

# Freedom EX 4000 USB Operations Guide

976-0425-01-01  
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 EX 4000. 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 EX 4000 inverter/charger/converter for the purpose of upgrading firmware for the Freedom EX 4000 inverter/charger/converter, to change device settings, or to extract device logs.

## 2.0 Requirements

- USB drive - Class 2, FAT32, 1 – 500 GB, USB 2.0 or higher
  - recommended brands are from Sandisk (3.0), Vital (3.0), Kingston (3.0), Philips, Onn
  - incompatible brand is from Emtec. DO NOT USE.
  - format the USB drive to FAT32 to avoid reading and writing errors

## 3.0 Operations

Figure 1 USB drive to Freedom EX 4000

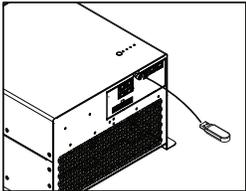
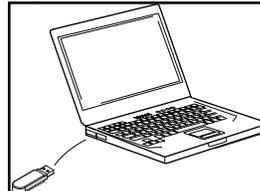
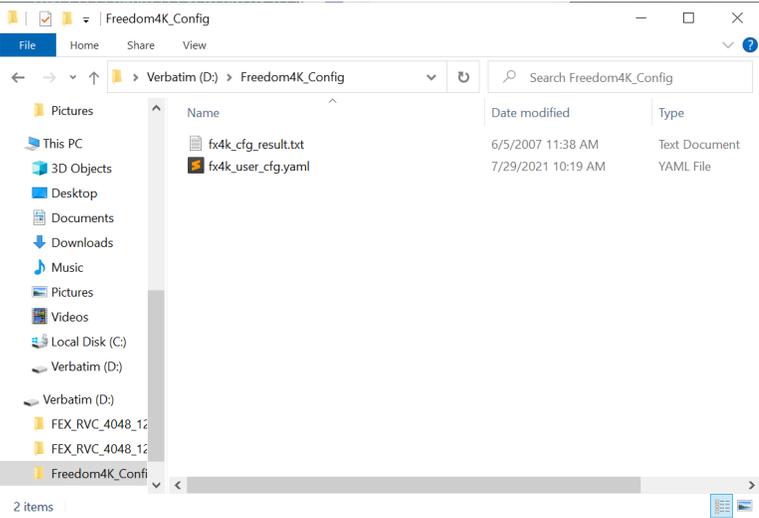
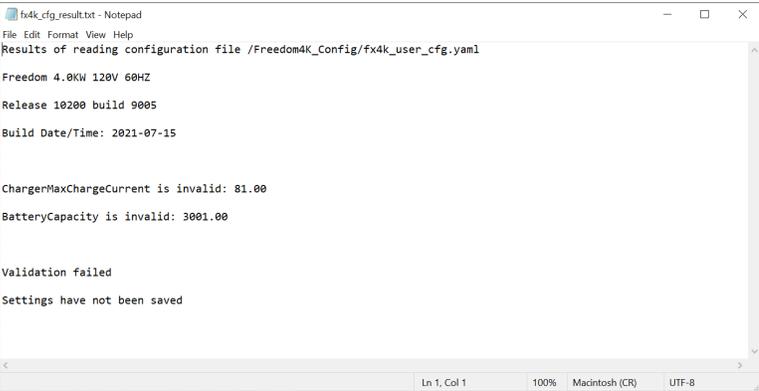
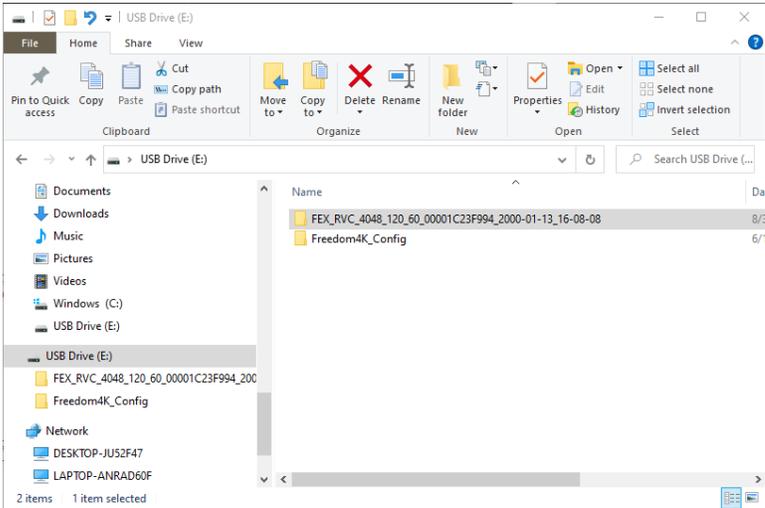


Figure 2 USB drive to a PC



How to...	Steps
Apply new configuration settings to the Freedom EX 4000.	<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"> <span style="font-size: 1.2em;">⚠</span> <b>TIP:</b> Make sure to type file and folder names exactly as shown here.                 </div> <ol style="list-style-type: none"> <li>1. From a PC, move (or copy) the configuration file (<i>fx4k_user_cfg.yaml</i>) to the <b>Freedom4K_Config</b> file folder. If this file folder does not already exist, create it from the USB drive's root directory, name it <b>Freedom4K_Config</b> and move the <i>fx4k_user_cfg.yaml</i> file into it.</li> <li>2. Remove the USB drive from the PC.</li> <li>3. Insert the USB drive that contains the configuration file with the new configuration settings into the Freedom EX 4000's USB port (<i>Figure 1</i>).  <b>NOTE:</b> All programmed configurations (device settings) will be copied from the USB drive into the Freedom EX 4000's internal memory. Wait ~20 seconds for the configuration files to loaded into the unit.</li> </ol>

How to...	Steps
	<p>4. Remove the USB drive from the USB port of the Freedom EX 4000.</p> <p>5. Plug the USB drive into a PC's USB drive (Figure 2).</p> <p>6. Open and examine the autogenerated <b>fx4k_cfg_result.txt</b> file under the <b>Freedom4K_Config</b> 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>7. Look for lines in the text file that have been flagged as <i>invalid</i>. For example,</p> 

How to...	Steps
	<p>8. Open the <i>fx4k_user_cfg.yaml</i> 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 EX 4000's Owner's Guide. For example,</p> <pre data-bbox="678 348 1443 684"> 59 InverterSearchDelayTime: 2 60 InverterOutputVoltageLN: 120.00 61 InverterIgnitionControl: off 62 ChargerEnable: true 63 ChargerMaxChargeCurrent: 79.00 #Range of value is 4 - 80 64 ChargerAlgorithm: 3stage 65 ChargerBatteryRechargeVoltage: 50.00 66 ChargerAbsorptionTime: 180 67 ChargerBlockStart: 0 68 ChargerBlockStop: 0 69 DefaultBatteryTemperature: warm 70 BatteryCapacity: 2300.00 #Range of value is 0 - 3000 71 BatteryType: flooded 72 CustomEqualizationSupportEnable: true 73 CustomEqualizationVoltage: 64.00 74 CustomBulkVoltage: 57.60                     </pre> <p>9. Close the <i>fx4k_user_cfg.yaml</i> file to save it.</p> <p>10. Re-apply the configuration from Step 1 up to Step 4. If the configuration file is accepted without invalid settings then the <i>fx4k_cfg_result.txt</i> file will be updated accordingly but without INVALID results.</p> <p>11. To verify that the settings were accepted from the configuration file, check the device settings using the Freedom EX remote panel.</p>
<p>Extract the current device settings of the Freedom EX 4000 to the USB drive.</p>	<p><b>IMPORTANT:</b> Make sure that the USB drive is either formatted and empty or without an existing <i>Freedom4K_Config</i> 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 EX 4000 instead.</p> <p>1. Insert the USB drive into the Freedom EX 4000's USB port.  <b>NOTE:</b> All current configurations (device settings) including up-to-date recorded data logs from the Freedom EX 4000 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 EX 4000, as well as the date and time stamp of recorded events in the data log.</p>  <p>2. Wait ~10 seconds before removing the USB drive from the USB port of the Freedom EX 4000.</p>

How to...	Steps
Transfer device settings to the Freedom EX 4000 from the USB drive.	<p> <b>TIP:</b> Make sure to type file and folder names exactly as shown here.</p> <ol style="list-style-type: none"> <li>1. From a PC, move the extracted device settings file (<i>fx4k_user_cfg.yaml</i>) to the <b>Freedom4K_Config</b> file folder. If this file folder does not already exist, create it from the USB drive's root directory, name it <b>Freedom4K_Config</b> and move the <i>fx4k_user_cfg.yaml</i> file into it.</li> <li>2. Remove the USB drive from the PC.</li> <li>3. Insert the USB drive into the Freedom EX 4000's USB port. <b>NOTE:</b> The most current configurations (device settings) that were copied into the USB drive will be loaded automatically to the Freedom EX 4000.</li> <li>4. Wait ~10 seconds before removing the USB drive from the USB port of the Freedom EX 4000.</li> </ol>
Upgrade the Freedom EX 4000's firmware.	<p> <b>TIP:</b> Make sure to type file and folder names exactly as shown here.</p> <ol style="list-style-type: none"> <li>1. Obtain the firmware update file from your Xantrex dealer and unzip the compressed files into your computer's local hard drive. The decompressed file is <i>FEX_RVC_4048_120_60.v##.##.BN####.xf0</i> where # is replaced by numerical values.</li> <li>2. Plug and format a USB drive (FAT32, 1GB or more) on the PC.</li> <li>3. Move the <i>FEX_RVC_4048_120_60.v##.##.BN####.xf0</i> file into a file folder called <b>Freedom4K_Firmware</b>. If this file folder does not already exist, create it from the USB drive's root directory, name it <b>Freedom4K_Firmware</b> and move the <i>FEX_RVC_4048_120_60.v##.##.BN####.xf0</i> file into it.</li> <li>4. Rename <i>FEX_RVC_4048_120_60.v##.##.BN####.xf0</i> to <i>InvChg.xf0</i></li> <li>5. Safely eject the USB drive from the PC.</li> <li>6. Remove (e.g., open upstream AC breakers and battery disconnects) any power sources that are energizing the Freedom EX 4000.</li> <li>7. Insert the USB drive into the USB port of the Freedom EX 4000.</li> <li>8. Restore (e.g., close upstream AC breakers and battery disconnects) power sources to the Freedom EX 4000 which will energize the Freedom EX 4000 and power it on.</li> <li>9. Observe during the update, that all four LEDs on the Freedom EX 4000 will flash briefly and turn off. Once that happens the update is complete.</li> <li>10. Remove the USB drive from the USB port of the Freedom EX 4000.</li> </ol>