Spin Air

Instructions for Use

Air sampler

For units with SN 10005520/1597 and below



Doc. 50006169-10

Revision date: October 2026

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INDICATION OF THE INTRODUCED MODIFICATIONS

If it’s the first time that you use Spin Air, please read the entire document carefully.

If it’s not the first time that you use Spin Air and you use it before, in the table below you can read the indication of the introduced modifications.

Revision	Description of change
10	Added SN number on the title page

1. INTRODUCTION

Thank you for choosing the Spin Air. We are confident that this instrument will become an integral part of your laboratory.

Before using the Spin Air, it is essential that you read these Instructions for Use carefully. Following the instructions and safety information in this Instructions for Use will ensure safe operation and maintain the system in a safe condition.

1.1. Intended Use of the Spin Air

The Spin Air is intended to be used in the pharmaceutical, medical device, food, and cosmetic manufacturers, as well as healthcare facilities to assess airborne bacterial and fungal bioburden.

1.2. Device Description

The Spin Air is a portable microbial air sampler that uses the unrivaled Spin technology. This sampling technology uses 100% of the Petri plate agar surface to plate microorganisms improving data statistical significance greatly and avoiding the use of colony count correction tables.

These samplers are compact and portable, they can be attached to a tripod for adequate sampling direction. If airflow problems arise, these are pointed out by a noisy alarm, and sampling is aborted. A handy countdown function avoids operator interference with results.

The Spin Air allows complying with USP 797 and 1116 regulations and is EN 17141:2020 Annex E certified, see Appendix K: CERTIFICATE of Compliance EN 17141:2020.

1.3. General Information

1.3.1. Scope of delivery

The delivery includes the following items:



a. Carrying case (Cat. 90005534) only included with Cat. 90005500 (Spin Air).
b. Spin Air main unit (Cat. 10005520).
c. IUL's external power unit (Cat. 90001566) and power cord.
d. Allen wrench (Cat. 90005516).

See Ordering Codes for more information.
Note: This is an image of the standard model. The set head of the Spin Air depends on the order of the customer and the appearance.

1.3.2. Technical assistance

At IUL SA we pride ourselves on the quality and availability of our technical support. Our Technical Service Department is staffed by experienced technicians with extensive practical and theoretical expertise in the use of IUL SA products. If you have any questions or experience any difficulties regarding the Spin Air or IUL SA products in general, do not hesitate to contact us or your local distributors.

IUL SA customers are a major source of information regarding advanced or specialized uses of our products. This information is helpful to other customers as well as to the researchers at IUL SA. We, therefore, encourage you to contact us if you have any suggestions about product performance or new applications and techniques.

For technical assistance, contact the IUL SA Technical Service Department (support@iul-inst.com) or your local distributors.

1.3.3. Policy statement

It is the policy of IUL SA to improve products as new techniques and components become available. IUL SA reserves the right to change the specifications of products at any time.

To produce useful and appropriate documentation, we appreciate your comments on these Instructions for Use. Please contact IUL SA Technical Service with any feedback.

1.3.4. Requirements for Spin Air users

The following table covers the general level of competence for the use and servicing of the Spin Air.

Task	Personnel	Training and experience
Routine use	Laboratory technicians or equivalent	Trained in techniques for laboratory instrument operation
Servicing	IUL SA Service Specialists only	Trained, certified, and authorized by IUL SA

2. SAFETY INFORMATION

Before using the Spin Air, it is essential that you read these Instructions for Use carefully. Following the instructions and safety information in this Instructions for Use will ensure safe operation and maintain the system in a safe condition.

The following types of safety information appear throughout the Spin Air Instructions for Use.

WARNING 	The term WARNING is used to inform you about situations that could result in **personal injury** to you or other persons. Details about these circumstances are given in a box like this one.

CAUTION 	The term CAUTION is used to inform you about situations that could result in **damage to the instrument** or other equipment. Details about these circumstances are given in a box like this one.

The advice given in this Instructions for Use is intended to supplement, not supersede, the normal safety requirements prevailing in the user's country.

2.1. Proper Use

WARNING/ CAUTION 	**Risk of personal injury and material damage** Improper use of the Spin Air instrument may cause personal injury or damage to the instrument. The instrument must only be operated by qualified personnel.

CAUTION 	**Damage to the instrument** Avoid spilling water or chemicals onto the Spin Air instrument. Damage caused by water or chemical spillage will void your warranty.

In case of emergency, switch off the Spin Air with the power button and unplug the power cord from the power outlet.

2.2. Electrical Safety

If the operation of the Spin Air is interrupted in any way (e.g., due to interruption of the power supply or a mechanical error), first switch off the instrument using the power button, then unplug the power cord from the power outlet. Contact IUL SA or IUL's Partner Technical Service after such an incident.

WARNING 	**Rechargeable Batteries** This WARNING is applicable to routine users as well as to technical service users. • Do not dismantle, open or shred batteries. • Keep batteries out of the reach of children. • Seek medical advice immediately if a battery has been swallowed. • Do not expose batteries to heat or fire. Avoid storage in direct sunlight. • Do not remove a battery from its original packaging. • Do not subject batteries to mechanical shock • In event of a cell leaking, do not allow the liquid to encounter the skin or eyes. If contact has been made, wash the affected area with copious amounts of water and seek medical advice. • Only use Batteries provided by IUL SA or your local distributor. After extended periods of storage, it may be necessary to charge and discharge the batteries several times to obtain maximum performance.

WARNING 	**Electrical hazard** Any interruption of the protective conductor (earth/ground lead) inside or outside the instrument or disconnection of the protective conductor terminal is likely to make the instrument unsafe. **This must be checked after service or maintenance.** Intentional interruption is prohibited. **Lethal voltages inside the instrument** This WARNING applies to routine users as well as to technical service users. • Risk of electrical shock and energy hazard. All failures should be examined by a qualified technician. Please do not remove the case of the AC adaptor by yourself! • Adaptors should be placed on a reliable surface. A drop or fall could cause damage. • Please do not place the AC adaptor in places with high moisture or near the water.

	• Please do not place the AC adaptor in places with high ambient temperature or near the fire source. About the maximum ambient temperature, please refer to “Appendix B:Flow Control”. • Disconnect the AC adaptor from the AC power before cleaning. Do not use any liquid or an aerosol cleaner. Only use a damp cloth to wipe it. In case of replacement or a loosing of the AC adaptor or the mains power cord, these must be replaced only with the AC adaptors or power cords listed on the “Ordering Codes” In case of replacement, this must be ordered to IUL SA’s Partner.

To ensure satisfactory and safe operation of the Spin Air:

- The power cord of the external power supply must be connected to a line power outlet that has a protective conductor (earth/ground).
- No other external power supply neither power cords than the specified in “Ordering Codes” must be used. In case of replacement, this must be ordered to IUL SA.
- The instrument must not be operated with the head removed.
- If you suspect any instrument damage, contact IUL SA Technical Services or your local distributor.

If the Spin Air becomes electrically unsafe, prevent other personnel from operating it, and contact IUL SA Technical Service.

The instrument may be electrically unsafe if:

- The instrument or the external power supply is shown to be damaged.
- The instrument has been stored under unfavorable conditions for a prolonged period.
- A different external power supply is used other than the one provided by IUL SA.

CAUTION 	**Risk of electric shock** In case of replacement or loss of the external power supply or the power cord, these must be replaced only with the external power supply or power cords listed on the “Ordering Codes” and provided by IUL SA.

2.3. Environment

Operating conditions

CAUTION 	**Explosive atmosphere** The Spin Air is not designed for use in an explosive atmosphere.
CAUTION 	**Overheating risk** Do not cover gaps and slots that ensure the ventilation of the Spin Air.

2.4. Biological Safety

Use safe laboratory procedures as outlined in publications such as Biosafety in Microbiological and Biomedical Laboratories, HHS:

https://www.cdc.gov/labs/pdf/CDC-BiosafetyMicrobiologicalBiomedicalLaboratories-2009-P.PDF

See: Section III—Principles of Biosafety

Laboratory Practices and Technique

The most important element of containment is strict adherence to standard microbiological practices and techniques. Persons working with infectious agents or potentially infected materials must be aware of potential hazards and must be trained and proficient in the practices and techniques required for handling such material safely. The director or person in charge of the laboratory is responsible for providing or arranging the appropriate training of personnel.

WARNING 	**Samples containing infectious agents** Some samples used with the Spin Air may contain infectious agents. Handle such samples following the required safety regulations. The responsible person(s) (e.g., laboratory manager) must take the necessary precautions to ensure that the workplace is safe and that the instrument operators are suitably trained and not exposed to hazardous levels of infectious agents, as defined in the applicable Safety Data Sheets (SDSs) or OSHA[1] ACGIH[2] or COSHH[3] documents. Venting of fumes and disposal of wastes must be following all national, state, and local health and safety regulations and laws.

[1] OSHA: Occupational Safety and Health Administration (United States of America).
[2] ACGIH: American Conference of Government Industrial Hygienists (United States of America).
[3] COSHH: Control of Substances Hazardous to Health (United Kingdom).

2.5. Chemicals

WARNING 	**Hazardous chemicals** Some chemicals used with the Spin Air may be hazardous. Always wear safety glasses, gloves, and a lab coat. The responsible person(s) (e.g., laboratory manager) must take the necessary precautions to ensure that the workplace is safe and that the instrument operators are suitably trained and not exposed to hazardous levels of toxic substances (chemical or biological), as defined in the applicable Safety Data Sheets (SDSs) or OSHA, ACGIH or COSHH documents. Venting of fumes and disposal of wastes must be following all national, state, and local health and safety regulations and laws.

2.6. Maintenance Safety

CAUTION 	**Damage to the instrument** Do not use spray bottles containing alcohol or disinfectant to clean the surface of the Spin Air instrument. Do not use products containing alcohol or other corrosive solvents to clean the Spin Air instrument.
WARNING 	**Risk of electric shock** Do not open the panels on the instruments. **Risk of personal injury and material damage** Only perform maintenance that is specifically described in this Instructions for Use.

2.7. Waste Disposal

Used consumables, such as sample dishes, may contain hazardous chemicals or infectious agents. Such waste must be collected and disposed of properly following local safety regulations.

For disposal of waste electrical and electronic equipment (WEEE) see “Waste Electrical and Electronic Equipment (WEEE)”.

2.8. Symbols on the Spin Air Device

Symbol	Location	Description
	Type plate on the bottom of the device.	Waste Electrical and Electronic Equipment (WEEE), see “Waste Electrical and Electronic Equipment (WEEE)”.
CE	Type plate on the bottom of the device.	CE Mark, Declaration of Conformity. See EU Declaration of Conformity

3. GENERAL DESCRIPTION

3.1. Device Overview

FRONT VIEW:



1.Head

2. Display

3. Keyboard

4. Holder and handler

REAR VIEW:



BOTTOM VIEW:



10. Reset buttonhole

11. Coupling tripod with base

5. Power supply connector
6. Connection to Spin Air Mate
7. Connection to IUL's Barcode Scanner
8. Connection to PC/Printer
9. Air exhaust

See Ordering Codes for more information.

NOTE: Use only the AC Adapter supplied by IUL SA to charge the Spin Air.

Push the “Reset” button when the device shows a “blank screen” and is not possible to switch on the device neither start the charging process. If you push the Reset button and the “blank screen” problem is solved, data and time must be set. Otherwise, contact Technical Service.

3.2. Control Panel

KEY	Action: if pressing once	Action if pressing > 3 sec	Action if pressing continuously
	RUN a program	ON (if the instrument is off)	_____
	STOP running a program STEP BACK in any menu	Instrument SWITCH OFF	_____
	ONE STEP FORWARD. READ BARCODE if the Barcode Scanner is connected	_____	STEP FORWARD quickly
	CHANGE Menu. ACCEPT parameter.	_____	_____
	ONE STEP BACK	_____	STEP BACK quickly

A sample process can be always interrupted by pushing . The icon showing the time on the left will start flashing. The interrupted process cannot be restarted. Pushing any key will return to the main menu.

3.3. Accessories of the Device

3.3.1. AC Adaptor

The AC Adaptor (Cat. 90001566) is included. It converts the Mains AC supply to a DC low voltage supply required by the Spin Air.

3.3.2. Power cord

The Spin Air is equipped with a power cord with a plug suitable for the destination country. See “Ordering Codes” for details.

CAUTION 	**Risk of malfunction or harmful interference** Conformity to **2014/30/EU** and FCC rules could be compromised by the use of an AC adaptor or power cord not provided by IUL SA. See “Ordering Codes” and “Appendix F:RoHS Statement”.

WARNING 	**Risk of electric shock** In case of replacement or a loosing of the power cord, this must be replaced only with one of the power cords listed on the “Appendix A:Ordering Codes” delivered by IUL SA.

4. INSTALLATION

4.1. Unpack the Device

The packaging of the Spin Air can be stored for reuse.





4.2. Site Requirements

Place the Spin Air device on a stable surface, far away from powerful lights and near an earthed/grounded electrical outlet. If a surface is not available, connect the Spin Air to a tripod. See “Appendix A:Ordering Codes” for more details.

For a long period of use, keep the Spin Air device connected to the power supply.

4.3. Power Cable Connection

The socket for connecting the power cable is on the back of the Spin Air device.

- Connect the supplied power cord to the power outlet of the unit.
- Connect the instrument to the mains.
- Switch on the instrument.
- While the main screen is loading, a welcome image will appear on the display.
- Once the main screen is loaded, any of the operating parameters can be changed.

When the Spin Air is not in use for a long period, we recommend disconnecting the power cable.

5. OPERATING PROCEDURES

5.1. Charging Battery

The instrument works properly during the charging battery process. In this case, the display will show the normal parameters.

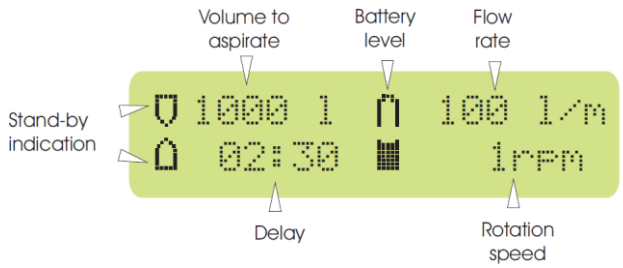
	Low battery indicator
	Connect power supply
	> 5 min
	Battery charged after 5 hours approx.

5.2. Sampling

1. Switch on the instrument by pushing this button  for more than 3 seconds. The software version will be shown:



In stand-by following display indications will be shown:



2. Select the parameters before running the program by pushing the arrow up, arrow down, and tick keys ( ,  and ):

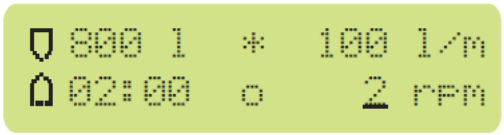
2.1 Adjust the volume (10 to 9900L).



2.2 Adjust the minutes of delay (60 minutes divided in seconds).

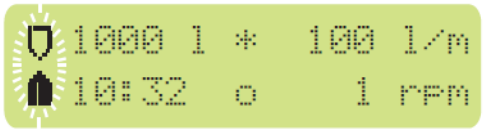


2.3 Adjust the rotation speed (0 to 4 rpm).

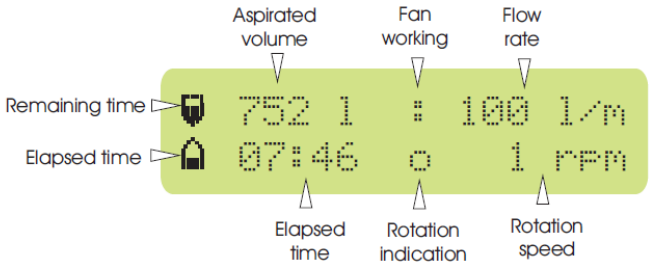


3. Run the program by pushing :

The hourglass on the left screen will blink while the program is running:



The remaining and the elapsed time will be indicated as is shown below:



4. Switch off the device by pushing the cross key for more than 3 seconds. The device will be automatically switched off if it is not used for more than 5 minutes.

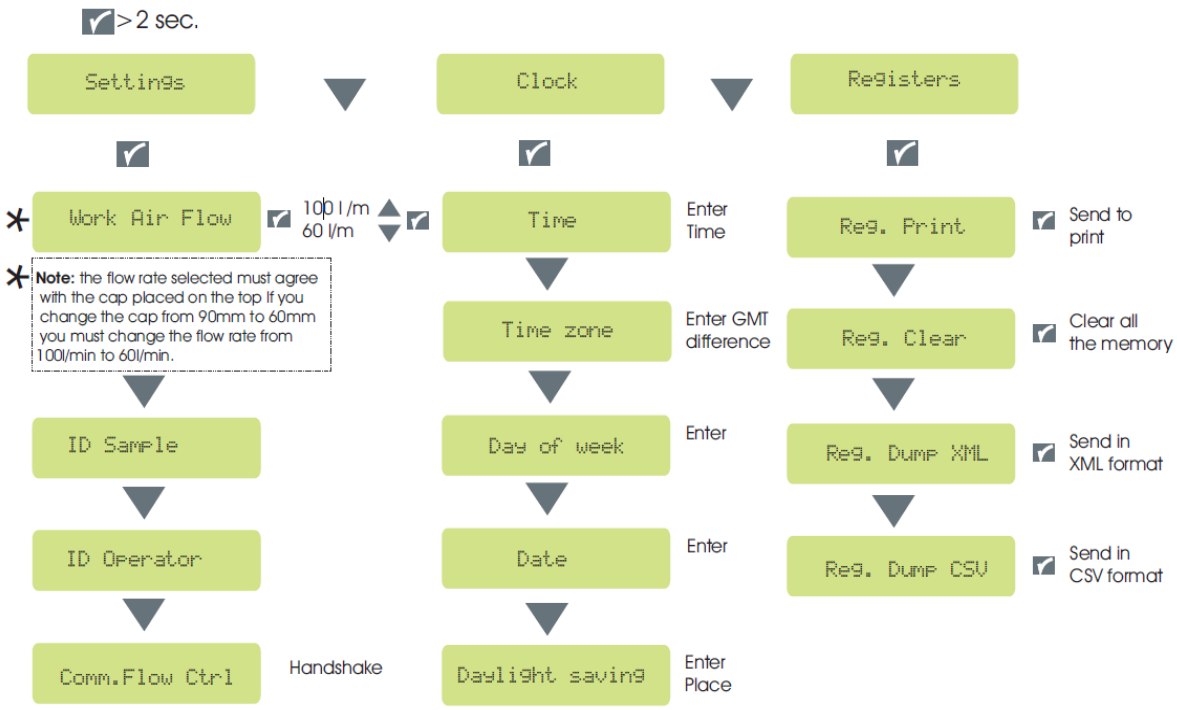
5.3. Use barcode Scanner Device

To use the Barcode Scanner device connect it to terminal 7 (Rear View).

The barcode of the sample ID and the operator ID can both be read with the Barcode Scanner. In ADVANCED MENU it is possible to select parameters to be read. By default, sample ID read eight characters, and four for the operator ID. Please, ask IUL or IUL distributor for the full functionality of this feature.

5.4. Advanced Menu

Push the tick key (✓) for more than 2 seconds to access the advanced menu:



To go back one step press the cross key ✕.

6. CALIBRATION

The instrument calibration is valid for 2 years or 1 million air liters. When the instrument reaches one of these situations it shows a message to every operation notifying about that.

The calibration must be performed by a trained operator and it is compulsory to use an anemometer manufactured for this specific purpose. Contact your IUL distributor when calibration is needed.

7. INSTRUMENT COMMUNICATIONS

The instrument has an RS-232 Serial Port for PC communication or printing purposes.

7.1. RS-232 Pinout



1. Not Conected
2. Tx
3. Rx
4. DTR (With internal bridge with DSR)
5. GND
6. DSR
7. RTS
8. CTS
9. Not Conected

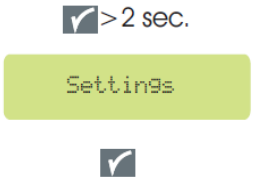
7.2. Stored Information and Outputs Formats

The instrument can transfer information through its RS-232 Port with these formats:

- **CSV** (Comma Separated Value).
- **XML** (Extensible Markup Language).
- **Printer Format** (Ready to be printed).

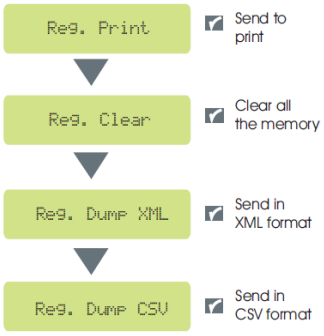
Follow these steps to access these functions:

1. Select “Settings”



2. Select “Registers”

3. Select which format the data must be transferred:



Information in every operation contains:

- Operation Number (internally signed).
- Sample Identification (Introduced using the Barcode Scanner).
- Aspired Air Volume.
- Start Time.
- End Time.
- Operator (Introduced using the barcode scanner).
- Master or Mate unit.
- Limit Data to do the next calibration.
- Remaining volume (Air Liters) to perform the next calibration.

NOTE: The instrument only stores the last 50 operations.

7.3. Testing the Information Output

7.3.1. LIMS Testing

Almost all the LIMS (Laboratory Information Management System) have capabilities to catch the information from the computer's serial port, the output formats of the Spin Air are standards recognized by these.

Connect the Spin Air to the computer and follow the instructions from the LIMS provider to capture the information. Dump the Spin Air registers to the computer using the format selected at the "Registers" menu of the instruments.

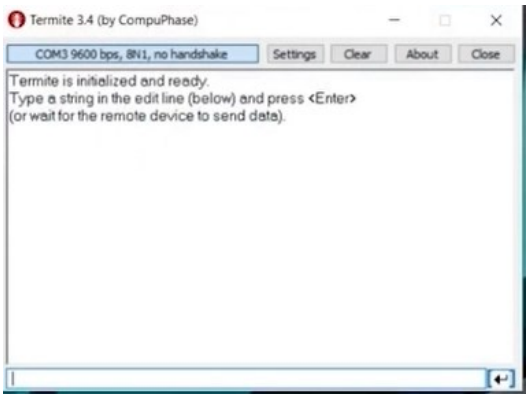
7.3.2. Terminal Software Testing

It is possible to capture the information from Spin Air with Terminal Software, the Termite or HyperTerminal are the most commonly used. Other terminal programs can be used to set up the same communication parameters.

A. Connect the Spin Air to the Computer

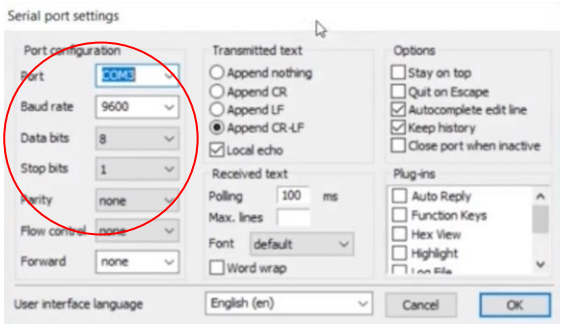
B. Setting up the Terminal:

1. Open the Terminal Software:

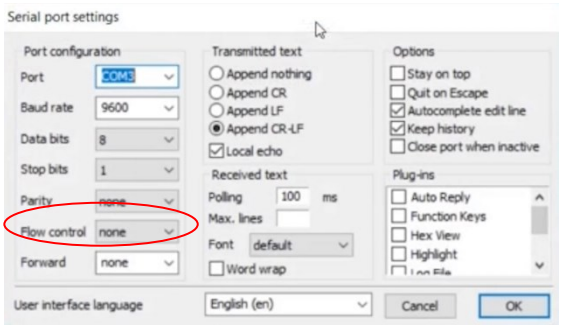


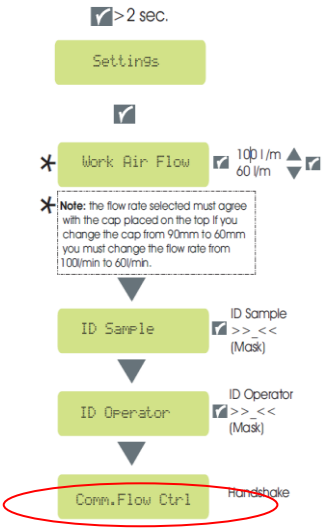
2. On the Terminal Software select the Computer COM port where the Spin Air is connected and set the following communication parameters:

    a. Baud rate: 9600
    b. Data bits: 8
    c. Stop bits: 1
    d. Parity: “none”



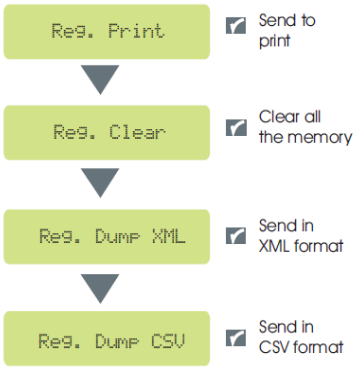
3. Ensure that the Spin Air has the same type of Flow Control as the computer. By default, in Spin Air, the Flow Control parameter is set to “off”.



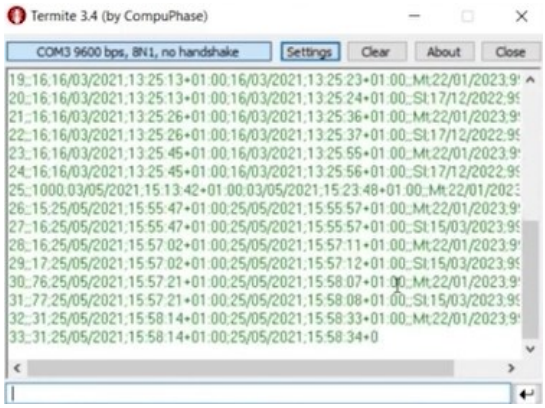


4. With the Spin Air connected to the computer, select the dumping option on the Spin Air:

   Select “Settings”>> “Registers” and select which format the data must be transferred:



5. Click “OK” on the Terminal Software. The instrument sends the data in this format, and it is displayed as follows:



   This information can be exported to a third party such as Microsoft Excel or Microsoft Access.

8. TROUBLESHOOTING

Symptom	Probable cause	Recommended action
The unit cannot turn ON.	Battery discharged.	Plug the power supply unit. Wait 5 seconds. If the battery icon doesn't appear then press the RESET button. In the Spin Air Master model, remember it is mandatory to set again data and time.
The unit switches off spontaneously.	The mains cord is unplugged and the battery getting too low.	Plug the mains supply and let the battery fully charge.
"Power flow Err" is displayed.	The cap is obstructed / The battery voltage has dropped / No head.	Clean the cap holes, dry them and place properly the cap on the device / Check the charging process and replace any damaged part (commonly the battery) / Verify the installation of the head.
"Calibration Needed" is displayed.	The calibration is out of limits (2 years or 1 million liters).	Perform the calibration process.
"Battery Low" is displayed.	The battery is empty.	Plug the charger and wait about 4 hours.

9. MAINTENANCE

9.1. Cleaning Procedure

To clean the Spin Air device use a damp brush or cloth moistened with a solution of hot water and soap. The stainless steel and aluminum heads can be autoclavable or clean with an alcohol solution (70%).

CAUTION 	**Damage to the device** Do not sprinkle inside the device.

APPENDIX A: ORDERING CODES

Spare Parts

Product	Contents	Cat. #
Power cord (UK)	1 unit	90002497
Power cord (Argentina)	1 unit	90002499
Power cord (EU/Schuko)	1 unit	90002495
Power cord (China/Australia)	1 unit	90002498
Power cord (Japan/USA)	1 unit	90002496
Adapter AC	1 unit	90001566

Optional Accessories

Product	Contents	Cat. #
SPIN AIR MATE for 90 mm Petri dishes with carrying case and connection cable	1 unit	90005502
SPIN AIR MATE for 60 mm Petri dishes with carrying case and connection cable	1 unit	90005506
Carrying case (included with Cat. 90005500 (Spin Air))	1 unit	900012094
Printer (serial interface, 40 columns)	1 unit	90003069
Ticket Thermal Printer (90005510 included)	1 unit	90003070
Set for 90 mm Petri dishes (holder and head of **aluminum**)	1 unit	90005504
Set for 60 mm RODAC plates (holder and head of **aluminum**)	1 unit	90005505

Product	Contents	Cat. #
PC/Printer communications cable (RS-232 Standard)	1 unit	90005510
Calibration kit with carrying case	1 unit	900012093
Tripod with base	1 unit	90005511
Set for 90 mm Petri dishes (holder and head of **plastic**)	1 unit	90005525
Set for 60 mm RODAC plates (holder and head of **plastic**)	1 unit	90005526
Set for 90 mm Petri dishes (holder and head of **INOX**)	1 unit	90005527
Barcode scanner (MMJ7)	1 unit	90005701
Tripod base Spin Air	1 unit	900011099

APPENDIX B: FLOW CONTROL

Flow Control (also known as Handshaking) is the process of adjusting the flow of data from one device to another to ensure that the receiving device can handle all of the incoming data.

This is particularly important where the sending device can send data much faster than the receiving device can receive it.

On the Spin Air there are two available kinds of Flow Control:

- Software (also known as XOn/XOff). When the receiving device sends an xoff message to the sending device when its buffer is full. The sending device then stops sending data. When the receiving device is ready to receive more data, it sends an XOn signal.
- Hardware (also known as RTS/CTS). It uses the dedicated signal wires RTS/CTS to indicate when any of both devices (receiving or sending) buffer is full and when any of these devices is ready to receive more data.

For successful communication between Spin Air and the computer, both should have the same values in all communication properties.

APPENDIX C: TECHNICAL DATA

IUL SA reserves the right to change specifications at any time.

Specifications

Airflow	100 l/m (90 mm plate)
	60 l/m (55-60 and Rodac plate)
	controlled by microprocessor
Air Total Volume	10 – 9900 L

The parameter of total air volume must be referred to sea-level pressure[1]

Delay to start	60 minutes, divided in seconds
Rotation speed	0, 1, 2, 3 and 4 rpm
Tripod thread	At the bottom
Communication	RS 232C to PC/Printer
Format communication	XML, CSV
Barcode connection	With IUL Barcode scanner
IUL Switching adapter (90001566)	100~240V AC 50/60 Hz to 12V DC 15W
Battery pack	Niquel Metal Hydride 7,2V
Range	8 hours full charge (without Mate)

Operating Conditions

Power range	12V +/-3%.

(It is supplied with the IUL's external power supply unit that can be used in 100V-240V)

Frequency range	D.C.

(It is supplied with an external power supply unit that can be used in 50Hz-60Hz)

Maximum power	18 W
Overvoltage category	II

[1] To operate the Spin Air at high altitude locations (>300 m), the desired volume at local pressure should be converted by decreasing a 1% of the volume for every 100 m of altitude.

Air temperature	10 - 40ºC (50ºF - 104ºF)
Relative humidity	10 - 75 % (non-condensing)
Atmospheric Pressure	1 atm ± 5% (101.3 kPa)
Place of operation	For indoor use only
Pollution level	2
Energy efficiency level	VI

Transportation Conditions

Air temperature	10 - 40ºC (50ºF - 104ºF) In manufacturer's packaging
Relative humidity	Maximum 75 % (non-condensing)

Storage Conditions

Air temperature	10 - 40ºC (50ºF - 104ºF) In manufacturer's packaging
Relative humidity	Maximum 75 % (non-condensing)

Dimensions and Weight

Dimensions (WxHxD)	145 x 190 x 215 mm / 5.71 x 7.48 x 8.46 in
Weight	Spin Air: 1.7 Kg / 3.75 lb Carrying case: 2.24 Kg / 4.85 lb (empty)

APPENDIX D: WARRANTY

The Spin Air has a 12-month warranty period.

The warranty is void when misuse of the equipment can be proved. Damage or faults caused by impacts, chemical or corrosive products, liquids, dampness, or other external factors, such as radiation, fire, or inadequate transport are not included.

In addition, the warranty will not apply if the equipment has been handled, repaired, or modified by unqualified or specifically designated personnel.

As part of this warranty, all shipping costs to the selected technical service are the responsibility of the Buyer.

APPENDIX E: WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE)

This section provides information about the disposal of waste electrical and electronic equipment by users.

The crossed-out wheeled bin symbol (see below) indicates that this product must not be disposed of with other waste. The product must be disposed to a certified treatment facility or a recycling collection point, according to local legislation.

The separate collection and recycling of electronic waste equipment at the time of disposal helps conserve natural resources and ensures that the product is recycled, protecting human health and the environment.



APPENDIX F: ROHS STATEMENT

The following information has been made available to comply with The Restriction of Hazardous Substances Directive, (RoHS2 & RoHS3), short for Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment.



APPENDIX G: STATISTICAL CORRECTIONS WHEN SAMPLING WITHOUT DISK ROTATION

The principle of Spin Technology is mainly based on two features: the rotating Petri dish and the distribution of the holes. The rotating Petri dish feature provides a genuine count without the need to apply statistical corrections. This is because a motionless system only uses 5% of the total surface of the agar. The IUL's Spin Air has a unique rotation motion device combined with a distinctive distribution of the holes that covers 100% of the agar surface.

If the Spin Air is used **without rotation** (0 rpm) a correction of the result must be applied. This correction takes into account the probability that one microorganism travels across the same hole that a previous one. This correction that is not important for low counts becomes dramatically high when there are more than 150 CFU per plate.

The statistical treatment due to Feller (1950) says that the probable statistically total (Pr) can be calculated according to the number of holed (N) and the real count (r).

$$Pr = N \cdot [1/N + 1/(N-1) + 1/(N-2) + .. 1/(N – r + 1)]$$

Applying the previous formula to the Spin Air for 90 mm plate the probable total count (Tc) is when (C) is the real count.

$$Tc = 400 \cdot [1/400 + 1/399 + 1/398 + … + 1/(400 – C + 1)]$$

Up to 20 colonies, there is no difference between the motionless and the rotation system. At 50 counts you must add around 5%. At 70 the difference is 10%. If the count reaches 100 CFUs you must add 15% of the total count. This percentage reaches 25% at 150 counts and it's more than 100% at more than 300 counts.

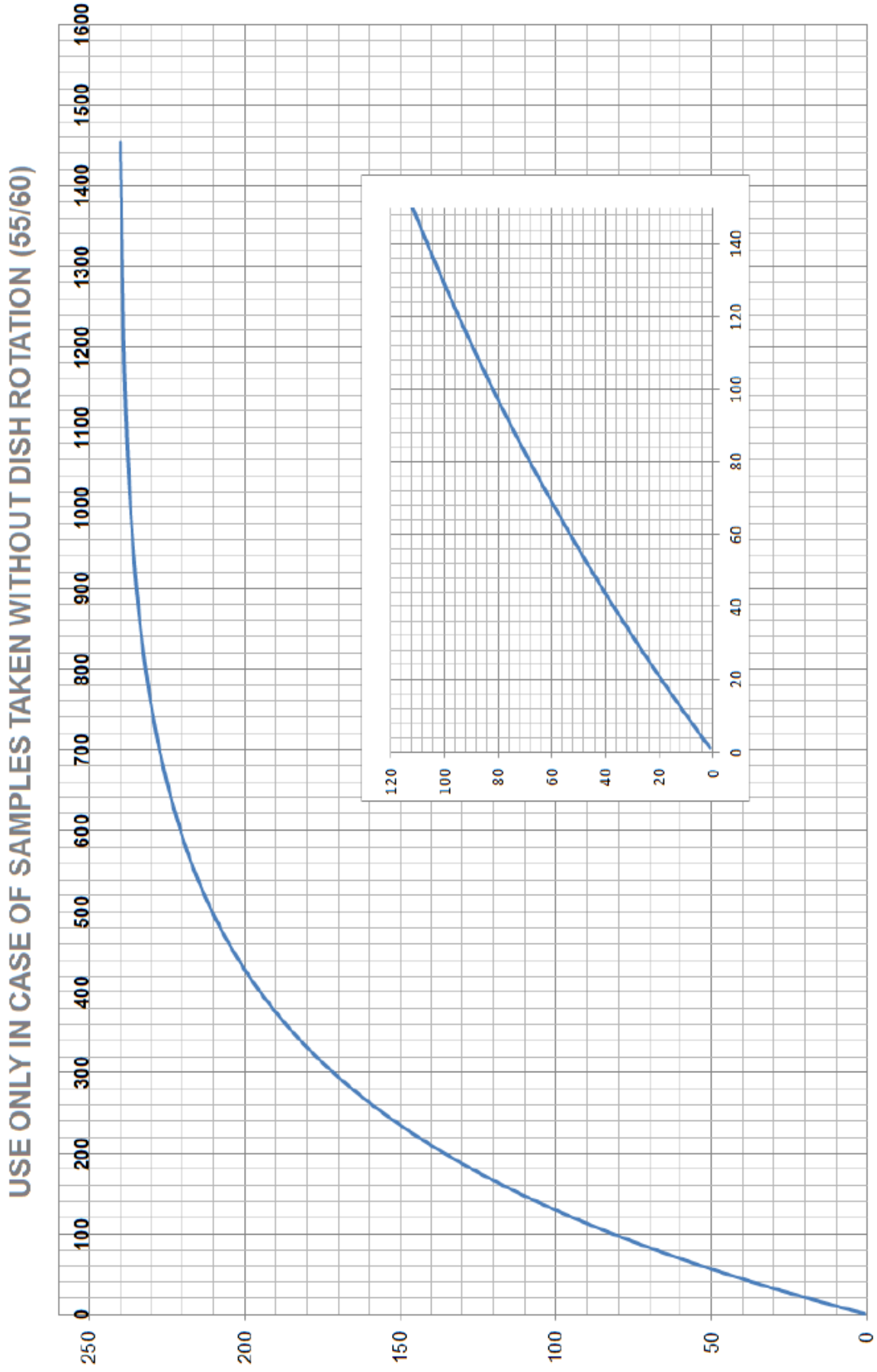
Using the **rotation motion** of the Spin Air all these calculations must be avoided.

APPENDIX H: TABLE OF STATISTICAL CORRECTIONS FOR SAMPLING USING A 55/60 MM CAP

(USE ONLY IN CASE SAMPLES TAKEN WITHOUT DISH ROTATION)

Total number of holes: N = 240
Colony number counter: r
Colony number estimated: PR

r	Pr	r	Pr	r	Pr	r	Pr	r	Pr
1	1	51	57	101	131	151	237	201	434
2	2	52	58	102	132	152	240	202	440
3	3	53	60	103	134	153	243	203	446
4	4	54	61	104	136	154	245	204	452
5	5	55	62	105	138	155	248	205	459
6	6	56	64	106	139	156	251	206	466
7	7	57	65	107	141	157	254	207	473
8	8	58	66	108	143	158	257	208	480
9	9	59	68	109	145	159	260	209	488
10	10	60	69	110	147	160	263	210	496
11	11	61	70	111	149	161	266	211	504
12	12	62	72	112	150	162	269	212	512
13	13	63	73	113	152	163	272	213	520
14	14	64	74	114	154	164	275	214	529
15	15	65	76	115	156	165	278	215	539
16	17	66	77	116	158	166	281	216	548
17	18	67	78	117	160	167	285	217	558
18	19	68	80	118	162	168	288	218	569
19	20	69	81	119	164	169	291	219	579
20	21	70	83	120	166	170	295	220	591
21	22	71	84	121	168	171	298	221	603
22	23	72	85	122	170	172	301	222	616
23	24	73	87	123	172	173	305	223	629
24	25	74	88	124	174	174	309	224	643
25	26	75	90	125	176	175	312	225	658
26	27	76	91	126	178	176	316	226	674
27	29	77	93	127	180	177	320	227	691
28	30	78	94	128	182	178	323	228	710
29	31	79	96	129	184	179	327	229	730
30	32	80	97	130	187	180	331	230	751
31	33	81	99	131	189	181	335	231	775
32	34	82	100	132	191	182	339	232	802
33	35	83	102	133	193	183	343	233	832
34	37	84	103	134	195	184	348	234	866
35	38	85	105	135	198	185	352	235	906
36	39	86	106	136	200	186	356	236	954
37	40	87	108	137	202	187	361	237	1014
38	41	88	109	138	205	188	365	238	1094
39	42	89	111	139	207	189	370	239	1214
40	44	90	113	140	209	190	375	240	1454
41	45	91	114	141	212	191	379		
42	46	92	116	142	214	192	384		
43	47	93	117	143	217	193	389		
44	48	94	119	144	219	194	394		
45	50	95	121	145	222	195	400		
46	51	96	122	146	224	196	405		
47	52	97	124	147	227	197	410		
48	53	98	126	148	229	198	416		
49	55	99	127	149	232	199	422		
50	56	100	129	150	235	200	428		

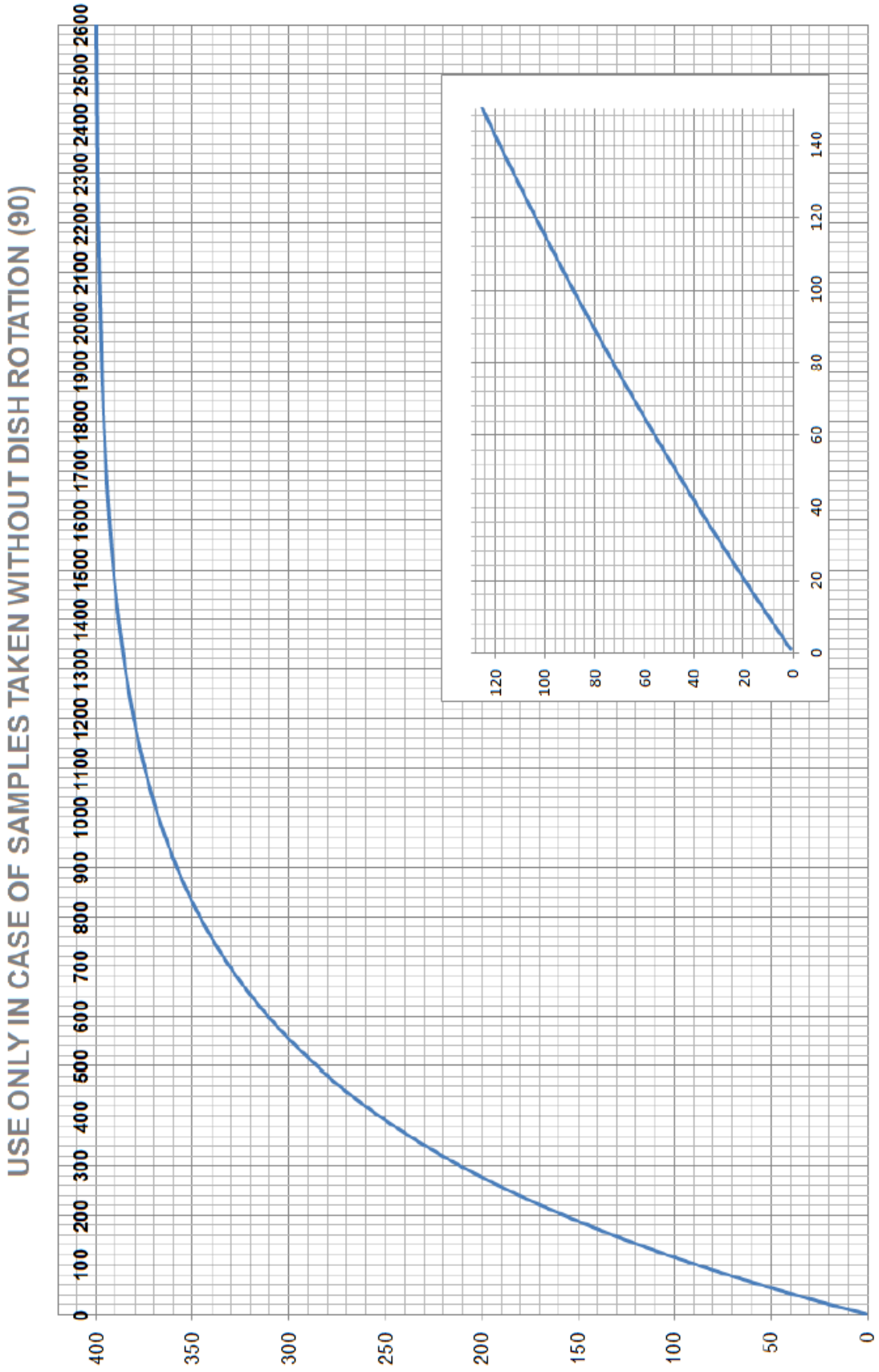

USE ONLY IN CASE OF SAMPLES TAKEN WITHOUT DISH ROTATION (55/60)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
250
200
150
100
50
0
120
100
80
60
40
20
0
0
20
40
60
80
100
120
140

APPENDIX I: TABLE OF STATISTICAL CORRECTIONS FOR SAMPLING USING A 90 MM CAP

(USE ONLY IN CASE SAMPLES TAKEN WITHOUT DISH ROTATION)

Total number of holes: N = 400
Colony number counter: r
Colony number estimated: PR

r	Pr	r	Pr	r	Pr	r	Pr	r	Pr	r	Pr	r	Pr	r	Pr
1	1	51	54	101	116	151	189	201	279	251	394	301	557	351	836
2	2	52	56	102	118	152	191	202	281	252	397	302	561	352	844
3	3	53	57	103	119	153	193	203	283	253	400	303	565	353	853
4	4	54	58	104	120	154	194	204	285	254	402	304	569	354	861
5	5	55	59	105	122	155	196	205	287	255	405	305	573	355	870
6	6	56	60	106	123	156	197	206	289	256	408	306	578	356	879
7	7	57	61	107	124	157	199	207	291	257	411	307	582	357	888
8	8	58	63	108	126	158	201	208	293	258	413	308	586	358	897
9	9	59	64	109	127	159	202	209	295	259	416	309	591	359	907
10	10	60	65	110	128	160	204	210	297	260	419	310	595	360	917
11	11	61	66	111	130	161	206	211	299	261	422	311	599	361	927
12	12	62	67	112	131	162	207	212	301	262	425	312	604	362	937
13	13	63	68	113	133	163	209	213	304	263	428	313	608	363	947
14	14	64	70	114	134	164	211	214	306	264	431	314	613	364	958
15	15	65	71	115	135	165	212	215	308	265	433	315	618	365	969
16	16	66	72	116	137	166	214	216	310	266	436	316	622	366	981
17	17	67	73	117	138	167	216	217	312	267	439	317	627	367	992
18	18	68	74	118	140	168	218	218	314	268	442	318	632	368	1005
19	19	69	76	119	141	169	219	219	317	269	445	319	637	369	1017
20	20	70	77	120	142	170	221	220	319	270	449	320	642	370	1030
21	22	71	78	121	144	171	223	221	321	271	452	321	647	371	1043
22	23	72	79	122	145	172	224	222	323	272	455	322	652	372	1057
23	24	73	80	123	147	173	226	223	325	273	458	323	657	373	1071
24	25	74	82	124	148	174	228	224	328	274	461	324	662	374	1086
25	26	75	83	125	150	175	230	225	330	275	464	325	667	375	1102
26	27	76	84	126	151	176	232	226	332	276	467	326	673	376	1118
27	28	77	85	127	153	177	233	227	335	277	471	327	678	377	1134
28	29	78	87	128	154	178	235	228	337	278	474	328	684	378	1152
29	30	79	88	129	156	179	237	229	339	279	477	329	689	379	1170
30	31	80	89	130	157	180	239	230	342	280	480	330	695	380	1189
31	32	81	90	131	158	181	241	231	344	281	484	331	701	381	1209
32	33	82	92	132	160	182	242	232	346	282	487	332	706	382	1230
33	34	83	93	133	161	183	244	233	349	283	491	333	712	383	1252
34	35	84	94	134	163	184	246	234	351	284	494	334	718	384	1276
35	37	85	95	135	164	185	248	235	353	285	497	335	724	385	1301
36	38	86	97	136	166	186	250	236	356	286	501	336	730	386	1327
37	39	87	98	137	167	187	252	237	358	287	504	337	737	387	1356
38	40	88	99	138	169	188	254	238	361	288	508	338	743	388	1387
39	41	89	101	139	171	189	255	239	363	289	511	339	749	389	1420
40	42	90	102	140	172	190	257	240	366	290	515	340	756	390	1456
41	43	91	103	141	174	191	259	241	368	291	519	341	763	391	1496
42	44	92	104	142	175	192	261	242	371	292	522	342	769	392	1541
43	45	93	106	143	177	193	263	243	373	293	526	343	776	393	1591
44	47	94	107	144	178	194	265	244	376	294	530	344	783	394	1648
45	48	95	108	145	180	195	267	245	378	295	534	345	791	395	1715
46	49	96	110	146	181	196	269	246	381	296	537	346	798	396	1795
47	50	97	111	147	183	197	271	247	384	297	541	347	805	397	1895
48	51	98	112	148	185	198	273	248	386	298	545	348	813	398	2028
49	52	99	114	149	186	199	275	249	389	299	549	349	820	399	2228
50	53	100	115	150	188	200	277	250	391	300	553	350	828	400	2628


USE ONLY IN CASE OF SAMPLES TAKEN WITHOUT DISH ROTATION (90)
0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500 2600
400 350 300 250 200 150 100 50 0
0 20 40 60 80 100 120 140
120 100 80 60 40 20 0

APPENDIX J: EU DECLARATION OF CONFORMITY

Manufacturer Name:

IUL SA

Manufacturer Address:

Carrer de la Ciutat d'Asuncion, 4 08030 Barcelona Spain

Declares that the product Name:

Spin Air

Catalog Number:

90005500

Conforms the Council Directives:

- Directive **2014/30/EU** of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast).
- Directive **2014/35/EU** of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits (recast).
- Directive **2011/65/EU** of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment and its amendments.

Standards which Conformity is Declared:

- **EN 61326-1:2013** Electrical equipment for measurement, control and laboratory use - EMC requirements -- Part 1: General requirements (IEC 61326-1:2012)
- **EN 61010-1:2010** Safety requirements for electrical equipment for measurement, control, and laboratory use -- Part 1: General requirements.

Barcelona, January the 23rd 2024

CE

Daniel Blanch / Director of Electronical Engineering

APPENDIX K: CERTIFICATE OF COMPLIANCE EN 17141:2020

UK Health Security Agency

Certificate of Compliance Testing

Biological Efficiency Testing of the IUL Spin Air 100 and 60 Samplers Using Techniques Described in EN 17141:2020 Annex E, Section E6.2

Report No. 23/011

Report Prepared For: IUL Instruments

Issue Date: 10 January 2024

Test Summary

Tests were undertaken using the simplified laboratory method (Annex E6.2) sampling environmental aerosols. Compared to the reference slit sampler the IUL Spin Air 100 was found to be 83.30% efficient and the Spin Air 60 was found to be 86.41% efficient. This shows compliance to acceptance criteria detailed in Annex E.6.4. Tests were also undertaken using a variation of the aerosol chamber method, comparing the ratio of the recoveries of mixed aerosol of *Staphylococcus epidermidis* and *Bacillus atrophaeus* spores. It was found that the compared to the reference sampler the Spin Air 100 was 91.73% efficient and the Spin Air 60 was 98.49% efficient.

Report Written By

Name: Mr Simon Parks

Title: Senior Biosafety Scientist

Report Authorised By

Name: Ms Helen Hookway

Title: Senior Biosafety Scientist

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Notes

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