

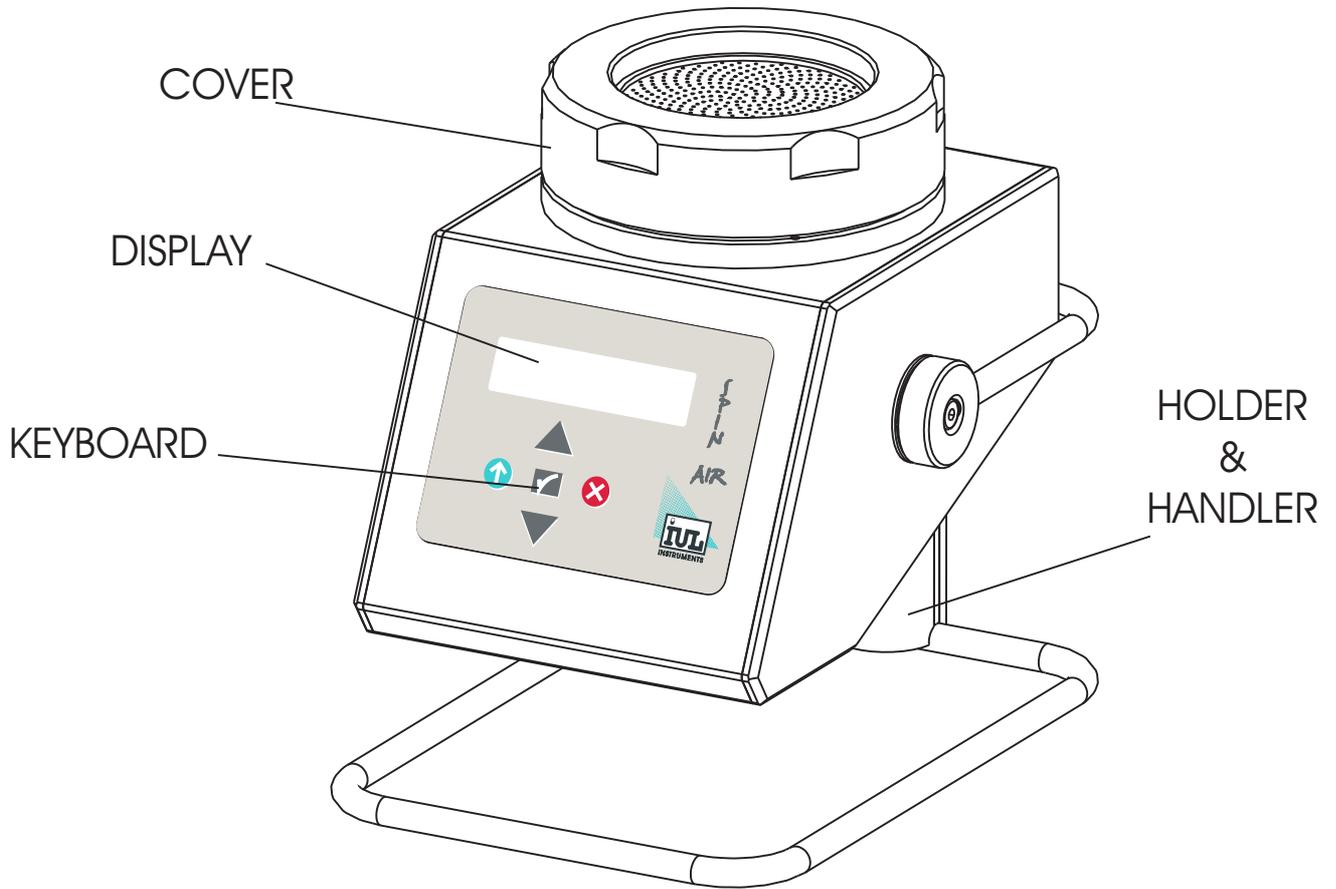
SPIN AIR V2

USER'S GUIDE

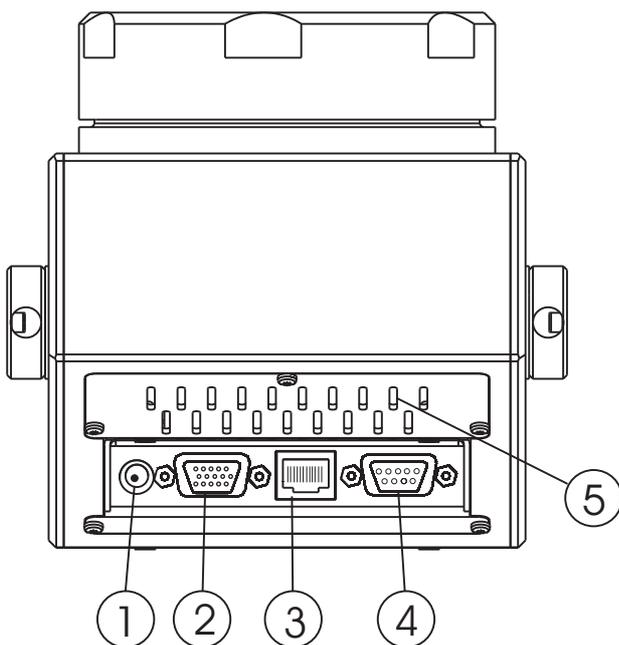
SPIN AIR

USER´S GUIDE

FRONT VIEW



REAR VIEW



- ① MAINS BATTERY RECHARGE
(CAT. 5515 FLAT US CONNECTOR)
(CAT. 5512 ROUND EUROPEAN CONNECTOR)
- ② CONNECTION TO SLAVE CAT. 11046
- ③ CONNECTION TO BARCODE READER CAT. 5700
- ④ CONNECTION TO PC/PRINTER CAT. 5510
- ⑤ AIR EXHAUST

KEYS SPECIFIC FUNCTIONS

KEY	SHORT	> 3sec	CONTINUOUS
	<ul style="list-style-type: none"> ● RUN a program 	<ul style="list-style-type: none"> ● ON (if stopped) 	
	<ul style="list-style-type: none"> ● STOP running program. ● STEP BACK in any menu. 	<ul style="list-style-type: none"> ● Instrument SWITCH OFF 	
	<ul style="list-style-type: none"> ● ONE STEP FORWARD ● With Barcode Reader connected reads it. 		<ul style="list-style-type: none"> ● STEP UP QUICKLY
	<ul style="list-style-type: none"> ● Change Menu ● ACCEPT parameter. 		
	<ul style="list-style-type: none"> ● ONE STEP BACK 		<ul style="list-style-type: none"> ● STEP DOWN QUICKLY

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

CALIBRATION

The instrument calibration is valid 2 years or 1 million air liters. When the instrument reaches one the both of these situations it shows a message 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 with your IUL distributor when a calibration is needed.

TROUBLESHOOTING

Power Error: The message "Mst. Power Error" will appear if the instrument runs without the proper Head Cover mounted.

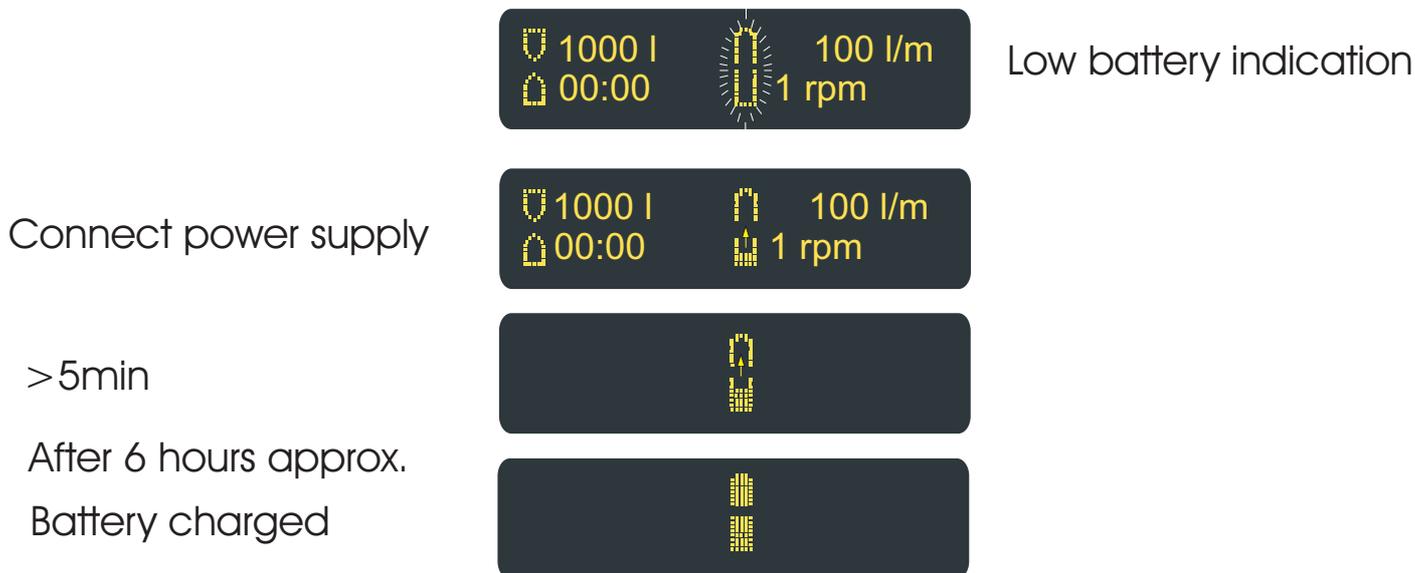
Calibration Needed: The message "Mst. Calib. Needed." will be displayed if the instrument is not calibrated.

There are two cases on which the Spin Air notifies that it needs a Calibration:

- 1.- After two years since its last Calibration was performed.
- 2.- After one million air litres were processed.

When these happen a Calibration message is displayed on the screen and the instrument will stop before running every operation. It will only continue with the selected operation after pressing the key to accept. It is highly recommended to send the instrument to IUL Technical Service for calibration as soon as possible.

CHARGING BATTERY



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

SPIN AIR SHORT GUIDE

SAMPLING

↑ >3sec.

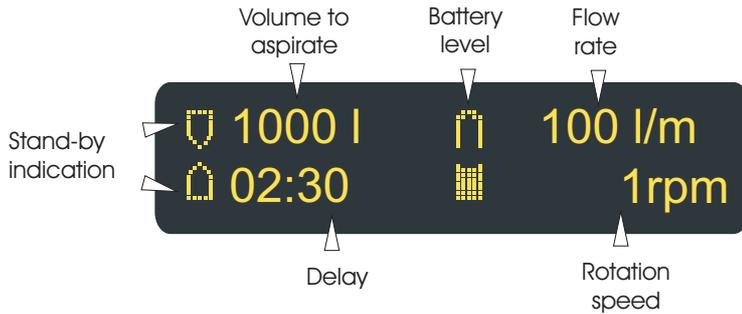


Instrument switched off



Switched on
Software version

DISPLAY INDICATIONS IN STAND-BY

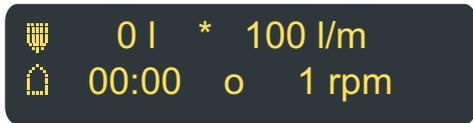


Stand-by
(Run menu showing
parameters before starting)

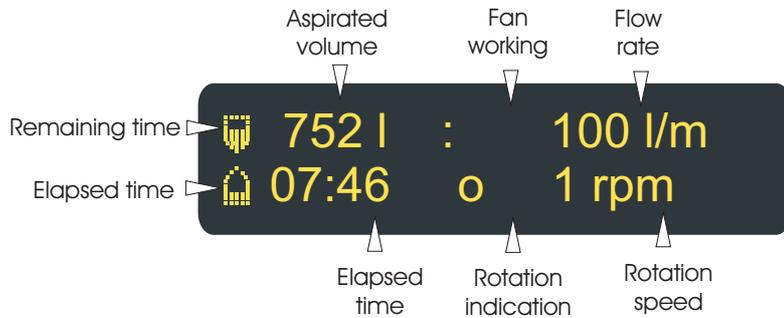
↑



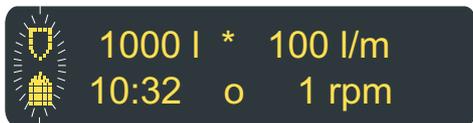
Run menu (starting)



DISPLAY INDICATIONS DURING SAMPLING

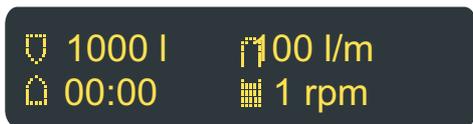


Running
(Run menu showing
actual situation)



Run menu (end)

ANY KEY



Stand-by
(Run menu showing
parameters before starting)

✗ >3sec.
or >5min.



Instrument switched off

CHANGING PARAMETERS

		Run menu
		VOLUME can be adjusted Parameters menu
		VOLUME can be adjusted Parameters menu
		VOLUME can be adjusted Parameters menu
		VOLUME is accepted Minutes DELAY can be adjusted Parameters menu
		Minutes DELAY can be adjusted Parameters menu
		Minutes DELAY can be adjusted Parameters menu
		Minutes DELAY accepted Seconds DELAY can be adjusted Parameters menu
		Seconds DELAY accepted ROTATION speed can be Adjusted Parameters menu
		ROTATION speed can be Adjusted Parameters menu
		New set of parameters Stand-by (Run menu)

USE BARCODE READER DEVICE

Should the Barcode Reader device be used, connect it to the terminal (3).

The barcode of the sample ID and for the operator ID are both readed. In ADVANCED MENU it is possible to select one mask for sample and another one for the operator.

The mask is a symbol included in the barcode that can be selected to be placed at the beginning of the barcode label of the sample ID.

Another one can be selected for the operator ID.

If you do not use any Mask the length of the sample ID barcode by default is eight, and four for the operator ID.

READ A BARCODE

Before running a sample it is possible to store the sample ID and operator ID in the memory.

- By pushing ▲ the Barcode Reader will light.
- Bring the Barcode Reader close to the sample or the operator label. The display will show sample ID or the operator ID according to the mask and to the length.
- The sample ID and/or the operator ID will be saved in the memory, to later on be transfered in the computer.
- Start run process. The parameters, as well as the date and time will join the string of sample ID and operator ID when finished.

ADVANCED MENU

1000 l
 00:00
 100 l/m
 1 rpm

> 2 sec.

Settings

Clock

Registers

Work Air Flow

100 l/m
 60 l/m

Time

Reg. Print

Send to print

ID Sample

ID Sample
 > > _ < <
 (Mask)

Time zone

Reg. Clear

Clear all the memory

ID Operator

ID Operator
 > > _ < <
 (Mask)

Day of week

Reg. Dump XML

Send in XML format

Comm.Flow Ctrl

Handshake

Date

Reg. Dump CSV

Send in CSV format

Daylight saving

Enter Place

RS-232 Parameters
 Baud Rate: 9600 (Fixed)
 Data Bits: 8 (Fixed)
 Parity: None (Fixed)
 Stop Bits: 1 (Fixed)
 Flow Control: None (Default)



To return one step back

Instrument Communications

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

1 - RS-232 Socket Pinout

- 1- Not Connected
- 2- Tx
- 3- Rx
- 4- DTR (Internally jumpered with DSR)
- 5- GND
- 6- DSR
- 7- RTS
- 8- CTS
- 9- Not Connected

2 - Stored Information and Output Formats

The instrument can send the information through its RS-232 Port the information regarding the realized operations.

Stored Information in every operation:

- Operation Number (Internally assigned)
- Sample Identification (Introduced using the BarCode Reader)
- Aspired Air Volume
- Start Time
- End Time
- Operator (Introduced using the BarCode Reader)
- Master or Slave Device
- Limit Date to do the next Calibration
- Remaining Volume (Air Liters) to do the next Calibration

NOTE: The instrument only stores the last 100 operations

The information can be formatted in three different standards to be sent:

- CSV** (Comma Separated Value) Separator ";"
The **CSV** data follow the order listed above.
- XML** (Extensible Markup Language)
- Printer Format** (Ready to be printed)

3 - Testing the Information Output

3.2 - 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 instrument.

3.3 - Terminal Software Testing

Is possible to capture the information from the Spin Air with a **Terminal Software**, the **HyperTerminal** (It comes with all versions of **Microsoft Windows**) is the most common way. Other terminal programs can be used setting up the same communication parameters.

Setting up the **HyperTerminal**:

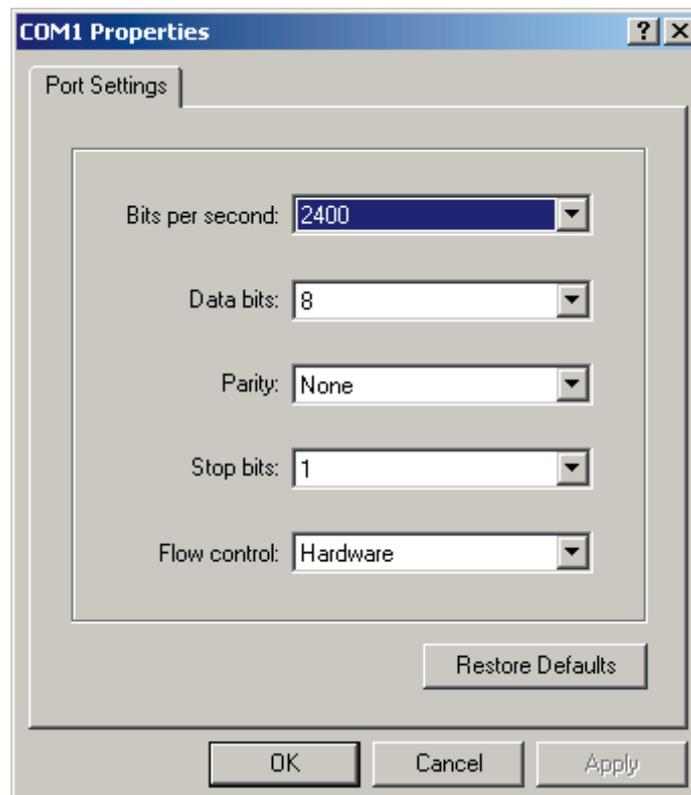
1. Opening the **HyperTerminal** the first step is enter a name to identify the communication (e.g. SpinAir):



2. Select the Computer COM port:



3. Select these COM Properties, and ensure that the Spin Air has the same type of Flow Control than the computer:



About de Flow Control

The Flow Control (also know 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 is capable of sending data much faster than the receiving device can receive it.

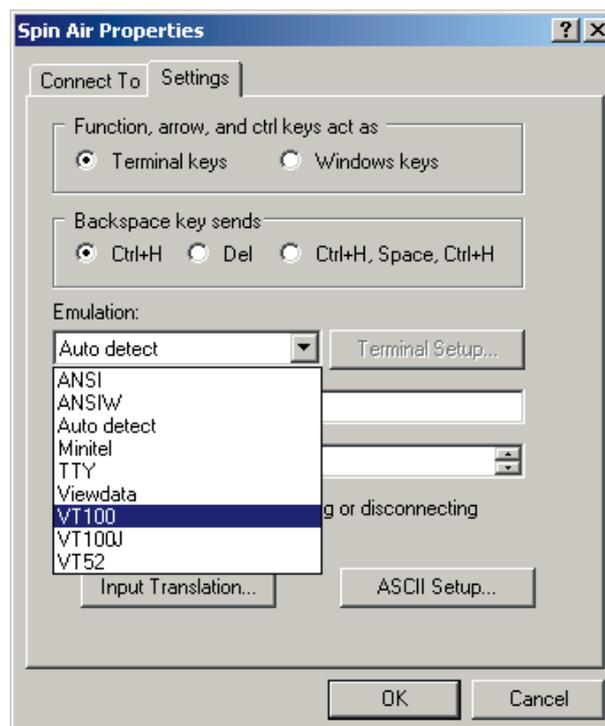
On the Spin Air there are two avaiable kinds of Flow Control:

- Software (Also know as XOn/XOff). When the receiving device sends a 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.

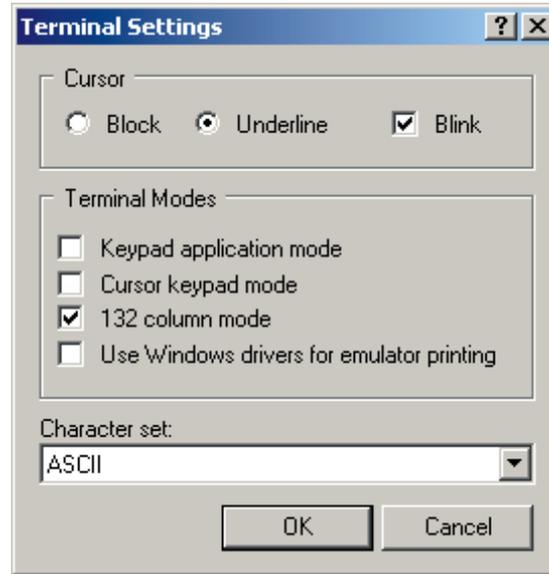
- Hardware (Also know as RTS/CTS). It uses the dedicated signal wires RTS/CTS to indicate when any of both devices (receiving or sending) buffer is full and when any of these devices is ready to receive more data.

For a successfully communication between the Spin Air and the Computer both should have the same values in all communication properties.

4. Go to Properties>Settings and then select VT100 Emulation:

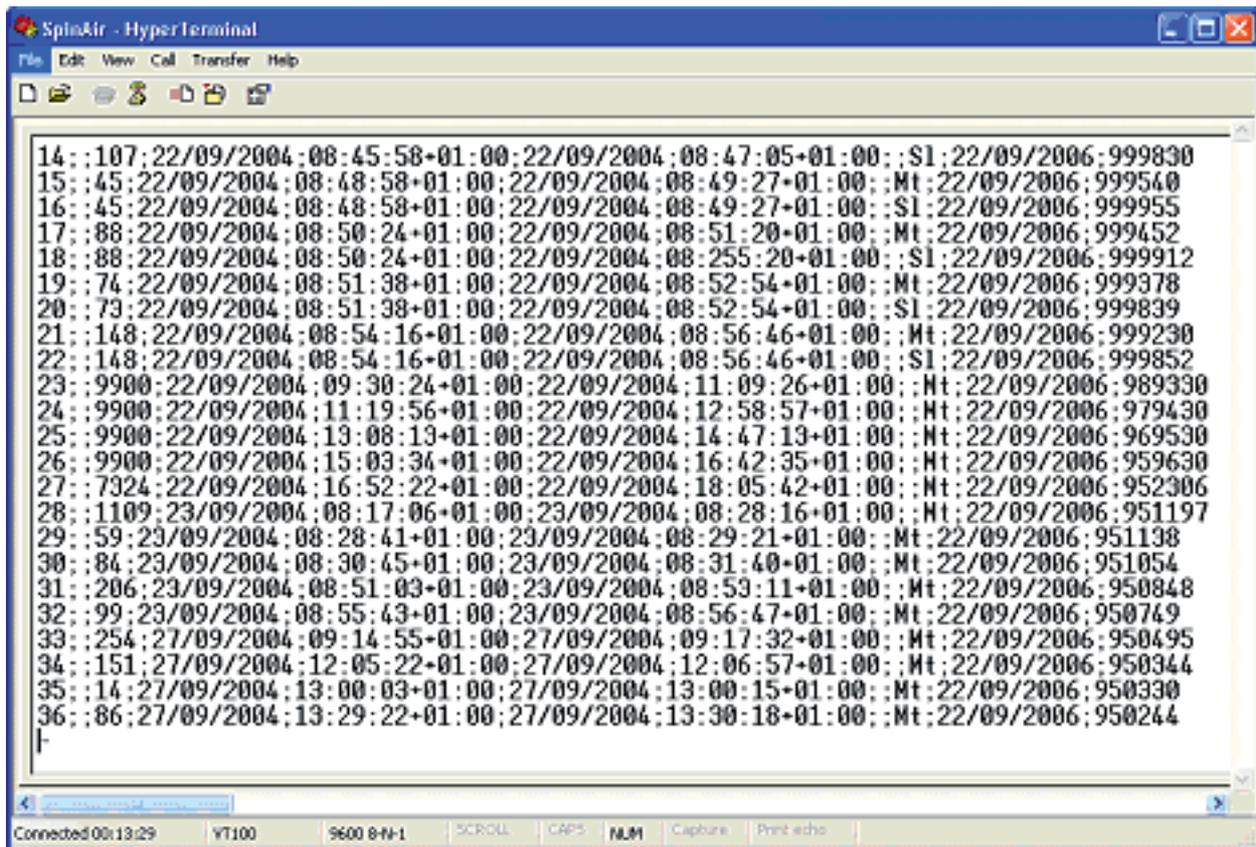


5. Press Terminal Setup, and select 132 column mode:



6. Connect the Spin Air to the computer and go to the menu that allows the registers dumping in CSV Format (Registers > Dump Reg. CSV).

The instrument sends the data in this format, and it is displayed as follows:



This information can be exported to a third party Software like Microsoft Excel or Microsoft Access. See its documentation in order to do that.

The SPIN AIR fundamentals

The principle of the rotating Petri dish allows to have a real count without any correction. This is due to the fact that a motionless system is only using 5% of the total surface of the agar. The IUL SPIN AIR having a patented rotation motion device combined with a special distribution of the holes covers 100% of the agar surface.

If the SPIN AIR is used without rotation (0 rpm) a correction on the result must be applied. This correction takes in account the probability that one micro organism travels across the same hole that a previous one. This correction that is not important at low counts become dramatically high at more than 150 cfu per plate.

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

$$Pr = N (1/N + 1/N-1 + 1/N-2 + .. 1/N - r + 1)$$

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

$$Tc = 400 (1/400 + 1/399 + 1/398 + ... + 1/400 - C+1)$$

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 differences is 10%. If the count reach 100 you must add 15% of the total count. This percentage reaches 25% at 150 counts and its more than 100% at more than 300 counts.

Using the rotation motion of the SPIN AIR all these calculations can be avoided.

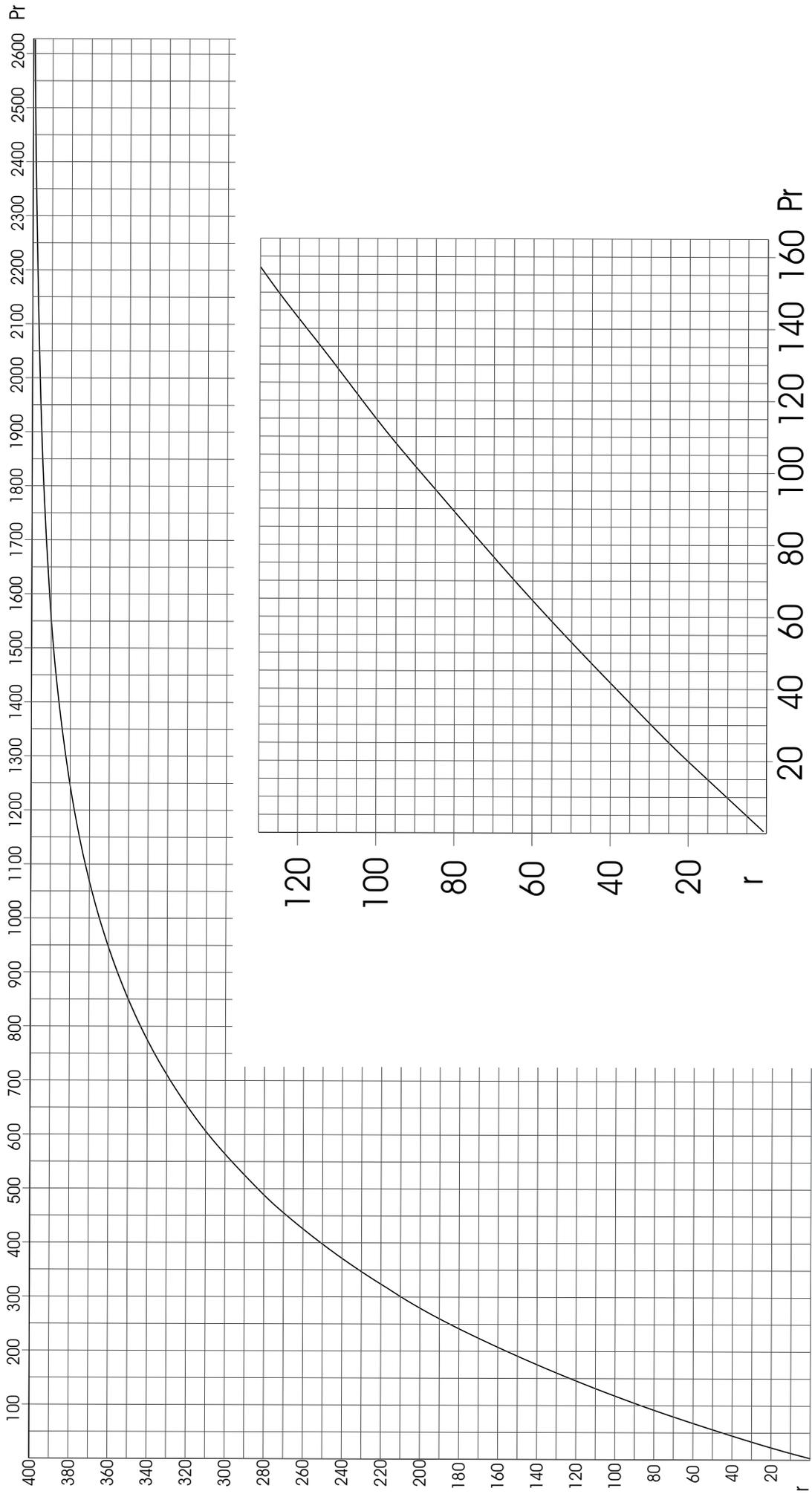
Table of statistical corrections for the instrument 400 holes x 0,7∅ mm.

USE ONLY IN CASE OF SAMPLES TAKEN WITHOUT DISH ROTATION

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

r Colony number counted.
Pr Colony number estimated.

USE ONLY FOR SAMPLES TAKEN WITHOUT ROTATION



TECHNICAL DATA

Air flow:	100 l/m (90mm plate) 60 l/m (Rodac plate) controlled by microprocessor
Air Total Volume:	10 - 9900 L.
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
Bar-code connection:	With IUL Bar-code device
Switching adapter:	100-240V AC 50/60 Hz to 12V CC 15W
Battery pack:	Ni Metal Hydride 7,2V
Range:	8 hours full charge (without Slave)
weight:	1.7Kg Spin Air 1.3Kg Spin Air Slave 2.2Kg Carrying case

ORDERING INFORMATION

Cat. No.

SPIN AIR for 90mm Petri dishes with carrying case and switching adapter	5500
SPIN AIR SLAVE for 90mm Petri dishes with carrying case and connection cable (needs compulsory a Spin Air main unit)	5502
Set for 90mm Petri dishes (holder and cover of aluminum)	5504
Set for 60mm Rodac plates (holder and cover of aluminum)	5505
Set for 55/60mm Petri dishes (holder and cover of aluminum)	5678

Set for 90mm Petri dishes (holder and cover of plastic)	5525
Set for 60mm Rodac plates (holder and cover of plastic)	5526
Set for 55/60mm Petri dishes (holder and cover of plastic)	5681
Set for 90mm Petri dishes (holder and cover of INOX)	5527
Set for 60mm Rodac plates (holder and cover of INOX)	5528
Set for 55/60mm Petri dishes (holder and cover of INOX)	5682
Cable for PC/Printer communication	5510
Tripod	5511
Bar-code reader	5701

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