innodisk ESPL-G401 PCIe to Four GbE LAN Module User Guide

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Contents

REVISION HISTORY

Innodisk Approver	Customer Approver

Revision	Description	Date
1.0	First Released	Nov, 2022

Product Introduction

Overview

Innodisk ESPL-G401 is designed with Standard PCIe form factor, ESPL-G401 supports PCIe Gen 2.1 with a single lane to four GbE LAN ports, optimized for higher performance and lower power, which brings you a flexible expansion solution for embedded systems.

Standard pile Form Factor

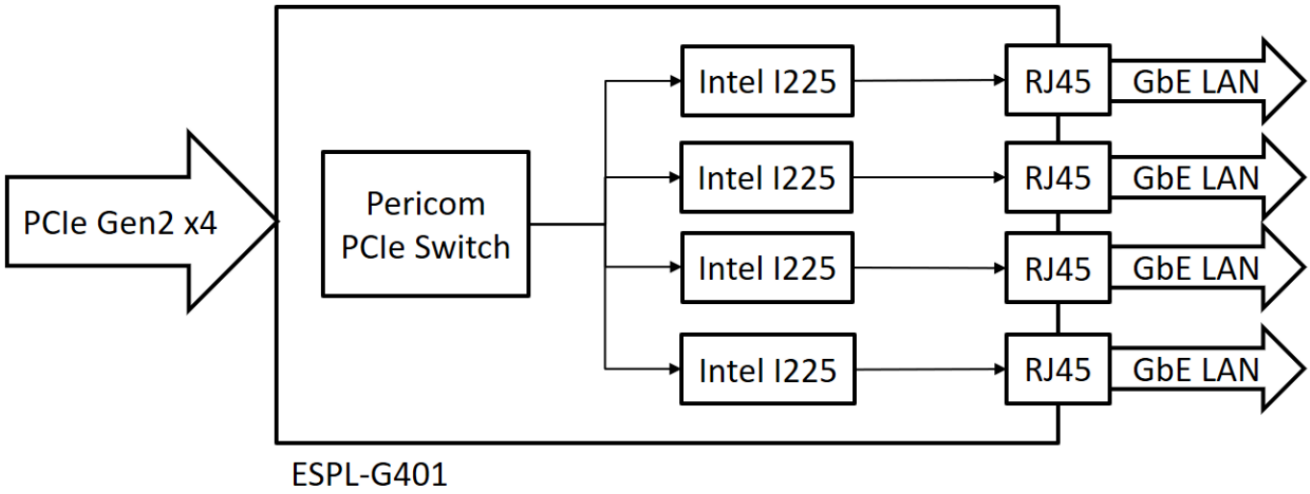

Figure 1: Block Diagram

Features

- Supports four GbE LAN ports
- 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

Product Specifications

Device Parameters

Table 1: Device Parameters

Form Factor	Standard PCIe
Input I/F	PCI Express 2.1 x 4
Output I/F	GbE LAN x 1
Output Connector	RJ45 x 4
Dimension (WxLxH)	169.55 x 111.15 x 17.52 mm

Electrical Specifications

Power Requirement

Table 2: Power Requirement

Item	Connector	Rating
Input voltage	mPCIe Golden Finger	+3.3 DC +-5%

Power Consumption

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Item	Connector	Rating
Input voltage	mPCIe Golden Finger	+3.3 DC +-5%

Power Consumption

Table 3: Power Consumption

Max (W)	Voltage(V)	Max (mA)
7.42	3.3	636
	12	443

Environmental Specifications

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°

Humidity

Relative Humidity: 10-95%, non-condensing

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

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 lifetime of the product in units of failure rate and MTBF.

Table 6: Mean Time between Failure (MTBF)

Product	**Condition**	**MTBF (Hours)**
ESPL-G401-C1/W1	The analysis is at 25°C ambient te mperature by Telcordia SR-332, Iss ues 4, Method I, Case 3 under Gro und Benign, Controlled environment, 50% operation stress	3,689,288

CE and FCC Compatibility

ESPL-G401 conforms to CE and FCC requirements.

RoHS Compliance

ESPL-G401 is fully compliant with RoHS directive.

Hardware

Layout

Pin Define

Table 7: 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

ESPL-G401 Mechanical Drawing

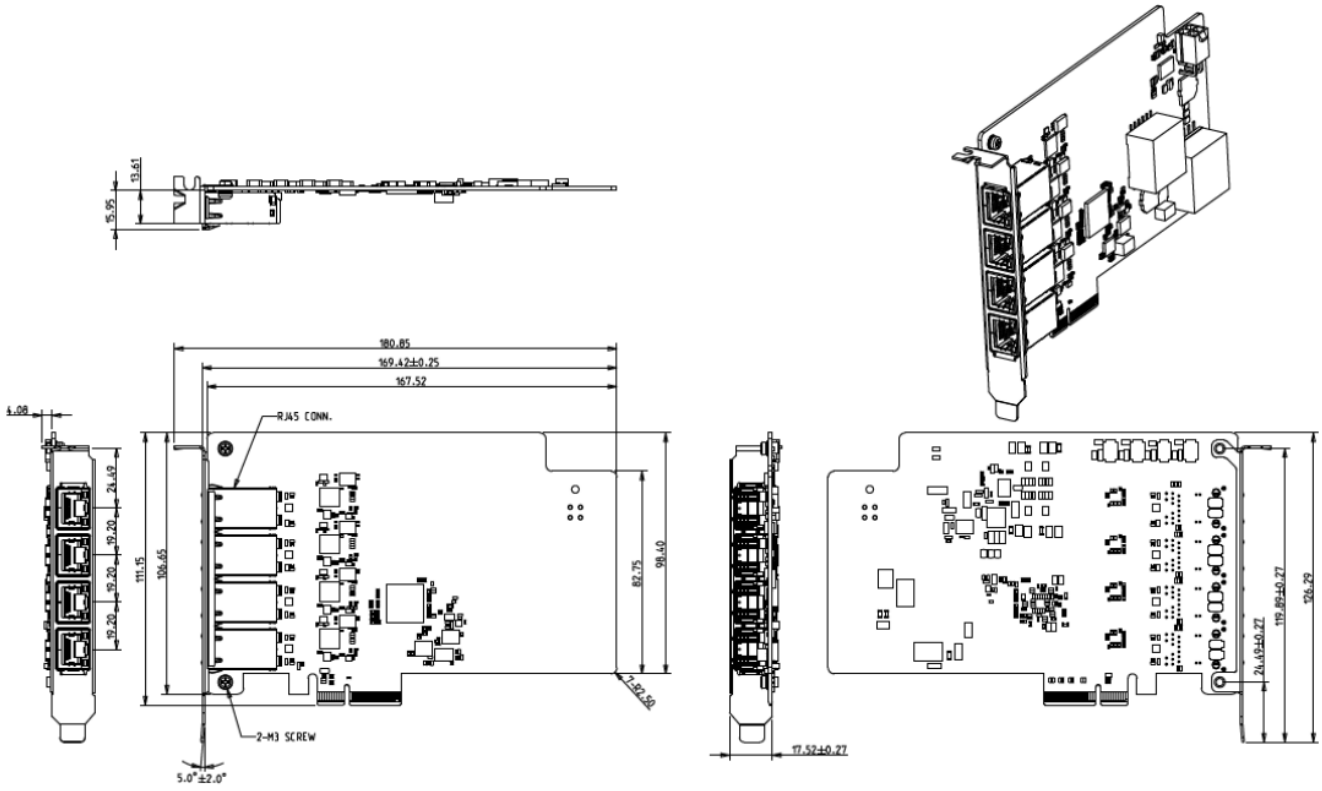

Figure 3: ESPL-G401 PCIe Board Drawing

Packing List

- ESPL-G401 PCIe Board x 1

Software Support

- **Windows:** 10(64bit)
- **Linux (igc):** kernel 5.x version

Installation Guide

Please download driver from Intel official website.

Or you can download Intel i225 chip driver from Intel official website directly.
https://www.intel.com/content/www/us/en/products/details/ethernet/gigabitcontrollers/i225controllers/downloads.hl

Appendix

Innodisk Corporation REACH Declaration Tc1:(02)7703-3000 Fax:(02) 7703-3555 Internet: httLo' 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 Appendix 2 meet the requirements of REACH SVHC regulations(SVHCs < 0.1% in Article), as described in the candidate list table currently including 224 substances and shown on the ECHA website. (**http://echa.europa.eu/de/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.

Innodisk Corporation

RoHS (RoHS Declaration of Conformity)

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

2011/65/EU (EU) 2015/863 RollS Innodisk Corporation declares that all products sold to the company, are complied with European Union RollS Directive (2011/65/EU) and (EU) 2015/863 requirement.

Innodisk Corporation agrees that both parties shall settle any dispute arising from or in connection with this Declaration of Conformity by friendly negotiations.

We declare, our products permitted by the following exemptions specified in the Annex of the RollS 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)

M1102)7703-3000 Interact **https://wwwinnodisk.cofni**

.Name of hazardous substance	‘‘Limite d of RoH ppm（mg/kg)
(Pb)	< 1000 ppm
(Hg)	< 1000 ppm
(Cd)	< 100 ppm
(Cr 6)	< 1000 ppm
(PBBs)	< 1000 ppm
(PBDEs)	< 1000 ppm
(DEHP)	; < 1000 ppm
{ BBP)	< 1000 ppm
– (DBP)	< 1000 ppm

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Documents / Resources

	innodisk ESPL-G401 PCIe to Four GbE LAN Module [pdf] User Guide ESPL-G401, ESPL-G401 PCIe to Four GbE LAN Module, PCIe to Four GbE LAN Module, Four GbE LAN Module, GbE LAN Module, LAN Module, Module

References

- Innodisk – Industrial Grade Flash, DRAM Modules and Embedded Peripherals
- Innodisk – Industrial Grade Flash, DRAM Modules and Embedded Peripherals
- User Manual