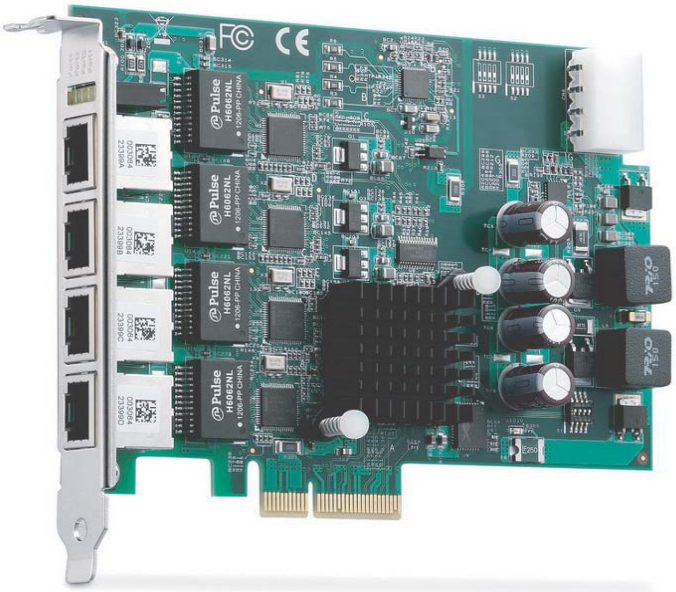
GIE64+

4-CH PoE GigE Vision Interface Card

User's Manual



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Revision History

Revision	Release Date	Description of Change(s)
2.00	Feb. 24, 2012	Initial release
2.10	Mar. 23, 2012	Minor spec changes
3.00	May 30, 2013	New product version release
4.00	July 17, 2013	Revision to new product version release

Preface

Disclaimer

The information in this document is subject to change without prior notice in order to improve reliability, design, and function and does not represent a commitment on the part of the manufacturer.

In no event will the manufacturer be liable for direct, indirect, special, incidental, or consequential damages arising out of the use or inability to use the product or documentation, even if advised of the possibility of such damages.

Environmental Responsibility

ADLINK is committed to fulfill its social responsibility to global environmental preservation through compliance with the European Union's Restriction of Hazardous Substances (RoHS) directive and Waste Electrical and Electronic Equipment (WEEE) directive. Environmental protection is a top priority for ADLINK. We have enforced measures to ensure that our products, manufacturing processes, components, and raw materials have as little impact on the environment as possible. When products are at their end of life, our customers are encouraged to dispose of them in accordance with the product disposal and/or recovery programs prescribed by their nation or company.

Trademarks

Product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective companies.

Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.

Additional information, aids, and tips that help users perform tasks.

Information to prevent ***minor*** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.

Information to prevent ***serious*** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

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1 Introduction

1.1 Overview

ADLINK's GIE64+ is a PCI Express® x4 lane, PoE (Power over Ethernet) frame grabber with support for four independent Gigabit Ethernet ports. Multiple Gigabit Ethernet Vision device connections are supported for standard Gigabit Ethernet Vision data transfer rates of up to 1000 Mb/s.

The GIE64+ features not only PoE, combining power supply and signal into a single cable, but also IEEE 1588 (precise time protocol), enabling synchronization with multi-camera acquisition.

The ADLINK GIE64+ also supports the Link aggregation control protocol, offering inexpensive setup of a double-speed backbone network for data transfers significantly exceeding those of a single Gigabit Ethernet port or device.

Finally, the GIE64+ provides a SmartPoe API, allowing remote on/off switching of PoE status via programming with no requirement for cable plug connection/disconnection.

1.2 Features

- IEEE802.3af (48 V, 15.4 W per channel) compliant, supporting classes 0,1,2,3,4
- Powered Device (PD) auto-detection and classification
- Support for four independent GbE ports
- Support for Link aggregation
- Support for jumbo frames (9 kBytes)
- IEEE 1588 compliant, supporting multi-camera synchronization
- Current limit, and short-circuit protection
- PCI Express x4 compliant
- Software API for easy remote PoE switching
- PoE loading from PCIe bus requires no external power connector (when total PoE loading is less than 20W)

1.3 Applications

The GIE64+ is ideally suited to frame grab functions in a wide variety of applications, including:

- Machine Vision Inspection systems
- Scientific research instrumentation
- Medical research instrumentation


NOTE:

The GIE64+ Function Library Reference can be downloaded from the product's pages at http://www.adlinktech.com

1.4 Specifications

1.4.1 Power over Ethernet Port

The GIE64+ Power over Ethernet specification supports

- Four fully-integrated Gigabit Ethernet Media Access Control (MAC) and physical layer (PHY) ports
- Full controller compliance with IEEE 802.3.af standard for maximum 15.4 watts, with power up to 48 V over existing CAT-5 Ethernet infrastructure, with no modifications required
- Standard IEEE 802.3 Ethernet interface provided for 1000BASE-T, 100BASE-TX, and 10BASE-T applications (802.3, 802.3u, and 802.3ab)


CAUTION:

If total POE loading exceeds 20W, Power Connector connection is required to avoid system damage. Please see Section 1.5.3 Power Connector

1.4.2 General Specifications

Function	Description
Power Requirements	▶ Input voltage: 3.3VDC and 12VDC, (w/ PC system power) ▶ Input from power connector (see Figure 1-2): Max 7A @ 12VDC (supporting up to 4 ports at 15.4W per PoE port) ▶ Input from PCIe slot: Max 2.1 A @ 12VDC (compatible to PCIe Spec), with connection cut off by fuse when exceeded
PCI Express	
PCIe X4 ports	1 port PCIe X4, for GigE Vision
Differential Output Peak to Peak Voltage	+0.8 V to +1.2 V
Differential Input Peak to Peak Voltage	+0.175 V to +1.2 V
Input voltage for PERST#, WAKE#, and SMBus	-0.75 V to +4.05 V
Gigabit Ethernet	
LAN chip	Intel® 82574L, PCIe v1.1 (2.5GT/s)
Gigabit Ethernet Ports	4
PoE Signal	
Max Output Power	15.4 W per channel, IEEE 802.3af compliant
PoE Output Voltage	44 to 48 V, PoE port positive voltage feed
Physical	
Dimensions	145 W x 111.12 L mm (5.71 X 4.38 in.)
Operating Temperature	0° C to 55° C
Storage Temperature	-40° C to 85° C
Safety Compliance	CE/FCC Class A; RoHS

1.5 I/O and Indicators

NOTE:

All dimensions shown are in mm

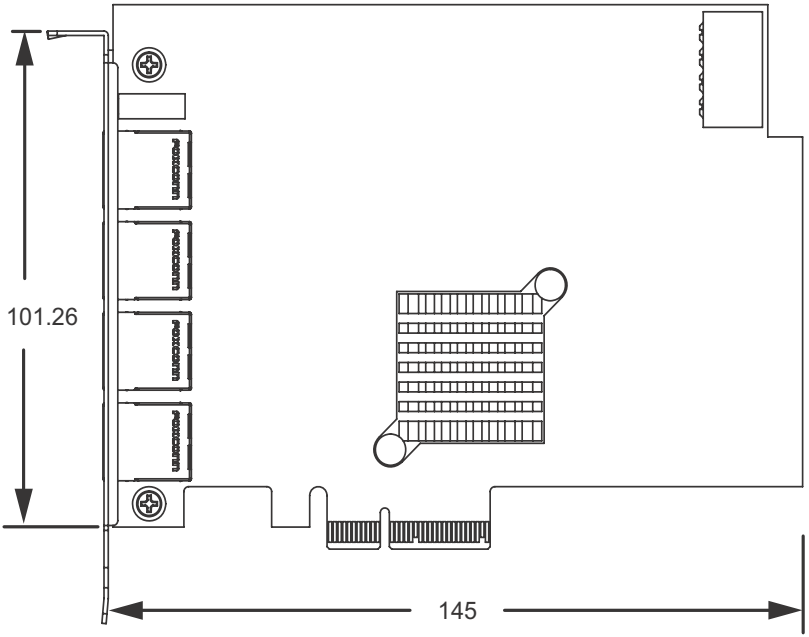

Figure 1-1: GIE64+ Schematic Diagram

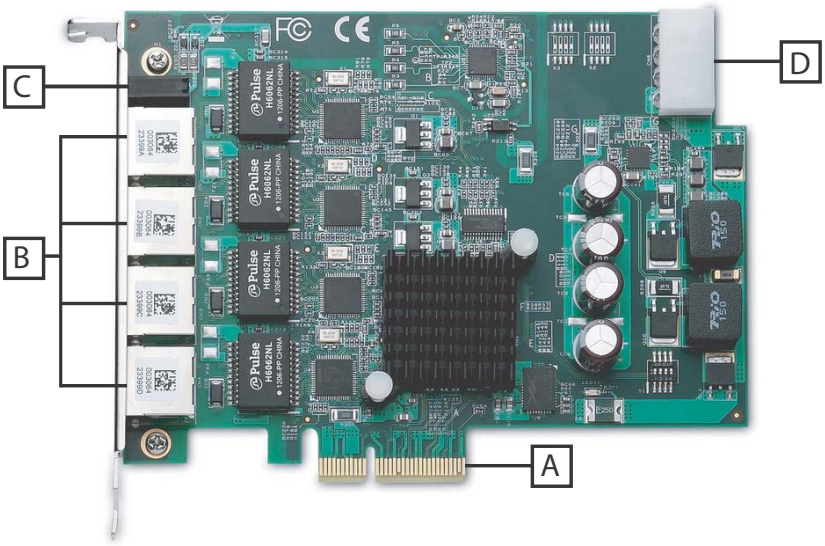

Figure 1-2: GIE64+ Board Layout

A	PCIe lane
B	RJ-45 Ethernet Ports
C	PoE Status LED
D	Power Connector

Table 1-1: Board Layout Legend

1.5.1 RJ-45 Ethernet Port

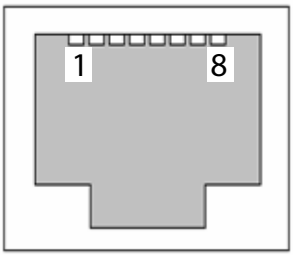

Figure 1-3: RJ-45 Ethernet Connector

Pin	Signal
1	MDI0+ (PoE_DC48V)
2	MDI0- (PoE_DC48V)
3	MDI1+ (PoE_DC0V)
4	MDI2+ (PoE_DC48V)
5	MDI2- (PoE_DC48V)
6	MDI1- (PoE_DC0V)
7	MDI3+ (PoE_DC0V)
8	MDI3- (PoE_DC0V)

Table 1-2: RJ-45 Ethernet Port Connector Signals

1.5.2 Status LEDs

Figure 1-4: Status LEDs

The GIE64+ provides four yellow LEDs to indicate operating conditions of the four PoE ports, as shown, with corresponding status as follows.

LED	Status
1	ON: Port 1 PoE On OFF: Port 1 PoE Off
2	ON: Port 2 PoE On OFF: Port 2 PoE Off
3	ON: Port 3 PoE On OFF: Port 3 PoE Off
4	ON: Port 4 PoE On OFF: Port 4 PoE Off

Table 1-3: Status LED Legend

1.5.3 Power Connector

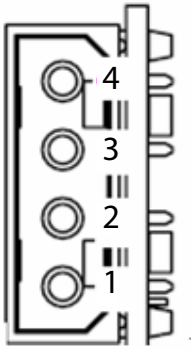

Figure 1-5: Power Connector

Pin	Signal
1	+12V
2	GND
3	GND
4	NC

Table 1-4: Power Connector Pin Assignments

1.5.4 Card ID Switch (S1)

The GIE64+ is equipped with a card ID switch allowing identification of individual cards in a multi-card system.

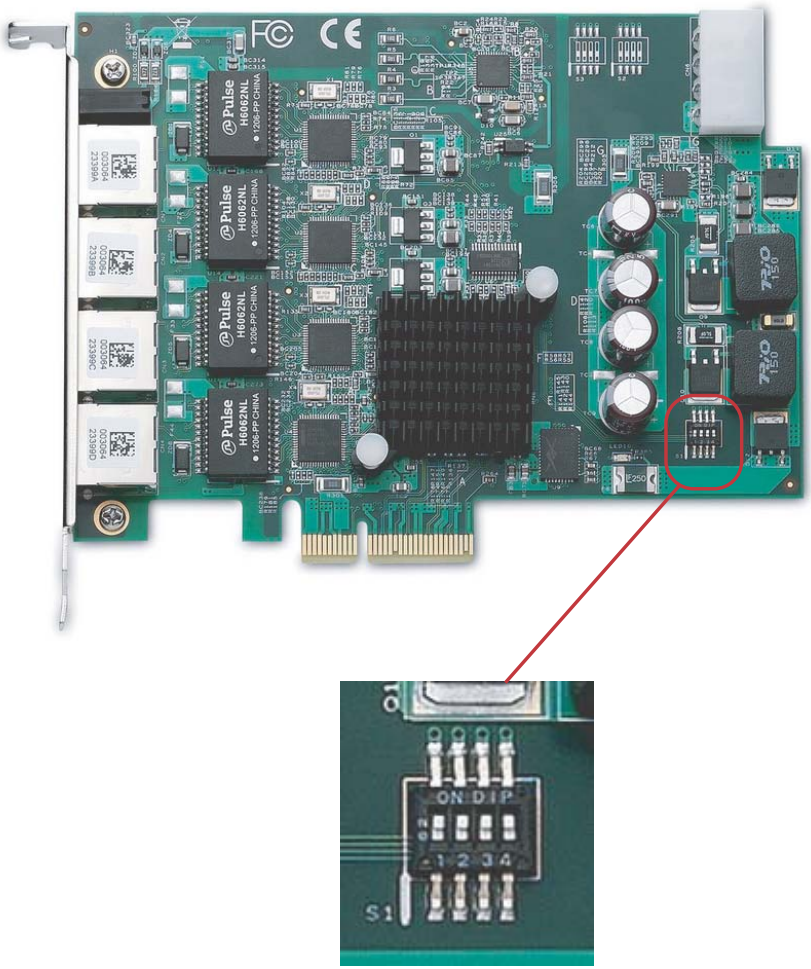

Figure 1-6: Card ID Switch Location

ID	S1 Slider				ID	S1 Slider			
	4	3	2	1		4	3	2	1
0	off	off	off	off	8	on	off	off	off
1	off	off	off	on	9	on	off	off	on
2	off	off	on	off	10	on	off	on	off
3	off	off	on	on	11	on	off	on	on
4	off	on	off	off	12	on	on	off	off
5	off	on	off	on	13	on	on	off	on
6	off	on	on	off	14	on	on	on	off
7	off	on	on	on	15	on	on	on	on

Table 1-5: ID Switch Position Legend

1.5.5 Onboard LED Status Indicators

9 LEDs on the rear side of the GIE64+ indicate the data stream for each port, as follows.

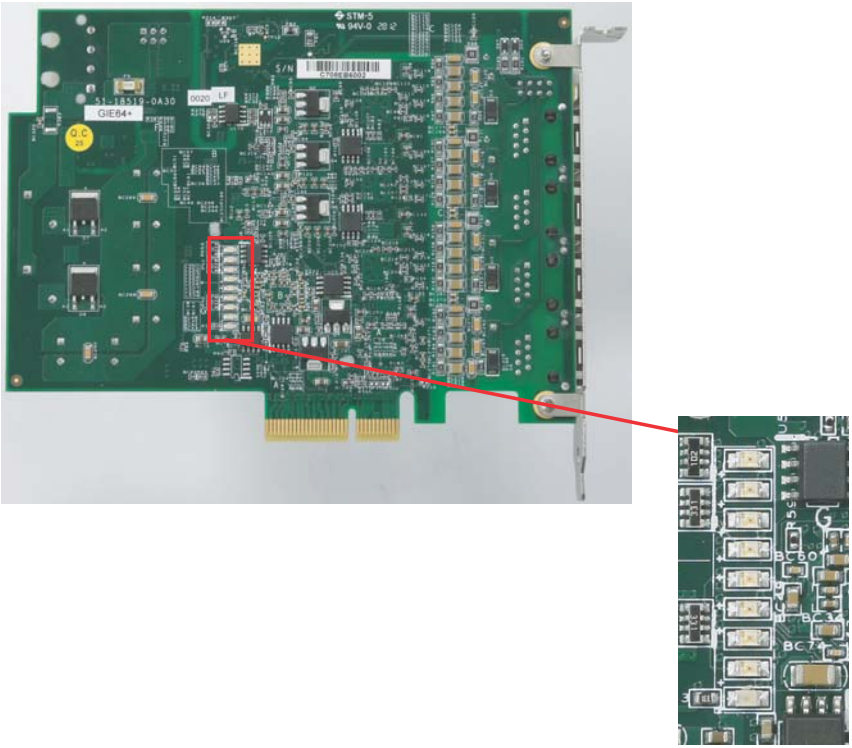

Figure 1-7: LED Status Indicator Location

LED	Status	Definition
1, 2, 3, 4	OFF	Abnormal, PCIe switch downstream function is disabled.
	Blinking	Normal
5, 6, 7, 8	OFF	Abnormal, PCIe switch downstream function is disabled.
	ON/Blinking	Normal

LED	Status	Definition
9	OFF	Normal
	ON	Abnormal, PCIe switch has unexpected error

Table 1-6: LED Status Indicator Display Definitions

Default status of LEDs 1-4 is blinking, for LEDs 5-8 lit or blinking, and LED 9 OFF. If the GIE64+ is malfunctioning and abnormal LED behavior, board damage may haver occurred. Please contact your distributor or agent.

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2 Getting Started

2.1 Unpacking Checklist

Before unpacking, check the shipping carton for any damage. If the shipping carton and/or contents are damaged, inform your dealer immediately. Retain the shipping carton and packing materials for inspection. Obtain authorization from your dealer before returning any product to ADLINK. Ensure that the following items are included in the package.

- GIE64+ unit
- User's manual

OEM versions with non-standard configuration, functionality, or packaging may vary according to individual requirements.

2.2 Installation

The following describes installation of the GIE64+ module on the PCI express bus.

1. Remove the computer cover according to the computer manual..

A vacant PCI express slot is required for installation of the GIE64+ module; if none is available, remove a PCI express board and note the slot number.

2. Remove the slot cover (if any).
3. Carefully position the GIE64+ in the selected PCI express slot. If installing in a tower computer, align the board with the board slots.
4. Press the board firmly but carefully into the connector.
5. Anchor the board with the screw.
6. Plug the cable into the PoE power connector.
7. Connect the device via a Gigabit Ethernet connector.

8. Power up the computer.


NOTE:

The GIE64+ can be installed in a PCI Express x4, x8, or x16 slot.

Please download the Intel® 82574L driver from: downloadcenter.intel.com

Important Safety Instructions

For user safety, please read and follow all **instructions**, **WARNINGS**, **CAUTIONS,** and **NOTES** marked in this manual and on the associated equipment before handling/operating the equipment.

- Read these safety instructions carefully.
- Keep this user's manual for future reference.
- Read the specifications section of this manual for detailed information on the operating environment of this equipment.
- When installing/mounting or uninstalling/removing equipment:
  - Turn off power and unplug any power cords/cables.
- To avoid electrical shock and/or damage to equipment:
  - Keep equipment away from water or liquid sources;
  - Keep equipment away from high heat or high humidity;
  - Keep equipment properly ventilated (do not block or cover ventilation openings);
  - Make sure to use recommended voltage and power source settings;
  - Always install and operate equipment near an easily accessible electrical socket-outlet;
  - Secure the power cord (do not place any object on/over the power cord);
  - Only install/attach and operate equipment on stable surfaces and/or recommended mountings; and,
  - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.

- Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.

A Lithium-type battery may be provided for uninterrupted, backup or emergency power.

Risk of explosion if battery is replaced with one of an incorrect type. Dispose of used batteries appropriately.

- Equipment must be serviced by authorized technicians when:
  - The power cord or plug is damaged;
  - Liquid has penetrated the equipment;
  - It has been exposed to high humidity/moisture;
  - It is not functioning or does not function according to the user's manual;
  - It has been dropped and/or damaged; and/or,
  - It shows obvious signs of breakage.

Getting Service

Contact us should you require any service or assistance.

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