USER'S MANUAL

AX92325

2/4-port PCI Express 1 GigE PoE Card with M12 X-coded connector

User's Manual

AXIOMTEK

www.axiomtek.com

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ESD Precautions

The boards have integrated circuits sensitive to static electricity. To avoid damaging chipsets from electrostatic discharge, observe the following precautions:

■ Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.

■ Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help to discharge any static electricity on a human body.

■ When handling boards and components, wear a grounding wrist strap available from most electronic component stores.

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Section 1
Introduction

This section contains general information and detailed specifications of the AX92325 2/4-port PCI express 1 GigE PoE Card with M12 X-coded connector, including the following sections:

- General Description
- Features
- Specifications
- Dimensions

1.1   General Description

The AX92325 PoE (Power over Ethernet) card supports 2 or 4 independent Gigabit PoE ports, providing up to 30W of power at 54 VDC per port. It has a special design for the M12 connector that doesn't take up the space of other slots. With the support of PCIe x4 interface, the AX92325 can be easily integrated into Axiomtek's diverse products including industrial PCs, ATX motherboards, embedded systems, etc. Designed to help customers deploy machine vision cases and surveillance systems in railway applications, the AX92325 brings not only expandable functionality but also flexible configurations to fulfill a variety of vertical application needs, delivering an ideal solution that will ultimately benefit customers with reduced costs, simpler installation, and lower maintenance need.

1.2   Features

- Four M12 x-coded connectors with special design (to avoid occupying two slots)
- 2 or 4 independent Gigabit PoE ports
- Supports 9.5KB Jumbo Frame and IEEE 1588
- Compliant with IEEE802.3at to deliver 30W at 54 VDC per port
- PCI Express x4 compliant
- $0°C$ to $+60°C$ operating temperature range
- PoE power management software
- Supports LAN port smart on/off

1.3   Specifications

- **Ethernet Port**

  - Intel® Ethernet Controller I210-AT 2 or 4 GbE LANs with Intel® i210-AT controller; supports 9.5KB jumbo frame and IEEE 1588

- **PoE capability**

  - IEEE 802.3at compliant; each port delivers up to 30W at 54 VDC

- **Speed**

  - All LANs support 10/100/1000Mbps

- **Port connector**

  - M12 X-coded connector

- **Golden finger**

  - One for standard PCIex4 interface

- **Dimensions**

  - W 168mm x D 111 mm

- **OS support**

  - Windows® 7/10 (32/64-bit)

- **Environmental**

  - Operating temperature: 0°C ~ 60°C with air flow

  - Operating humidity 10% ~ 95% non-condensing

  - Storage temperature: -20°C ~ 80°C

- **Input Voltage**

  - 12VDC or 24VDC

- **Power Requirements**

  - Power from PCIe slot: Max. 20W POE power output

    2.1A @ +12V

    1.2A @ +3.3V
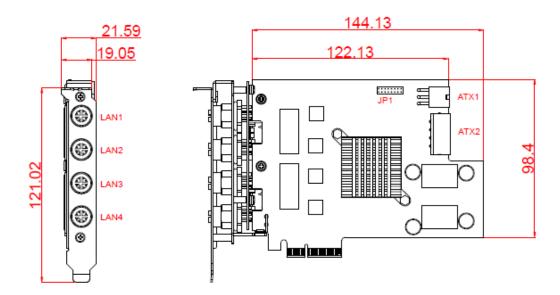
  - Power from the ATX power connector: Max. 120W POE power output

    12A @ +12V or 6A @ +24V
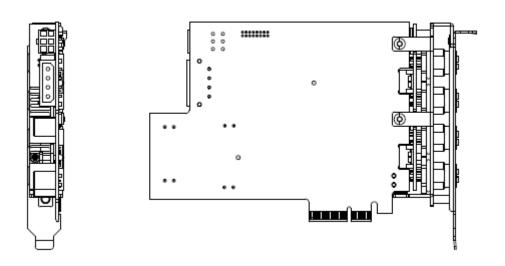
    1.2A @ +3.3V (from PCIe slot)

  - Power from Molex power connector: max. 60W PoE power output

1.4   Dimensions

Component Side

Solder Side

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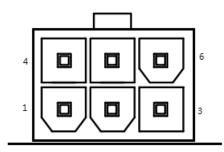
Section 2
Connectors & Jumper

2.1   Connectors & Jumper

This section describes the pin definitions of all connectors and jumper settings. Connectors connect the board with other parts of the system. Loose or improper connection might cause malfunctions. Make sure all connectors are properly and firmly connected.
The following table lists the function of each connector on the AX92325.

Connectors & Jumper	Label
ATX1	2.1.1
ATX2	2.1.2
LAN1~4	2.1.3
JP1	2.1.4

2.1.1   External Voltage Input (ATX1)

The power connector is used for the PoE function when the total power of the powered device is over 20 watts. The external power ATX1 is able to support max. 120 watts of PoE output.

Pin	Signal
1	+12V / +24V
2	+12V / +24V
3	+12V / +24V
4	Ground (GND)
5	Ground (GND)
6	Ground (GND)

Note:
* 24V power is for Axiomtek's products only.
* 12V power is for 6-pin ATX power supply.

2.1.2   4-pin Molex Male connector (ATX2)

The power connector is used for the PoE function when the total power of the powered device is over 20 watts. The external power ATX2 is able to support max. 60 watts of PoE output.

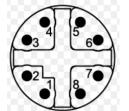| Pin	Signal
1	+12V
2	GND
3	GND
4	NC

Note:

*According to different PoE power budge requirements, refer to the following table of PoE power source.

PoE power source	PCIe slot	4-pin Molex connector	6-pin ATX connector
Total power budge	20W	60W	120W

2.1.3   LAN with M12 X-coded connector (LAN1~4)

The M12 8-pin LAN connector which supports 10/100/1000 Mbps is an X-coded type.

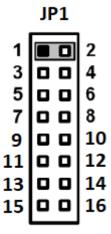| Pin	10/100 Mbps	1000 Mbps
1	TX +	MDI 0+
2	TX -	MDI 0-
3	RX +	MDI 1+
4	RX -	MDI 1-
5	--	MDI 3+
6	--	MDI 3-
7	--	MDI 2 -
8	--	MDI 2+

M12 X-coded 8-Pin/ Female

Note:

* IEEE 802.3at (PoE output), full-load 25.5W for each port (PoE version only).
* The pin definition of the M12 8-pin LAN connector may vary when used with other devices.

2.1.4   Board ID (JP1)

Default board ID setting is 1.

Function	Setting
Board ID=1	1-2 close
Board ID=2	3-4 close
Board ID=3	5-6 close
Board ID=4	7-8 close
Board ID=5	9-10 close
Board ID=6	11-12 close
Board ID=7	13-14 close
Board ID=8	15-16 close

Note:

You can ignore this setting if using only one piece of AX92325 on your system.
When using two or more pieces of AX92325 on your system, you must set a different board ID for each card.

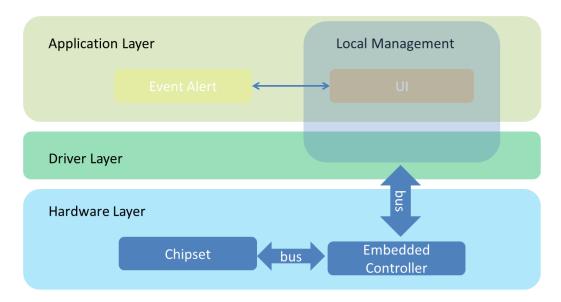**This page is intentionally left blank**.

Section 3
PoE Manager Software

3.1   Management software

AMSIO PoE Manager is a highly integrated software management system that provides an easy-to-use application programming interface.
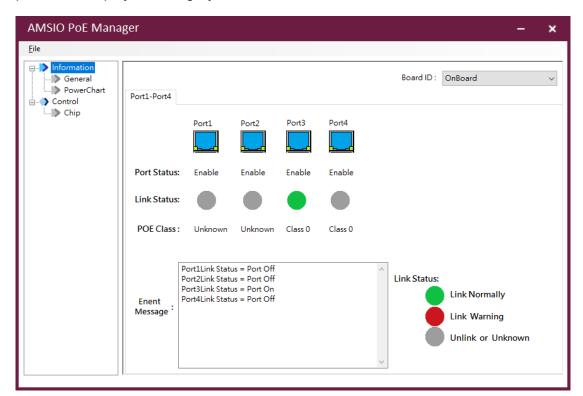
Software Structure

AMSIO PoE Manager is an intelligent software tool for managing PoE (Power over Ethernet) devices ranging from physical layer connectivity and communication layer protocols to middleware API and high-level software for management. AMSIO PoE Manager is ideal for integration with specific embedded systems, and comes with powerful PoE managerial abilities suited for various vertical applications.

Layer structure

3.2 AMSIO PoE Manager

AMSIO PoE Manager is a software program that helps to monitor and manage PoE (Power over Ethernet) operations. The major task of PoE manager is to routinely monitor each PoE port's power consumption and status. If any problem happens to a port, it will display info imagery for the user.
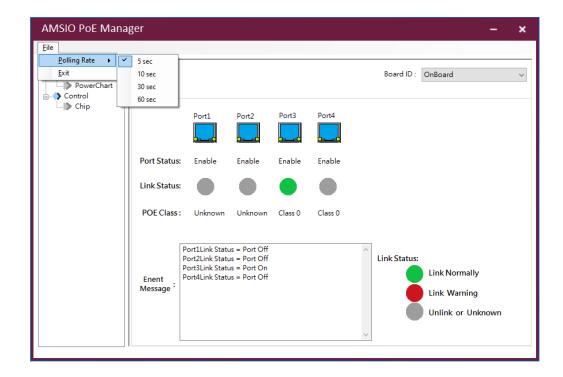

PoE Manager interface

3.3   Menu Bar

On the top of the main screen is the menu bar. Select a tab in this bar to go to the submenus.

3.3.1   File

Polling rate
Set the polling rate to monitor PoE power consumption and port status. Polling rates include the following:
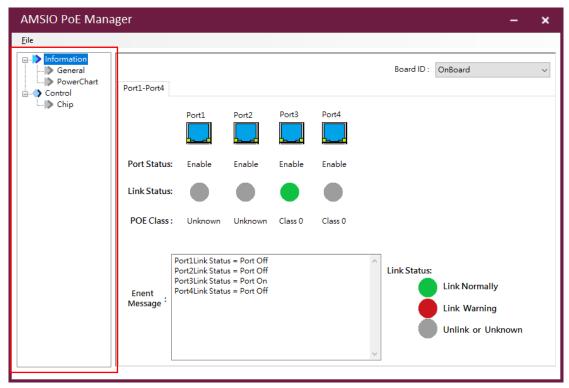- 5 sec
- 10sec
- 30 sec
- 60 sec

Exit
Close the PoE manager program.

3.4   Side Menu

The side menu is located on the left frame of the screen and contains all monitoring and control functions. It has two submenus: "Information" and "Control".

PoE Manager menu list

Information

The information menu includes the "General" and "PowerChart" options. "General" is responsible for showing each port's status, and "PowerChart" is responsible for showing the power consumption chart.
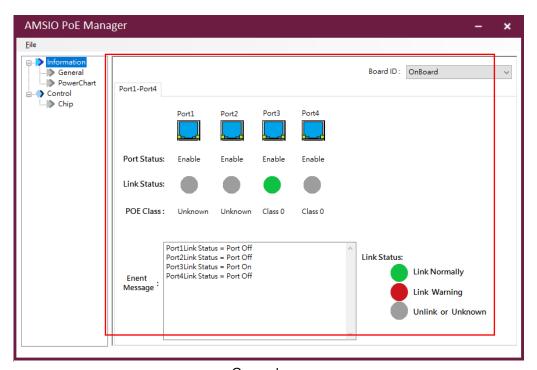
Control
The control menu contains the "Chip" option, which provides the functions including each port's control switch, max power budget display and user-defined power budget, as well as a Save button for saving configurations.

3.5   Features

3.5.1   Information

● **General**

General page

Board ID: The board ID displays the board number and the module's name. The user can click the drop-down list to display other module information.

Port1-2 or 1-4: The tab sort shows all available device ports.

Port Status: The port status option displays the word "Enable" along with a lit port icon

to indicate an enabled port, whereas it displays the word "Disable" with a dim port
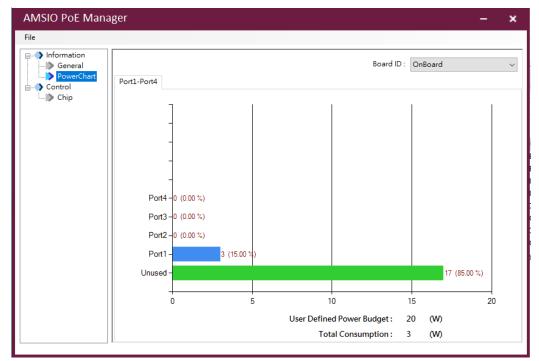
icon   to indicate a disabled port. (The user can control port status using the "Chip" function. Refer to "Chip" in section 3.5.2.)

Link Status: The link status can display connection status with a powered device (PD). The green icon indicates a normal connection with PD. The red icon warns of a connection problem with PD, and the user can search the port error code in the "Event Log" txt file to understand what has caused the problem. The icon turns gray when the system hasn't connected to PD or has connected to an undefined device.

POE Class: The POE class describes PD's classification, which follows the 802.3 af/at protocol to define.

Event Message: It displays detailed information on a port's link status. If the link status icon turns red to indicate a connection problem, the event message will report more detailed information.
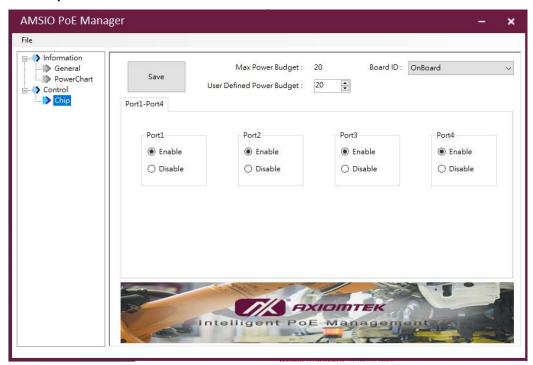
● **Power Chart**

PowerChart page

Chart: The chart describes power consumption by each port and total amount of unused power. It uses percentage to represent ratio of each port.

User Defined Power Budget: The power budget shows the upper limit of power consumption defined by the user. The user can go to the "Chip" option to set power budget, which cannot exceed the max power budget. Refer to "Chip" in section 3.5.2.

Total Consumption: The function displays the total power consumption value of all ports by adding up every port's power in use.

3.5.2   Control

● **Chip**

Chip page

Max Power Budget: This function shows the module's max power budget value. The user cannot set power budget higher than max power budget limit.

User Defined Power Budget: The user can define a power budget value, which cannot exceed max power budget limit.

Port 1~2 or 1~4 Switch (Enable/Disable): The user can turn on a port by selecting "Enable", or turn off port by selecting "Disable". Each port's status can be monitored in the "General" menu.

Save Button: Click the "Save" button to save all user set values into the module's chip. All user defined settings will be reserved even when the system is shut down or restarted.