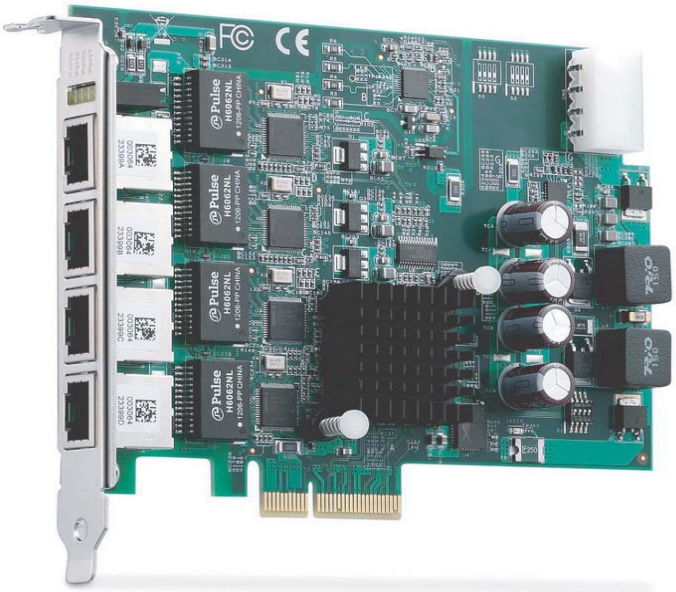
GIE64+

4-CH PoE GigE Vision Interface Card

User's Manual



Manual Rev.: 4.00

Revision Date: July 17, 2013

Part No: 50-11245-1030

Recycled Paper

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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

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Preface

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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)

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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

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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

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1.5 I/O and Indicators

NOTE:

All dimensions shown are in mm

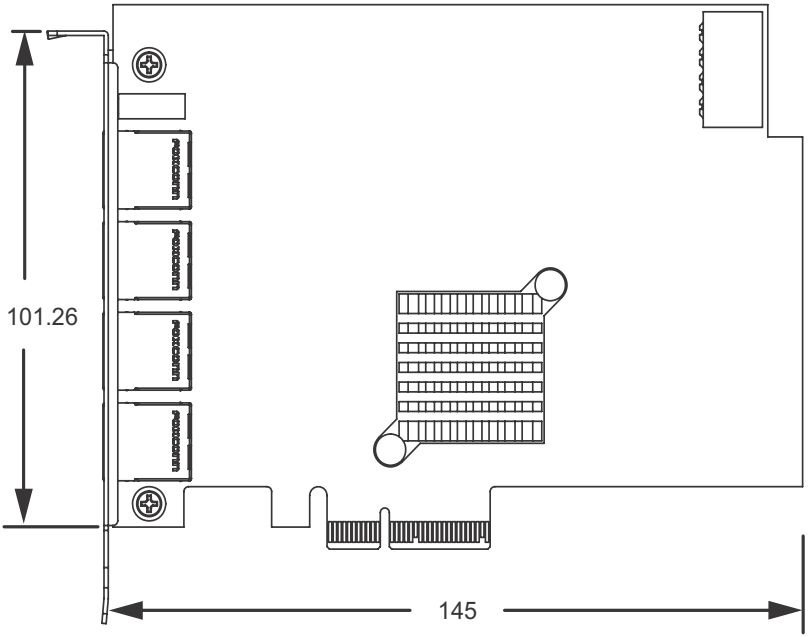


Figure 1-1: GIE64+ Schematic Diagram

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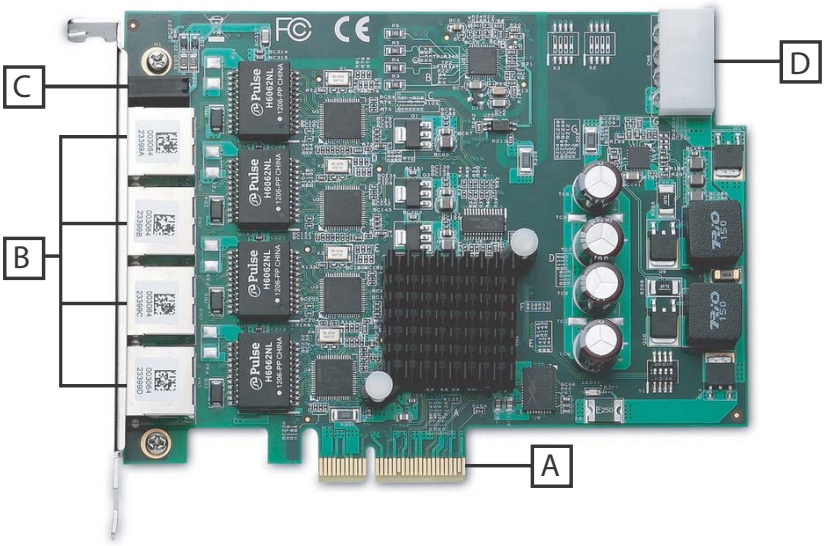


Figure 1-2: GIE64+ Board Layout

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

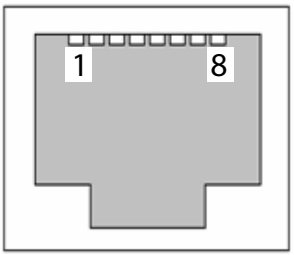


Figure 1-3: RJ-45 Ethernet Connector

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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

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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

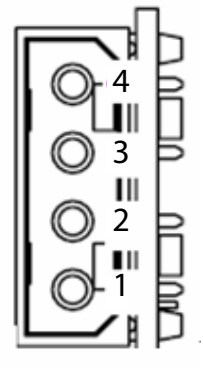


Figure 1-5: Power Connector

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

Table 1-4: Power Connector Pin Assignments

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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.

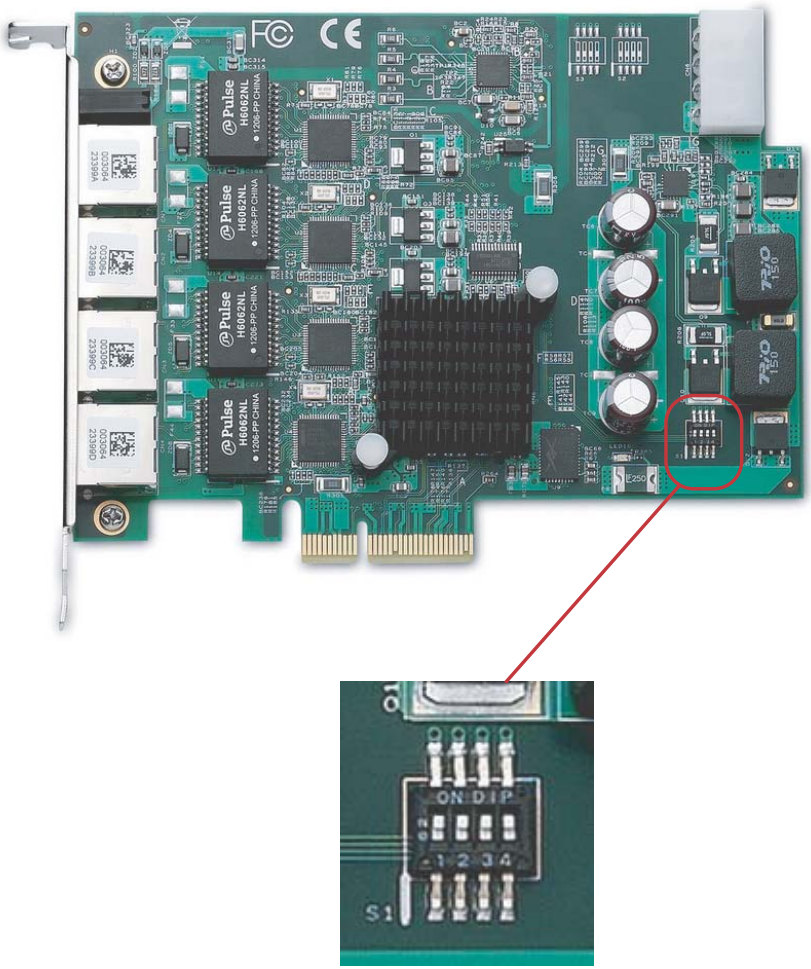


Figure 1-6: Card ID Switch Location

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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

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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.

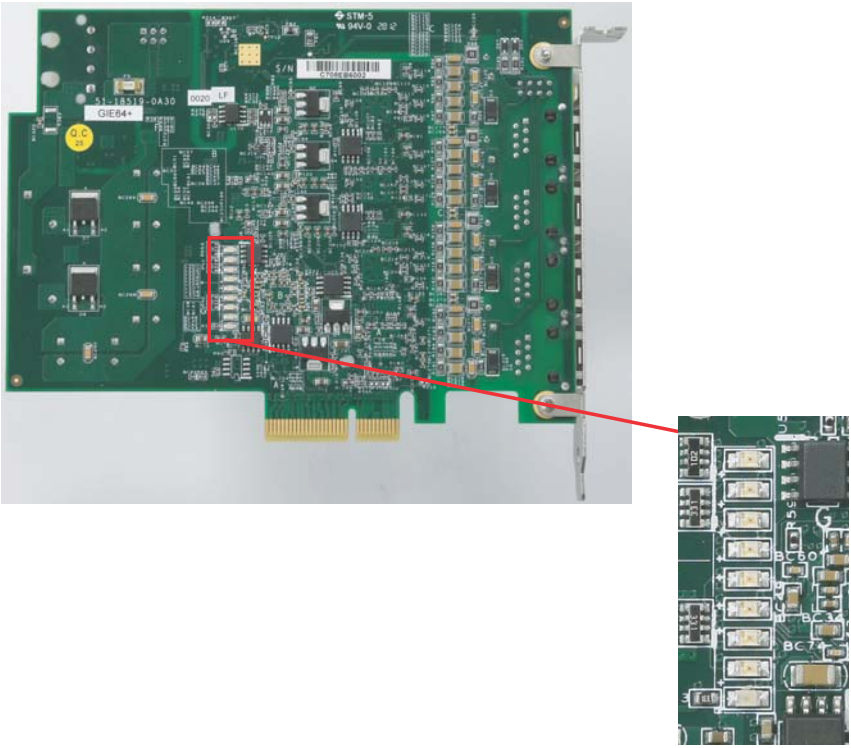


Figure 1-7: LED Status Indicator Location

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

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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.

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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

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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.

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- 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.

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Getting Service

Contact us should you require any service or assistance.

ADLINK Technology, Inc.
Address: 9F, No.166 Jian Yi Road, Zhonghe District
New Taipei City 235, Taiwan
新北市中和區建一路 166 號 9 樓
Tel: +886-2-8226-5877
Fax: +886-2-8226-5717
Email: service@adlinktech.com

Ampro ADLINK Technology, Inc.
Address: 5215 Hellyer Avenue, #110, San Jose, CA 95138, USA
Tel: +1-408-360-0200
Toll Free: +1-800-966-5200 (USA only)
Fax: +1-408-360-0222
Email: info@adlinktech.com

ADLINK Technology (China) Co., Ltd.
Address: 上海市浦东新区张江高科技园区芳春路 300 号 (201203)
300 Fang Chun Rd., Zhangjiang Hi-Tech Park,
Pudong New Area, Shanghai, 201203 China
Tel: +86-21-5132-8988
Fax: +86-21-5132-3588
Email: market@adlinktech.com

ADLINK Technology Beijing
Address: 北京市海淀区上地东路 1 号盈创动力大厦 E 座 801 室(100085)
Rm. 801, Power Creative E, No. 1,
Shang Di East Rd., Beijing, 100085 China
Tel: +86-10-5885-8666
Fax: +86-10-5885-8626
Email: market@adlinktech.com

ADLINK Technology Shenzhen
Address: 深圳市南山区科技园南区高新南七道 数字技术园
A1 栋 2 楼 C 区 (518057)
2F, C Block, Bldg. A1, Cyber-Tech Zone, Gao Xin Ave. Sec. 7,
High-Tech Industrial Park S., Shenzhen, 518054 China
Tel: +86-755-2643-4858
Fax: +86-755-2664-6353
Email: market@adlinktech.com

LiPPERT ADLINK Technology GmbH
Address: Hans-Thoma-Strasse 11, D-68163, Mannheim, Germany
Tel: +49-621-43214-0
Fax: +49-621 43214-30
Email: emea@adlinktech.com

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

ADLINK Technology, Inc. (French Liaison Office)
Address: 15 rue Emile Baudot, 91300 Massy CEDEX, France
Tel: +33 (0) 1 60 12 35 66
Fax: +33 (0) 1 60 12 35 66
Email: france@adlinktech.com

ADLINK Technology Japan Corporation
Address: 〒101-0045 東京都千代田区神田鍛冶町 3-7-4
神田 374 ビル 4F
KANDA374 Bldg. 4F, 3-7-4 Kanda Kajicho,
Chiyoda-ku, Tokyo 101-0045, Japan
Tel: +81-3-4455-3722
Fax: +81-3-5209-6013
Email: japan@adlinktech.com

ADLINK Technology, Inc. (Korean Liaison Office)
Address: 서울시 서초구 서초동 1675-12 모인터빌딩 8 층
8F Mointer B/D,1675-12, Seocho-Dong, Seocho-Gu,
Seoul 137-070, Korea
Tel: +82-2-2057-0565
Fax: +82-2-2057-0563
Email: korea@adlinktech.com

ADLINK Technology Singapore Pte. Ltd.
Address: 84 Genting Lane #07-02A, Cityneon Design Centre,
Singapore 349584
Tel: +65-6844-2261
Fax: +65-6844-2263
Email: singapore@adlinktech.com

ADLINK Technology Singapore Pte. Ltd. (Indian Liaison Office)
Address: 1st Floor, #50-56 (Between 16th/17th Cross) Margosa Plaza,
Margosa Main Road, Malleswaram, Bangalore-560055, India
Tel: +91-80-65605817, +91-80-42246107
Fax: +91-80-23464606
Email: india@adlinktech.com

ADLINK Technology, Inc. (Israeli Liaison Office)
Address: 6 Hasadna St., Kfar Saba 44424, Israel
Tel: +972-9-7446541
Fax: +972-9-7446542
Email: israel@adlinktech.com

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