innodisk

Total Solution For
Embedded Peripherals

ESPL-G4P1

PCIe to Four

PoE/PoE+ Module

Customer: _____

Customer Part Number: _____

Innodisk Part Number: _____

Innodisk Model Name: _____

Date: _____

Innodisk Approver	Customer Approver

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REVISION HISTORY

Revision	Description	Date
1.0	First Released	Oct, 2023
1.1	Correct 2.2.1 Power Requirement information	May, 2024

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1. Product Introduction

1.1. Overview

Innodisk ESPL-G4P1 is designed with Standard PCIe form factor, ESPL-G4P1 supports PCIe Gen 2.1 with a single lane to four PoE/PoE+ LAN ports, optimized for higher performance and lower power, which brings you a flexible expansion solution for embedded systems.

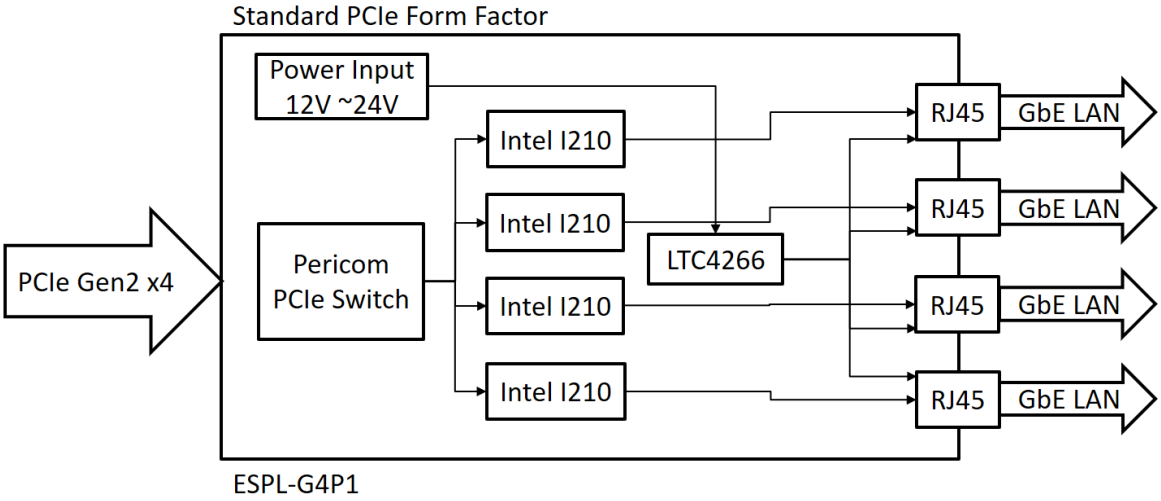


Figure 1: Block Diagram

1.2. Features

- Supports four GbE LAN ports
- Four independent PSE channels
- Complies with IEEE 802.3af, up to 15.4W at 48V per PoE port
- Complies with IEEE 802.3at, up to 25.5W at 52V per PoE port
- Supports 12V~24V power input via 4pin PCIE-ATX
- Supplies total power up to 75W
- Complies with EN61000-4-5 2kV Surge protection
- Optional Industrial Temperature (-40°C to +85°C) support
- 30μ" golden finger, 3-year warranty
- Industrial design, manufactured in innodisk Taiwan

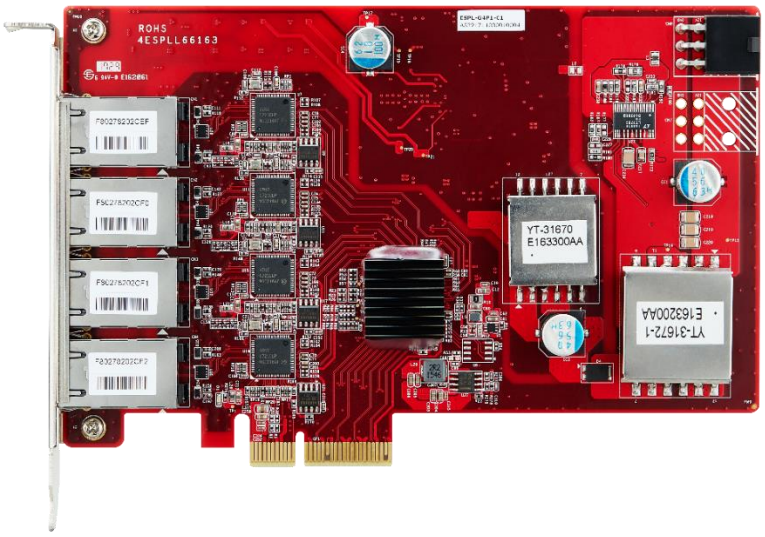


Figure 2: PCIe Board Picture

2. Product Specifications

2.1. Device Parameters

Table 1: Device Parameters

Form Factor	Standard PCIe
Input I/F	PCI Express 2.1 x 4
Output I/F	PoE/PoE+ x 4
Output Connector	RJ45 x 4
Dimension (WxLxH)	169.55 x 111.15 x 19.6 mm

2.2. Electrical Specifications

2.2.1. Power Requirement

Table 2: Power Requirement

Item	Connector	Rating
LAN Input voltage	PCIex4 Golden Finger	+3.3/12V DC +-5%
PoE Input voltage	PCIe ATX 6p Connector	12V DC +-5%

2.2.2. Power Consumption

Table 3: Power Consumption

Max (W)	Voltage(V)	Max (A)
86.2	12	7.18

*PoE Power Source

2.3. Environmental Specifications

2.3.1. Temperature Ranges

Table 4: Temperature Ranges

Temperature	Range
Operating	Standard Grade: 0°C to +70°C Industrial Grade: -40°C to +85°
Storage	-55°C to +95°

2.3.2. Humidity

Relative Humidity: 10-95%, non-condensing

2.3.3. Shock and Vibration

Table 5: Shock and Vibration

Reliability	Test Conditions	Reference Standards
Vibration	7 Hz to 2K Hz, 20G, 3 axes	IEC 68-2-6
Mechanical Shock	Duration: 0.5ms, 1500 G, 3 axes	IEC 68-2-27

2.3.4. Mean Time between Failure (MTBF)

Reliability prediction methodology provides the basis for reliability evaluation and analysis. The purpose of the prediction is to predict the life time of the product in units of failure rate and MTBF.

Table 6: Mean Time between Failure (MTBF)

Product	Condition	MTBF (Hours)
ESPL-G4P1-C1/W1	The analysis is at 25°C ambient temperature by Telcordia SR-332, Issues 4, Method I, Case 3 under Ground Benign, Controlled environment, 50% operation stress	5,734,443

2.4. CE and FCC Compatibility

ESPL-G4P1 conforms to CE and FCC requirements.

2.5. RoHS Compliance

ESPL-G4P1 is fully compliant with RoHS directive.

2.6. Hardware

2.6.1. Layout

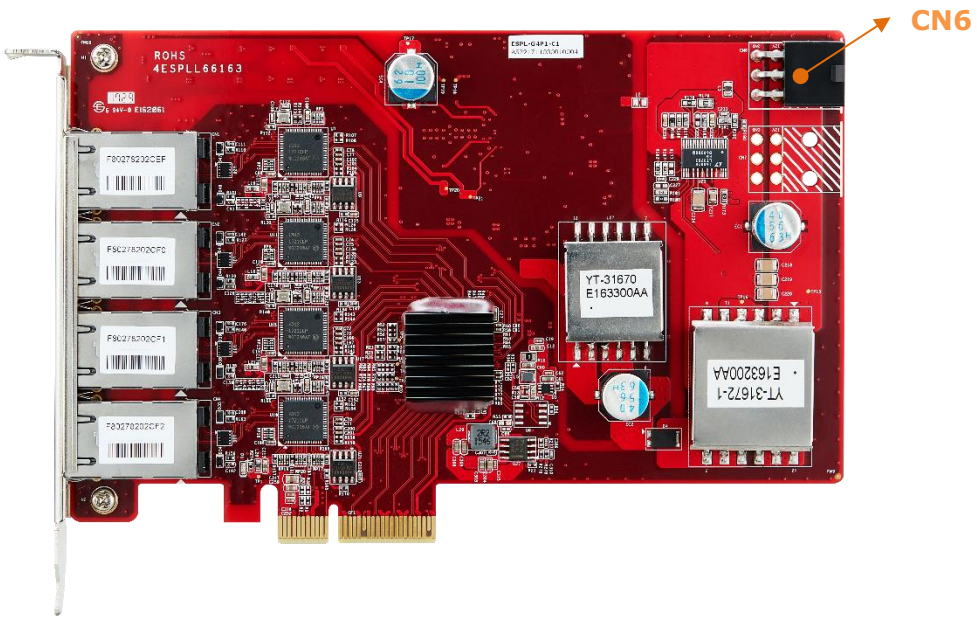


Table 7: PCB Layout Legend

Label	Connector Type	Function
CN6	PCIe ATX Connector DIP 2*3P P:4.2mm 90°	12-24V Power Input

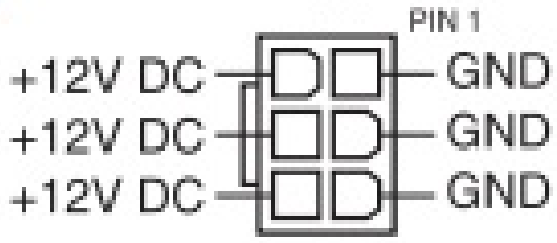
2.6.2. Pin Define

Table 8: PCIe x 4 Golden Finger Pin Define

Signal Name	Pin #	Pin #	Signal Name
+12V	**B1**	**A1**	PRSNT
+12V	**B2**	**A2**	+12V
+12V	**B3**	**A3**	+12V

GND	**B4**	**A4**	GND
SMCLK	**B5**	**A5**	NC
SMDAT	**B6**	**A6**	NC
GND	**B7**	**A7**	NC
+3.3V	**B8**	**A8**	NC
NC	**B9**	**A9**	+3.3V
NC	**B10**	**A10**	+3.3V
WAKE	**B11**	**A11**	PERST
Mechanical Key			
NC	**B12**	**A12**	GND
GND	**B13**	**A13**	REFCLK+
RX0+	**B14**	**A14**	REFCLK-
RX0-	**B15**	**A15**	GND
GND	**B16**	**A16**	TX0+
PRSNT	**B17**	**A17**	TX0-
GND	**B18**	**A18**	GND
RX1+	**B19**	**A19**	NC
RX1-	**B20**	**A20**	GND
GND	**B21**	**A21**	TX1+
GND	**B22**	**A22**	TX1-
RX2+	**B23**	**A23**	GND
RX2-	**B24**	**A24**	GND
GND	**B25**	**A25**	TX2+
GND	**B26**	**A26**	TX2-
RX3+	**B27**	**A27**	GND
RX3-	**B28**	**A28**	GND
GND	**B29**	**A29**	TX3+
NC	**B30**	**A30**	TX3-
PRSNT	**B31**	**A31**	GND
GND	**B32**	**A32**	NC

2.6.3. PCIe ATX Power Connector Pin Define



2.6.4. ESPL-G4P1 Mechanical Drawing

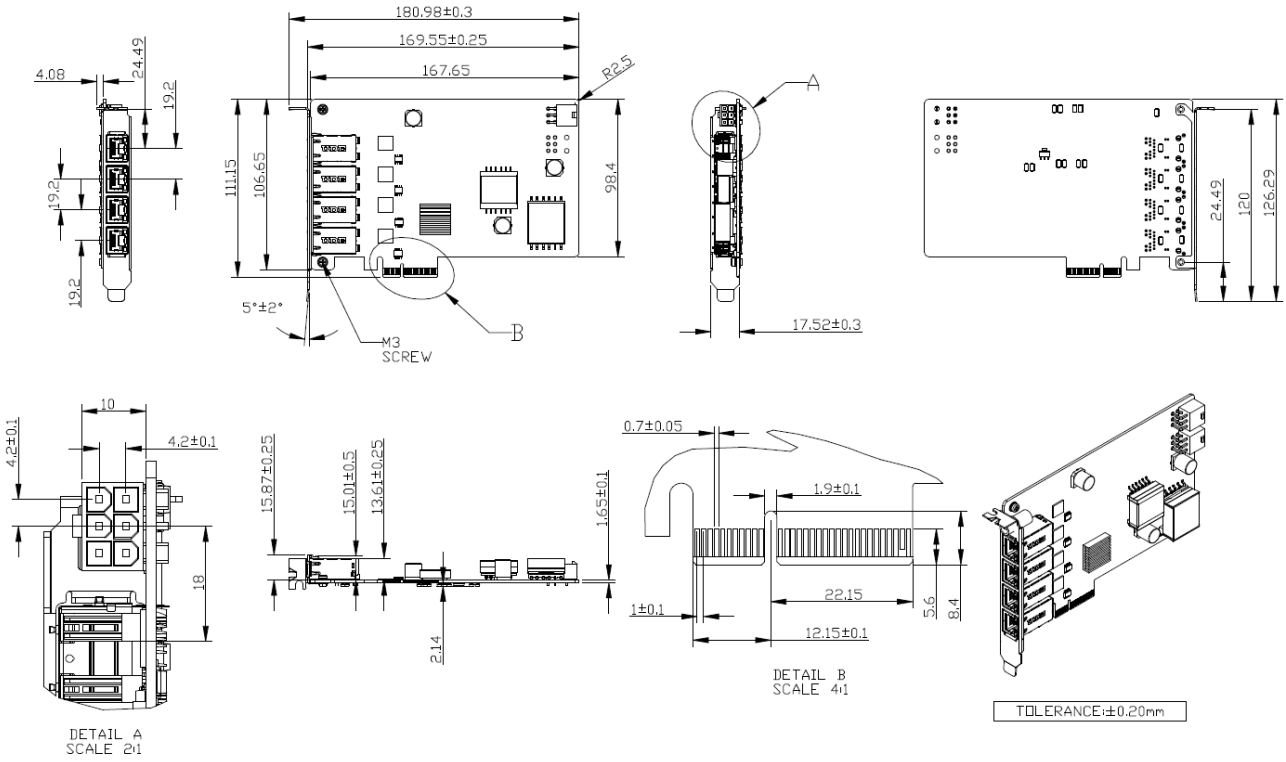


Figure 3: ESPL-G4P1 PCIe Board Drawing

2.6.5. Packing List

- ESPL-G4P1 PCIe Board x 1

2.7. Software Support

- Windows: XP(32bit), 7(32/64bit), 8/8.1(32/64 bit), 10(32/64bit), 11
- Linux: Kernel 2.4 above.

3. Installation Guide

Please download driver from Intel official website.

Or you can download Intel i210 chip driver from Intel official web site directly.
https://www.intel.com/content/www/us/en/products/details/ethernet/gigabit-controllers/i210-controllers/downloads.html

4. Appedix

CERTIFICATE OF CONFORMITY

BUREAU VERITAS

CE

Equipment	:	PCIe to 4Port POE Module
Brand Name	:	Innodisk
Test Model No.	:	E%PL-G#P1
Multiple Listing	:	E%PL-G#P1 (%: Form factor: (2: 2.5"SSD,3:DDR3 DIMM,D:Dongle,G:NGFF_M.2, H:mPCIe Half,L:PCIe Low profile,M:mPCIe,S:PCIe Standard,X:Multi,Z:Others) #: Output items: (1:1Port,2:2Ports,3:3Ports,4:4Ports,A~Z:TBD,X:Multi))
Applicant	:	Innodisk Corporation
Test Report No.	:	CE171003D26

We, **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, declare that the equipment above has been tested in our facility and found compliance with the requirement limits of applicable standards, in accordance with the Directive 2014/30/EU. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate under the standards herein specified.

EN55032:2015 +AC:2016, Class A
EN 61000-3-2:2014 (Not applicable)
EN 61000-3-3:2013 (Not applicable)
EN 55024:2010
EN 61000-4-2:2009 / IEC 61000-4-2:2008 ED. 2.0
EN 61000-4-3:2006 +A1:2008 +A2:2010 / IEC 61000-4-3:2010 ED. 3.2
EN 61000-4-4:2012 / IEC 61000-4-4:2012 ED. 3.0 (Not applicable)
EN 61000-4-5:2014 / IEC 61000-4-5:2014 ED. 3.0 (Not applicable)
EN 61000-4-6:2014 / IEC 61000-4-6:2013 ED. 4.0 (Not applicable)
EN 61000-4-8:2010 / IEC 61000-4-8:2009 ED. 2.0
EN 61000-4-11:2004 / IEC 61000-4-11:2004 ED. 2.0 (Not applicable)

NOTE: The above EN/IEC basic standards are applied with latest version if customer has no special requirement.

Henry Lai Director
Oct. 17, 2017

No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)
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CERTIFICATE OF CONFORMITY

Equipment	:	PCIe to 4Port POE Module
Brand Name		Innodisk
Test Model No.	:	E%PL-G#P1
Multiple Listing	:	E%PL-G#P1 (%: Form factor: (2: 2.5"SSD,3:DDR3 DIMM,D:Dongle,G:NGFF_M.2, H:mPCIe Half,L:PCIe Low profile,M:mPCIe,S:PCIe Standard,X:Multi,Z:Others) #: Output items: (1:1Port,2:2Ports,3:3Ports,4:4Ports,A~Z:TBD,X:Multi))
Applicant	:	Innodisk Corporation
Test Report No.	:	FV171003D26

We, **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, declare that the equipment above has been tested in our facility and found compliance with the requirement limits of applicable standards. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate under the standards herein specified.

47 CFR FCC Part 15, Subpart B, Class A

ICES-003:2016 Issue 6, Class A

ANSI C63.4:2014

Henry Lai / Director
Oct. 17, 2017

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宜鼎國際股份有限公司
Innodisk Corporation
REACH Declaration

Tel:(02)7703-3000 Fax:(02) 7703-3555 Internet: https://www.innodisk.com/

Innodisk Corporation pursues its social responsibility for global environmental preservation by committing to be compliant with REACH regulation (REGULATION (EC) No 1907/2006).
We hereby confirm that the product(s),

Scope: Flash Memory, DRAM Module and Embedded Peripherals Products.

■ The standard products of **not listed in** the ***Appendix2*** meet the requirements of REACH SVHC regulations(SVHCs < 0.1% in Article), as described in the candidate list table currently including 240 substances (release date: 23-JAN-2024) and shown on the ECHA website. https://echa.europa.eu/candidate-list-table

■ The standard products listed in the ***Appendix2*** contain(s) one or more hazardous substances or constituents exceeding 0.1 % by weight in article if not otherwise specified in candidate list table.
Where the threshold value is exceeded, the substances in question are to be declared in accompanying. (SVHCs > 0.1% in Article).

■ Comply with REACH Annex XVII.

Guarantor

Company name 公司名稱： Innodisk Corporation 宜鼎國際股份有限公司

Company Representative 公司代表人： Yichuan Chen 陳怡全

Company Representative Title 公司代表人職稱：Quality Assurance Div. SR. Manager 品保處經理

Date 日期：2024 / 02 / 19

innodisk

宜鼎國際股份有限公司
Innodisk Corporation

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RoHS 自我宣告書(RoHS Declaration of Conformity)

Manufacturer Products: All Innodisk EM FLASH, DRAM and EP products

一、 宜鼎國際股份有限公司（以下稱本公司）特此保證售予貴公司之所有產品，皆符合歐盟 2011/65/EU 及(EU) 2015/863 關於 RoHS 之規範要求。
Innodisk Corporation declares that all products sold to the company, are complied with European Union RoHS Directive (2011/65/EU) and (EU) 2015/863 requirement.

二、 本公司同意因本保證書或與本保證書相關事宜有所爭議時，雙方宜友好協商，達成協議。
Innodisk Corporation agrees that both parties shall settle any dispute arising from or in connection with this Declaration of Conformity by friendly negotiations.

三、 本公司聲明我們的產品符合 RoHS 指令的附件中 7(a)、7(c)-I、6(c)允許豁免。
We declare, our products permitted by the following exemptions specified in the Annex of the RoHS directive.

※ 7(a) Lead in high melting temperature type solders(i.e. lead-based alloys containing 85% by weight or more lead).

※ 7(c)-I Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectric devices, or in a glass or ceramic matrix compound.

※ 6(c) Copper alloy containing up to 4% lead by weight. (This exemption applies to products that use antennas)

Name of hazardous substance	Limited of RoHS ppm (mg/kg)
鉛 (Pb)	< 1000 ppm
汞 (Hg)	< 1000 ppm
鎘 (Cd)	< 100 ppm
六價鉻 (Cr 6+)	< 1000 ppm
多溴聯苯 (PBBs)	< 1000 ppm
多溴二苯醚 (PBDEs)	< 1000 ppm
鄰苯二甲酸二(2-乙基己基)酯 (DEHP)	< 1000 ppm
鄰苯二甲酸丁酯苯甲酯 (BBP)	< 1000 ppm
鄰苯二甲酸二丁酯 (DBP)	< 1000 ppm
鄰苯二甲酸二異丁酯 (DIBP)	< 1000 ppm

innodisk

宜鼎國際股份有限公司
Innodisk Corporation

立 保 證 書 人 (Guarantor)

Company name 公司名稱： Innodisk Corporation 宜鼎國際股份有限公司

Company Representative 公司代表人： 簡川勝

Company Representative Title 公司代表人職稱： Chairman 董事長

Date 日期： 2023 / 06 / 14

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May 16, 2024