

Freedom X Combox USB Operations Guide

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Rev A

⚠ DANGER

RISK OF FIRE, ELECTRIC SHOCK, EXPLOSION, AND ARC FLASH

This guide is in addition to, and incorporates by reference, the relevant product manuals for Freedom X | XC, Freedom X Remote Panel, and Freedom X Combox. Before reviewing this guide you must read the relevant product manuals. Unless specified, information on safety, specifications, installation, and operation is as shown in the primary documentation received with the product. Ensure you are familiar with that information before proceeding.

Failure to follow these instructions will result in death or serious injury.

1.0 Purpose

The purpose of this guide is to provide instructions on how to use a USB drive to transfer data between the USB drive and the Freedom X Combox for the purpose of upgrading firmware for the Freedom X | XC, Freedom X Remote Panel, and Freedom X Combox, to change device settings for the Freedom X | XC, or to extract device logs from the Freedom X | XC.

2.0 Requirements

- USB drive - Class 2, FAT16/32, 1 – 500 GB, USB 3.0 or higher
 - tested compatible brands are from Sandisk (3.0), Vital (3.0), Kingston (3.0)
 - tested incompatible brands are from Philips, Onn, Emtec
 - format the USB drive to FAT16 or FAT32 to avoid reading and writing errors

3.0 Operations

Figure 1 USB drive to Freedom X Combox

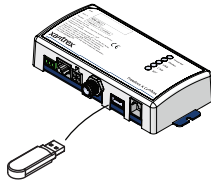
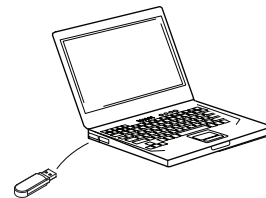
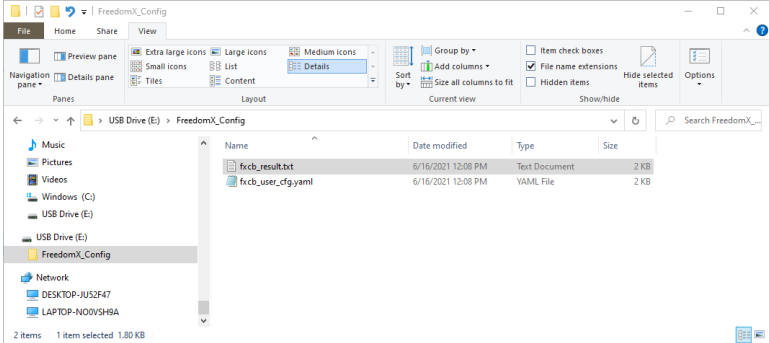
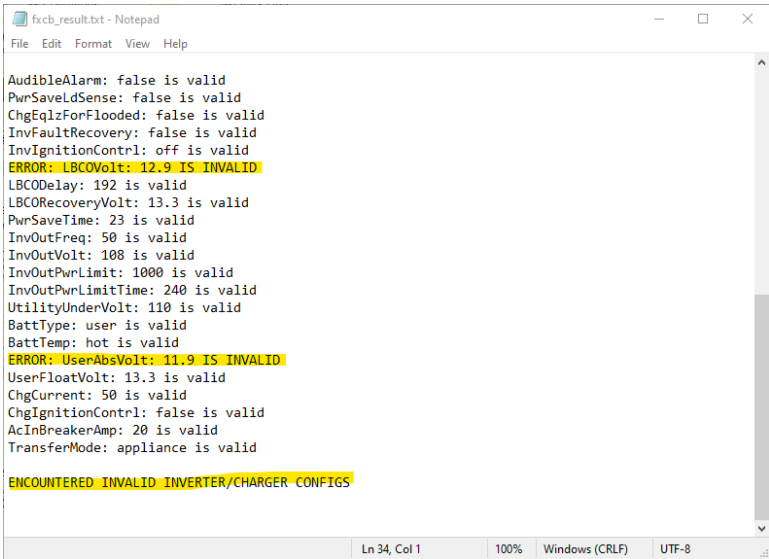
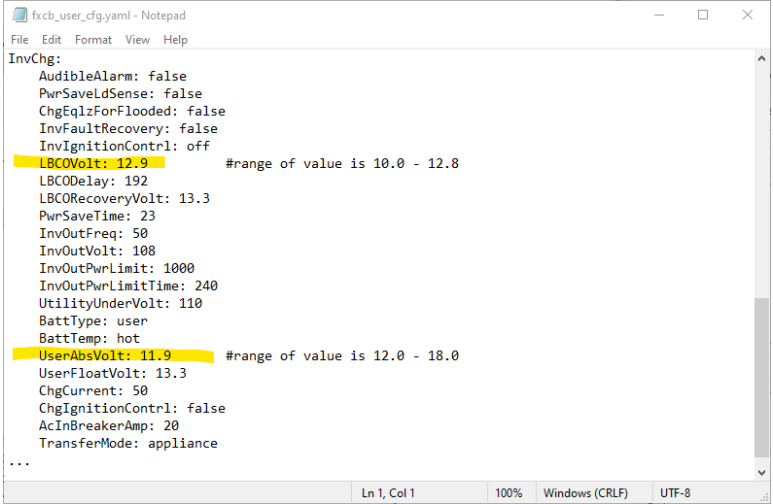








Figure 2 USB drive to a PC









How to...	Steps
Apply new configuration settings to the Freedom X XC.	<ol style="list-style-type: none"> 1. Insert the USB drive that contains new configuration settings into the Combox's USB port (<i>Figure 1</i>). The USB LED will flash green intermittently. NOTE: All programmed configurations (device settings) will be copied from the USB drive into the Freedom X XC's internal memory through the Combox. 2. Remove the USB drive from the USB port of the Combox when the USB LED turns solid green [● USB] and jump to Step 10. 3. If the USB LED turns solid red [● USB] then proceed to the next step. 4. Plug the USB drive into a PC's USB drive (<i>Figure 2</i>).

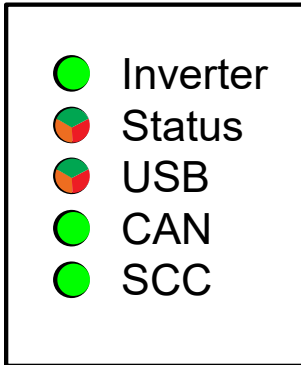
How to...	Steps
	<p>5. Open and examine the autogenerated fxcb_result.txt file under the FreedomX_Config file folder. If the configuration file contains any invalid setting, the USB configuration will be rejected and a results file will show all invalid settings.</p>  <p>6. Look for lines in the text file that have been flagged as INVALID. For example,</p>  <pre> AudibleAlarm: false is valid PwrSaveLdSense: false is valid ChgEqLzForFlooded: false is valid InvFaultRecovery: false is valid InvIgnitionContrl: off is valid ERROR: LBCOVolt: 12.9 IS INVALID LBCODelay: 192 is valid LBCORecoveryVolt: 13.3 is valid PwrSaveTime: 23 is valid InvOutFreq: 50 is valid InvOutVolt: 108 is valid InvOutPwrLimit: 1000 is valid InvOutPwrLimitTime: 240 is valid UtilityUnderVolt: 110 is valid BattType: user is valid BattTemp: hot is valid ERROR: UserAbsVolt: 11.9 IS INVALID UserFloatVolt: 13.3 is valid ChgCurrent: 50 is valid ChgIgnitionContrl: false is valid AcInBreakerAmp: 20 is valid TransferMode: appliance is valid ENCOUNTERED INVALID INVERTER/CHARGER CONFIGS </pre>

How to...	Steps
	<p>7. Open the fxcb_user_cfg.yaml file using Notepad (or any text editor) and change the value of the INVALID setting to make sure it is within the allowable range according to the Freedom X XC, Freedom X Remote Panel, and Freedom X Combox's Owner's Guide. For example,</p>  <p>8. Close the fxcb_user_cfg.yaml file to save it.</p> <p>9. Re-apply the configuration from Step 1 up to Step 4. If the configuration file is accepted without invalid settings then the fxcb_result.txt file will be updated accordingly but without INVALID results.</p> <p>10. To verify that the settings were accepted from the configuration file, check the device settings using the Freedom X XC's display panel or if the device is inaccessible, use its Freedom X remote panel.</p>
Copy the current device settings of the Freedom X XC via the Combox	<p>IMPORTANT: Make sure that the USB drive is either formatted and empty or without an existing FreedomX_Config folder. If this folder exists as well as an old configuration file, the copy-to-USB-drive process will be reversed and an older configuration file will get transferred to the Freedom X XC instead.</p> <p>1. Insert the USB drive into the Combox's USB port. The USB LED will flash green intermittently. NOTE: All current configurations (device settings) including up-to-date recorded data logs from the Combox will be copied into the USB drive automatically under a time stamped folder. The data logs will be created and written to a folder on the USB drive specifying the serial number of the Freedom X XC the Combox is connected to, as well as the date and time stamp of the Combox.</p> <p>2. Remove the USB drive from the USB port of the Combox when the USB LED turns solid green [● USB].</p> <p>3. Redo the previous steps if the USB LED turns solid red [● USB].</p>

How to...	Steps
Transfer device settings to the Freedom X XC via the Combox	<p> TIP: Make sure to type file and folder names exactly as shown here.</p> <ol style="list-style-type: none"> 1. From a PC, move the copied device settings file (<i>fxcb_user_cfg.yaml</i>) to the FreedomX_Config file folder. If this file folder does not already exist, create it from the USB drive's root directory, name it FreedomX_Config and move the <i>fxcb_user_cfg.yaml</i> file into it. 2. Remove the USB drive from the PC. 3. Insert the USB drive into the Combox's USB port. The USB LED will flash green intermittently. NOTE: The most current configurations (device settings) that were copied into the USB drive will be loaded automatically to the Combox. 4. Remove the USB drive from the USB port of the Combox when the USB LED turns solid green [ USB]. 5. Redo the previous steps if the USB LED turns solid red [ USB].
Upgrade the Combox's firmware.	<p> TIP: Make sure to type file and folder names exactly as shown here.</p> <ol style="list-style-type: none"> 1. Obtain the firmware update file from your Xantrex dealer and unzip the compressed files into your computer's local hard drive. The decompressed files are <i>fxcb.enc</i> and <i>fxcb_manifest.cbor</i>. 2. Plug and format a USB drive (FAT32, 1GB or more) on the PC. 3. Move the <i>fxcb.enc</i> and <i>fxcb_manifest.cbor</i> files into a file folder called FreedomX_Firmware. If this file folder does not already exist, create it from the USB drive's root directory, name it FreedomX_Firmware and move the <i>fxcb.enc</i> and <i>fxcb_manifest.cbor</i> files into it. 4. Safely eject the USB drive from the PC. 5. Turn off the RV engine, if running, and turn off all AC loads connected to the Freedom X XC. 6. Remove (e.g., open upstream AC breakers and battery disconnects) any power sources that will energize the Freedom X XC which in turn will de-energize the Combox. 7. Insert the USB drive into the USB port of the Combox. 8. Restore (e.g., close upstream AC breakers and battery disconnects) power sources to the Freedom X XC which in turn will power the Combox. 9. Observe during the update, that the USB LED on the Combox will flash red intermittently. Once the update is complete, the flashing will stop and turn to solid green or red. 10. Remove the USB drive from the USB port of the Combox when the USB LED turns solid green [ USB]. 11. Redo the previous steps if the USB LED turns solid red [ USB].

How to...	Steps
Upgrade the Freedom X remote panel's firmware via the Combox.	<p> TIP: Make sure to type file and folder names exactly as shown here.</p> <ol style="list-style-type: none"> 1. From a PC's web browser, download the latest Freedom X remote panel firmware version from www.xantrex.com. 2. Rename the downloaded firmware file exactly to REMOTE.bin. 3. Plug and format a USB drive (FAT32, 1GB or more) on the PC. 4. Create a new folder on the USB drive called FreedomX_Firmware. 5. Move the REMOTE.bin file into the FreedomX_Firmware folder. 6. Safely eject the USB drive from the PC. 7. Turn off the RV engine, if running, and turn off all AC loads connected to the Freedom X XC. Keep the Freedom X XC in Battery (Inverter) Mode to supply full power to the Combox. 8. Insert the USB drive into the USB port of the Combox. During the update, the USB LED will flash red intermittently. Once the update is complete, the flashing will stop and turn to solid green or red. 9. Remove the USB drive from the USB port of the Combox when the USB LED turns solid green [ USB]. 10. Redo the previous steps if the USB LED turns solid red [ USB].
Upgrade the Freedom X XC's firmware via the Combox.	<p> TIP: Make sure to type file and folder names exactly as shown here.</p> <ol style="list-style-type: none"> 1. From a PC's web browser, download the latest Freedom X XC firmware version from www.xantrex.com. 2. Unzip the downloaded firmware file. Usually the firmware file unzips to a folder called FreedomX_Firmware. 3. Inside the FreedomX_Firmware folder, rename the one and only file to INVCHG.bin. 4. Plug and format a USB drive (FAT32, 1GB or more) on the same PC. 5. Move the unzipped FreedomX_Firmware folder which contains the INVCHG.bin firmware file into the root directory of the USB drive. 6. Safely eject the USB drive from the PC. 7. Turn off the RV engine, if running, and turn off all AC loads connected to the Freedom X XC. Keep the Freedom X XC in Battery (Inverter) Mode to supply full power to the Combox. 8. Insert the USB drive into the USB port of the Combox. During the update, the USB LED will flash red intermittently. Once the update is complete, the flashing will stop and turn to solid green or red. 9. Remove the USB drive from the USB port of the Combox when the USB LED turns solid green [ USB]. 10. Redo the previous steps if the USB LED turns solid red [ USB].

4.0 Combox LED Status Indicators



Inverter	Green	The Combox is connected to a Freedom X XC unit and the unit is ON.
	Flashing green	The Combox is connected to a Freedom X XC unit and the unit is on Standby.
	Off	Freedom X XC unit is disconnected from its battery source or Combox is disconnected from a Freedom X XC unit.
Status	Green	Combox App activity
	Flashing red	Combox detected a USB and is loading up new firmware
USB	Green	USB-related operation ¹ is successful
	Flashing green	Active USB-related operation
	Red	USB-related operation is unsuccessful
	Flashing red	Active USB-related operation
	Amber	USB drive is plugged in
	Flashing amber	Active USB-related operation
	Off	No USB drive detected
CAN	Green / Flashing green	CAN device detected and operating
	Off	No device detected
SCC	Green / Flashing green	SCC (Xantrex Solar Charge Controller) detected and operating
	Off	No device detected

¹ USB-related operations include loading and applying firmware updates, copying and applying device configurations, and data logging.

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