bCUBE® 2.0 Quick Start Guide

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Information in this document is subject to change without notice. Hyris Ltd assumes no responsibility for any incorrect information that may appear in this document.

Please, refer to the Owner's manual for complete safety and functional information.

Notice:

bCUBE® 2.0 is only for research purpose and for all other fields except for in vitro diagnostics.

Trademarks:

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Hyris bCUBE® 2.0

Box Opening

The following items will be found in the provided box:

- **bCUBE® 2.0** (Figure 1a)
- **Ethernet cable** (Figure 1b)
- **Power Supply** including European and North American power cords (Figure 1c).
  Characteristics:
  - **Input**: 100 ~ 240 V c.a. 1.4A 50/60Hz
  - **Output**: 12V DC 5A
  - **Power**: 60W
- **USB** stick with Hyris bPANEL software installer and User Manuals (Figure 1d)

Figure 1: Box content. (1.a) bCUBE® 2.0. (1.b) Ethernet cable. (1.c) DC power supply. (1.d) USB stick

NOTE: Please check the presence of all these items. Remove the items carefully from the shipping box and inspect them for any external damage. If any of the parts is missing or damaged, contact the manufacturer prior to installation.

Device Overview

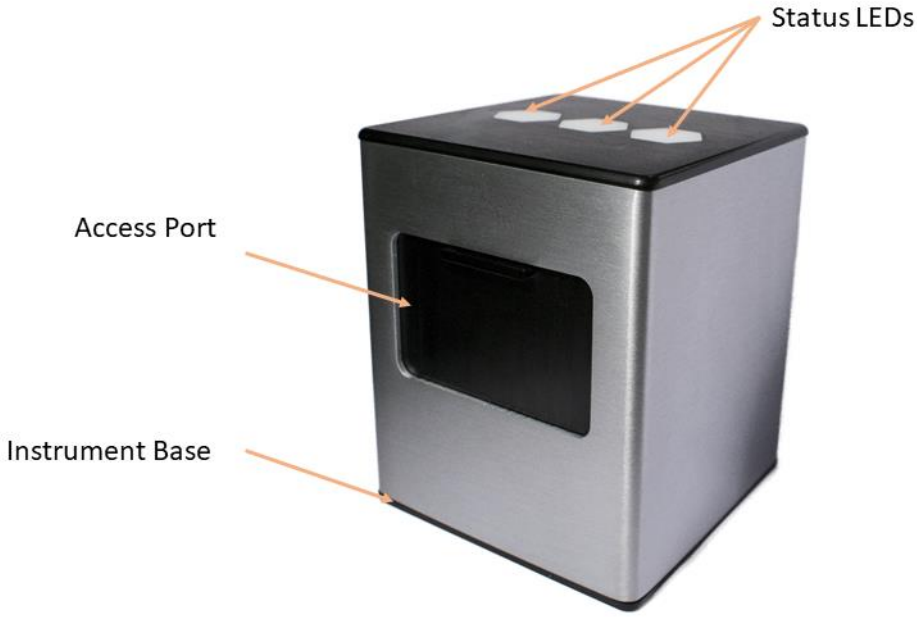

Figure 2: bCUBE® 2.0 isometric view

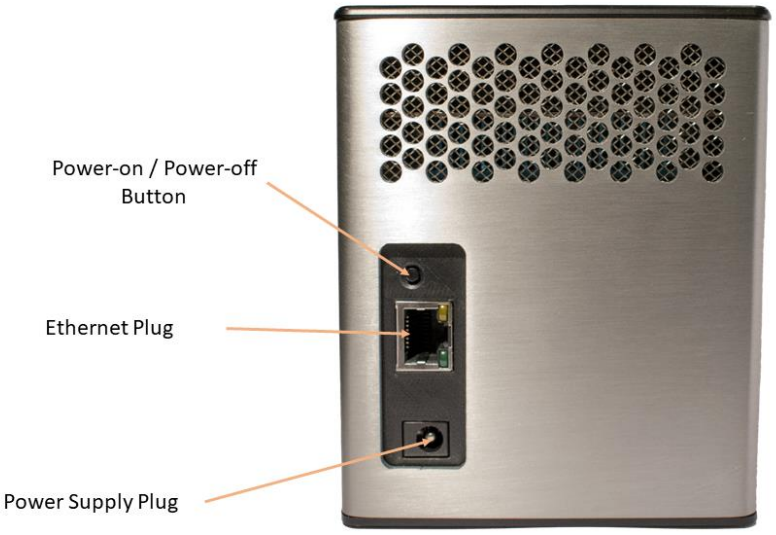

Figure 3: bCUBE® 2.0 back view

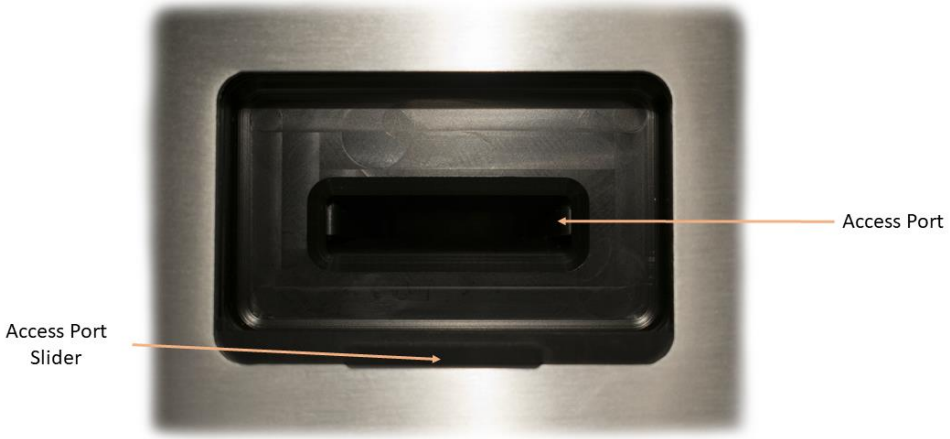

Figure 4: bCUBE® 2.0 front view - Cartridge slot detail

Description of the features highlighted in the pictures above:

- **Access Port Slider:** opened to insert/remove the cartrige inside bCUBE® 2.0. To be kept closed during operations.
- **Access Port:** cartridge slot. Always push the cartridge up to the end of the port.
- **Power supply Plug:** insert here the 12 VDC adapter jack
- **Power-on/Power-off button:** press shortly to wake up the instrument from Stand-By. When the machine is running, long press (about 5 seconds) to safely power down the bCUBE
- **Ethernet Plug:** insert here the Ethernet cable for Windows PC / Network communication
- **Status LEDs:** Give information about the status of the instrument

Status LEDs

The status of the bCUBE and its functioning are communicated to the user by the different color combinations of the status LEDs on the top of the device.

- **bDATA LED**: corresponding to the symbol, it indicates the connection status to Hyris server.
  Ready color: green
  When Ready color is on, bCUBE® 2.0 is connected to bDATA
- **Thermal LED**: corresponding to the symbol, it indicates if the cartridge is hot or not.
  Ready color: orange
  When Ready color is on, the internal temperature of the bCUBE® 2.0 is not hot. If cartridge is inserted, it can be safetly handled

- **Connection LED**: corresponding to the symbol, it indicates the internet connection state of the bCUBE® 2.0
  Ready color: blue
  When ready color is on, bCUBE® 2.0 is connected to the internet

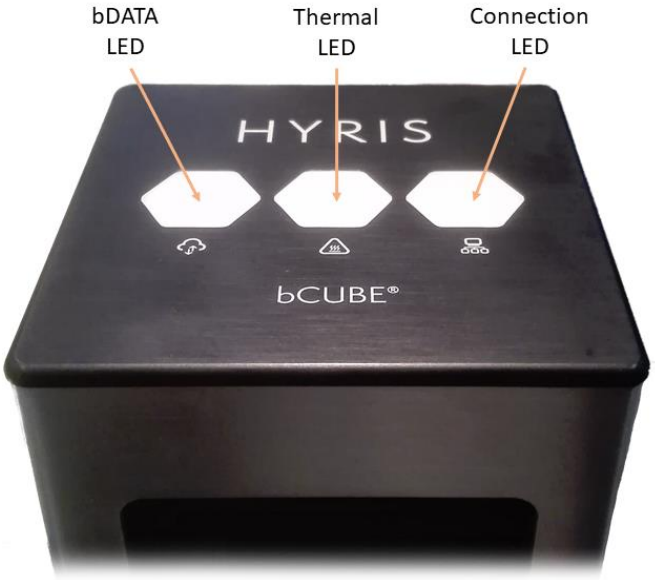

Figure 5: bCUBE® 2.0 status LEDs

For a graphical representation, the symbol (from left to right: bDATA, Thermal and Connection LEDs) will be displayed in this document when color code explaination is required.
Some examples are reported in the following table:

LEDs COLORS	DESCRIPTION	INTERPRETATION
	- bDATA LED steady green - Thermal LED steady orange: - Connection LED steady blue:	- bDATA connection OK - Cartridge not hot - Internet connection OK
	- bDATA LED steady green - Thermal LED blinking orange and red - Connection LED steady blue	- bDATA connection OK - WARNING: Cartridge hot - Internet connection OK
	- bDATA LED multicolor - Thermal LED multicolor - Connection LED multicolor	- Experiment is running on bCUBE® 2.0
	- bDATA LED off - Thermal LED off - Connection LED off	- bCUBE® 2.0 off

NOTE: not all the Status LEDs color combinations are shown. For further information, please read the Owner's Manual

First set up

PC settings

Some preliminary steps are necessary in order to properly connect the bCUBE® 2.0:

1. Make syour PC/Laptop has nothing connected to the Ethernet port (**bCUBE® 2.0 off** and **not connected**)
2. Open "Network and Sharing Center"
3. Click on "Change adapter settings" (see image below)

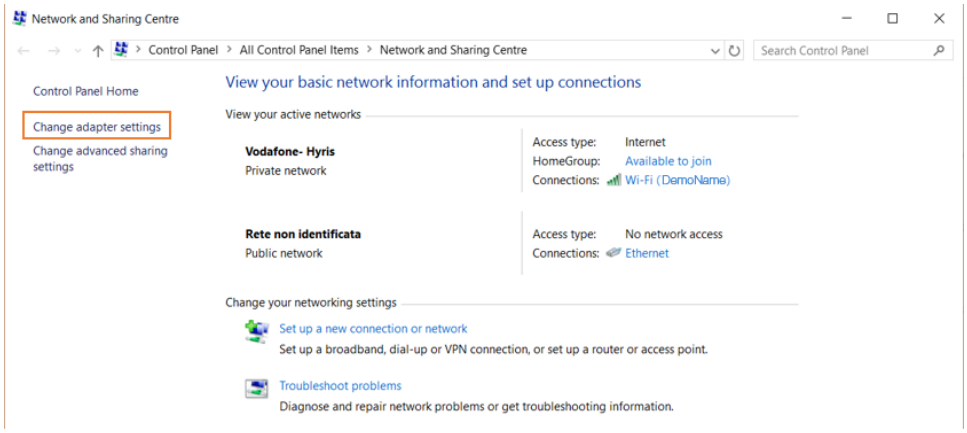

Figure 6: Windows Control Panel - Network and Sharing Center view

4. Right-click on your Wi-Fi connection icon, click on "Properties", go to "Sharing" tab and check the box "Allow other network users to connect through this computer's internet connection". Choose "Ethernet" from the list of networking connections (this list may not be available on all Windows versions, in that case ignore this).

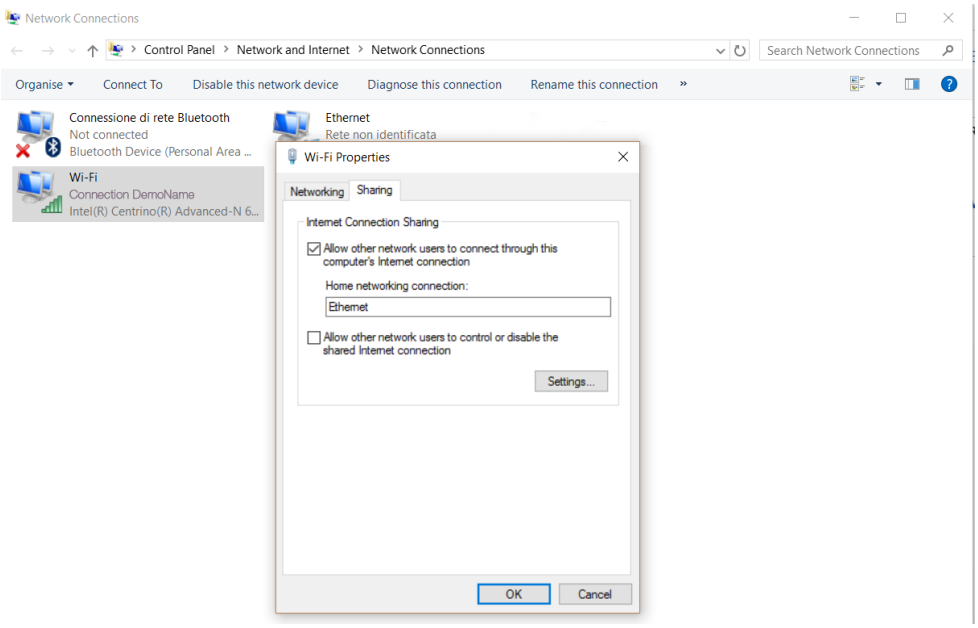

Figure 7: Windows Control Panel - Wi-Fi Properties settings view

5. Now you can connect your bCUBE® 2.0 to your laptop. **Make sure that bCUBE® 2.0 is turned on after the ethernet cable is correctly wired to your PC/Laptop, otherwise a successful connection may not be possible.**

bCUBE® 2.0 Connection

In order to properly work, the following steps have to be respected:

1. Make sure the bCUBE® 2.0 is set on a flat and stable surface
2. Make sure to have correctly followed the steps in the PC Set-up section

3. Connect one end of the Ethernet cable to the bCUBE® 2.0 and the other to the PC according the following configuration

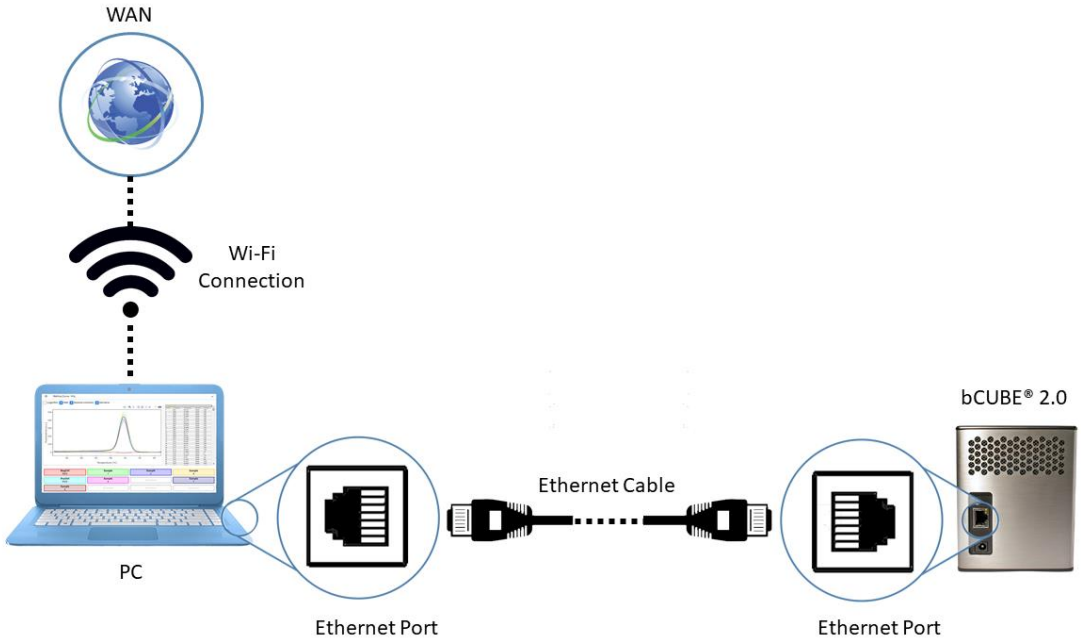

Figure 8: bCUBE® 2.0 connection - Suggested conFiguretion

4. **Power** on the PC. Wait until PC is ready
5. **Connect** the PC to internet. Make sure internet connection is stable
6. Power on the bCUBE® 2.0. Status LEDs colors:
7. bCUBE will start booting. Status LEDs colors:
8. Wait about a minute for Status LEDs Ready colors:
   If LEDs colors are different from the LEDs Ready colors, try to repeat the steps. Otherwise, check the Owner's Manual

NOTE: Status LEDs may display different colors while bCUBE® 2.0 is looking for internet connection from point nr7 to point nr8. If no connection is available, the following LEDs colors may be displayed even after a minute of waiting time: . Repeat the PC Set-up steps. If the problem persists, see the Owner's Manual.

Interacting bCUBE® 2.0: bAPP and bPANEL

bCUBE® 2.0 can be controlled and monitored with two Hyris tools: bAPP and bPANEL.

- **bAPP**: it's a web app software and there's no need to install it on the PC. Ready-to-use recipes or custom recipes (see dedicated section) can be used to create and run analyses on the available devices according to

the account permissions. Account and devices management are possible by this application. It can run on PC or Smartphone. **Internet connection is mandatory**.

- **bPANEL**: this software interface is designed for **offline** usage of the bCUBE device, while also providing internet data sharing when connection is available. bPANEL 2.0 can start new analyses by using the already existing recipes (created on bAPP).

bAPP interface

Access the bAPP

1. Make sure to have properly followed the instruction described in the bCUBE 2.0® Connection section.

   If bCUBE® 2.0 is ready for operations, open the internet browser (Google Chrome browser recommended) on the PC and type https://bapp.hyris.net in the address bar. Then press enter to access the bAPP.

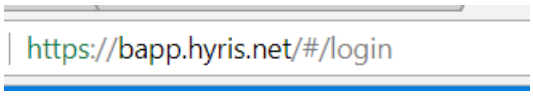

Figure 9: Google Chrome address bar

2. The **Home** window will be shown. The screen is mainly divided in two sections:
   - **Main Menu**: list of available bAPP sections:
     - **Home**: Welcome Window. Log-in credentials required when starting a new session on bAPP
     - **Swarms**: "Swarm" is used to define a collector of analyses and recipes. User can have access to multiple swarms according to his permissions. Visible Swarms are listed in this sections
     - **Analyses**: all the available analyses are listed in this section. New analyses can be created
     - **Recipes**: a "Recipe" is a detailed list of steps and settings that the bCUBE has to execute while performing an analysis. New recipes can be customized from this menu (see Appendix-2: Custom Recipe). All the available recipes are listed here
     - **Users**: list of available users and relative permissions (see Owner's Guide for further information)
     - **bCUBEs**: list of available bCUBEs with relative extra information (see Owner's Guide for further information)
   - **Tab View Area**: content is related to the selected Main Menu section

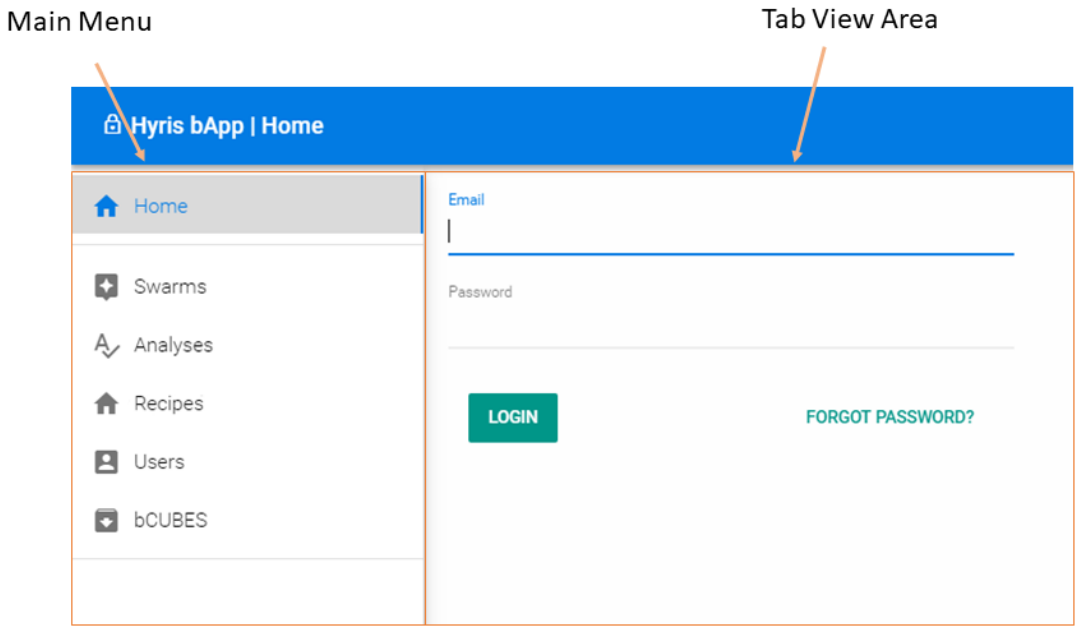

Figure 10: bAPP interface - Main View example

3. After the Main Window is displayed, **Log-In** is required.
   Insert your email and password, which are corresponding to the **credentials** used to register the user to the Hyris Ltd web site.

In case of forgotten password, press on "**FORGOT PASSWORD?**" and insert the user mail. Then check your mail box for further instructions.

Create a New Analysis

Click on the "**Analyses**" button on the left side main menu. The already existing analyses will be listed in a table.

Click on the + button to add a new analysis. Fill the spaces with the required information. Following steps are required:

1. Insert the **Analysis Name** (Mandatory)
2. Select the **Swarm** among the available swarm list (Mandatory). This result depends on the user permissions
3. Add a brief analysis description (Optional)
4. Select the desired **Recipe** among the available ones according to the selected swarm. If no recipes are available select "**Global Recipe**" to access the recipes provided by Hyris. (Mandatory)

5. Click on "**CONTINUE**" to proceed.

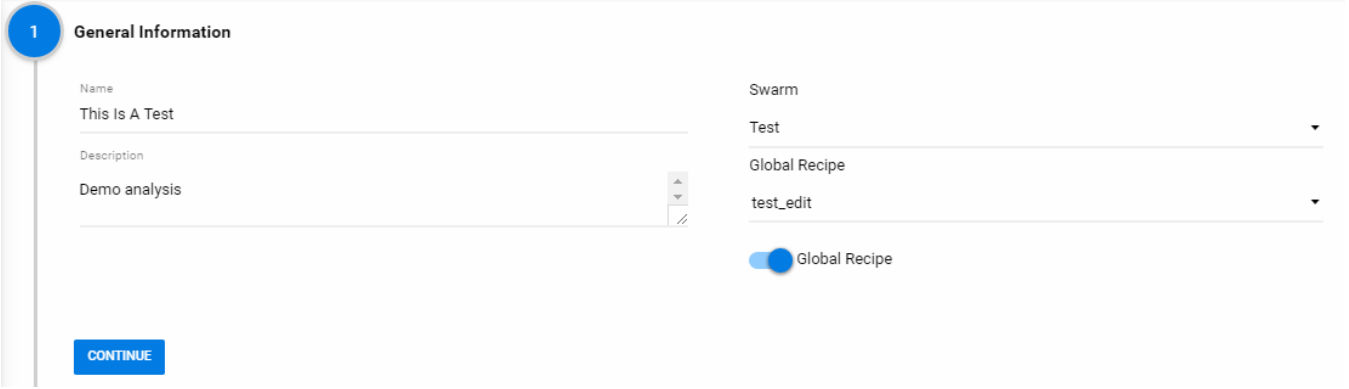

Figure 11: General Information view – Analysis Creation - bAPP

6. The wells information are filled while compiling the selected recipe.

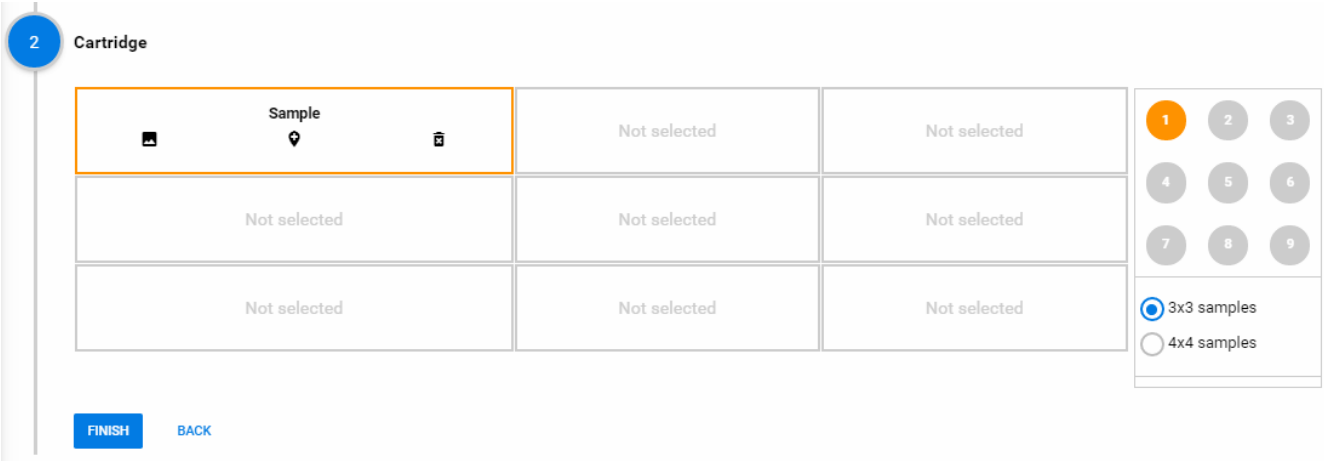

Figure 12: Sample View - Analysis creation - bAPP

7. Wells can be deleted (press the linked to the desired well), modified or added. In this last case:
   a) Click on the desired well on the cartridge model on the right, according to the loaded sample

Figura 13: Sample Well Selection - bAPP

b) A dedicated window will appear
c) Select the **Sample Type** from the drop-down menu (Mandatory)
d) Enter the **Sample Name** (Mandatory)
e) Choose the **Well Color**
f) Click on "**SAVE**" button

Figura 14: Well Information Editing - bAPP

8. Click on "**FINISH**" button. The new analysis will be added to the analyses list (Click on "Date" to order the list by the creation date)

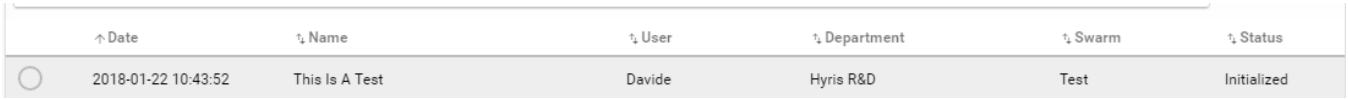

Figure 15: Analyses list -bAPP

Run the analysis

If an analysis status is "**Initialized**", then it could be loaded to one of the available bCUBE® 2.0.

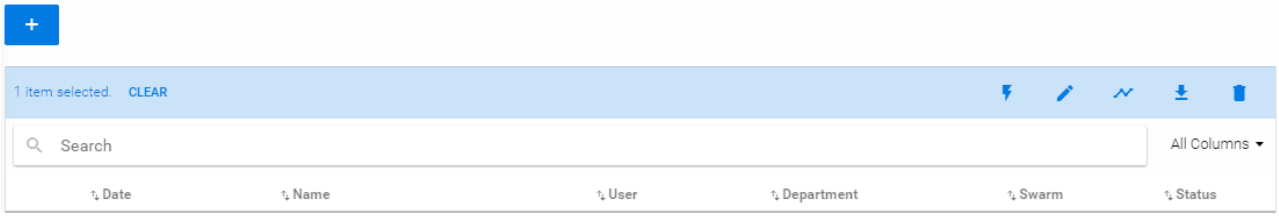

Figura 16: Analysis Tools Menu -bAPP

1. Select the analysis by checking the  symbol. A menu will appear to the top of the table.
2. Check the cartridge is correctly loaded as shown in Cartridge Preparation section
3. Press the  button and select the desired bCUBE® 2.0.
4. Click on "**SEND**". If no errors occurred, the analysis will automatically start, while the status LEDs of the device will start to show multiple and changing colors  . Otherwise, check the Owner's manual for further information

Analysis parameters are updated in real time while bCUBE® 2.0 is connected to internet. To follow the real time experiment results:

1. Select the running analysis and click on the  symbol. Different sections are available:
   - **Analysis Name**: the current selected analysis name
   - **Tab Selection**: each tabs provides different information about the selected analysis. If the selected analysis is running, the tabs information are updated in real time
   - **Tab View Area**: the content of the selected tab

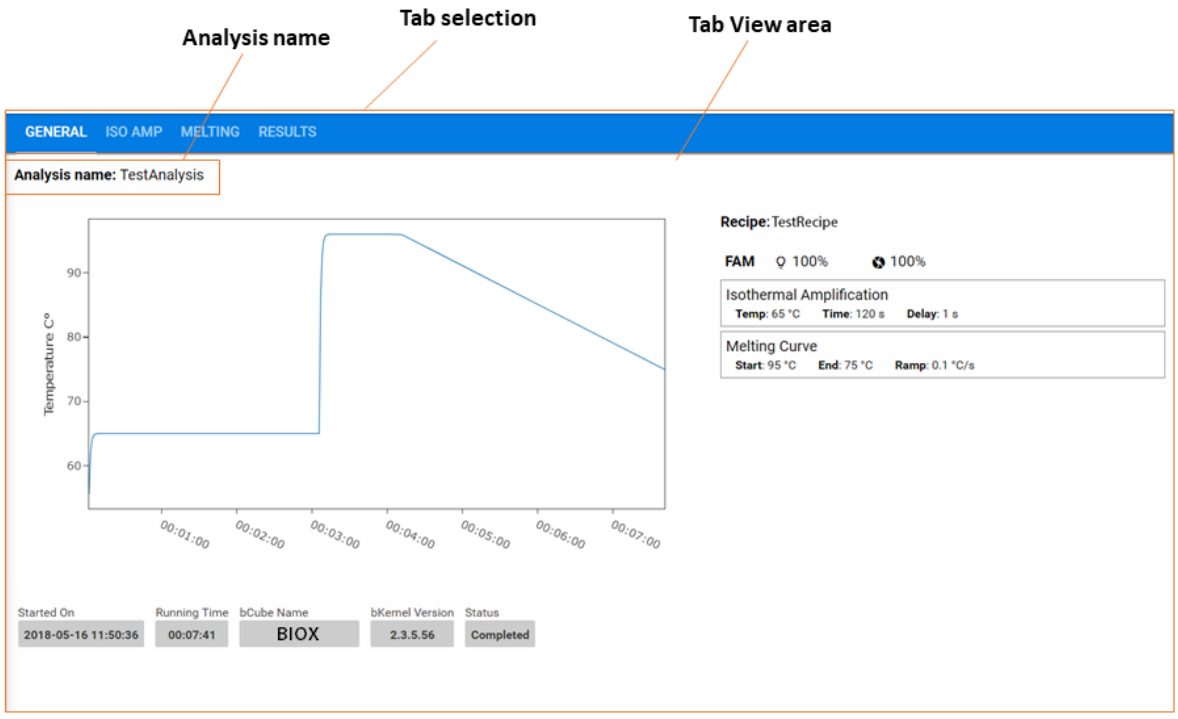

Figure 17: Analysis Overview - bAPP

bPANEL 2.0 interface

Installation

Open the bPANEL 2.0 installer located in the provided USB.

1) Insert into an available USB port the Hyris® USB Stick containing bPANEL installer.
2) Launch the file **Setup.msi**, located inside **bPANEL** folder.
3) On the welcome screen, click on **Next.**

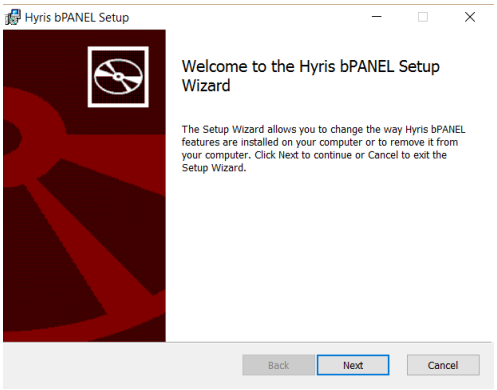

Figure 18: bPANEL installation - Welcome screen

4) On the next page, carefully read the licence agreement. Tick the check-box and click **Install** to continue.

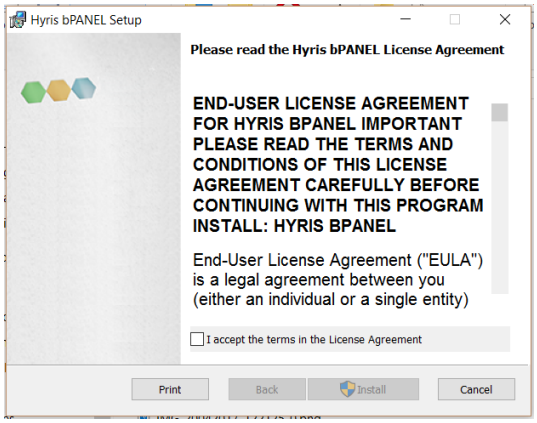

Figure 19: bPANEL installation - License Agreement view

5) Wait for the installation process to end. Click on **Finish** on the last page to complete the installation.

No driver installation is required for using bCUBE® 2.0.

Main view

Make sure all the steps described in bCUBE 2.0® Connection have been correctly performed.

Open the bPANEL 2.0 program. The main view will be shown:

- **Command Buttons**: list of command to send to the connected bCUBE
- **Tab selection**: each tab provides different information about the loaded analysis or the user settings. The analysis related tab are updated in real time while the selected analysis is running and the correspondent bCUBE is connected

- **Tab View Area**: shows the content of the selected tab

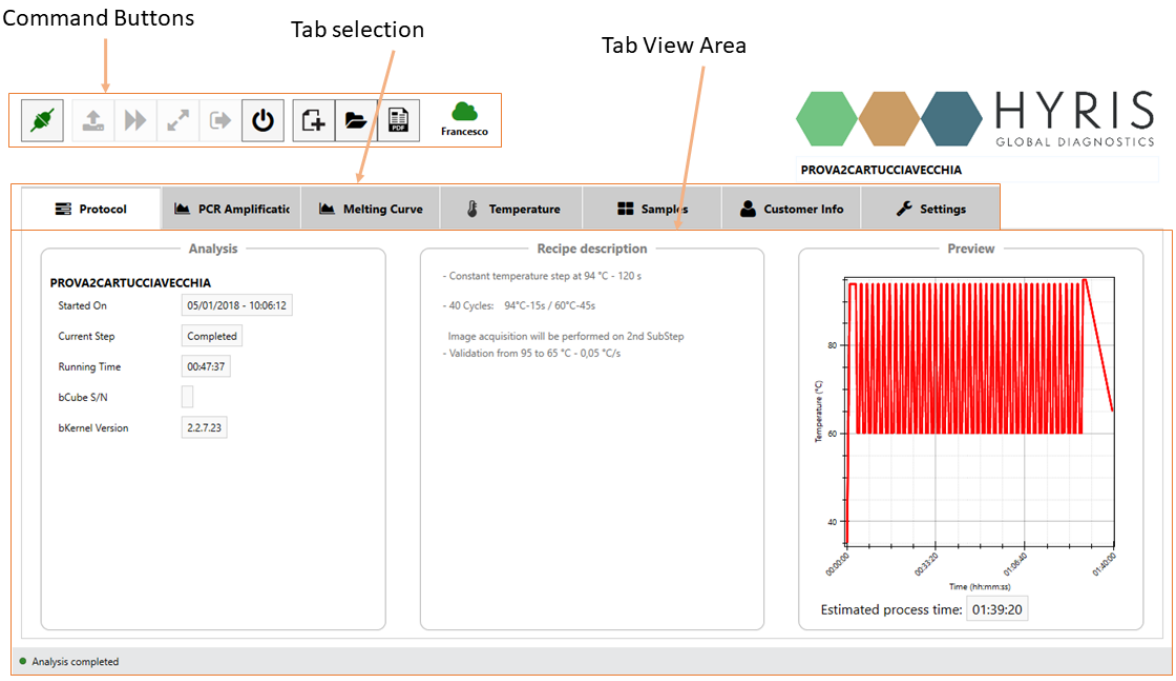

Figure 20: bPANEL Overview

Settings: Log in/Sync and bCUBE® 2.0 connection

Go to "Settings" tab:

1. Click on "**Login**"

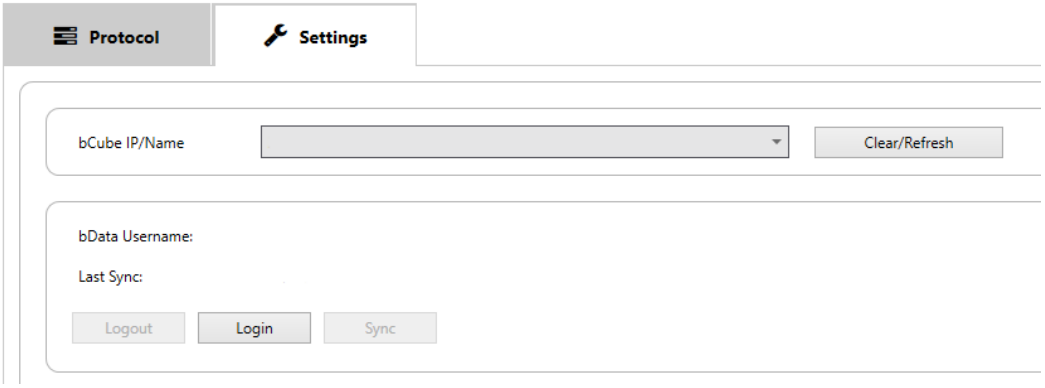

Figure 21: Settings Tab - bPANEL

2. Insert your **email** and **password**, which are corresponding to the **credentials** used to register the user to the Hyris Ltd web site (same as used credential to access the bAPP. See Access the bAPP section for further information). Then click "**OK**"

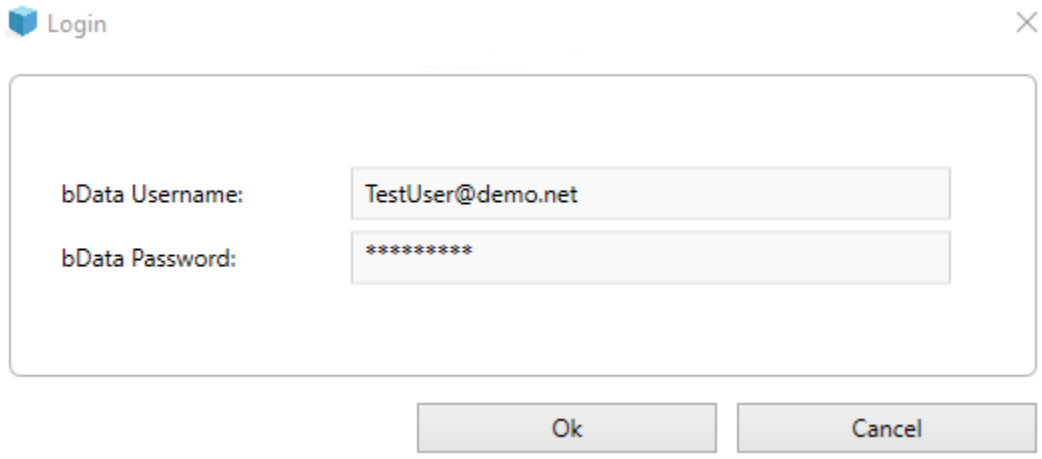

Figure 22: Log In Window - bPANEL

3. Click on "**Clear/Refresh**". After the operation completion, the available bCUBEs devices will be listed in the dedicated drop-down menu. Select the desired one

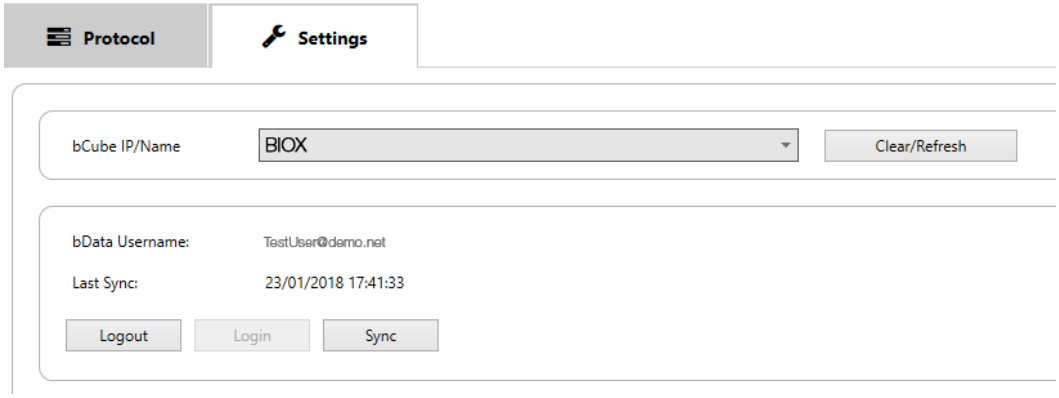

Figure 23: Settings View with completed information - bPANEL

4. Click on the  button to connect to the selected device. After connection, the button will turn green 

New analysis creation

1. Click on the button
2. Insert the **Analysis Name** (Mandatory)
3. Select the desired **Swarm** among the available ones (Mandatory)
4. Select the desired **Recipe**
5. Click on "**OK**" button.

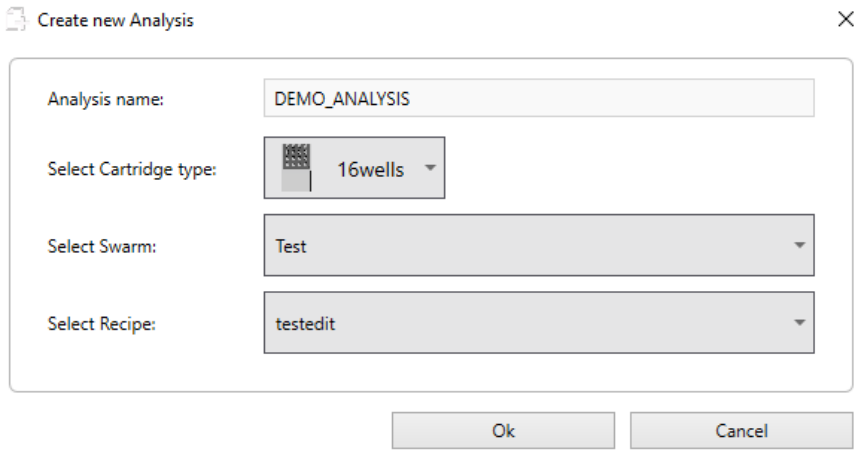

Figura 24: New Analysis window

6. The new analysis will be created and tabs updated accordingly.
   The wells information are filled while compiling the selected recipe downloaded from bDATA.

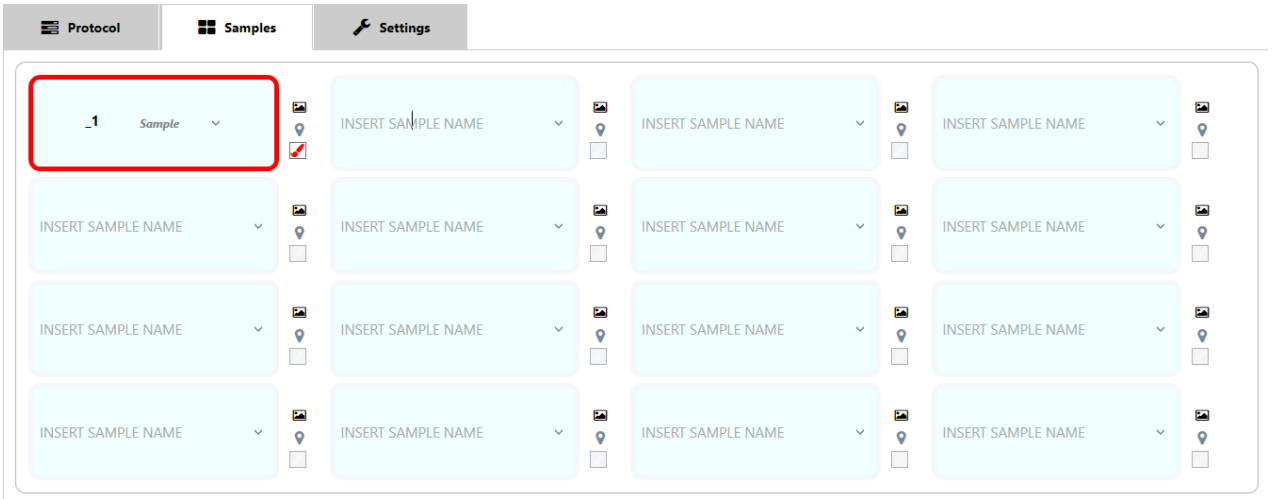

Figura 25: Sample Tab View - bPANEL

7. Wells can be deleted, modified or added. In this last case:
    a. Click on the desired well on the cartridge model on the right, according to the loaded sample
    b. Select the **Sample Type** from the drop-down menu (Mandatory)
    c. Enter the **Sample Name** (Mandatory)
    d. Choose the **Sample Color**

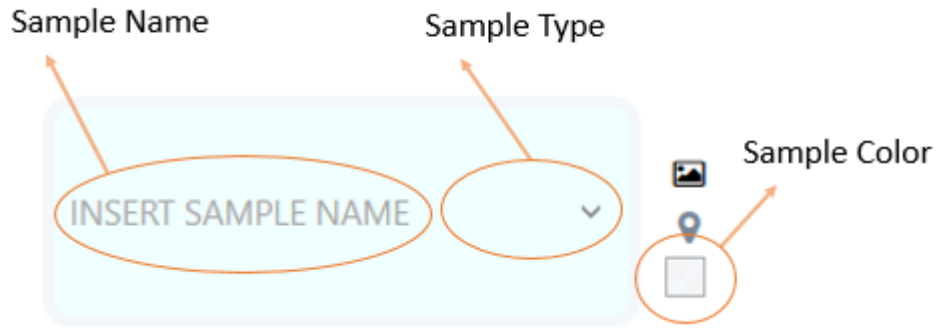

Figure 26: Needed Sample Information - bPANEL

Run the analysis

1. Load the cartridge to the selected bCUBE® 2.0 (see section: Cartridge Preparation).
2. Run the analysis by clicking on the command button. The analysis will be uploaded to the selected bCUBE® 2.0. If no errors occur, the experiment will immediately start, while the status LEDs of the device will start to show multiple and changing colors.
3. The analysis parameters and results will be automatically shown in specific tabs in real time.
4. Wait for "Ready Colors"
5. Generate a PDF report file by clicking on the command button, and then selecting "**Build/Rebuild PDF Report**".
6. Unload the cartridge

Old analyses view

Old analyses can be consulted by opening them from PC, bCUBE or online bDATA folders.

Click on the command button and select the desired folder location among "**LOCAL**", "**bCUBE**" and "**bDATA**". Click on "**OK**" after the analysis selection. The analysis data will be loaded to bPANEL and results can be consulted. The opened analysis can't be modified.

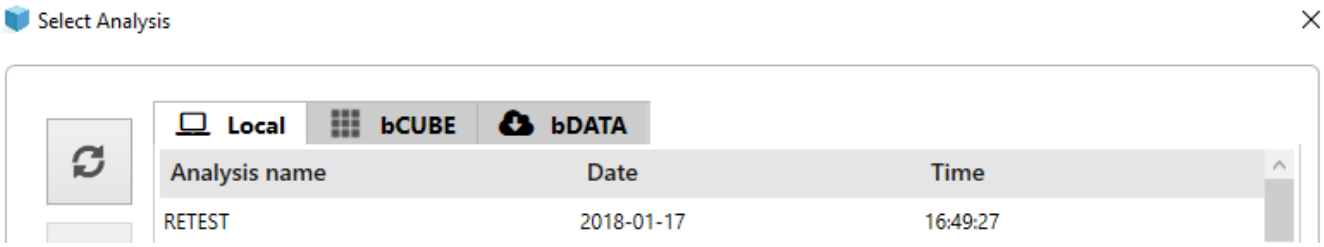

Figure 27: Load Analysis View - bPANEL

Flow Chart

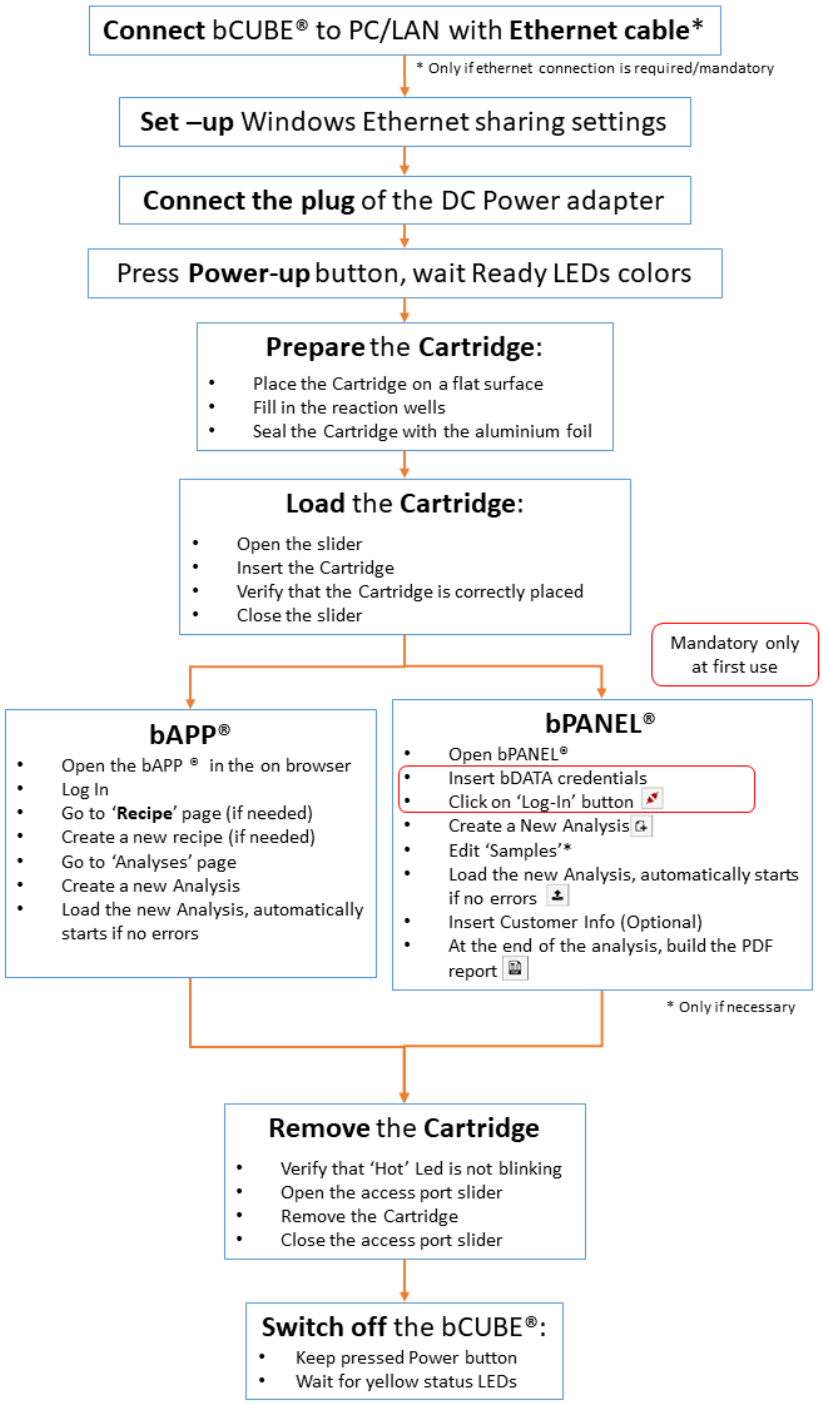

Figure 28: Process Overview - Flow Chart

Appendix-1: Set bCUBE® 2.0 Wi-Fi

bCUBE® 2.0 can also be connected to internet via Wi-Fi. To do that, Wi-Fi has to be set up.

1. Follow the instructions described in the bCUBE 2.0® Connection section to properly connect the bCUBE® 2.0
2. Access the bAPP and Log In as shown in the PC: bAPP Interface section
3. Click on "**bCUBEs**" from the main menu: a list of the available devices will appear. The available devices could be different among users of the same company depending on their permissions.
4. Select the desired device and press the button.
5. Select the desired LAN and set the Wi-Fi password, then click on "**SAVE**".

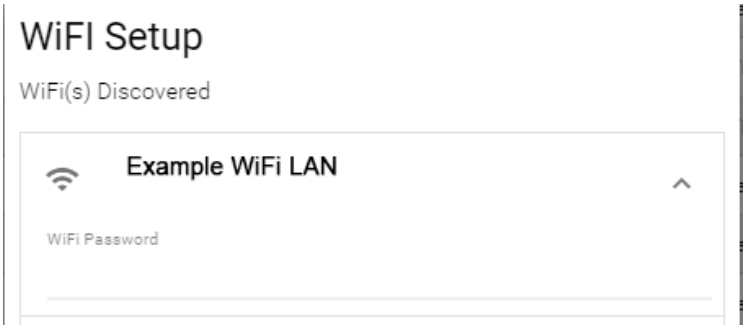

Figure 29: Wi-Fi Setup Window - bAPP

6. Reboot the selected bCUBE.

Appendix-2: Custom Recipe

New recipes can be customized on the bAPP according to user's permissions. If recipe customization is not allowed by user's permissions, global recipes provided by Hyris Ltd or already existing company recipes can be used for new analyses.

1. Click on "**Recipes**" in the left side main menu: the list of the available recipes will be shown.

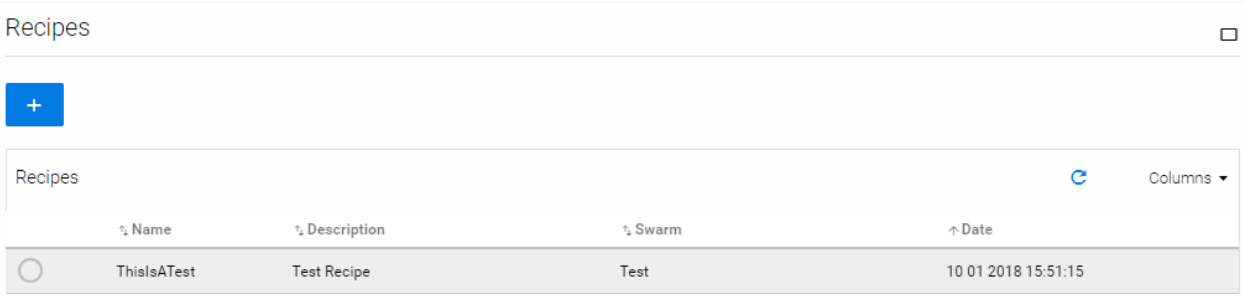

Figura 30: Available Recipe List - bAPP

2. Click on the + button to access to the new recipe customization form. Remember that **Recipe name** and selected **Swarm** are mandatory.
3. Follow the steps and click on "**FINISH**" button.
4. The new recipe will added to the recipe list

Appendix-3: Cartridge Preparation

Load samples

In order to load the samples for the experiment:

1. Place the cartridge face up on a flat and stable surface
2. Put the sample in one or more of the cartridge wells as indicated in the reference Recipe.
3. Seal the cartridge with the provided aluminium foils

Figure 31: Cartridge Side View

Load cartridge to bCUBE® 2.0

To load the cartridge to the bCUBE® 2.0:

1. Open the bCUBE® 2.0 Access Port slider (see Owner's Manual for more info)
2. Insert the cartridge by pushing it through the Access Port by keeping it face up holding it from the handle till it stops
3. Close the access port slider

To unload the cartridge:

1. Make sure the cartridge is not hot (see Owner's Manual for further information)
2. Open the access port slider
3. Gently pull the cartridge from the handle
4. Close the access port slider