Installing the *INSIGHT* 3G Data Streaming System

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Introduction

The *INSIGHT* 3G data streaming system uses TSI's POWERVIEW cameras in conjunction with IO Industries' CLFC board. This document is intended to inform you of any instructions and troubleshooting steps that are different from a standard system.

Installing the System

Overall, the data streaming system will operate in the exact same way as a standard system. However, there are some differences.

Connecting the Synchronizer

The CLFC board only needs one BNC trigger connection, regardless of whether you are triggering one camera or two. Simply use the provided trigger cable (BNC to 25 pin "D" female connector) to connect channel "E/F" on the synchronizer to the trigger input on the computer.

Figure 1
Inputs on the CLFC Card

Connecting the Cameras

The CLFC board has two camera link connectors, CLFC Port 1 and CLFC Port 2. Port 1 is the camera link connector closest to the motherboard. You can usually determine which side of the computer the motherboard is on by looking at the mouse and keyboard connections. If the mouse and keyboard connections are on the left side, then the motherboard is on the left side, and therefore CLFC Port 1 is the left-hand port. When using two cameras in stereo configuration, it is recommended to connect the left camera to CLFC Port 1 and the right camera to CLFC Port 2.

Configuring the Hardware

After starting INSIGHT 3G, select **Tools** from the menu and select **Hardware Setup...** At this point you must choose from the various pieces of hardware that INSIGHT 3G supports. Since the data streaming system uses the CLFC board, select **DVR Express CLFC** from the Frame Grabber drop-down menu. Chose the appropriate camera(s) from the Camera drop-down boxes adjacent to the frame grabber you have chosen. If using two cameras, associate them with the same DVR Express CLFC board—you only have one board, therefore, all cameras must be associated with that single board.

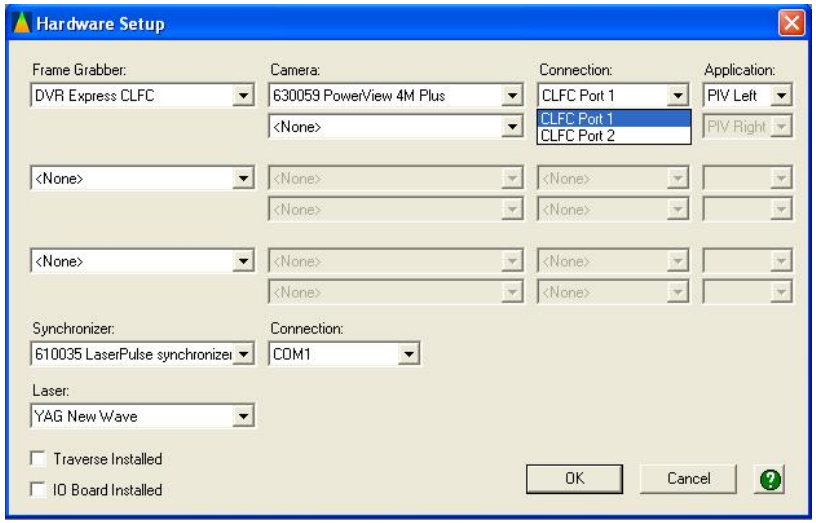

Figure 2
Selecting the Appropriate Connection Port for a Data Streaming System

Next, select the correct connection ports that you have attached the camera(s) to (see "Connecting the Cameras").

There are a couple steps that may be necessary if the CLFC board needs to be reinstalled. One is flashing the firmware, another is making sure that the acquisition mode is correct.

Video Savant RTL Security Key

In addition to the INSIGHT 3G security key, you will need to have the Video Savant RTL security key inserted in a USB port on your computer. This is necessary in order to use the computer to capture images using the DVR Express CLFC board. Insert this key before starting INSIGHT 3G.

Capturing Images

INSIGHT 3G supports two modes of capture with all our cameras and frame grabbers: capture to RAM and capture to disk. Capture to RAM transfers the images directly from the frame grabber into RAM, and capture to disk transfers images directly to hard disk. Normally, capture to RAM is always used when you do not want to drop frames, since writing to disk cannot keep up with the bandwidth rate of the camera.

The data streaming system is different. The data streaming system first streams all images to "video drives"[1], which are

[1] These drives use a proprietary format not readable by the Windows operating system; therefore, you will not see these drives in Windows Explorer.

able to keep up with the bandwidth rate of the cameras. However, this means that capturing to disk will not stifle the bandwidth of the cameras at all. So feel free to capture to RAM *or* disk with the data streaming system—no frames will be dropped either way.

Be forewarned, however, that capturing to disk will transfer *all* captured images to your Run folder, which probably resides on a standard IDE hard drive. If you are using a standard data streaming system, which has two 36 GB drives associated with each camera, and you fill the video drives with images, you will have to wait until 72 GB of data is transferred from the video drives to the Windows hard drive. For a POWERVIEW 4MP, this is more than 11,000 images.

Reinitializing the CLFC Board

At some point in your use of the system, the CLFC board may lose its firmware or acquisition settings. This could be caused by updating INSIGHT 3G, updating your drivers, low power, or removing the board and putting it back in.

If this happens, reconfiguring the signal manager may be helpful. However, do not perform these steps unless you are having problems with capturing or are instructed to do so by TSI.

Configuring the Signal Manager

The signal manager takes as input the TTL trigger from the LASERPULSE synchronizer and sends it to the cameras on the camera link cable. In order to take synchronized captures, the signal manager must be properly configured or the camera will receive improper triggers. The application used to configure the signal manager is CLFC Test. The absolute path of the application is C:\Program Files\IO Industries\CLFC\BIN\CLFCTEST.EXE.

1. Run the application.
2. Click on the **Signal Manager** button.
3. Make sure that the **Camera Control Signal Outputs** for both **Base 1** and **Base 2** are set as follows:
    a. **CC1** – **Aux TTL Input 0**
    b. **CC2-4** – **Always Low**
4. Click the **Update** button and close the application.

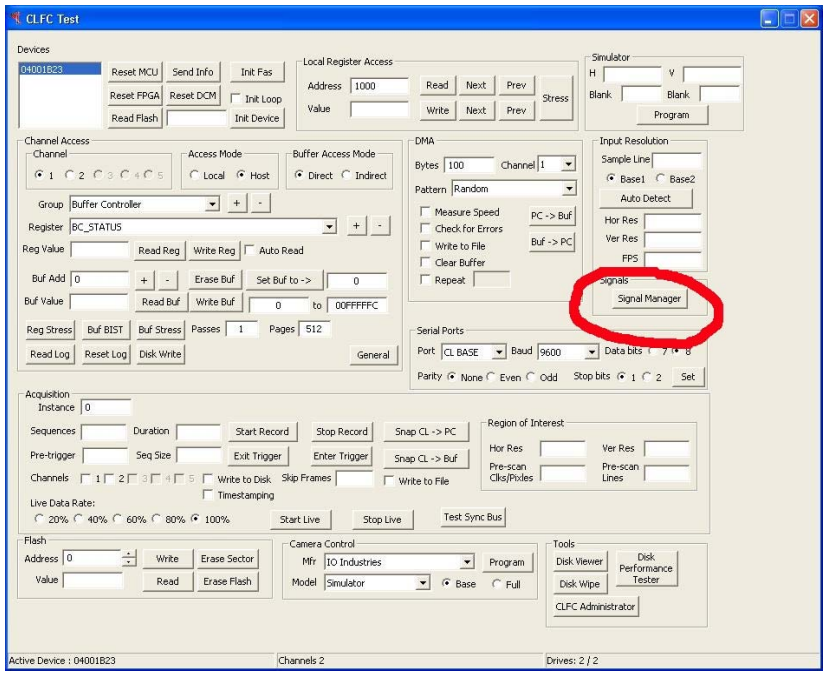

Figure 3
Starting the Signal Manager

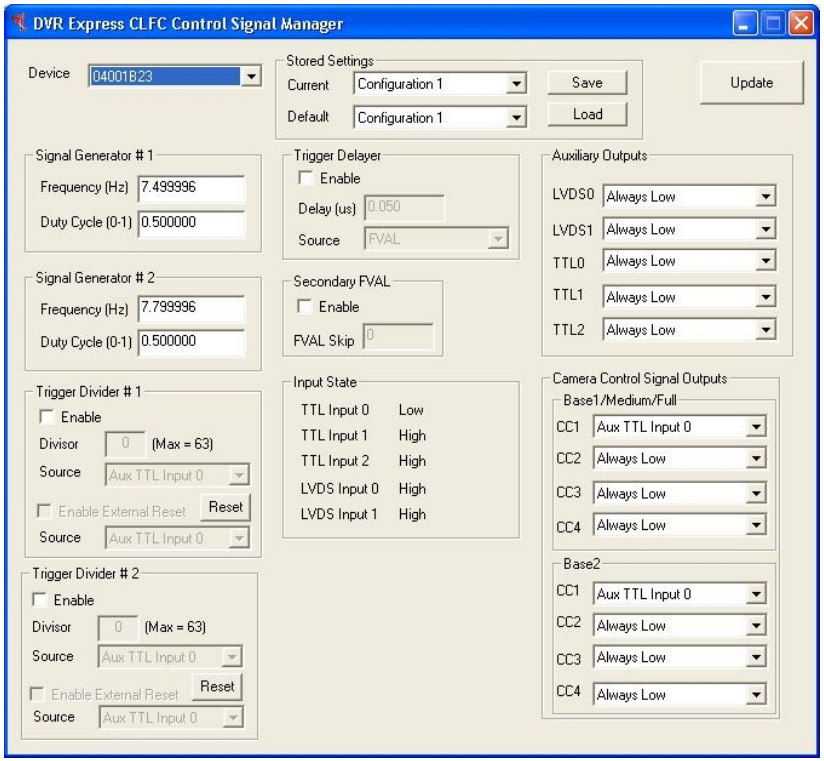

Figure 4
Setting the Signal Outputs with the Signal Manager

Resetting the Video Files

Note: *Do **not** change any settings on the video files unless you are specifically instructed to do so by TSI or error messages appear mentioning the video files specifically. INSIGHT 3G requires that the video files be configured in very specific ways, and changing any settings will most likely render your system unusable.*

It is possible that your video files (the files that reside on the "hidden" drives to which images are streamed) become corrupted. You will most likely see messages concerning the video files if this happens. Rather than trying to fix the files, the easiest step to take at this point is to delete the files and allow INSIGHT 3G to recreate them correctly.

The application used to delete the video files is the DVR Express CLFC Manager. There should be a shortcut to this program located in **All Programs | IO Industries | DVR Express**. If not, the absolute path of the application is C:\Program Files\IO Industries\CLFC\BIN\CLFCMGR.EXE.

1. Run the application.
2. Select **Delete All** from the "Video File" menu.
3. INSIGHT will recreate the files when it starts the next time. You will not lose any useful information.

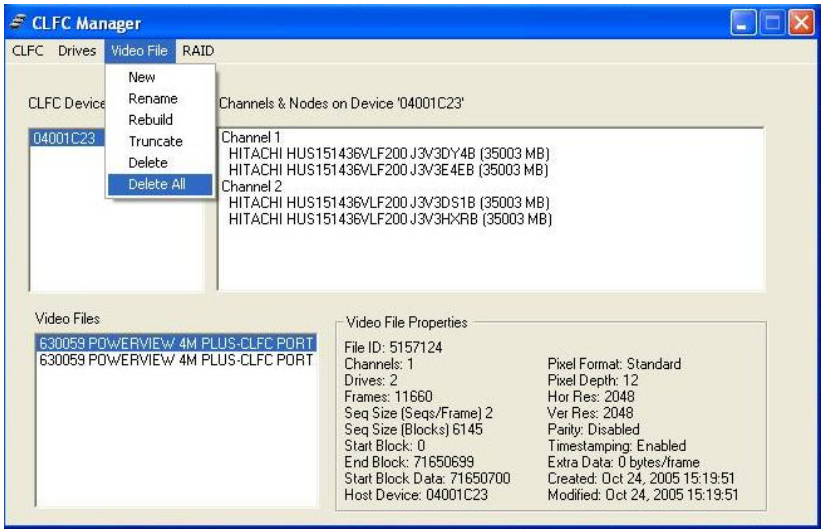

Figure 5
Using the CLFC Manager to Delete the Video Files

Checking Memory Settings

If you reinstall the CLFC drivers or Video Savant, or if INSIGHT 3G is reinstalled, it may be necessary to set the memory settings for the data streaming system to the correct values. Usually, not having enough memory will result in messages that include the text "rcBusy" or "buffer lock failed". As there are two types of memory that the system uses, there are two values to check: one for application memory and one for driver memory.

Checking the Application Memory

The application that you will need to run is Video Savant. Typically there is a shortcut to the program located at **All Programs | Video Savant 4 | Video Savant 4.0**. If that shortcut is not there, the absolute path to the executable file is C:\VSAVANT\VSAVANT4.EXE.

1. Run the application.
2. Click on the button at the bottom left labeled **Video File** and select **Administrator**.
3. Set the Maximum memory usage to 128MB by choosing **Specify** and entering 128 in the text field.
4. Close Video Savant.
5. Restart the computer.

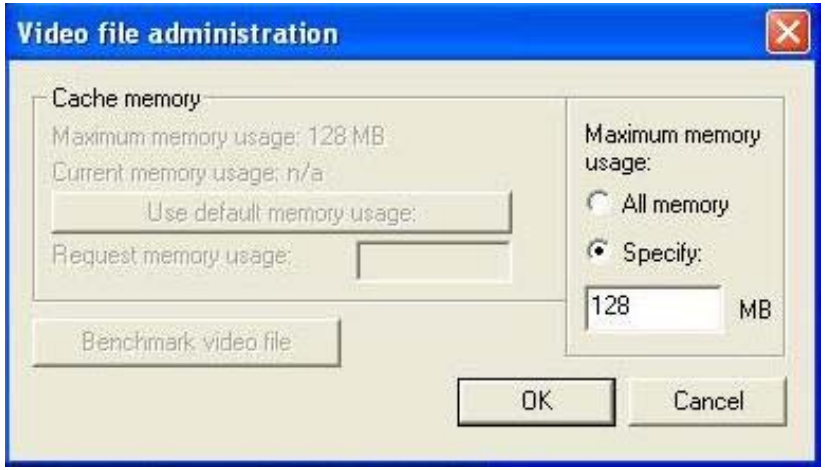

Figure 6
Using Video Savant to Set Application Memory

Checking the Driver Memory

The application that you need to run in order to set the driver memory is regedit.

1. In the Start menu, click **Run...**
2. Enter "regedit" in the text box and click **OK**.
3. Use the tree view at the left to navigate to the key **My Computer | HKEY_LOCAL_MACHINE | SYSTEM | CurrentControlSet | Services | clfc**.
4. Make sure that the value of the MaxSqlTransferSize is set to 0x08000000 (134217728). If not, double click **MaxSqlTransferSize** and enter 8000000 into the "Value data" field.
5. Restart the computer.

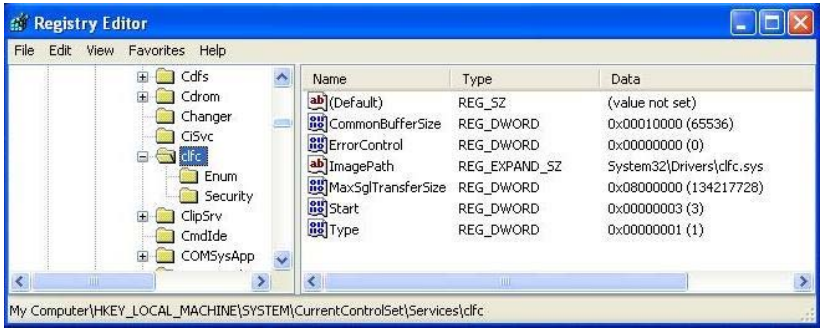

Figure 7
Using Regedit to Check the Value of the Driver Memory

Recovering from a Video Savant Crash

Sometimes, Video Savant (the engine that drives the CLFC board) will stop unexpectedly or INSIGHT 3G may crash, leaving the Video Savant kernel running in the background. This will prevent INSIGHT 3G from operating properly; if this happens, you will probably have difficulty starting INSIGHT 3G without error messages that mention "OpenDevice". Manually shutting down the VS kernel will usually fix this (restarting the computer will have the same effect but is typically not necessary).

1. Make sure that INSIGHT 3G is closed.
2. Run the Task Manager.
3. Find the process called "VSKERNLX.EXE".
4. Select this process by clicking on it.
5. Click **End Process**.
6. Click **Yes** to accept the warning.
7. Restart INSIGHT 3G.