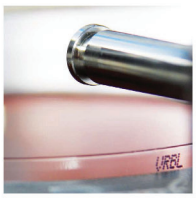
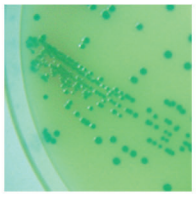
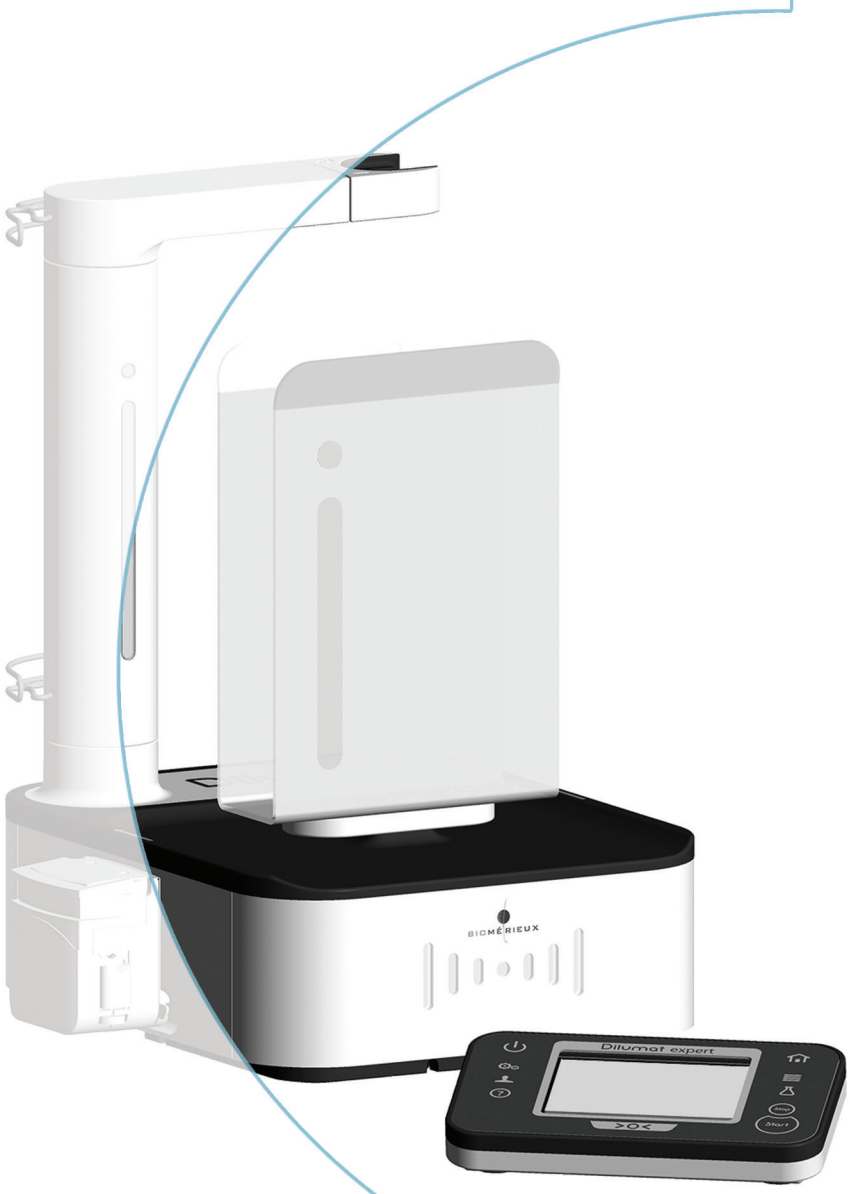


User manual

# Dilumat Start

blue line AES

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## Document history

Translation of the original document.

| VERSION | DATE | MODIFICATIONS |
|---|---|---|
| A | 27/02/2013 | Creation |
| B | 17/09/2013 | Modifications on images |
| C | 16/12/2013 | Regulatory modifications following the AES and bioMérieux merger |

## User manual - Pictograms

| | |
|---|---|
|  | Note |
|  | Equipment optimization tip |
|  | Prohibited action notice |
|  | Noteworthy point warning |
|  | Danger or potential risk warning |
|  | Reminder of the pre-requisites for implementation of the next instructions |

AES blue line™ is one of bioMérieux's registered trademarks.

The information and graphs contained in this manual are not binding. bioMérieux therefore reserves the right to implement changes to the document without prior notice.

bioMérieux will not approve any modifications whatsoever to the equipment implemented by the user. bioMérieux shall under no circumstance be held liable for any direct or consequential injury or damage whatsoever suffered by the user or by any third party, as a result of modifications to the equipment.

- This equipment is for professional use only.
- Users are required to read all the accompanying documents, including the statutory information, before using the equipment.

## Equipment conformity

### FCC compliance

This equipment has been declared in compliance with FCC regulations, section 15, applicable to class B digital equipments. These regulations are designed to provide adequate protection against harmful interferences in a residential installation. This equipment generates, uses and may emit radio-electric waves. It can generate interferences that may be harmful to radio-communications if it is not installed or used according to the instructions. Using this equipment in a specific installation may generate harmful interferences, in which case the user may need to correct the interference using one or all of the following methods:

- Redirect or move the receiver aerial
- Move the equipment away from the receiver
- Plug the equipment into a different socket from the one used for the receiver
- Contact the distributor or get help from a radio / TV technician.

### Industry conformity Canada (IC)

This class B digital equipment complies with Canadian standard NMB- 03.

## EC compliance

This equipment complies with the relevant EC directives and standards listed in the accompanying certificate(s).

# Contents

1

# Learning about the equipment

## Features

Diluting the samples is the first step in microbiological analysis. Accuracy in the dilution process therefore determines the success of the whole analysis. The Dilumat Start allows you to optimize this step and to carry it out automatically.

Place the sample in the bag. It will be weighed accurately by the equipment then the exact volume of diluent will be automatically and carefully added to achieve the expected dilution or dosing outcome.

The Dilumat Start gives you the benefit of the latest technological innovations to help make your job much easier.

✓ **New!**

- Get detailed explanations thanks to the Dilumat Smart's integrated context-sensitive help. The features are presented in a way that will guide you throughout your use of the equipment.

✓ **Ergonomics**

- The color touch-screen and the different light indicators make it easier to find what you need.
- The mast light indicator allows you to quickly visualize task results.
- The Dilumat Smart is compact enough to be installed under laminar flow hoods.
- The concept of the dispensing arm allows you to remove the bag to limit the risks of cross contamination.
- The design allows for easy maintenance and an excellent resistance to cleaning products.

✓ **Efficiency and accuracy**

- Diluting a 25 g sample to 1/10 is done in less than 20 seconds.
- The strain gage guarantees 100% accuracy up to 100 g.
- The pump guarantees identical dispensing patterns.

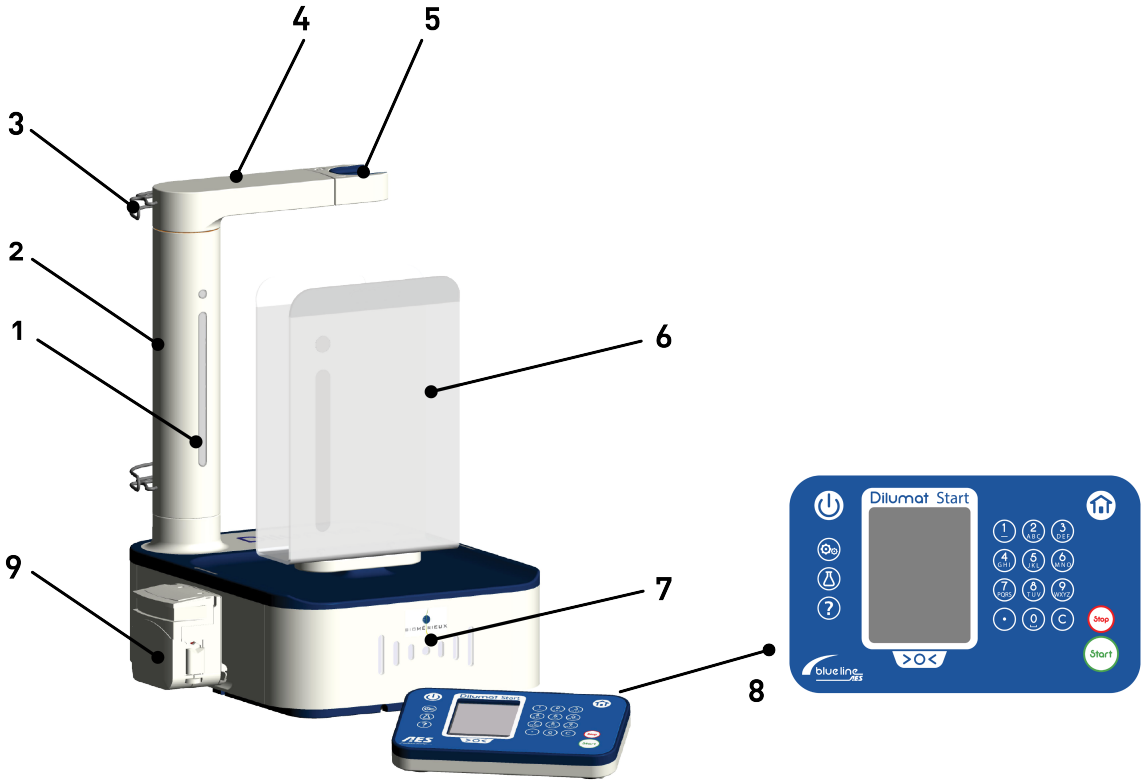
✓ **Capacity and adaptability**

- The equipment can dispense up to 2 kg (sample + diluent).
- You can connect an external pump and manage up to two different diluents on the equipment.

✓ **Advanced features**

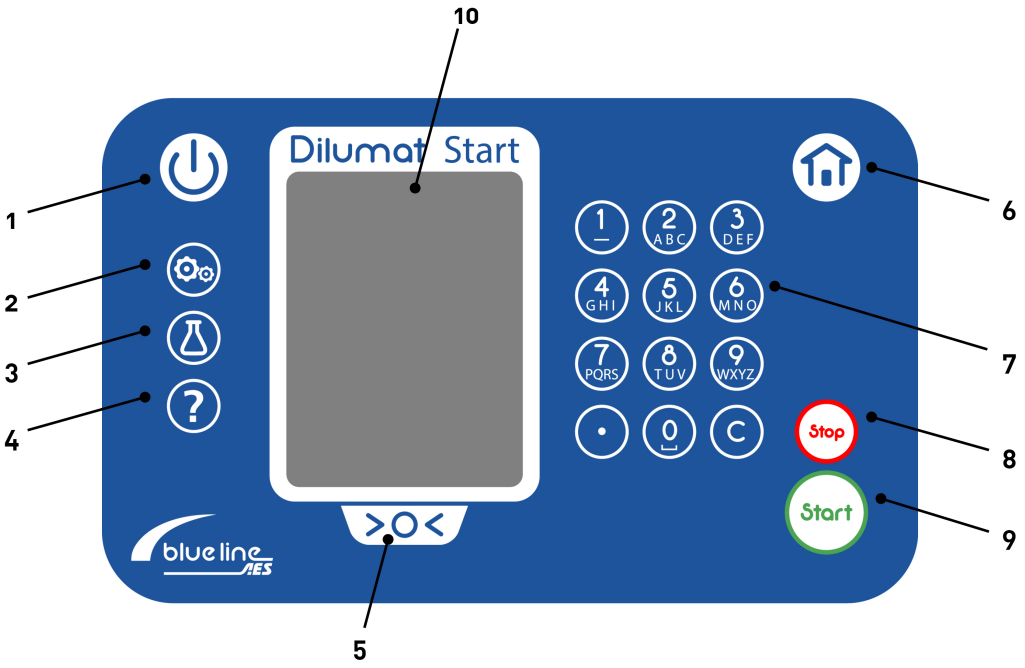
- Traceability is guaranteed thanks to data imports and exports via various peripherals (USB stick, ticket or virtual printer, FTP server).
- Traceability of the diluent batches is easily managed thanks to the embedded RFID reader bioMérieux and the bar code reader.

## Front view



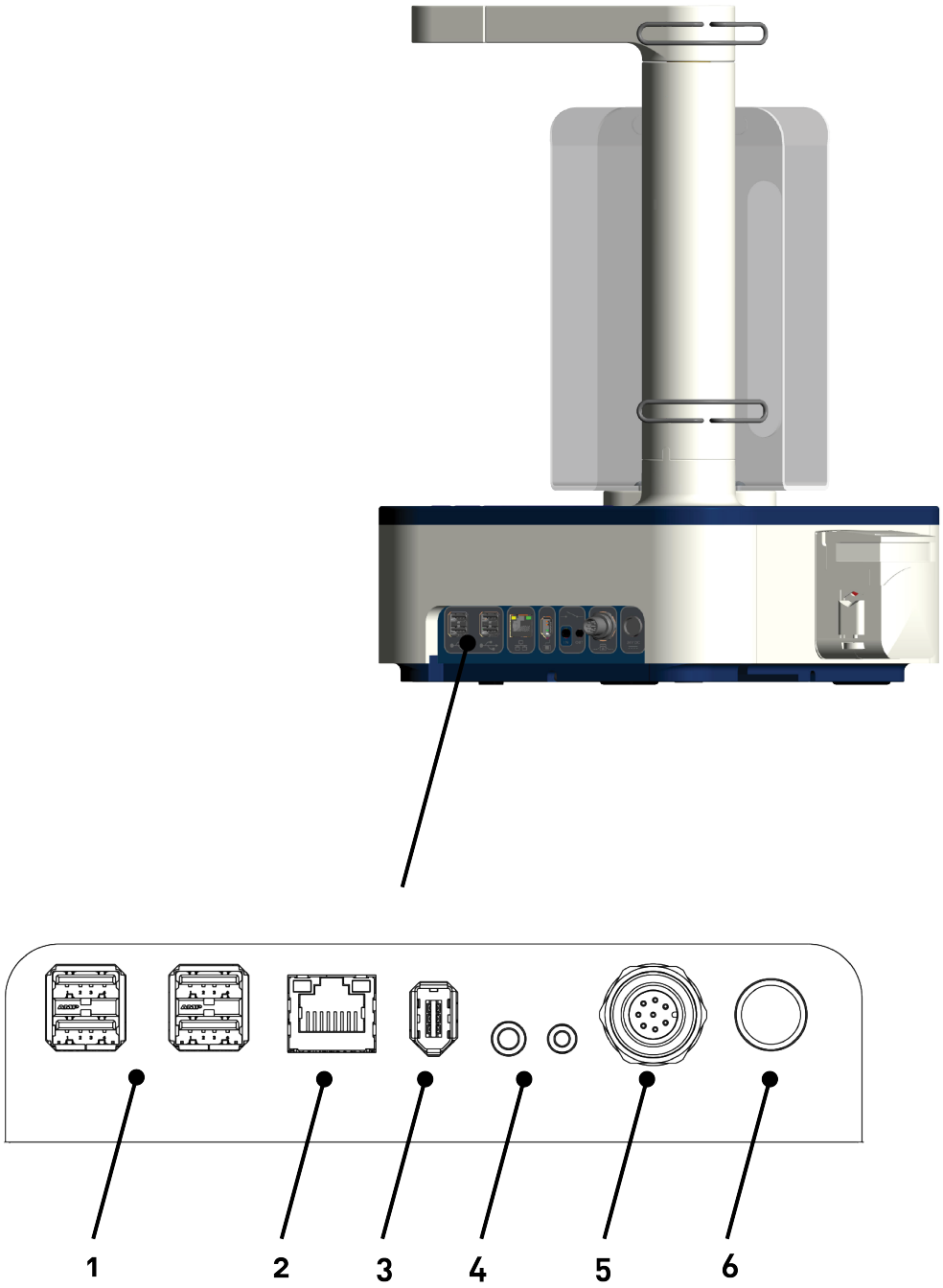

| | |
|---|---|
| 1 | Mast light indicator |
| 2 | Dispensing mast |
| 3 | Hose guide |
| 4 | Dispensing arm |
| 5 | Dispensing nozzle support |
| 6 | Bag support |
| 7 | RFID reader with light indicator |
| 8 | Touch panel |
| 9 | Pump head |

## The touch panel




| | |
|---|---|
| 1 | On / Off button |
| 2 | Configuration button |
| 3 | Diluent button |
| 4 | Help button |
| 5 | Calibration button |
| 6 | Home button |
| 7 | Number pad |
| 8 | Stop button |
| 9 | Start button |
| 10 | Touch screen |

## Rear view

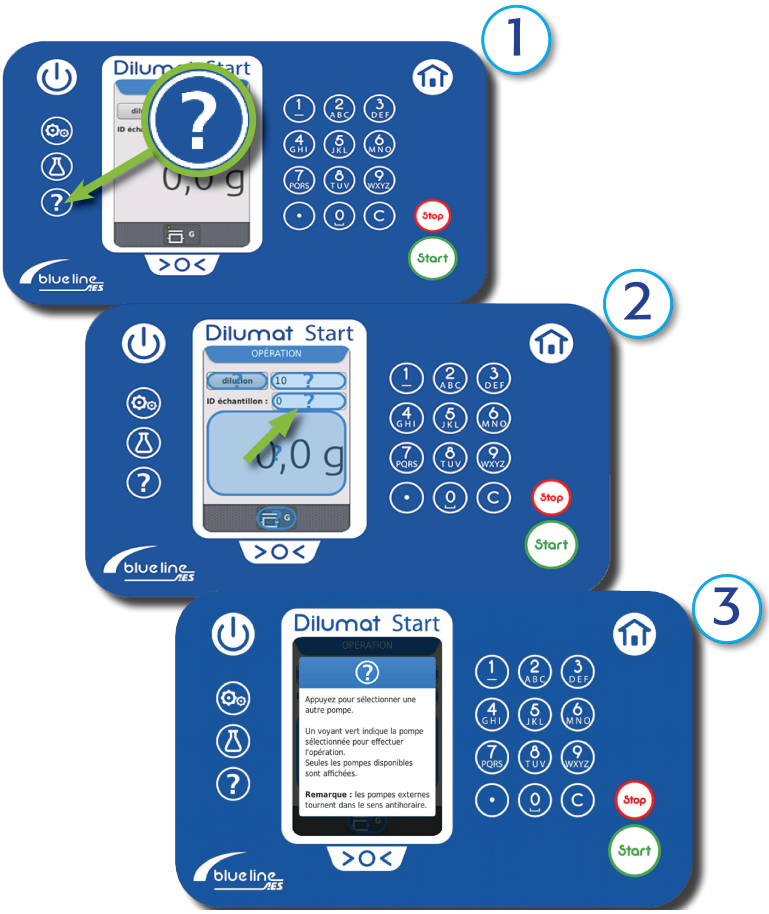



| | |
|---|---|
| 1 | USB port x 4 |
| 2 | Ethernet port |
| 3 | Touch panel power supply cable connector |
| 4 | Dry input / output contact |
| 5 | External pump power supply cable connector |
| 6 | Mains power supply cable connector |

## Context-sensitive help

- Use the context-sensitive help available in the touch panel to find the information you need about specific equipment features.
- Read the user manual to find out how to use the equipment and how to access different functions, then get any additional information you need from the context-sensitive help feature.

Whichever screen you happen to be working on, just press  to display help information on any particular feature.




1. Press.
2. Select.
3. Read.

Just press  to disable the Help feature.

# Equipment features explained

## CONFIGURATION

### System settings

- Importing configuration settings
- Exporting configuration settings
- Managing updates
- Configuring localization
- Making adjustments on energy settings
- Making adjustments on date, time and time zone
- Managing external devices
  - Activating / Deactivating the embedded FTP server
  - Plugging in a USB key
  - Configuring a WIFI USB key
  - Configuring the Ethernet
  - Configuring a remote FTP server
  - Connecting a physical printer
  - Creating a virtual printer
  - Importing a label model
  - Modifying a label model
  - Configuring a bar code reader
  - Configuring a number pad

### Configuration settings for the equipment

- Printing a calibration / adjustment certificate
- Restoring calibration / adjustment certificates
- Configuring the communication settings for the LIMS
- Calibrating
- Making an adjustment

### Support

- Consulting details for the equipment
- Performing an update
- Verifying sensors state
- Managing life counters
- Allowing remote control
- Performing tests

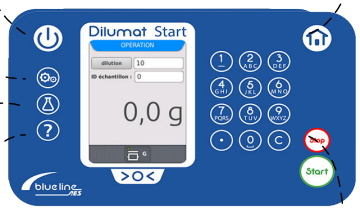
### Connecting with an user account

## EXIT

- Placing the equipment in sleep mode
- Switching off the equipment
- Restarting the equipment

## OPERATION

- Performing a dilution
- Implement dosing
- Dispensing in manual mode




## CONTEXT-SENSITIVE HELP

## USERS

- Changing the user session
- Modifying my user account
- Closing my user session

## STOP

- Recharging diluent
- Changing the pump
- Canceling a task under way

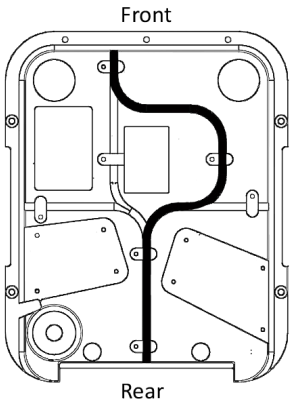
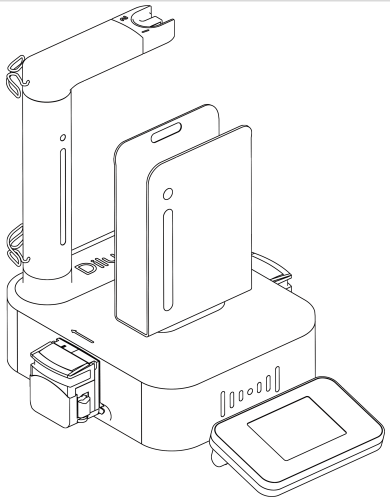
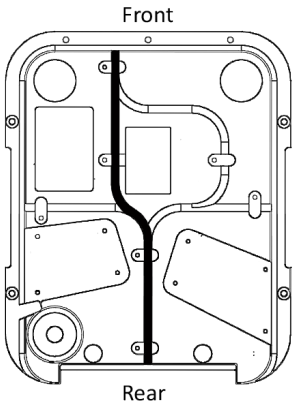
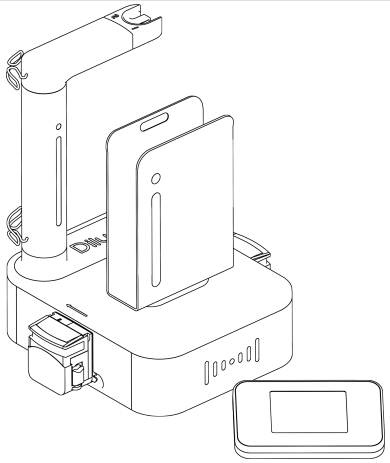
# 3 Installing the equipment

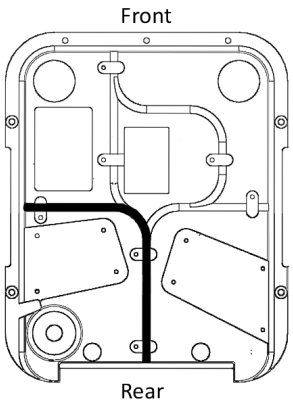
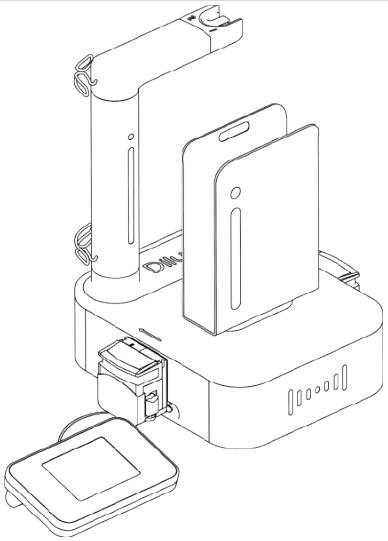
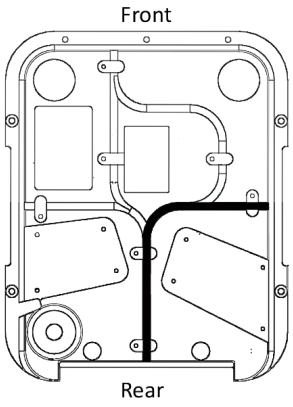
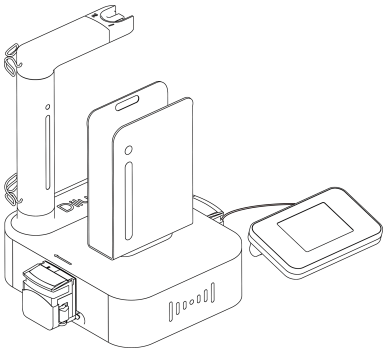
Install the equipment in a good working environment for optimal use.

You have unpacked and assembled your equipment according to the assembly procedure.

1. Carefully place the equipment on a flat, horizontal, stable surface.
   The equipment should be placed on a clean, dry work surface.
2. You may run the cable through the grooves under the equipment depending on where you want to place the touch panel.

   Do not connect the touch panel before performing this operation.

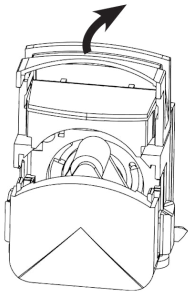
| Location of the touch panel | Underneath the equipment | Real preview |
|---|---|---|
| In front of the equipment with a short cable length |  |  |
| In front of the equipment with a long cable length |  |  |

| Location of the touch panel | Underneath the equipment | Real preview |
|---|---|---|
| Left side of the equipment |  |  |
| Right side of the equipment |  |  |

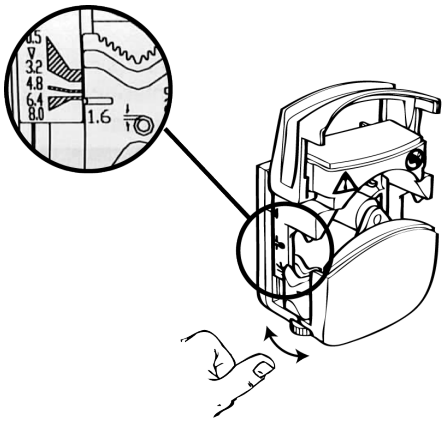
3. Connect the touch panel to the equipment with its power cable.
4. Plug the equipment's power cable into a wall socket close to the device. In the event of a problem, the user must be able to easily unplug the power cable.
   The equipment will start up.
5. Choose a country that has localization settings that are similar to the settings in your country. You can then customize the localization settings adapted to your country. Check the "Define the localization settings" section.
   The Task screen will appear.

# Installing the tubing

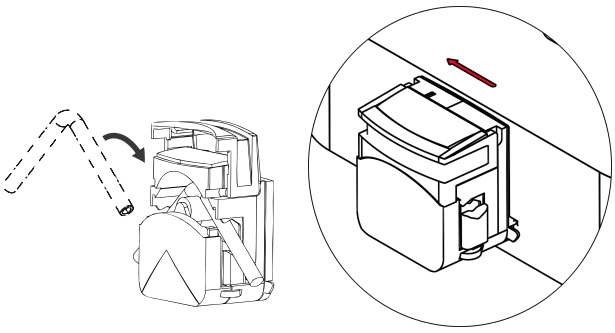
**1.** Lift up the pump head housing.



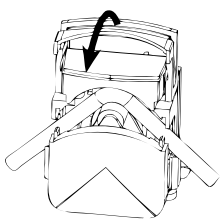
**2.** Depending on the tubing being used, turn the thumb wheels to adjust the pump head.



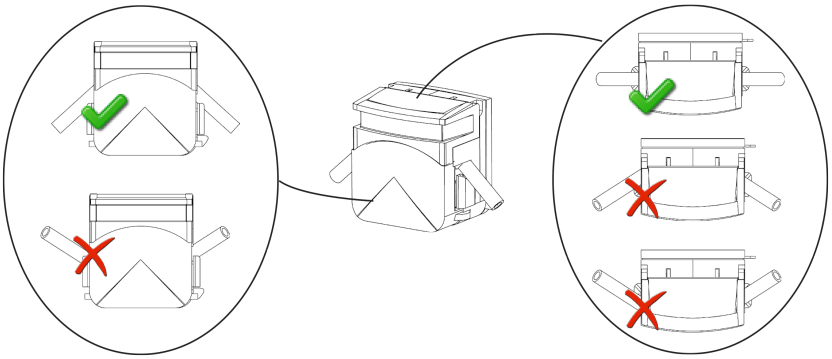

**3.** Insert the tubing (tip of the opaque tubing) into the pump and make sure that it is placed in the right direction.
The part of the tubing with the dispensing nozzle must be placed in the direction of the arrow.



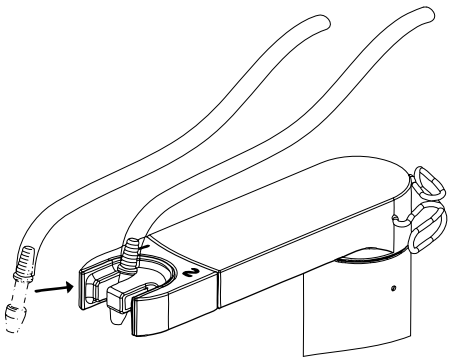
**4.** Close the housing while making sure you remove your fingers from the pump.



**5.** Check that the tubing is properly placed.

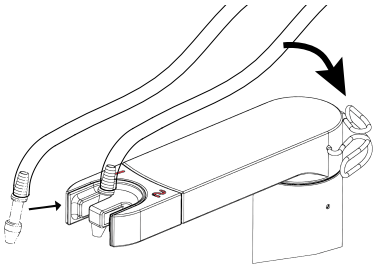


**6.** Attach the dispensing nozzle to the corresponding nozzle holder while making sure that you do not touch the tip of the nozzle:



| **Hose installed on:** | **Dispensing nozzle placed on:** |
|---|---|
| Left pump | nozzle holder 1 |
| Right pump or external pump | nozzle holder 2 |

**7.** Run the tubing, on the dispensing nozzle side, through the tubing guide. Avoid stretching the tubing, doing so might prevent the arm from working properly.



# 5 Switching the equipment on / off

## Switching the equipment on

The equipment does not have an on / off switch.

Proceed according to the following situations:

| Option | Description |
|---|---|
| **Your equipment is off and plugged in.** | Press on the touch panel.<br>The equipment will start after a few seconds. |
| **Your equipment is in sleep mode.** | Touch the screen. |
| **The equipment is not plugged in.** | Plug in the equipment.<br>The equipment will start up after a few seconds. |

## Placing the equipment in sleep mode

Place the equipment in sleep mode to save energy.

1. Press .
2. Press .

To exit sleep mode, touch the screen.

## Restarting the equipment

1. Press .
2. Press .

## Switching off the equipment

1. Press .
2. Press .

# 6 Recommendations for use

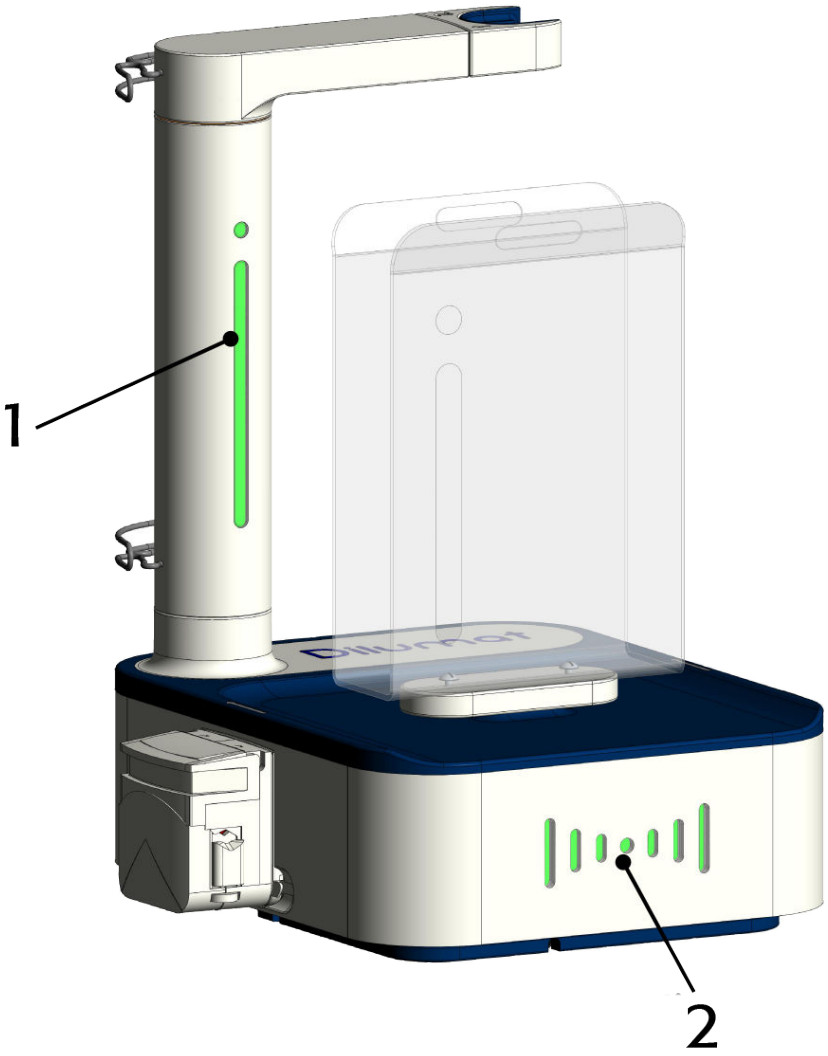
Be careful to keep your head well away from the rotating arm's reach to avoid harm when moving or handling the equipment.

- Always use the equipment on a horizontal, stable surface.
- Adjust the equipment at least once a year.
- Check that the gap between the bag and the bag support does not exceed 1.5 cm.
- Use the following tubing set dimensions:
  - 4.8 mm tubing set with no sampling nozzle: for sample dilutions or dosing with a net weight of under 100 g
  - 6.4 mm tubing set with no sampling nozzle: for sample dilutions or dosing with a net weight of under 1,000 g

7

# Understanding the light indicators

Different light indicators inform you about the state of the equipment and help you to understand how it operates.




| | |
|---|---|
| 1 | Arm light indicator |
| 2 | RFID reader light indicator |

✓ **Mast light indicator**

| Indicator | Color | Explanation |
|---|---|---|
|  | blue | • equipment is turned on<br>• equipment is ready for an operation |
|  | blue (flashing) | • task in progress<br>• task in manual mode: manual dispensing of the diluent currently in progress |
|  | green | • task successful |
|  | green (flashing) | • Dispensing in manual mode: the correct diluent mass has been reached. |
|  | red | • task failed<br>• an error has occurred |
|  | orange (flashing) | • task postponed |
|  | colorless | • equipment is off<br>• equipment is in standby mode |

✓ **RFID indicator**

| Indicator | Color | Explanation |
|---|---|---|
|  | Briefly turns green) | • label or RFID card scan was successful |
|  | blue | • RFID reader is in playback mode |
|  | colorless | • cannot be scanned |
|  | red | • scan failed |

✓ **RFID indicator (with LIMS connection)**

| Indicator | Color | Explanation |
|---|---|---|
| 1.  <br>2.  <br>3.  | 1. flashing blue<br>2. turns green<br>3. going back to blue | • RFID ticket or RFID card scan was successful |
|  | blue | • RFID reader is in playback mode |
|  | red | • scan failed |
|  | colorless | • cannot be scanned |

# 8 Calibrating

Use a standard mass to calibrate the equipment and check whether your equipment readings are accurate.

1. Remove all items from the scales
2. Press the key then the key.
3. Press .
4. Press then **Start** to access the Calibration screen.
5. Enter the calibration mass.
6. Place the calibration mass on the scales.
   The equipment displays the mass reading.
7. Press **To generate the certificate**.

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# Making an adjustment

With the help of the calibration weights, you can make an adjustment to the equipment to reduce the gap between the calculated measurement and the calibration weights.

1. Remove all objects from the scales.
2. Press the key then the key.
3. Press then .
4. Press **Start** to go to the Adjustment screen.
5. If necessary, change the calibration weight for the first adjustment.
6. Put the calibration weight on the scale.
   The equipment will indicate the weight measurement.
7. Press **Save**.
   The results are saved and appear in the table.
8. If necessary, change the calibration weight for the second adjustment.
9. Put the calibration weight on the scales.
   The equipment will indicate the calculated weight.
10. Press **Save**.
    The results are saved and appear in the table.
11. Press **Generate certificate**.

You have to perform a calibration to confirm the adjustment certificate, check the *Perform a calibration* section.

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# Performing a dilution

Distribute a diluent according to a specific dilution factor and sample mass.

1. Press  to access the Task screen, then select **Dilution** and enter the dilution factor you want to achieve.
2. Press  to select a pump..
3. Press  to allocate a diluent to the pump you have just selected.
4. Place your bag on the bag support.
5. Carry out a tare weight measurement.
6. Place the sample in the bag and complete the **sample ID** field if required.
7. Press  .
   Dispensing starts.
8. Remove the bag once the task is complete.

# Dosing

Dispense a certain mass of diluent.

1. Press  to access the Task screen, then select **Dosing** and enter the mass of the dose you need to dispense.
2. Press  to select a pump.
3. Press  to allocate a diluent to the pump you have just selected.
4. Place your bag on the bag support.
5. Carry out a calibration.
6. Place the sample in the bag and complete the **sample ID** field if required.
7. Press  .
   Dispensing starts.
8. Remove the bag once the task is complete.

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# Dispensing in manual mode

Dispensing manually by pouring the diluent into the bag.

1. Press  to access the Task screen, then select **Dilution** or **Dosing** and enter the mass of the dose you need to dispense or the dilution factor you want to achieve.
2. Press  to select the **Manual** dispensing mode.
3. Place your bag on the bag support.
4. Carry out a calibration.
5. Place the sample in the bag and complete the **sample ID** field if required.
6. Press  .
   The mast light indicator flashes blue.
7. Pour the diluent into the bag.
8. Press  to confirm.
9. Remove the bag once the task is complete.

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# Stopping a task under way

You may stop a task under way at any time to top up the diluent or change the pump. You can then resume or cancel the task.

## Recharging diluent while a task is under way

You may recharge the diluent while a task is under way, without canceling the task. This only applies if the Diluent option is enabled and if a diluent has been allocated to the pump being used for the task.

A task is under way.

1. Press Stop.
   The Stop screen is displayed.
2. Press to recharge the diluent. The operation starts automatically.

## Changing the pump while a task is under way

You may change the pump while a task is under way, without having to cancel the task. This only applies when at least two pumps have been detected by the equipment.

A task is under way.

1. Press Stop.
   The Stop screen is displayed.
2. Select a pump if required.
3. Press .
   The task starts automatically.

## Canceling a task under way

You may cancel a task that is under way.

A task is under way.

1. Press Stop.
   The Stop screen is displayed.
2. Press then Stop.

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# Priming a tubing

Prime the tubing of the pump you are using in case of malfunction.

 You have positioned the tubing correctly in the pump but the pump stalls when you start a task.

**1.** Press  to select the pump to which the tubing has been connected.

**2.** Press  .

**3.** Press  until the diluent flows out of the pump head.

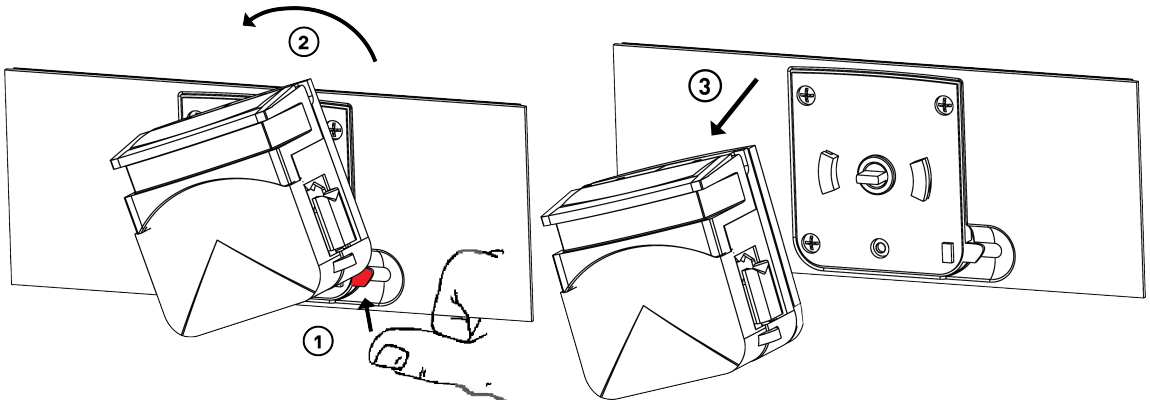
# Cleaning the equipment

- Do not spray cleaner directly on the equipment terminals.
- Do not use aggressive chloride- or acid-based products.

**1.** Unplug the equipment from the wall socket.

**2.** Remove the dispensing tubing from the equipment.

**3.** Remove the pump head, if required. Be careful not to trap your fingers.




**4.** Remove the bag support.

**5.** Clean the equipment, the pump head and the bag support with a cloth and a cleaning fluid or with hot water.

Remember to also clean the inside of the arm.

**6.** Clean the touch panel with a dry or slightly damp cloth

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# Connecting with an administrator account

You can connect with an administrator account to access a wider range of features.

1. Press  .
   The Configuration screen is displayed.
2. Press  .
3. Enter the password `35170` to connect with an Administrator account.
   You will remain connected as an Administrator until you leave the Configuration screen.

# Managing the external devices

Access more features (data management, updates, etc.) by adding physical or virtual external devices (USB stick, Wifi stick, Ethernet, printer, virtual printer, number pad, bar code reader, embedded FTP, remote FTP).

## Enabling-disabling the embedded FTP server

You may enable or disable the embedded FTP server to store your data.

1. Press the key then the key.
2. Press .
3. Press .
4. Select the embedded FTP in the list of external devices.
5. Press the on / off button to enable or disable the embedded FTP server.

You may connect to the embedded FTP server via an anonymous session by using the `35170` password.

## Connecting a USB stick

You may use a USB stick to store your data.

You can connect your USB stick from any screen.

1. Press the key then the key.
2. Press .
3. Press .
4. Plug your USB stick into the rear panel on the equipment.
   The USB stick is automatically detected and displayed in the list of external devices.

Disable the USB stick before removing it to avoid data loss.

## Configuring a Wifi stick

Use a Wifi stick to access a network and to manage your data.

Disable the Ethernet before enabling the Wifi stick.

1. Press the key then the key.
2. Press .
3. Press .
4. Plug your Wifi stick into the rear panel on the equipment.
   The Wifi stick is automatically detected and displayed in the list of external devices.
5. Press the on / off button to enable the Wifi stick.
6. Press to configure the Wifi stick.

## Configuring the Ethernet

You may use the Ethernet to access a network and to manage your data.

Disable the Wifi stick before enabling the Ethernet.

1. Press the key then the key.
2. Press .
3. Press .
4. Plug your Ethernet cable into the rear panel on the equipment.
   The Ethernet is automatically detected and displayed in the list of external devices.
5. Press the on / off button to enable the Ethernet.
   The equipment connects to the network.
6. Press to display the IP settings.
   By default, the equipment is configured in DHCP mode.

## Configure a remote FTP server

You may configure a remote FTP server to store your data.

1. Press the key then the key.
2. Press .
3. Press .
4. Press .
5. Select **remote FTP server** then press .
6. Complete the fields, then press to confirm.
   The remote FTP server is included in the list of external devices.

## Connecting a physical printer

You may use a physical printer to print your labels.

1. Press the key then the key.
2. Press .
3. Press .
4. Plug your printer into the rear panel on the equipment.
   The printer is automatically detected and displayed in the list of external devices.

The virtual printer is configured by default.

5. Press to modify its configuration.

## Creating a virtual printer

You may use a virtual printer to store your data on a USB stick, an embedded FTP server or a remote FTP server.

1. Press the key then the key.
2. Press .
3. Press .
4. Press .
5. Select **virtual printer** then press .
6. Complete the fields, then press to confirm.
   The virtual printer is displayed in the list of external devices.

The virtual printer is configured by default.

7. Press to modify its configuration.

## Modifying a label model

You may modify the default label models for the equipment.

Your printer is on or you have set up a virtual printer.

1. Press the key then the key.
2. Press .
3. Press .
4. Select a printer and press .
5. Select the type of label you want to modify.
6. Choose another label model.
7. Press to confirm.

## Importing a label model

You may customize the label models by importing your own models.

- Your printer is on or you have set up a virtual printer.
- You have stored your label model file on an external storage device (USB stick, embedded FTP server or remote FTP server).

1. Press the key then the key.
2. Press .
3. Press .
4. Select a printer and press .
5. Select the type of label you want to customize.
6. Press .
7. Select and import your label model file from the external storage device.

## Configuring the bar code reader

You may use a bar code reader to scan your labels.

1. Press the key then the key.
2. Press .
3. Press .
4. Plug your bar code reader into the rear panel on the equipment.
   The bar code reader is automatically detected and is included in the list of external devices.
5. Press to configure the bar code reader.

A bar code reader is configured like a keyboard, according to the country's language. For example in France (fr), keyboards are configured in AZERTY and in QWERTY in English speaking countries. It is the same for bar code readers. Be sure to select the country code corresponding to your bar code reader localization settings. Otherwise, the reader will not be able to read correctly yout bar codes. Run a test on a bar code on which you can see the content in order to check that your reader has been correctly configured.

6. Select your country's language
7. Press to confirm.

## Configuring a number pad

You may use a number pad.

1. Press the key then the key.
2. Press .
3. Press .
4. Plug your number pad into the rear panel on the equipment.
   The number pad is automatically detected and is included in the list of external devices.
5. Press to configure the number pad.
   A number pad is configured like a keyboard, according to the country's language.
6. Press to confirm.

# Configuring the system settings

## Importing the configuration settings

You may import your configuration settings for the equipment from your external devices.

1. Press the key then the key.
2. Press .
3. Press to access the Import/Export screen.
4. Press .
5. Select the configuration file you want to import.
6. Press to confirm.
   The equipment will restart.

## Exporting the configuration settings for the equipment

You may export your configuration settings for the equipment via your external devices.

1. Press the key then the key.
2. Press .
3. Press to access the Import / Export screen.
4. Press .
5. Select where you want to store the configuration file.
6. Press to confirm.

## Managing updates

You may enable and disable the automatic firmware installation and search feature and update the firmware.

1. Press the key then the key.
2. Press then to access the Update screen.
3. Configure the settings.
4. Press to confirm.

## Configuring the localization settings

You may choose your localization settings by choosing a country.

1. Press the key then the key.
2. Press .
3. Press to access the Localization screen.
4. Select a country.
5. Press to confirm.

## Adjusting the energy settings

You may adjust the energy settings for greater readability and configure the sleep feature to save energy.

1. Press the key then the key.
2. Press .
3. Press to access the Energy screen.
4. Configure the settings.
5. Press to confirm.

## Adjusting the date, time and time zone

You may adjust the date, time and time zone You may also enable / disable the automatic date / time and time zone synchronization feature.

1. Press the key then the key.
2. Press .
3. Press to access the Date & Time screen.
4. Complete the fields
5. Press to confirm.

## Print a certificate

You may print the calibration and adjustment certificates using a physical or a virtual printer. The labels are printed as .png files and can be stored on a USB stick, an FTP server, etc.

Check that you have configured all the external devices required for printing. See the *Managing your external devices* section.

1. Press the key then the key.
2. Press .
3. Press to access the Certificates screen.
4. Select the benchmarking or adjustment tab according to the certificate you want to print.
5. Press to print the certificate.
   The certificate will be printed as a label or saved as a .png file on a USB stick or FTP server.

## Restore the calibration and adjustment certificates

You may restore the default values of the calibration and adjustment certificates.

1. Press the key then the key.
2. Press .
3. Press to access the Certificates screen.
4. Press to restore the default values of the calibration and adjustment certificates.

## Configuring the communication settings for the LIMS

You may configure the settings to allow communication with your LIMS.

Contact bioMérieux customer service to configure the LIMS.

1. Press the key then the key.
2. Press .
3. Press .
4. Configure the settings.
5. Press to confirm.

# Managing messages

## Displaying a message

A flashing envelope indicates you have a new message, no matter which screen you are working on.

1. Press ✉.
   The Message screen is displayed.
2. Select the message you want to read, then press ▶.
   - The message is marked as read.
   - It remains in your inbox.
   - The envelope stops flashing.

## Deleting a message

Delete your messages from the message list once you have read them.

1. Press ✉, no matter which screen you are working on.
   The Message screen is displayed.
2. Select the message you want to delete, then press 🗑.

# Troubleshooting

## Typical errors

Please check the following trouble-shooting list before calling the after-sales service.

| Problem outline | Possible causes | Problem resolution |
|---|---|---|
| Pump will not start | • Badly placed tubing<br>• Hose not primed | • Place tubing correctly in pump<br>• Prime tubing. |
| Uneven dispensing. | • Tube adjustment is not in right position for the diameter of the tubing currently in use. | • Adjust the tube so that the tubing is not constricted. |
| The touch panel is off but the mast light indicator is on. | • Faulty touch panel connection on the equipment side.<br>• Faulty touch panel connection on the touch panel side. | • Check that the touch panel cable is connected to the equipment.<br>1. Disconnect the touch panel from the equipment.<br>2. Unscrew the touch panel connector housing.<br>3. Re-connect the cable correctly.<br>4. Screw on the touch panel connector housing.<br>5. Re-connect the touch panel to the equipment. |
| The mast light indicator is off but the touch panel is on. | • Faulty mast connection. | • Check that the mast cable is connected to the terminal in the base of the equipment. |
| Only half the touch panel screen is on. | • Faulty connection | • Disconnect then re-connect the equipment. |
| Dispensing will not start. | • Dispensing in manual mode. | • Select the required dispensing mode. In manual dispensing mode, you must introduce the diluent manually, without using the pump. |
| Weight remains the same. | • The equipment has reached its maximum weighing capacity. | • Check that total weight (sample + diluent) does not exceed the equipment's weighing capacity. |
| Equipment is not dispensing diluent in the middle of the bag support. | Faulty tubing nozzle positioning | • Check that all tubing nozzles are correctly positioned on the end connectors. |
| Dispensing starts but no liquid is being dispensed. | • Hose is constricted.<br>• Hose is positioned wrong way round. | • Make sure the tubing is not constricted or bent.<br>• Make sure the tubing are correctly positioned on the left-hand and right- |

| Problem outline | Possible causes | Problem resolution |
|---|---|---|
| | | hand pumps by checking the arrows on the equipment. |
| Bar code reading malfunction. | • Incorrect bar code reader configuration. | • Configure the bar code reader when you connect the equipment. |
| The external pump is not detected on the interface and none of the light indicators are on. | • Faulty connection | • Check that the external pump is connected to the equipment. |
| Pedal does not work. | • Faulty connection | • Check that the pedal is connected to the equipment then check state of the pedal entry sensor. Read the *Checking sensor state* section. |
| USB ports do not work. | USB devices overload | 1. Turn off the equipment.<br>2. Unplug the equipment.<br>3. Plug back the equipment. |

## Displaying the details for the equipment

Change the equipment name, display the equipment specifications and program release.

1. Press the key then the key.
2. Press .
3. Press .
4. If required, change the equipment name and display the available information.

## Checking sensor state

Check that equipment sensors are operating correctly.

1. Press the key then the key.
2. Press then .
3. Follow context-sensitive help to check state of sensors.
   When state is **on**, the sensor is operational.

## Implementing functional tests

You may implement simple tests (light indicators, pumps, sound, etc.) and sequential tests on the equipment to check for malfunction.

1. Press the key then the key.
2. Press then .

## Managing the life counters

You may display and zero the life counters for the equipment and send anonymous reports to optimize them.

1. Press the key then the key.
2. Press then .
3. You can either:
   - Display the life counters
   - Enable / disable the sending of regular anonymous reports to bioMérieux.
4. Press to confirm.

## Authorizing remote maintenance

Authorize remote maintenance in the event of equipment failure to allow the After-sales service to take control of your equipment remotely to deal with the problem.

To authorize remote maintenance, you need to be in contact with the After-sales service.

1. Press the key then the key.
2. Press then .
3. Press .
4. Follow the After-sales service instructions.

# Technical data

| | | | |
|---|---|---|---|
| Environmental conditions | Altitude | up to 2,000 m | |
| | Temperature | from 0 to 45°C max. | |
| | Relative humidity (RH) | from 10 to 80% | |
| | Mains supply voltage | 100-240 CAV, 50/60 Hz, 2 A | |
| | Machine supply voltage | 24 V DC, 3,75 A | |
| | Degree of pollution | 2 | |
| Atmospheric pressure | | 700 hPa to 1,100 hPa | |
| Power rating | | 90 W | |
| Installation Category | | Type II according to CEI664 directive | |
| Noise level | | 67 db | |
| Equipment dimensions (W x H x D) | | Equipment alone (mm)<br>• Start: 324 x 437 x 333<br>• Expert: 377 x 437 x 333<br>• Expert Evo: 377 x 527 x 336 | Packaged equipment (mm)<br>• Start: 580 x 330 x 400<br>• Expert: 580 x 330 x 400<br>• Expert Evo: 580 x 346 x 400 |
| Weight of the equipment | | Equipment alone (kg)<br>• Start: 11.6<br>• Expert: 13<br>• Expert Evo: 14 | Packaged equipment (kg)<br>• Start: 15.5<br>• Expert: 17<br>• Expert Evo: 18 |
| Dilution factor | | • Start: From 1/2 to 1/100th<br>• Expert and Expert Evo: From 1/2 to 1/1000th | |
| Dispensing speed | | Less than 10 seconds for a 1/10 dilution of a 25 g sample. | |
| Accuracy | | • Weight: less than 1% starting from 5 g<br>• Dilution / dosing: less than 5% on the final weight starting from 10 g. | |
| TFT resistive touchscreen | | Size<br>• Start: 8.89 cm (3.5 inches)<br>• Expert and Expert Evo: 12.70 cm (5 inches) | Resolution (px)<br>• Start: 240 x 320<br>• Expert and Expert Evo: 640 x 480 |
| Keypad | | • Start: 20 physical keys<br>• Expert and Expert Evo: 10 physical keys | |
| Weight | | • Start: from 3 g to 2 kg<br>• Expert: from 0.3 g to 3 kg<br>• Expert Evo: from 3 g to 7 kg | |
| External pump | Number of external pumps allowed | • Start: 1 depending on equipment configuration<br>• Expert & Expert Evo: up to 4 | |

# e-pump

✓ **New**

You can now connect external pumps to your compatible AES blue line™ equipment.

✓ **Capacity**

You can connect up to four external pumps according to the way your equipment is configured.

✓ **User-friendly design**

Different colored light indicators make the system easy to use. Thanks to its compact, robust design, the system allows you to stack the pumps on top of each other.

## Technical specifications

Environmental conditions for external pump use and technical specifications.

Environmental conditions

| Name | Values |
|---|---|
| Altitude | up to 2,000 m |
| Temperature | 0°C to 45°C max. |
| Relative humidity (RH) | 10% to 80% |
| Can be interconnected with: | compatible AES blue line™ equipment |
| Pollution level | 2 |

| Name | Values |
|---|---|
| Atmospheric pressure | 700 hPa to 1100 hPa |
| Equipment category | Type II ECI664 directive compliant |
| Noise level | 63 db |
| Dispensing speed | up to 600 rpm |

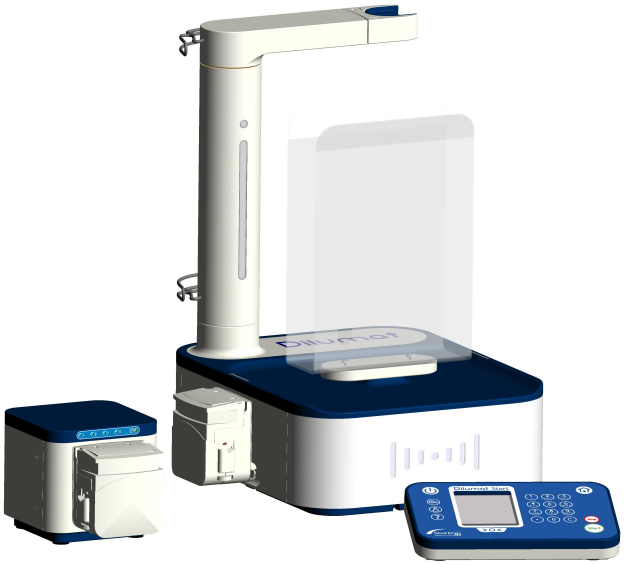
Dimensions and weight

| Name | Values |
|---|---|
| Equipment dimensions (unpacked) (W x H x D) | 120 x 115 x 195 mm |
| Equipment dimensions (packed) (W x H x D) | 285 x 340 x 127 mm |
| Power cable length | 400 mm |
| Power cable extension length | 700 mm max. |
| Equipment weight (unpacked) | 3.4 kg |
| Equipment weight (packed) | 3.7 kg |

## Recommendations for use

- Only use the pump with a single pump head only.
- Total length of power supply cables for external pumps must not exceed 3 m.

## Installing an e-pump



1. Place the pump on a flat, stable surface next to the equipment you want to connect it to.

   The pump must be placed on a clean, dry work surface.
2. Switch the equipment off and unplug the mains power supply for the equipment you want to connect the external pump to.
3. Connect the power supply cable for the external pump to the equipment.

   Connect the second external pump to the pump already connected to the equipment.
4. Plug in the equipment.
   - A blue light indicator will display the number of the external pump according to the order in which they are connected.
   - The green light indicator shows that the external pump has been selected for a task via the equipment.

# Glossary

### Adjustment

Adjustment consists in setting the equipment to reduce the difference between the measurement recorded and the reference mass.

### Calibration

Calibration has to deal with comparing the measurement recorded by the equipment with a reference mass.

### Dilution

Dispensing a diluent according to the dilution factor and sample mass.

### Dosing

Dispensing a fixed volume of diluent.

### LIMS

LIMS (Laboratory Information Management System), is an integrated management software package used in laboratories.

### MPD (Maximum Permissible Difference)

In metrology, this has to deal with the maximum permissible error for a measuring instrument. The metrological analysis is declared non-compliant if the measurement is outside of the zone defined by the MPD.

### RFID

RFID (Radio Frequency Identification), is a method for storing and remotely retrieving data by using devices called "RFID tags" or "RFID transponders".

### Test weight

Weight used for adjusting and checking.

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