QUANSER
INNOVATE·EDUCATE

Quick Start Guide: QBot Platform

python™

STEP 1 Check Components and Details

Make sure you have the following items ready before you begin:

Ensure your QBot Platform includes the following components

1. QBot Platform
2. 2x 12V 7Ah LiFePO4 (LFP) Batteries
3. Testing mat
4. Optimate LFP charger
5. Logitech F710 Wireless Joystick
6. 2x Wi-Fi antennas

Ensure you local computer has the following components

1. Windows 10/11 operating system
2. Python 3.10.4 or later installed
3. QUARC 2023 SP3 or Quanser SDK 2023, or later for either, installed

STEP 2 Setup the Hardware

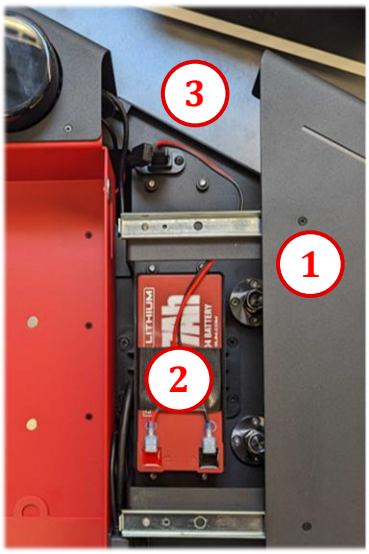
The steps below outline the instructions to setup the QBot Platform for testing:

A

Charge one or both LFP batteries using the provided charger to 100% as indicated.

B

Access the QBot Platform battery bay by opening one of its wings (1). Place a charged battery in one of the QBot Platform battery bays (2). Connect the SAE battery connector to the QBot chassis connector (3). Close the wing.



C

Ensure that your network is live using the router provided with the Mobile Robotics Lab or your own network.

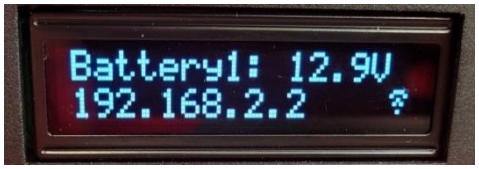
If using the provided router, the QBot will automatically connect to **`Quanser-UVS-5G`**. See the *Connectivity User Manual* for setting up your own Wi-Fi network.

D

Turn ON the QBot Platform using the Power button. The QBot LEDs should turn solid **red** after a minute.

E

Check the battery level and IP address of the QBot Platform on the LCD. If using a personal network, check the *Connectivity User Manual* for more information.



F

Connect the Wi-Fi antennas near the power button and HDMI port

G

Ensure you are connected to the QBot Platform by using the ping command from your local computer.

```
C:\Users\username>ping IP_ADDRESS -t
```

where `IP_ADDRESS` is the one you noted on the LCD in step 2E. You should get a response if connected.

STEP 3 Running an example

The steps below outline the instructions to run the Quick Start Example for Python™:

A

Browse to either of the following directories,

```
C:\Program Files\Quanser\QUARC\python
C:\Program Files\Quanser\Quanser SDK\python
```

and double-click on the installation file named **`install_quanser_python_api.bat`**.

B

Connect the Logitech F710 joystick's wireless dongle to a USB port on the QBot Platform.

C

Open **`quick_start_qbot_platform.py`** and change the variable **`ipHost`** (defined on line 1697) to the IP address of your local computer. You can use the ipconfig command to find the IP address of your local computer:

```
C:\Users\username>ipconfig
```

D

Use **`WinSCP`** or **`terminal SCP`** or a **`USB drive`** to transfer **`quick_start_qbot_platform.py`** and **`qbot_platform_driver_physical.rt-*`** to the QBot Platform's **`/home/nvidia/Documents/Quanser`** directory. The username and password are **`nvidia`**.

E

Launch a **`PuTTY terminal`** with the hostname being the **`IP_ADDRESS`** of the QBot Platform. The username and password are **`nvidia`**. Alternatively, create an **`SSH connection`** in a terminal via **`cmd/powershell`** with the command, **`ssh nvidia@IP_ADDRESS`**. The password is **`nvidia`**. Browse to **`/home/nvidia/Documents/Quanser.`**

On your local computer, in either **`Visual Studio Code`** or in a **`cmd/powershell`** terminal, browse to the directory containing **`observer.py`**.

D

Turn ON the QBot Platform using the Power button. The QBot LEDs should turn solid **red** after a minute.

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Check the battery level and IP address of the QBot Platform on the LCD. If using a personal network, check the *Connectivity User Manual* for more information.

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On your local computer, in either **`Visual Studio Code`** or in a **`cmd/powershell`** terminal, browse to the directory containing **`observer.py`**.

F

In your local computer's terminalrun the following command,

```
> python observer.py
```

Then, in your QBot Platform's terminal, run the following command,

```
$ sudo PYTHONPATH=$PYTHONPATH python3
quick_start_qbot_platform.py
```

G

The LEDs on the QBot should start pulsing **white** slowly to indicate that the driver is running successfully.

H

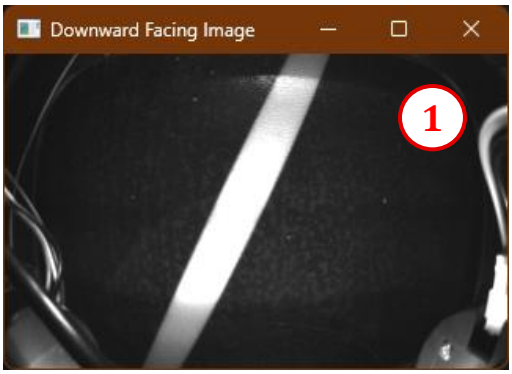
After a short delay, LEDs on the QBot Platform should turn steady **blue**, indicating a connection between the quick start application and the driver.

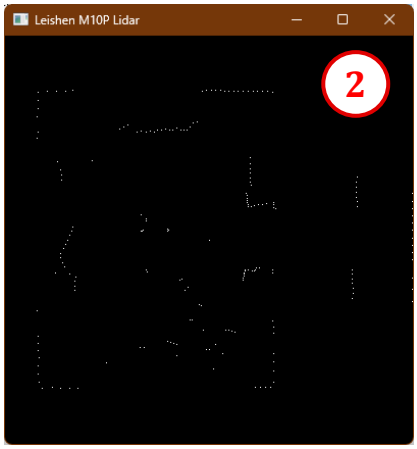
I

Press and hold the LB button on the joystick to arm the QBot Platform. The LEDs on the robot should be steady **green** indicating an armed status.

J

Use the left joystick stick-axis to steer the robot (left and right) and the right joystick stick-axis to drive the robot front and back. To stop at any time, let the sticks go. Monitor the live Downward camera (1), Lidar (2), RealSense Depth (3), and RealSense RGB (4) feeds as you drive the robot. Also check out the Tachometer (5), Accelerometer (6) and Gyroscope (7) data in the associated scopes.



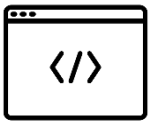


K

Stop the quick start application by tapping the RB button on your joystick. The LEDs on the QBot should pulse white. Shut the QBot Platform down by hitting the power button. The LCD will display a shutting down message. The LEDs on the QBot should go completely OFF.

TROUBLESHOOTING

Common issues and possible solutions

The QBot Platform **LCD** shows a **LOW BATTERY** message	Ensure that the QBot Platform **batteries** have been **charged** before use. The Optimate charger should show a **green LED** next to the **check mark** at **full charge**.	
The QBot Platform **LCD** does **not** show an **IP address.**	Ensure that the QBot Platform **network** has been **configured**. If using the provided router, ensure that it is turned ON. For your own network configuration, see the Connectivity User Manual.	
The QBot Platform **LEDs** remain red when running the quick start model.	Ensure that the QBot Platform **driver** is **running** prior to running the quick start application. The LEDs should be **pulsing white**. When you run the quick start application, the LEDs will turn **blue**.	
The QBot Platform does **not respond** to **joystick** commands to **drive**.	Ensure that the wireless joystick **dongle** is **plugged** into the QBot Platform's **USB ports**. Also ensure that the **toggle switch** at the back end of **joystick** is set to **X** and that the **MODE** LED is off.	
The local computer **cannot find** the **QBot**.	Ensure that the QBot Platform and local computer are on the **same network**, the QBot Platform **has an IP**, and that a **ping test passes**. If issues persist, consider **rebooting** the QBot Platform.	
Quick start Application hung on "**Connecting to Observer**"	Ensure that **observer.py** is **running**, and that the variable **ipHost** in the **quick start** application script is changed to the IP address of your **local computer**.	

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STILL NEED HELP

For further assistance from a Quanser engineer, contact us at tech@quanser.com