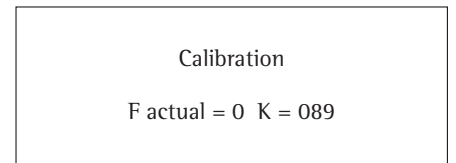
### 8.3 Calibration

As previously stated, re-adjustments to the factory calibration should in principle only be carried out by Sartorius Stedim Biotech service personnel, unless you have a suitable calibration instrument, such as the Sartorius Stedim Biotech calibration unit 16756, at your availability.

You can reach the menu prompt "Calibration" from the setting:



by pressing key  $\downarrow\uparrow$ . The following then appears in the display:



F actual = the current value of the actual frequency of the propeller scanned by the fork light barrier inside the AirPort MD8.  
K = a correction value without any dimension with which the air flow rate is changed.

### 8.3.1 Connecting the AirPort MD8 to the calibration unit 16756

To carry out a calibration, the calibration unit 16756 developed by Sartorius Stedim Biotech must be connected to the AirPort MD8. The individual steps for doing this correctly are described in section 5 of the Operating Instructions supplied with the calibration unit (publication number SL-6115-a), with the MD8 airscan instrument used as example. To connect the calibration unit to the AirPort MD8, however, further accessories are required to those stated in the example (such as the connection set 17657 and PVC hose 17085). If you will be using BACTair™ culture media plates, be sure to use adapter 17803 on the Calibration Unit in place of the adapter 17801 for gelatin filter disposables. The corresponding accessories are described in the literature available for the MD8 airscan and AirPort MD8 air samplers.

### 8.3.2 Calibration procedure

After having connected the Calibration Unit to the AirPort MD8, carry on from the menu prompt:

Calibration

F actual = 0 K = 089

to start calibration by pressing the ON | Start | Stop key. By pressing this key, the AirPort MD8 regulates the last set air flow rate (30, 40 or 50 l/min or 125 l/min). After adjusting the air flow rate to either 30, 40 or 50 l/min (if gelatin filters are used; 125 l/min can be selected only if calibration is to be performed for the use of BACTair™ culture media plates), the corresponding actual value (e.g. 3.0 m<sup>3</sup>/h or 50 l/min) displayed by the calibration unit is compared with the selected set value (50 l/min) on the AirPort MD8.

Should there be a difference between the two values, then press the ↓ or ↑ key to change the K value until the set value and the value displayed by the calibration unit correspond to each other. An increase in the K value entails an increase in the air flow rate; a decrease reduces this rate.

The calibration is now completed.

To store the values, now press the ↓↑ key to go to the “Service programme” display, then press the ON | Start | Stop key.

#### Note:

The propeller anemometer works linearly over the range 20 to 80 l/min, i.e. it is only necessary to calibrate one of the 3 air flow rates (30, 40 or 50 l/min). The measuring range of 125 l/min for use of BACTair™ culture media plates must be separately calibrated.

Storing and leaving the service programme is possible from any position. To do this, use key to go to the “Service programme” display, then press the ON | Start | Stop key.

## 9. How to use gelatin filter disposables

Gelatin filter disposables consist of 80 mm diameter gelatin filters which are fitted between the top and base parts of a disposable plastic holder. They are individually packed in single or triple bags and presterilized by gamma irradiation. Full details are given in the Directions for Use supplied with them (publication number SM-6043-p).

### 9.1 How to fit a filter disposable to the adapter

To take out a single-packaged filter disposable, cut open the polyethylene bag on the side where the seam is located (Fig. 3).

To take out a unit from a triple-package, cut open the outer bag on the side where the seam is located, open the middle bag at the zip-lock seam and cut open the innermost bag on the side where the seam is located.



Fig. 3



Fig. 4

Remove the filter disposable by hand, touching only the outer edge of the unit (Fig. 4), and lock it onto the adapter. While doing this, avoid contamination of the filter, or damage to it, by avoiding touching of the open filter face.



Fig. 5

The adapter (order no. 17801) can be locked onto the AirPort MD8 Air Sampler (arrow Fig. 5) inlet by turning it clockwise, either before attaching a filter disposable to it, or with an attached filter disposable.



Fig. 6

### 9.2. How to remove a filter disposable with the adapter

After sampling, detach the adapter holding the filter disposable from the AirPort MD8 by turning it counterclockwise (no photo). Hold the adapter and base of the filter disposable firmly and with the filter face up, then detach the top part of the filter disposable by turning it counterclockwise (Fig. 6).



Fig. 7

Invert an agar-filled petri dish base over the gelatin filter (Fig. 7),



Fig. 8

and make contact so that the gelatin filter can adhere to the agar surface (Fig. 8). Cover the dish base with the lid of the petri dish.



Fig. 9

The gelatin filter starts to dissolve and become transparent (Fig. 9) because of the moisture in the agar,



Fig. 10

and is completely dissolved within a few minutes (Fig. 10).

### **9.3. How to remove a filter disposable without the adapter**

To remove the filter disposable from the sampler without removing the adapter, grasp the bevelled edge of the filter disposable base.

Detach the top part of the filter disposable by turning it counterclockwise and proceed further as under 9.2.

If you prefer to use forceps to remove the gelatin filter and place it on the agar surface (a notch has been provided in the base of the filter disposable for this purpose), do not grasp the filter too firmly, as it somewhat brittle and may then break.



Fig. 11

#### 9.4. Incubation and evaluation of collected microorganisms

After transferring the gelatin filter to the culture medium, place it in an incubator for incubation. The relative humidity of the air in the incubator should be between 40–50% (this can be maintained by placing a petri dish containing water in the incubator). The petri dish should be positioned with lid up, to avoid condensed water on the inside of the lid, and should have cams of some sort so that excess condensed water can evaporate out. To avoid excessive accumulation of liquid on the agar, use plates which are only 1 to 2 days old and pre-dried at room temperature. Alternatively, the agar plates can be dried open for up to 3 hours in a clean bench. To be certain of avoiding contamination during this, place the base down but held at a tilt with the lid beneath one side of it (Fig. 11).

Choose the time, temperature and type of culture medium according to your microbiological application, for instance, Standard, Caso or Plate Count Agar are suitable for determining the colony count; Sabouraud, Malt Extract or Wort Agar for detecting yeasts and molds; and Blood Agar for detecting pathogenic microbes causing hemolysis.

You can obtain the number of colony forming units per cubic meter of air by relating the colony count obtained to the volume of air sampled ( $\text{cfu}/\text{m}^3$ ).

We recommend that you plate the gelatin filter on a suitable agar immediately after sampling is completed, as this avoids possible inactivation of very sensitive bacteria due to drying-out effects. If the filter is transported to the laboratory, then the filter disposable should be protected from contamination by covering it with a sterile petri dish lid or wrapping it in sterile aluminum foil, until its removal under sterile conditions (sterile bench, laminar-flow glove box or isolator).

#### 9.5. Dissolving the gelatin filter prior to evaluation of collected microorganisms

Gelatin filters can be dissolved in 100 ml of sterile liquid, such as physiological saline or 0.1% peptone water, warmed to 35–40°C. Dissolution should be finished within about 15 minutes. Stirring the liquid using a sterile magnetic stirrer accelerates dissolution of the filter.

The solution can then be processed by a pour plate or membrane filter method.

During the dissolving and stirring process, groups of microorganisms are separated into individual microorganisms, so that a higher count will be obtained with this method than by direct plating of the gelatin filter. This method is recommended when very high colony counts are expected (dilution series) or when sampling is carried out in areas which have been sprayed with disinfectants or where antibiotic dust could be present (subsequent filtration of solution through an 0.45  $\mu\text{m}$  cellulose nitrate membrane filter, e.g. 11406, and rinsing this with an osmotically appropriate sterile medium prior to incubation ensures removal of growth inhibiting substances). A modified dissolution method can be used to determine the bacteria count by fluorescence (further information on request).

#### 9.6. Dissolving the gelatin filter after collecting viruses and phages

When the virus concentration is to be determined, a gelatin membrane filter must be used and subsequently dissolved, so that retained viruses (phages) can be cultivated in the solution and analysed by virological or molecular biological methods. Detailed procedural information is given in the application notes “Collecting Airborne Viruses and Phages Using the Gelatin Membrane Filter Method” and “A method for detecting and enumerating airborne virulent bacteriophage of dairy starter cultures” (publication numbers SLF-4028-e and SM-4021e respectively) as well as in further publications on this topic.

Further information on request.



## 10. How to use 80 mm gelatin membrane filters in the aluminum filter holder and the filter stack



Fig. 12

### 10.1. Preparation and sterilization of the filter holder

The filter holder supplied consists of a top and a bottom part (Fig. 12).

The top part fits on the bottom part by turning it clockwise all the way to the stop. Before first use, clean the parts with hot water. If necessary, add a little gentle laboratory detergent and rinse subsequently with hot water. Use distilled water for a final rinse. Dry the parts with hot air and assemble the filter holder.

Cleaning after use is only required when the parts are visibly dirtied

### Sterilization of the filter holder for air sampling

The filter holder or assembled filter stack can be sterilized by heating them in a drying oven at 180°C for up to 2 hours. Autoclaving is not possible, as the aluminum material would corrode on account of the moist heat.



Fig. 13

### 10.2. Placing a filter in the filter holder

Turn the top part counterclockwise to detach it from the bottom part (do this under sterile conditions for microbiological work), place the filter to be used on the filter support of the bottom part, centering it properly (Fig. 13). Close the holder with the bayonet catch without damaging or displacing the filter. Wrap the holder in aluminum foil or similar (sterile if appropriate) and do not unwrap it until it has been transferred to the point of sampling and is to be attached to the air inlet of the sampler.

### 10.3. Removing a filter from the filter holder after sampling

Detach the filter holder containing the exposed filter from the air inlet of the sampler (no Photo) and protect it from contamination until the gelatin filter is removed for plating on agar and incubation (see sections 9.4. and 9.5.).



Fig. 14

#### 10.4. Using an aluminum filter stack

An aluminum filter stack (accessory order no. 17656, Fig. 14) consists of 10 filter holders fitted together in a stack, in which used and unused holders can be separated.

Before first use, clean all parts with hot water, adding a little gentle laboratory detergent if necessary, then rinse with hot water followed by distilled water. Dry the parts with hot air and assemble the filter holder.



Fig. 15

To assemble the stack, place the holders in numerical order and insert the top of the first holder in the intermediate adapter that accepts holders on either side (Fig. 15). Fit the top of the second holder in the bottom of the first holder (snap them together).



Fig. 16

Continue by fitting the third holder on the second one, etc. Fit an end cap on the bottom of the last holder (Fig. 16) and the other end cap on the open side of the intermediate adapter.

The spring-loaded spherical retainers in each holder permit easy attachment and detachment.

#### Note:

Should the spring-loaded spherical retainers be somewhat stiff at any time, they can be loosened by using a special alkaline detergent in an ultrasonic bath, details on request).

For microbiological work, sterilize in a drying oven at 180°C for 2 hours. Autoclaving is not possible, since the aluminum material would corrode on account of the moist heat.

Insert filters in the individual holders (see section 10.2.), under sterile conditions if appropriate, and restack them as above. The filters are now protected from contamination until sampling is carried out.



Fig. 17

For sampling, remove the first filter holder from the stack and immediately attach the intermediate adapter to the top part of the second filter holder. Fit the filter holder on the AirPort MD8 (see section 6).

After sampling, remove the holder used, fit it on the other side of the intermediate adapter (Fig. 17) and cover it with the end cap.

The filters which have been used for sampling are so separated from the unused filters and are protected from contamination until removed e.g. for plating on agar and incubation (see sections 9.4. and 9.5.).

## 11. Use of AirPort MD8 with BACTair™ culture media plates

The most frequently used method today for sampling airborne organisms is based on the Andersen principle that traps particles on culture media by impaction. In this method, air is suctioned through a sieve, accelerated and directed against a culture media plate. Due to their inertia, airborne organisms are prevented from being swept away by the diverted stream of air and are impacted onto the culture media plate. After sampling, the culture media plate is incubated and the colonies grown are counted as colony-forming units/m<sup>3</sup> of air (cfu/m<sup>3</sup>).



Fig. 18

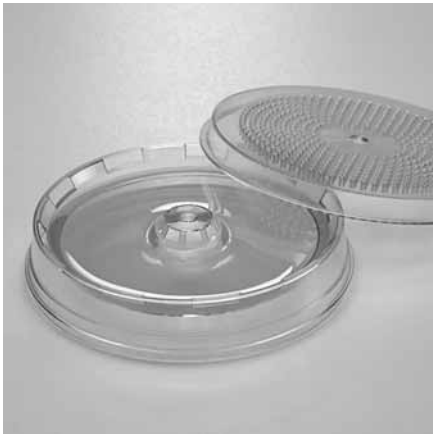


Fig. 19

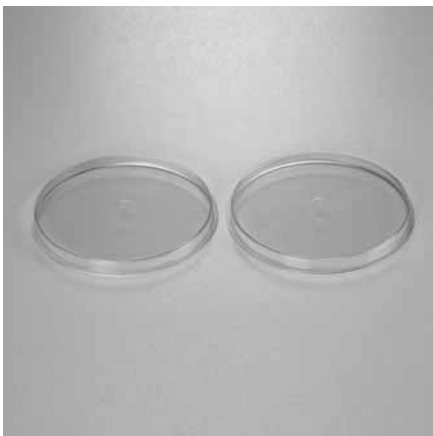


Fig. 20

The newly developed patented method consisting of a sterile disposable sampling chamber (Figs. 18 and 19) and a culture media plate can be used directly in sampling without requiring any further manual steps. This culture media plate system is called BACTair™ culture media plate. Covers for sealing BACTair™ culture media plates are also available as an accessory (Fig. 20)



Fig. 21

### 11.1. Application

For airborne sampling, cut open a BACTair™ culture media plate PE bag behind the seam and attach the BACTair™ culture media plate to the tapered metal adapter (17803) located on the air sampler (see Fig. 21). In doing so, be sure to avoid any secondary contamination of the BACTair™ culture media plate.



Fig. 22

Now start the AirPort MD8 air sampler to begin sampling (Fig. 22).



Fig. 23



Fig. 24



Fig. 25



Fig. 26

At the end of air sampling, detach the BACTair™ culture media plate from the adapter on the AirPort MD8 air sampler, making sure to avoid secondary contamination, and place the BACTair™ culture media plate in the original PE bag for transportation.

Alternatively, you can exchange the sieve plate on the BACTair™ culture media plate with the cover supplied as an accessory, for example, directly on the air sampler (Figs. 23 + 24)

After removing the covered BACTair™ culture media plate, you can close the bottom of the culture media plate with the second cover included in the packaging unit (Fig. 25)

**Note**

BACTair™ culture media plates can be stacked on top of each other for incubation (Fig. 26)

After transporting the culture media plate into an incubator and invert it (life facing downward), start incubation. Select the time and temperature according to guidelines (e.g. EP, USP) and the objectives of your microbiological test. For example, to determine the colony-forming units (total colony count), TSA is used. To detect yeasts and molds, Sabouraud agar can be used.

The number of the colonies that develop on a BACTair™ culture media plate yield the quantity of colony-forming units per cubic meter of air (cfu/m<sup>3</sup>) in relation to the air volume sampled.

## 12. Accessories and consumables



17801



17655



17656



17803

### 12.1 Accessories

- 17801 Adapter for gelatin filter disposables (units)
- 17803 Adapter for using BACTair™ culture media plates on AirPort MD8
- 17655 Filter holder for 80 mm disc filters
- 17656 Filter stack (10 filter holders, individually numbered)
- 6989525 Battery charger with changeable plugs for worldwide use

Details on further accessories on request.



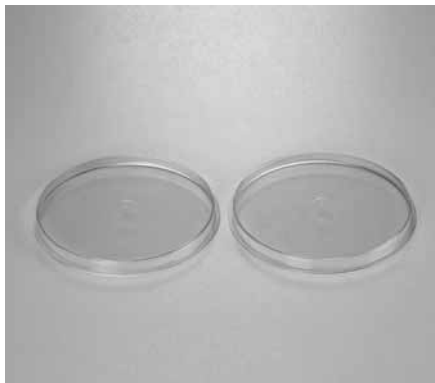
17528-080



12602-080-ALK



14320-110-ACD/14321-110-ACD



1ZPX-D0002

### 12.2.1 Filter consumables

- 17528-080 ACD Gelatin filter disposables (pack of 10, each sterile and individually packed in a polyethylene bag)
- 17528-080 BZD Gelatin filter disposables (pack of 10, each sterile and individually packed in three successive polyethylene bags)
- 17528-080-VPD Gelatin filter disposables (pack of 100, each sterile and individually packed in three successive polyethylene bags, but with label on innermost bag)
- 12602-080 ALK Gelatin disc filters for filter holder or stack (80 mm diameter, pack of 50, presterilized 5 filters to a bag)

When gelatin filters cannot be used because of the ambient conditions (relative humidity above 85% and/or temperature above 30°C), we recommend the use of cellulose nitrate filters. In this case, it is possible that the maximum air flow rate of 50 l/min cannot be used, because the filter resistance is too high.

- 11404-080 ALN Cellulose nitrate membrane filters, white with black grid (0.8 µm, 80 mm diameter, pack of 100, presterilized 5 filters to a bag)
- 13004-080 ALN Cellulose nitrate membrane filters, gray with white grid (0.8 µm, 80 mm diameter, pack of 100, presterilized 5 filters to a bag)

### 12.2.2 Consumables BACTair™ culture media plates

The BACTair™ culture media plates are sterile and individually packaged, and consist of a top and bottom part. They are gamma-sterilized and supplied prefilled with different media.

BACTair™ culture media plates available:

- 14320-110-ACD BACTair™ culture media plate with TSA, sterile and individually packaged in a PE bag; 10 units per box
- 14321-110-ACD BACTair™ culture media plate with Sabouraud agar, sterile and individually packaged in a PE bag, 10 units per box

Store the BACTair™ culture media plates filled with culture medium at +15° - + 25°C (room temperature); these have a shelf life of 6 months.

### Accessories for BACTair™ culture media plates:

- 1ZPX-D0002 Covers for BACTair™ culture media plates, 10 × 2 units, individually, sterile packaged



### **13. Warranty**

The warranty conditions can differ somewhat in various countries. Should no warranty card be included with the instrument, please contact the Sartorius Stedim Biotech subsidiary in your country at the address given on the back of this publication.

## 14. Information and instructions on disposal

Packaging that is no longer required must be disposed of at the local waste disposal facility. The packaging is made of environmentally friendly materials that can be used as secondary raw materials.



The equipment, including accessories and empty non-rechargeable and rechargeable batteries, does not belong in your regular household waste; such equipment is manufactured from high-grade materials and can be recycled and reused.

The European Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE) requires that electrical and electronic equipment be collected and disposed of separately from other unsorted municipal waste with the aim of recycling it. The crossed-out waste bin symbol indicates that separate collection is required.

In Germany and many other countries, Sartorius takes care of the return and legally compliant disposal of its electrical and electronic equipment on its own. **Such equipment may not be thrown out with household waste or brought to collection centers run by local public disposal operations – not even by small commercial operators.** Please contact our on-site service technicians or our Service Center in Goettingen:

Sartorius AG  
Service Center  
Weender Landstrasse 94-108  
37075 Goettingen, Germany  
Tel.: +49.551.308.3333 | 4444  
Fax: +49.551.308.3730  
Jan.Naumann@sartorius.com

For equipment disposal in the following countries of the European Economic Area (EEA), please contact your local Sartorius affiliate, subsidiary, dealer or distributor:

Country	Contact person	Country	Contact person
Austria	<b>Sartorius Stedim Austria Ges.m.b.H. Wien</b> Harri Thenmaier Phone +43.1.796.57.63 Fax +43.1.796.57.63.44 Harald.Thenmaier@sartorius-stedim.com	Latvia	<b>SIA „DOMA“</b> 13 Skanstes Str. 1013 Riga Phone +371.737.62.89 Fax +371.737.62.99 info@domagroup.lv
Belgium	<b>Sartorius Stedim Belgium NV</b> Phone +32.2.756.06.80 info.belgium@sartorius.com	Lithuania	<b>Sartorius Service and Consulting Center</b> ETERMA Technikos salonas Pr. Savanoriu 178 2600 Vilnius Phone +370.5.2311.202 Fax +370.5.2137.611 info@eterma.lt
Cyprus	<b>Markides &amp; Vouros Ltd.</b> Klitos Theocharides Phone +357.22.760121 klitosth@logosnet.cy.net	Luxembourg	<b>Sartorius Stedim Belgium NV</b> Phone +32.2.756.06.80 info.belgium@sartorius.com
Czech Rep.	<b>Sartorius Service and Consulting Center</b> Karolina-Express Mr. Kratochvil Vanickova 1069/31 40001 Usti nad Labem Phone +420.47.520.08.70   521.13.48 Fax +420.47.520.08.70 info@sartorius.cz	Malta	<b>Technoline</b> Elisabeth Saguna Phone +356.21.337975 esaguna@technoline-mt.com
	<b>Sartorius Service and Consulting Center for Process Weighing &amp; Control</b> SARTALEX spol. sr.o. Pod skalou 126 40340 Usti nad Labem Phone +420.47. 5511355   2742990 Fax +420.47. 5511354 servis@sartalex.cz www.sartalex.cz	Netherlands	<b>Sartorius Stedim Netherlands BV</b> Phone +31.30.602.50.80 filtratie.nederland@sartorius-stedim.com
Denmark	<b>Sartorius Stedim Nordic A/S</b> Phone +45.70.23.44.00 ne.customersupport@sartorius-stedim.com	Norway	<b>Sartorius Stedim Nordic A/S</b> Phone +45.70234400 ne.customersupport@sartorius-stedim.com
Estonia	<b>Sartorius Service and Consulting Center</b> OÜ Perimex Lossi Str. 1A 12-616 Tallinn Phone +372.6.726.777 Fax +372.6.726.778 perimex@online.ee	Poland	<b>Sartorius Service and Consulting Center</b> SARTOPOL ul. Warszawska 61 61028 Poznan Phone +48.61.879 29 33 Fax +48.61.879 25 04 biuro@sartopol.pl
Finland	<b>Sartorius Stedim Nordic A/S</b> Phone +45.70234400 ne.customersupport@sartorius-stedim.com	Portugal	<b>Sartorius SA Representação em Portugal</b> Rua Prof. Aires de Sousa, 4B 1600-590 Lisboa
France	<b>Sartorius Stedim France S.A.S</b> Antje Grislin Phone +33.607.478.220 antje.grislin@sartorius.com	Slovakia	<b>Sartorius Service and Consulting Center</b> Sartorius Slovensko s.r.o. Hlavná ul. 26/5 929 01 Dunajská Streda Phone   Fax +421.31.5-52 64 98, Fax +421.31.5-52 99 38 bfsarto@BA.TELECOM.SK
Greece	<b>Biodynamics SA</b> Constantin G. Liatsos Phone +30 (210) 6449421 Constantine.Liatsos@biodynamics.gr	Slovenia	<b>Sartorius Service and Consulting Center for Biotechnology</b> Sanolabor d.d. Leskoskova 4 1000 Ljubljana Phone +386.1.585 42 66 Fax +386.1.585 42 98 franc.levstek@sanolabor.si
Hungary	<b>Sartorius Service and Consulting Center</b> S-Membran Kereskedelmi es Szolgaltato Kft. Kagyló u. 5. 2092 Budakeszi Phone +36.23.457-227, -228, -148 Fax +36.23.457-147 s-membran@s-membran.hu	Spain	<b>Sartorius Stedim Spain SA</b> Phone +34.91.3586102 Fax +34.91.3588804 iberia.bioproceso-lab@sartorius.com
Iceland	<b>Sartorius Stedim Nordic A/S</b> Phone +45.70234400 ne.customersupport@sartorius-stedim.com	Sweden	<b>Sartorius Stedim Nordic A/S</b> Phone +45.70234400 ne.customersupport@sartorius-stedim.com
Ireland	<b>Sartorius Stedim UK Limited</b> Phone +44.1372.737159 ne.customersupport@sartorius-stedim.com	Switzerland	<b>SARTORIUS Mechatronics</b> Roland Baumgartner Switzerland AG Lerzenstrasse 21 CH-8953 Dietikon
Italy	<b>Sartorius Stedim Italy S.p.A.</b> Giuseppe Pollicino   Jury Ceccarelli   Luca Bin Phone +39.055.63.40.41 Fax +39.055.63.40.526 info@sartorius.it	United Kingdom	<b>Sartorius Stedim UK Limited</b> Phone +44.1372.737159 ne.customersupport@sartorius-stedim.com

In countries that are not members of the European Economic Area (EEA) or where no Sartorius affiliates, subsidiaries, dealers or distributors are located, please contact your local authorities or a commercial disposal operator.

Sartorius, its affiliates, subsidiaries, dealers and distributors will not take back equipment contaminated with hazardous materials (ABC contamination). Before returning any equipment to us, the sender must fill out the attached Non-hazardous Declaration completely and return it to us in advance.

No repair or return is possible unless a completed Non-hazardous Declaration form has been submitted.

Prior to disposal or scrapping of the equipment, remove any rechargeable or non-rechargeable batteries and, if they are empty, dispose of them in local collection boxes. Only for customers in Germany: On request, Sartorius will have the Foundation of Manufacturers' Mutual Return System for Batteries (GRS, Stiftung Gemeinsames Rücknahmesystem Batterien) provide customers in Germany with battery collection boxes

**Note:**

In Germany, Sartorius is entered in the EAR Registry of the Foundation for Used Electrical and Electronic Equipment (Stiftung Elektro-Altgeräte Register). The WEEE registration number for Germany is DE 49923090.



**Non-hazardous Declaration**

Declaration of Safety and Acceptability as Non-Hazardous to Health

The safety and health of our employees, the legal regulations governing the handling of materials that pose hazards to health and the environment and the regulations governing occupational safety mandate and require that this Non-hazardous Declaration be filled out completely for all equipment returned to the respective Sartorius affiliate, subsidiary, dealer or distributor listed for your country. No repair or return is possible unless a completed Non-hazardous Declaration form has been submitted.

Fax or mail a copy of a completed Non-hazardous Declaration form in advance to the respective Sartorius affiliate, subsidiary, dealer or distributor listed for your country (for the fax number or address, please refer to our list of countries). We require this information before the equipment | component arrives. An additional copy must accompany the equipment | component. If necessary, the shipping company must be notified.

Incomplete entries or non-compliance with this procedure will automatically lead to considerable delays in processing.

In the event of return, we do not differentiate between

- still utilizable and | or repairable used electrical and electronic equipment and no longer utilizable and | or repairable used electrical and electronic equipment or
- between waste that is subject to monitoring by the supervisory authorities and waste that is not subject to any special monitoring by supervisory authorities (used electrical and electronic equipment).

Model: \_\_\_\_\_ Serial No.: \_\_\_\_\_

I | we guarantee that the following measures have been taken:

- The equipment | component has been freed of hazardous materials to ensure that persons involved with the handling | repair are not exposed to any hazard or danger whatsoever.
- The equipment has been packaged for safety and the complete labeling has been affixed to it.
- The shipping agent has been notified (as prescribed) about the hazardous nature of the shipment.

The person sending in the equipment | component is hereby notified that said person shall be liable to Sartorius, its affiliates, subsidiaries, dealers and distributors as well as to any third parties – in particular to any of employees of Sartorius, its affiliates, its subsidiaries, dealers or distributors involved with the handling | repair of the equipment | component – for any damage, caused by entries that are incomplete or incorrect on account of negligence, gross negligence or willful intent.

Name: \_\_\_\_\_

Position: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Company stamp: \_\_\_\_\_

Sartorius Stedim Biotech GmbH  
August-Spindler-Strasse 11  
37079 Goettingen

Phone +49.551.308.0  
Fax +49.551.308.3289

[www.sartorius-stedim.com](http://www.sartorius-stedim.com)

Copyright by Sartorius Stedim  
Biotech GmbH, Goettingen,  
Germany. All rights reserved.  
No part of this publication may  
be reprinted or translated in any  
form or by any means without  
the prior written permission  
of Sartorius Stedim Biotech  
GmbH.

The status of the information,  
specifications and illustrations  
in this manual is indicated by  
the date given below. Sartorius  
Stedim Biotech GmbH reserves  
the right to make changes to the  
technology, features, specifica-  
tions, and design of the equip-  
ment without notice.

Status:  
June 2008,  
Sartorius Stedim Biotech GmbH,  
Goettingen, Germany