



POINT GREY
RESEARCH

MultiSyncTM

User Manual

Revised June 25, 2009
v1.2

Point Grey Research[®] Inc.

12051 Riverside Way • Richmond, BC • Canada • V6W 1K7 • T (604) 242-9937 •
www.ptgrey.com

1 Software License Agreement

The MultiSync™ Software (the "Software") is owned and copyrighted by Point Grey Research, Inc. All rights are reserved. The Original Purchaser is granted a license to use the Software subject to the following restrictions and limitations.

1. The license is to the Original Purchaser only, and is nontransferable unless you have received written permission of Point Grey Research, Inc.
2. The Original Purchaser may use the Software only with Point Grey Research, Inc. cameras owned by the Original Purchaser, including but not limited to, Firefly®, Firefly®2, Flea®, Scorpion™, Dragonfly®, Dragonfly®2 or Dragonfly Express™ Camera Modules.
3. The Original Purchaser may make back-up copies of the Software for his or her own use only, subject to the use limitations of this license.
4. Subject to s.5 below, the Original Purchaser may not engage in, nor permit third parties to engage in, any of the following:
 - a. Providing or disclosing the Software to third parties.
 - b. Making alterations or copies of any kind of the Software (except as specifically permitted in s.3 above).
 - c. Attempting to un-assemble, de-compile or reverse engineer the Software in any way.
 - d. Granting sublicenses, leases or other rights in the Software to others.
5. Original Purchasers who are Original Equipment Manufacturers may make Derivative Products with the Software. Derivative Products are new software products developed, in whole or in part, using the Software and other Point Grey Research, Inc. products. Point Grey Research, Inc. hereby grants a license to Original Equipment Manufacturers to incorporate and distribute the libraries found in the Software with the Derivative Products. The components of any Derivative Product that contain the Software libraries may only be used with Point Grey Research, Inc. products, or images derived from such products.
 - 5.1 By the distribution of the Software libraries with Derivative Products, Original Purchasers agree to:
 - 5.1.1 not permit further redistribution of the Software libraries by end-user customers;
 - 5.1.2 include a valid copyright notice on any Derivative Product; and
 - 5.1.3 indemnify, hold harmless, and defend Point Grey Research, Inc. from and against any claims or lawsuits, including attorney's fees, that arise or result from the use or distribution of any Derivative Product.

Point Grey Research, Inc. reserves the right to terminate this license if there are any violations of its terms or if there is a default committed by the Original Purchaser. Upon termination, for any reason, all copies of the Software must be immediately returned to Point Grey Research, Inc. and the Original Purchaser shall be liable to Point Grey Research, Inc. for any and all damages suffered as a result of the violation or default.

2 Table of Contents

1	Software License Agreement	2
2	Table of Contents	3
3	Introduction.....	4
	3.1. Compatible Cameras	4
	3.2. System Requirements	4
4	Installation and Operation	5
	4.1. Installation.....	5
	4.2. Running MultiSync.....	5
	4.3. Synchronizing Across Multiple PC's	6
5	Errors and Troubleshooting	7
	5.1. Cameras not listed or detected by MultiSync	7
	Appendix A: Technical Support Resources.....	8
	Appendix B: Contacting Point Grey Research	9
	Appendix C: Revision History	10

3 Introduction

MultiSync™ is designed to synchronize the image acquisition of multiple compatible Point Grey cameras across different IEEE-1394 buses on the same computer. MultiSync is an ideal software replacement for Point Grey's popular [Sync Unit](#), and adds support for the S800 (800Mb/s) speeds that are possible with Point Grey IEEE-1394b products such as the Dragonfly Express™.

While Point Grey cameras (compatible models listed below) are automatically synchronized on a single IEEE-1394 bus¹, they do not automatically synchronize to each other across multiple PCs or multiple buses. MultiSync synchronizes image acquisition of Point Grey cameras across separate buses on the same computer, and across separate buses on multiple computers. MultiSync ensures cameras are synchronized to within a maximum deviation of 125µs.

3.1. Compatible Cameras

- Dragonfly®
- Dragonfly®2
- Dragonfly Express™
- Firefly® MV²
- Flea®
- Flea®2
- Grasshopper®
- Scorpion™
- Bumblebee®
- Bumblebee®2

3.2. System Requirements

- 1394a or 1394b PCI or PCI Express cards³
- Intel Pentium® III 800 MHz or compatible processor
- 256 megabytes (MB) of RAM or higher recommended
- Windows 2000 Service Pack 4 or Windows XP Service Pack 1



Point Grey cameras must have Point Grey drivers⁴ installed (e.g. pgrcam.sys from the FlyCapture® SDK) in order for MultiSync to run correctly. Future versions will aim to provide the ability to synchronize cameras installed using third-party drivers. The Sync Unit can be used for synchronizing Point Grey cameras that are installed with third-party drivers across buses

¹ A single IEEE-1394 OHCI host adapter generally constitutes a single "bus"

² MultiSync is supported on the Firefly® MV beginning with firmware version 0.0.0.11, and only when running in standard Format_0 modes at 30 FPS or 60 FPS. Format_7 modes are not supported. The amount of time to achieve synchronization depends on the frame rate, with a maximum of 12 seconds at 30 FPS.

³ To sync across computers requires an additional card on each computer (daisy chaining)


⁴ Some exceptions to this apply for multiple PC configurations – see section 4.3

4 Installation and Operation

4.1. Installation

Run MultiSync.exe and proceed through the installation wizard.

4.2. Running MultiSync

1. From the Windows Start menu, select Point Grey Research > PGR MultiSync > Multisync.exe. The MultiSync software must be run on every machine in the configuration.
2. The MultiSync icon () will appear in the System Tray on the Windows Task Bar.
3. Right click on the sink icon in the System Tray and select Status. This will show each of the Point Grey cameras on the computer, highlighted in one of the following ways:

Color	Meaning
Red	The cameras are not synchronized.
Yellow	The cameras are in the process of synchronizing, or there are not enough cameras to synchronize.
Green	The cameras are synchronized.

Only those cameras connected to the local computer can be seen; cameras connected to other computers in the sync network cannot be seen from the Status dialog on the local computer.

4. Cameras can be added dynamically. Each time a camera is added or removed, the cameras need to be re-synced. This is reflected in the status dialog.



The first time that the MultiSync software is run, the user will be warned about the installation of the 1394 virtual driver for every 1394 card installed in the machine. This is necessary for supporting multiple PC configurations.

4.3. Synchronizing Across Multiple PC's

The MultiSync software is capable of synchronizing Point Grey cameras across multiple computers. This is achieved by linking all of the computers to a single 1394 bus dedicated to sharing timing information (the *timing bus*). This requires that a 1394 card on each machine be dedicated to the *timing bus*.



*Every computer involved in a multiple camera configuration needs a separate IEEE-1394 card dedicated to connecting it to **the timing bus**. This timing bus card **must** have the **Microsoft low-level 1394 host adapter driver ohci1394.sys** installed on it (it is usually pre-installed). Other cards in the PC can have either the **Point Grey FirePRO (pgr1394.sys)** driver, or the Microsoft driver (in conjunction with the Point Grey PGRCAM driver on the camera) installed.*

The following series of steps will allow the user to create a usable configuration:

1. Plug each camera into its respective 1394 card being sure not to plug any cameras into the card reserved for the *timing bus*.
2. Using a standard 1394 cable and the reserved 1394 card, connect each of the computers in the configuration to the *timing bus*. This can be achieved in one of three ways:
 - a. Using both ports on the reserved 1394 cards to effectively daisy chain all of the machines together to form the *timing bus*.
 - b. Creating the *timing bus* by connecting all of the reserved cards to a central 1394 hub in a star like configuration.
 - c. Using some combination of the layouts described in (a) and (b).

At this point, each computer in the configuration should have: 1) cables running from one or more 1394 cards to each of the camera(s) in the network; and 2) at least one cable running from a dedicated 1394 card with no cameras on it connecting it directly to the *timing bus*.

The following configurations are not supported:

1. Any configuration that places cameras on the *timing bus*.
2. Any configuration that uses a single PC with multiple 1394 cards to act as a central hub for the *timing bus*.

5 Errors and Troubleshooting

This section attempts to address some of the errors that can occur during a firmware update. In all cases, ensure the host computer being used to update the device(s) has a supported operating system and the latest Service Packs installed. Consult the following knowledge base article for supported operating systems:

KB Article 27: www.ptgrey.com/support/kb/index.asp?a=4&q=27

Also, try to avoid performing updates on any systems that are discussed in the following article:

KB Article 21: www.ptgrey.com/support/kb/index.asp?a=4&q=21

If the steps outlined below do not resolve the error, please contact Technical Support.

5.1. Cameras not listed or detected by MultiSync

In cases where cameras are detected by the operating system or other software, but not by MultiSync, ensure that the cameras are installed using the standard PGRCAM driver, pgrcam.sys, which is included with the FlyCapture SDK.

Appendix A: Technical Support Resources

Point Grey Research Inc. endeavors to provide the highest level of technical support possible to our customers. Most support resources can be accessed through the Product Support section of our website: www.ptgrey.com/support.

Creating a Customer Login Account

The first step in accessing our technical support resources is to obtain a Customer Login Account. This requires a valid name, e-mail address, and camera serial number. To apply for a Customer Login Account go to www.ptgrey.com/support/downloads/.

Knowledge Base

Our on-line knowledge base at www.ptgrey.com/support/kb/ contains answers to some of the most common support questions. It is constantly updated, expanded, and refined to ensure that our customers have access to the latest information.

Product Downloads

Customers with a Customer Login Account can access the latest software and firmware for their cameras from our downloads site at www.ptgrey.com/support/downloads. We encourage our customers to keep their software and firmware up-to-date by downloading and installing the latest versions.

Contacting Technical Support

Before contacting Technical Support, have you:

1. *Read the product documentation and user manual?*
2. *Searched the Knowledge Base?*
3. *Downloaded and installed the latest version of software and/or firmware?*

If you have done all the above and still can't find an answer to your question, contact our Technical Support team at www.ptgrey.com/support/contact/.

Appendix B: Contacting Point Grey Research

For any questions, concerns or comments please contact us via the following methods:

Email: For all general questions about Point Grey Research please contact us at info@ptgrey.com.

For technical support (existing customers only) contact us at <http://www.ptgrey.com/support/contact/>.

Knowledge Base: Find answers to commonly asked questions in our knowledge base at <http://www.ptgrey.com/support/kb/>.

Downloads: Users can download the latest manuals and software from <http://www.ptgrey.com/support/downloads/>

Main Office:

Mailing Address: Point Grey Research, Inc. 12051 Riverside Way Richmond, BC, Canada V6W 1K7	Tel: +1 (604) 242-9937 Toll-free (North America only): +1 (866) 765-0827 Fax: +1 (604) 242-9938 sales@ptgrey.com
--	---

Distributors

USA **Tel:** +1 (866) 765-0827
na-sales@ptgrey.com

Europe
Israel **Mailing Address:** Point Grey Research GmbH
Schwieberdinger Strasse 60
71636 Ludwigsburg
Germany **Tel:** +49 7141 488817-0
Fax: +49 7141 488817-99
eu-sales@ptgrey.com

Japan ViewPLUS Inc. (<http://www.viewplus.co.jp/>)

Korea Cyrod Co. Ltd. (<http://www.cyrod.com>)

China LUSTER LightVision Tech. Co., Ltd (www.lusterlighttech.com)

Singapore
Malaysia
Thailand Voltrium Systems Pte Ltd. (www.voltrium.com.sg)

Taiwan Apo Star Co., Ltd. (www.apostar.com.tw)

Appendix C: Revision History

Revision	Date	Notes
1.1	November 12, 2008	<ul style="list-style-type: none">• Section 3 Introduction: Added that MultiSync ensures cameras are synchronized to within a maximum deviation of 125μs• Section 3.1 Compatible Cameras: Added Firefly® MV.• Updated with new company address and phone.
1.2	June 25, 2009	<ul style="list-style-type: none">• In Section 4.3, clarified that the Microsoft-1394 driver must be installed on the IEEE-1394 card connected to the timing bus.• Added the Grasshopper to the list of compatible cameras in Section 3.1