

CTVUE Application Note

Number:CTVUE-1012, Revision 2, 3/2//2009
Subject: Troubleshooting USB Download

Troubleshooting – USB Download

Introduction

While USB offers the ability to provide high-speed downloads, it does require some extra steps in order to work properly. When working with the CTVUE, care must be taken to ensure successful connection and download.

Driver Installation – Beware of Missteps

The steps required to properly install the USB drivers are detailed in CTVUE-1003 USB Install. Follow this link to view or download the guide

[CTVUEhttp://www.emersonct.com/download_usa/CTVue/ApplicationNotes/CTVUE-1003.pdf-1003.pdf](http://www.emersonct.com/download_usa/CTVue/ApplicationNotes/CTVUE-1003.pdf-1003.pdf)

Do note that you may be prompted as many as *three times* to install a USB driver. If any of the prompts are skipped or cancelled, you may not be able to successfully download to the device.

Why Three Times?

One advantage of the CTVUE product is that they automatically update their firmware when CTVUE Configurator detects a mismatch during file transfer. (You may remember the days of ole' when special PC tools were required, or worse, components such as EPROMs had to be replaced in order to update firmware.) To facilitate automatic firmware updates, CTVUE products must start up in their bootloader, prior to running the OS. The PC sees the bootloader as a different device than the actual runtime application, which accounts for two of the three USB drivers.

The third driver is required to support the CF card. In order to browse the contents of the CF card, your PC needs to recognize the hardware as an external mass storage device. This requires a different USB driver altogether.

Troubleshooting

Assuming that the aforementioned technote is followed, you should be able to download successfully. However, there are a few issues that can cause confusion. The following are some items to watch out for...

Stuck during download – look at your PC

If the unit appears to be “stuck” during the download sequence, check to see if the PC is prompting you to install another USB driver. If you have several applications running, you may not notice that your PC has opened up the driver installation wizard. Unless you finish the driver installation (or cycle power without the USB cable connected) the unit will remain in this state.

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Check the Device Manager

With the unit connected to your PC, go to the Control Panel. Open up the System icon, and go to the Hardware tab. Click on the “Device Manager” button. If there were problems during the USB driver installation, you will see one or more yellow question marks. Right click these objects, and select “Uninstall”.

By doing the above, you’ll be prompted once again to install the drivers properly.

Disconnect and reconnect the Unit

If you see a balloon above the Window’s System Tray similar to the following, the USB drivers were not installed properly. Follow the above steps in order to remove the device from your PC, and reinstall the drivers.

Runtime Corruption

If you’ve followed everything thus far, and you still can’t download, or if you’ve been downloading all along and for some reason you suddenly can’t, the unit may be in a state in which the runtime cannot accept a download. To correct this situation, you will need to download to the device while it is in the bootloader mode.

Every time the unit is powered on, it enters the bootloader for approximately three to four seconds – timing is critical here. You will know the unit is in bootloader mode if the Power or STS light is flashing rapidly.

To correct this, first be sure that you have a file open for the type of product that you’re trying to download to. Then, to put the unit into bootloader mode, simply cycle power. When you hear your PC establish the USB connection, hit the PC’s F9 key to attempt a download. If you get a prompt that says “Error – Failed to connect to USB device”, you can quickly hit the space bar to close the window, so that you can try the F9 key again.

Depending on speed at which your PC establishes a connection, you may have to work a bit quicker or slower to successfully download to the bootloader. However, after a few attempts you should be able to download.

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Clear the Database

If the unit is in a state in which it can't accept a download, and you've tried to catch it during the bootloader mode (see above), then you should try clearing the database.

Simply hold Soft-key 1 and Soft-key 2 down while powering up, and the unit will ask you if you want to clear the database. As indicated on the screen, pressing Soft-key 1 again clears the database. The unit will display "Invalid Database". At this point, it is in a mode that will accept a download, assuming that the PC drivers are working properly.

Grounding Issues

Most of our HMIs have non-isolated USB and serial ports. Laptops also use non-isolated ports, and therefore, grounding issues can play a part in preventing successful downloads.

If experiencing issues while using a laptop, try running it on its batteries instead of the AC supply. This will break the ground loop if one exists.

USB Ports – Try a Different One

USB port connectors can be damaged through frequent use. Further, various issues during the driver installation procedure, or conflicts with other installed software, may render a particular port inoperable.

To rule out an issue with the PC's USB port, simply try another port. Usually, PCs have multiple "groups" of USB ports. Sometimes the ports within a group share the same host connection; sometimes they use independent hosts. *The author's PC has two connectors on the back, and two on the side. Different USB hosts manage each of these groups.*

If you do connect to another host controller when changing ports, the PC will prompt you to reinstall the drivers, regardless of whether or not you've successfully installed them for the other host.

Note: Windows can take a minute or so to rationalize the disappearance, and subsequent reappearance, of the same USB device on a different controller and/or port. Therefore, it's best to wait for a minute or so after you've switched ports. You may either listen to the various noises Windows will make during this time, or have a look at the Device Manager, to monitor the PC's progress.

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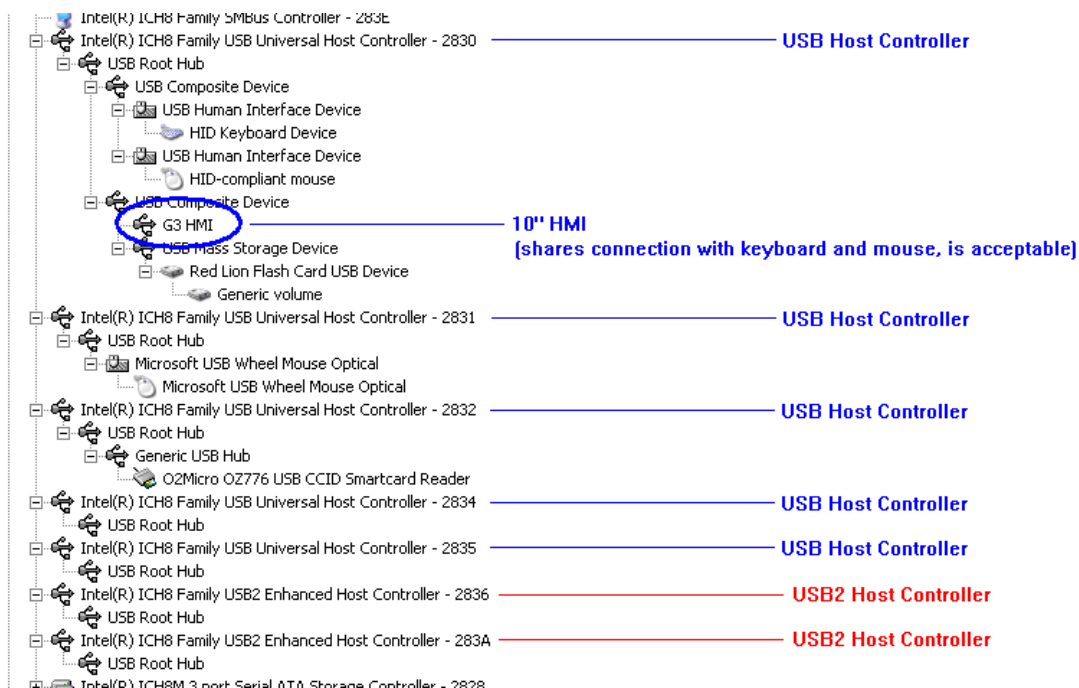
15" HMI

The processor used in the design of the 15" HMI contains a bug at the silicon level, which prevents it from working if it is not the only USB device connected to a particular host.

Many PCs have more than one host, and these frequently share the various connections on a PC. Therefore, if you have a mouse connected to a different group of connectors than the 15" HMI, it's not necessarily on a different host! Further, some PCs contain internal USB hubs, and are therefore already connected to something else.

The only real way to determine what the HMI is connected to is to look at Device Manager, and to view it in "Devices by Connection" mode.

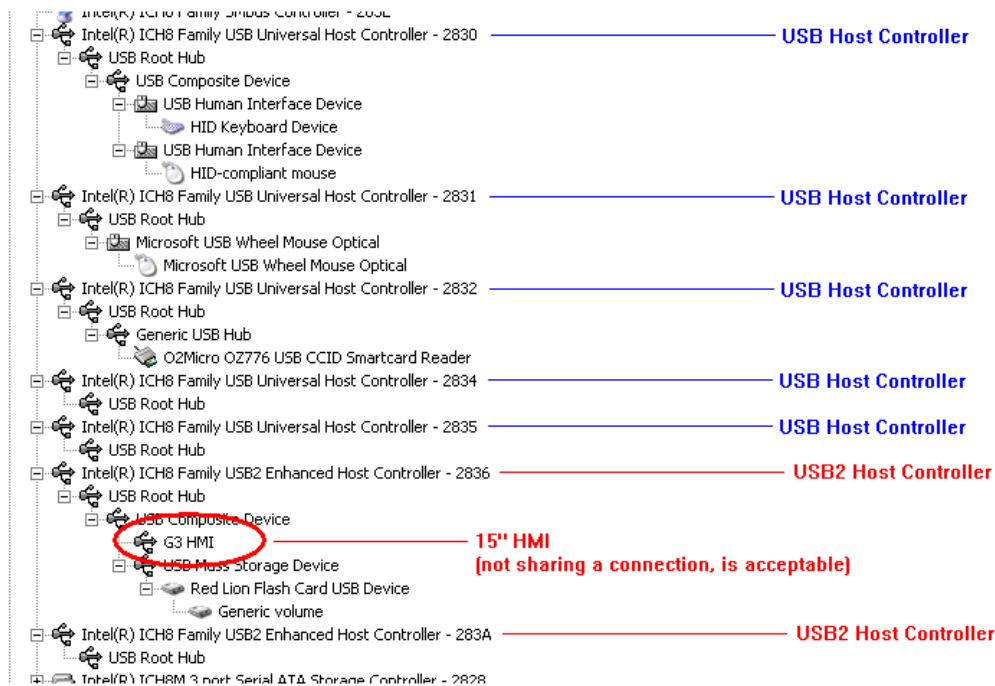
The picture below shows a 10" HMI, which is connected to a host along with a mouse. The 10" works in this configuration.



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The following picture shows a 15" HMI, which is connected to a USB2 (high speed) host. The 15" works in this configuration.



If the 15" HMI is shown on a USB2 connection along with another device, it won't work. Check to see if the PC has more than one USB2 host. If it does, try a different group of USB connectors. The HMI should then use the other host.

If the PC does NOT have more than one USB2 host, but has several unused USB hosts, you can disable the USB2 host. This will force all of the connected devices to look for another connection, and they'll ultimately downgrade to the USB hosts. Again, if the HMI ends up sharing the same host with another devices, try a different group of connectors.

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Serial Download

If the device you're working with has a serial port, and you're lucky enough to be one of the few that still has a serial port on your PC, you may want to try downloading via RS232. See the product manual for details, but do make sure that you change CTVUE Configurator "Link->Options" settings in order to download to a serial COM port. Control Technique's offers a serial programming cable CTVUE-PROG. If your PC does not have a DB9 (serial) Port, you can purchase a USB to serial converter. One such device that has been tested is GOLDX part number GXMU-1200. This converter still requires USB Driver installation but you will install one driver one time for a given port.

Still Stuck

Emerson Control Techniques tech support is always there should you need further assistance. Don't hesitate to contact us if problems persist.



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