Updating Firmware and Programming a Multiplus Inverter with VEConfig

NOTE: This programming process is required for Victron batteries in which an assistant is needed. You will need a computer running Windows, and to download Victron's software to proceed.

You will want to set the custom values that depend on the type of battery bank you are using. The custom settings are developed by AM Solar to work with the systems that we designed. If firmware updates are required by Victron in the future, or you wish to make any changes to the system for any reason, the MK3 will allow you to perform this as well as view any changes.

The settings can be changed in two ways: Through the VictronConnect app on a phone or tablet, or through VEConfigure on a machine running Windows. If you have a Victron battery bank, or will be using any assistants, you will need to perform the installation using VEConfigure outlined in this guide. If you don't require assistants, you should consider using the alternative method of programming settings through the VictronConnect app.

What you need:

- Tablet/Laptop/PC with an internet connection and a USB port
  - *Important*: This laptop must be able to run the Victron software linked below
- MK3-USB adapter cable and RJ45 cable

NOTE: Before you connect your MK3 for the first time, be sure you are connected to the internet.
Victron's instructional video is here: https://youtu.be/V1Zceq02vMA

Step 1:

Download the communication software from Victron

You will need the latest versions of **VEFlash** and **VEConfig** downloaded from the Victron website onto your PC.

a) Go to this website: https://www.victronenergy.com/support-and-downloads/software
b) On the right side of the page click the download link for **VE Configuration tools** and download the file to your desktop.
   NOTE: Remember the location of the download on your computer, so you can open the file later.
c) You will now install the program. Double click the file you downloaded.
d) Your PC may prompt you with a message "Do you want to allow…" click **YES.**
e) A window will pop up that says "Welcome to the VE Configure tools Setup Wizard". Click **Next>**.
f) The window will say "Select Additional Tasks", check the boxes next to **VEConfig** and **VEFlash**, this will put the programs on your desktop so you can find them easily. Click **Next >**.
g) The window will say "Ready to Install", click **Install**.
h) The window will say "Completing the VE Configure tools Setup Wizard", uncheck **Start VEConfig when setup finished**, and click **Finish**.

Step 2:

Download the program files from the AM Solar website.

a) Go to: https://amsolar.com/rv-solar/support/
b) Scroll down to Programming Guides, and download the files for your appropriate battery and inverter.
c) NOTE: You will download both the Inverter file (the Multiplus 2000 or 3000) as well as your battery type, they are two separate files.

Step 3:

Preparing your inverter and physically connecting your PC

In order to do this step, your inverter needs to be fully installed and connected to the battery bank.

a) Turn the black inverter switch on the faceplate to the OFF position (middle position for the rocker switch).
b) Turn any breakers supplying the inverter with AC to the OFF position.
c) Using a Philips screw driver remove the four screws on the inverter faceplate and remove the faceplate.
d) Unplug all RJ45 cables.
e) Plug the MK3-USB Adapter's USB port into your PC's USB port.
f) Plug one end of an RJ45 cable into the MK3-USB Adapter's port and plug the other end into one of the inverter's ports.

AM Solar Inc.
3555 Marcola Rd.
Springfield, OR 97477
541.726.1091
www.amsolar.com

Step 4:
Updating the firmware

If the steps on this list don't exactly match up with what your computer does, you may want to try using a different PC. Sometimes the "Next>" button is missing. If that happens, just click ENTER to go to the next step.

a) Find the VEFlash icon on your desktop and double click it.
b) A "Welcome" screen will pop up. Click **Start**.
c) The window will say "Select required action", leave the toggle on "Update the firmware" and click **Next>**.
d) The window will say "Warning", click **Next>**.
e) The window will say "Select file", click **Browse**.
f) Select the .vff firmware file you downloaded to the desktop in Step 2 and click **Open**, then click **Next>**.
g) The window will say "Prepare your system", click **Next>**.
h) Turn the inverter ON by pushing the black button upward (away from the cables coming out the bottom).
i) The window will say "Select a comport", click **Auto detect comport**. A window will pop up while it searches for the comport. After the window disappears click **Next>**.
    i. **NOTE** - It is very important you follow the next steps very carefully and power the device on/poff at the appropriate times.
j) The window will say "Connect part 1", turn the inverter OFF by pushing the black button back toward the center position. Click **Next>**.
k) The window will say "Connect part 2", turn the inverter back ON with the black button. Click **Next>**.
l) The window will say "Ready to program", click **Next>**.
m) The window will "Busy" as an animation shows data going into a microprocessor. When the animation stops, click **OK**.
n) The window will disappear and your inverter firmware will have been updated.
o) Disconnect power to the inverter and then reconnect it.

NOTE: We only suggest updating your inverter firmware during the installation and when you are not depending on the inverter for your AC house loads and living in general. It's unlikely but a failure to finish a firmware update can result in the inverter ceasing to function.

Step 5:
Uploading battery settings

a) Find the VEConfig icon on your desktop and double click on it.
b) A warning window will pop up. Click **OK**. The warning will disappear, leaving the VEConfigure window.
c) Click on the **Port selection** tab, mouse over **Com port**, click on **Auto detect (not for MK1)**.
d) After a couple seconds of initialization the window will show inverter status. Click on the **File** tab and click on **Load settings**.
e) A browsing window will pop up. Select the battery settings file you downloaded in Step 2. Click **Open**.
f) A window will pop up saying "It is not allowed to make this charge in the grid code…" Click **No**.
g) Click on the **Send settings** button.
h) Click on the "**all settings**" toggle, then click **OK**.
    a. If a window pops up saying "Would you like to send the assistant setup to the device?" click Yes.
i) A new window will pop up saying "Writing block…", then will close and you will see "Assistant setup successfully written to target." Click **OK**.
j) Congratulations, your inverter is now fully programmed. You can close out of the VE Configure program.

Step 6:
Put the inverter back together

a) Turn the inverter OFF with the black button by pushing it down to the center position.
b) Physically unplug the RJ45 cable that is connected to the MK3-USB adapter from the inverter.

Troubleshooting:

- If your inverter is being installed with Victron Batteries, special files (called assistants) will be needed to properly operate your Multiplus Inverter. Call AM Solar for more information.
- If the MK3 is not recognizing the inverter on your laptop, move onto page 3 to update the firmware and try again.

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What To Do if the Port is not Recognized - Getting MK3 Compatible USB Drivers

- Open VE Configure.
- Go to the Special Tab at the top —> Dropdown to USB Drivers.
- It will pull up a message screen, click yes.
- You will download a file now, it will bring up the download destination screen. Put the file in a location you can find later.
- You will see a success message.
  - You can close VEConfigure after getting that driver downloaded.
- Next go to to the Device Manager on your PC.
  - If you can't locate it, just search for "Device Manager" in the search bar.
- Scroll down to "Universal Serial Bus Controller" which should be near the bottom.
  - Expand the list of devices
- Take a photo of the list of devices
- Unplug the MK3 from the USB port.
- See which device was removed when compared to the photo. It should be "USB Serial Converter".
- Plug the MK3 back in to the USB port.
- The device will reappear. Highlight the device and click on properties.
- Go to "General" at the top.
- Click on "Change" Settings.
- Click on "Drivers" at the top.
- Click on "Update Drivers".
- Click on "Browse my computer for driver software"
- Locate the folder that you downloaded it to at the beginning, select the folder.
- It will state the driver is installed - You are finished with this portion.

Now we want to go back to step 4 above, and the port should be recognized with the MK3.

Troubleshooting:

If the cable is connected to the inverter and powered on without internet connectivity.

a) The update file will be corrupted, and must be re-installed from step one. Be sure to be connected to the internet before plugging in the MK3 into the inverter and power cycling.

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