
bCUBE[®] 2.0 Quick Start Guide

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

Notice:

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Summary

Figure Index	4
Hyris bcUBE® 2.0	5
Box Opening	5
Device Overview	6
Status LEDs	7
First set up	9
PC settings	9
bcUBE® 2.0 Connection.....	9
Interacting bcUBE® 2.0: bAPP and bPANEL.....	11
bAPP interface	12
Access the bAPP	12
Create a New Analysis.....	13
Run the analysis.....	16
bPANEL 2.0 interface	17
Installation.....	17
Main view	18
Settings: Log in/Sync and bcUBE® 2.0 connection.....	19
New analysis creation.....	20
Run the analysis.....	22
Old analyses view	22
Flow Chart.....	24
Appendix-1: Set bcUBE® 2.0 Wi-Fi from bcUBE's menu	25
Appendix-2: Custom Recipe.....	25
Appendix-3: Cartridge Preparation.....	26
Load samples	26
Load cartridge to bcUBE® 2.0.....	26

Figure Index

Figure 1: Box content. (1.a) bcUBE® 2.0. (1.b) Ethernet cable. (1.c) DC power supply. (1.d) USB stick	5
Figure 2: bcUBE® 2.0 isometric view	6
Figure 3: bcUBE® 2.0 back view	6
Figure 4: bcUBE® 2.0 front view - Cartridge slot detail	7
Figure 5: bcUBE Status LEDs disposition	8
Figure 6: bcUBE® 2.0 connection - Suggested configuration	10
Figure 7: bcUBE action menu	10
Figure 8: Saved WIFI Networks section	11
Figure 9: Google Chrome address bar	12
Figure 10: bAPP interface - Main View example	13
Figure 11: General Information view – Analysis Creation - bAPP.....	14
Figure 12: Sample View - Analysis creation - bAPP	14
Figure 13: Well Information Editing - bAPP	15
Figure 14: choose the desired bcUBE from the drop-down menu	15
Figure 15: Analyses list -bAPP	15
Figure 16: Analysis Tools Menu -bAPP	16
Figure 17: Analysis Overview - bAPP	17
Figure 18: bPANEL installation - Welcome screen.....	17
Figure 19: bPANEL installation - License Agreement view	18
Figure 20: bPANEL Overview	19
Figure 21: Settings Tab - bPANEL.....	19
Figure 22: Log In Window - bPANEL	20
Figure 23: Settings View with completed information - bPANEL	20
Figure 24: New Analysis window	21
Figure 25: Sample Tab View - bPANEL.....	21
Figure 26: Needed Sample Information - bPANEL.....	22
Figure 27: Load Analysis View - bPANEL.....	23
Figure 28: Process Overview - Flow Chart	24
Figure 29: Wi-Fi Setup Window - bAPP	25
Figure 30: Available Recipe List - bAPP.....	25
Figure 31: Cartridge Side View	26

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

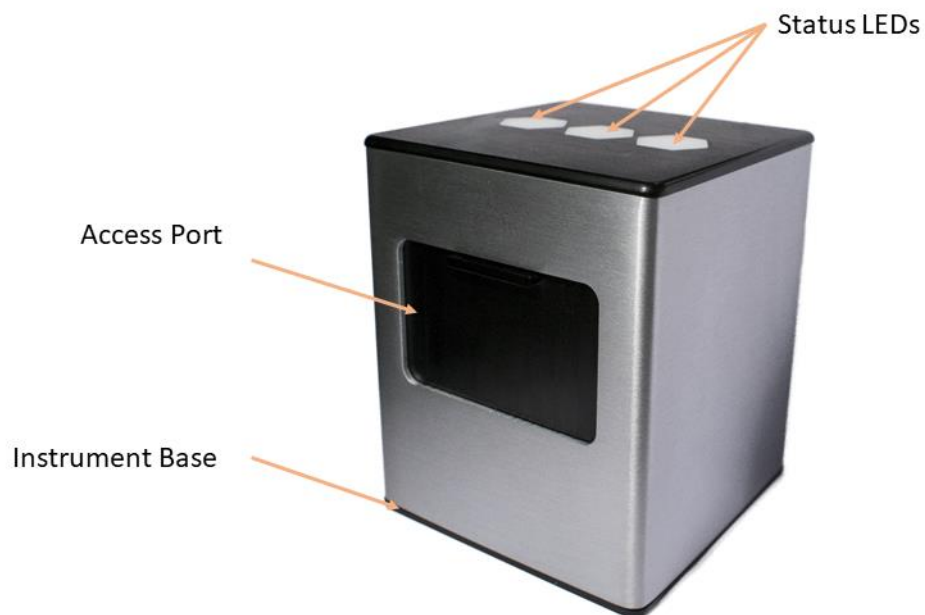


Figure 2: bCUBE® 2.0 isometric view

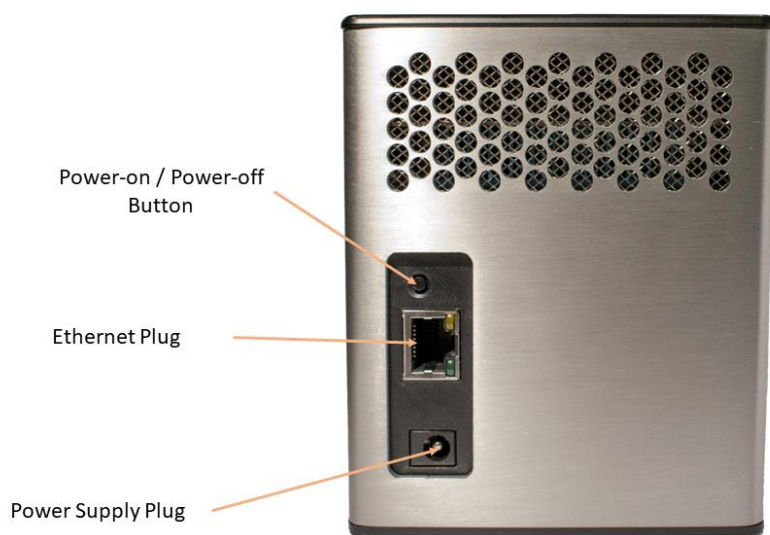


Figure 3: bCUBE® 2.0 back view

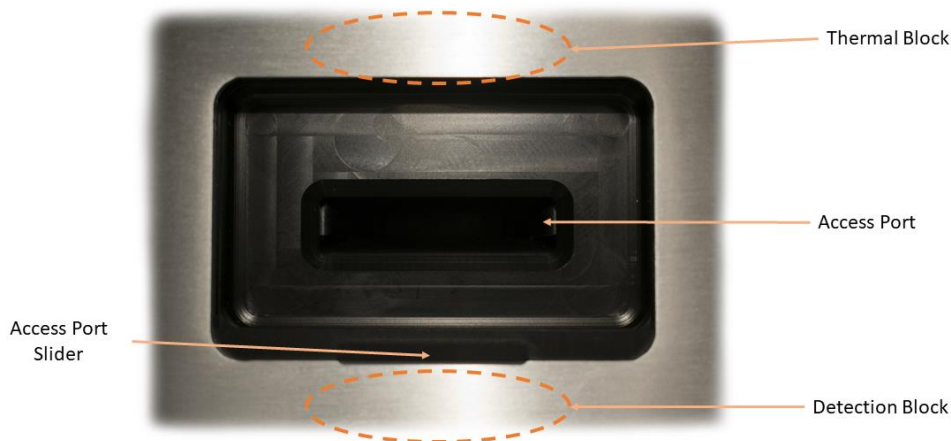




Figure 4: bCUBE® 2.0 front view - Cartridge slot detail





Description of the features highlighted in the pictures above:

- **Access Port Slider:** opened to insert/remove the cartridge inside bCUBE® 2.0. To be kept closed during operations.
- **Access port:** insert the cartridge here. Always push the cartridge up to the end of the port.
- **Thermal Block:** precisely controls the temperature of the cartridge and contained samples. Heating/Cooling is obtained with a Peltier element.
- **Detection block:** features high brightness LEDs with dichroic filters for fluorophores excitation. Detection is obtained thanks to a CMOS sensor with dichroic filters matched to fluorophores emission wavelengths.
- **Top venting holes:** allows air exchange between the inside of the **Instrument** and the ambient
- **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 safely 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 a network

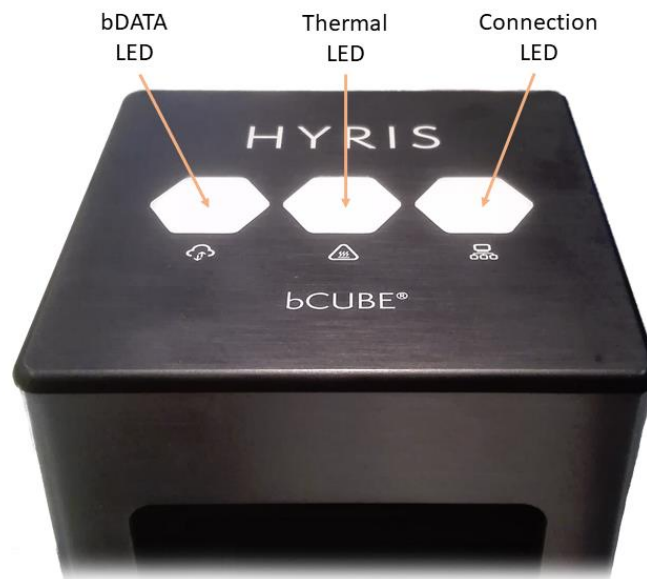









Figure 5: bCUBE Status LEDs disposition

For a graphical representation, the  symbol (from left to right: bDATA, Thermal and Connection LEDs) will be displayed in this document when color code explanation is required.

Some examples are reported in the following table:

LEDs COLORS	DESCRIPTION	INTERPRETATION
	<ul style="list-style-type: none"> - bDATA LED steady green - Thermal LED steady orange: - Connection LED steady blue: 	<ul style="list-style-type: none"> - bDATA connection OK - Cartridge not hot - Network connection OK
	<ul style="list-style-type: none"> - bDATA LED steady green - Thermal LED blinking orange and red - Connection LED steady blue 	<ul style="list-style-type: none"> - bDATA connection OK - WARNING: Cartridge hot - Network connection OK

	<ul style="list-style-type: none"> - bDATA LED blinking green and yellow - Thermal LED steady orange - Connection LED blinking red and yellow 	<ul style="list-style-type: none"> - Missing bDATA connection - Cartridge not hot - Missing network connection
	<ul style="list-style-type: none"> - bDATA LED blinking green and yellow - Thermal LED steady orange - Connection LED steady blue 	<ul style="list-style-type: none"> - Missing bDATA connection - Cartridge not hot - Network connection OK. bCUBE® 2.0 can be used locally
	<ul style="list-style-type: none"> - bDATA LED multicolor - Thermal LED multicolor - Connection LED multicolor 	<ul style="list-style-type: none"> - Experiment is running on bCUBE® 2.0
	<ul style="list-style-type: none"> - bDATA LED off - Thermal LED off - Connection LED off 	<ul style="list-style-type: none"> - 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

PC has to be connected to a stable internet connection.

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 provided the condition explained 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

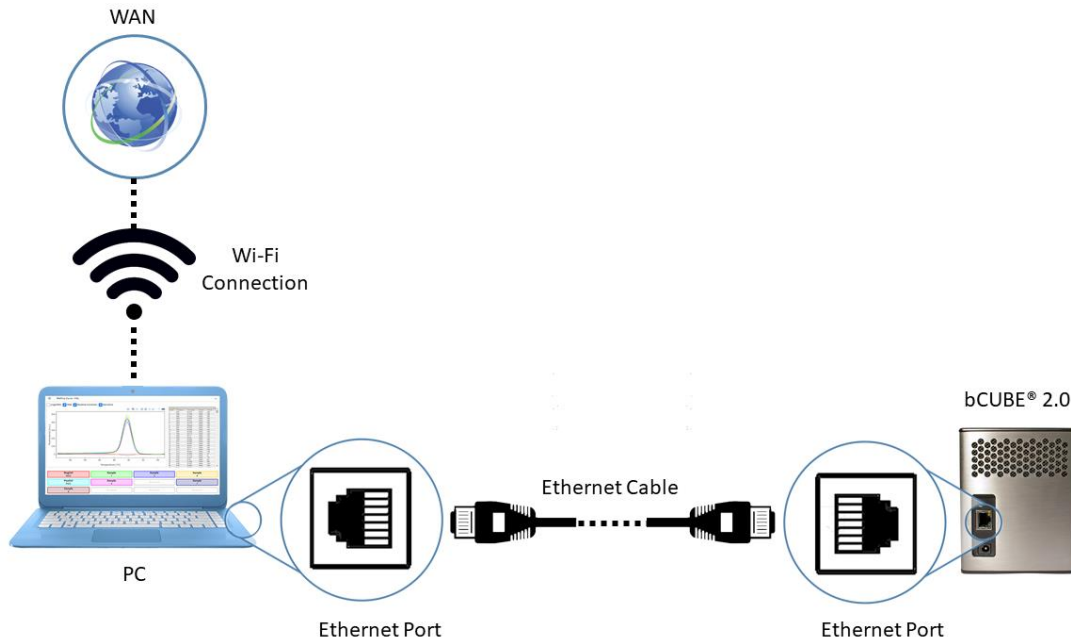






Figure 6:: bCUBE® 2.0 connection - Suggested configuration

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 until Connection Status LED color is steady blue:  or 
If LEDs colors are different from the above mentioned, try to repeat the steps. Otherwise, check the Owner's Manual
9. Access the bAPP (see the [Access the bAPP](#) section) and go to the **bCUBEs** section. Select the desired bCUBE by checking the Serial number of the machine (see the Owner's manual). The **"Connected"** flag should be a green icon, indicating that the bCUBE is connected to a network. An action menu should be shown.

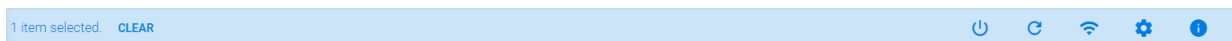



Figure 7: bCUBE action menu

10. Click in the  button to access the **"Local settings page"**, then go to the **"Network"** section. Select one of the **"Available WIFI Networks"** and enter the related password, then click on **"Save"**. See the Owner's manual to perform **WPS** connection to the router or to manually add a network. The saved Wifi should

immediately appear in the “**Saved WIFI Networks**” column.

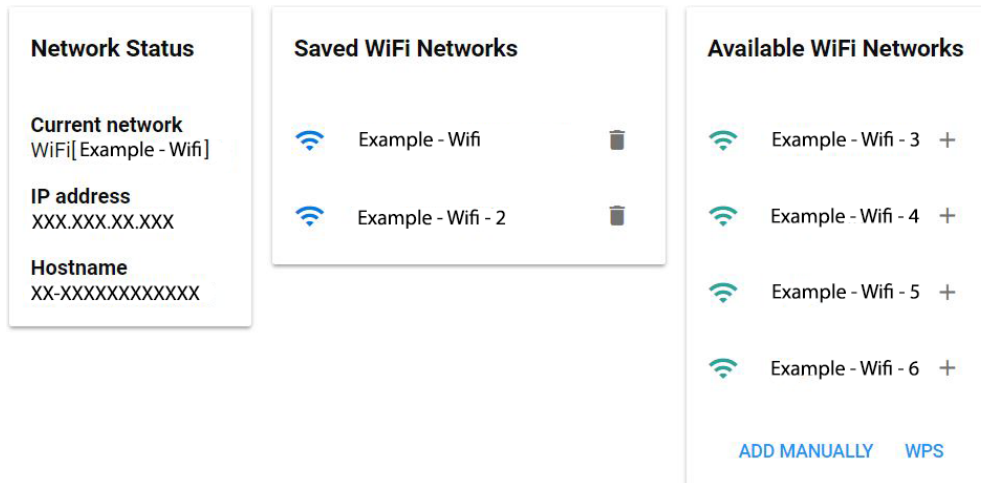




Figure 8: Saved WIFI Networks section

11. When all the desired Wifi networks are saved, go back to the bAPP and unplug the Ethernet cable from the bCUBE. After some seconds, the Status LEDs should show the Hyris Redy colors . If not, check the troubleshooting section on the Owner’s manual.

NOTE: Status LEDs may display different colors while bCUBE® 2.0 is looking for network connection from point nr7 to point nr8. If no connection is detected, the following LEDs colors may be displayed 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 be 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.

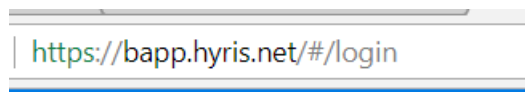


Figure 9: Google Chrome address bar

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

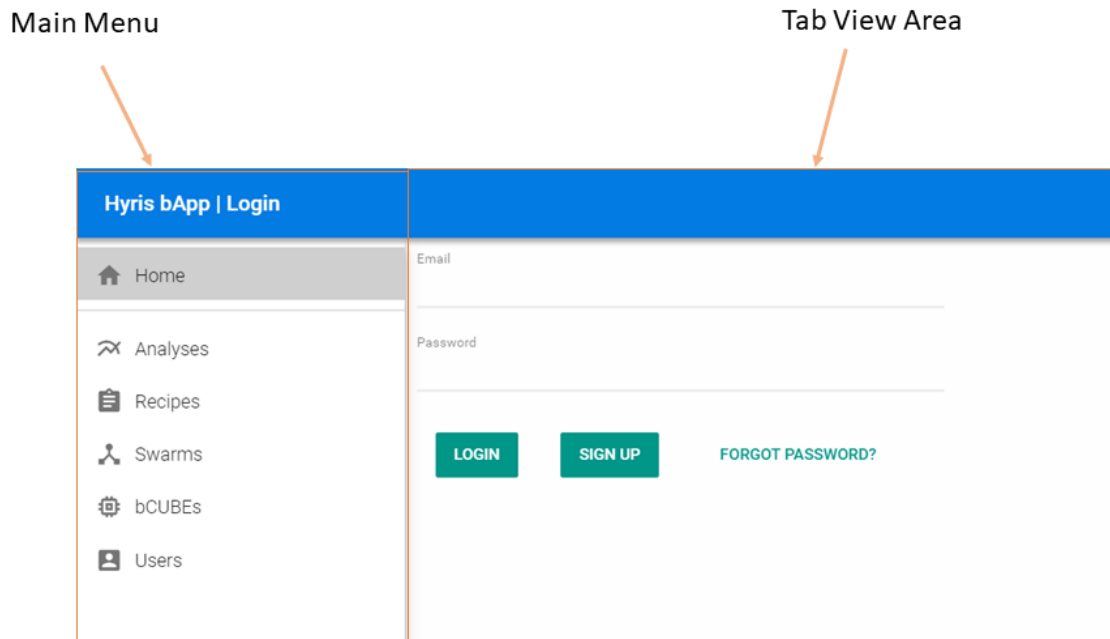


Figure 10: bAPP interface - Main View example

3. After the Main Window is displayed, **Login** is required.


Insert your email and password, which are corresponding to the **credentials** used to register the user to the Hyris Ltd web site or the bAPP.

In order to sign up, push the “**SIGN UP**” button and follow the steps.

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

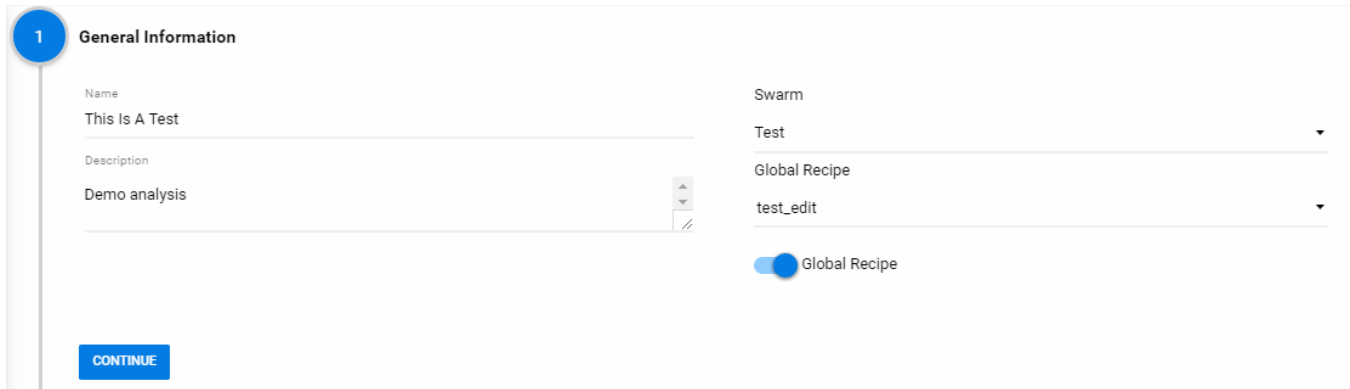
Create a New Analysis

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)

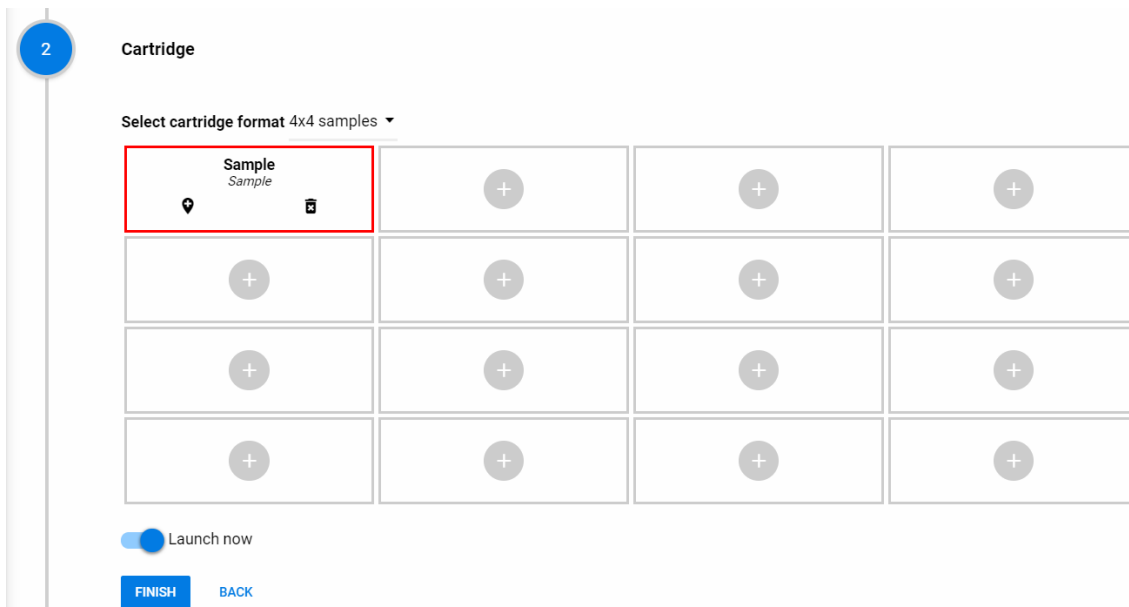
5. Click on “**CONTINUE**” to proceed.



The screenshot shows the 'General Information' screen in the bAPP. It has a sidebar with a blue circle containing the number '1'. The main area is divided into two columns. The left column has fields for 'Name' (containing 'This Is A Test'), 'Description' (containing 'Demo analysis'), and a 'CONTINUE' button at the bottom. The right column has fields for 'Swarm' (containing 'Test'), 'Global Recipe' (containing 'test_edit'), and a 'Global Recipe' toggle switch which is turned on.


Figure 11: General Information view – Analysis Creation - bAPP

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



The screenshot shows the 'Cartridge' screen in the bAPP. It has a sidebar with a blue circle containing the number '2'. The main area shows a 'Select cartridge format 4x4 samples' dropdown menu. Below it is a 4x4 grid of wells. The top-left well is highlighted with a red border and contains the text 'Sample Sample' and a trash icon. The other wells contain a plus sign. At the bottom, there is a 'Launch now' toggle switch which is turned on, and 'FINISH' and 'BACK' buttons.

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
 - 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

Define well nr. 2

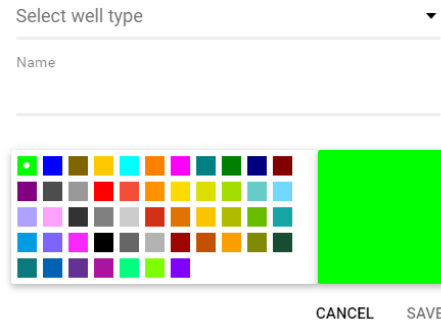


Figure 13: Well Information Editing - bAPP

- 8. Click on **“FINISH”** button. If the **“Launch now”** option is selected, a new window will open. Select the desired bCUBE among the available devices and click on **“SEND”** to immediately launch the analysis. The live analysis view page will be shown.

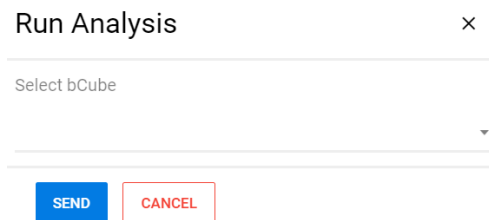


Figure 14: choose the desired bCUBE from the drop-down menu

If the **“Save for later”** option is selected, the user will be brought back to the Analyses list view.

⬆ Date	🔍 Name	🔍 User	🔍 Department	🔍 Swarm	🔍 Status	
🕒	2018-01-22 10:43:52	This Is A Test	Davide	Hyris R&D	Test	Initialized

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.

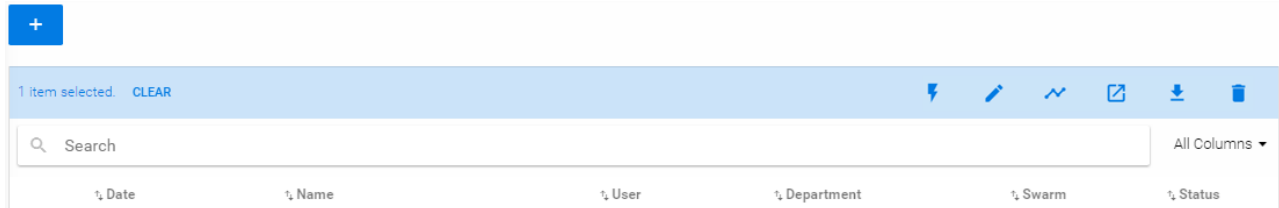





Figure 16: Analysis Tools Menu -bAPP

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

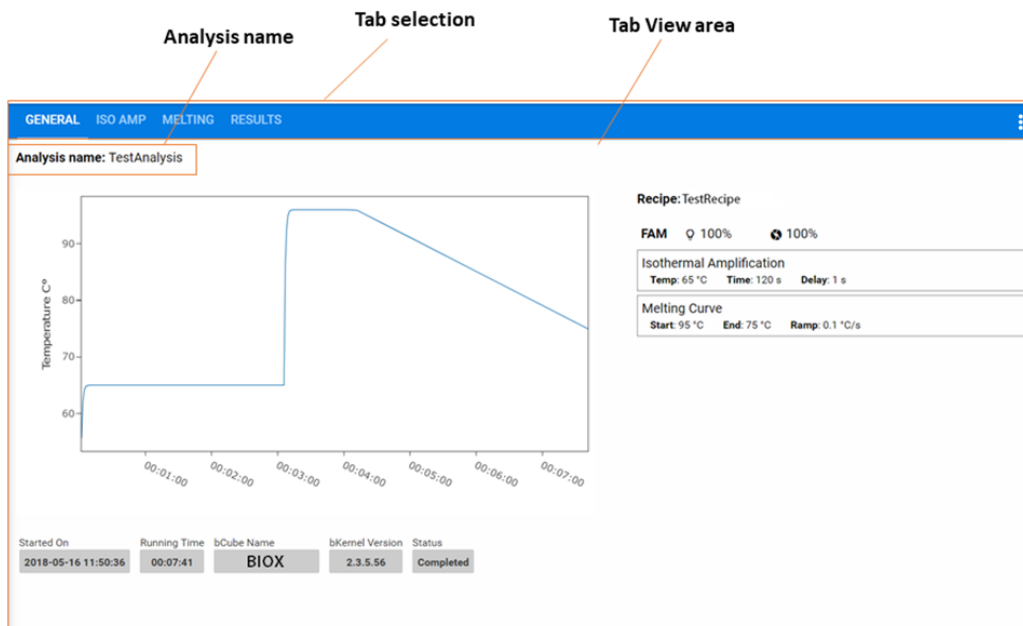


Figure 17: Analysis Overview - bAPP

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**.

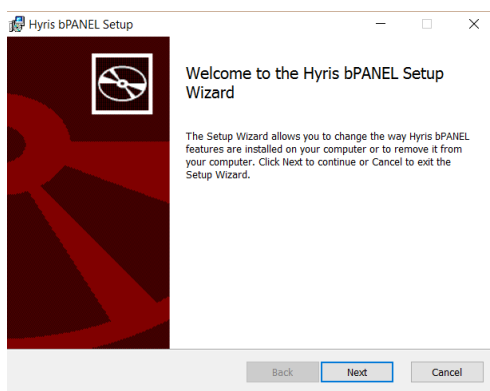


Figure 18: bPANEL installation - Welcome screen

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

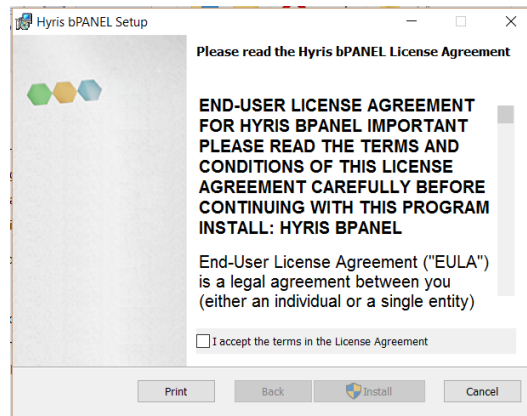


Figure 19: bPANEL installation - License Agreement view

- 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

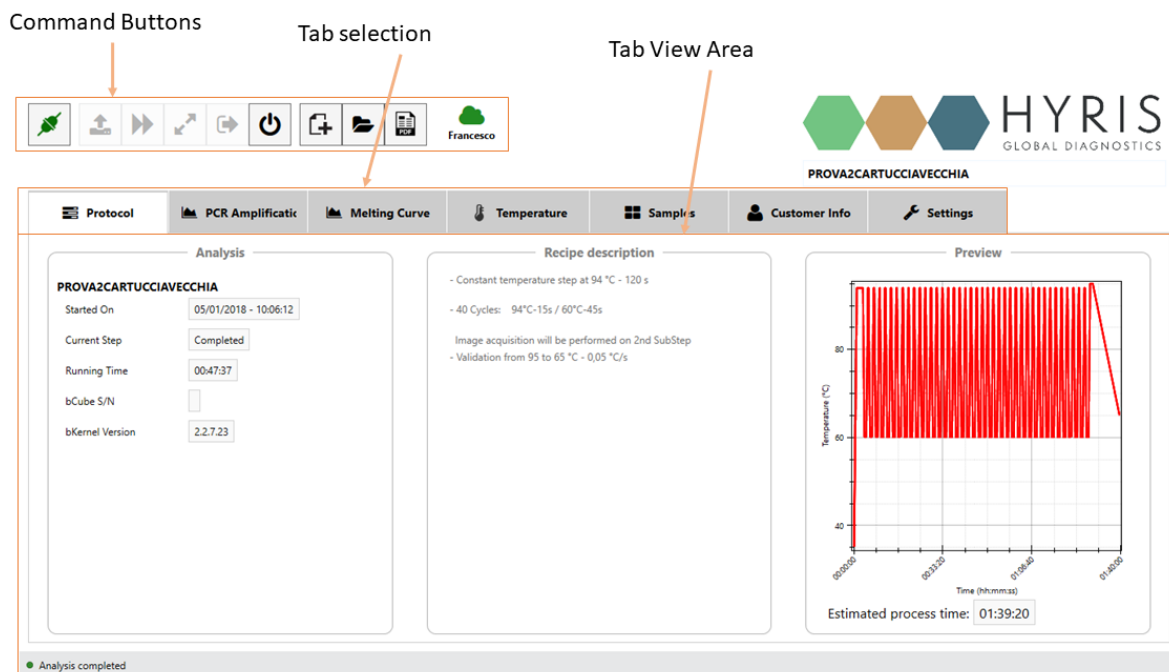


Figure 20: bPANEL Overview

Settings: Log in/Sync and bCUBE® 2.0 connection

Go to “Settings” tab:

1. Click on “Login”

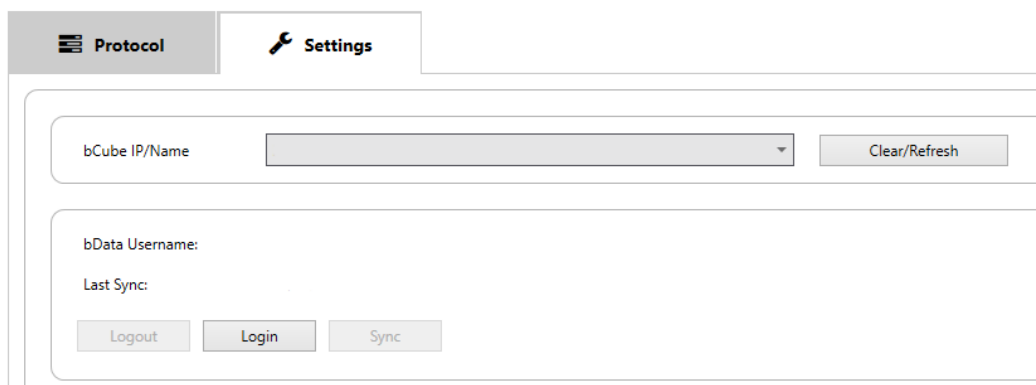
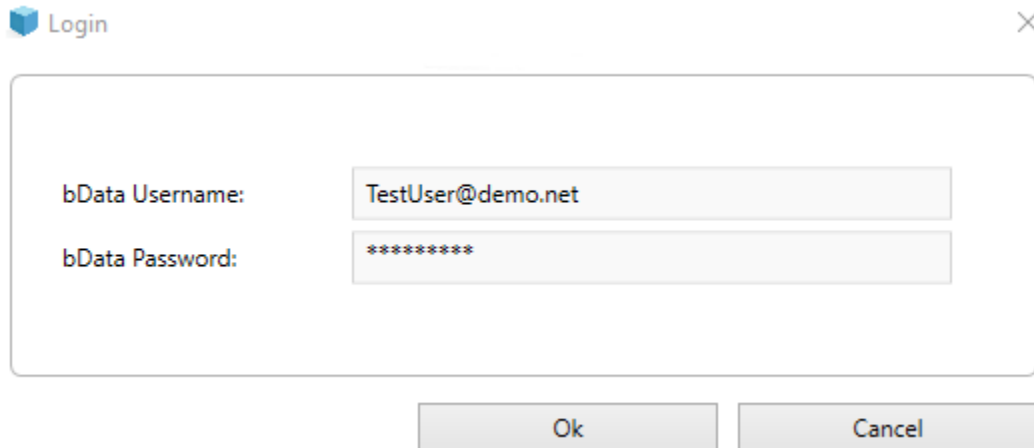


Figure 21: Settings Tab - bPANEL

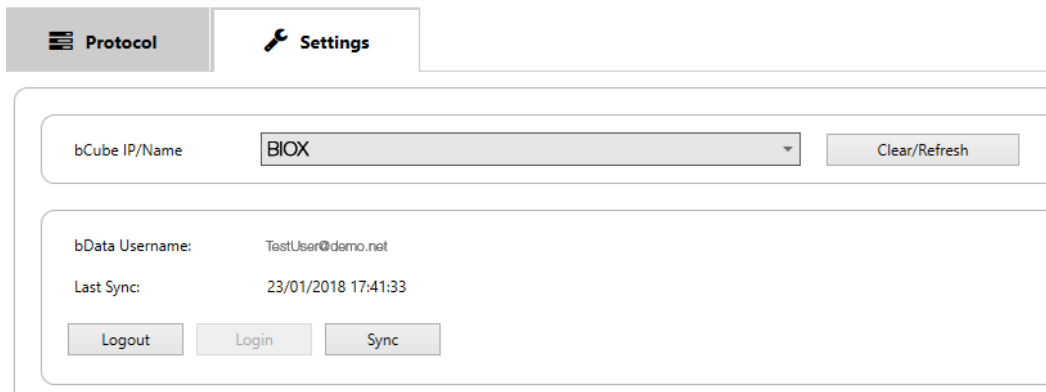
2. Insert your **email** and **password**, which are corresponding to the **credentials** used to register the user to the Hyris Ltd web site (same as used credential to access the bAPP. See [Access the bAPP](#) section for further information). Then click “OK”



The screenshot shows a 'Login' dialog box with a close button (X) in the top right corner. It contains two input fields: 'bData Username:' with the text 'TestUser@demo.net' and 'bData Password:' with masked characters '*****'. Below the fields are two buttons: 'Ok' and 'Cancel'.


Figure 22: Log In Window - bPANEL

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




The screenshot shows the 'Settings' tab in the bPANEL interface. At the top, there are two tabs: 'Protocol' and 'Settings'. Below the tabs, there is a section for 'bCube IP/Name' with a dropdown menu showing 'BIOX' and a 'Clear/Refresh' button. Below this, there is a section for 'bData Username:' showing 'TestUser@demo.net' and 'Last Sync:' showing '23/01/2018 17:41:33'. At the bottom of this section are three buttons: 'Logout', 'Login', and 'Sync'.

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)

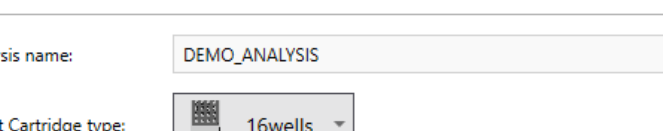

- 
- Create new Analysis
- Analysis name: DEMO_ANALYSIS
- Select Cartridge type:  16wells ▼
- Select Swarm: Test ▼
- Select Recipe: testedit ▼
- Ok Cancel

Figure 24: New Analysis window

- Protocol




Samples

Settings

_1




Sample

▼






INSERT SAMPLE NAME

▼






INSERT SAMPLE NAME

▼






INSERT SAMPLE NAME

▼






INSERT SAMPLE NAME

▼






INSERT SAMPLE NAME

▼






INSERT SAMPLE NAME

▼






INSERT SAMPLE NAME

▼






INSERT SAMPLE NAME

▼






INSERT SAMPLE NAME

▼






INSERT SAMPLE NAME

▼






INSERT SAMPLE NAME

▼






INSERT SAMPLE NAME

▼






INSERT SAMPLE NAME

▼



INSERT SAMPLE NAME

▼



INSERT SAMPLE NAME

▼






Figure 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**

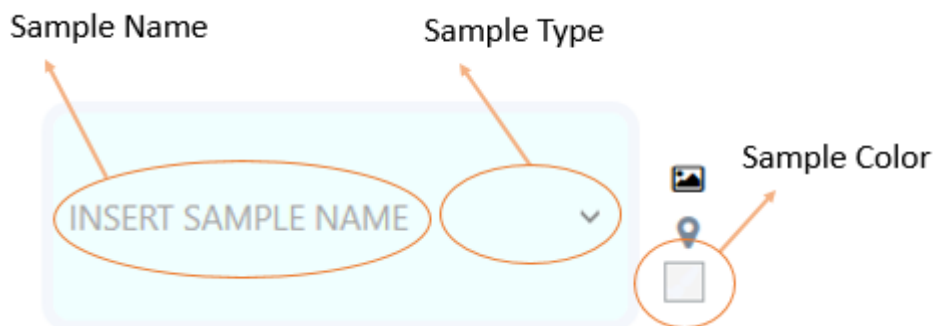





Figure 26: Needed Sample Information - bPANEL

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.

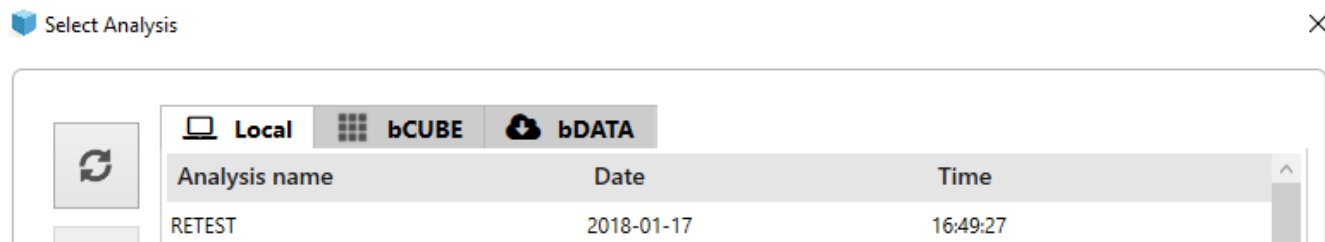


Figure 27: Load Analysis View - bPANEL

Flow Chart

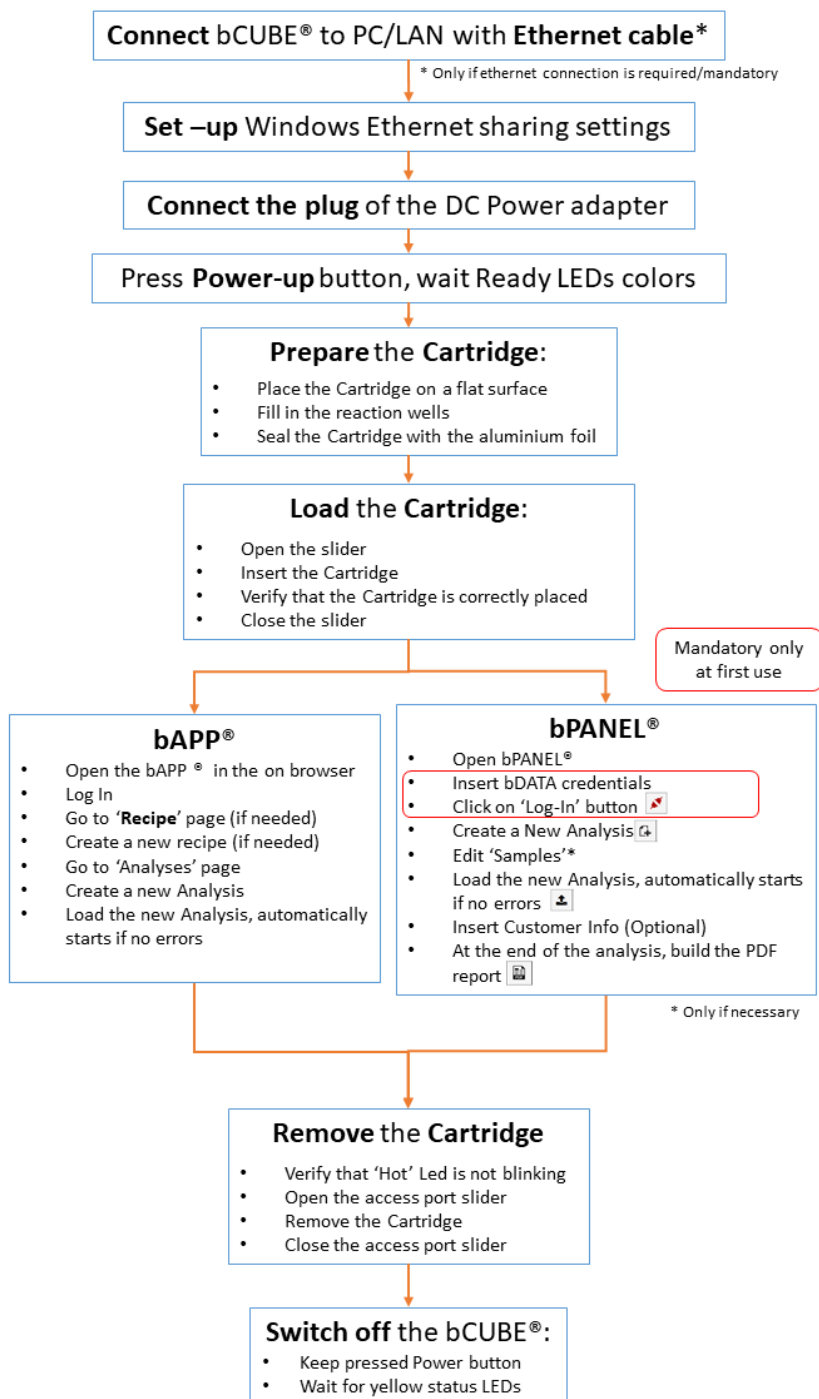



Figure 28: Process Overview - Flow Chart

Appendix-1: Set bCUBE® 2.0 Wi-Fi from bCUBEs menu

If the bDATA Status LED is showing steady green color, bCUBE® 2.0 Wifi can also be configured from “**bCUBEs**” section of the bAPP.

1. Access the bAPP and Log In as shown in the [PC: bAPP Interface](#) section
2. 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.
3. Select the desired device and press the  button.
4. Select the desired LAN and set the Wi-Fi password, then click on “**SAVE**”.

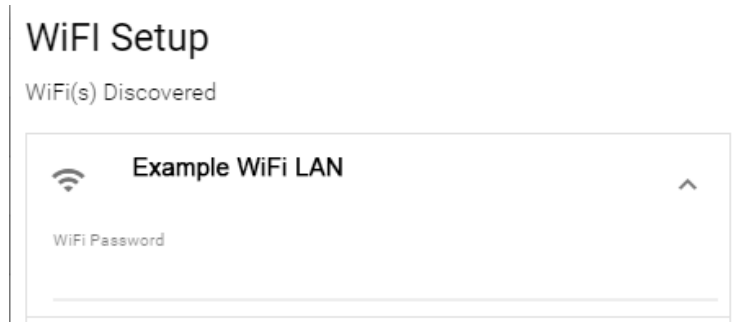


Figure 29: Wi-Fi Setup Window - bAPP


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.

Recipes			
<div>+</div>			
Recipes			
% Name	% Description	% Swarm	↑ Date
<input type="radio"/> ThisIsATest	Test Recipe	Test	10 01 2018 15:51:15

Figure 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
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 as indicated by the Steady orange color of the Thermal Status LED.
2. Open the access port slider
3. Gently pull the cartridge from the handle
4. Close the access port slider