Adrienne Electronics Corporation

"USB-TC FIRMWARE UPDATE GUIDE"

For All USB-TC Family Products

Introduction:
If it becomes necessary to update the firmware inside your USB-TC (including USB-IRIG) device for any reason, please proceed as indicated here. Every device being updated will require its very own update data file (obtained from AEC), and the update process will install both new microcomputer firmware and new FPGA firmware. This is an In-Circuit Update (ICU), so there is no need to disconnect the box from your PC or take the box apart (please don't). At present the in-circuit update software works only on Windows PC's.

CAUTION

1) Deviate from these instructions at your own risk. If anything fails in the middle of the firmware update process, you will have to return the USB-TC device to the factory (at your own expense) for full reprogramming.

2) Balance the risks of performing the firmware update against your need to obtain the firmware update. There is a nonzero risk that the update will fail, even if you follow all of the instructions. You will then have to return the USB-TC device to the factory (at your own expense) for full reprogramming, and will have to live without the device in the meantime.

3) If you have multiple USB-TC devices, and the firmware update process fails while updating the first device, please contact us before attempting to update any more devices. Chances are good that whatever is going wrong will apply to every USB-TC device you have, and you could easily end up disabling all of your devices and having to return them all to the factory.

4) Do not turn off power to the PC, or allow the PC to reset itself, while the USB-TC firmware update procedure is active. Doing so will not physically damage the USB-TC device, but the USB-TC device will have to be returned to the factory for reprogramming from scratch.

5) If the USB-TC firmware update process appears to stall, wait at least 3 minutes before abandoning hope. Do not touch anything on your PC until the full 3 minute period expires. In many cases Windows just gets busy doing something else, and the update process is proceeding OK in the background, it's just that the display window isn't being properly updated.

6) Do not attempt to use the update data file more than once. Each file is designed for one-time use on a single USB-TC device. After a device has been updated, its 16-Digit ID Code will change to something completely different, and thus the update file will no longer work for that device (or any other).

<u>USB-TC Firmware Update Procedure:</u>
Details may vary slightly, depending upon the software contained within the "AecUsbUpdate.exe" in-circuit update program which is in the same directory as this document file. However, in general, you will need to proceed as follows:

1) Obtain the most recent USB-TC CDROM files at <www.adrielec.com/downloads>, then "unzip" the files so that they can be used in the following steps. If necessary, use the WinZip program (available for 30-day free trial at <www.winzip.com>) to extract the files. This is a good program which is easy to use.

2) Unless year 2016 or later USB-TC Windows device driver software is already installed, connect your USB-TC device to a USB 2.0 port (ideally) on a Windows 7 or later PC. If only USB 3.0 ports are available, you may need to temporarily install a USB 2.0 hub in between the USB 3.0 port and your USB-TC device. Once the new USB-TC Windows device driver software is installed, your USB-TC device should work fine on USB 3.0 ports, but you have to get the device connected and the driver updated first.

3) If necessary, install new USB-TC Windows device driver software dated 2016 or later, and copy DLL files as needed, using the instructions in the "USB-TC Windows Guide" (PDF) document which can be found in the USB-TC CDROM "Documentation" subdirectory. This new device driver software is required for use with USB 3.0 ports, and is also required for USB-TC firmware updating purposes.

4) Run the "AecUsbUpdate" program within the "Firmware Updating" subdirectory, then send an e-mail to <support@adrielec.com>, with subject line something like "<u>USB-TC Firmware Update Request</u>", and include the 16-digit ID code which is displayed by the AecUsbUpdate program. If you receive an error message indicating that a DLL file is missing, then go back to step #3 above (you did not copy one or more DLL files correctly). Note that each USB-TC device ever made has a different 16-digit ID code.

5) You should receive from us in a timely manner a reply e-mail with an attached firmware update file having a file name something like "AEC_xxxx.USB", where "xxxx" is equal to the first 4 digits of the 16-digit ID code for your USB-TC device. Note that this firmware update file will only work once, and it will only work with the USB-TC device having the exact same 16-digit ID code.

6) If your USB-TC device is being used for PC clock jamming, read the "AecClock Removal" (PDF) document in the "PC Clock Setting" subdirectory, then follow the instructions to temporarily stop the AecClock service. There is no need here to delete the registry entries.

7) To increase your chances of success, we also recommended that you:
   a) Close all other applications on the host PC.
   b) Temporarily disable internet access, typically by unplugging the RJ45 LAN cable, and/or by switching off the wireless LAN link.
   c) Copy both the "AecUsbUpdate" file, and the "AEC_xxxx.USB" file, to a temporary directory on your hard drive. We have experimentally discovered that the update process behaves much more reliably this way.
   d) Temporarily disconnect all other USB devices (except keyboard & mouse). The goal here is to make Windows pay full attention to the AecUsbUpdate program, without any distractions from Ethernet packets, other USB devices, or anything else attached to your PC.

8) Run the "AecUsbUpdate" program again, select the "Start Update" button, navigate to the matching "AEC_xxxx.USB" file, then sit back and watch the firmware update progress to completion. Do not touch anything. The firmware update process usually takes less than 3 minutes. If the USB-TC firmware update process appears to stall, wait at least 3 minutes before abandoning hope. Do not touch anything on your PC until the full 3 minute period expires. In many cases Windows just gets busy doing something else, and the update process is proceeding OK in the background, it's just that the display window isn't being properly updated. Upon completion, the USB-TC device automatically reboots itself using the new firmware. This reboot may confuse Windows and cause an error window to appear (ignore it).

9) Restart your Windows PC so that it can adapt to the "new" USB-TC device.

A) Run the "AecWinDemo" program (in the "Windows Demo" subdirectory) to confirm that your USB-TC device is working properly, and is now using the new "C1" (or later) firmware.

B) Delete the "AEC_xxxx.USB" file (it can be used only once, for one device).

C) Enjoy the new "C1" (or later) firmware inside your USB-TC device.

THAT'S ALL!