Adrienne Electronics Corporation

"USB-TC Windows Guide"

For All USB-TC Family Products

Introduction:
This document helps you install, test, and use your USB-TC product in a
Microsoft "Windows" software environment. This process is not easy, so take
it slow, step by step. Consider it a tutorial. After you have done it once,
you are well on your way to becoming a Windows driver installation expert.

Windows Software Overview:
There are many different versions of Windows (more than most people know), and
within each version there may be multiple "editions" (for example Windows 7
has six(6) different editions), and Windows software is continually being
updated. So we can only describe here in general terms how to get your
product working with Windows. If your version, edition, or revision of
Windows is a little bit different from what we describe here, please tough it
out as best you can, and send a note to <support@adrielec.com> if you find
something which should really be added to this Windows setup document. In
general, you will need to (in this order):

1) Log onto your Windows PC with "administrator" privileges. This is
   necessary so that you can install the device driver file.

2) Install the "driver software" (a ".sys" file) which allows Windows and its
   library functions and applications to access the USB-TC box hardware.

3) Install the "function library" (a ".dll" file) which makes it easy for
   different USB-TC box applications to access the driver software. This is
   code which could be included within each application, but for software
   maintenance reasons, it makes more sense to use the separate file. You
   will typically find dozens (if not hundreds) of DLL files on a Windows PC.

4) Launch (execute) the desired Windows "application" (a ".exe" file) which
   provides the Graphical User Interface (GUI) and functionality which
   motivated you to purchase your USB-TC box in the first place.

<u>32-bit Versus 64-bit PC Notes:</u>
Intel has been making 32-bit "80x86" (more commonly known as "x86") CPU's since about 1985. AMD began making 64-bit CPU's which could also execute the older 32-bit code (without any changes) around 2003, and Intel soon followed AMD's lead. The 64-bit processors are commonly known as "x64" CPU's. So "x86" indicates 32-bit architecture, and "x64" indicates 64-bit architecture.

A PC which has a 32-bit CPU requires a 32-bit version of Windows.

A PC which has a 64-bit CPU almost always runs 64-bit Windows, but can instead run 32-bit Windows if needed for compatibility with older 32-bit drivers.

A PC with 32-bit Windows requires 32-bit driver software, 32-bit DLL's, and can only execute 32-bit applications.

A PC with 64-bit Windows requires 64-bit driver software (always), but can execute 32-bit applications with a 32-bit DLL, and can execute 64-bit applications with a 64-bit DLL. So you must be careful to get things right.

You will see separate directories on the USB-TC CDROM for both 32-bit and 64-bit Windows files.

<u>Device Driver Installation (General):</u>
USB-TC boxes are generic USB devices, which means that it is easy for BIOS and Windows to find the box which is attached to your system. However, Microsoft and their Windows software have never heard of tiny Adrienne Electronics Corporation or its USB-TC boxes, so you must explicitly tell Windows what driver software to use in order to access a USB-TC product.

In some versions of Windows, a "Found New Hardware" window or balloon will pop up, asking you what driver to use. In other versions of Windows, you have to initiate this task yourself. To make things simpler, just close down all automatic windows and balloons if they appear, then proceed as follows...

Device Driver Installation (Device Manager Startup):
Remember that you must be logged onto your Windows PC with "administrator" privileges in order to install device driver software. All versions of Windows have a "Device Manager" program which is responsible for installing and maintaining a device driver for each device which it automatically finds in the system (such as your USB-TC box).

The hard part is finding Device Manager in your system. Each version of Windows does things a little bit differently. Here are some examples...

For Windows XP Device Manager, select...
        Start → Control Panel → System → Hardware (tab)
          → Device Manager

For Windows 7 Device Manager, select...
        Start → Control Panel
          → Hardware and Sound
          → Device Manager (within the Devices and Printers group)

For Windows 8 Device Manager, select (from the main tiled screen)...
        [down arrow in lower left corner] → Control Panel
          → Hardware and Sound
          → Device Manager (within the Devices and Printers group)

For Windows 10 Device Manager, select (from the main tiled screen)...
        [window frame icon in lower left corner] → Settings
          → Devices → Device Manager

<u>Device Driver Installation (Using Device Manager):</u>
From within the Device Manager window, install the appropriate device driver file for your USB-TC product as follows...

1) First you must find the entry associated with your USB-TC device. Depending on the USB-TC driver version already installed (if any), look for one of the following Device Manager categories (and associated entry):
   a) "Other devices" → "AEC USB-TC..."
   b) "Adrienne USB-TC..." → "AecUsbTC Device"
   c) "AEC Time Code devices" → "AEC USB-TC device"

2) Once you have found the entry associated with your USB-TC device, right click on that entry, then select "Properties".

3) Below the "Details" tab, select the "Device Instance Path" property, then verify that there is a text string present in the "Value" display which says (in part) something like "VEN_AECB" (an AEC product).

4) Below the "Driver" tab, select "Update Driver", then select "Browse my computer...", then navigate to the proper directory on the USB-TC CDROM. Be very careful to select the "32-bit Win Files" directory for 32-bit Windows, and the "64-bit Win Files" directory for 64-bit Windows.

5) Follow the driver installation instructions now provided by Windows. It should verify that you are installing a driver written by Adrienne Electronics Corp. Device Manager takes several seconds to install and check the driver file, then should indicate that the driver installation completed OK. Be patient if needed. This concludes driver installation (congratulations)!

Linking and Loading Notes: (optional)
Windows software is very modular, in that there are hundreds of separate software files, each of which must interface to others in order to perform useful work. In addition, each Dynamic Link Library (DLL) file typically contains many separate software functions (subroutines) which may be called and used by Windows application software. So when Windows "executes" (begins running) a ".exe" Windows application program, it must first load said program into memory, then link said program with all the library functions inside other software modules so that they can all properly interact with each other. This is a somewhat simplified account of the way things work, but at least it gives you an idea what a DLL file is and how it is used in your system.

Library (DLL) Files Copying:
You don't really have to "install" library (".dll") files. However, Windows does need to know where said files are located then you begin executing a Windows application which uses one or more of the functions contained within said library file(s). Proceed as follows...

Copy 32-bit DLL Files:
1) Navigate to the "32-bit Win Files\DLL Files" directory on the CDROM.
2) Use the mouse to select and "copy" all of the DLL files there.
3) For 32-bit Windows, use the mouse to "paste" said 32-bit files into the "C:\Windows\System" directory. If you see a "System32" directory instead, then you probably have 64-bit Windows (do not copy these files there!).
4) For 64-bit Windows, use the mouse to "paste" said 32-bit files into the "C:\Windows\SysWOW64" directory. Yes, despite the name, this is a 32-bit DLL directory (thank you Microsoft).

Copy 64-bit DLL Files: (optional, not needed for AEC applications)
1) Navigate to the "64-bit Win Files\DLL Files" directory on the CDROM.
2) Use the mouse to select and "copy" all of the DLL files there.
3) Use the mouse to "paste" said 64-bit files into the "C:\Windows\System32" directory. Yes, despite the name, this is a 64-bit DLL directory (thank you Microsoft).

As an optional shortcut, in some cases you can just copy the 32-bit AEC_NTTC.dll file into the same directory as a 32-bit application (such as we have already done for the "AecWinDemo" program). However, if an error window pops up stating that a DLL file is missing, you will generally need to follow the instructions above (carefully).

The DLL file copy operations above make the DLL file(s) (and functions) visible and available to your Windows application programs, no matter where they are executed (launched) from.

In all cases it is very important to:
a) Always use 32-bit DLL files with 32-bit applications.
b) Always use 64-bit DLL files with 64-bit applications.
Windows generally takes care of this for you automatically, provided that you have copied the proper DLL files into the proper directories as shown above.

Run the Windows Test/Demo Program: *****IMPORTANT*****
Once you have installed the device driver file in your system, you need to
make sure that everything is installed and working properly under Windows.
The easiest way to do this is by finding and running the "AecWinDemo" (".exe")
test/demo Windows application in the "Windows Demo" directory on the CDROM.
You can double click on the file name and execute the program directly from
the CDROM. Because it is a 32-bit Windows application, we have conveniently
provided a proper size (32-bit) DLL file in the same directory. This program
should work fine with both 32-bit and 64-bit Windows. If it is running
properly, then you know that your Host PC, your USB-TC product, and the
Windows files are set up properly. If you subsequently have difficulties
accessing your USB-TC box with some other Windows application, then you know
that said application (not the box or the Windows files) is most likely the
source of the problem (or the proper sized DLL file is not visible).

Application File Installation:
You don't really have to "install" a Windows application (".exe") file
anywhere. If you want to run one of the ".exe" Windows application files
provided within the USB-TC CDROM, double click on the file name to start
running it directly from the CDROM. Alternatively, you may use the Windows
"copy" and "paste" functions to copy said file (and the proper sized DLL file)
from the CDROM to a location on your PC's hard disk drive (HDD), then double
click the file name to start running it from the HDD. Be sure that the proper
sized DLL file is in the same directory as the ".exe" file, or is in a Windows
system directory which is visible to all Windows applications.

Application File Problems:
For some reason we frequently get technical support calls and/or e-mails from
customers who are using another company's Windows application program to
interface to our product. In most cases we have never seen or heard of said
application program, and thus cannot help you with it even if we wanted to.
Please direct such inquiries to the appropriate software or system vendor. If
your USB-TC box works properly with the Windows test/demo program provided on
the USB-TC CDROM (see above), then all the hardware is OK and the Windows
setup is OK (congratulations). We have then done all we can.

Driver File Date/Time Problems:
Be careful not to modify the date and/or time of any of the files within each
set of driver files. Some customers have reported accidentally doing so,
after which Windows may get confused and report security certificate or other
problems. If necessary, use the WinZip program (available for 30-day free
trial at <www.winzip.com>) to extract files from a ".zip" file downloaded from
our website. This is a good program which is easy to use.

In Case of Trouble:
If you have honestly tried all the above, and things aren't working right,
contact us at <support@adrielec.com>, or via the phone number found in the
"Introduction" file in the root directory of the USB-TC CDROM. It is quite
possible that the Windows software has changed, or that this document needs to
be updated, or perhaps you have discovered a new software "feature" (bug). We
want you to be a happy customer who will order more AEC products and recommend
AEC and its products to your friends, so please give us a chance to fix
problems and make improvements if and where needed.