# Doble Application Note

November 12, 2020

For more information, contact
support@doble.com

# Obtaining and Updating Firmware for F6 Instruments

This application note describes the process for updating Doble F6 instruments. It is Doble's policy that you use the latest firmware release; you will benefit from the latest feature upgrades, bug fixes, and software compatibility.

Note: it is **no longer necessary to match firmware versions** for end-to-end testing. Doble has provided a start-delay setting in the instrument web-based configuration page (available with a web browser connected to the instrument IP address). Contact support@doble.com for more information.

You must have a connection to the Internet to download the firmware. You must have an e-mail account to receive the unzip password. When requesting the firmware password contact support@doble.com. Include your serial number(s) and use your business e-mail address.

The instrument displays the CPUn number (n is a numeral indicating the hardware-revision number) and the installed firmware version on the vacuum-fluorescent display after applying power to the instrument. The firmware differs for each hardware revision:

CPU3/4: v6.nn
CPU2: v4.nn
CPU1: v2.23

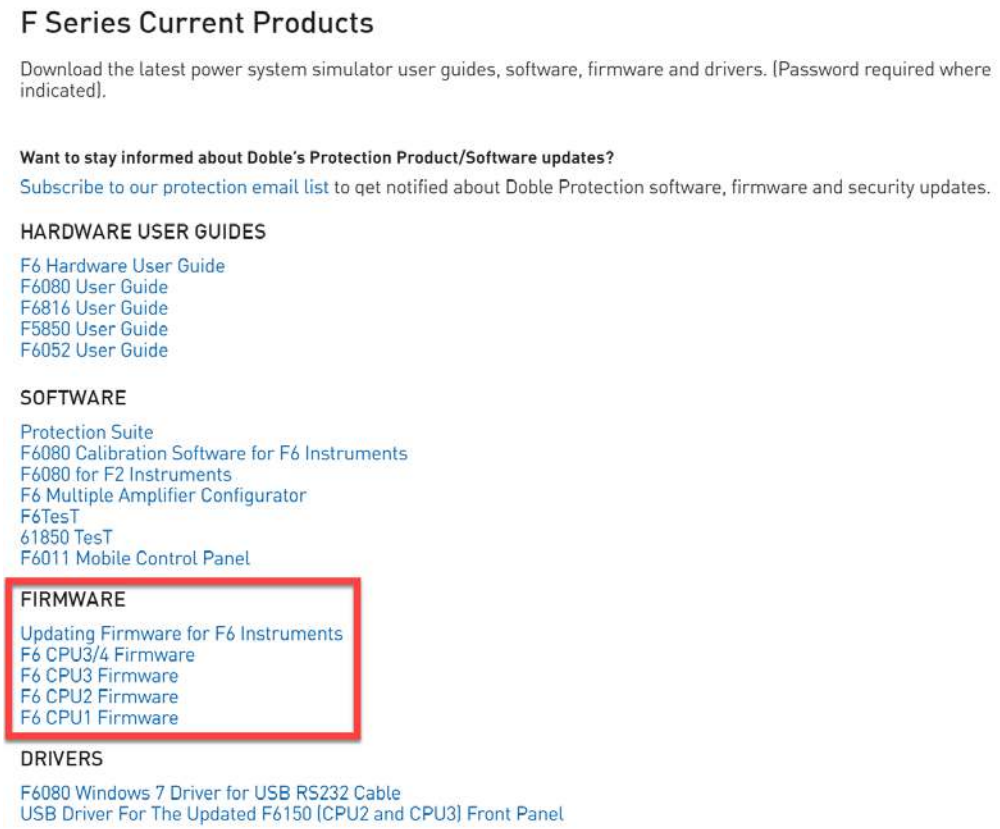
Be sure to download and update the correct firmware for your instrument hardware revision.

## Firmware Update Process

Complete the following steps to update the instrument firmware:

1) Apply power to the instrument
2) Decide the firmware that you need:
3) CPU3/4: v6.nn
4) CPU2: v4.nn
5) CPU1: v2.23
6) Open a web browser
7) Navigate to the protection download page (Figure 1) at https://www.doble.com/support/downloads/fseries/



F Series Current Products

Download the latest power system simulator user guides, software, firmware and drivers. (Password required where indicated).

**Want to stay informed about Doble's Protection Product/Software updates?**

Subscribe to our protection email list to get notified about Doble Protection software, firmware and security updates.

HARDWARE USER GUIDES

F6 Hardware User Guide
F6080 User Guide
F6816 User Guide
F5850 User Guide
F6052 User Guide

SOFTWARE

Protection Suite
F6080 Calibration Software for F6 Instruments
F6080 for F2 Instruments
F6 Multiple Amplifier Configurator
F6TesT
61850 TesT
F6011 Mobile Control Panel

FIRMWARE

Updating Firmware for F6 Instruments
F6 CPU3/4 Firmware
F6 CPU3 Firmware
F6 CPU2 Firmware
F6 CPU1 Firmware

DRIVERS

F6080 Windows 7 Driver for USB RS232 Cable
USB Driver For The Updated F6150 (CPU2 and CPU3) Front Panel

Figure 1. F-Series firmware-download section at https://www.doble.com/support/downloads/fseries/

8) Select the link for the firmware that you need. Review the instructions listed at this link
9) Request the firmware password from support@doble.com (per the instructions)
10) Click on the firmware name to download the **.zip** file to your computer
11) Read the return e-mail from Doble that contains the unzip password. Copy this password

**Note**: be careful to copy only the characters in the password. Do not copy additional spaces behind and in front of the password—there are no spaces at the beginning and at end of the firmware password.

12) Open a Windows Explorer window and navigate to the downloaded **.zip** file (see Figure 2)

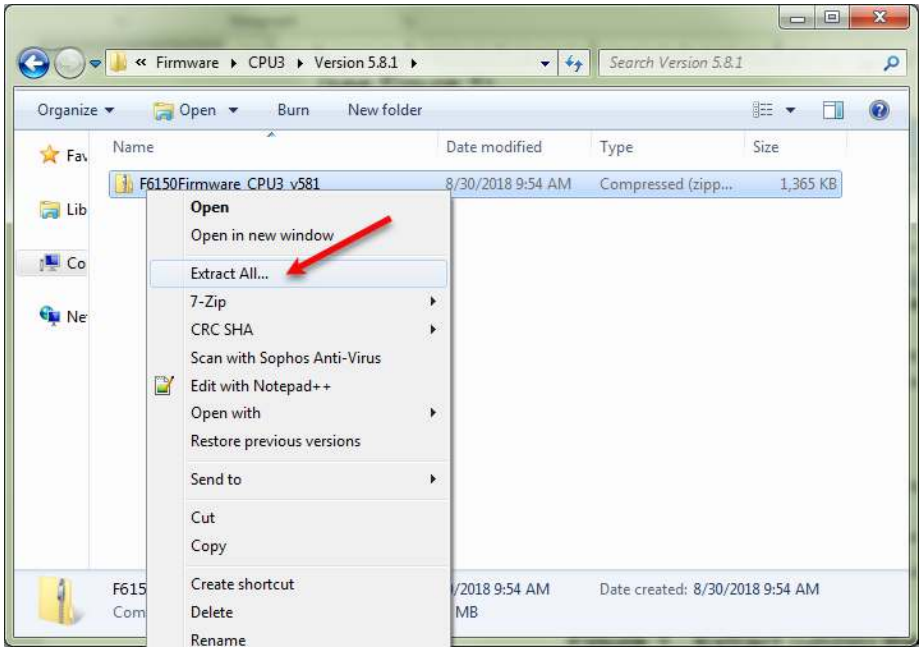



Figure 2. Extract (unzip) the downloaded file

13) Extract (unzip) the file with the supplied password. Create a folder in which to place the extracted files (for example: My Documents/Doble Engineering/Firmware/CPUn)

    **Note**: use Winzip or the Microsoft Windows Extract tool only. The use of a different tool might modify the file structure.

14) Make a note of this folder location and the resulting file "**.pkg**." Figure 3 shows an example of the unzipped firmware file (and the unzipped release-notes file)

**Note**: other files exist in the extracted folder. The firmware-update process uses only the **.pkg** file.

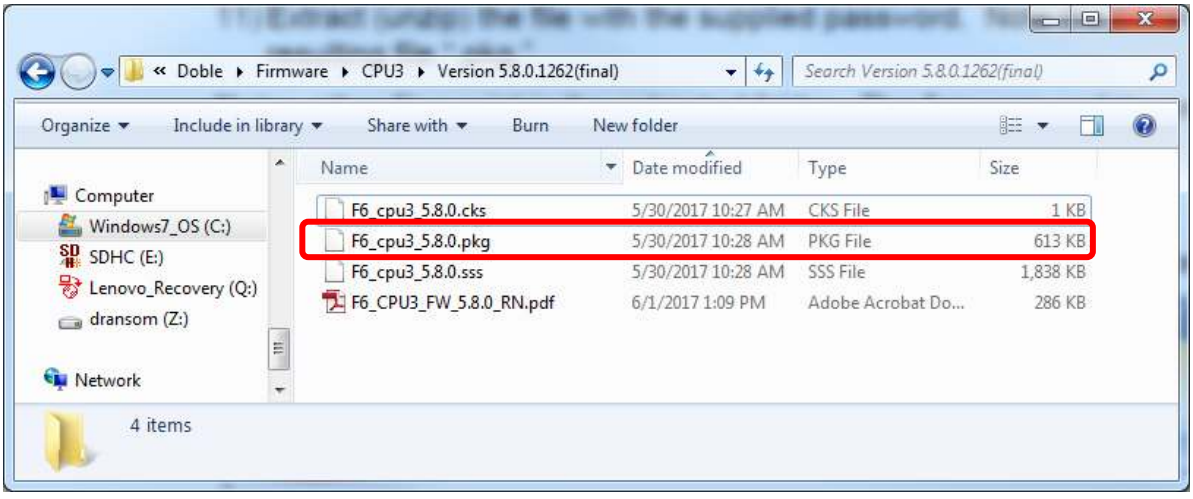



Figure 3. Unzipped F6 CPU3 firmware files and release notes

15) Open Protection Suite

16) Navigate to Instrument > Connect, Verify (format is “top tab > bottom tab;” see Figure 4)

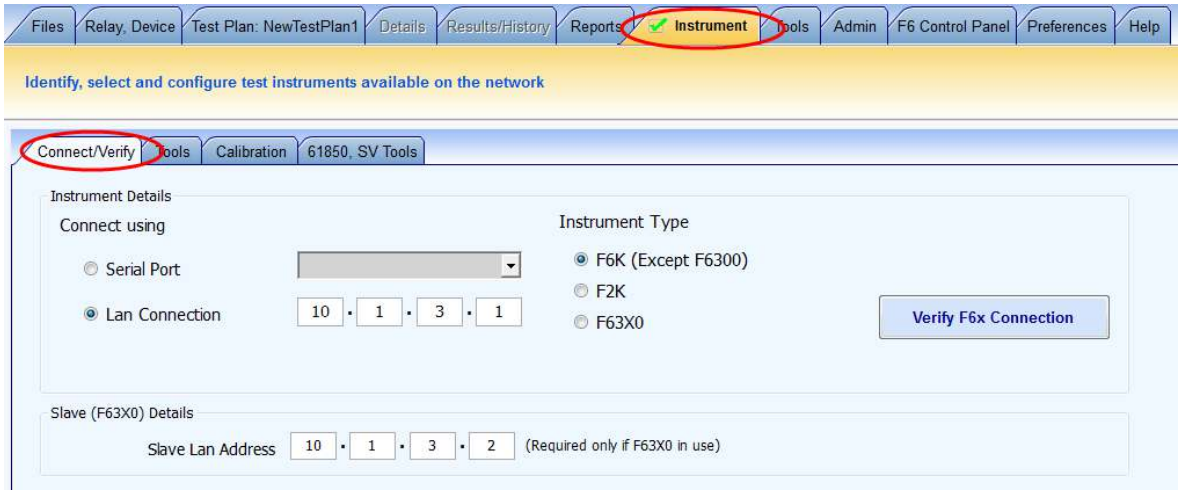



Figure 4. Connect to the F6150 instrument

17) Select the Instrument Type corresponding to the F-series instrument that you are updating

18) Click on Verify F6x Connection to connect to the instrument

19) Click the box with the ellipsis (three dots) to view the instrument options (see Figure 5)

20) Record the instrument options (a screenshot or photograph works well)

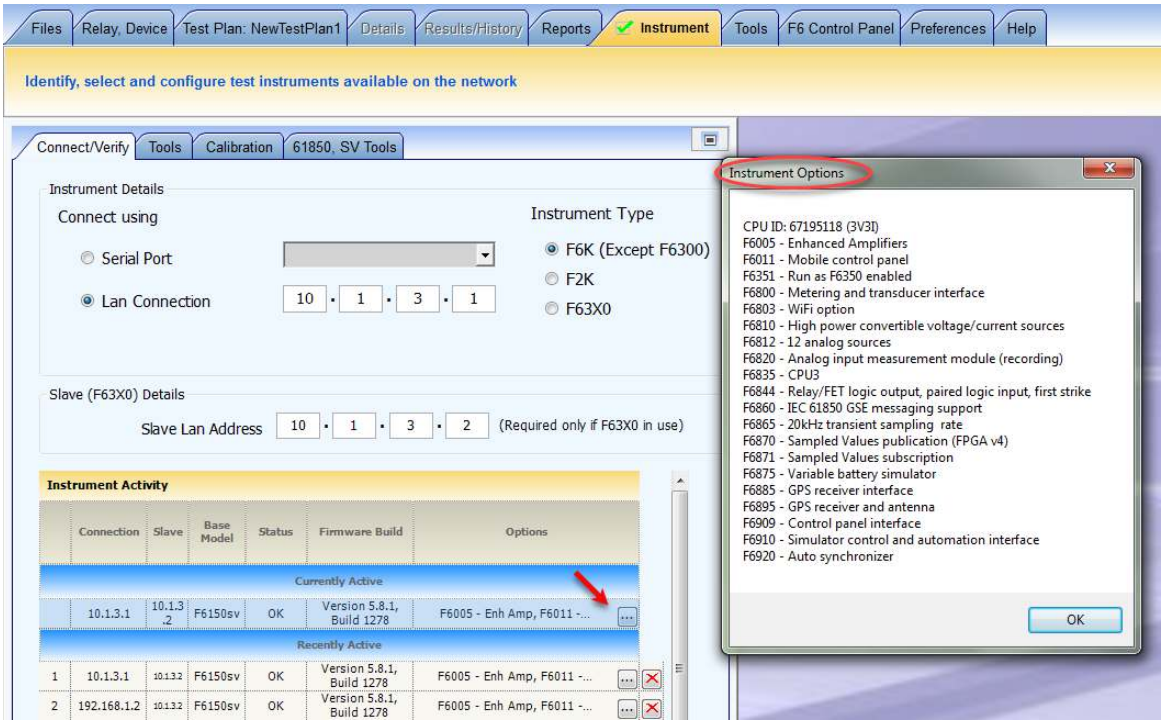



Figure 5. F6150 instrument options before firmware update

**Note**: this step is a precaution, to compare options on the F6150 instrument after the firmware update.

21) Navigate to Instrument > Tools or Instrument Tools on newer Protection Suite versions

22) Choose Update Capability Key (in the F6 Instrument Tools section, shown in Figure 6)

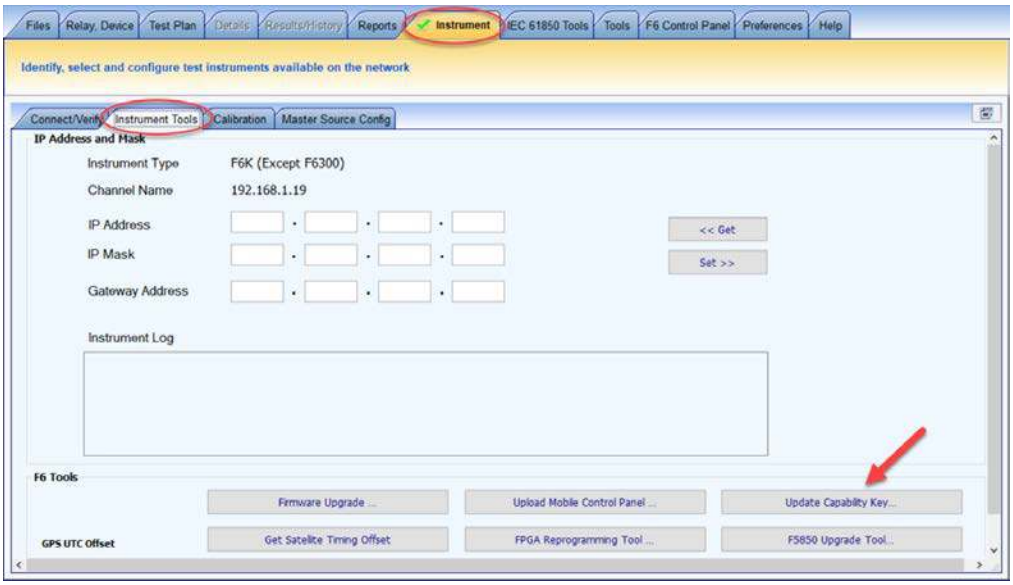



Figure 6. Location of “Update Capability Key” button

23) Record the Installed Key number (a screenshot or photograph works well)

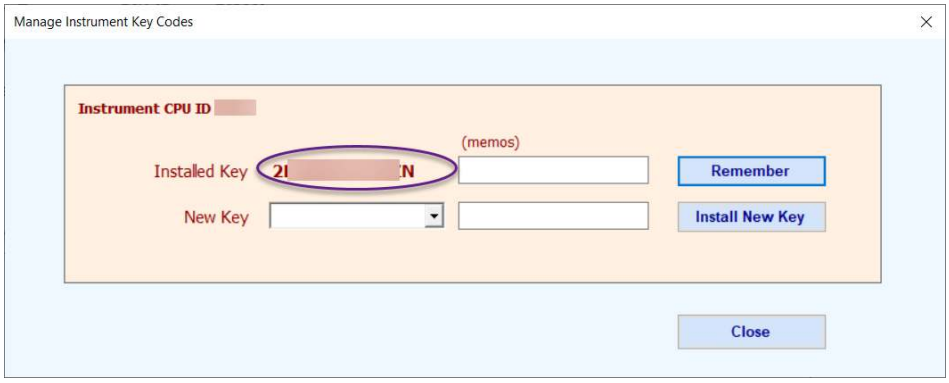



Figure 7. Location of “Installed Key” number

24) Navigate to Instrument > Tools or Instrument Tools on newer Protection Suite versions

25) Choose Firmware Upgrade (in the F6 Tools section, shown in Figure 8)

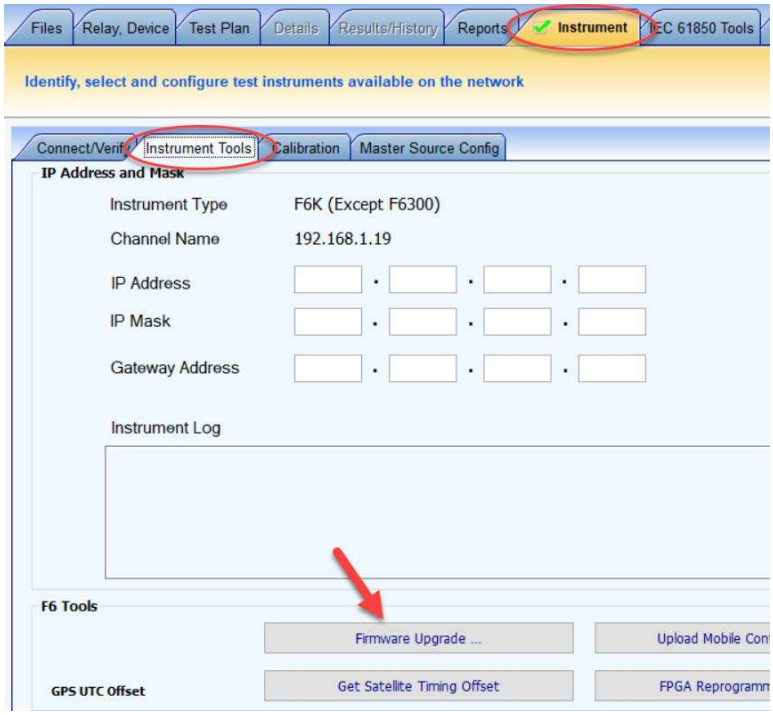



Figure 8. Location of "Firmware Upgrade" button

26) Observe the Flash Loader, shown in Figure 9

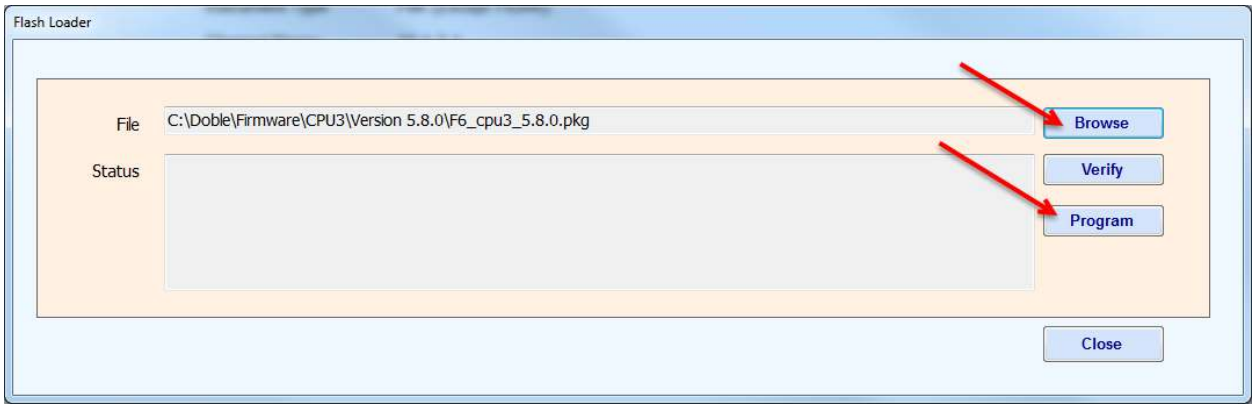



Figure 9. Flash Loader example for F6 CPU3 (Protection Suite 4.2 and later)

27) Browse to the folder that contains the **.pkg** file identified in Step 14

28) Select the **.pkg** file

**Note**: the Verify function checks the downloaded firmware file against the installed firmware—routine updates do not use this function.

29) Click on Program

**Caution:** do not disturb the file upload while in progress (keep cables attached and power applied continuously).

**Note**: do not use a Wi-Fi connection for the firmware upgrade process. The firmware upgrade process takes a few seconds when using a hardwire Ethernet cable, and a few minutes when using a serial (USB) cable.

30) Power cycle the instrument when prompted. Wait a few seconds when powering the test set on again

31) Observe that the front-panel, vacuum-fluorescent display shows the new firmware version during the boot process

32) Wait for five seconds after the instrument fans reduce speed

33) Navigate to Instrument > Connect, Verify (format is “top tab > bottom tab;” see Figure 10)

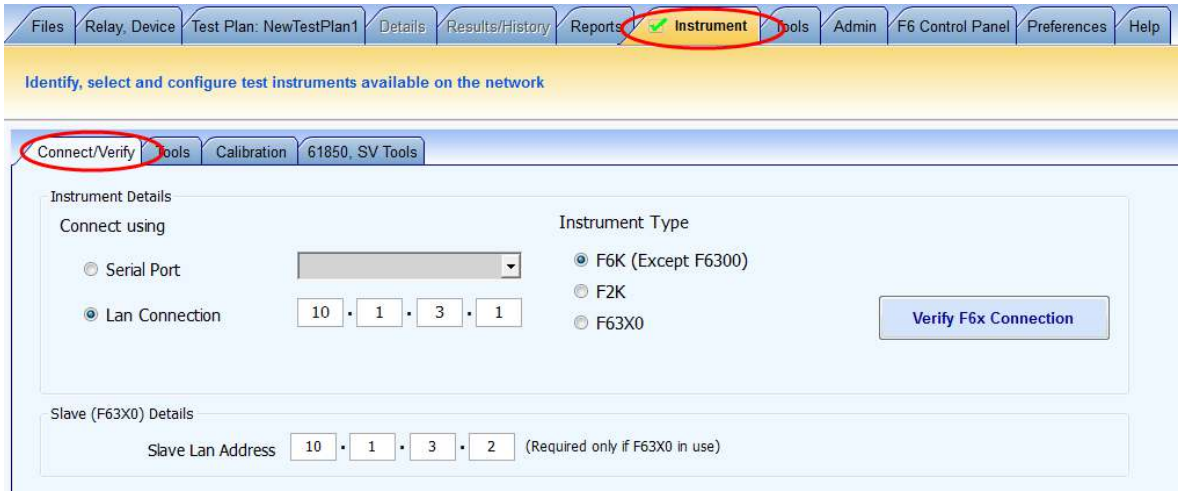



Figure 10. Reconnect to the F6150 instrument

34) Select the Instrument Type corresponding to the F-series instrument that you are updating

35) Click on Verify F6x Connection to reconnect to the instrument

36) Click the box with the ellipsis (three dots) to view the instrument options (see Figure 11)

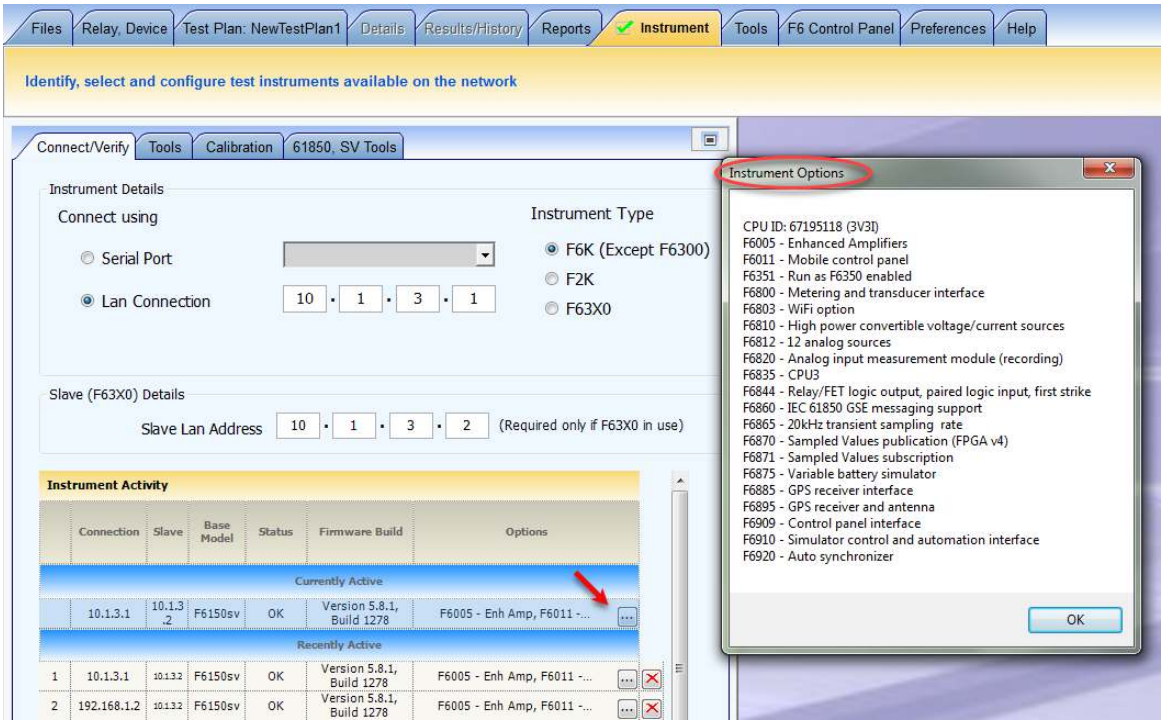



Figure 11. F6150 CPU3 instrument options after update

37) Check that the Instrument Options after the firmware update are the same as the ones before the firmware update. If an option is missing, load the installed key number recorded on step 23 by using the Update Capability Key option; insert the recorded key on the New Key box followed by a click on Install New Key button. Power cycle the F6150 test instrument.

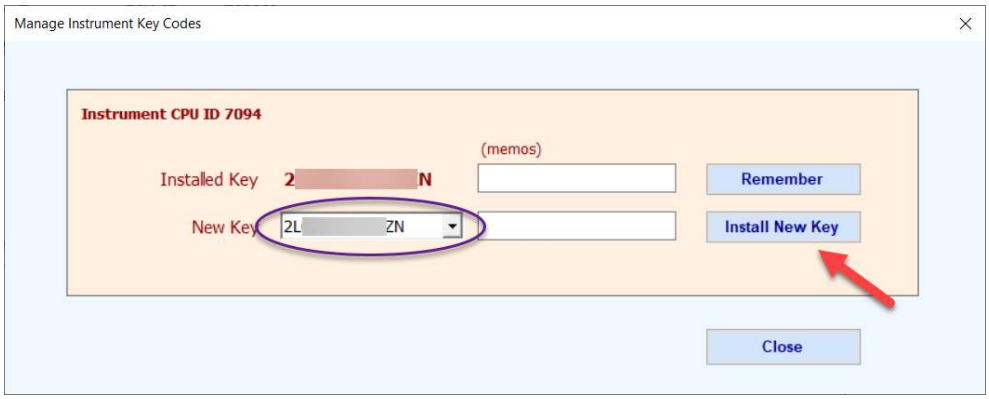



Figure 12. Installing new key code after update

38) If the F6150 still miss an option after the key code install, e-mail the following information to support@doble.com :

a) F6150 instrument serial number

b) F6150 CPU ID

c) Documentation of the Instrument Options before the firmware update (screenshot or photograph)

d) Documentation of the Instrument Options after the firmware update (screenshot or photograph)

**Note**: when updating multiple F6150s at the same time, be sure to gather the information above for each F6150 instrument separately.

## Troubleshooting

Although it seldom occurs, it is possible to "brick" an instrument upon uploading new firmware (front-panel display does not appear upon restoring power). Another possibility is sending the incorrect F6 CPU firmware version (v4 to CPU3 v6, or v6 to CPU2 v4). In this case, the front-panel display shows a message similar to Figure 13.


Figure 13. F6150 CPU2 instrument invalid-image error message after update

There is a process for recovering from these conditions. Contact support@doble.com or view the F6 Hardware User Guide for instructions on recovery from flash-load failure: Flashload Failure Recovery Techniques.

## Contact Us

Please contact us if you have any questions regarding this release or any other Doble Engineering Company protection-testing product:

- Telephone: US +1 617 926 4900
- Fax: US +1 617 926 0528
- E-Mail: support@doble.com