# GigabitEthernet Interface



Revision 1.03E



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This manual was created taking every possible measure to ensure the accuracy of its contents. However, if you find a section which is unclear, a mistake, or an omission, please contact PHOTRON LIMITED using the contact information provided at the end of the manual.

PHOTRON LIMITED bears no responsibility for the results of using the product or from following the instructions in this manual.

Thank you for your purchasing a Photron high-speed camera system. This manual contains the operating instructions and warnings necessary for connecting the high-speed camera system to a PC. Before operating the unit, please read this manual thoroughly, and retain it for future reference. If any content remains unclear after reading this manual, please contact us.

## **Manual Notation**

The following icons and symbols are used in the explanations in this manual.

Icon/Symbol	Description
Caution	This symbol indicates instructions that should always be followed when using the software, or things to be careful of when using the software.
Supplement	This symbol indicates supplementary items to be aware of when using the software.
Reference	This symbol indicates the location of a reference.
K MENO	This symbol indicates a space you to use for making notes.
[]	This symbol is used to indicate menu names, and sub-menu names.

## **Using the Manual**

This section explains the layout of the manual.



Directions for inquiry contact.

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## 1. Important Notice

- This document explains a brief procedure to control FASTCAM Series Gigabit Ethernet interface models with control software "Photron FASTCAM Viewer 3" (Referred to below as PFV). The procedure may vary depending on the environment of the PC you are using, especially its OS and network adapter device. Use this document as a reference example when checking the settings.
- The Gigabit Ethernet Interface of the FASTCAM series is compatible with 1000BASE-T standard. You cannot directly connect it to a PC which is compatible with only 10BASE-T or 100BASE-TX. Using a switching hub, which supports all Ethernet standards, as a repeater, will make such a connection possible, though we don't recommend it because it may cause the overall performance to be decreased.
- You can use a commercial LAN cable to connect FASTCAM series to a PC, though we basically recommend you to use the LAN cable which comes with the FASTCAM camera. When you use a commercially-available LAN cable, be sure to use an STP or UTP cable which is beyond the Enhanced Category 5 (CAT5e) standard.
- If you wish to know how to make a connection in a more complicated case, for example, connecting multiple camera systems, or connecting cameras to an existent network, ask us for help.

## 2. Confirming Camera System IP Address

Confirm the IP address of the camera system by looking at the IP address label placed on the camera (or processor) body.

## Factory-default IP address

IP address	: 192 . 168 . 000 . 010
Subnet mask	: 255 . 255 . 255 . 000
Default gateway	: 000 . 000 . 000 . 000

#### **Caution**

- The IP address of high-speed camera and PC should be different.
- When two or more cameras are connected, each unit should be set to different IP address.
- When the IP address of camera is unknown, a remote control or a video monitor is necessary for recover it. In this case, please contact our technical support staff.

#### Supplement

• When the camera IP address is unknown, some specific high-speed camera model can restore the default IP address only with the camera body. Please refer to the manual for detail.

## 3. Setting PC

## 3.1. Setting with Windows XP

- i Click [Start] => select [Control Panel] => [Network Connection].
- ii Select [Properties] on right-click menu of [Local Area Connection], then the [Local Area Connection Properties] dialog appears.
- iii On [General] tab in the dialog, select [Internet Protocol (TCP/IP)] and click the [Properties] button.

🕹 Local Area Connection 3 Properties 🛛 🔹 💽
General Authentication Advanced
Connect using:
Intel(R) PR0/1000 GT Desktop Ada
This connection uses the following items:
<ul> <li>Elient for Microsoft Networks</li> <li>File and Printer Sharing for Microsoft Networks</li> </ul>
<ul> <li>✓ Tornet Protocol (TCP/IP)</li> </ul>
Install
Description
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.
Show icon in notification area when connected Votify me when this connection has limited or no connectivity
OK Cancel

- iv Check [Use the following IP address], and enter:
  - 1. IP address : **192.168.000.001**
  - 2. Subnet mask : 255 . 255 . 255 . 000

J Supplement

- You do NOT need to input anything in [Default gateway].
- [Use the following DNS server addresses] is chosen, though you do NOT need to input anything either.

Internet Protocol (TCP/IP) Prop	erties 🛛 🛛 🔀
General	
You can get IP settings assigned auto this capability. Otherwise, you need to the appropriate IP settings.	omatically if your network supports ask your network administrator for
O Dbtain an IP address automatica	ally
Ouse the following IP address:	
IP address:	192.168.0.1
S <u>u</u> bnet mask:	255.255.255.0
Default gateway:	
○ O <u>b</u> tain DNS server address auto	omatically
Use the following DNS server ac	idresses:
Preferred DNS server:	
<u>A</u> lternate DNS server:	· · ·
	Ad <u>v</u> anced
	OK Cancel

V Select [Advanced] tab on the [Local Area Connection Properties]
 dialog. Click the [Settings...] button in [Windows Firewall].



 vi Within the [Windows firewall] dialog, select the [Enable (Recommended)] radio button. Do not forget to uncheck the [Don't allow exceptions] checkbox.



vii Within the [Exception] tab, add PFV as an exception program.



viii Click the **[OK] buttons** to close the **[Windows Firewall]** and **[Local** Area Connection Properties] dialogs.

## 3.2. Setting with Windows Vista

i From the [Start] menu, click the [Control Panel], then click [View network status and tasks].



ii Under **Tasks** located on the left-hand side of the window, click [Manage network connections].



iii Right click the [Local Area Connection] icon (when multiple Local Area Connections exist, use the one with Gigabit Ethernet interface), and select [properties] in the popup menu, then [Local Area Connection Properties] dialog will be displayed.



iv Select the [Internet Protocol Version4 (TCP/IPv4)] in the [Local Area Connection Properties] dialog, the n click the [Properties] button.

		4
etworking		
Connect using:		
VIA Rhine II (	Compatible Fast Etheme	t Adapter
		Configure
This connection use	es the following items:	L
🗹 👥 Client for M	licrosoft Networks	
QoS Pack	et Scheduler	
🗹 📑 File and Pr	inter Sharing for Microso	ft Networks
🗹 📥 Internet Pr	otocol Version 6 (TCP/II	Pv6)
🗹 📥 Internet Pr	otocol Version 4 (TCP/II	Pv4)
🗹 🔺 Link-Layer	Topology Discovery Ma	pper I/O Driver
🗹 🔺 Link-Layer	Topology Discovery Re	sponder
	3	

- From the [General] tab, verify that [Use the following IP address] is selected. And set the [IP address] and [Subnet mask] as follows respectively
  - 1. IP address : 192 . 168 . 000 . 001
  - 2. Subnet mask : 255 . 255 . 255 . 000

#### J Supplement

• There is no need to fill out [Default gateway]. Ether the [Use the following DNS server address] may be empty as well.

eneral									
You can get IP settings assigned this capability. Otherwise, you n for the appropriate IP settings.	l automatio eed to ask	ally you	if yo ur ne	ur twi	net ork	wor adn	rk si ninis	uppo	rts or
Obtain an IP address auton	natically								
• Use the following IP addres	s:								
IP address:	1	92.	168		0		1	1	1
Subnet mask:	2	55.	255		255		0	1	
Default gateway:			a (	(e.)		×			/
Obtain DNS server address	automatic	ally							
• Use the following DNS serve	er address	es:							
Preferred DNS server:				4				1	
Alternate DNS server:								]	
						A	d <u>v</u> a	nced	

vi Click **[OK]**, and then go back to the **[Control Panel]**. Select **[Security]** this time.



#### vii Then, select [Turn Windows Firewall on or off].



viii In the **[Windows Firewall Setting] dialog**, select the <u>[On</u> (recommended)] radio button. Note that **[Block all incoming connections]** is uncheck.



### ix In the [Exceptions] tab, add PFV as an exception program.

Windows Firewall is turned off. Your computer is at risk of attacks from outside sources such as the Internet. We recommend that you Seneral tab and select On.	and intrusion ou click the
What are the risks of unblocking a program?	location.
<u>r</u> o enable an exception, select its check box:	
Program or port	
BITS Peercaching	
Connect to a Network Projector	
Core Networking	=
Distributed Transaction Coordinator	
File and Printer Sharing	
SCSI Service	
Key Management Service	
Network Discovery	
Performance Logs and Alerts	
Remote Administration	
Remote Assistance	
Remote Desktop	-
Romata Event Lea Management	
Add program Add port Properties	Delete
	-7-
Vetify me when Windows Firewall blocks a new program	



eneral	Advanced		
Windows Firewall is t from outside sources	urned off. Your compute such as the Internet. W	r is at risk of attacks and e recommend that you c	intrusions lick the
General tab and sele	ct On.		
Windows Firewall is o What are the risks o	urrently using settings fo unblocking a program?	or <mark>the</mark> public network loca	ation.
<u>T</u> o enable an except	on, select its check box:		2
Program or port			^
BITS Peercachir	g		
Connect to a N	twork Projector		
Core Networkin	3		=
Distributed Tran	saction Coordinator		
File and Printer	Sharing		
iSCSI Service			
Key Manageme	nt Service		
Network Discov	ery		
Performance Lo	ns and Alerts		
PFV Ver. 325			
Remote Adminis	tration		
Remote Assista	nce		+
Domato Dockto			
Add program	Add p <u>o</u> rt	Properties De	elete
Notify me when \	/indows Firewall <u>b</u> locks a	new program	

#### Caution

• The setting is necessary when PFV is version updated.

#### Supplement

- It also does work when "Disable (Not recommended)" is selected. As the firewall is entirely disabled in this case, it is not recommended
- If the PC has other security software firewalls, you may have to make the PFV exception for each firewall. For information on the specific way of setting, refer to the relevant manual of the security software.
- x Click the **[OK] buttons** to close the **[Windows Firewall]** and **[Local** Area Connection Properties] dialogs.

## 3.3. Setting with Windows 7

i From the [Start] menu, click the [Control Panel], then click [View network status and tasks].



ii Under Tasks located on the left-hand side of the window, click [Change adapter settings].



iii Right click the [Local Area Connection] icon (when multiple Local Area Connections exist, use the one with Gigabit Ethernet interface), and select [Properties] in the popup menu, then [Local Area Connection Properties] dialog will be displayed."



iv Select the [Internet Protocol Version4 (TCP/IPv4)] in the [Local Area Connection Properties] dialog, then click the [Properties] button.



- From the [General] tab, verify that [Use the following IP address] is selected. And set the [IP address] and [Subnet mask] as follows respectively
  - 1. IP address : 192.168.000.001
  - 2. Subnet mask : 255 . 255 . 255 . 000

#### Supplement

• There is no need to fill out [Default gateway]. Ether the [Use the following DNS server address] may be empty as well.

Internet Protocol Version 4 (TCP/IPv4)	Properties
General	
You can get IP settings assigned auto this capability. Otherwise, you need t for the appropriate IP settings.	matically if your network supports to ask your network administrator
Obtain an IP address automatica	ally
• Use the following IP address:	
IP address:	192.168.0.1
Subnet mask:	255 . 255 . 255 . 0
Default gateway:	
Obtain DNS server address auto	matically
• Use the following DNS server ad	dresses:
Preferred DNS server:	
<u>A</u> lternate DNS server:	• • •
Valjdate settings upon exit	Ad <u>v</u> anced
L	OK Cancel

vi Click [OK], and then go back to the [View network status and tasks]. Select [Windows Firewall] this time.



#### vii Then, select [Allow a program or feature through Windows Firewall].



viii Then, click [Change settings] button and [Allow another program...] button.

at are the risks of allowing a program to communicate?	Chaj	nge settings	l.
llowed programs and features:			
Name	Home/Work (Private)	Public 🔺	
BranchCache - Content Retrieval (Uses HTTP)			
BranchCache - Hosted Cache Client (Uses HTTPS)			
BranchCache - Hosted Cache Server (Uses HTTPS)			
BranchCache - Peer Discovery (Uses WSD)			
Connect to a Network Projector			
✓ Core Networking	$\checkmark$		
Distributed Transaction Coordinator			
File and Printer Sharing			
HomeGroup			
iSCSI Service			
Key Management Service			
Media Center Extenders		_ ▼	
	Details	Re <u>m</u> ove	
	Allow anothe	r p <u>r</u> ogram	

ix In the [Add a Program] dialog, select PFV and click [Add] button.

Add a Program	3
Select the program you want to add, or click Browse to find one that is not listed, and then click OK.	t
Programs:	
Create a System Repair Disc FASTCAM-1024PCI Imager Setup FASTCAM-512PCI Imager Setup	
PFV Ver.3262	
Windows Anytime Upgrade Windows DVD Maker Windows Fax and Scan Windows Media Center Windows Remote Assistance XPS Viewer	
Path:       C:\Program Files\Photron\Photron FASTCAM \       Browse         What are the risks of unblocking a program?	
You can choose which network location types to add this program to.         Network location types         Add	

### x Click the [OK] button to close the [Windows Firewall].

#### Allow programs to communicate through Windows Firewall

To add, change, or remove allowed programs and ports, click Change settings.

What are the risks of allowing a program to communicate?

Name	Home/Work (Private)	Public	*
iSCSI Service			
Key Management Service			
Media Center Extenders			_
Netlogon Service			
Network Discovery			Ξ
Performance Logs and Alerts			
✓ PFV Ver.3262			
Remote Assistance			
Remote Desktop			
Remote Event Log Management			
Remote Scheduled Tasks Management			
Remote Service Management			Ŧ
	Detai <u>l</u> s	Re <u>m</u> ov	e
	Allow anothe	r progran	n

😯 Cha<u>n</u>ge settings

Cancel

OK

#### Caution

• The setting is necessary when PFV is version updated.

#### Supplement

- It also does work when "Disable(Not recommended)" is selected. As the firewall is entirely disabled in this case, it is not recommended
- If the PC has other security software firewalls, you may have to make the PFV exception for each firewall. For information on the specific way of setting, refer to the relevant manual of the security software.

## 4. Starting and Connecting Camera System

- i Power the camera on.
- ii Connect between the camera system and PC with the provided LAN cable.
- iii Make sure that the [Link] LED on the camera system and that on the PC (Ethernet) are on.

J Supplement

• It may take about 10 seconds for the camera system to start up.

## 5. Setting up PFV

- i Start up the PFV.
- ii Click [Option] => [Configuration]
- iii Select the **[Camera]** item on the tree. Then make sure the applicable camera is checked in the **[Camera Interface List]** and **[Device List]** fields.

Configuration		X
Camera Display Alert € Record Option	Camera Interface List	Network Configuration Setup Startup IV Live Display at Startup Shutter Speed(For APX RS only) I 1/frame sec C Seconds
	OK Cancel	Apply

iv Click the [Setup] button on [Network Configuration] in the same dialog.Then the [IP-address] dialog appears.

Network Configuration		
	Setup	

- v Here is the easiest way:
  - 1) Select [Auto detection].
  - 2) Enter [IP-address] items 192.168.0.XXX
  - 3) Select [Auto] on the item [Packet size].

IP-address	
IP-address 192	2 168 0 XXX
C Select IP-address	IP-address list ID IP-address <==== Add Set Delete
1000Base-T Packet size Safety size(722) Auto User determined si	Send port 0 Receive port 0 Cancel

#### Reference

- Refer to "7.1.3. Confirming and Setting Camera IP Address" in "Photron FASTCAM Viewer User's Manual" for the details of the [IP-address] dialog.
- vi Click the [OK] button and close the [IP-address] dialog.
- vii The settings become effective when the PFV is restarted.

## 6. Setting "Jumbo Frame"

## 6.1. Setting network adapter device with the OS

- i Click [Start] => select [Control Panel] => [Network Connection].
- ii Select [Properties] on right-click menu of [Local Area Connection], then the [Local Area Connection Properties] dialog appears.
- iii Confirm that the network adapter device 1000BASE-T and "Jumbo Frame" compatible are shown on the [Connect using:] item. Click the [Configure...] button then open the properties of the network adapter.

🕹 Local Area Connection 3 Properties 🛛 🔹 🛛	
General Authentication Advanced	
Connect using:	
Intel(R) PRO/1000 GT Desktop Ada	
This connection uses the following items:	
Client for Microsoft Networks      P. File and Printer Sharing for Microsoft Networks      QoS Packet Scheduler      Thernet Protocol (TCP/IP)	
Install Uninstall Properties Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.	
Show icon in notification area when connected ✓ Notify me when this connection has limited or no connectivity	
OK Cancel	

iv Click the [Advanced] tab, and set the [Jumbo Frames] (Jumbo Packet, or something similar) item to the maximum allowable value.

The image shown below is an example of using Intel Pro/1000GT.



## 6.2. Setting PFV

- ✓ It is all right to just keep [Auto] on the [Packet size] item.
- ✓ Keep [Send port] and [Receive port] "0 (zero)".

#### Caution

• Depending on the network adapter being used, the settings may be different from this document.

## 7. Recommended Gigabit Ethernet Interface Device

To use the Jumbo Frames feature in the most effective manner, Photron has verified the usefulness of, and recommend, the Gigabit Ethernet devices listed below:

Туре	Brand	Model
PCI board: PCI bus	Intel	Pro/1000GT
PC card: Cardbus	Buffalo	LPC-CB-CLGT
PC card: Cardbus	Airlink101	AGIGACB
PC card: Cardbus	Edimax	EP-4203DL

#### Caution

• Please use the drivers with latest version.

#### J Supplement

• When using PFV, the max size of date can be transferred from a Photron high-speed camera is 8,994 Byte.

## 8. FAQ

### Q.1.

Isn't a driver required for Gigabit Ethernet interface, as is the case with IEEE1394 and Optical interface systems?

## A.1.

No, it is not necessary to install any driver because communication takes place via the TCP/IP Ethernet connection.

### Q.2.

What is "Jumbo Frame"?

### A.2.

A frame that is bigger than the standard maximum frame size of Ethernet (1,518byte) is called a "Jumbo Frame" or "Jumbo Packet".

When a "Jumbo Frame" is activated, the maximum size of data to be sent at one time becomes bigger and the actual data transfer speed (throughput) is increased.

To use the Jumbo Frame function, all devices are required to be compatible with Jumbo Frame, not only the devices on both sides, which communicate each other, but also other network devices like the network hub.

### Q.3.

Camera is not recognized by the software when starting up the PFV application.

### A.3.

Try to read the applicable hardware manual well, such as the PFV manual and this document. Many possible causes are considered.

One typical cause may be that, at the first time the PC is connected to the camera system, the Firewall of Windows XP may block the connection.

Another cause may be that, even thought the PFV software seems to be reacting correctly, the image presents some problem. Choosing [Safety Size (722)] may possibly solve the problem.

## Q.4.

What is the difference between simply selecting [Auto detection] and selecting [Select IP-address] to register each IP address on [IP-address dialog] ?

## A.4.

There may be some difference in the startup time when starting up the PFV application. When **[Auto Detection]** is selected, the application looks for applicable camera systems by the IP address, which takes a little more time.

You can control only the specified camera(s), if there are several camera systems on the Network, if the IP address of each camera is registered.

On the other hand, if the network has a DHCP server in it, which assigns IP addresses for all devices in the network, the IP addresses assigned to cameras may be changed every time they are connected to the network, and the PC is required to be set in the **[Auto detection]** mode in advance to find the camera systems.

## Q.5.

Is it possible to use the camera systems connecting by them to an existing 1000BASE-T network? Is it also possible to control the cameras in a WAN-connected network? For example, is it possible to control a camera remotely from other locations?

## A.5.

It is technically possible but we do NOT recommend it because of possible security issues involved. Note there is NO assurance of security.

We only recommend using the camera system in a closed network.

## Q.6.

How can multiple camera systems be connected to one PC?

## A.6.

Connecting multiple camera systems to one PC is possible by using a network hub. The hub must be 1000BASE-T compatible. In addition, if you wish to use the "Jumbo Frame" function, the hub must also be compatible with the function.

## 9. Contacting Photron

For inquires related to this manual, contact Photron at the contact information listed below. Additionally, the following items will be verified when inquiring, so please prepare them in advance.

Items Verified	Concrete Example
Contact Information	Company, school or organization name, customer contact name, contact phone number, Contact e-mail.
Condition of the system and what is known about it.	

Contact Information	
In Americas and Antipodes	PHOTRON USA, INC.         9520 Padgett Street, Suite 110         San Diego, CA 92126-4426, USA         Phone : 800-585-2129 or 858-684-3555         Fax : 858-684-3558         E-mail : image@photron.com         www.photron.com
In Europe, Africa and India	PHOTRON EUROPE LIMITED The Barn, Bottom Road, West Wycombe, Buckinghamshire, HP14 4BS, U.K. Phone : +44(0) 1494 48 1011 Fax : +44(0) 1494 48 7011 E-mail : image@photron.com www.photron.com
In other areas	PHOTRON LIMITED Fujimi 1-1-8, Chiyoda-Ku Tokyo 102-0071, Japan Phone : +81 3 3238 2107 Fax : +81 3 3238 2109 E-mail : image@photron.co.jp www.photron.co.jp

## GigabitEthernet Interface

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