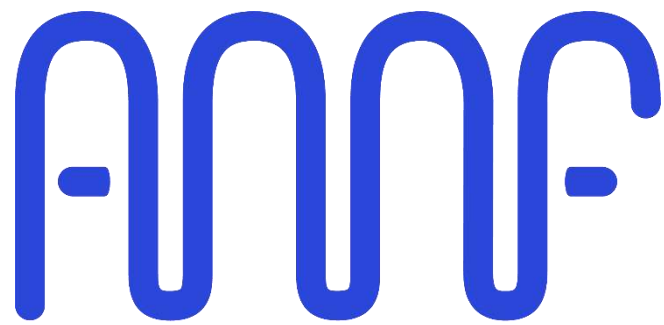




Advanced Microfluidics

LSPoneQuick – User Guide

Version 03.03

Document Purpose

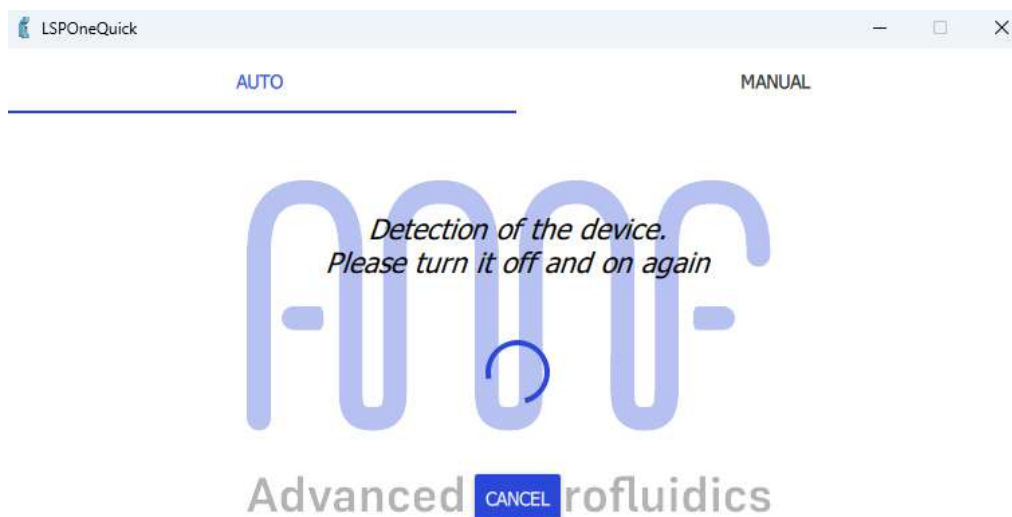
This document shows the different possibilities of our LSPoneQuick GUI.

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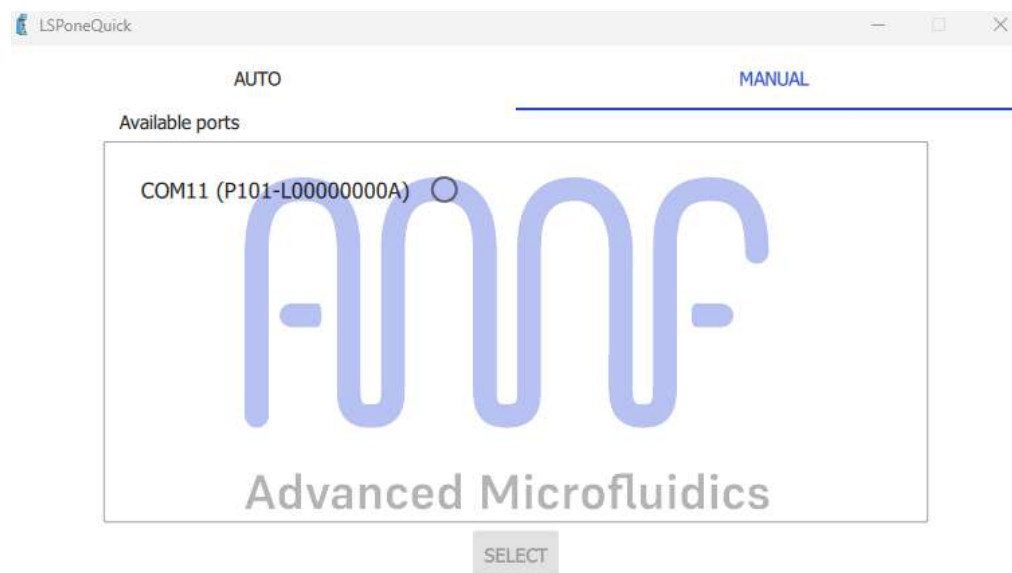
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1. Opening screen

When the opening screen shows up, the easiest is to follow the instructions. Turn the pump off and on again.

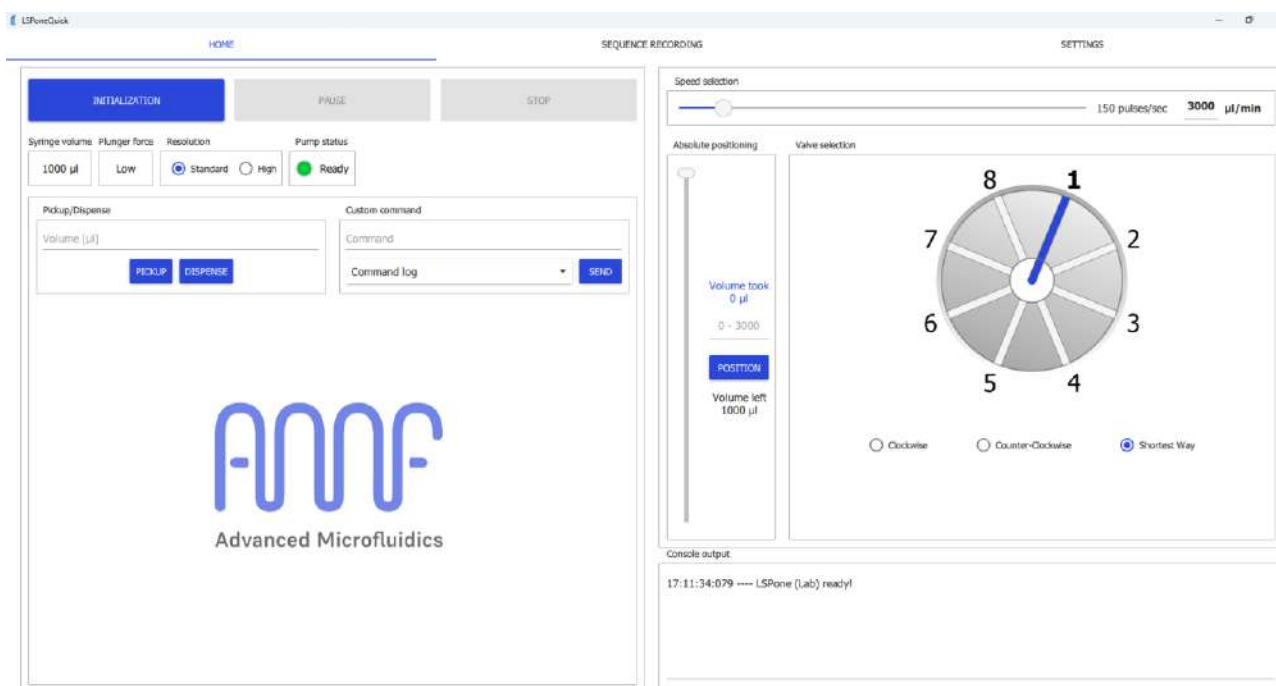


It is also possible to switch to Manual mode and select a specific serial port.



2. Home tab

Once the pump is connected, it should automatically initialise and bring you to the home tab.



If this is not the case, please click on *RESET*.

The home tab lets you:

- **Reinitialise the pump**
 - Click on *RESET*
 - Completely empties the syringe. Check that a waste is connected to port 1 for correct evacuation.
- **Stop the pump** at any time
 - Click on *STOP*
 - Requires you to reinitialise the pump after
- **Stop the pump** at the end of the current instruction
 - Click on *PAUSE*
 - Does NOT require a reinitialisation
- See the **syringe size**
 - Verify that it is the correct syringe size before you do anything
 - Can be changed in the settings tab
- See the **force on the plunger for initialisation**
 - This is automatically determined depending on your syringe size
 - Can be changed in the settings tab
- Choose the **resolution** of your displacement
 - Standard = the position of the plunger in the syringe is divided between 3'000 positions
 - High = the position of the plunger in the syringe is divided between 24'000 positions – useful when handling minimal quantities of liquid (e.g. up to 5 µl)
- See the **pump status**



- Green = ready to receive the next command
 - Orange = currently busy
- Choose the **volume** that you would like to pickup/dispense at the next syringe movement
 - Make sure that you have the correct syringe size selected, or this will be false
 - *PICKUP* fills the syringe, *DISPENSE* empties the syringe
 - There are several boxes stacked on the left-hand side. This allows you to have several “ready instructions” so you don’t need to retype the volume each time when you often use it
- Add a **custom command**
 - [For advanced users only](#)
 - From the command set in the user manual, in the format: \1 + command + R
 - *E.g. the initialisation command would be \1ZR*
 - The commands that you enter are saved in the *Command log*. It is wiped every time you quit the software.
- Enter the **speed** at which the syringe will be moving
 - the speed in $\mu\text{L}/\text{min}$ is automatically calculated depending on the syringe size
- Choose the **absolute position** of the plunger in the syringe
 - Instead of moving the syringe using the quantity in μL , you can decide to move to a position.
 - *E.g. moving to position 0 ensures that you empty the syringe, regardless of the volume that is in it.*
- You can **select the port** on which you want to go using the valve selection
 - You must check that the valve shown here corresponds to the model mounted on your LSPone.
 - Can be changed in the Setting Tab
 - If you are in *Click & Go* mode, the valve will automatically move when you click on a port number. Otherwise, click on the port number, then on *MOVE*
 - By default, the valve will turn in the clockwise direction. You will need to check the *counter-clockwise rotation* box to turn in the other direction. You can also automatically choose the closest path by selecting *Shortest way*
- **Observe** what you are doing
 - The console at the bottom shows you the current state of the pump and the commands that are sent to the pump
 - You can save or clear this log at any time by right-clicking on it



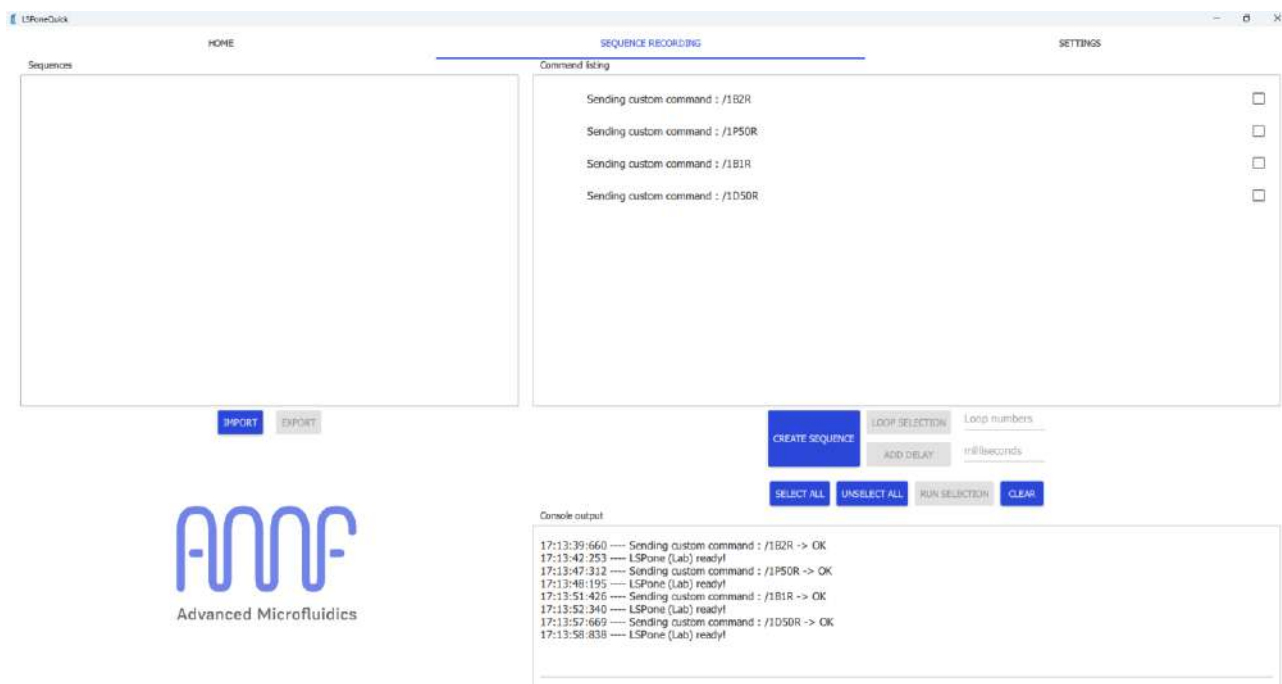
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3. Sequence recording tab

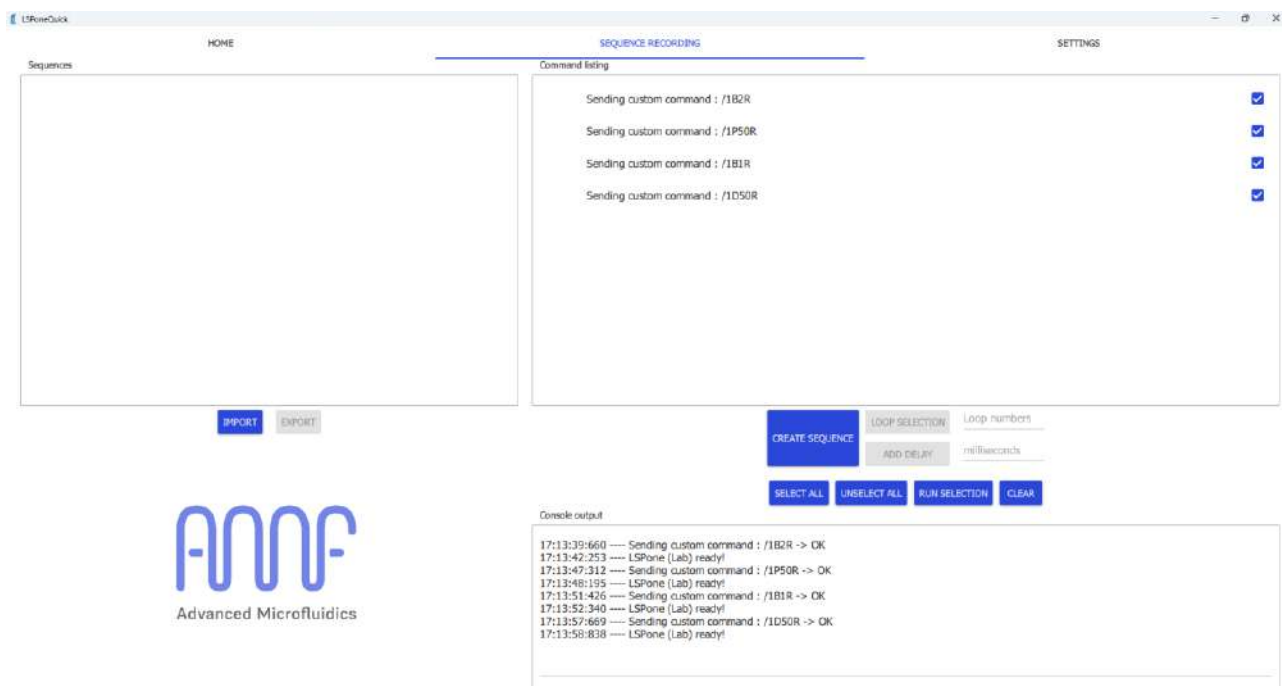
Any action that you perform in the home tab is automatically saved in the *command listing* of the *Sequence recording* tab.

This allows you to control what you have done, to repeat it if you want to, and to save it for later.

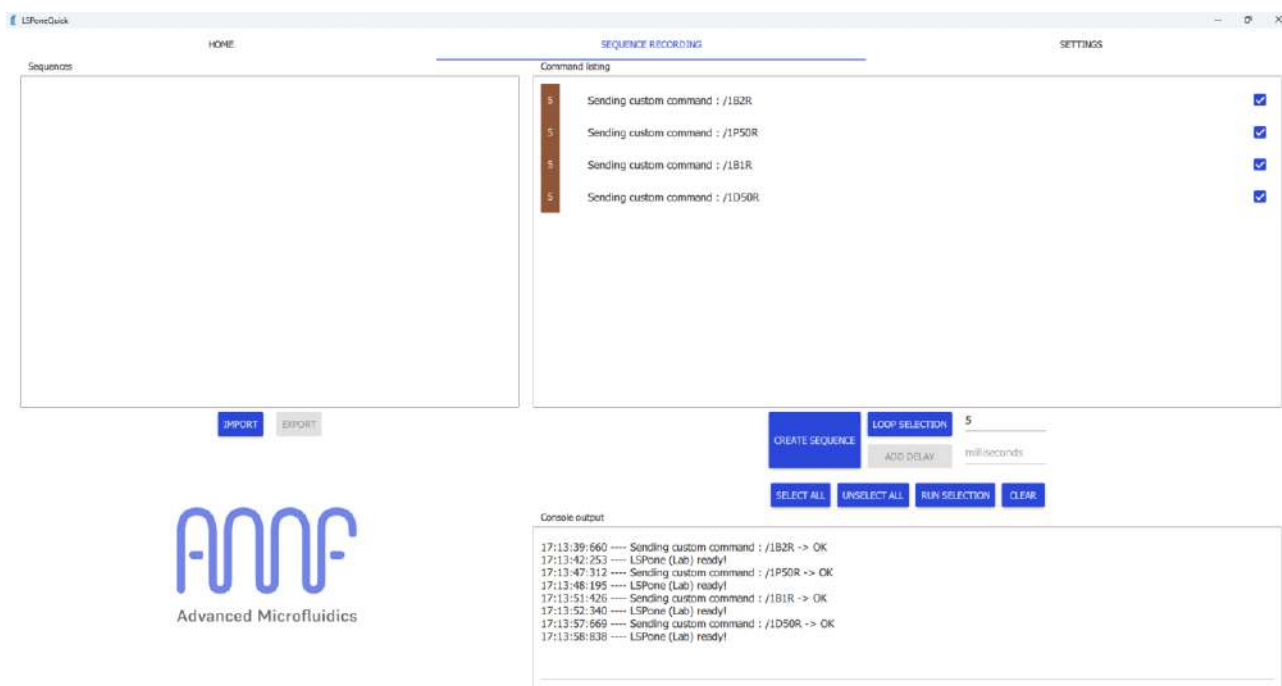


Here are a few tips for how to use this tab:

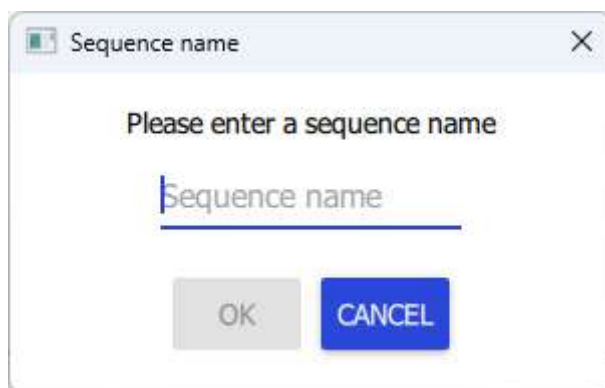
- Check the instruction that you want to deal with:



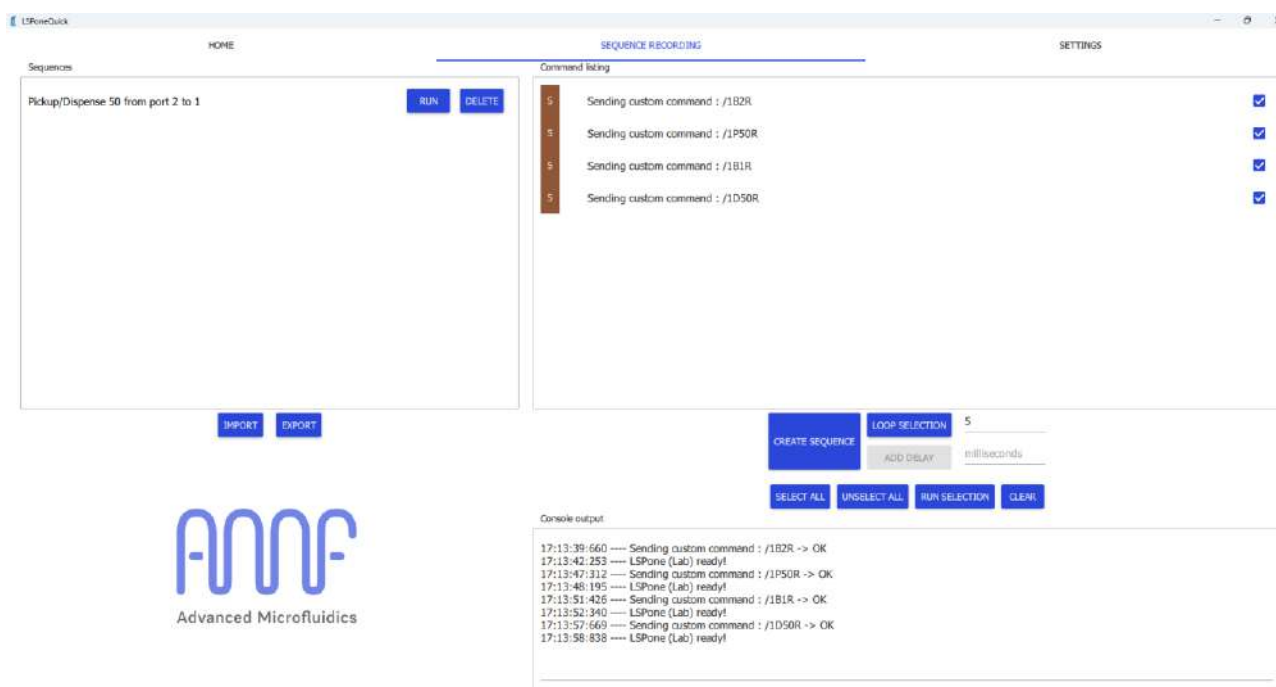
- If you simply want to repeat this set of instructions once, click on *RUN SELECTION*
- If you want to run this set more than once, enter a number of loops that you want on the *Loop number* line and click on loop selection. The number of loops will appear next to the instructions.
 - Only valid for consecutive instructions



- If you want to save the sequence that you created for future use, click on *CREATE SEQUENCE*
 - A window will open asking for a sequence name



- As you can see, a new sequence has appeared on the left side.

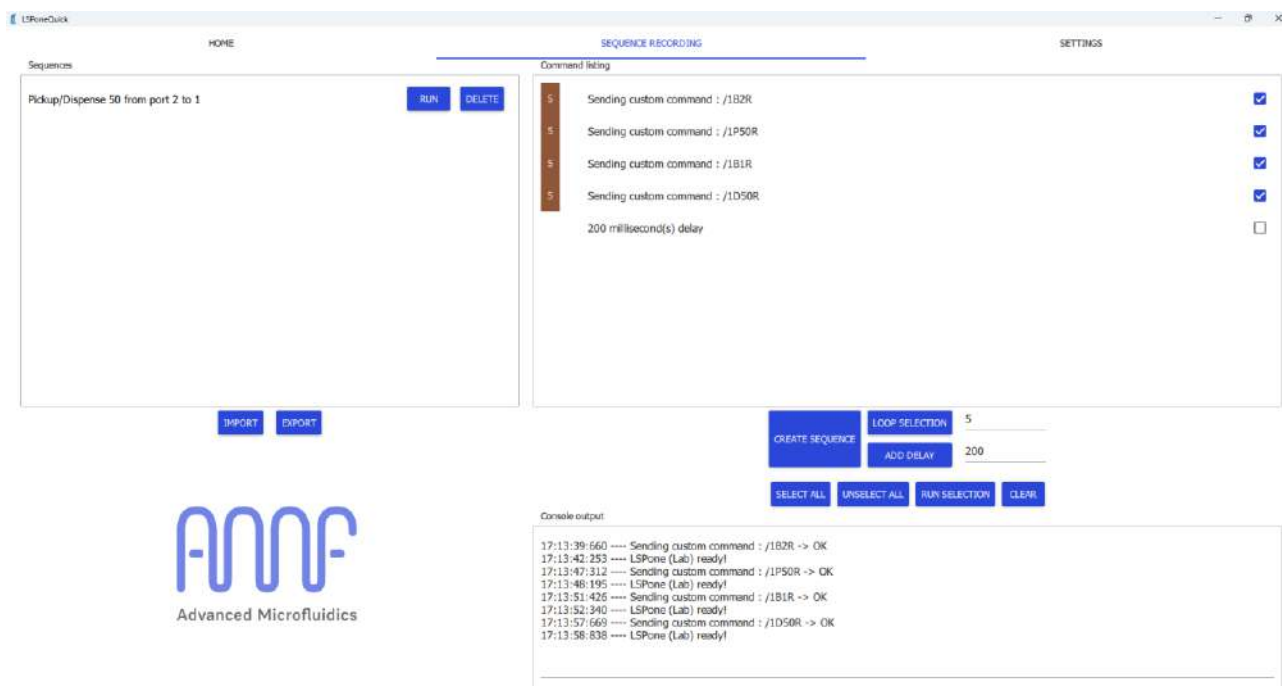


- To run this new sequence, click on *RUN* next to the sequence name.
- **At this point, this sequence only exists until you close the program. Then it will be lost forever.**
- If you want to keep this sequence for future use the next time you open the program, click on *EXPORT*. A window will open for you to select the exporting directory.
- To retrieve a saved sequence the next time you open the program, please click on *IMPORT* and find you sequence in your system.
- It is also possible to add a delay between instructions by entering the time you want to wait (in milliseconds) and clicking on *ADD DELAY*
 - This delay will be added at the end of the current instruction set:

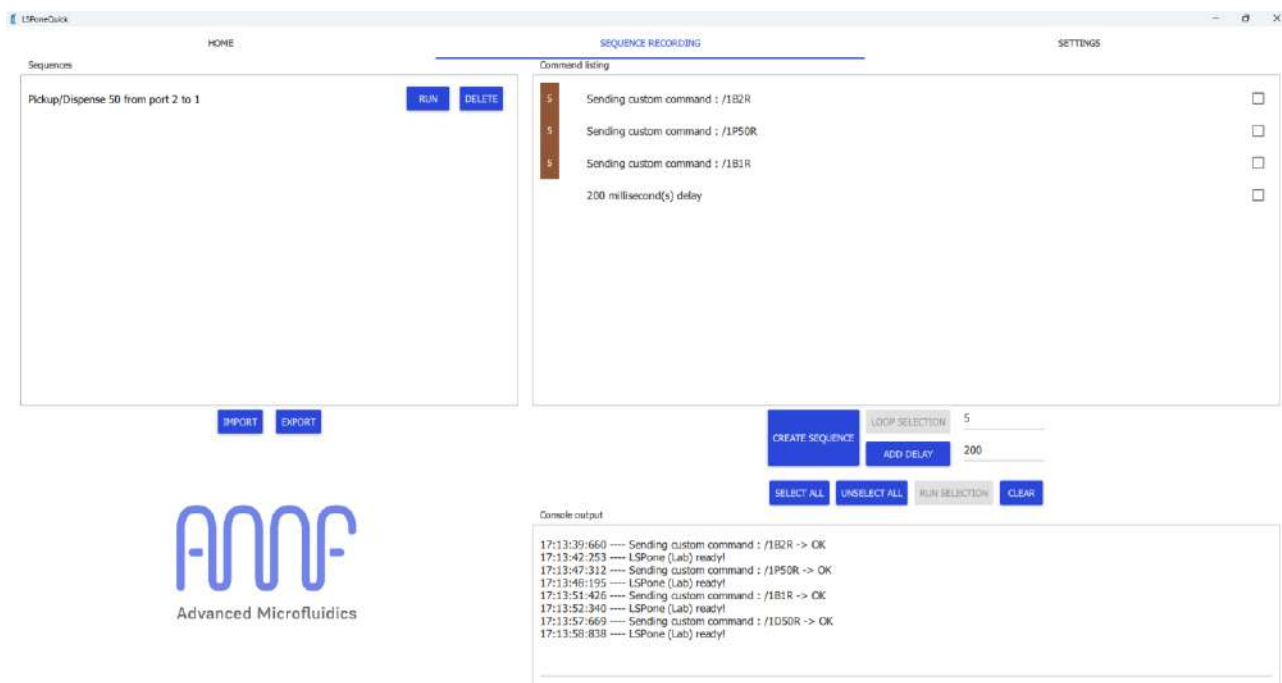


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- If you have specific instructions that you would like to remove, check these specific instructions and click on **CLEAR**. They will then disappear from the list:

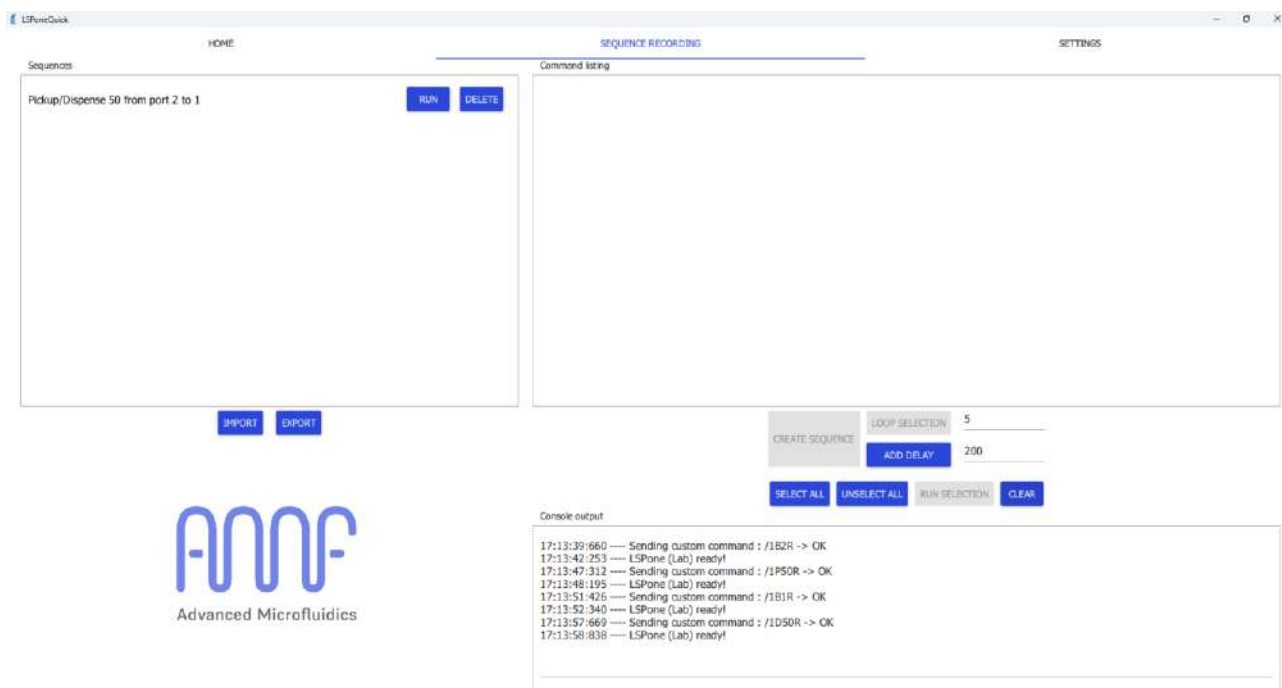


- You can use the **SELECT ALL** and **UNSELECT ALL** buttons for easier selection of your instructions, depending on the number that you have got.
- If you want to clear the full list and come to a fresh start, simply click on **CLEAR** without selecting anything:



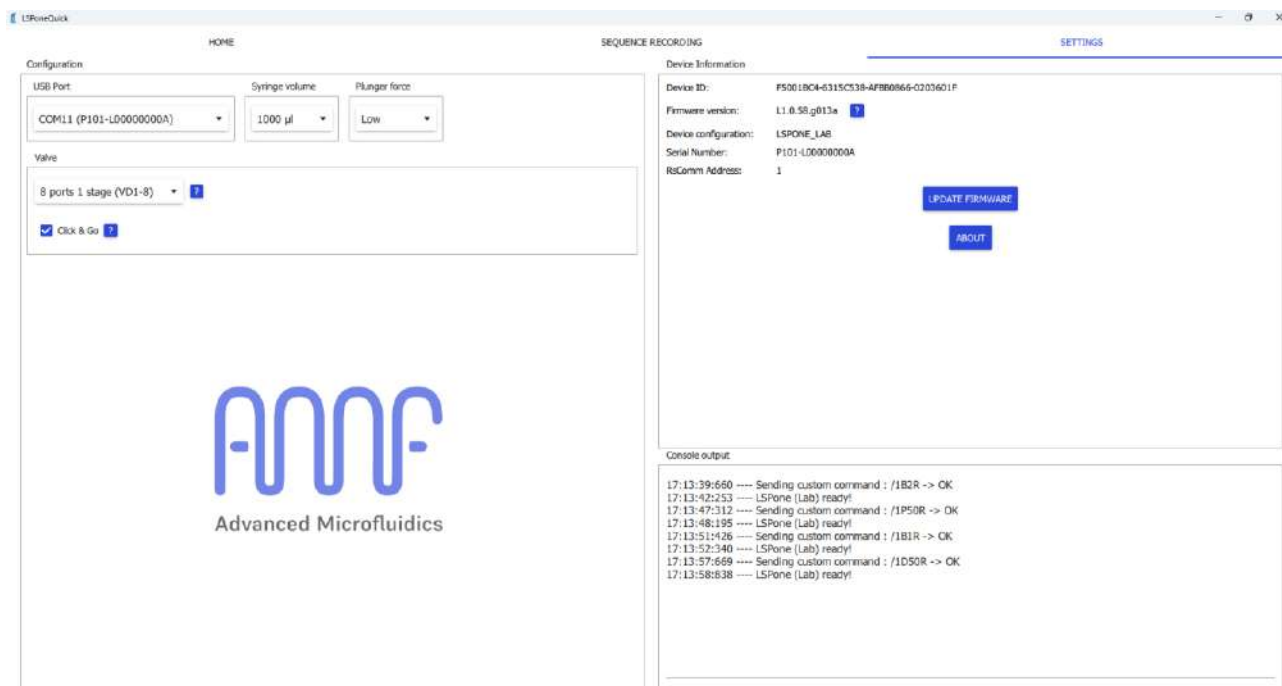
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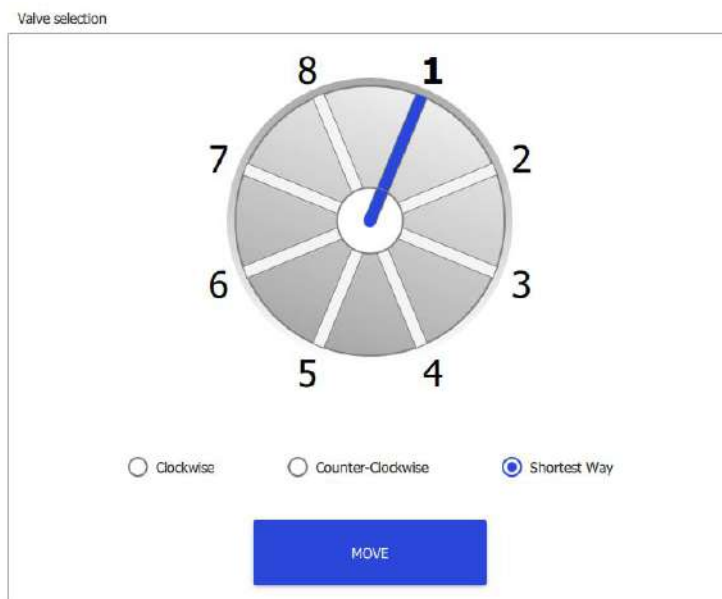
- The output console shows what the pump is doing and its status at any time.

4. Settings tab

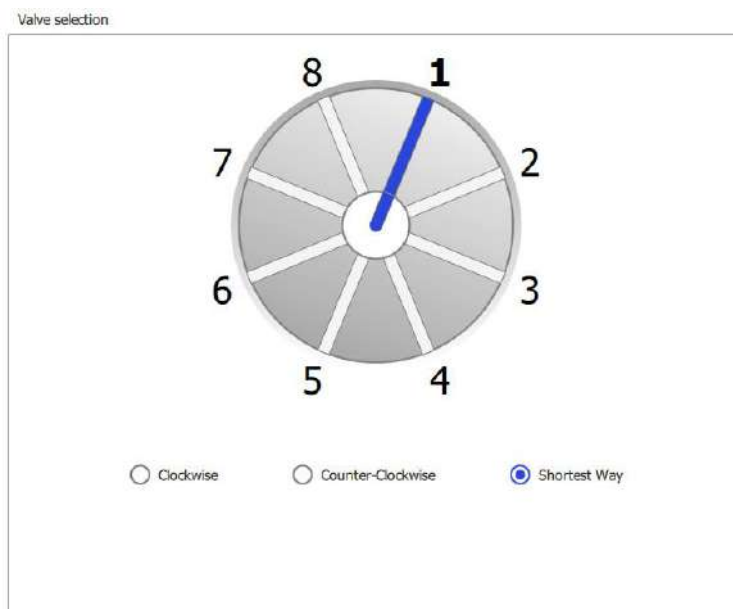


The settings tab allows you to input which specific pump configuration you are using:

- The **port** you are connected to (mostly important when using several pumps)
- The **syringe** that is mounted on the pump
- The **valve** model
- Whether you want to use the software with the “**Click&Go**” option
 - If the box is unchecked, you must select a port number, then click on *MOVE*



- If the option is selected, the port change happens as soon as you click on a different port number. The move button then disappears



You can also have specific information (read on the firmware) to know which pump you are using. This is mostly useful if you need to contact us in case you have a problem. Here is the information given:

- The unique pump ID
- The firmware version (software in the pump)
- The LSPone configuration
- The serial number

Using the *UPDATE FIRMWARE* button allows you to update the firmware. You can check our website to get newer firmware versions or you can contact us to get a specific firmware version.

The *ABOUT* button gives you information about the software licensing.

The settings page also shows the output console, so you can monitor what is happening from any window.

5. Troubleshooting

5.1 Broken firmware

Most of the time, broken firmware issues are related to the product being configured in RS-485 mode. LSPoneQuick software is not compatible with products configured in RS-485 mode and will fail to communicate with them; it will then display a broken firmware issue.

To solve the problem, the product should be configured in RS-232 mode by sending the custom command “/_@RS232R”, using the custom command field. Once the command has been sent, the software needs to be restarted for the error to be cleared.



5.2 Sequence failing to execute

If the sequence is not made properly, it will fail to execute. A sequence failing to execute can output an error, or you may notice that the pump stops while the sequence is not over. Most of the time, such errors are due to bad entries in the selected actions. Here is a non-exhaustive list of entries that could cause the sequence to fail:

- Configuration commands inside the sequence, such as plunger force configuration for example. These commands should not be included in the sequence and should be cleared before creating a sequence.
- Relative moves (pickup / dispense) inside a sequence can also cause some issues. As these commands depend on the current position of the plunger, they can lead to “move out of range” errors if the pump is not at the correct position at the start of the sequence. We recommend using absolute moves (using the plunger slider in the Home tab in sequences to avoid such errors.
- Sequence and “Running selection” entries in the command listing. When running a sequence or a set of actions using the *RUN SELECTION* button, it will add an entry to the command listing. If a new sequence is created, or if all the commands are run, it will embed the previous sequence. Embedding such actions will often result in unwanted actions and errors. We recommend clearing these entries before creating a new sequence.