innodisk EGPL-T102 Single 10GbE LAN Module Instruction Manual

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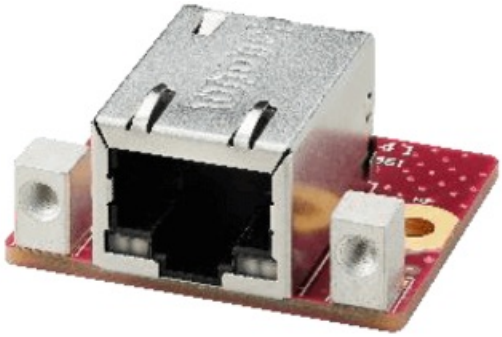
innodisk EGPL-T102 Single 10GbE LAN Module



Product Specifications

Device Parameters

- **Form Factor:** M.2 2280 B-M
- **Input I/F:** PCI Express 3.0 x 2
- **Output I/F:** 10GbE LAN x 1
- **Output Connector:** RJ45 x 1
- **Dimension (WxLxH):** M.2 Board: 22 x 80 x 14.5 mm, Daughter Board: 31.75 x 28 x 17.7 mm

Electrical Specifications

1. 2.2.1. Power Requirement**Input voltage:** +3.3 DC +-5%
2. Power Consumption

RMS (mA)	MAX(mA)	Voltage (V)
812.1	1068	3.3

Environmental Specifications

1. Temperature Ranges
    1. **Operating:** -20 to 55°C
    2. **Storage:** Not specified
2. Humidity
3. **Relative Humidity:** 10-95%, non-condensing
    1. Shock and Vibration
4. Refer to table for detailed shock and vibration specifications.
5. Mean Time between Failure (MTBF)
6. **MTBF:** 11,259,017 Hours

CE and FCC Compatibility
Innodisk EGPL-T102 conforms to CE and FCC requirements.

RoHS Compliance
Innodisk EGPL-T102 is fully compliant with RoHS directive.

Hardware

1. LayoutDetailed layout information is provided in the manual.
2. Pin DefineDetailed pin definitions are provided in the manual.

REVISION HISTORY

Revision	Description	Date
1.0	First Released	Jan, 2024
1.1	1. Add PTP Feature 2. Support -20 to 55C	Apr, 2024

Product Introduction 1.1. Overview

Innodisk EGPL T102 is designed with M.2 2280 form factor with B/M key, EGPL T102 supports PCIe Gen 3.0 with dual lane to single 10 GbE LAN, optimized for higher performance and lower power, which brings you a flexible expansion solution for embedded systems.

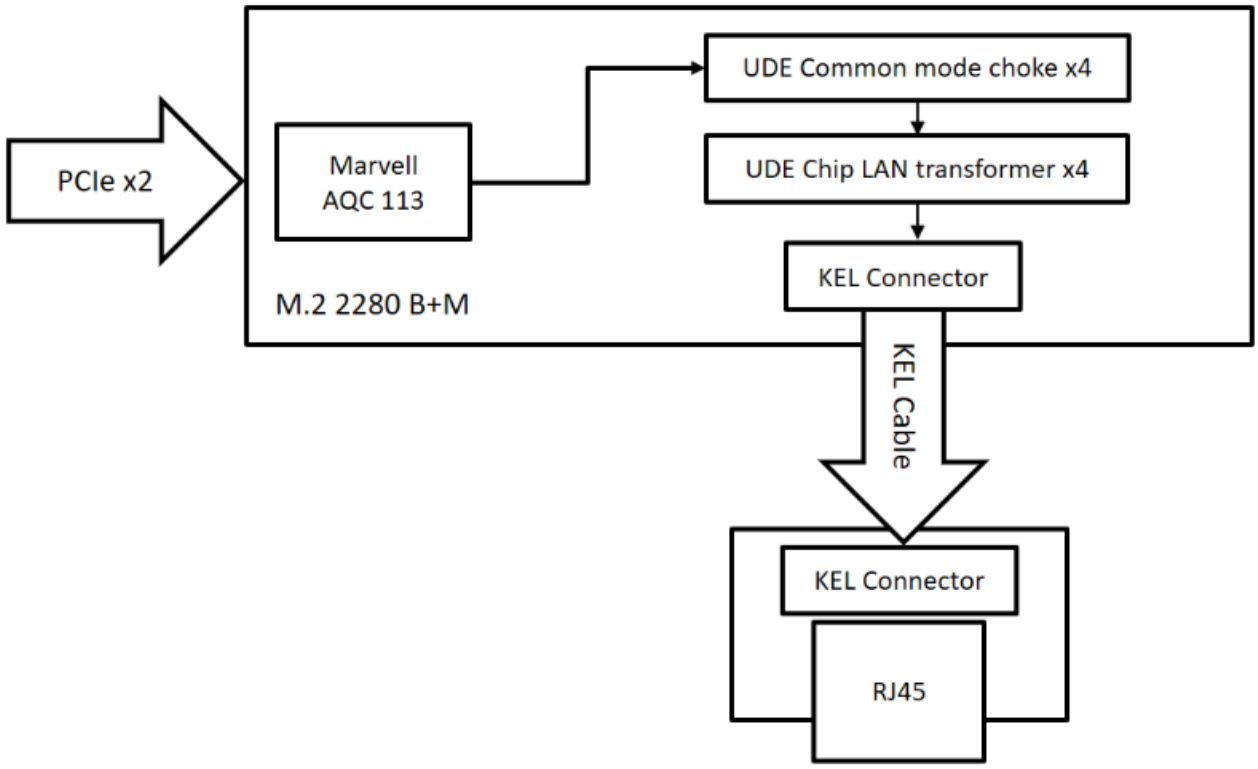


Figure 1: Block Diagram

Features

- Marvell AQtion Ethernet Controller
- Support 10G/5G/2.5G/1000M/100M/10M LAN speed
- Lowest power and smallest 10GbE expansion solution
- Support x2/x1 PCI Express with Gen3/Gen2
- Tiny daughter board with high speed shielding cable
- Support Precision Time Protocol (PTP-1588v2)/AVB
- Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV
- Operation temperature -20°C to +55°C support
- 30μ” golden finger, 3-year warranty
- Industrial design, manufactured in Innodisk Taiwan

Figure 2: M.2 2280 Board Picture

Figure 3: Mounting Hole Daughter Board Picture (EGPL-T102-C1)

Product Specifications

Device Parameters

Table 1: Device Parameters

Form Factor	M.2 2280 B-M
Input I/F	PCI Express 3.0 x 2
Output I/F	10GbE LAN x 1
Output Connector	RJ45 x 1
Dimension (WxLxH)	M.2 Board: 22 x 80 x 14.5 mm Daughter Board: 31.75 x 28 x 17.7

Electrical Specifications

Power Requirement

Table 2: Power Requirement

Item	Connector	Rating
Input voltage	M.2 Golden Finger	+3.3 DC +-5%

Power Consumption

Table 3: Power Consumption

RMS (mA)	MAX(mA)	Voltage (V)
812.1	1068	3.3

Environmental Specifications

Temperature Ranges

Table 4: Temperature Ranges

Temperature	Range
Operating	-20°C to +55°C
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 life time of the product in units of failure rate and MTBF.

Table 6: Mean Time between Failure (MTBF)

Product	Condition	MTBF (Hours)
EGPL-T102	The analysis is at 25°C ambient te mperature by Telcordia SR-332, Issues 4, Method I, Case 3 under Ground Benign, Controlled environment, 50% operation stress	11,259,017

CE and FCC Compatibility
EGPL T102 conforms to CE and FCC requirements.

RoHS Compliance
EGPL T102 is fully compliant with RoHS directive.

Hardware

Layout

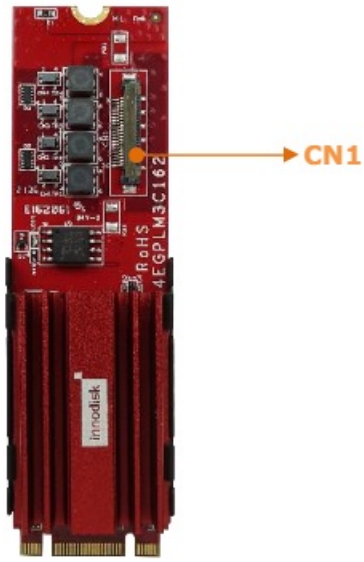


Table 7: M.2 2280 PCB Layout Legend

Label	Connector Type	Function
CN1	WAFER SMD/20P/90D P:0.5mm H2.75mm	GbE LAN Signal LED Signal

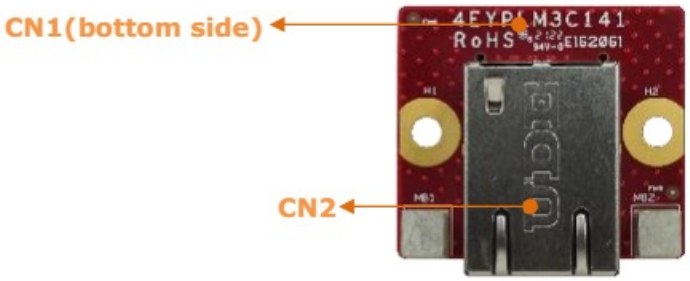


Table 8: Daughter Board PCB Layout Legend

Label	Connector Type	Function
CN1	WAFER SMD/20P/90D P:0.5mm H2.75mm	GbE LAN Signal LED Signal

CN2	10GbE RJ45 DIP/1X1/90D 8P8C w/LED:GO-GO Tab/D	GbE LAN Port LED Indicator

Pin Define

Table 9: M.2 B M Key Pin Define

Signal Name	Pin #	Pin #	Signal Name
		75	CONFIG_2 (GND)
3.3V	**74**	**73**	GND
3.3V	**72**	**71**	GND
3.3V	**70**	**69**	CONFIG_1 (NC)
NC	**68**	**67**	NC
Module Key M			
NC	**58**		
NC	**56**	**57**	GND
PEWAKE#	**54**	**55**	REFCLKp
CLKREQ#	**52**	**53**	REFCLKn
PERST#	**50**	**51**	GND
NC	**48**	**49**	PERp0
NC	**46**	**47**	PERn0
NC	**44**	**45**	GND
SMB_DATA	**42**	**43**	PETp0
SMB_CLK	**40**	**41**	PETn0
NC	**38**	**39**	GND
NC	**36**	**37**	PERp1
NC	**34**	**35**	PERn1
NC	**32**	**33**	GND
NC	**30**	**31**	PETp1
NC	**28**	**29**	PETn1
NC	**26**	**27**	GND
NC	**24**	**25**	NC
NC	**22**	**23**	NC

NC	**20**	**21**	CONFIG_0 (GND)
Module Key B			
NC	**10**	**11**	NC
NC	**8**	**9**	NC
NC	**6**	**7**	NC
3.3V	**4**	**5**	NC
3.3V	**2**	**3**	GND
		1	CONFIG_3 (GND)

I/O Connector Mechanical Drawing & Pin Defines

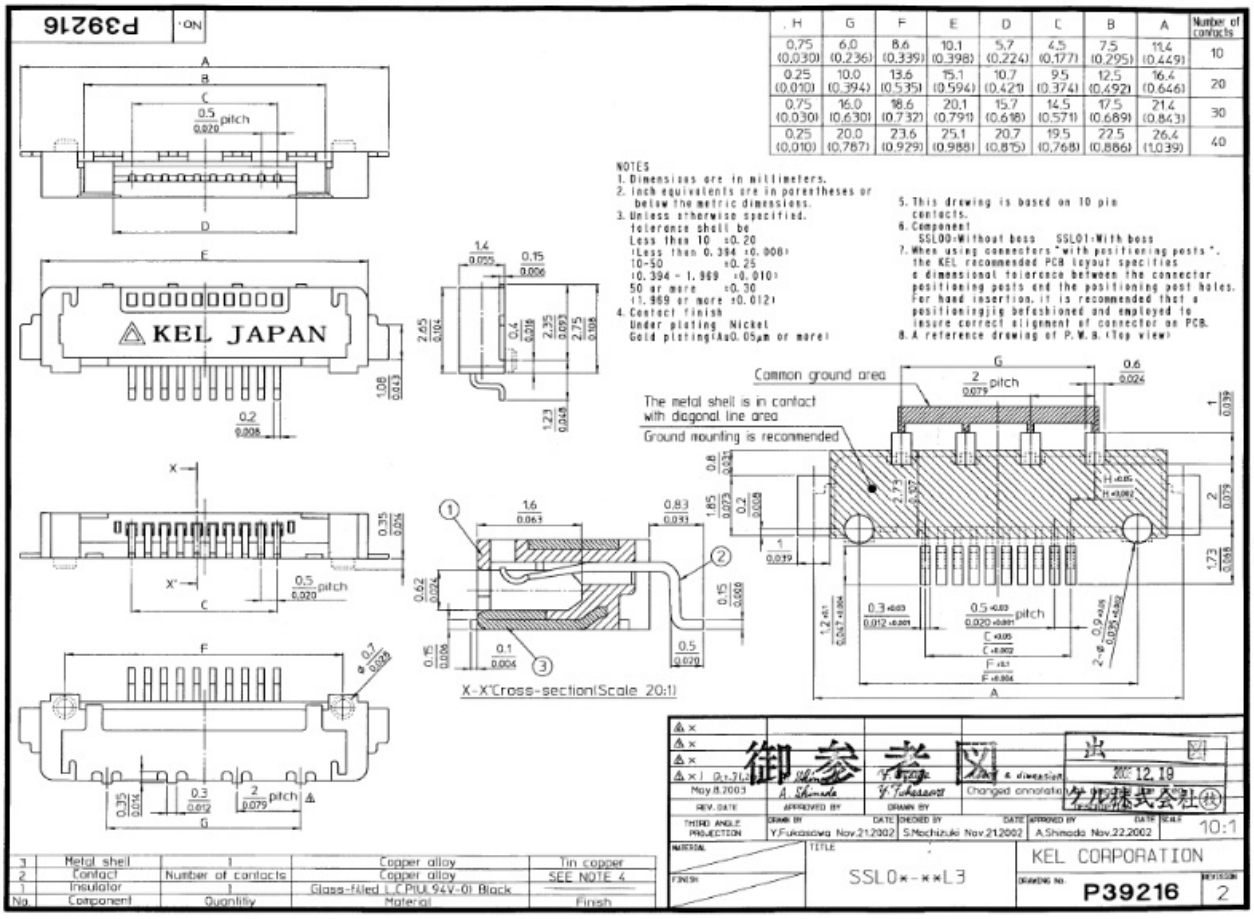
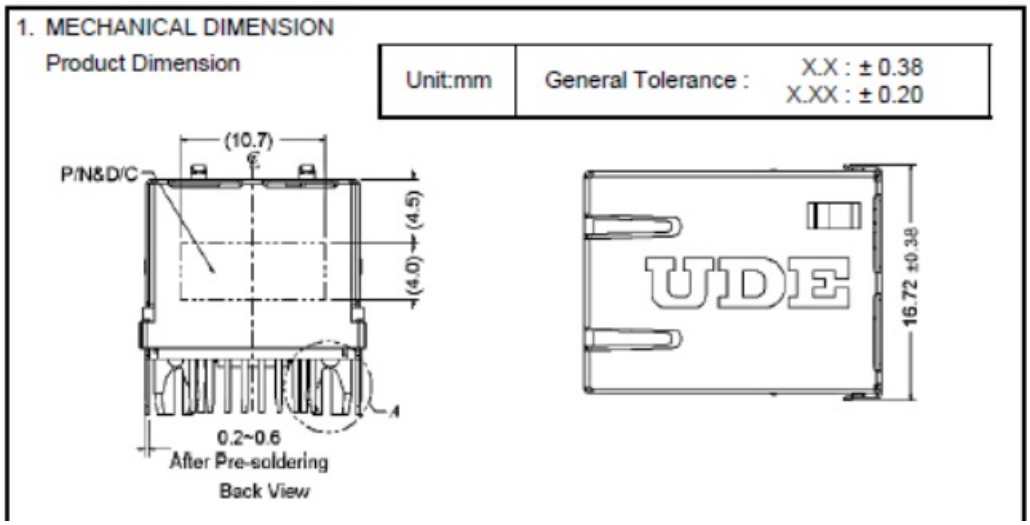


Figure 4: Wire to Board SMD 20P Connector Drawing

Table 10: Wire to Board SMD 20P Connector Pin Define

Pin #	Signal Name
1	LED_A2
2	LED_A1
3	LED_A0
4	3.3V
5	GND
6	P0_D_N_CN
7	P0_D_P_CN
8	GND
9	GND
10	P0_C_N_CN
11	P0_C_P_CN
12	GND
13	GND
14	P0_B_N_CN
15	P0_B_P_CN
16	GND
17	GND
18	P0_A_N_CN
19	P0_A_P_CN
20	GND



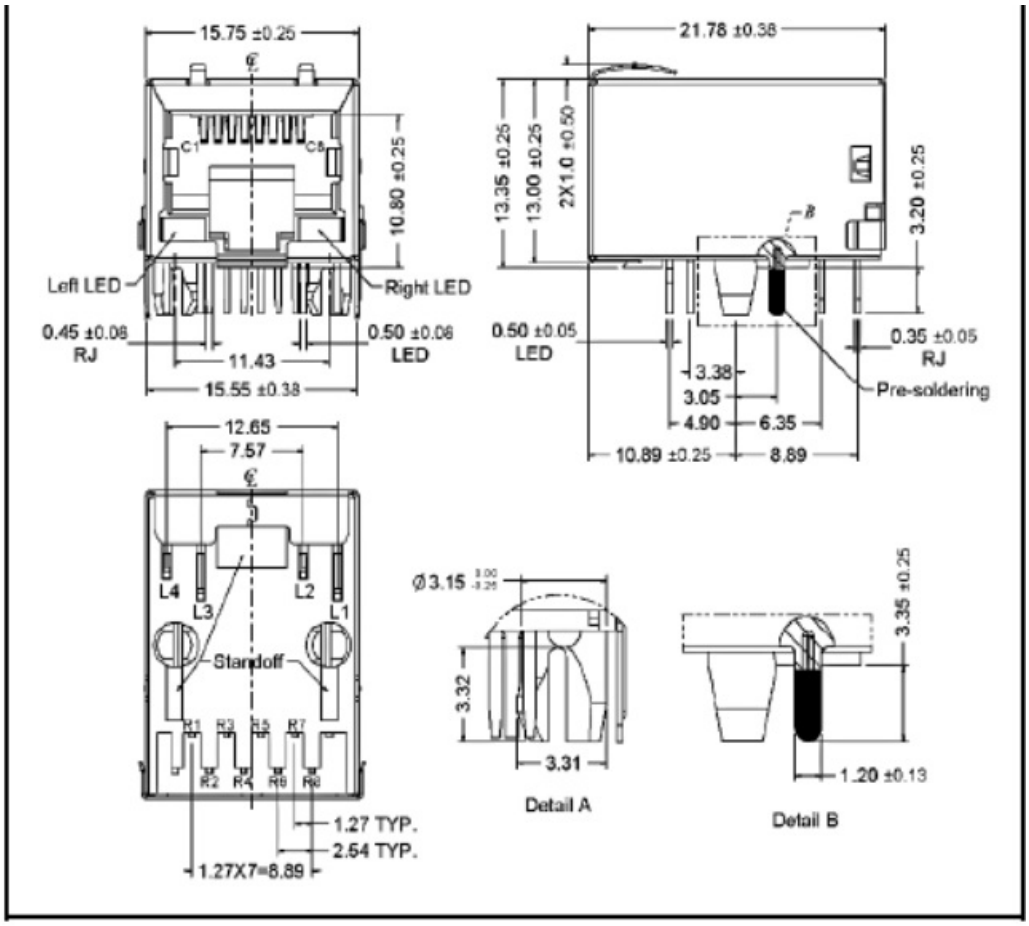
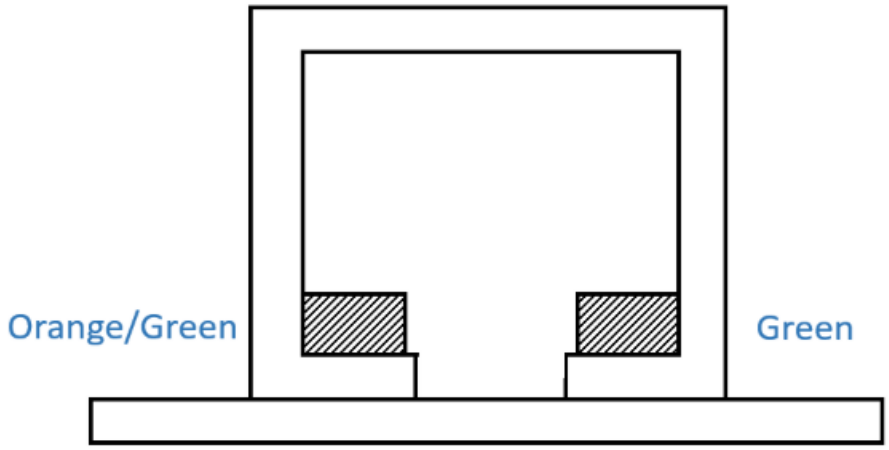


Figure 5: RJ45 Connector Drawing

Table 11: RJ45 LAN LED Table



Speed	Orange/Green (Status)	Green (Active/Link)
Others	Green	Flash
10G	Orange	Flash

EGPL T102 Mechanical Drawing

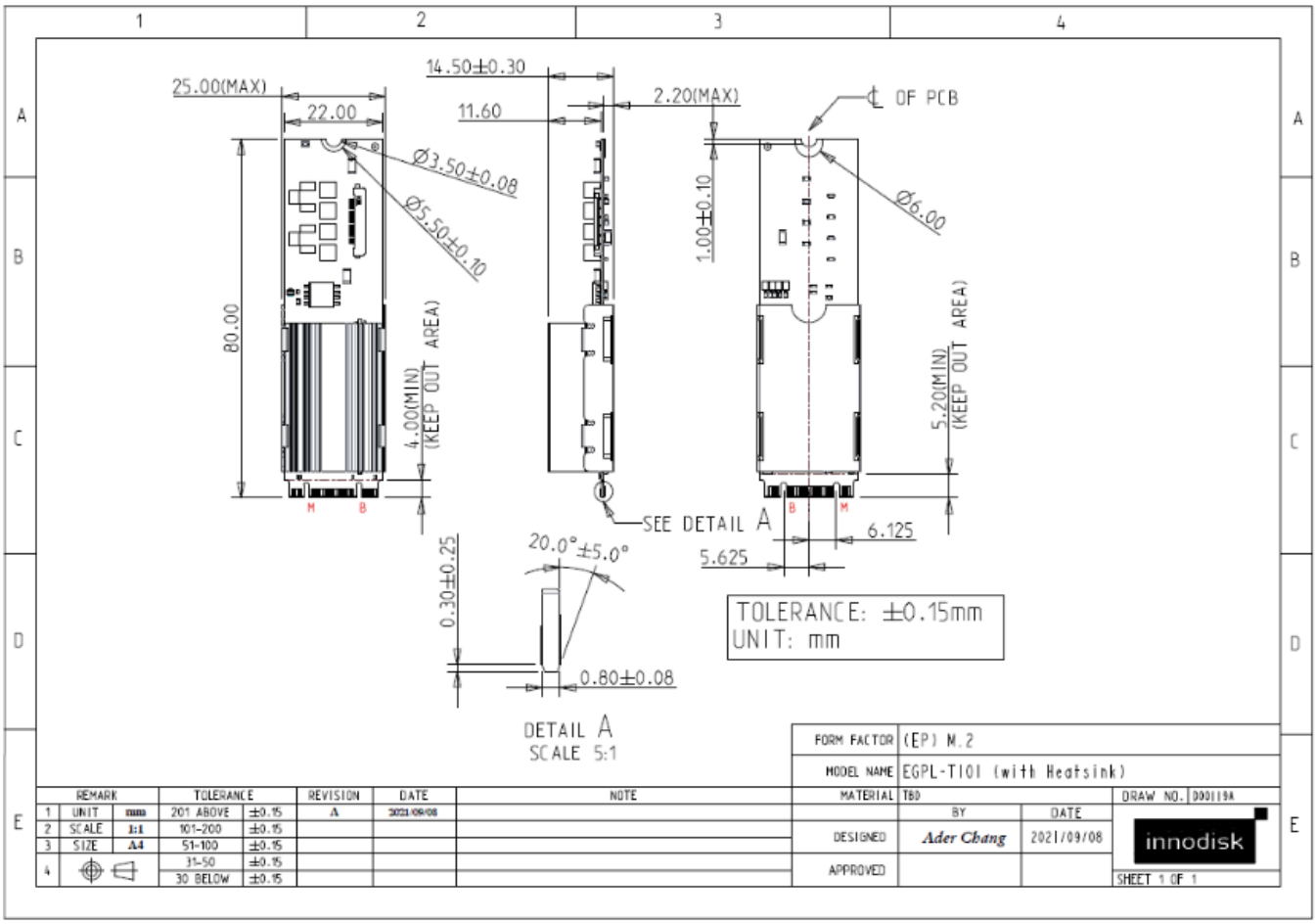


Figure 6: EGPL-T102 M.2 Board Drawing

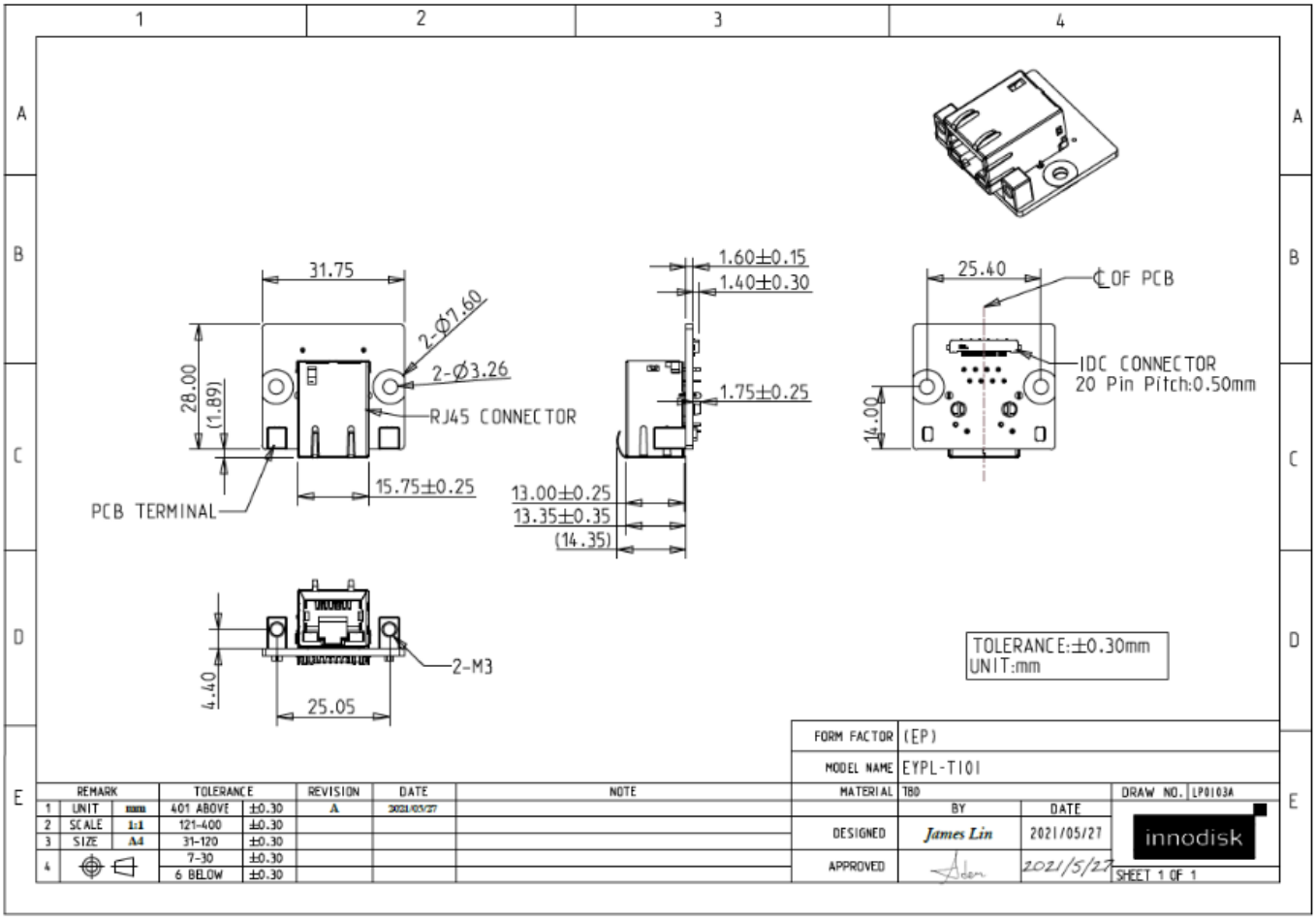


Figure 7: EGPL-T102 RJ45 Daughter Board Drawing

Cable Mechanical Drawing

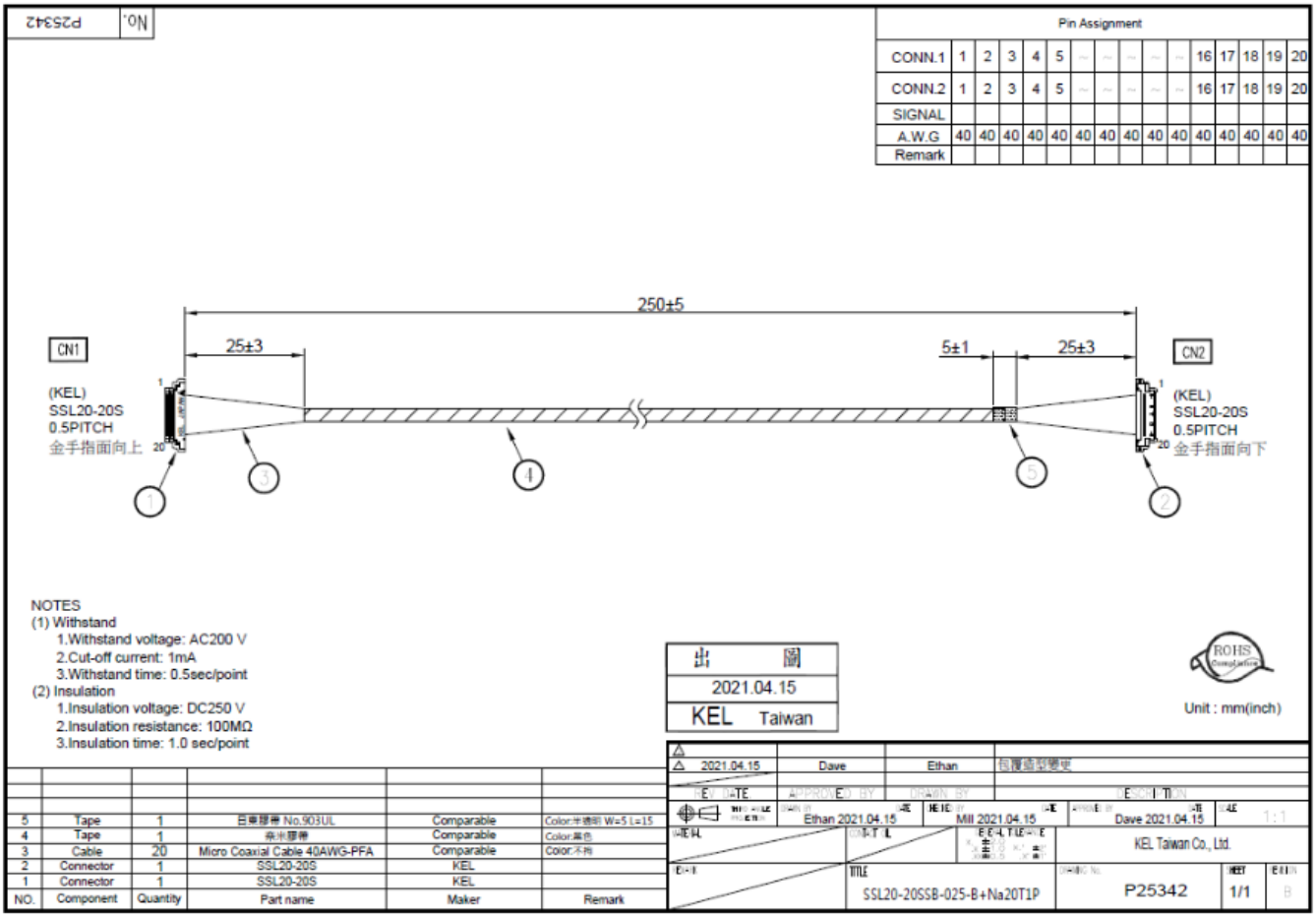


Figure 8: Board to Board LAN Cable Drawing

Packing List

- EGPL-T102 M.2 Board x 1
- EGPL-T102 Daughter Board x 1
- Board to Board LAN Cable x 1

Software Support

- Microsoft Windows System 10 and later releases
- Linux Kernel 3.10 and later releases

Installation Guide

Please download driver from Myinnodisk or Innodisk official web site.

https://myinnodisk.innodisk.com/myinnodisk/Login.aspx

Appedix

Innodisk Corporation
REACH Declaration
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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 products),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 233 substances (release date: 17-Jan-2023) 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.

Innodisk

CERTIFICATE
OF CONFORMITY

BUREAU VERITAS

Product	:	M.2 to Single 10GbE LAN Module
Brand	:	Innodisk
Test Model	:	E%PL-T101
Series Model	:	E%PL-T101 %: 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)
Applicant	:	Innodisk Corporation
Report No.	:	FDBDBO-WTW-P21115055

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 B

ANSI C63.4:2014

Innodisk

CERTIFICATE OF CONFORMITY

Product	:	M.2 to Single 10GbE LAN Module
Brand	:	Innodisk
Test Model	:	E%PL-T101
Series Model	:	E%PL-T101 %: 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)
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47 CFR FCC Part 15, Subpart B, Class B

ANSI C63.4:2014

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2021/12/23

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Innodisk

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Applicant	:	Innodisk Corporation
Report No.	:	CEBDBO-WTW-P21115055

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.

EN 55032:2015 +A11:2020, Class B
EN 61000-3-2:2014 (Not applicable)
EN 61000-3-3:2013 (Not applicable)
EN 55035:2017 +A11:2020
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
EN 61000-4-5:2014 +A1:2017 / IEC 61000-4-5:2017 ED. 3.1 (Not applicable)
EN 61000-4-6:2014+AC:2015 / IEC 61000-4-6:2013 ED. 4.0
EN 61000-4-8:2010 / IEC 61000-4-8:2009 ED. 2.0
EN 61000-4-11:2004 +A1: 2017 / IEC 61000-4-11:2017 ED. 2.1 (Not applicable)

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

Product	:	M.2 to Single 10GbE LAN Module
Brand	:	Innodisk
Test Model	:	E%PL-T101
Series Model:	:	E%PL-T101 %: 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)
Applicant	:	Innodisk Corporation
Report No.	:	CEBDBO-WTW-P21115055

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 Electromagnetic Compatibility Regulations 2016 (S.I. 2016/1091). The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate under the standards herein specified.

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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
EN 61000-4-5:2014 +A1:2017 / IEC 61000-4-5:2017 ED. 3.1 (Not applicable)
EN 61000-4-6:2014+AC:2015 / IEC 61000-4-6:2013 ED. 4.0
EN 61000-4-8:2010 / IEC 61000-4-8:2009 ED. 2.0
EN 61000-4-11:2004 +A1: 2017 / IEC 61000-4-11:2017 ED. 2.1 (Not applicable)

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

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Documents / Resources

	innodisk EGPL-T102 Single 10GbE LAN Module [pdf] Instruction Manual EGPL-T102, EGPL-T102 Single 10GbE LAN Module, Single 10GbE LAN Module, 10GbE LAN Module, LAN Module, Module

References

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