# Point Grey Research, Inc.
Sync Unit Documentation

v1.0
www.ptgrey.com
support@ptgrey.com

Features

- The Sync Unit is designed to work with the 1394 card to synchronize the use of many Point Grey cameras at once. Presently, the cameras to be used with the Sync Unit are the Digiclops™, the Dragonfly™ and the Bumblebee™.
- By connecting Sync Units in parallel, one can achieve greater bandwidth.
- The cameras have an offset register that will correct the timing of the two buses so that they are synchronized.
- The Sync Unit updates periodically to compensate for any disparity between the source and the destination.
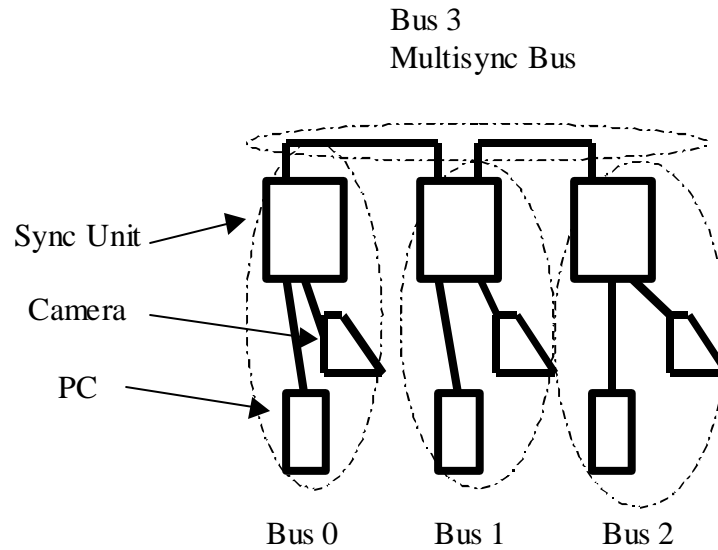
Setup
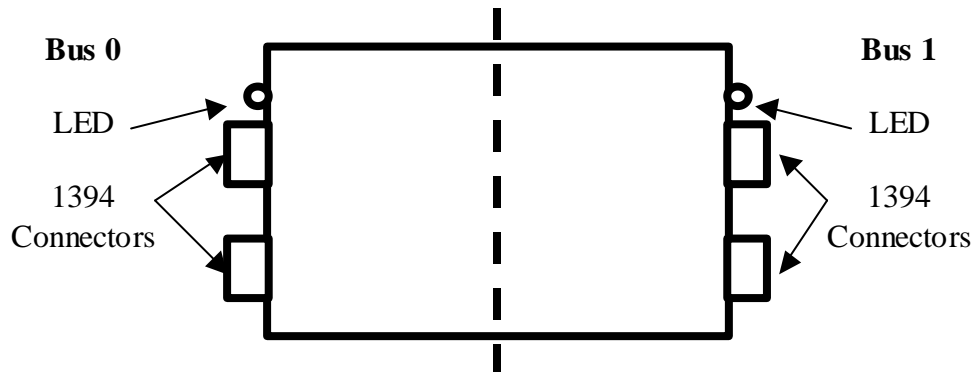
Each side of the unit corresponds to one bus.
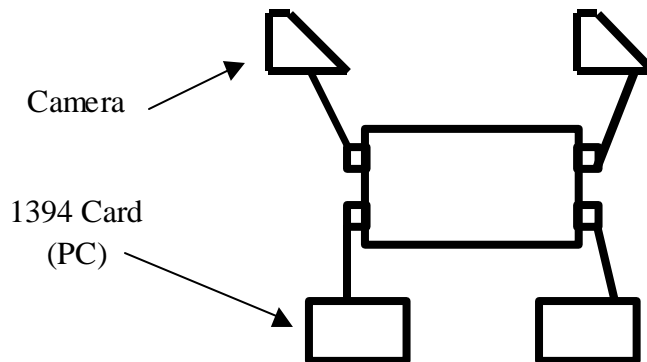
One connector will be connected to the Firewire card while the other can be connected to a camera or to another sync unit. It is important that the buses are not interconnected. For example, do not have one camera plugged into both buses at the same time.

In order to use multiple sync units together (to increase the bandwidth), the sync units must be connected to each other to create an independent bus as shown in the diagram above. This bus will be the source for synchronizing the timing.

Important Notes

- The Digiclops being used must have their firmware upgraded before using the Sync Unit(s).
- You will need as many sync units as there are 1394 cards.
- Currently no driver is needed for the device. When the hardware is being detected, the option to not install a driver for the hardware will be presented. Click OK on this and then follow the directions until the process is finished. The device will show up as "Other Device" with a yellow question mark under "Device Manager", but will function properly.
- Digiclops grabs at a different base rate than Dragonfly or Bumblebee so they will not synchronize together.

Troubleshooting

The LEDs on the sync unit flash to communicate different messages to the user:

- Flashing red light indicates that the unit is busy or that an error condition exists.
- Short flashing green light indicates that the unit is idle.
- Solid green indicates that the unit is functioning properly and that the cameras on the bus are synchronized.

- Long flashing green indicates a camera with firmware that has not been updated.

Dragonfly specific information

This section describes a known-good configuration for 2 computers and 8 Dragonfly cameras. It does not exhaustively enumerate all the possible uses of the Dragonflys and Sync Units.
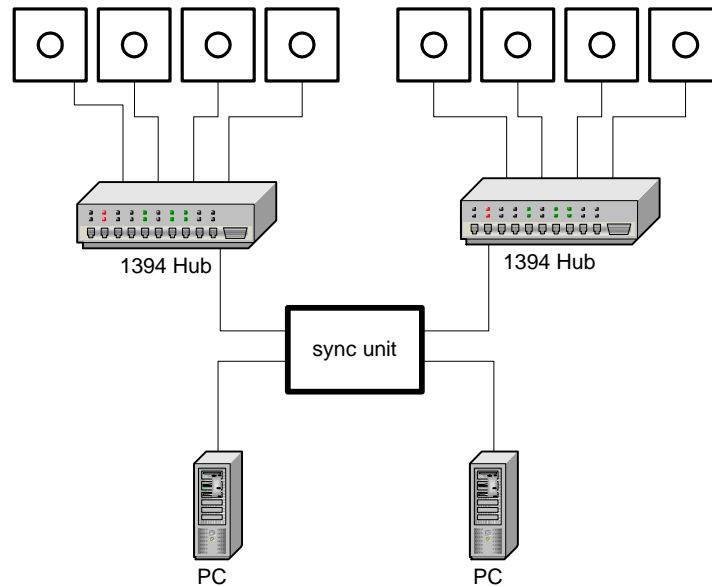
- Dragonflys must have updated firmware in order to work correctly. (currently the known working firmware is "dragonfly-ver2.0.02.zip")
- Each "side" of the configuration, consisting of the PC, the side of the sync unit, the 1394 Hub and the 4 cameras is a separate bus. The sync unit synchronizes grabbing between the busses, but the PC will only be able to see the 4 cameras on the bus that it is on.
- In order to test all 8 cameras at 30Hz, use a single instance of the timeSliceDemo program on each PC. This program is currently the only application that manually increases the framerate of the cameras it finds in order to use 8 cameras at 15Hz or, in this case, 4 cameras at 30Hz.
- A solid green LED on both sides of the Sync Unit indicates that it is currently synchronizing connected busses.
- The Sync Unit will show up as a hardware device on the PC on <u>one</u> of the two buses. Microsoft OSes will ask for a driver. The Sync Unit does not need a driver, and these dialogs can safely be ignored. The device will show up as a "Yellow Question Mark" in the Windows Device manager. This is expected behavior.

eof