

qbmove GUI

USER MANUAL

DRAFT

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Installation procedure

- **Mac:**

If not already installed, it is necessary to install the [FTDI serial drivers](#) to make possible the device is seen as a serial port.

Double click on the App and use it. There is also a .dmg package. You can open it and move the application to your dock or the Application folder.

- **Windows:**

If not already installed, it is necessary to install the [FTDI serial drivers](#) to make possible the device is seen as a serial port. If the serial port is not seen on the GUI main window, it is possible that the system has recognized the COM port with a high COM number. The supported serial ports are from COM1 to COM9. To change the port number, go under Control Panel > Hardware and Sound > Device Manager.

Open the Ports (COM & LPT) drop down menu, right click on the COM port and select Properties.

Select the Port Settings tab and then click on Advanced. Once in Advanced menu select from the drop down menu a COM number between COM1 and COM9 and click on OK.

The device should now be recognized properly.

- **Unix:**

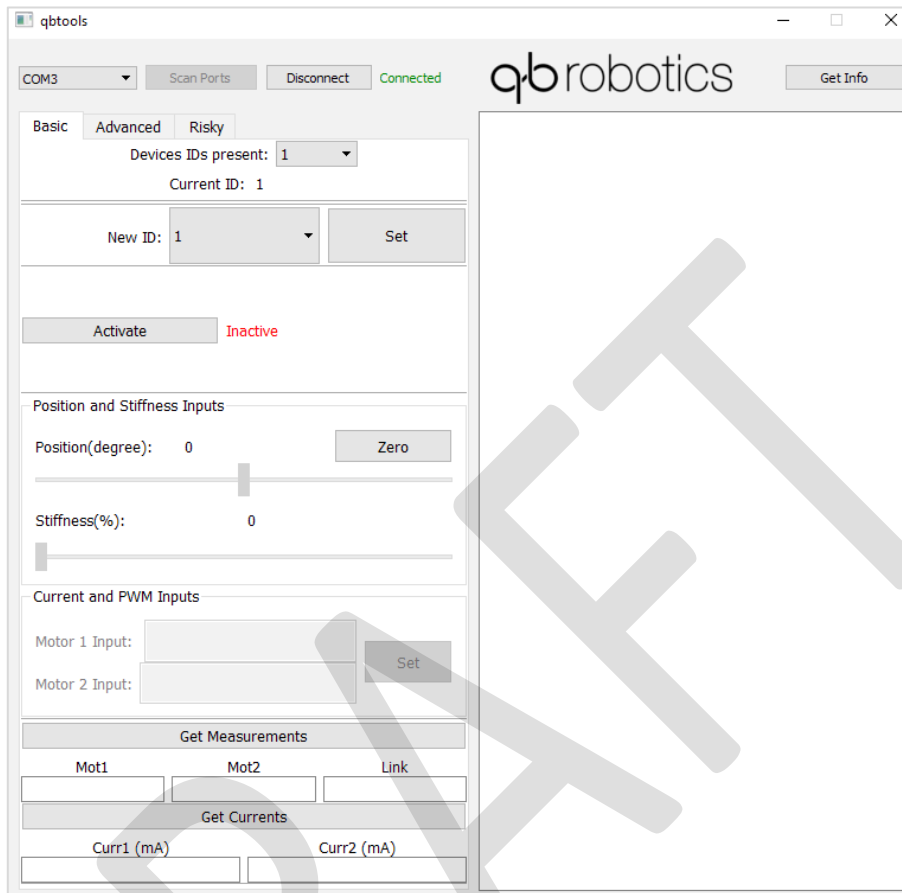
Before using the GUI it is mandatory to add the user to the dialout group. In order to do so, you have to put the following command on a terminal.

```
sudo adduser user_name dialout
```

where user_name is the username under which the GUI is used.

Once this command is executed, it is necessary to log out and back in, for the changes to take effect.

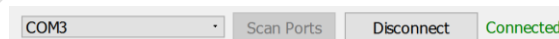
Main Layout



The application is structured into three tabs:

- **Basic:** Basic commands. ID setting, activation of the board, measurements and currents reading, position and current inputs;
- **Advanced:** Advanced commands. Control Mode, Resolution and Offset settings;
- **Risky:** PID controller, Position and current limits, Bootloader mode.

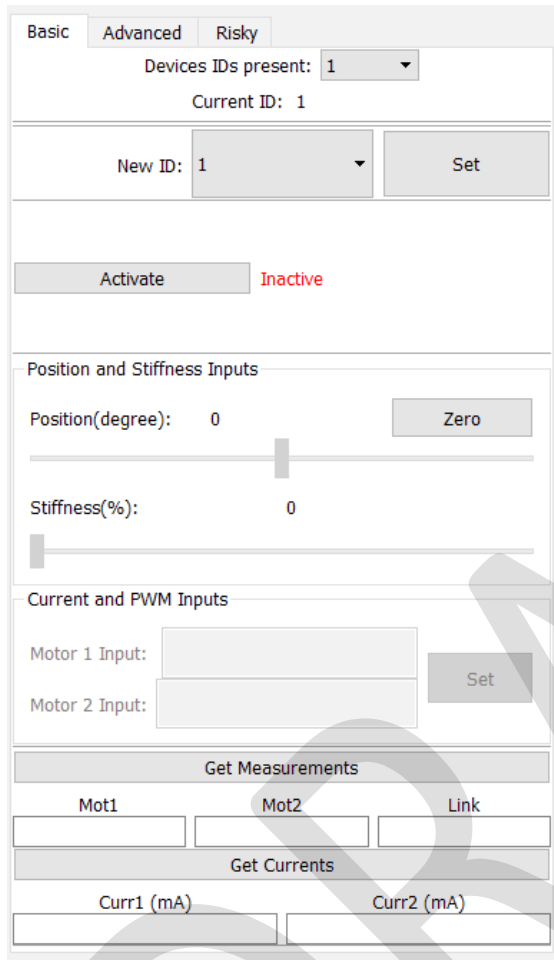
In order to use the qbMove with this application you have to click on “Scan Ports”. If the qbMove is properly connected, you’ll see the serial port in the little window on the left. Once the serial port is seen you could connect the device clicking on the Connect button. This operation, if successful, enables all of the buttons and you should see a green “Connected” text near the Connect button
The qbmoves must be powered with 24V power supply.



The “Get Info” button prints useful information about the qbMove and its control board in the blank window on the right side of the application, like: firmware version, parameters values and position measurements.

Basic Tab

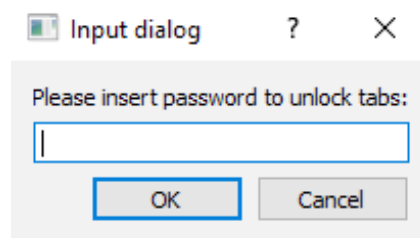
The functions associated to the buttons of the basic tab are:



- **Devices IDs present:** Once the device, or devices (if connected in a chain), are connected clicking on “Connect”, the list of their IDs are going to be showed here. Selecting the desired ID from the drop-down menu will make the application connect to that device and the possibility to use that specific device;
- **New ID:** The default ID of the board is 1. Clicking on the drop-down menu will show a list of available IDs (1 to 127). Clicking on the “Set” button will set the ID equal to the New ID selected;
- **Activation:** In order to use the qbMove you first have to activate the qbMove drivers. You can do this by clicking on “Activate”. The string next to the button will show the state of activation of the board;
- **Inputs:** Depending on the control modality set, which by default is “Position”, it is possible to move the drivers of the qbMove using the sliders or the Motor 1/2 Input fields. The corresponding groupBox relative to its control modality is activated/deactivated when the control modality is set (in advanced tab);
- **Measurements and Currents:** Clicking on “Get Measurements” and “Get Currents” will show the encoder measurements for the first one and the current measurements, for the second one. The encoder measurements are shown in encoder ticks, the current in mA;

Remember to power the qbMove, or the chain, before using it.

In case you need to set advanced or risky parameters you can click on “Advanced” or “Risky” tab. A popup input dialog window will show up and you can insert a password.



In case you don't know the password and you need to set any of the Advanced or Risky parameters, please contact directly qbrobotics: support@qbrobotics.com

Advanced Tab

The functions associated to the buttons of the advanced tab are:

- **Control Mode:** In the same way of the ID setting, is possible to change the Control mode. Is highly recommended to use the Position or Position/Current control mode only;
- **Resolution:** The resolutions are multipliers used to divide the encoder measurements. For a qbMove the default values are "1 [2 turns]";
- **Offsets:** Clicking on "Set zero" will set the zero position of the qbMove. The zero position is where the qbMove will return when 0 is driven as a position input.
It is possible to manually set the offset values, by inserting the wanted values into the three white bars and clicking on "Set Offsets", even if it is not recommended
- **Multipliers:** Clicking on "Set" the values written in the fields will be set as Multipliers. Multipliers are used to change the value read from the encoder, which is multiplied by those factors.

The screenshot shows the 'Advanced' tab of the qbrobotics interface. At the top, there are three tabs: 'Basic', 'Advanced', and 'Risky'. A red warning message reads: "Changing the control modality will strongly affect the behaviour of the qbmove".

The 'Control mode:' section has a dropdown menu set to 'Position' and a 'Set' button.

The 'Resolution:' section has three rows, each with a dropdown menu set to '1 [2 turns]' and a 'Set' button.

The 'Offsets:' section has three input fields, each containing '0', and two buttons: 'Set offsets' and 'Set zero'.

The 'Multipliers:' section has three input fields, each containing '1', and a 'Set' button.

Changing one or more of these parameters is highly not recommended. Any change is at your own risk.

Risky Tab

The functions associated to the buttons of the Risky tab are:

Basic Advanced Risky

Changing these parameters may compromise the functionality of the qbmove. Any change is at your own risk.

Controller Parameters

	P	I	D
Position:	0.100	0.000	0.800
New:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Current:	5.000	0.000	0.000
New:	<input type="text"/>	<input type="text"/>	<input type="text"/>

Reset Default PID values

Motor 1 Limits

Inf	-1500	Inf Limit
Sup	1500	Sup Limit

Motor 2 Limits

Inf	-1500	Inf Limit
Sup	1500	Sup Limit

Set

Current Limit

Value: 1500

Set

Reset Default Limits

Bootloader Mode

Bootloader Enable

- **PID setting:** It is possible to change the position and current PID parameters clicking on "Set". Changing these parameters may compromise the functionality of the qbMove. It is possible to reset these parameters to their default values by clicking on "Reset Default PID Values";
- **Position Limits:** These are the limits set to the position driven by the slider in the Basic tab. The default parameters are set from the firmware;
- **Current limit:** This parameter sets a limit on the absorbed motor current. The lower it is, the slower the qbmove can move. Beware to not set this value higher than 1500 mA. It is possible to reset this param and the position limits to their default values by clicking on "Reset Default Limits";
- **Bootloader Mode:** This function is used to update the firmware on the qbMove board. Firstly the checkbox must be checked to enter in Bootloader Mode by pressing on the corresponding button. This function is reserved only to expert users, do not use it if you do not know how to update the firmware.

Changing one or more of these parameters is highly not recommended. Any change is at your own risk.