

QSwitch extended release note firmware 2.0

New: UDP communication instead of TCP/IP communication

To resolve the unstable ethernet communication for QSwitch with firmware version 1.3 and below, the protocol for ethernet communication has been changed from TCP/IP to UDP. The Python wrapper has been updated accordingly. UDP works without handshaking. To make sure that no relay (*ROUTE*) commands are lost the wrapper automatically checks that the commands have been well received and executed. In fact the new wrapper using the UDP protocol is more tolerant against short congestions and other network interruptions than the usual TCP/IP protocol.

A consequence of switching from TCP/IP to UDP is that the VISA library cannot be used anymore for ethernet communication to the QSwitch, as VISA does not support UDP. The USB/serial interface is still supported by VISA. However, users who are using Python or QCoDeS (also Python) are not expected to feel any difference as both the Python wrapper and the QCoDeS driver handle the change under the hood. Further, a standalone Python driver with functionality similar to the QCoDeS driver has been made available.

<https://docs.quantum-machines.co/latest/docs/Hardware/QSwitch/>

Updating the firmware

The firmware updater has changed slightly as it now requires a hardware reset to connect to the QSwitch. The hardware reset is performed by powering off the QSwitch (if not already powered off), and then powering it on. Some devices require a few power cycles before updating starts.

Procedure:

1. Download the relevant updater (Windows, Linux). On Linux systems the installation executable must have its attribute changed to "executable" by using the "chmod +x" command. On Windows the operating system may need convincing that it is safe to run the executable.
2. Connect the QSwitch to the computer with a USB cable. Make sure only one QSwitch is connected to the computer.
3. Power down the QSwitch.
4. Start the updater.
5. Power up the QSwitch
6. If you within 3 seconds do not receive a "*** Connected to Qswitch ***" message, then power off, and then back on. If you are unplugging at the mains side of the power supply instead of unplugging the barrel connector on the QSwitch rear panel, then please wait 4 seconds before reconnecting mains power.
7. When the updating and verification has ended press <enter> – or sometimes the <space> bar.

The updater attempts to connect for up to 30-40 seconds and then gives up. If this happens, just repeat the procedure. If after several attempts updating is not successful, please contact the Quantum Machines Customer Success Team (<https://www.quantum-machines.co/contact-us/>).

Example – executing the firmware installer on Windows

```
> ./qswitch-fw-update.exe  
Updating QSwitch firmware to version 2.0...  
[13:18:31] Attempting to connect..  
[13:18:35] *** Failed to connect, please power the device OFF and then back ON ***  
[13:18:37] *** Failed to connect, please power the device OFF and then back ON ***  
[13:18:38] *** Connected to Qswitch ***  
[13:18:40] Update | ████████████████████████████████████████████████████████ | 975/975  
[13:20:17] Verify | ████████████████████████████████████████████████████████ | 975/975  
[13:20:41] Resetting device  
Update finished  
(Press Enter to close)  
Press any key to continue ...>
```