

GigE Cameras Trouble Shooting Guide





WHAT IS GigE?

GigE or Gigabit Ethernet is a member of the family of computer networking and communication standards. The Gigabit Ethernet standard supports a theoretical maximum data rate of 1 gigabits per second (1 Gbps or 1000Mbps), as defined by the IEEE 802.3-2008 standard. To ensure a high data rate, Gigabit Ethernet workS using unshielded twisted pair (1000BASE-T) copper cable (specifically, the CAT5e and CAT6 cabling standards).

What are the first things I should do to get an image?

- 1. Install Gigabit Ethernet network card (also called; Ethernet Adapter or Frame Grabber)
- 2. Configure network card (or; Jumbo Frames, Receive Descriptors, Performance Options and IP address settings). See "*Network Settings for GigE Cameras*" for detailed information.
- 3. Install camera manufactures SDK (Software Development Kit), from a web-download or the CD supplied. This will usually include the manufacturer's viewer software.
- 4. Connect the camera to your PC or laptop and power (switch on) the camera
- 5. Acquire your first image by using the viewer programme

If you are using an alternative software program (eg; Streampix, Labview, CVB, Matlab, Halcon, etc), it is advisable to test the camera and frame grabber with its own viewer software beforehand.

NOTE: If it doesn't work with its own software, it probably won't work with a third party software

Why is my camera not working?

Is the camera getting power? On all of our GigE cameras the RJ45 Ethernet connector on the back of the camera contains LEDs. One of these LED's will illuminate when the camera is powered. If unlit, check the power adapter. If possible, test the adapter with a working camera to verify its operation.

Is the camera powered, but not detected in Viewer?

Damaged or poor quality Ethernet cabling can result in "no cameras found", dropped packets, decreased bandwidth, and other problems. Use Category 6 or better rated Ethernet cabling. If the camera still does not work with the viewer software, then it is more likely that your Ethernet adapter has not been setup properly. If this is the case please refer to "*Network Settings for GigE Cameras*".

What connection card do I use?

Does it matter what Gigabit Ethernet card is used? GigE Vision cameras can operate on 10/100, or Gigabit speed Ethernet adapters. In order to take full advantage of maximum frame rates and resolution, a Gigabit speed adapter is required. Most GigE Vision camera manufacturers recommend using the Intel Chipset for maximum performance.

NOTE: If you are still unsure, Lambda can supply Ethernet adapters for desktops and laptops.

Does my PC meet system requirements?

For high speed cameras or multiple camera setups, please check with Lambda for a complete computer configuration. The following are basic guidelines only!

System Requirements

	Single	e Camera	Multi C	amera
	Minimum	Recommended	Minimum	Recommended
CPU	Intel Pentium 4 or comparable	Intel Core	(i3 to i5) duo comparable p	rocessor
Clock	2.5GHz	>2.5GHz	2.5Ghz	3GHz
RAM	1GB	2GB	2GB	4GB
OS	Microsoft Windows	XP/Vista/7/8 32/64bit* Linux 32	64 bit system from Kernel	2.6.xx
Graphics	Recommen	ded resolution: 1280 x 1024; Co	lour depth: at least 16 bit	
Ethernet	Gigabit E	thernet compliant NIC* (Recomr	nended: Intel® chipset)	
CPU	Intel Pentium 4 or comparable	Intel Core	(i3 to i5) duo comparable p	rocessor
Hard Disk Speed	5400 rpm for non-recording	7200 rpm for reco	rding with eventually RAID- SSD highly recommended	-0 configuration.

* NOTE: Norpix recording software only support Windows 7/8 32/64bit

Network Settings for GigE Cameras

To configure the network settings for the transfer of data between the camera and your PC, please follow the steps listed below:

Windows 7

- Start, Control Panel
- Network and Internet
- View network status and tasks
- Change adapter settings
- Right-click Network Connection
- Properties
- Select Internet Protocol Version 4 and click Properties

 Select Use the following IP address for example: IP address: 169.254.100.7
 Subnet mask: 255.255.0.0
 Default gateway: blank

connoc doing.		
Intel(R) PRO/1	1000 PT Dual Port Server	Adapter
		Configure
This connection uses	the following items:	
🗆 🛃 Virtual PC N	etwork Filter Driver	
🗆 🚚 QoS Packet	Scheduler	
🗆 县 File and Prin	ter Sharing for Microsoft I	Vetworks
🗌 📥 Intel(R) Adva	anced Network Services	Protocol
-4- Internet Prot	ocol Version 6 (TCP/IPv	5)
 Internet Prot 	ocol Version 4 (TCP/IPv4	4)
_	Tanalama Dianawana Mana	er I/O Driver
🗌 🔺 Link-Layer T	opology Discovery Mapp	
Link-Layer T	III	
Link-Layer T	Uninstall	Properties
Link-Layer T	Uninstall	Properties
Link-Layer T	Uninstall	Properties
Link-Layer T Install Description Transmission Contr wide area network	Uninstall Internet Protocol/Internet Protocol that provides co	Properties

You can get IP setting this capability. Other for the appropriate IF	gs assigned auto vise, you need to settings.	matically if ask your r	your n	etwork	
Obtain an ID ad			ie wor	k admir	nistrator
Obtain an 1P aut	fress automatica	lly			
O Use the following	g IP address:				
IP address:		- 4	12	4	
Subnet mask:					
Default gateway:					
🔘 Obtain DNS serv	er address autor	matically			
Ouse the following	g DNS server add	dresses:			
Preferred DNS serv	/er:		÷.	2	
Alternate DNS serv	er:			•	
Validate setting	s upon exit			Adv	anced

If you are doubtful what IP address to use, you can select "Obtain an IP address automatically" along with "Obtain DNS server address automatically". However this set-up process may take a little longer.

How do I ensure the best speed performance?

There are adjustments to the Ethernet Adapter that can be made to improve the system performance when using a GigE Vision camera. This performance is related to minimizing CPU usage and dropped or resent packets.

You will need to edit the Ethernet adapter driver properties of the following - Packet Size, Adjust Moderation Rate and Receive & Transmit Buffers:

Packet Size

Windows 7, Intel Gigabit CT

- Start, Control Panel
- Hardware and Sound
- Device Manager
- Network Adapter
- Right-click Adapter device name
- Properties
- Advanced tab
- Settings: Jumbo Packet Value: 9014 Bytes or to the maximum

The settings list in the advanced adapter settings may be different for different types/brands of Gigabit Ethernet network cards. Common expressions are **Jumbo Frames** or **Jumbo Packet**. If **Jumbo Frames** or **Jumbo Packet** does not appear in this list, your network card may not support it.

eaming	VLANs	Boot Options		Driver	Details
General	Link Speed	Advanced	1	Power M	anagement
intel?	Advanced Ad	apter Settings			
ttings:	~	100	Value:		
iigabit Maste	r Slave Mode	<u>^</u>	9014	Bytes	
umbo Packe	t	-			
arge Send O	fiload V2 (IPv4)	=			
arge Send O	ffload V2 (IPv6)				
ocally Admin	istered Address				
og Link State		+		Use Defa	ault
			6		
umbo Packe	ŧ.	and the statement			100
Enables Jun	nbo Packet capa	bility for TCP/IP	packets	. In situati	ions 📩
where large	packets make u	ip the majority o	f traffic	and	E
additional la	tency can be too	erated, Jumbo P	ackets	can reduc	ce
CPU Utilizati	on and improve	wire eniciency.	-		
Jumbo Pack	ets are larger th	an standard Eth	ernet fr	ames, wh	hich
are approxi	matery 1.5k in siz	te.			
TT # 11-	te: Changing thi	s setting may ca	ause a r	nomentar	y
V X NO					

NOTE: Without this capability, you may not be able to achieve the full performance of the camera - CALL LAMBDA

Performance Options

Adaptive Inter-Frame Spacing

Settings:

Flow Control

Adjust Moderation Rate and Receive & Transmit Buffers

Windows 7, Intel Gigabit CT

- Start, Control Panel
- Hardware and Sound
- Device Manager
- Network Adapter
- Right-click Adapter device name
- Properties
- Advanced tab
- Performance Options
- Settings: Interrupt Moderation Rate Value: Extreme
- Settings: Transmit Buffers Value: 256 bytes
- Settings: Receive Buffers Value: Max allowable

Receive Buffers Transmit Buffers Use Default Use Default Interrupt Moderation Rate This sets the rate at which the controller moderates or delays the generation of interrupts making it possible to optimize network throughput and CPU utilization. The Adaptive setting adjusts the interrupt rates dynamically depending on traffic type and network usage. Choosing a different setting may improve network and system performance in certain configurations. Without interrupt moderation, CPU utilization increases at higher data rates because the system must handle a larger number of OK Cancel

Value:

Extreme

•

Installing a Dual GigE Camera

Designed to take full advantage of Quad Tap readouts, the Dual GigE cameras incorporate state-of-the-art sensors that provide an unrivalled combination of image quality, resolution and high frame rates. In order to provide the high data rate to support image transfer, two Gigabit Ethernet ports are combined to a dynamic Link Aggregation Group, (LAG). Connecting both ports increases the available bandwidth to 240 MB/sec.

Configure and optimise each Ethernet adapter port using steps outlined in the "*Network Settings for GigE Cameras*". The following steps describe the setup of a Link Aggregate Group, (LAG).

Windows 7, Intel PT

- Start, Control Panel
- Hardware and Sound
- **Device Manager**
- **Network Adapter**
- Right-click Adapter device name
- **Properties**
- Teaming tab
- Select Team the adapter with otheradapters
- Click New Team
- The New Team Wizard window opens, choose a team name and click Next

	Link Speed	Advanced	Power M	anagement
eaming	VLANs	Boot Options	Driver	Details
intel	Adapter Tean	ning		
⊽ Team Tear	this adapter with o	other adapters	New Tea	am
No t	eams available	*	Properti	BS
leam with (
Allows yo participate If not cheo	u to specify whe e in a team. For an cked this adapter	ther a network con overview of team is not part of a tear	nection will ing, <u>click here</u> n.	
Allows yo participate If not chec	u to specify whe in a team. For an cked this adapter	ther a network con overview of team is not part of a tear	nection will ing, <u>click here</u> n.	



< Back

Next >

Select team type: Static Link Aggregation

ports to be used by the camera, click Next

Click Next

This configures the team and a new adapter appears in the Network Connections window.

Now return to your viewer program on your PC or Laptop to view your images.

You have now:

- 1. Connected your camera to your PC/Laptop using high quality cabling
- 2. Applied power to your camera
- 3. Created the correct Network Settings in your Laptop or PC
- 4. Created a Team if using Dual GigE if you have Dual GigE adapters installed
- 5. Seen your sample in your viewer software

Lambda Photometrics Ltd A Polytec company

E: info@lambdaphoto.co.uk W: www.lambdaphoto.co.uk T: +44 (0)1582 764334 F: +44 (0)1582 712084

X

(E)

Cancel