Manuals+ — User Manuals Simplified.

FlexRadio FLEX-6000 Series Software Defined Radio Instruction Manual

Contents

FlexRadio FLEX-6000 Series Software Defined Radio

Product Information

SmartSDR v3.3.32 is a maintenance release for all FLEX-6000-series software-defined radios (FLEX-6400TM, FLEX-6400MTM, FLEX-6600TM, FLEX-6600MTM, FLEX-6300TM, FLEX-6500TM, and FLEX-6700TM) and the MaestroTM. This version supersedes all previous versions of SmartSDR v3.x. The release notes cover changes to client software such as SmartSDR for Windows, SmartSDR for the M Model FLEX-6000s, and Maestro. Changes to clients or utilities produced by 3rd parties are not covered. Please consult the SmartSDR Software Users Guide V3 for details on using features and an optimal operating experience.

Product What's New in SmartSDR v3.3.32?

SmartSDR v3.3.32 is a maintenance release for SmartSDR v3.3 that addresses several issues identified in SmartSDR v3.3.29. As part of this effort, there are several changes related to upgrading the radio firmware process.

Bug Fixes in SmartSDR v3.3.32

- Improved SD Card Reliability for Older Radios: Additional changes have been made to the firmware upgrade process to improve the formatting of the SD card and subsequent data integrity verification processes to reduce SD card failure rates for older radios. SD card failures after upgrading the radio firmware for this and future versions of SmartSDR should only occur if the SD card media is physically damaged and is not recoverable. (SMART-8862)

- Fixed ATU Memories not being Recalled Properly: A software defect introduced in SmartSDR v3.3.29 was preventing ATU memories from being properly recalled. This issue has been resolved. (SMART-8821)

- Low RF power on CW Resolved: A low RF power issue when operating CW has been corrected. (SMART-8851)

- USB Cables are now Properly Recognized: A condition where some USB cable interfaces were not being properly recognized by the radio has been fixed. (SMART-8829)

- VOX Parameters were being Persisted after Band Changes: When using VOX, settings were being retained incorrectly after band changes. This behavior has been corrected. (SMART-8828)

Upgrading SmartSDR v3.3.32

Before upgrading to SmartSDR v3.3.32, please read all sections marked as IMPORTANT for upgrade prerequisites and other important information. Failure to follow these instructions may create problems requiring FlexRadio support or service staff interventions.

Upgrading to SmartSDR v3.2.39 before Upgrading to SmartSDR v3.3.32
It is important to upgrade to SmartSDR v3.2.39 before upgrading to SmartSDR v3.3.32.

Upgrading the Radio Firmware can be a Two-Step Process
Upgrading the radio firmware may require an extended, multi-step process, where the radio may reboot several times. The upgrade may take upward to 15 minutes to complete depending on the radio model. Beginning with version (v3.3.29), the radio firmware is upgraded following a multi-step process. The SD card media is formatted and verified, the radio operating system and firmware are updated, and a radio-specific firmware image is installed to the FPGA. It is normal to hear the radio's fans spin up at high speed during the upgrade. Be prepared for the upgrade process to take several more minutes than what you may be accustomed to experiencing. For further details and optimal usage experience, please consult the SmartSDR Software Users Guide V3.

SmartSDR™ for Windows v3.3.32 Release Notes

June 16, 2022 SmartSDR™ v3.3.32 is a maintenance release for all FLEX-6000-series (FLEX-6400™, FLEX-6400M™, FLEX-6600™, FLEX-6600M™, FLEX-6300™, FLEX-6500™, and FLEX-6700™) software-defined radios and the Maestro™. This version supersedes all previous versions of SmartSDR v3.x. This document also covers changes to client software (SmartSDR for Windows, SmartSDR for the "M" Model FLEX-6000s, and Maestro). Changes to clients or utilities produced by 3rd parties are not covered. Please consult the SmartSDR Software Users Guide V3 for details on using features and an optimal operating experience. Before upgrading, please read all sections marked as IMPORTANT for upgrade prerequisites and other important information. Failure to follow these instructions may create problems requiring FlexRadio support or service staff interventions.

What's New in SmartSDR v3.3.32?

SmartSDR v3.3.32 is a maintenance release for SmartSDR v3.3 that addresses several issues identified in SmartSDR v3.3.29. As part of this effort, there are several changes related to upgrading the radio firmware process noted below.

IMPORTANT: Upgrading to SmartSDR v3.2.39 before Upgrading to SmartSDR v3.3.32 If you are running a version of SmartSDR less than v3.2.39, you must upgrade to v3.2.39 before upgrading to this version (v3.3.32). Note that v3.2.39 updates the .NET framework used by SmartSDR clients for Windows, Model M, and Maestro and can take a significant amount of time, especially on some Maestros, to complete. Please review the SmartSDR v3.2.39 Release Notes for upgrade requirements, instructions, and caveats. Failure to upgrade to SmartSDR v3.2.39 before upgrading to SmartSDR v3.3.32 can result in a significantly longer time to complete the upgrade.

IMPORTANT: Upgrading the Radio Firmware can be a Two-Step Process Upgrading the radio firmware may require an extended, multi-step process, where the radio may reboot several times. The upgrade may take upward to 15 minutes to complete depending on the radio model. Beginning with version (v3.3.29), the radio firmware is upgraded following a multi-step process. The SD card media is formatted and verified, the radio operating system and firmware are updated, and a radio-specific firmware image is installed to the FPGA. It is normal to hear the radio's fans spin up at high speed during the upgrade. Be prepared for the upgrade process to take several more minutes than what you may be accustomed to experiencing.

Bug Fixes in SmartSDR v3.3.32

Please refer to the SmartSDR v3 Changelog for a complete listing of changes in the SmartSDR v3.3.32 release. Improved SD Card Reliability for older Radios: Additional changes have been made to the firmware upgrade process to improve the formatting of the SD card and subsequent data integrity verification processes to reduce SD card failure rates for older radios. SD card failures after upgrading the radio firmware for this and future versions of SmartSDR should only occur if the SD card media is physically damaged and is not recoverable. (SMART-8862) Fixed ATU Memories not being Recalled Properly: A software defect introduced in SmartSDR v3.3.29 was preventing ATU memories from being properly recalled. This issue has been resolved. (SMART-8821) Low RF power on CW Resolved: A low RF power issue when operating CW has been corrected. (SMART-

8851) USB Cables are now Properly Recognized: A condition where some USB cable interfaces were not being properly recognized by the radio has been fixed. (SMART-8829) VOX Parameters were being Persisted after Band Changes: When using VOX, settings were being retained incorrectly after band changes. This behavior has been corrected. (SMART-8828) Fixed Setting a Static IP address on the Front Panel: A new feature in SmartSDR v3.3.29 allowed the ability to set a static IP address to the front panel of M mode radios. In certain circumstances, improperly setting the IP address information would prevent network communication between the front panel and the radio backend. In SmartSDR v3.3.32, this functionality has been moved to the M model radio settings "gear" icon shown on the radio connect screen. (SMART-8837)

Important Release Details

What to do if the FLEX-6000 fails to boot after upgrading to SmartSDR v3.3.32: If the FLEX-6000 fails to boot after performing a firmware upgrade, please open a HelpDesk support ticket to get the issue resolved. Backup your profiles before upgrading: Moving back and forth between different versions of SmartSDR may result in data loss unless you have a backup (export) of your Profiles. It is recommended to export all profiles before upgrading to v3.3.32, and export profiles again before reverting to previous versions.

NOTE: There is one exception. If the FLEX-6000 is running SmartSDR v3.2.31 do not export the profiles before upgrading. The SmartSDR v3.2.31database may contain corrupted data and is not suitable for exporting profiles. Exporting profile data is covered in detail below in the Best Practices for Installing / Uninstalling SmartSDR v3 section. Maintaining a good set of profile exports as backups is always a best practice.

Upgrading FLEX-6400M and FLEX-6600M Front Panel: If you are upgrading a FLEX-6400M or a FLEX-6600M using SmartSDR for Windows, the upgrade will not be applied to the software in the Front Panel of the "M" Model. The radio must first be connected to your network and can access the Internet to download the necessary software to update the front panel. After the radio firmware updates from your PC, shut down SmartSDR for Windows and connect to your radio using the "M" Model Front Panel. The Version Select screen should display SmartSDR v3.3.32 showing a download icon. Selecting that version will start the final portion of the upgrade process. For a detailed description of the SmartSDR for Windows software upgrade process, please refer to the SmartSDR Software Users Guide V3 Always Perform a Factory Reset of your Radio when Downgrading the Radio Firmware: In general, downgrading to a previous version of SmartSDR is not recommended. The database in the FLEX-6000 is NOT backward compatible. This means if you downgrade the firmware in your radio, you must perform a Factory Reset to ensure the internal database is consistent with the version of SmartSDR firmware that is running on the radio. The procedure for performing a Factory Rest is described in the Best Practices for Installing a New Version of SmartSDR for Windows section below. In addition to performing a Factory Reset on the radio, you mustn't import a database using a profile export that is greater than the version you are using won the FLEX-6000. In later versions of SmartSDR, the profile export file name contains the version of SmartSDR that was running when the export was saved to your PC. SmartSDR v3 requires a software license installed on the radio before it can be used with a FLEX-6000: If your radio is licensed for a version of SmartSDR less than v3, a SmartSDR license upgrade is required. Once the FLEX-6000 has been licensed for SmartSDR v3, all subsequent point releases (v3.x) are available at no additional expense. Please see the section "Purchasing a SmartSDR Software License for your FLEX-6000" for instructions on how to purchase a license.

Best Practices for Installing / Uninstalling SmartSDR

Best Practices for Installing a New Version of SmartSDR for Windows

Always backup your Global, TX (transmit), and Microphone Profiles. Please refer to the SmartSDR for Windows Software User's Guide for detailed instructions related to exporting your profiles to a file on your PC. When you upgrade to a newer version of SmartSDR for Windows, a database conversion program runs automatically to convert older profile schemas to an updated one. When downgrading versions, SmartSDR is unable to restore the updated profile schema version, which may cause profile corruption. To recover your previously created profiles after a software version downgrade, import the profile data created using the downgraded version of SmartSDR for Windows. Ensure your Windows operating system is up to date before installing SmartSDR for Windows. The proper operation of SmartSDR for Windows and its associated drivers relies on having an up-to-date and supported Windows operating system including the root security certificates. It is strongly recommended that you

run Windows Update and install all mandatory and optional updates before installing SmartSDR for Windows. Managing SmartSDR installed on other devices. If using Maestro or other PCs running SmartSDR for Windows, update all devices at the same time to ensure a consistent operating experience and to avoid radio firmware upgrade/downgrade delays. Power cycle the FLEX-6000 radios before installing a new version of SmartSDR for Windows. To ensure a seamless upgrade of the FLEX-6000, it is recommended that you power cycle your radio before installing the SmartSDR for Windows software on your PC and updating the radio firmware. "Cold Boot" your FLEX-6000 after upgrading the radio firmware. Using the power button, shut down the FLEX-6000, then disconnect it from DC power for 30 seconds. This procedure "cold boots" the radio and helps ensure proper operation. Once DC power is restored to the FLEX-6000, wait an additional 2 minutes to ensure that all internal processors have booted up completely before booting your FLEX-6000 software-defined radio. What to do if the firmware updates do not finish after 10 minutes? On rare occasions, an update may not signal the completion of a firmware update. If ten (10) minutes have elapsed without the radio restarting and completing the upgrade, power off the radio by pressing the power button. The radio should restart, and the firmware update should complete normally.

Note: It would be rare that a single press on the power button does not shut down the radio. However, if this occurs, remove the DC power cable from the radio to force a hard reset. Wait about 1 minute, restore DC power, wait 2 minutes and depress the power button. The radio will restart and the firmware update should complete successfully.

How to Factory Reset a FLEX-6000

There may be situations where a factory reset of the FLEX-6000 is needed to ensure that the radio is working properly. If instructed to Factory Reset the FLEX-6000, use the procedure below.

Perform a Comprehensive Cold Boot and Factory Reset of your radio
Please pay attention to the "wait times" that are part of the steps listed below. These are important to ensure the radio resets properly.

- Power off the radio by pressing and releasing the power button. Allow it to completely power down before continuing by waiting for the power LED to turn off (or amber if a GPSDO is installed). If pressing and releasing the power button does not shut down the radio, press and hold the power button until the radio shuts down. If this does not work, turn off the DC power supply to shut down the radio.
- Once the radio is powered off, wait for 2 minutes to allow for all processors to properly shut down.
- Remove the power cable from the radio for at least 30 seconds and then reconnect it. It is important to remove the power cable from the radio and not just turn off the power supply.
- After reconnecting the DC power cable, turn DC power ON, and wait for 2 minutes to allow for the internal PSoC processor to boot up completely before continuing.

For the FLEX-6700 and FLEX-6500:

- Press and hold the OK button while pressing and releasing the Power button.
- Release the OK button once the power LED turns white and allow the radio to continue booting normally.

For the FLEX-6300, FLEX-6400(M), and FLEX-6600(M):

- Press and hold the Power button for approximately 5 seconds until the Power button LED turns white. After the power button turns white, release the Power button and allow the radio to continue booting normally. Depending on different network factors, it may take up to 2 minutes for the radio to finish booting so please be patient and allow it to boot up completely.

Best Practices for installing a new version of SmartSDR for an "M" Model FLEX-6000 or Maestro
The following best practices are applicable only when installing a new version of SmartSDR on a Maestro. Both the Maestro and an M Model FLEX-6000 must have network access that allows connectivity to the Internet to download the new SmartSDR software. Ensure your Maestro has a reliable power source. Make certain the supplied AC adapter is used to power the unit. This prevents the Maestro from losing power during an update. Ensure your Maestro has a reliable network connection. The Maestro and radio firmware are upgraded entirely through the network connection. When upgrading a Maestro, a wired Ethernet connection is recommended; wired Ethernet connections are faster and more reliable than Wi-Fi. .

**Uninstalling Previous Versions of SmartSDR for Windows – Is It Necessary?**

In general, the answer is no, but there are considerations when more than one version of SmartSDR is maintained on your system: Currently, every version of SmartSDR for Windows is installed in a "side by side" manner allowing the use of previous versions and supporting easy version switching of both software and radio firmware as long as there are no software or database dependencies that prevent backward compatibility. This method of installing different versions "side by side" places unique versions of software on your PC rather than removing or upgrading previous versions. SmartSDR for Windows Shared Components: The SmartSDR software employs shared components used by multiple versions of the software. When previous versions of SmartSDR for Windows are uninstalled it may result in the removal of one or more of these shared components, which may make newer versions inoperable. Therefore, if you desire to uninstall an older version of SmartSDR, we highly recommend you uninstall older versions of SmartSDR before installing a new version of SmartSDR for Windows. Removing the DAX and FlexVSP drivers are not recommended unless explicitly instructed to do so in the Release Notes or by FlexRadio Support.

Known Issues

- If you revert from any version of SmartSDR v3 to a previous version you should perform a factory reset of your radio. When reverting to a previous version of SmartSDR there can be database incompatibilities that may result in operational anomalies. It is recommended that a factory reset be performed after downgrading to ensure the database schema is 100% compatible with the version being used. Once the radio has been factory reset, DO NOT import any profiles created using a version of SmartSDR greater than the one installed on the FLEX-6000. We recommend deleting any profiles exported using SmartSDR v3.2.31 to ensure that they are not utilized as profile backups. Importing profiles created with earlier versions of SmartSDR than the installed version in the FLEX-6000 is acceptable. FlexVSP NOTE: A new FlexVSP driver for SmartSDR CAT is installed with SmartSDR v3.2.34 and greater if an update to FlexVSP is required. The SmartSDR installation software will automatically remove the previous FlexVSP driver and install the new one. The new FlexVSP driver is not backward compatible with previous versions of SmartSDR CAT. An unhandled exception error will occur when using previous versions of SmartSDR with the new FlexVSP driver.
- During alpha testing, after the initial installation of the updated DAX drivers provided in SmartSDR v3.1.6, there have been reports of a Windows "stop error"
(colloquially known as the Blue Screen of Death or BSoD). In most cases, the error occurred once and after a subsequent PC reboot, the error did not occur again or impact proper DAX operations. We are working to identify the cause and resolve the behavior.
- After installing the updated DAX drivers, if you receive a DAX error where all the DAX channels are red, the most common reason for this is due to the lack of a default Windows audio playback device (speakers). To identify this error condition, look at the speaker icon in the Windows Task Bar. If it has a red "X" on it, this indicates a missing default audio playback device. To resolve this issue, simply connecting a pair of PC speakers or a headset to the PC will cause Windows to find a suitable default audio playback device and upon restarting DAX, the error condition should be resolved.

Purchasing a SmartSDR Software License for your FLEX- 6000 using SmartSDR for Windows
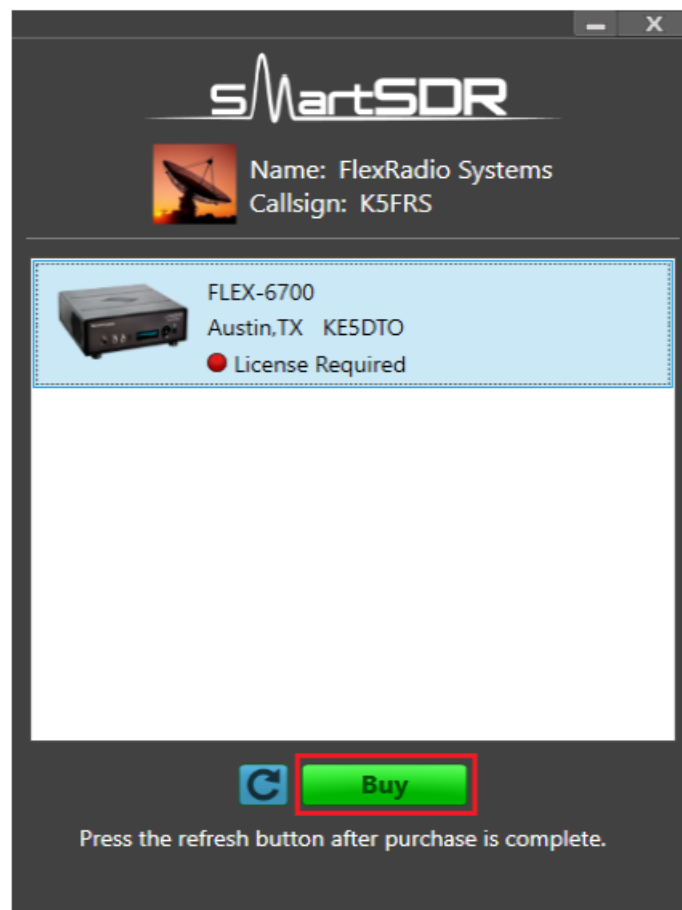
Obtaining a SmartSDR software license using SmartSDR for Windows is easy and convenient. Download the latest software installer for SmartSDR and run it to install the software on your PC. Using the new software, update the radio with the new firmware. Start SmartSDR then select the radio in the radio chooser window and press the yellow Update button.
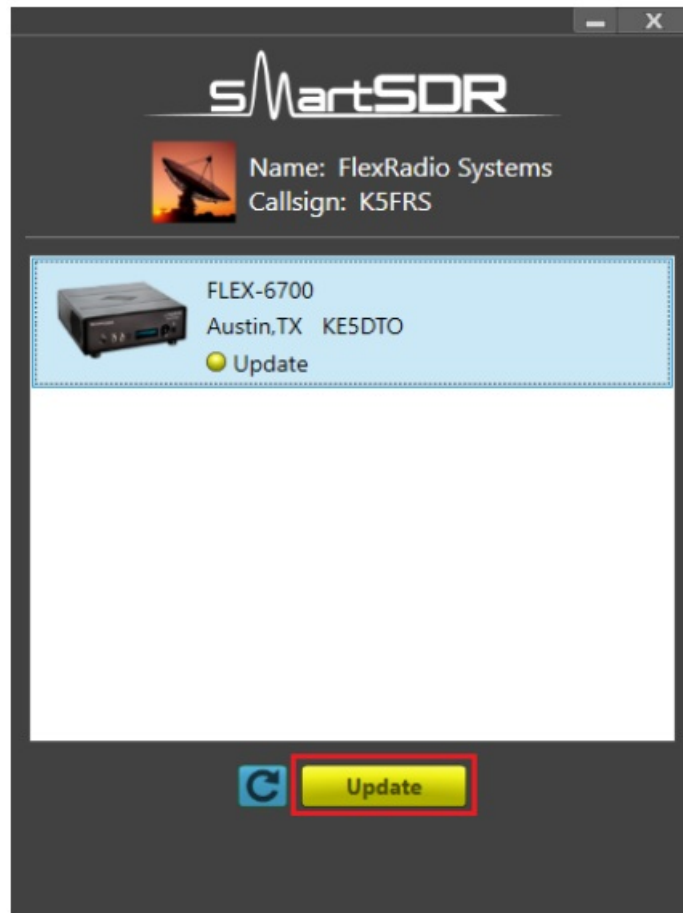
- Once the update completes, if the radio you are upgrading requires a license, the radio status will show "License Required" and you will be presented with a Buy button that will launch a web browser, which will take you through the steps to purchase the license.

Note: New radios purchased include a SmartSDR license for the current major version and will not see the "License Required" indicator.

Once you have purchased a SmartSDR license for your radio, click the blue circular refresh button in the radio chooser window to update the license information for the radio. It may take up to a minute after the purchase completes before the radio acquires its license and cycling the power on the radio may be required.

Note: The radio (not just the computer) will need internet access to obtain the newly acquired license. Please ensure that the radio is plugged into a network that gives internet access.

Purchasing a SmartSDR Software License for your FLEX-6000 using an "M" Model FLEX-6000 or a Maestro

Obtaining a SmartSDR software license using an M model FLEX-6000 or a Maestro is easy and convenient. After downloading and installing a SmartSDR 3 software version, At the Select a Version screen, choose the version 3 software just installed. If you need to purchase a license to run the software, the Buy button will appear as shown below.
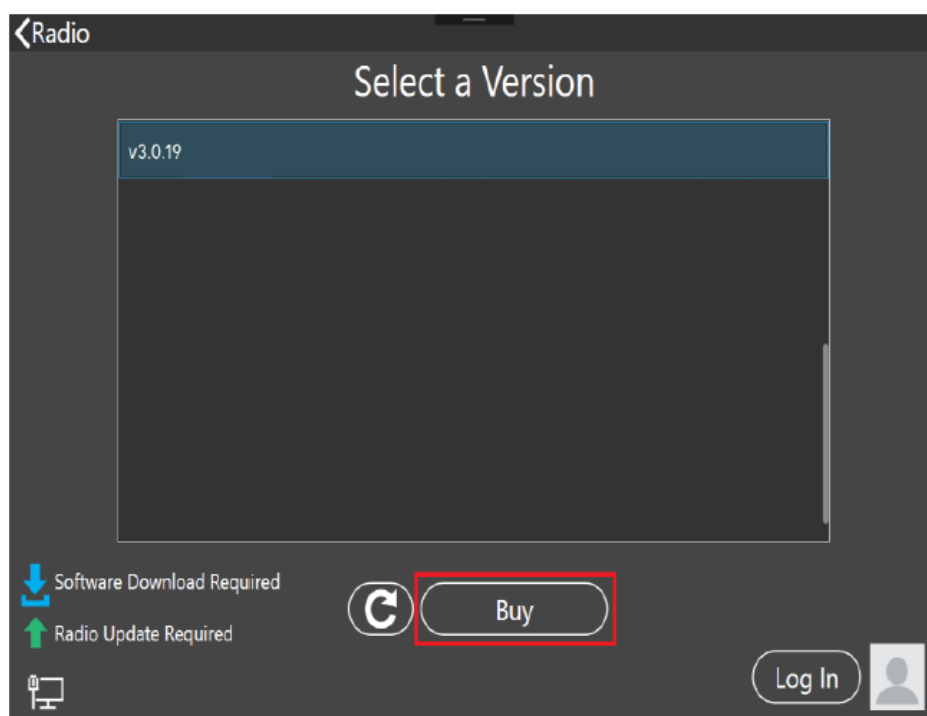
Tapping the Buy button will generate and show a shortened URL that must be plugged into a browser manually. Note that the URL is case-sensitive and unique for each radio.
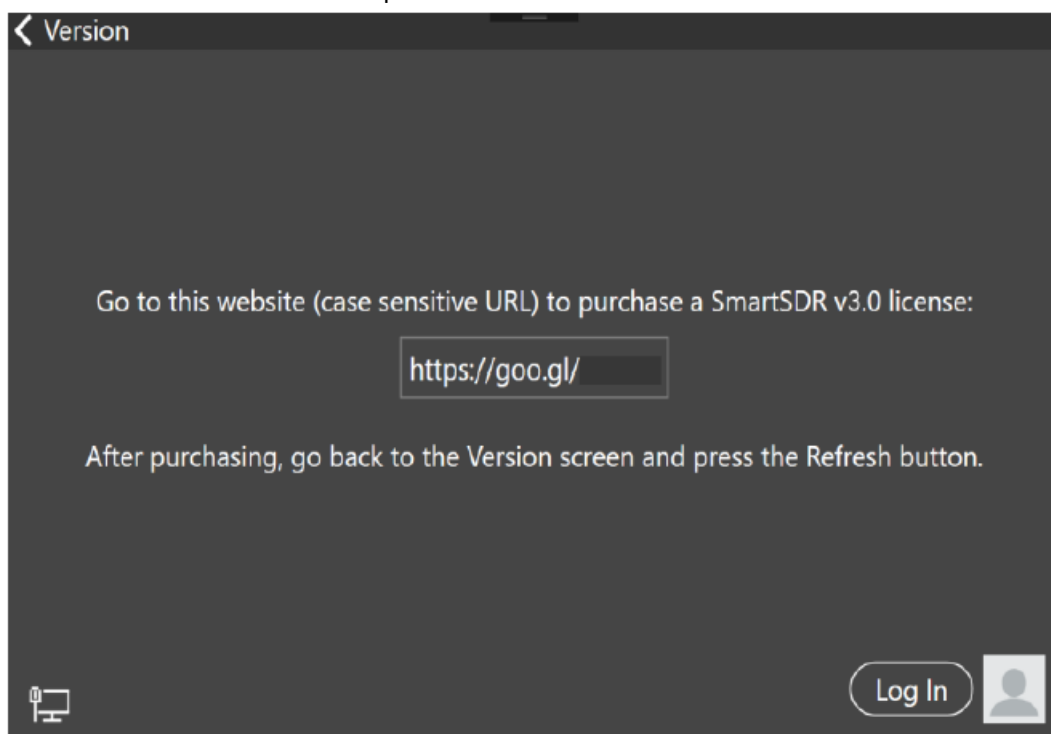
When the license purchase is complete, tap the Version link at the top left corner of the screen to go back to the Select a Version screen. At the Select, a Version screen, tap the refresh button (circular icon) to update the license information for the radio. It may take up to a minute after the purchase completes before Maestro finds the new license.

When the license is updated, the refresh button will disappear and the Buy button will change to a Run button. Tap the Run button to connect SmartSDR v3 for an M Model FLEX-6000 or Maestro to your FLEX-6000.
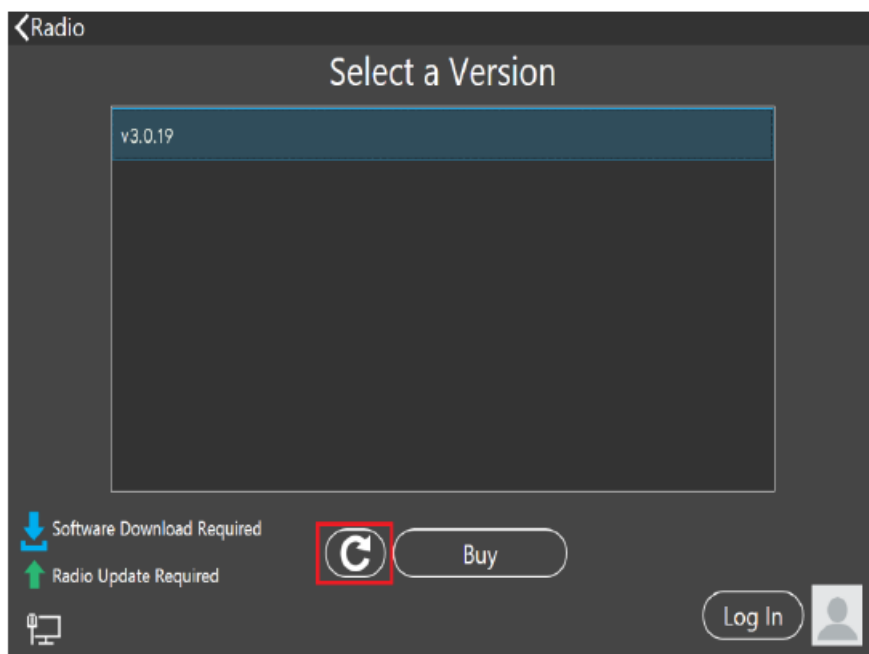
SmartSDR Documentation Available from **www.flexradio.com** The following documentation and how-to guides for SmartSDR v3.3.32 are available as a convenient download from the FlexRadio website.

SmartSDR for Windows Software User's Guide
https://www.flexradio.com/documentation/smartsdr-software-user-guide-pdf/
FLEX-6400M and FLEX-6600M User's Guide

https://www.flexradio.com/documentation/flex-6400m-and-flex-6600m-user-guide-pdf/

SmartSDR CAT User Guide
https://www.flexradio.com/documentation/smartsdr-cat-user-guide-pdf/
FLEX-6000 Signature Series Hardware Reference Manual
https://www.flexradio.com/documentation/flex-6000-hardware-reference-manual-pdf/
FLEX-6400 and FLEX-6600 Hardware Reference Manual
https://www.flexradio.com/documentation/flex-6400-and-flex-6600-hardware-reference-manual-pdf/
FLEX-6000 Signature Series Quick Start Guide
https://www.flexradio.com/documentation/flex-6000-family-qsg-single-page-pdf/
SmartLink for SmartSDR Quick Start Guide
https://www.flexradio.com/documentation/smartlink-quick-start-guide-for-smartsdr-pdf/
FreeDV Waveform How-to Guide
https://www.flexradio.com/documentation/freedv-waveform-how-to-guide-pdf/

USB Cable Interface Guide
https://www.flexradio.com/documentation/usb-cable-interface-guide-pdf/

SmartSDR v3 with multiFLEX Installation Video
https://www.youtube.com/watch?v=zO90kVkIYM8

SmartSDR V3 Changelog
https://www.flexradio.com/software/smartsdr_v3_changelog/

Obtaining Technical Support

If you encounter any issues installing or operating SmartSDR for Windows with your FlexRadio Systems'
Signature Series software defined radio, please use our online Community to search for information about
SmartSDR and the FLEX-6000. If you need assistance using the Community, please refer to the Community
Message Board for additional information. If you are unable to find an existing answer to your issue via the
Community, please contact FlexRadio Systems Technical Support by opening a HelpDesk support ticket online.
For details on how to submit a HelpDesk support ticket, please refer to the HelpDesk article How to Submit a
Request for Technical Support.

Hours of Operation: Our Technical Support engineers are available Monday-Friday from 7:00 AM-4:00 PM
Central Time. If you open a HelpDesk ticket after business hours, on a holiday, or weekend, we will respond to
your request for assistance during regular business hours in the order your HelpDesk ticket was received.

Copyrights and Trademarks

FlexRadio 4616 W. Howard Lane Suite 1-150 Austin, TX USA 78728 +1 (512) 535-4713 www.flexradio.com

Documents / Resources

[**FlexRadio FLEX-6000 Series Software Defined Radio**](#) [pdf] Instruction Manual
FLEX-6000 Series Software Defined Radio, FLEX-6000 Series, Software Defined Radio, Defined Radio, Radio

References

- 〰 [**FlexRadio | Leaders in Software Defined Radios & Technology**](#)
- 〰 [**FlexRadio | Leaders in Software Defined Radios & Technology**](#)
- 〰 [**Message Board — FlexRadio Community**](#)
- 〰 [**FLEX-6000 Family Quick Start Guide – FlexRadio**](#)
- 〰 [**FLEX-6000 Hardware Reference Manual – FlexRadio**](#)
- 〰 [**FLEX-6400 and FLEX-6600 Hardware Reference Manual – FlexRadio**](#)
- 〰 [**FLEX-6400 and FLEX-6600 Hardware Reference Manual – FlexRadio**](#)
- 〰 [**FLEX-6400M and FLEX-6600M User Guide v3.x – FlexRadio**](#)
- 〰 [**FreeDV Waveform How To Guide – FlexRadio**](#)
- 〰 [**SmartLink Quick Start Guide – FlexRadio**](#)
- 〰 [**SmartSDR CAT User Guide v3.x – FlexRadio**](#)
- 〰 [**SmartSDR Software User Guide v3.x – FlexRadio**](#)
- 〰 [**SmartSDR USB Cable Interface Guide – FlexRadio**](#)
- 〰 [**SmartSDR v3 Changelog – FlexRadio**](#)

[**Manuals+**](#),