

Piksi Multi - Upgrading Firmware

This can be done indoors and requires an Internet connection to download new firmware.

Caution Avoid unpowering or resetting your Piksi Multi during the upgrade process

Overview

Swift Navigation provides new features and performance improvements to Piksi® Multi via device firmware updates. If your Piksi Multi firmware version is not the latest, update it to get the most recent features from Swift. This article details the process for updating the firmware on your device.

Prerequisites

USB to Serial Driver Installation Guide:

<http://support.swiftnav.com/customer/portal/articles/2757197>

Installing Swift Console:

<http://support.swiftnav.com/customer/portal/articles/2756825>

Powering Piksi Multi:

<http://support.swiftnav.com/customer/en/portal/articles/2746937>

Connecting to Piksi Multi - USB to Serial Adapter:

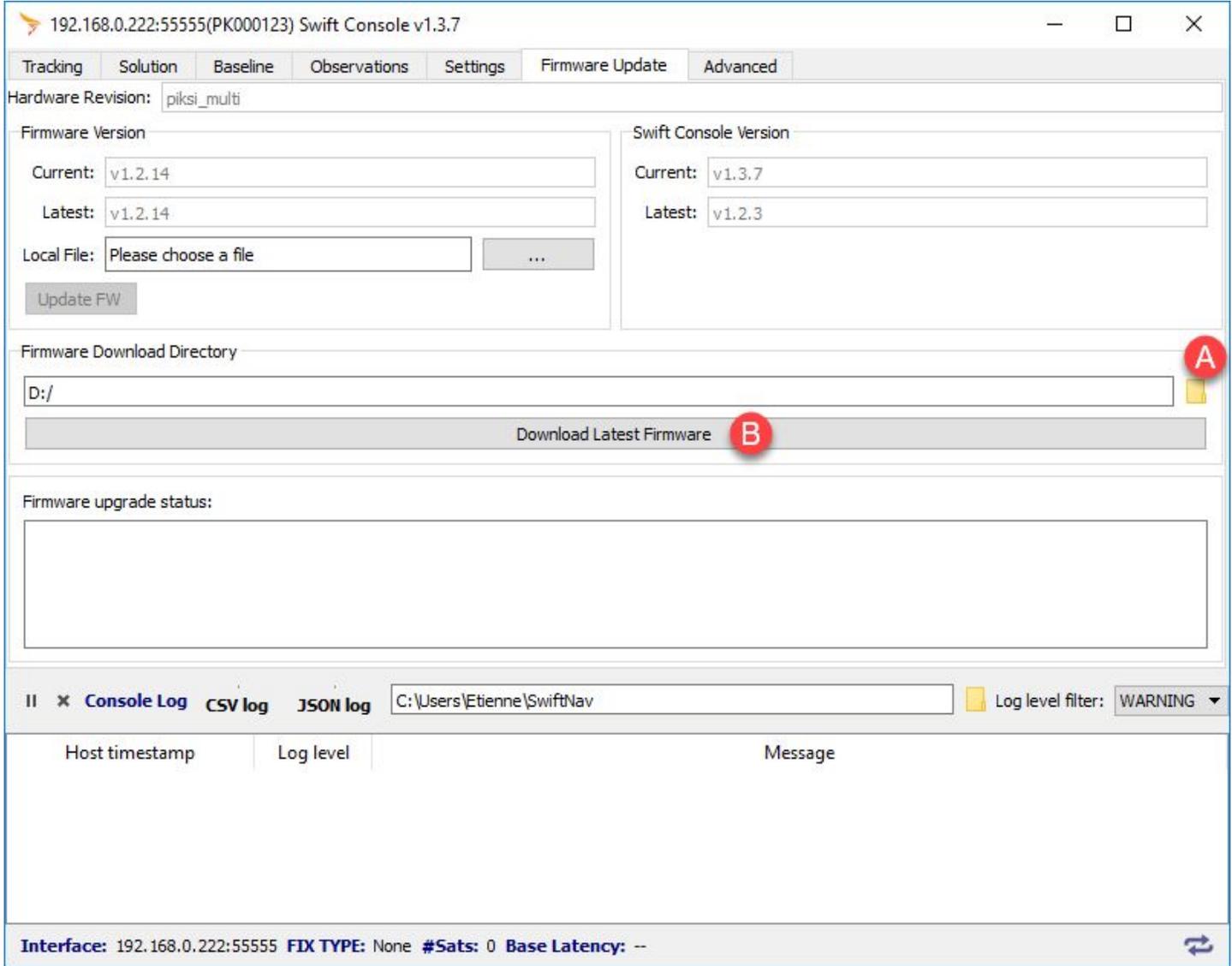
<http://support.swiftnav.com/customer/en/portal/articles/2747195>



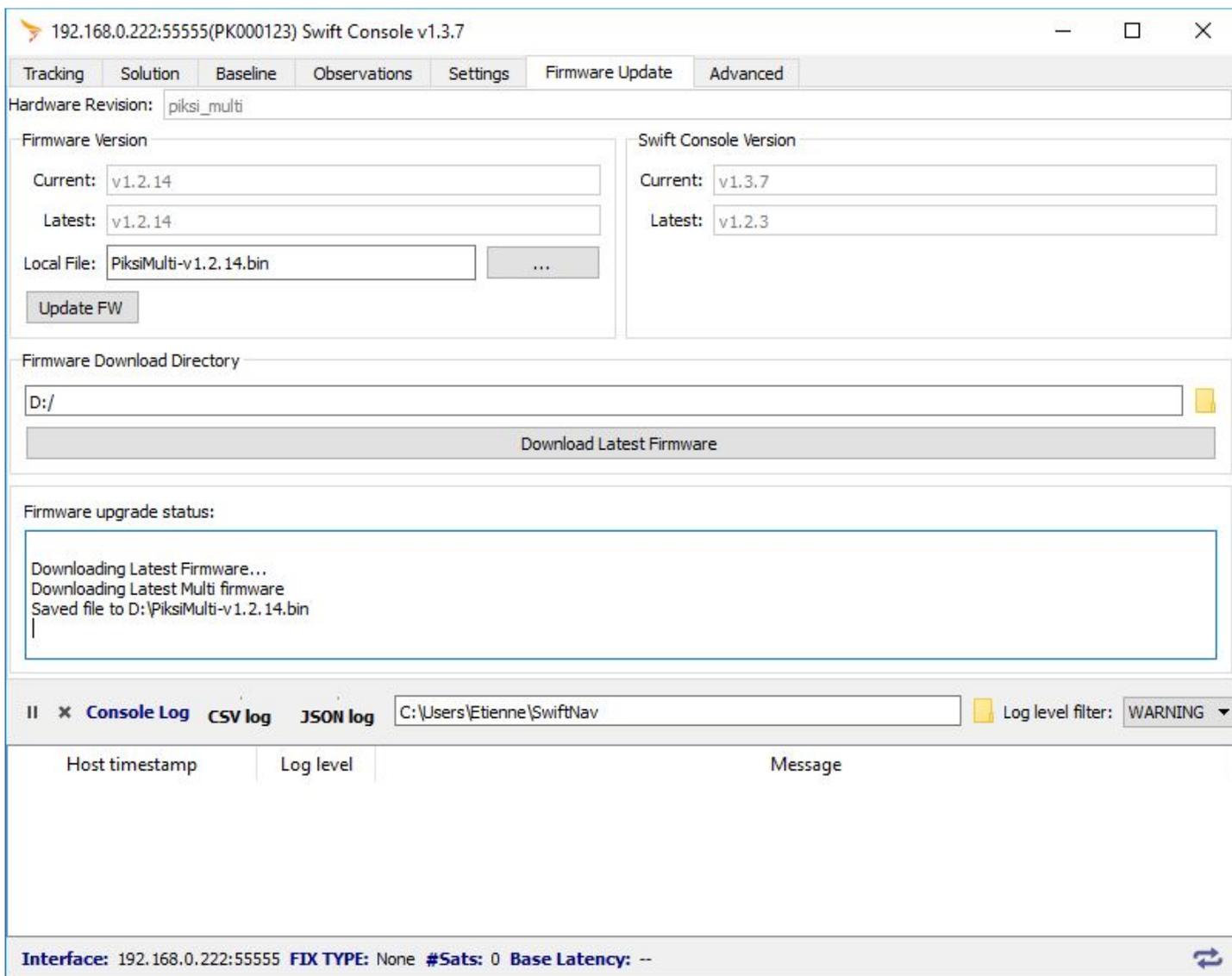
Updating Firmware from USB Drive

With Piksi Multi connected via USB to RS-232 adapter (see above) and latest Swift Console running:

- Connect the USB drive (included in the Evaluation Kit) to your computer and ensure it is empty
- Click the *Firmware Update* tab on the Swift Console



- Use the folder icon (A) to select the path to the USB drive or type it in manually
- Click *Download Latest Firmware* button (B) to download latest firmware file to the USB drive
 - The latest firmware is also available from the [downloads section of the support site](#)



- Eject the USB drive from your computer
- Connect the USB drive to the USB Host port on the Evaluation Board
- Press the Reset (RST) button on the Evaluation Board
- Piksi Multi will restart and following messages should be seen on the Console

Host timestamp	Log level	Message
Oct 26 2017 10:03:13	WARNING	Performing upgrade...
Oct 26 2017 10:03:12	WARNING	New firmware image set detected: /media/sda1/PiksiMulti-v1.2.14.bin

- After about 3 minutes when the upgrade completes you'll be prompted to remove the USB drive from the Piksi Evaluation Board and reboot your Piksi

Host timestamp	Log level	Message
Oct 26 2017 10:04:36	WARNING	Upgrade completed successfully. Please remove upgrade media and reboot.
Oct 26 2017 10:04:35	WARNING	Upgrade completed successfully. Please remove upgrade media and reboot.
Oct 26 2017 10:04:34	WARNING	Upgrade completed successfully. Please remove upgrade media and reboot.
Oct 26 2017 10:03:13	WARNING	Performing upgrade...

Updating Firmware via Serial or Ethernet using Swift Console

Alternatively, you can also use the Swift console to upgrade your firmware over serial or ethernet. Using serial communication over UART, this process can be very long so we recommend using USB or ethernet instead.

Connected to the Piksi Multi, using the latest console:

- Click the *Firmware Update* tab on the Swift Console

- Click on the folder icon (A) to select where to download the firmware
- Click on the *Download Latest Firmware* bar (B)
 - The latest firmware is also available from the [downloads section of the support site](#)
- Verify the path of the downloaded file (C). If you downloaded the firmware directly from the website, you can skip (A) and (B) and choose directly the file using the *Local File* field and the associated button.
- Click on the *Update FW* button (D)

192.168.0.222:55555(PK000123) Swift Console v1.3.7

Tracking Solution Baseline Observations Settings Firmware Update Advanced

Hardware Revision: piksi_multi

Firmware Version

Current: v1.2.14

Latest: v1.2.14

Local File: PiksiMulti-v1.2.14.bin ...

Update FW

Swift Console Version

Current: v1.3.7

Latest: v1.2.3

Firmware Download Directory

C:\Users\Etienne\Documents\piksi_firmwares

Transferring i... ? X

Firmware upgrade status:

Downloading Latest Firmware...

Downloading Latest Multi firmware

Saved file to C:\Users\Etienne\Documents\piksi_firmwares\PiksiMulti-v1.2.14.bin

Transferring image file...

Console Log CSV log JSON log C:\Users\Etienne\SwiftNav Log level filter: WARNING

Host timestamp	Log level	Message

Interface: 192.168.0.222:55555 FIX TYPE: None #Sats: 0 Base Latency: --

192.168.0.222:55555(PK000123) Swift Console v1.3.7

Tracking Solution Baseline Observations Settings Firmware Update Advanced

Hardware Revision: piksi_multi

Firmware Version

Current: v1.2.14

Latest: v1.2.14

Local File: PiksiMulti-v1.2.14.bin ...

Update FW

Swift Console Version

Current: v1.3.7

Latest: v1.2.3

Firmware Download Directory

C:/Users/Etienne/Documents/piksi_firmwares

Download Latest Firmware

Firmware upgrade status:

42 % complete

42 % complete

43 % complete

Console Log CSV log JSON log C:\Users\Etienne\SwiftNav Log level filter: WARNING

Host timestamp	Log level	Message

Interface: 192.168.0.222:55555 FIX TYPE: None #Sats: 0 Base Latency: --

192.168.0.222:55555(PK000123) Swift Console v1.3.7

Tracking Solution Baseline Observations Settings Firmware Update Advanced

Hardware Revision: piksi_multi

Firmware Version

Current: v1.2.14

Latest: v1.2.14

Local File: PiksiMulti-v1.2.14.bin

Update FW

Swift Console Version

Current: v1.3.7

Latest: v1.2.3

Firmware Download Directory

C:/Users/Etienne/Documents/piksi_firmwares

Download Latest Firmware

Firmware upgrade status:

```

100 % complete
ok
upgrade completed successfully
Resetting Piksi...

```

Console Log CSV log JSON log C:\Users\Etienne\SwiftNav Log level filter: WARNING

Host timestamp	Log level	Message
Dec 21 2017 11:40:00	CONS...	Received a command response message with code 0

Interface: 192.168.0.222:55555 FIX TYPE: None #Sats: 0 Base Latency: --

- Follow the progress of the upgrade process as described above. You'll get a "upgrade completed successfully. Resetting Piksi..." message when the process is over. Wait for the Piksi to reboot and connect again to check the firmware version.

Updating firmware over serial or Ethernet (Advanced)

The USB drive upgrade procedure above is recommended for all testing and evaluation but it is not the only method to upgrade Piksi Multi. Piksi Multi can be upgraded over any of the serial interfaces (UART and USB) and Ethernet. Piksi was designed to allow over-the-air upgrades to occur in the background while the system operates normally.

The firmware upgrade process in production requires the high-level steps below. Please refer to the [Swift Binary Protocol \(SBP\) documentation](#) for detailed about SBP. Additionally, example python software performing the firmware upgrade, over serial, is available from the piksi_tools repository as [bootload_v3.py](#).

- Transfer firmware file to Piksi
 - This can be accomplished through SBP file I/O messages or linux utilities like SCP
 - By convention the firmware goes to the root of the temporary file system with name "upgrade.image_set.bin"
- Launch the firmware upgrade tool
 - This can be accomplished through the SBP message MSG_COMMAND_REQ with the command string below and a timeout of 300 seconds:
 - "upgrade_tool upgrade.image_set.bin"
 - This could equivalently be accomplished over SSH via the Ethernet interface if available
- When the command completes, a MSG_COMMAND_RESP will be sent indicating the exit code of the upgrade process (0 indicates success)
- Piksi will continue to operate normally, but the next time the system reboots it will initialize into the upgrade firmware.