

December 12, 2018

For more information, contact <u>fserieshelp@doble.com</u>

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 <u>fserieshelp@doble.com</u> for more information.

You must have a connection to the Internet to download the firmware. You must have an email account to receive the unzip password. When requesting the firmware password contact <u>fserieshelp@doble.com</u>. Include your serial number(s) and use your business email 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: v5.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: v5.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 F6 CPU3 Firmware F6 CPU2 Firmware F6 CPU1 Firmware

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 fserieshelp@doble.com (per the instructions)
- 10) Click on the firmware name to download the .zip file to your computer

11) Read the return email 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)



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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)
- 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.

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Organize 👻 Include in li	brary		Nev	v folder		•== •		0
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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)

ntify, select and configure te	st instruments available on the networl	k		
connect/Verify Dools Calibra	61850, SV Tools			
Connect using		Instrument Type		
Serial Port	•	F6K (Except F6300)		
Ian Connection	10 • 1 • 3 • 1	 F2K F63X0 	Verify F6x Con	nection
Slave (F63X0) Details				

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)

File	es Relay, De	vice Test Plan	: NewTestPlan1	Details	Results/History	Reports	Instrument	Tools	F6 Control Panel	Preferences	Help	
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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
- 22) Choose Firmware Upgrade (in the F6 Tools section, shown in Figure 6)

Files Relay, Device Test Plan: NewTestPlan	n1 Details Results/His	story Reports Instrument
Identify, select and configure test instrumen	ts available on the netw	vork
Connect/Verify Tools Calibration 61850), SV Tools	
IP Add	ress and Mask	
	Instrument Type	F6K (Except F6300)
	Channel Name	10.1.3.1
	IP Address	0.0.
	IP Mask	0.0.
	Gateway Address	0.0.
	Instrument Log	
F6 Too	ls	
F	Firmware Upgrade	Upload Mobile Control Panel

Figure 6. Location of "Firmware Upgrade" button

23) Observe the Flash Loader, shown in Figure 7

Flash	Loader			
	File Status	C:\Doble\Firmware\CPU3\V	ersion 5.8.0\F6_cpu3_5.8.0.pkg	Browse Verify Program
				Close

Figure 7. Flash Loader example for F6 CPU3 (Protection Suite 4.2 and later)

24) Browse to the folder that contains the .pkg file identified in Step 11

25) Select the .pkg file

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

26) Click on Program

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

Note: the firmware upgrade process takes a few seconds when using an Ethernet cable, and a few minutes when using a serial (USB) cable.

- 27) Power cycle the instrument when prompted
- 28) Observe that the front-panel, vacuum-fluorescent display shows the new firmware version during the boot process
- 29) Wait for five seconds after the instrument fans reduce speed
- 30) Navigate to Instrument > Connect, Verify (format is "top tab > bottom tab;" see Figure 8)

Connect/Verify Dools	Calibration 61850,	SV Tools				
Instrument Details			Instrument Type			
Serial Port		•	F6K (Except F6300)			
Lan Conne	ction 10 •	1.3.1	 F2K F63X0 	[Verify F6x Connection	ı

Figure 8. Reconnect to the F6150 instrument

- 31) Select the Instrument Type corresponding to the F-series instrument that you are updating
- 32) Click on Verify F6x Connection to reconnect to the instrument
- 33) Click the box with the ellipsis (three dots) to view the instrument options (see Figure 9)



Files Relay, Device Test Plan: NewTestPlan1 Details Results/History Reports Instrument Identify, select and configure test instruments available on the network	Tools F6 Control Panel Preferences Help
Connect/Verify Tools Calibration 61850, SV Tools	
Instrument Details Connect using Serial Port Instrument Type F6K (Except F6300) F2K Lan Connection Instrument Type F6K (Except F6300) F2K F63X0	CPU ID: 67195118 (3V3) F6005 - Enhanced Amplifiers F6011 - Mobile control panel F6351 - Run as F6350 enabled F6800 - Metering and transducer interface F6803 - Wife joption
Slave (F63X0) Details Slave Lan Address 10 • 1 • 3 • 2 (Required only if F63X0 in use)	Fotoo - Wird prover convertible voltage/current sources F6810 - High power convertible voltage/current sources F6820 - Analog input measurement module (recording) F6835 - CPU3 F6844 - Relay/FET logic output, paired logic input, first strike F6860 - IEC 61820 GSE messaging support F6865 - 20kHz transient sampling rate F6870 - Sampled Values publication (FPGA v4) F6871 - Sampled Values subscription
Instrument Activity Connection Slave Base Model Status Firmware Build Options	F6875 - Variable battery simulator F6885 - GPS receiver interface F6895 - GPS receiver and antenna F6909 - Control panel interface F6910 - Simulator control and automation interface F6920 - Auto synchronizer
Currently Active 10.1.3.1 10.1.3 F6150sv OK Version 5.8.1, 10.1.3.1 F6150sv OK Build 1278 F6005 - Enh Amp, F6011	ОК
Recently Active	
1 10.1.3.1 101.3.2 F6150sv OK Version 5.8.1, Build 1278 F6005 - Enh Amp, F6011 Image: Second	

Figure 9. F6150 CPU3 instrument options after update

- 34) Check that the Instrument Options after the firmware update are the same as the ones before the firmware update. If an option is missing, email the following information to <u>fserieshelp@doble.com</u>:
 - a) F6150 instrument serial number
 - b) Documentation of the Instrument Options before the firmware update (screenshot or photograph)
 - c) 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 v5, or v5 to CPU2 v4). In this case, the front-panel display shows a message similar to Figure 10.





Figure 10. F6150 CPU2 instrument invalid-image error message after update

There is a process for recovering from these conditions. Contact <u>fserieshelp@doble.com</u> 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: <u>fserieshelp@doble.com</u>

