

Indexor System Manual

v6.0.3 (English)

www.maksense.com

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Introduction

The INDEXOR System allows quick and efficient organization and tracking of the localization of sample tubes.

Read the information provided in this manual carefully before installing the system.

Manual

This manual explains how to use the INDEXOR System. It also provides detailed information on the major functions of the **QuickLab** software. It also provides instructions on how to calibrate the modules and troubleshoot technical issues with the **QuickLab** software.

Patent Information

iSens - Electronica Lda. owns the intellectual property rights over the INDEXOR technology described in this document.

Warranty

All products supplied by **iSens Electrónica Lda.** are covered by our 2-year-warranty.

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FCC Regulatory info:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

No changes shall be made to the device without the manufacturer's permission as this may void the user's authority to operate the device.

This device complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. The Indexor Module 60A complies with the safety requirements for RF exposure in accordance with FCC Part 2.1093 for portable use conditions.

ISED Canada Regulatory info:

This device complies with ISED's licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

This device complies with ISED Canada RF radiation exposure limits set forth for an uncontrolled environment. The Indexor Module 60A complies with the safety requirements for RF exposure in accordance with RSS-102 for portable use conditions.

"Informations réglementaires d'ISDE Canada:

Ce dispositif est conforme à la norme RSS exemptée de licence de l'ISED. L'opération est soumise aux deux conditions suivantes :

- (1) ce dispositif peut ne pas causer d'interférence, et
- (2) ce dispositif doit accepter toute interférence, y compris les interférences qui peuvent causer le fonctionnement indésirable de l'appareil.

Cet appareil est conforme aux limites d'exposition aux rayonnements RF d'ISED Canada établies pour un environnement non contrôlé. Le module Indexor 60A est conforme aux exigences de sécurité pour l'exposition aux RF conformément à la norme RSS-102 pour les conditions d'utilisation portables."

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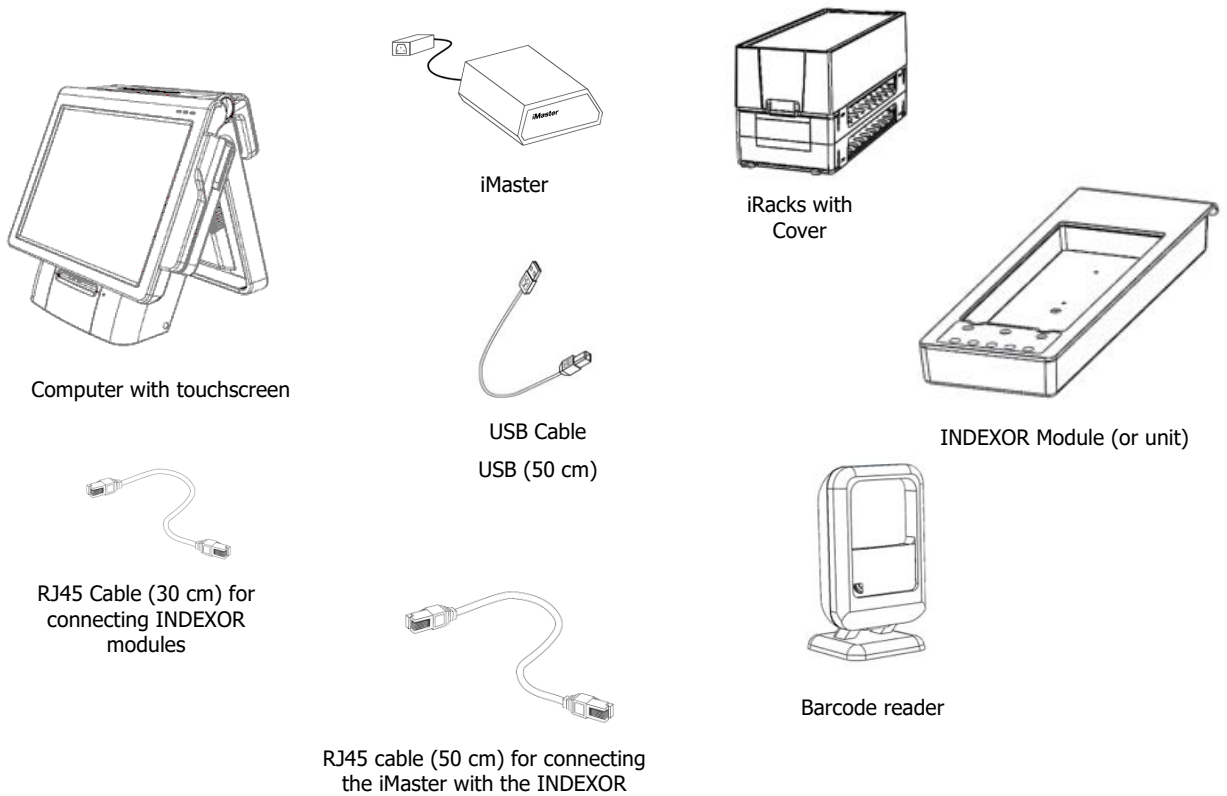
1. General Description

INDEXOR System

The INDEXOR system can be used to assist in the organization of pre and post analytical areas, allowing tubes to be registered, distributed to various laboratory areas, and archived for long-term storage.

System components

The system consists of the following components:



To access the computer back, remove the back panel as shown in the Picture:



Checking INDEXOR Identification:



The screw arrow is pointing at number 2. The connection order must be ascendant, as that is how the modules are displayed on Quicklab's main screen.


1.1.1 INDEXOR module Front panel


The INDEXOR unit has a front panel with LED lights that help to identify the operation being carried out by the unit.



Blinking means that the Indexor module is connected to the iMaster unit.

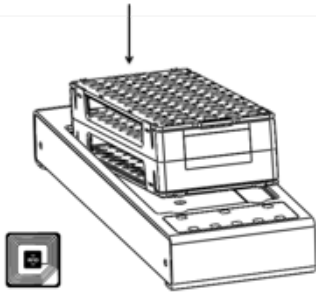
When ON, it means that the Indexor module is powered on.

 When this light is ON, it shows that the Indexor module has **power**.

 When the light blinks, it means that there is a **signalised tube** to be picked up in the corresponding column.

1.2 Working principles

1 – Inserting a Tube Rack

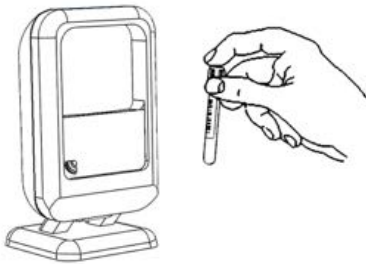


Insert a Rack – first the back part and then the front!



Check that the RFID light is on. If it is off, this means that the RFID tag is damaged or that the rack has been placed incorrectly.

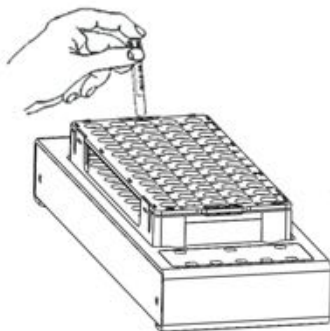
2 – Scanning a tube



Scanning a tube with the barcode reader until the reader emits a “beep”.

If is not possible to read the barcode, it can be typed manually. After, press <ENTER>.

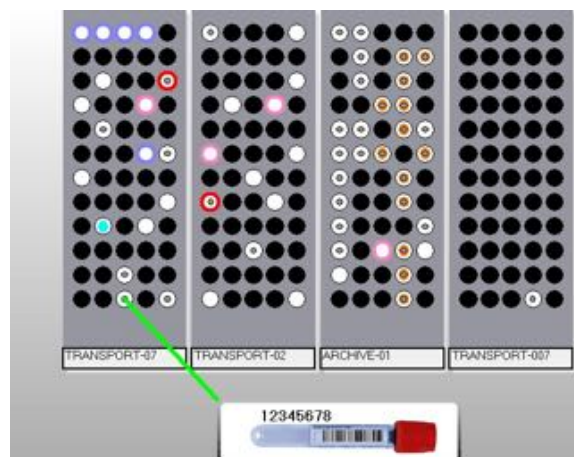
3 – Placing a tube in the rack



The tube can then be **placed anywhere** in the rack.

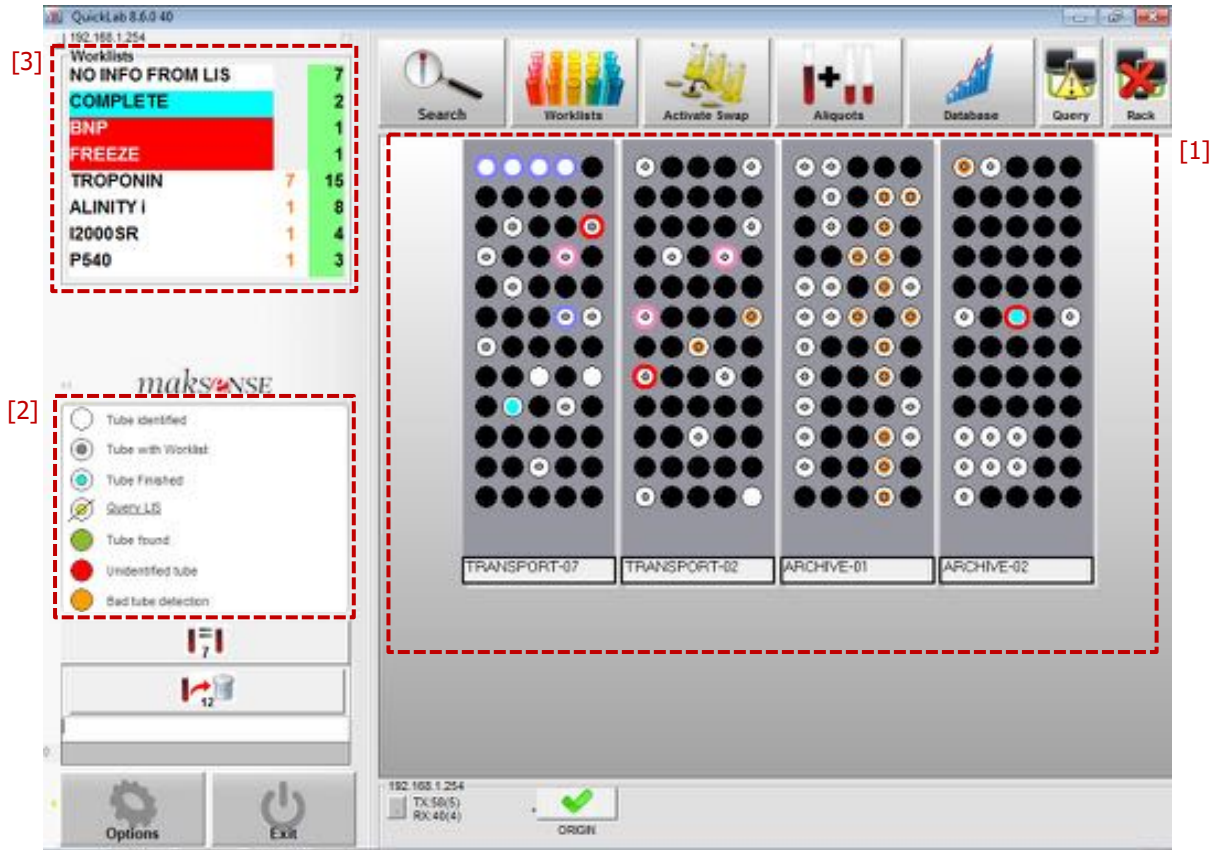
There is a timeout **of a few seconds**. This time can be adjusted in the **Options** Screen.

The user should be able to see the **tube position** on Quicklab's main window (see below).



2. QuickLab Software

The software's main screen should look like this:



[1] – When an iRack is placed on the Indexor base, it will be displayed on Quicklab's main window and different colours can be assigned to the tubes stored in that particular iRack. The meaning of each colour is shown on the side window [2], as follows:

Tube status key:



Tube identified – Tube with valid identification

Tube with Worklist – The tube has one or more worklists.

Tube finalized – Means the tube has no more worklists or tests pending and it is ready for storage.

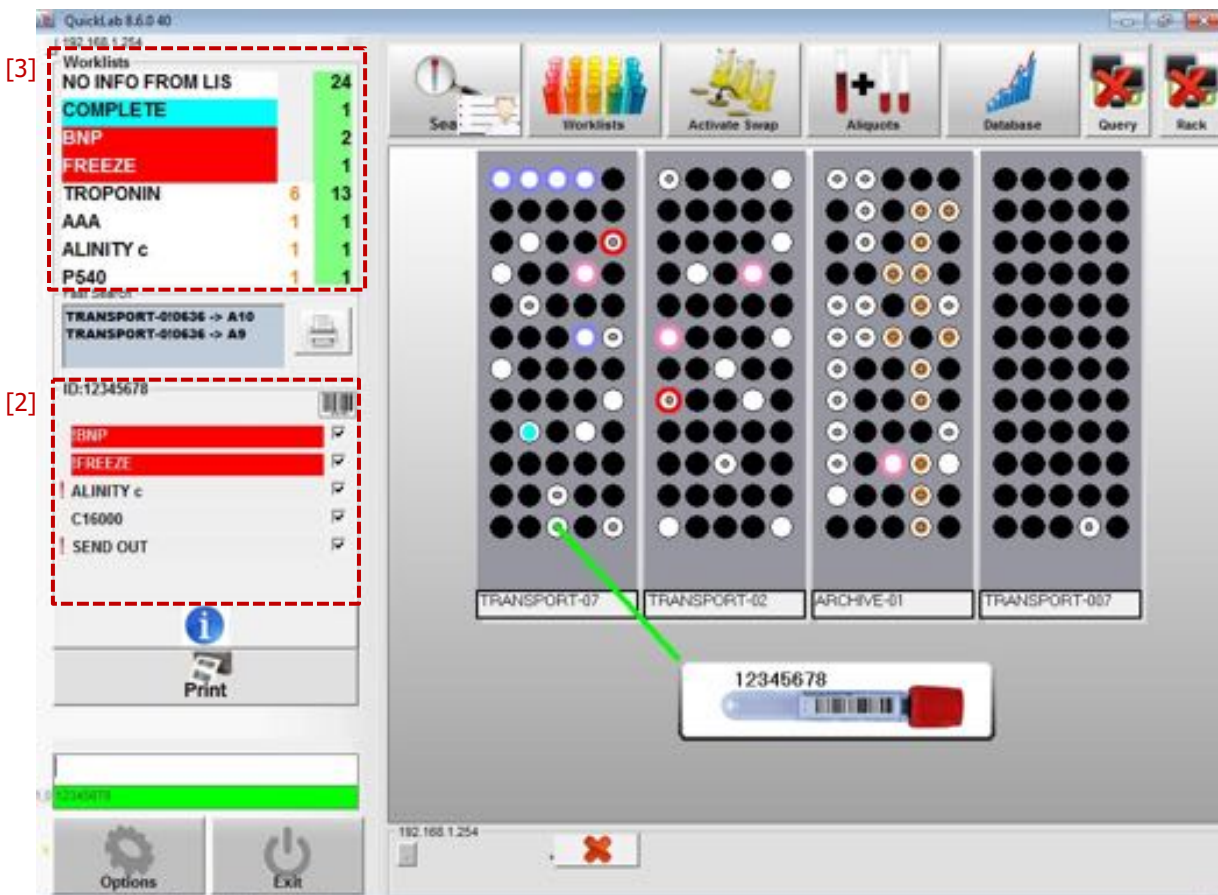
Tube found – Indicates where the searched tube is.

Unidentified tube – The tube has no identification – Read it again or check the list of problems on page 54.

Bad tube detection – The tube is not well fitted in the rack or it is in a unit with a detection problem (check list of problems on page 54).

The user can also identify each iRack by name and change it if necessary. Check section 3 of 36 for more operations and information regarding iRacks.

When a tube is being read, the user can quickly access the associated worklists. The information is displayed on the tube key window [2].



This enables the user to **place the tube in different racks**, depending on the worklists received.

[3] – On the Worklists window, the user can see the number of samples that exist for each worklist. You can also expand this area for more detailed information. The same can be achieved by clicking the Worklists button.

Please check section 2.2 of page 17.



Search – Allows for tubes to be searched for in INDEXOR units or in storage.

Worklists – enables available Worklists to be viewed and selected for the tubes present in the INDEXOR units.

Activate Swap – This option is useful for swapping tubes from one position to another without having to read them with the barcode reader again.

Aliquots – Allows labels to be duplicated from the barcode reader or from a worklist.

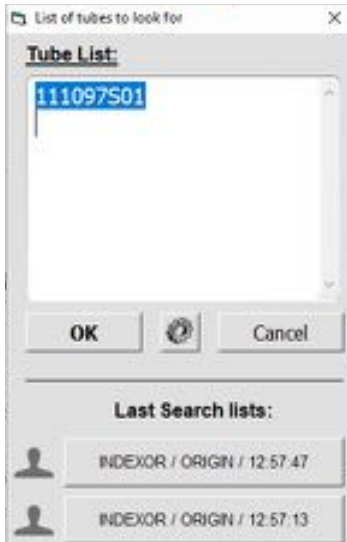
Database – Information about all Racks and samples stored in the local database.

Query / Rack / HL7 – LIS communication status

2.1 Search



Click this button to search for tubes.



After clicking the SEARCH button, another window will open, where the user can enter up to 100 codes to search for, separated by <Enter>.

In this window, the user can also select from a previous search, provided it was performed in the last 15 minutes.

Possible Results:

After running a search, the following outcomes may be displayed:



Found – Corresponds to the number of tubes found in the INDEXOR module.

If the tubes found are in the Indexor modules, then the corresponding arrow will blink. When the user picks up the first tube, the second one will start flashing, and so on.

Tubes with the same identification flash simultaneously so that the user can select one. The user must lift slightly and then put the tube that is not needed back.

Localized – Corresponds to the number of tubes not found in the INDEXOR module, but that are stored in the archive.

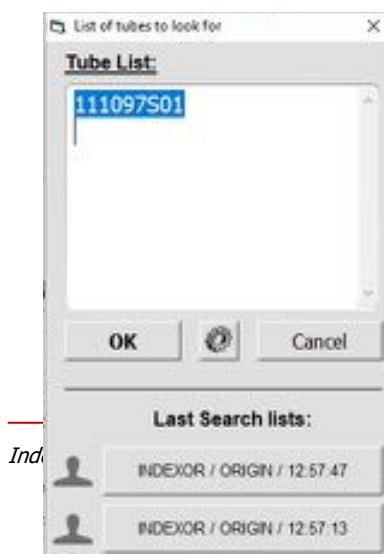
Localized tubes are listed on the side window with an indication of their position in the corresponding rack.

NOTE: This list can be printed for easier tube identification, in case the user needs to search the archive.

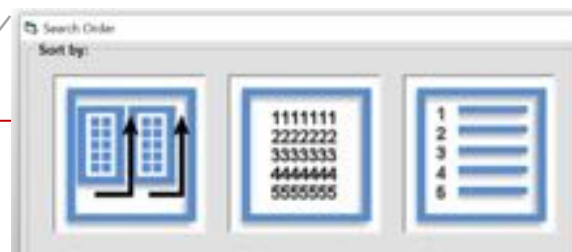
Not found – Correspondence to the number of tubes not found in the INDEXOR system. When this happens, the user can search the sample in the Tube Log window, where all the samples' history is recorded (see details on section 2.5.3, page 30).

Clicking the Config icon,  the user can set:

Sort by: the user can choose how search results are displayed. Either using the Indexor position, the tube number or the entry order as a reference.



Additional information: In this field, the user can select different results to be printed or viewed on Quicklab's main screen.



Print all positions: By checking this box, the user opts to print all the positions of the tubes in the Indexor system.

Print tube date: Allows the user to print the date and time the tube was placed in that position.

Print patient name: If the user checks this box, then the patient name associated with the searched barcode will also be printed.

Show patients: Checking this box activates the search for patient names. The “**List of tubes to look for**” window may present the following:

ID	Name	Birth Date	Tube ID
----	------	------------	---------

Fast Search:

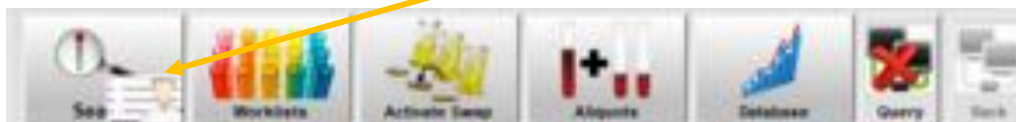
If the user checks the "Fast Search" box, it will enable a shortcut on Quicklab's main window. With this option, it is possible to type the tube Identification number directly on the main window or read the corresponding barcode in order to see the tube's position.



This is how it will be displayed on the main screen:

Enable patient test window:

After checking this box, click the OK button and, on the Quicklab panel, a **new icon** will appear on the Search button.



After placing the iRack in the Indexor module, the tubes appear in white – Tube identified but without worklists.

After sending all information about the checked-in samples to LIS, LIS responds with the corresponding tests and the tubes are marked with a grey dot.

From this point on, it is possible to search for tubes that were checked-in or not checked-in for a specific patient.

Now, click on the new icon:

This will open a window that allows the user to search for checked-in or not checked-in tubes. Read the barcode and the associated name and tubes will appear.

There are 3 different possible situations:

Tubes are not checked-in

Tubes are checked-in

Tubes are Complete

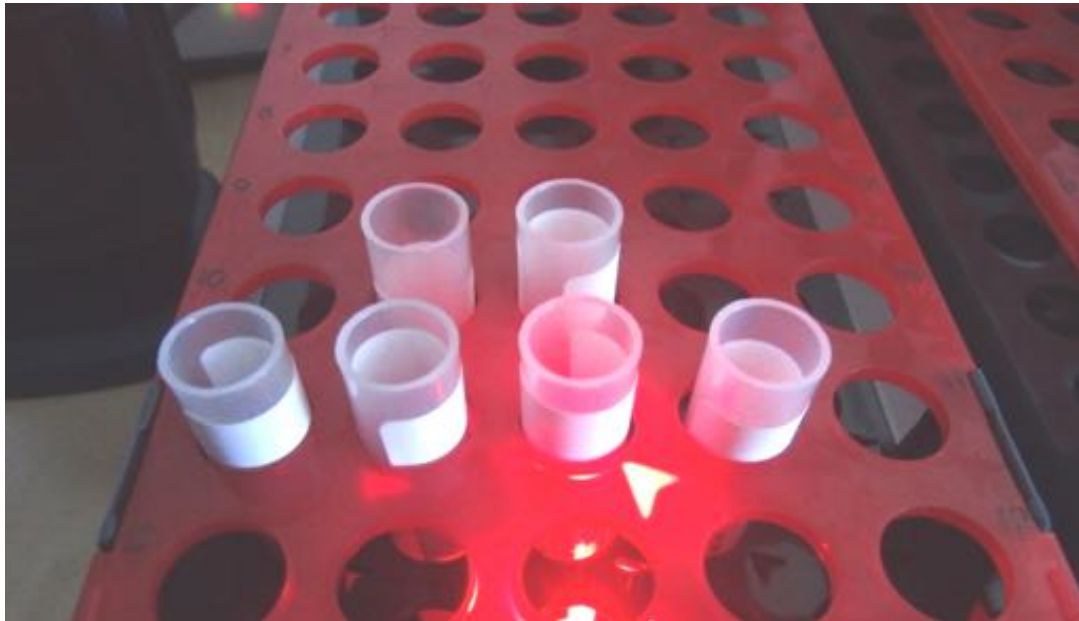


The number in (-) corresponds to the number of tests for that specific tube.

The user can also print the displayed result. Just press the Receipt button.

Please note: clicking the Search button and not the patient icon, will allow for normal searching.

2.1.1 Tube detection

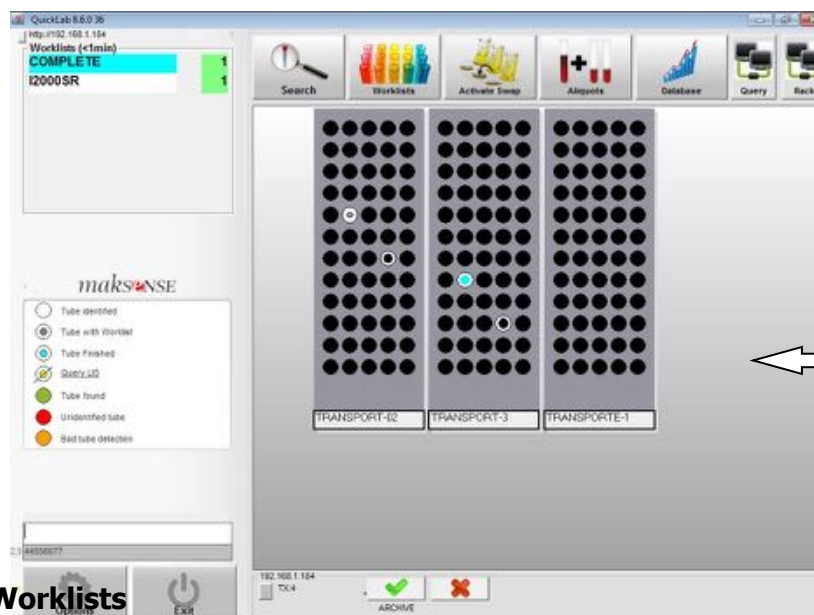


The **arrow** on the iRack shows the found tube.

Slow blinking – Means the tube has been **found**.

Fast blinking – **Unidentified** Tube. Remove the tube and read it again with the barcode reader.

Simultaneous blinking – If more than one tube is blinking, it means that they have the same identification. If only one tube is needed, then the other one can be lifted up and put back down in order to move to the next one on the list.



Click over the grey area to cancel the current search

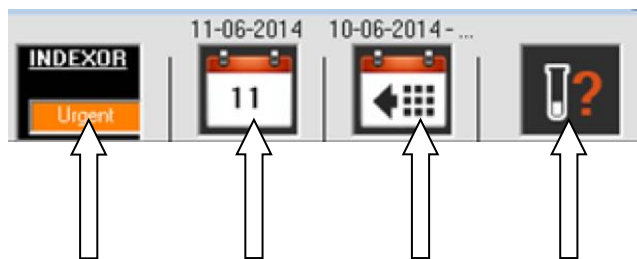
2.2 Worklists



This button will show the Worklists window.

All worklists are sent from LIS to the Indexor system. In the Worklists window, more columns can be displayed, as shown in the picture below.

Clicking on any icon at the top of the columns will open a Help window that explains what each column represents.



List Mode Help window:

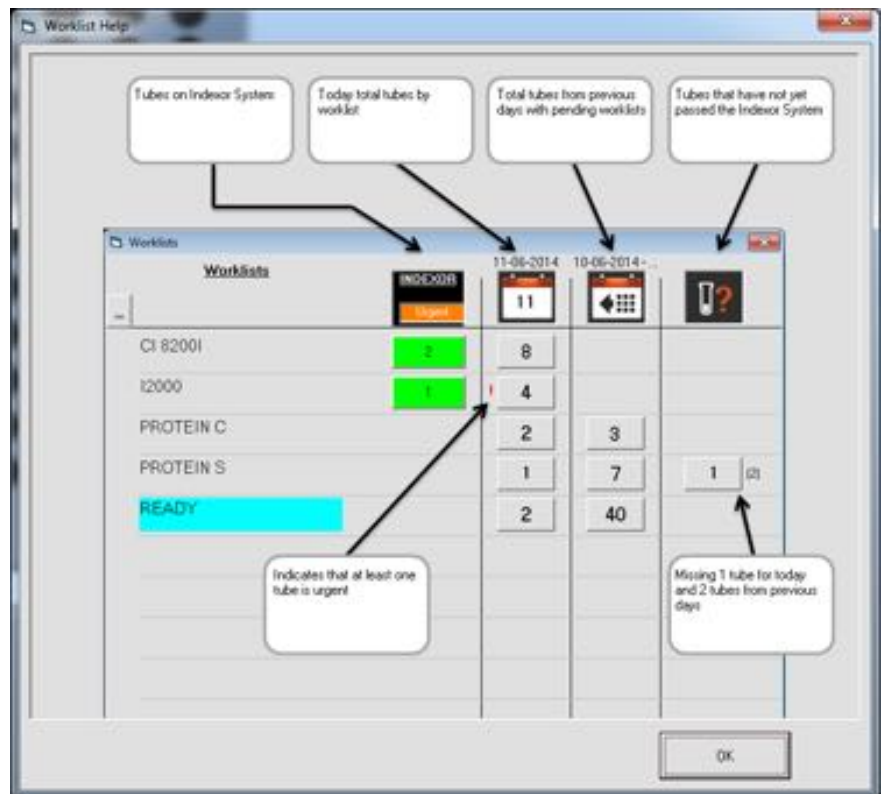
First column: – Tubes in the Indexor system by worklist.

If the system is operating in List or HL7 mode, then the user has access to more information:

Second column: Today's total tubes by worklist.

Third column: Total tubes from previous days by worklists.

Fourth column: Tubes that have not yet been entered into the Indexor system. The number between brackets represents tubes never seen from previous days.



This window shows **how many tubes** exist for each **worklist**.

To identify the tubes for a specific Worklist, click the button with the corresponding number of tubes, on the first column.

The tubes for that list will blink sequentially on the iRack, as they are being removed. After removing the first blinking tube from the iRack, the worklist window closes and the user can also see, on Quicklab's main screen, the tubes for the chosen worklist, as they will be flashing.



Colour key:



- New tubes



- Urgent tubes



- Already processed tubes (small square)

Example:

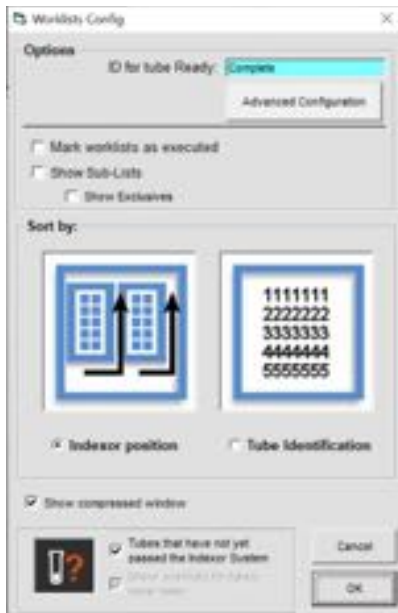


- There are 2 **new tubes** and 1 of them is **urgent**.

If number **2 is pressed**, then the 2 tubes will blink in the INDEXOR modules.

If number **1 is pressed**, then only the urgent tube will blink, and the total number of tubes is now 1.

By clicking on the Worklist Configuration  button, the user can set several helpful settings:



- [1] - Name a worklist that identifies tubes without pending worklists [1] (Named "Complete" or "READY").
- [2]

- **Mark worklist as Executed** [2]: If this option is selected, the worklist window will show how many tubes, per worklist, are still waiting to be picked up, and those that have already been picked up.

If the "Mark worklists as executed" checkbox is checked, then the picked-up tube is separated from the total tubes in Indexor:



- 2 tubes in Indexor, 1 picked up and 1 not picked up.


From this point on, the Worklists window on the main screen will only show the worklists with tubes still waiting to be picked up.

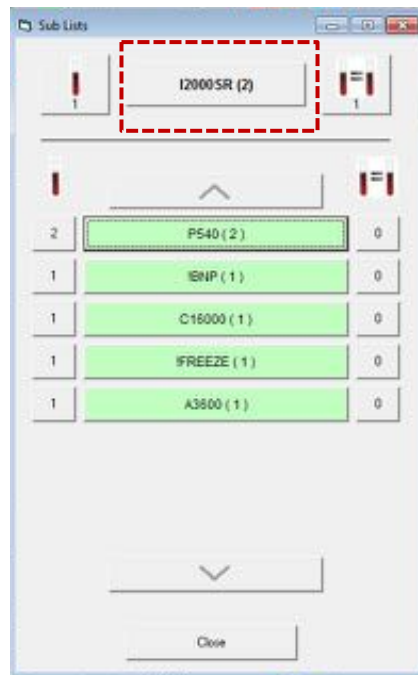
- **Show sub-lists:** If this option is selected, the user will be able to see the tubes in that worklist and check the other worklists also associated with those samples.

Click on the plus sign next to the corresponding worklist. It will open a new window listing the other associated worklists. To know which samples are included in both worklists, just press the Worklist icon button and those samples will be highlighted on the main screen.



Show Exclusives: If this option is selected, Quicklab will separate the samples that are exclusive to that worklist.

Click on the plus sign  next to the corresponding worklist. It will open a new window showing (top part) which samples are exclusive for that worklist. The other listed tubes have other worklists associated with them besides the selected one.

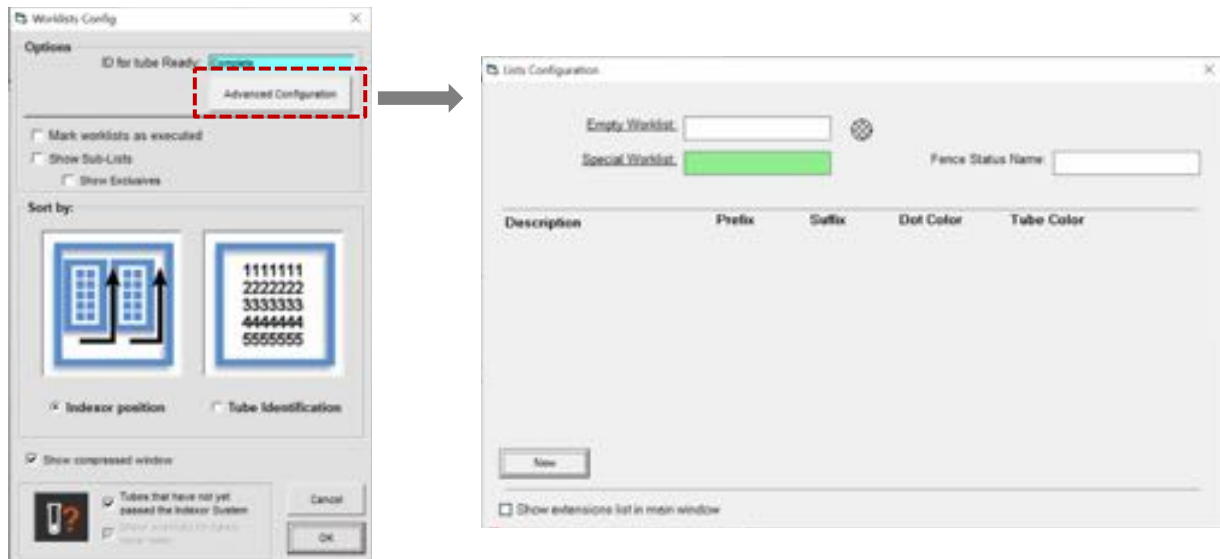


Sort by: the user can choose between Indexor position or Tube identification sorting modes [3]. Tubes with the same identification will blink simultaneously. If only one tube is needed, then the other one can be lifted up and put back down in order to move to the next one on the list.

The worklist window can also be presented in a compressed view if necessary. Just check the **"Show compressed window"** box.

2.2.1 Worklists – Advanced Configuration

Clicking this button will allow the user to customize worklist labels and to create prefix/suffix rules.



When working with several samples per day, a quicker identification of specific worklists may be crucial. The user can set a particular colour coding for that worklist.

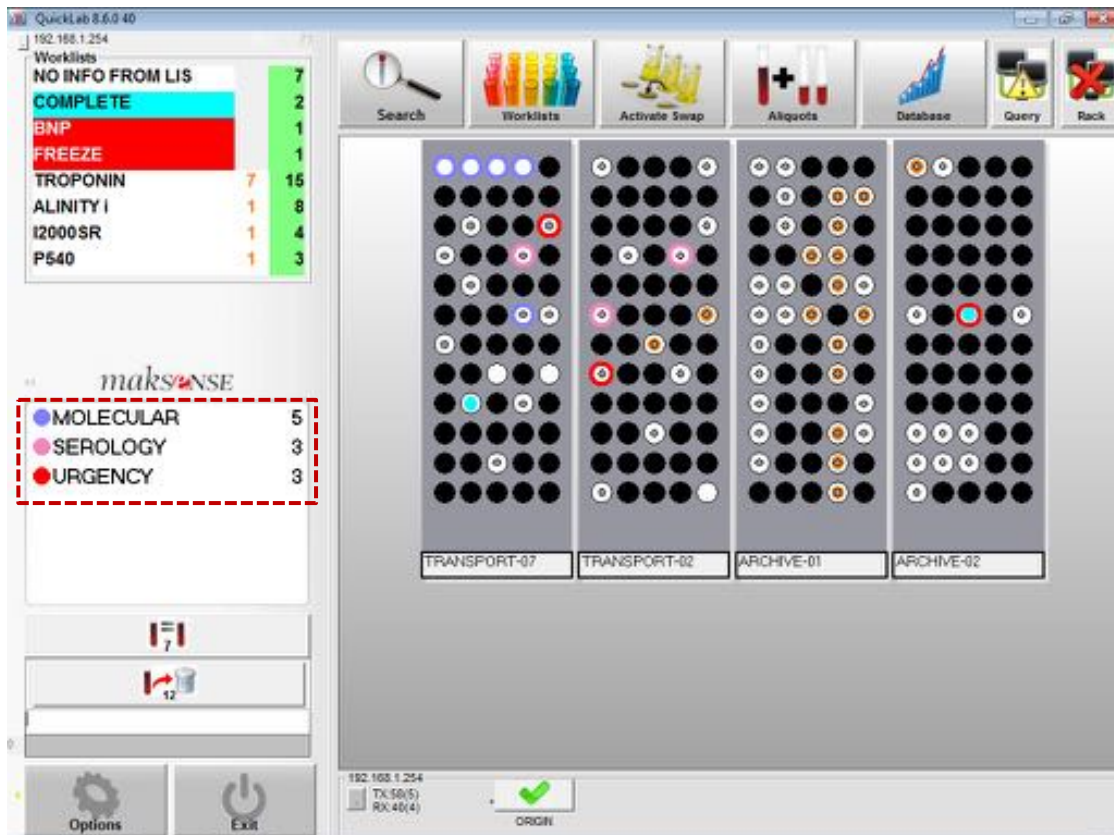


The checked-in tubes waiting for the corresponding worklists (information provided by the LIS) can be differentiated from the others which remain (empty worklist). The same can be applied to another worklist that the user intends to highlight or distinguish (special worklist).

If the used barcodes present a particular Prefix or Suffix (distinguishable from the others), it is possible to categorize the tubes and assign a desired colour (dot and tube cap colour), which is visible on the main screen, when the tube is read and stored in the iRack.

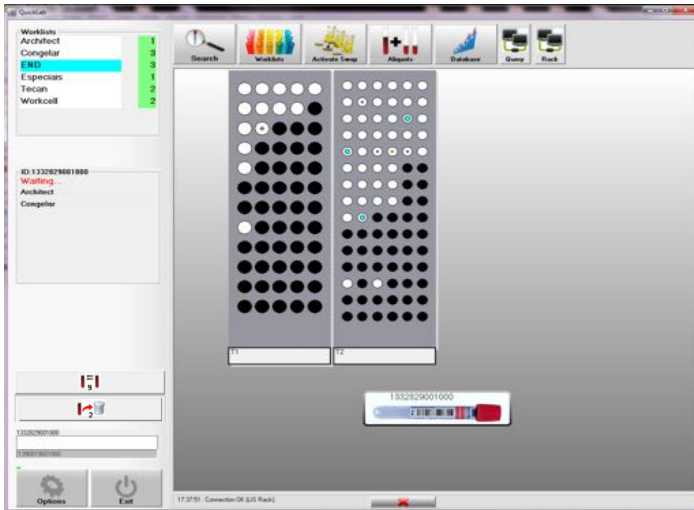


If the **“Show extensions list in main window”** box is checked, this barcode differentiation is visible on Quicklab’s main screen (see below).



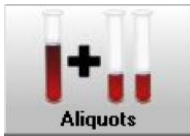
Instant Worklists

When a tube is being read, the user can quickly access the associated worklists. The information is displayed on the tube key window.



This enables the user to **place the tube in different racks**, depending on the worklists received.

2.3 Aliquots



This button will open the Aliquots window.

PRINT BARCODES:



From Scanner

In this case, reading a tube with the Barcode reader will print a label with the same identification. It is possible to **manually** enter a **code**. After, press **<Enter>**.



From current selection

With this option, the user can print labels from a specific worklist.

To do this, before entering the option, a **worklist needs to be selected**, but tubes should not be removed from the rack.

Close the Worklists window and open the Aliquots window.

After pressing the **"From current selection"** button, the labels from the selected worklist will be printed.

Also, a **"Search"** for tubes can be performed, followed by an aliquot print **"From current selection"**.

Print All Worklists

With this option, it is possible to print labels for all the tubes with worklists.

If the **"Mark lists as executed"** box is checked, when a label is printed, the tube will appear as Executed in the worklist window.


If the user checks the **"One label per tube"** box, only one label is printed.

Finding a Primary tube: After printing the labels, stick them on the new tubes. QuickLab should be open on the main screen. Any other windows must be closed.

Finally, read the new tube with the barcode reader. INDEXOR will show where the primary tube is.

Repeat this process for the rest of the aliquot tubes.

Tubes with the same identification: The Quicklab software can indicate the existence of tubes with the same identification number when the tube entry is performed.

I.e., when the user is registering tubes in the Indexor system,  and a tube is signaled, it means that another tube with the same ID already exists in the system.

This may be ignored if the samples are just being re-arranged but could be useful for a quick search of primary tubes!



More information is provided on the main menu: by pressing this button, the pairs of identical aliquots are sequentially identified, and their position and name are displayed. This information is helpful to arrange the aliquots in separate racks, which can then be forwarded to different tests.

2.4 Activate Swap



Click this button to swap tube positions.

This option allows for a **tube to be swapped** from one location to another without scanning it again with the barcode reader.

ATTENTION: If there is no activity during a specified period of time (by default, 20 seconds) this option will be disabled automatically for safety reasons. It will also be disabled if a Rack is removed from an INDEXOR unit.

After clicking the button, swap the intended tube. The system will automatically process the exchange.

2.5 Database / Storage



Here, it is possible to **see Rack and Sample data**. Some operations in the database can also be performed.



2.5.1 Out-of-date Racks



This option is useful to check which tubes are out of date (see storage types in section 3.2 on page 39), to sort them for disposal.



By selecting this option, the system will indicate, for the different storage types previously set, which tubes are out of date and the percentage of the support affected. So, if the support appears at 100%, that means that you can discard all the tubes from the support, thus saving the time of checking all tubes individually.

This information/help is explained in the



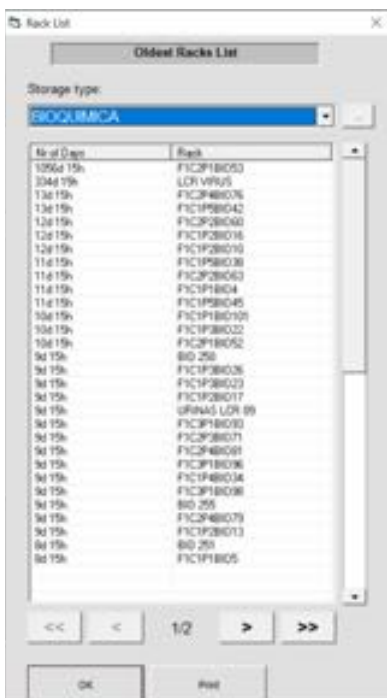
icon.

2.5.2 Sorted List



The “**Sorted List**” option presents a list of the **oldest Racks** in use that should be cleaned and subsequently used to store new tubes.

The Window should look like this:



If a **Storage type** is set, it can be used as a filter.

This list can also be printed to facilitate the search for the racks in storage.

2.5.3 Tube Log



This option allows the user to see each tube's individual history.

Includes: Tube identification, Rack name, position, Indexor name, name of the user that manipulated the tube, Date/time of the action, if the tube information was sent to LIS and at what date/time. You can search for a particular tube. Just type the

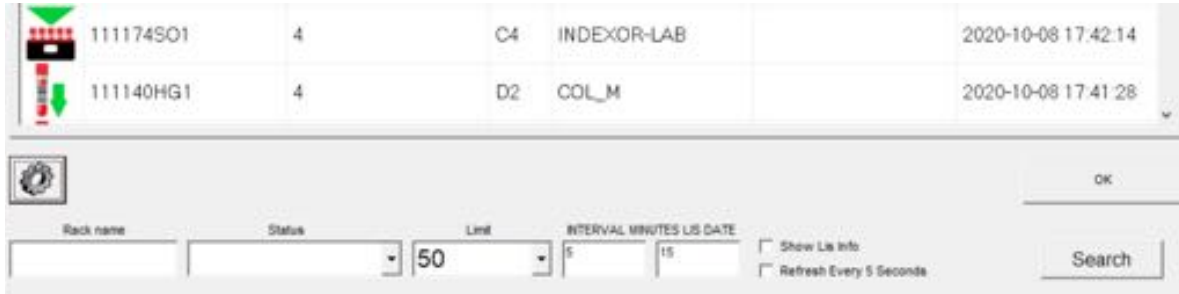
The screenshot shows the 'Tube Log' application window. It features a search bar at the top with a 'Search' button. Below the search bar are two tabs: 'Actions' and 'Check-in'. The main area contains a table with the following data:

Event	Tube ID	Rack	Pos.	Indexor	User	Date/Time
	TUBO202	transp 02	B6	INDEXOR-LAB		2020-10-08 17:10:48
	222333444	4	D8	COL_M		2020-10-08 17:07:15
	TUB-O-2000	transp 02	A10	INDEXOR-LAB		2020-10-08 17:06:36
	111174501	TRANSPORT-1	D6	INDEXOR-LAB		2020-10-08 17:06:07
	TUBO-201	TRANSPORT-3	B6	INDEXOR-OUT		2020-10-08 17:04:56
	TUB-O-2000	transp 02	A10	INDEXOR-LAB		2020-10-08 17:02:07
	654321	transp 02	A5	INDEXOR-LAB		2020-10-08 17:01:42
	000060	transp 02	A12	INDEXOR-LAB		2020-10-08 17:01:42

At the bottom of the window, there is a 'OK' button.

identification number and click the **"search"** button.

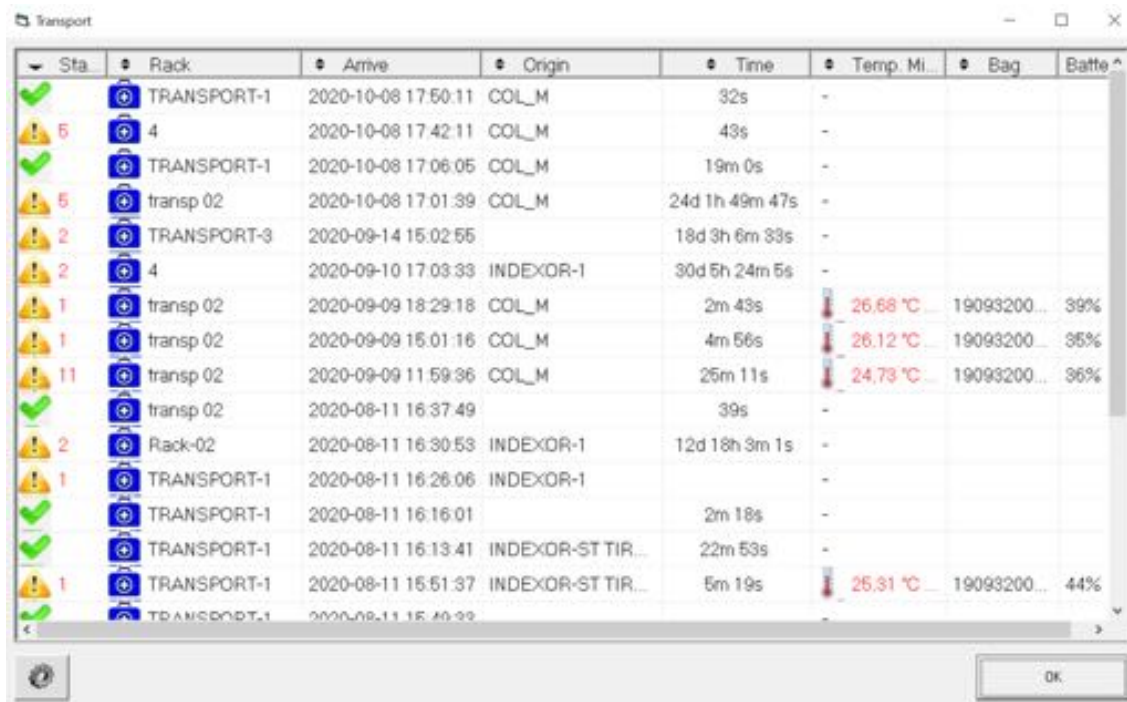
By clicking the Configuration button, the user can select the number of tubes they wish to see on the tube log window or view the tube log for a specific rack.



2.5.4 Transport



Here, the user can check all the information about the registered transports.



It is possible to see the iRack name, at what Date/Time the transport arrived at the destination Indexor, where it came from, and how much time it took.

When transported using the iLogger case 4A, it also shows the recorded temperatures, the number of the bag in which the iRacks were transported, and the battery percentage of the case. All icons on this window can be clicked to show more information (transports, alerts, temperatures, etc.).



The status column can display an alert sign, and by clicking on the icon, the user can access more detailed information.

When the iRack enters the Indexor system, an alert is immediately displayed if any event has occurred during the transport, so that the user can address it.

Possible errors:



Example: In this case, there is one tube missing from position C5 and one unidentified tube in position E12. The bag shows a low battery % and that it suffered 6 impacts during a very long transport (1d 20h 1m 40s). Also, the temperatures inside the bag exceeded the maximum and minimum set by the user.

The Indexor system will alert the user about several parameters:



- **Missing tubes:** If a tube is checked in and is not placed in the saved iRack position.



- **Unidentified tubes:** If a tube is stored in any position of the iRack but the system does not have a sample ID to associate to that position.



- **Transportation time exceeded:** The user can set the maximum duration of the transport event and will be alerted if it is exceeded.



- **Temperature range exceeded:** The user can set the maximum and minimum temperatures that the samples can be exposed to and will be alerted if they are exceeded.



- **Number of impacts suffered:** The user will be notified about any impacts suffered during transportation.



- **Battery percentage:** The user can set the minimum battery % of the iLogger case and will be alerted if that value is reached. If so, the batteries need to be replaced in order to ensure that the case continues to function properly.

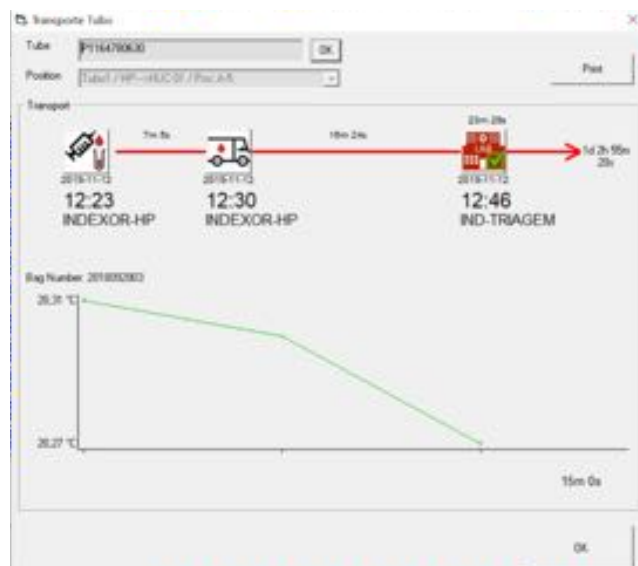
This information can also be printed if necessary.



Clicking on the Transport icon brings up the list of samples registered in the iRacks.

Tube	Position	Collect Date
P11470030	A-5	2019-11-12 12:23
P11470021	A-11	2019-11-12 11:50:5
H82760000	A-12	2019-11-12 11:37:1
P114690005	B-5	2019-11-12 11:59:1
H92320001	B-11	2019-11-12 12:23:2
P114690004	B-12	2019-11-12 11:57:0
P114690004	C-5	2019-11-12 11:59:2
H82384000	C-10	2019-11-12 12:30:2
H923210006	C-11	2019-11-12 12:24:4
P114690000	C-12	2019-11-12 11:57:0
P114710000	D-5	2019-11-12 12:01:1
P114770000	D-10	2019-11-12 12:30:0
P114690000	D-11	2019-11-12 11:57:2

Clicking on the tube icon shows detailed information about that specific sample.



The user can see how much time the sample was at the collection point before transportation, how long the transportation took, and at what time it arrived at the laboratory.



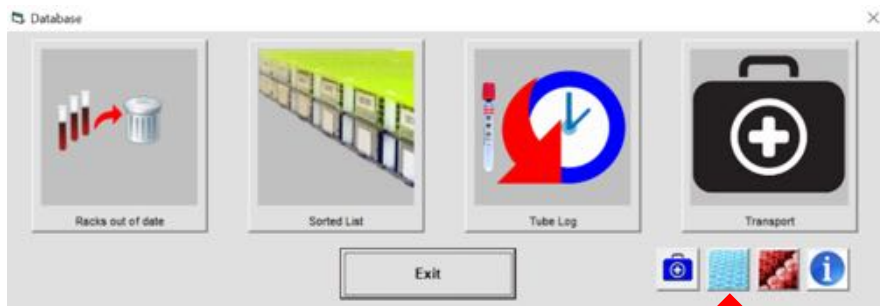
The configuration button in the transport log window allows the user to adjust the temperature range, the transport duration (min) and the minimum % of battery to trigger an alert.

If the user checks the “**Driver registers with racks in bag**” box, then the start of transportation is sent via network to the destination Indexor and not stored in the iRack RFID.

Note: This is only possible if the Mini-Indexor and the destination Indexor are network-connected.



2.5.5 Rack list



By clicking this button, the user can view all the information regarding the iRacks in use.

Tube	DELETE	Rack name	RFID	Tubes	Storage Type	Type	Current Date and	Days
		T-8102 MOLECULAR	000218C00000000	11	HPGLFVQ	Standard	2019-10-16 14:36:37	28
		30-06-2014 10:28	2236a07f000000000	0	TRANSPO.	Standard	2014-06-20 16:57:50	1372
		A-252	A611178C00000000	0		Standard	2014-06-20 16:53:36	1372
		A-253	A604178C00000000	0		Standard	2014-06-20 16:53:42	1372
		AC2 ALERGAS 1	9627104C000000000	59	CONGELA.	Standard	2019-11-05 15:50:21	28
		AC2 ALERGAS 2	F819F07E000000000	23	CONGELA.	Standard	2019-11-07 14:24:29	7
		AC2 ALERGAS1	03A9A291000000000	0	CONGELA.	Standard		
		AC2 AUTO MUNO21	8645208C000000000	29	CONGELA.	Standard	2019-11-07 14:24:36	9
		AC2 AUTO MUNO22	03FE104C000000000	24	CONGELA.	Standard	2019-10-28 18:20:57	22
		AC2 CAPILLAR 1	19F51F8C000000000	10	CONGELA.	Standard	2019-11-07 14:24:16	6

Here, the user can see the list with every iRack in the system and, if necessary, delete them from the database. If deleted, the user will also lose the information regarding the samples stored in that particular iRack.

The number of days (the number of days for any iRack refers to the number of days passed since the last tube was stored in that iRack/last time the iRack was used in an Indexor system) of each iRack is also displayed.

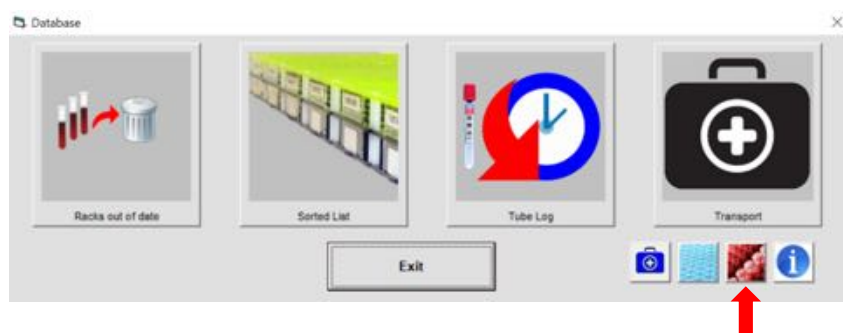
This list is also useful to change the storage type. By clicking the tube icon, the user can see all the tubes stored in that specific iRack. (see below). It is possible to print or export the tube list of any listed iRack.

ARCHIVE.01 / CD1B239B00000000

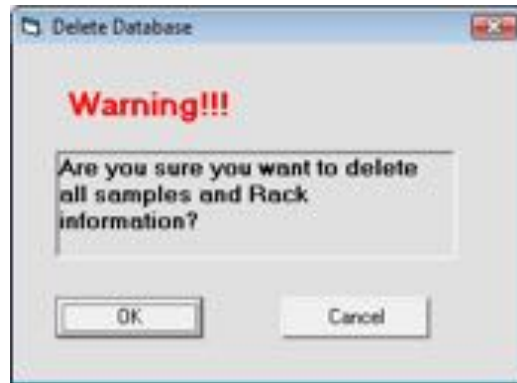
Tube ID	X Position	Y Position	Current Date and TL...
7563	A	1	19-11-2019 12:22:30
5339	A	5	19-11-2019 12:22:33
611	A	6	19-11-2019 12:22:34
8459	A	7	19-11-2019 12:22:35
4974	A	8	19-11-2019 12:22:35
5087	A	9	19-11-2019 12:22:36
2549	A	10	19-11-2019 12:22:36
89123456	A	11	27-11-2019 12:30:01
4621	B	1	19-11-2019 12:22:39
4060	B	2	19-11-2019 12:22:39
904	B	3	19-11-2019 12:22:40
9950	B	5	19-11-2019 12:22:40
8907	B	6	19-11-2019 12:22:41
634	C	4	19-11-2019 12:22:46
8922	C	6	19-11-2019 12:22:47
111097501	C	10	27-11-2019 12:56:44
9144	D	2	19-11-2019 12:22:52

OK

2.5.6 Delete all samples

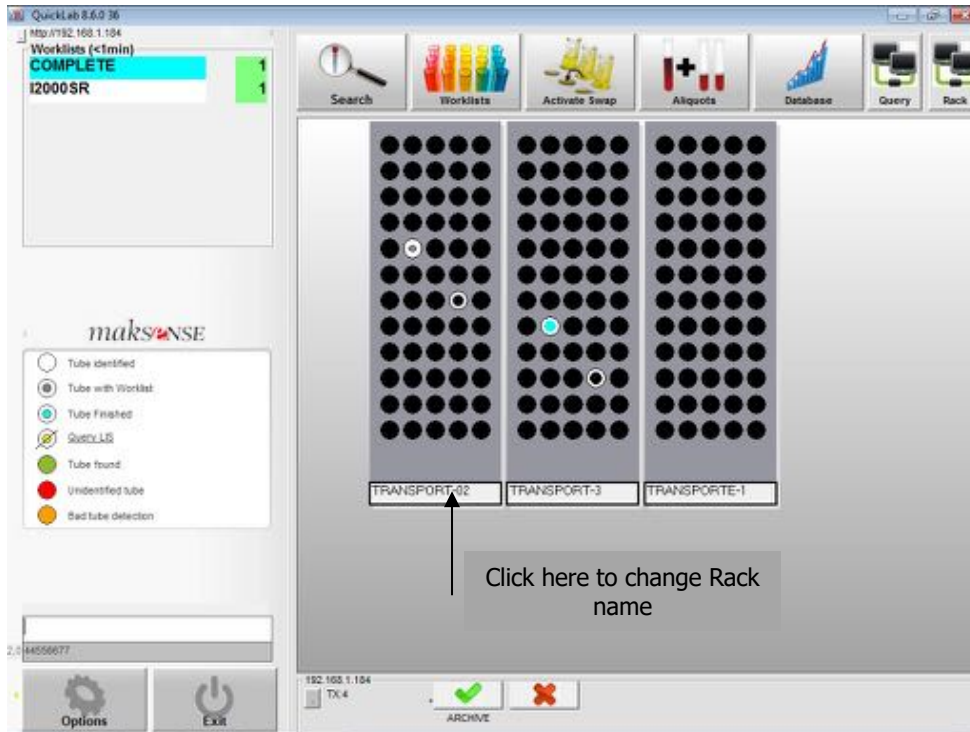


Here, the user can delete **all** the sample information saved in the database.



3. Rack identification

The rack identification can be changed by clicking on its name.



It is possible to store and send more information in the rack's RFID. As well as information about the location of the tubes, it is also possible to send the name of the Rack, Storage type, type of Rack and name of the driver that transported it.

Changing Rack identification data:



Here, the user can write the name they want to see for that rack

Click here to select a particular storage type (1 week, 3 months, etc.). To set a storage type, see page 39.

Click here to enter the Driver's name

3.1 Rack type

The rack type can be used to **save rack information on the RFID tag**. When saving this information on the RFID tag, it **allows that rack to be read in another INDEXOR System**, completely independently from the first one.

For this to work, it is necessary to set the behaviour of the Rack in the Indexor System.

This feature can be used to register tubes coming from other sample collection stations.



So, **before taking the rack out** of a collection station in order to proceed to its transportation, the user must open the rack identification window and click the **“SAVE to RFID”** button.

After that, at the central Laboratory, inserting the rack in an INDEXOR unit will automatically open a window, confirming that the RFID data is being read.

After reading, a report will be generated, which can be **checked and printed**, if necessary.

Selecting the rack type:



- **Standard rack**

In this case, Reading/Writing on the RFID tag is not allowed.



- **Check-in/out Rack**

Read from RFID: Every time the rack is inserted in an INDEXOR unit, the RFID tag is read.

This rack can be used to transport **tubes between INDEXOR Systems**, for example from a sample collection station or from another point in the Laboratory.

Save to RFID: This functionality is useful to mark the beginning of the transportation event.

3.2 Storage types

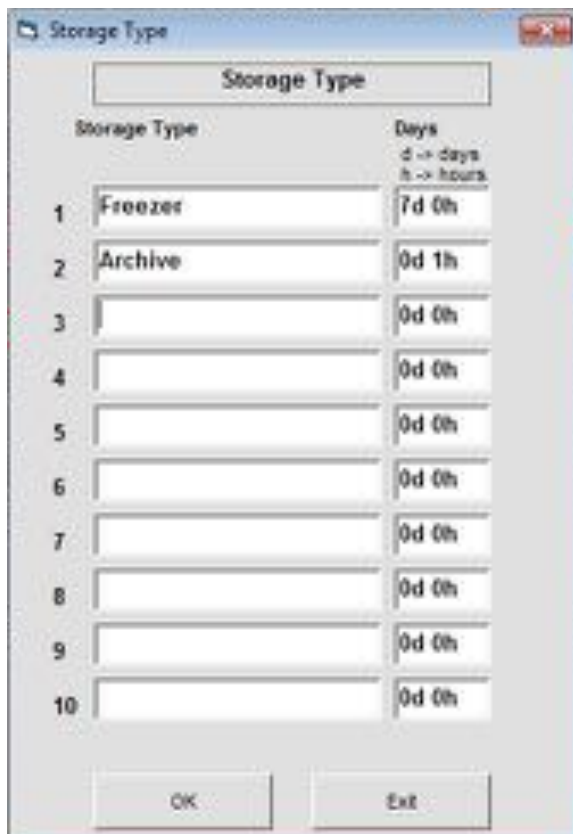
If there is more than one storage location or type, for example “Freezer” or “Archive”, it is possible to associate this kind of information to a rack.



From this point on, every tube in these racks will be linked to this storage type.

To set storage type, click here. ←

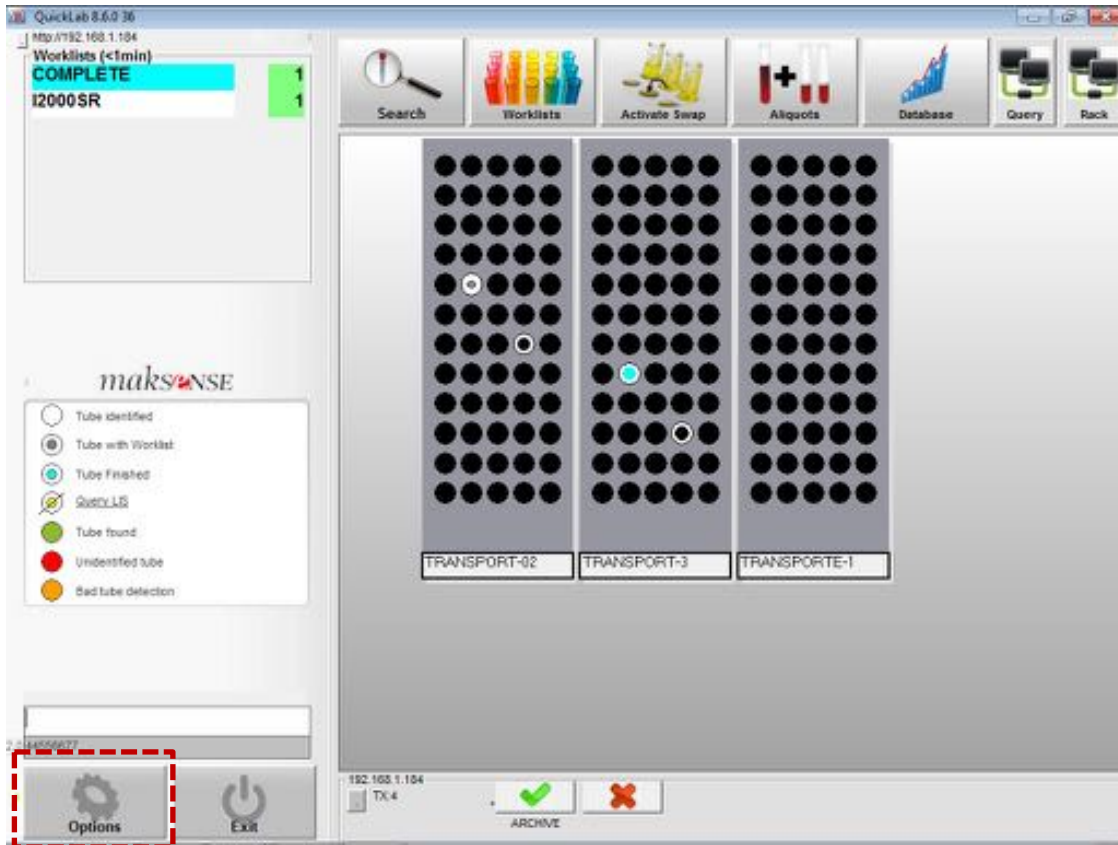
Use this window to create a storage type:



Allows for up to 10 storage types to be created, and the number of days and hours to be set for each one.

4. QuickLab software options

Opening **QuickLab**:



Accessing the Settings screen

A new window opens:



4.1 Settings



In this menu, the user can change the following settings:

1. **Indexor Name:**

Give a name to the INDEXOR system.

2. **Language:**

- **Language** – Choose the language. If changed, the application must be restarted in order for changes to take effect.

3. **Trash:**

By selecting this option, the following icon will be displayed on the main window:



This icon represents the number of tubes that are out of date, therefore allowing for the identification of these tubes in the racks, and their subsequent disposal. Here you can also set the number of days for a tube to be considered out of date. The number of days corresponds to the tube's expiry date after being placed at the current position in an Indexor system.



However, this will only be the case if the iRacks where the samples are stored, do not have a particular storage type set (number of days and hours). This shortcut is only useful if it is necessary to know, from the iRacks placed on the Indexor system, which tubes are out of date. Thus, by pressing this button on the main screen, expired samples will flash on the iRacks and may be eliminated.

4. Options:



-Identical samples: This option shows how many barcodes are repeated among the samples displayed in Quicklab's main screen.



-Previously registered: This option creates an alert on Quicklab's main screen when a sample is checked in but has been already registered in an Indexor system.



-Save patient data: Patient information sent by the LIS will be saved in the Indexor database.

5. INDEXOR units Calibration:

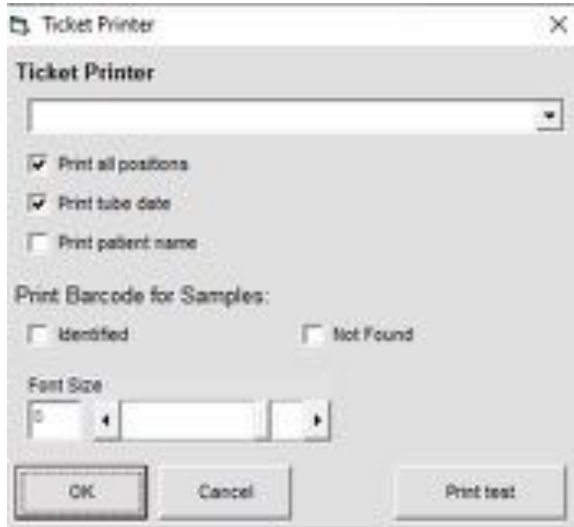
- **Calibrate** – Calibrate sensor values. Remove all racks from INDEXOR units. This operation should be done on the first installation of the equipment, every time the ambient light characteristics change radically or if some kind of scratch is detected on the acrylic glass.
- **Without calibration** – In this case, no calibration value is calculated, and the sensors are read without reflection compensation.

6. Printers:

- **Ticket Printer** – Selects a ticket printer installed on the computer and shows the printer parameters.
- **Barcode Printer** – Selects a barcode printer installed on the computer and its parameters.

7. Admin button: If you need to make other changes, please contact your Service and Support Specialist or e-mail us at support@maksense.com to send your enquiries.

4.1.1 Ticket Printer



Selects the ticket printer and enables tickets to be printed with the following data:

- Positions of all the tubes found in all the modules;
- Tube date;
- Patient name.
- Barcode of Identified or Not Found Samples (or both) to facilitate the search.

4.1.2 Barcode Printer



Commands

By default, the command window includes several **EPL commands** set for a **Zebra Printer**.

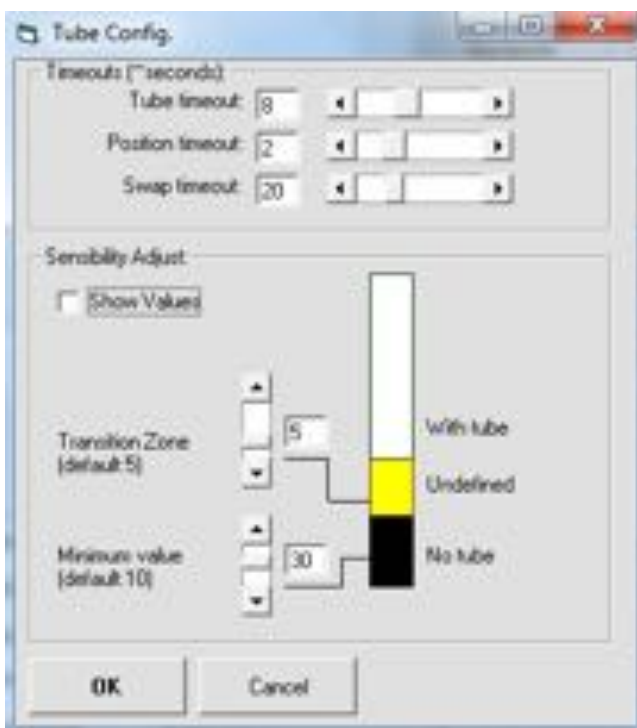


Print test – Prints a sample label.

4.1.3 Tube Configuration



This option allows the tube timeout to be set for several actions, and the sensitivity in the detection of tubes in the modules.



a) Timeouts (~seconds):

- **Tube timeout** - Maximum time allowed between reading a tube with the barcode reader and putting it in a rack over an INDEXOR unit.

- **Position timeout** - Maximum time allowed between lifting a tube up and down again without losing its identification.

- **Swap timeout** – Time to disable tube swap function if no activity is detected.

b) Sensitivity adjustment:

Tube detection values go from 0 to 255. A tube is detected via the combination of the following two variables:

- **Transition zone (T. Zone)** – Safety margin to avoid noise detection.
- **Minimum value (Min)** – The minimum value that triggers a tube detection.

If a tube is not detected, this value should be lowered. The “**Show values**” option should also be turned on for easier adjustments.

If desired, please use this range as a reference:

Normal: T. Zone = 5
5

Min = 30

Sensitive: T. Zone = 5

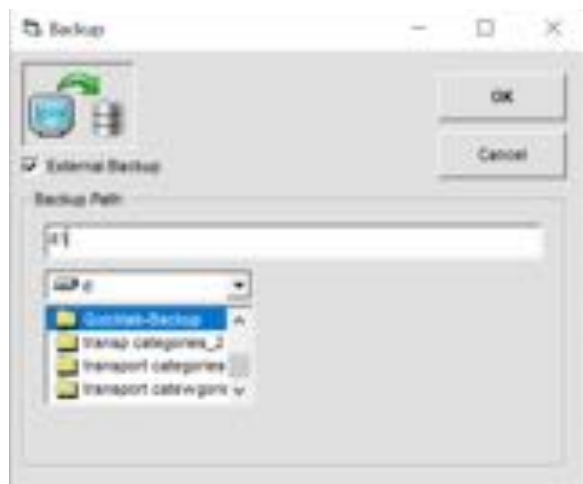
M = 25

Highly Sensitive: T. Zone =

Min = 20

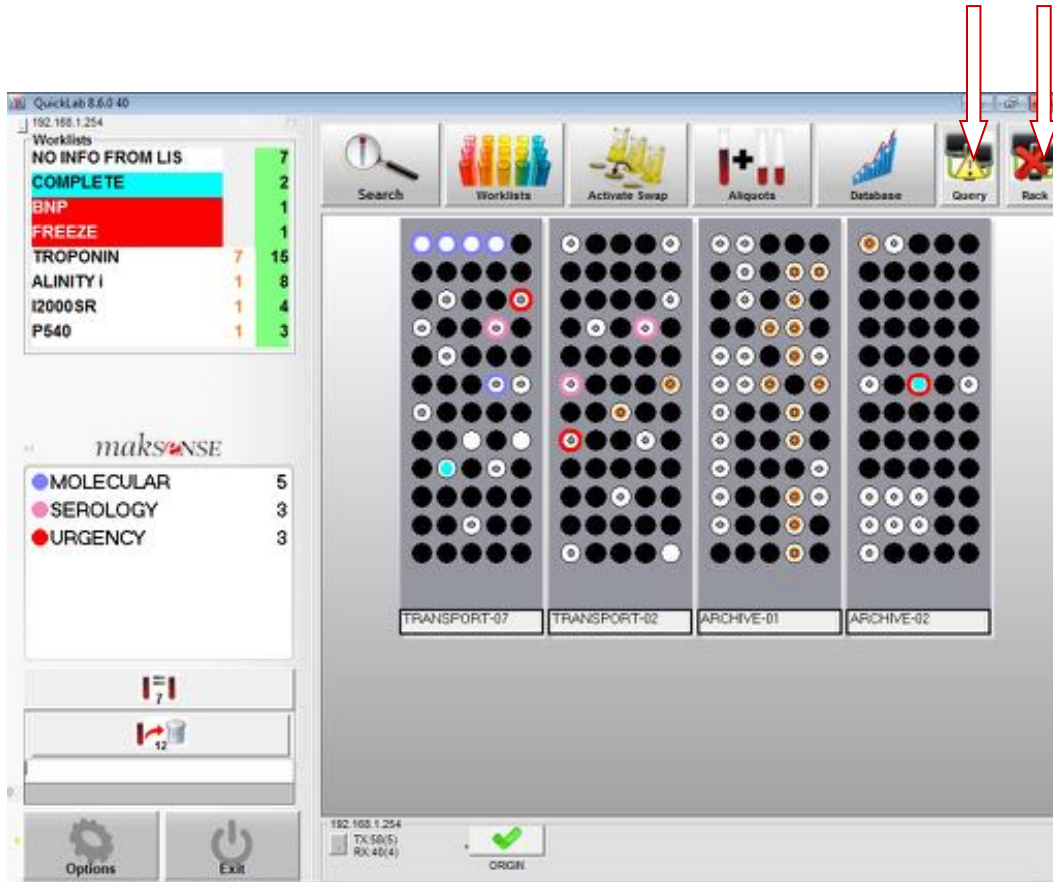
4.1.4 Backup

Click the Backup button in order to specify the destination folder for the database files. The Indexor system comes with a USB pen-drive where the database is saved automatically at 00H00 or when the software is shutdown.



5. LIS connection

LIS connection status

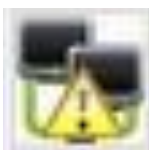


Possible statuses:



- Connection OK

TCP/IP or Serial connection is established.
Clicking this button brings up the communication window.



- Connection on standby

This will be displayed when the Indexor system does not receive updates from the LIS over a period of 30 minutes.



- Connection failed

No connection exists. The system will keep trying.

Clicking

this button brings up the communication window.

-
The



- Connection disabled

“LIS” configuration is “Disabled”

5.1 LIS communication window



Clicking the Query channel button on the main window will show the following:

Status 2019-11-21 17:36:36

1° Last List Saved DB: 2019-11-22 04:24:34 () - URGENT

2° Last Comm Received by LIS: 2019-11-21 16:25:36 (1h 11m)

3° Local IP Address: 192.168.1.46

4° LIS Connection Status: Ping (10.1.2.3) - OK (53ms), Query Port 50000 - OK, Rack Port 50001 - OK

HOURS	TUBES	LISTS ADDED	LISTS CANCEL	SENT RACK
00:00h - 00:30h	18	22	14	26
00:30h - 01:00h	21	39	18	31
01:00h - 01:30h	18	25	6	29
01:30h - 02:00h	18	34	16	23
02:00h - 02:30h	17	17	12	33
02:30h - 03:00h	21	46	22	23
03:00h - 03:30h	16	19	10	33
Totals	Tubes	Lists	Cancel	Sent Rack
Until 17:36:36	179	279	129	358

OK Query Log Rack Log

This window allows the user to view:

- the last worklist saved in the Indexor database, including at what date/time;
- at what date/time the last Communication to the LIS took place;
- The local IP address (also visible on Quicklab's main screen). An alert will appear here if there are changes.
- LIS connection status.

The user can scroll to see the events recorded every 30 mins (for 24h):

- how many tubes were recorded in the Indexor system.
- number of worklists associated with those samples. Including how many were added (Lists added) or removed (lists cancelled).
- how many sample actions were sent to the LIS (sent rack).

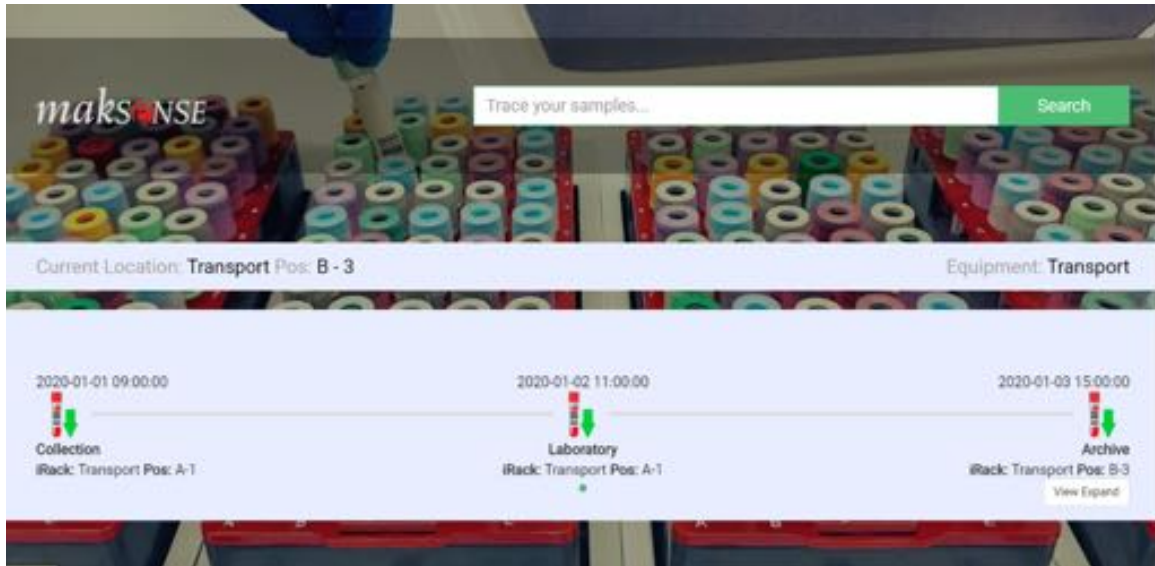
All the information is shown at the bottom as a sum, up until the current timestamp.

The Query Log and Rack Log buttons can be clicked, if necessary, for more detailed communications between Indexor and LIS.

6. Web Tube Search

To see the history of a particular tube, Maksense now offers an improved websearch feature.

A new tab is presented:



In the "Trace your samples" box, write the sample identification number and click Search or press Enter.

In this particular case, sample 111174S01 was traced:



It reports where the sample was last seen (which iRack and position), as well as the equipment where it was identified.

The central description informs the user of the IN actions and it shows the date and time stamps together with the Mini-Indexor or Indexor name that corresponds to it. The iRack name and position on that specific iRack is also shown.

More details can be provided by clicking “Expand View”.

The tube history is shown from the oldest action (top) to the most recent one (bottom).



The green arrow identify **IN** actions and the orange arrow shows that the sample was removed from the rack – **OUT**.

Example: In this case, sample 111174SO1 was collected in Mini-Indexor “COL_M”. Then it was checked-out and the iRack was received in an Indexor named “INDEXOR-1”. At the destination the sample was removed for corresponding analysis and checked-in once again. With all these steps, you can find the date and time stamp and, once again, which iRack was used and in which position it was stored.

If the user prefers this expanded view to be used as default, just click the “Set Default View” button and on the next search, the sample info will be displayed with this view.

To use this feature, type the IP address that you see on the Quicklab software (see example below) on the web browser.



7. Barcode Reader– Quick setup

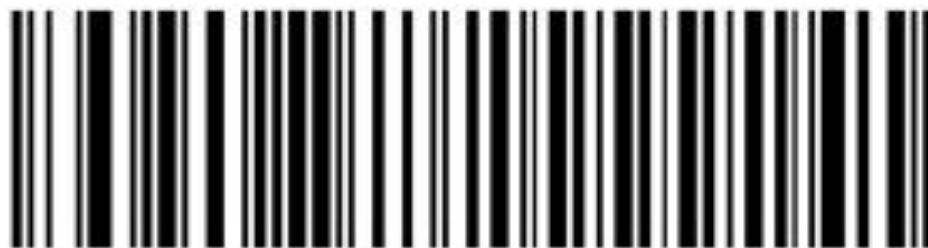
Quick Setup

The following codes can be read by the Scanner to set it up according to the following specifications:

1. Code128 + Code 39
(Default configuration)



In case any communication problem occurs, then the following code will get the scanner back to USB communication.



123Scan² USB Communication

8. Troubleshooting

This equipment was designed to be reliable. However, if a problem occurs, follow the procedures described in this section. This section can help you determine the cause of the problem and how to solve it.

Users should be familiar with these procedures.

When operating the INDEXOR system, many warning messages and/or errors may be displayed. The list below contains the system messages and suggestions for their resolution.

Issue or message	Troubleshooting
"USB Device (iMaster) not responding" The iMaster device has all lights turned off.	Check the connections. See if the power cable is connected. Check the cable's condition. If the power adapter is not providing power to the iMaster, please contact the supplier
"Missing USB Device"	No USB connection to the iMaster device. Check the USB connection between the computer and the iMaster. If this issue persists, the software driver may need to be reinstalled.
The system is not detecting the tubes.	The system has not been calibrated. Please calibrate the system.
Language does not change as indicated.	You did not restart the application after changing the language settings. Please restart the application (quit the software and open it again).
The tube rack does not fit in the INDEXOR model (models before 2015).	Each INDEXOR model (INDEXOR60A or INDEXOR90A) has its own tube rack model. Please make sure that the tube rack you are trying to use matches the INDEXOR model you are using.
Tube signalled as unidentified. Tube identified with the colour red.	You have most likely taken the tube from its place for a longer period than that configured in timeouts – position timeout. You may have changed a tube position without activating the "Activate Swap" option. The tube needs to be rescanned.
Tube signalled as wrongly placed. Tube identified with the colour orange.	If the issue persists, the sensitivity should be increased (by decreasing its value) in the advanced configuration panel. It is important to recalibrate the units.
The selected printed name does not exist.	The printer was not selected in the settings screen. Please select the correct printer.
"Timeout in ler_usb"	Communication with iMaster has been lost. Click the "retry" option. If the issue persists, close the application and disconnect the USB cable from the iMaster. Reconnect it and wait 5 seconds before restarting the application.
"Timeout in ler_usb_vector"	Communication with the iMaster has been lost. Click the "retry" option. If the issue persists, close the application and disconnect the USB cable from the iMaster. Reconnect it and wait 5 seconds before restarting the application.
Message – Rack type: xxx non-existent	Problem in the database data, or a module with old firmware is being used.
The number of modules presented in the QuickLab panel is different from the actual number of modules.	A new INDEXOR module was added with the same address or with an old firmware version. Please make sure that each INDEXOR module has a unique address.
'Uncalibrated Devices. Please calibrate!'	Calibrate the system. Go to the options screen and press 'Calibrate'.
The code scanner is not working.	Refer to the Scanner User Manual and configure it according to the specifications needed.

9. Safety Precautions

The INDEXOR System was designed with the highest concern for safety. However, to ensure accident-free operation, be sure to follow these guidelines:

- Avoid shaking the INDEXOR System or placing it on an unstable surface.
- Do not expose the INDEXOR System to **high temperatures**.
- Do not expose the INDEXOR System to direct **sunlight or any very intense light**.
- Do not expose the INDEXOR System to humidity, as it is an electrical appliance.
- Avoid handling the system components with **wet hands**;



Warning: Avoid **looking directly at the LEDs** lamps inside the INDEXOR module.

Maintenance

- The INDEXOR System does not require special maintenance.



Warning: Do not try to perform any maintenance operations on the INDEXOR System!

Do not disassemble, modify or repair the INDEXOR system.

Environmental Information



This symbol on the product indicates that it is covered by Directive 2002/96/EC (Waste Electrical and Electronic Equipment). The crossed-out dustbin indicates that waste electrical and electronic equipment must not be disposed of with unsorted household waste and that it must be disposed of separately.

Disposal must be carried out in accordance with local environmental regulations on waste disposal.

For information about recovery and recycling of this product, please contact the supplier of this equipment.



Important: The correct disposal of the equipment helps avoid dangerous or detrimental effects to human health and the environment.

10. Cleaning and disinfection

Cleaning INDEXOR units

Turn the power supply off before cleaning.

It can be cleaned with **a soft cloth, slightly moistened with ethyl alcohol (70%).**

Avoid spilling liquids, in order to not flood the electronics.



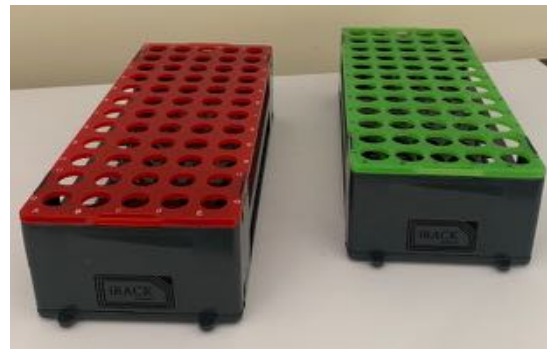
Caution: Never spray or apply cleaners directly onto the system. Never use acids or caustic chemicals to clean.



Cleaning Racks and Cover

Step 1:

- Use a detergent solution, such as RBS 25 with Type 3 water (40 ml diluted in 2 litres of water). Alternatively, dilute the detergent in tap water.



Or

- Use a **soft cloth slightly moistened with ethyl alcohol (70%).**

Step 2:



- Submerge the Rack and cover in the chosen solution for a maximum period of 5 minutes, followed by rinsing with tap water.

Step 3:

- The Rack and cover can be dried in an oven at 50 °C for a maximum of 10 minutes.




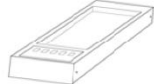
11. Manufacturer's Declaration

iSens - Electronica Lda. declares that this device is in compliance with the essential and other relevant requirements of the RED, LVD and EMC Directives.

The full text of the EU Declaration of Conformity is available at:

<https://support.maksense.com>.

12. Specifications

Components Description:	
1. Computer with touchscreen and ticket printer included.	
2. CCD Barcode Reader	
3. QuickLab Software for hardware control and LIS communications.	
4. iMaster for USB conversion and power supply to INDEXOR units.	
5. INDEXOR 60 units for reading rack information.	
LIS connection:	
Ethernet 10/100/1000 Gb (RJ45) or serial communication (RS-232).	
Computer specification:	
17" touch screen, Windows 10 Pro intel i5, 4Gb RAM, SSD 120Gb	
5 x USB, 2 x PS/2, 2 x RS232C, 1 x Ethernet GigaLAN RJ45	
Keyboard, mouse	
Thermal Ticket Printer with cut function.	
Barcode specification:	
Barcode types:	UPC-A, UPC-E, EAN-13, EAN-8, Code 39, Code 32, Code 128, Interleaved 2 of 5, Codabar, Code 93, MSI/Plessey, Standard 2 of 5
2D Symbolologies:	PDF417, Datamatrix, QrCode, MAxicode, Aztec
Maximum number of characters:	20 (Software restriction)
Sample Tubes allowed:	
75 mm/100 mm Tubes With diameters from 13 to 17 mm.	
Rack types:	
60 Tubes/Rack for up to 17 mm tubes	
60 Tubes/Rack for 13 mm tubes	
Rack Dimensions:	250(W) x105(D) x60(H) mm
Minimum Temperature:	-80 °C
INDEXOR Units:	
INDEXOR 60A:	for 60 tube Racks (13 and 16 mm tubes)
Up to 16 INDEXOR units may be connected. Making it possible to monitor up to 960 (60x16) tubes at the same time.	
Consumables specification	

- Thermal paper roll (79.5 mm Width x 83 mm Diameter) Thickness: 0.07 mm		
Power:		
Power Supply Unit for Computer	Input: 100-240 V~ 50/60 Hz 2.5A Output: 24V DC 6.35A	
Power Supply Unit for iMaster	Input: 100-240 V~ 50/60 Hz, 0.6A Output: 5V DC 4 A	
Safety/approval:		
Computer:	, CE, ROHS	
INDEXOR 60A:	CE, ROHS	
Barcode Reader:	FCC, CE, ROHS	
Physical Dimensions and Weight		
Computer:	360(W)x344(D)x351(H) mm / 9.7 kg	
Barcode Reader:	84(H) x 71(W) x 94 (D) mm / 198.5g	
iMaster:	85(W)x135(D)x42(H) mm / 160 g	
INDEXOR 60A:	130 (W)x375(D)x50 (H) mm / 1.3kg	
Temperature and Humidity Specifications		
	Humidity	Temperature
Computer:	20% ~ 90%	0 °C ~40 °C (0 °C~60 °C when in storage)
Barcode Reader:	5 ~ 95%	0 °C ~40 °C(-40 °C~70 °C when in storage)
iMaster / INDEXOR 60A:	20 ~ 90%	0 °C ~40 °C (0 °C~70 °C when in storage)
Noise specifications		
~25 dB(A)		