innodisk

Total Solution For
Embedded Peripherals

EGPC-B201

M.2 to dual isolated CANbus 2.0B/J1939 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	Aug, 2021

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1. Product Introduction

1.1. Overview

Innodisk EGPC-B201 is designed with standard M.2 2280 form factor, supports PCIe to Dual CAN bus 2.0B port, optimized for higher performance and lower power, which brings you a flexible expansion solution for embedded systems.

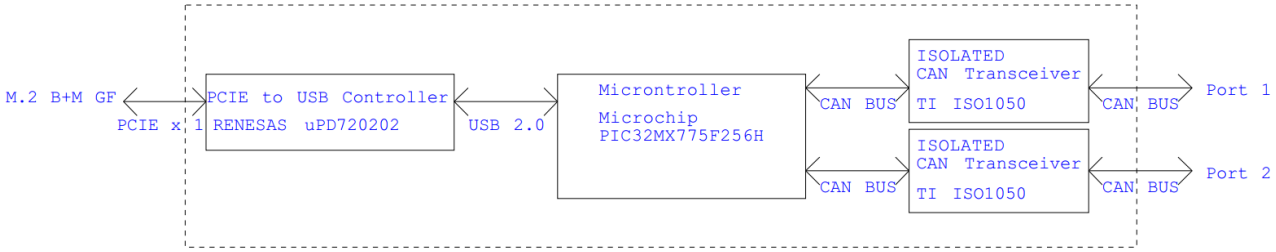


Figure 1: M.2 Board Block Diagram

1.2. Features

- Alternative M.2 2260 or 2280 B-M key
- CANbus 2.0B backward compatible with 2.0A
- Support baud rate 100/125/250/500(default)/800/1000K
- Support CAN message acceptance filter
- Keep configuration after hardware reboot
- Up to 6000 CAN messages per second (receive data)
- Support Listen-only mode
- Additional driver to support Linux SocketCAN
- Support SAE J1939/CANopen high layer protocol (Optional)
- Termination resistor enabled/disabled by jumper
- Complies with EN61000-4-5 2.5kV Surge protection
- Complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 2.5kV HiPOT protection
- Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV
- 30μ" golden finger, 3-year warranty
- Supports -40 to +85 degrees
- Industrial design, manufactured in Innodisk Taiwan

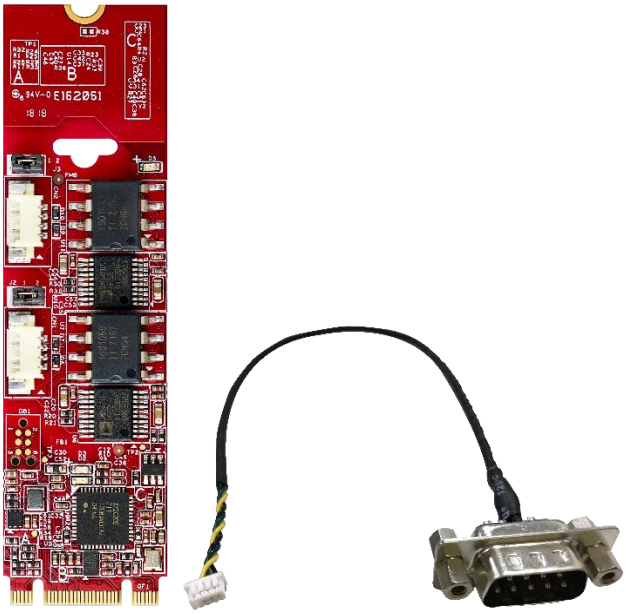


Figure 2: Picture

2. Product Specifications

2.1. Device Parameters

Table 1: Device Parameters

Form Factor	M.2 2260/2280 B-M
Input I/F	PCI Express 2.0
Output I/F	CAN bus 2.0B
Output Connector	DB-9 x 2
Dimension (WxLxH)	22 x 60/80 x 8.05 mm

2.2. Performance

In performance test, we use our own stress test tool to verify the receiving performance.

Table 2: Receiving Performance

Ports Q'ty	Frame Q'ty	Total Receiving Time
1 port	6000	923 ms
2 ports	4800	991 ms

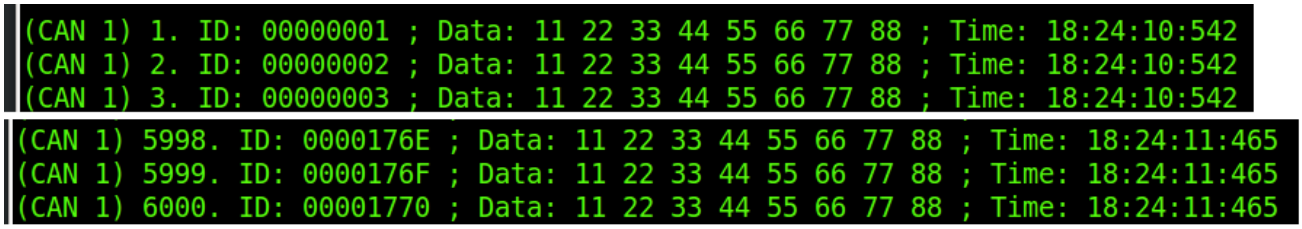


Figure 3: Performance Test Result for 1 Port

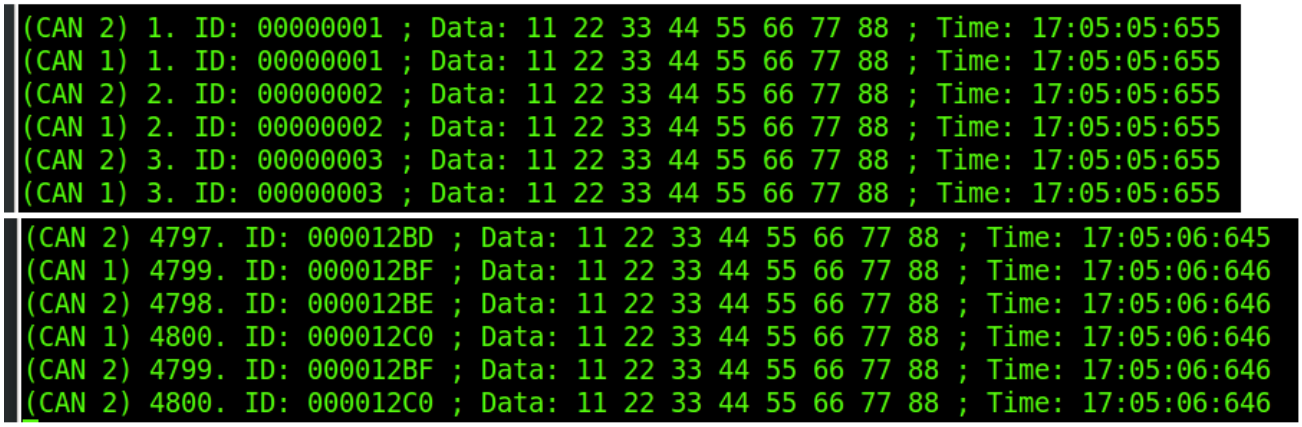


Figure 4: Performance Test Result for 2 Ports

2.3. Electrical Specifications

2.3.1. Power Requirement

Table 3: Power Requirement

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

2.3.2. Power Consumption

Table 4: Power Consumption

Full Load (mA)	Voltage (V)
815	3.3

2.4. Environmental Specifications

2.4.1. Temperature Ranges

Table 5: Temperature Ranges

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

2.4.2. Humidity

Relative Humidity: 10-95%, non-condensing

2.4.3. Shock and Vibration

Table 6: 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

2.4.4. 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 7: Mean Time between Failure (MTBF)

Product	Condition	MTBF (Hours)
EGPC-B201	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	TBD

2.5. CE and FCC Compatibility

EGPC-B201 conforms to CE and FCC requirements.

2.6. RoHS Compliance

EGPC-B201 is fully compliant with RoHS directive.

2.7. Hardware

2.7.1. Layout

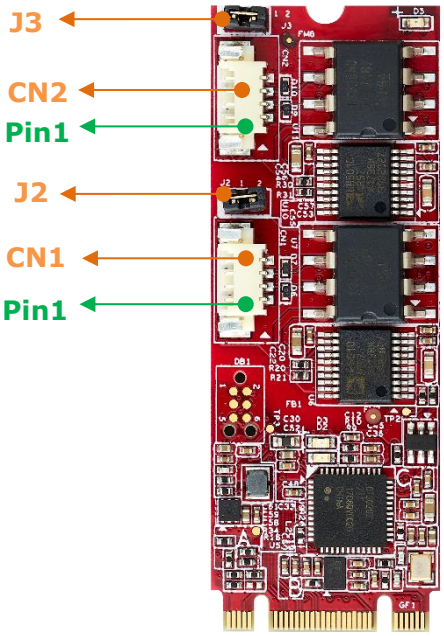


Table 8: PCB Layout Legend

Label	Connector Type	Function
CN1	Wire to board SMD 1*4P 90° P:1.25mm	CAN bus Port 1
CN2	Wire to board SMD 1*4P 90° P:1.25mm	CAN bus Port 2
J2/J3	Pin Header DIP 1*2P 180° P:2.0mm	Enable Termination Resistor

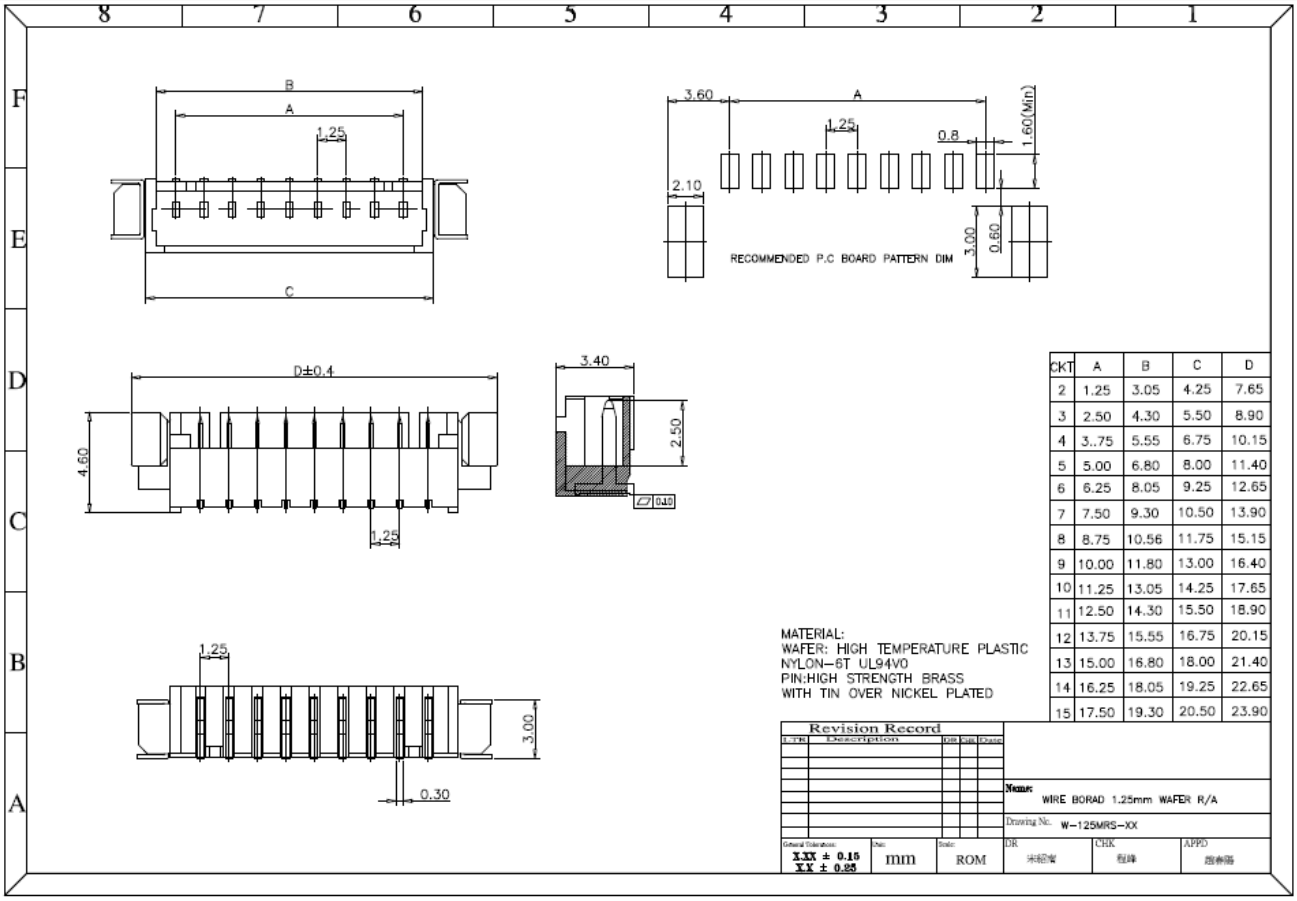
2.7.2. Pin Define

Table 9: M.2 B-M Key Pin Define

Signal Name	Pin #	Pin #	Signal Name
		75	GND
3.3V	**74**	**73**	GND
3.3V	**72**	**71**	GND
3.3V	**70**	**69**	NC
NC	**68**	**67**	NC

Module Key M			
NC	**58**		
NC	**56**	**57**	GND
WAKE_M2	**54**	**55**	PCIE_CLK_P
PCIE_CLKREQ#	**52**	**53**	PCIE_CLK_N
PLT_RST#	**50**	**51**	GND
NC	**48**	**49**	PCIE_RXP
NC	**46**	**47**	PCIE_RXN
NC	**44**	**45**	GND
NC	**42**	**43**	PCIE_TXP
NC	**40**	**41**	PCIE_TXN
NC	**38**	**39**	GND
NC	**36**	**37**	NC
NC	**34**	**35**	NC
NC	**32**	**33**	GND
NC	**30**	**31**	NC
NC	**28**	**29**	NC
NC	**26**	**27**	GND
NC	**24**	**25**	NC
NC	**22**	**23**	NC
NC	**20**	**21**	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	GND

2.7.3. I/O Connector Mechanical Drawing & Pin Defines



CKT	A	B	C	D
2	1.25	3.05	4.25	7.65
3	2.50	4.30	5.50	8.90
4	3..75	5.55	6.75	10.15
5	5.00	6.80	8.00	11.40
6	6.25	8.05	9.25	12.65
7	7.50	9.30	10.50	13.90
8	8.75	10.56	11.75	15.15
9	10.00	11.80	13.00	16.40
10	11.25	13.05	14.25	17.65
11	12.50	14.30	15.50	18.90
12	13.75	15.55	16.75	20.15
13	15.00	16.80	18.00	21.40
14	16.25	18.05	19.25	22.65
15	17.50	19.30	20.50	23.90

Figure 5: Wire to Board SMD 1*4P Connector Drawing (CN1-CN2)

Table 10: Wire to Board SMD 1*4P Connector Pin Define (CN1-CN2)

Pin #	1	2	3	4
Signal Name	NC	CAN-H	CAN-L	GND

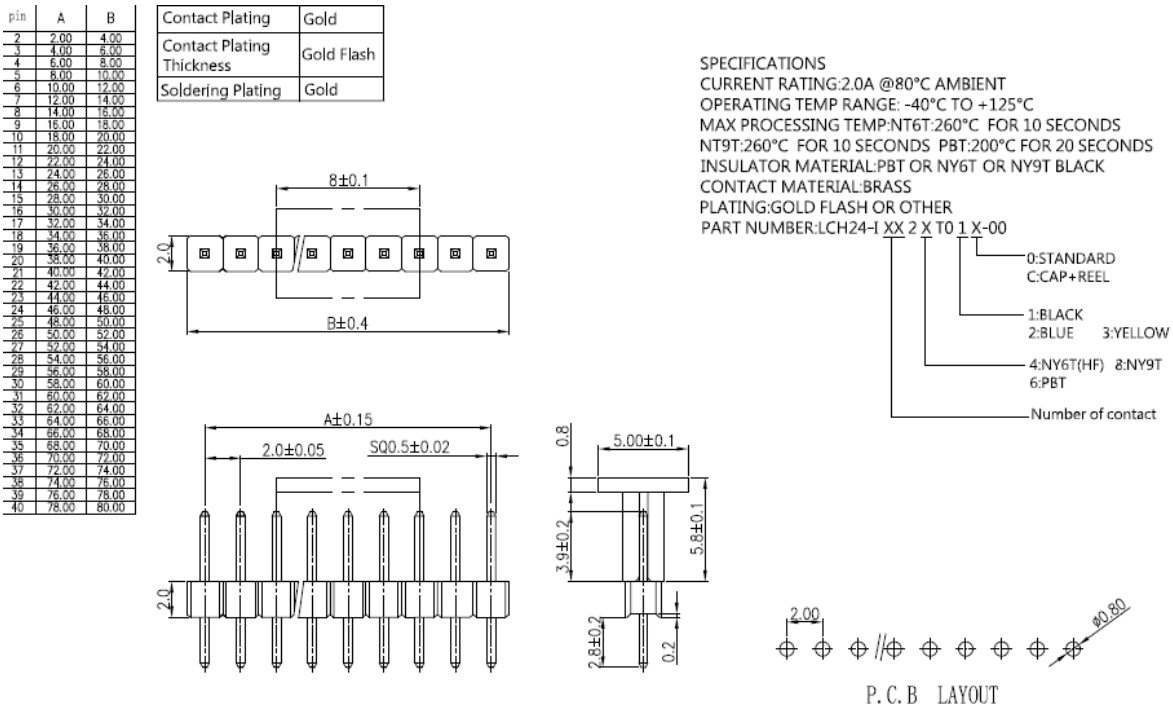


Figure 6: Pin Header DIP 1*2P Drawing (J2/J3)

Table 11: Pin Header DIP 1*2P Jumper Setting (J2/J3)

Jumper is set	Enable Termination Resistor
Jumper is NOT set	Disable Termination Resistor

2.7.4. EGPC-B201 Mechanical Drawing

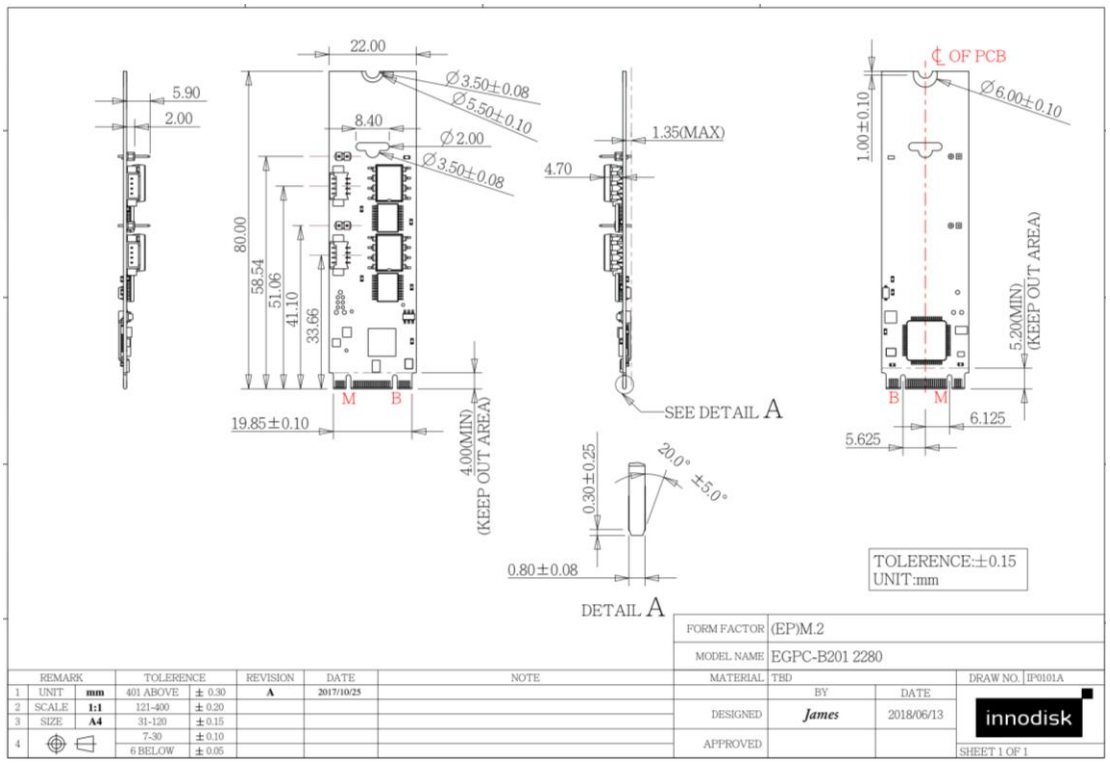


Figure 7: EGPC-B201 Drawing

2.7.5. Cable Mechanical Drawing & Pin Defines

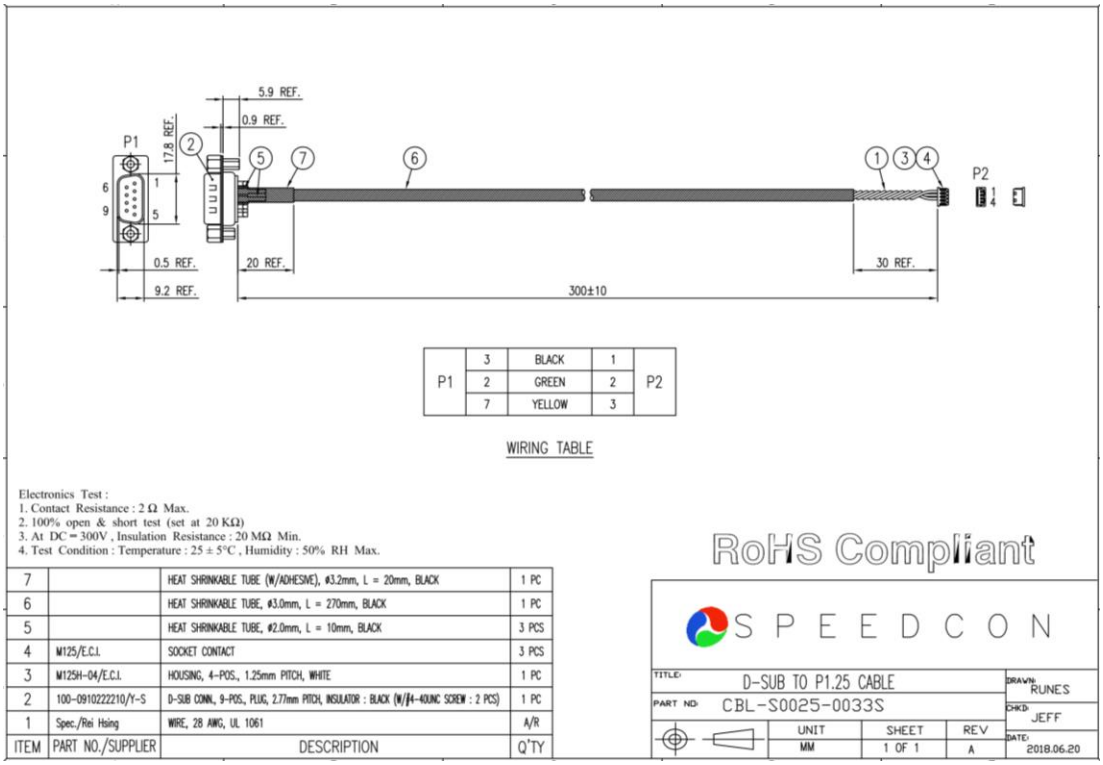


Figure 8: DB9 Cable Drawing

Table 12: DB9 Cable Pin Define

Pin #	1	2	3	4	5	6	7	8	9
Signal Name	NC	CAN-L	GND	NC	NC	NC	CAN-H	NC	NC

2.7.6. Packing List

- EGPC-B201 M.2 2260/2280 board x1
- DB9 Cable x2

2.8. Software Support

Windows	XP(32bit) 7(32/64bit), 8/8.1(32/64bit), 10(32/64bit)
Linux (cdc-acm driver)	Kernel 2.6 and above, 32/64bit
Linux (SocketCAN driver)	Kernel 2.6.38 and above, 32/64bit
QNX	6.6

3. Installation Guide

Please download driver, software API and user manual from Myinnodisk web site.
https://myinnodisk.innodisk.com/myinnodisk/Login.aspx

4. Appedix

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宜鼎國際股份有限公司
Innodisk Corporation

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

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(7a)、(7c-I)允許豁免。
We declare, our products permitted by the following exemptions specified in the Annex of the RoHS directive.
※ (7a) Lead in high melting temperature type solders(i.e. lead-based alloys containing 85% by weight or more lead).
※ (7C-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.

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

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： Randy Chien 簡川勝

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

Date 日期： 2020 / 03 / 03

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 211 substances and shown on the ECHA website. (http://echa.europa.eu/de/candidate-list-table).

■ 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： QA Manager 品保經理

Date 日期： 2021 / 03 / 03

CERTIFICATE OF CONFORMITY

Product	:	CAN BUS Module
Brand	:	Innodisk
Test Model	:	E%PC-B#01
Series Model	:	E%PC-B#01 (%: 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:SATA, X:Multi,Z:Others) #: Output items: (1:1Port,2:2Ports,3:3Ports,4:4Ports,A~Z:TBD,X:Multi))
Applicant	:	Innodisk Corporation
Report No.	:	CE180523D03

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 +AC:2016, Class A
EN 61000-3-2:2014 (Not applicable)
EN 61000-3-3:2013 (Not applicable)
EN 55035:2017
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
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)
Broadband impulse noise disturbances (Not applicable)

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

Henry Lai / Director
May 30, 2018

No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)
Tel: 886-2-26052180 Fax: 886-2-26051924
http://www.bureauveritas-adt.com E-Mail: service.adt@tw.bureauveritas.com

CERTIFICATE OF CONFORMITY

Product	:	CAN BUS Module
Brand	:	Innodisk
Test Model	:	E%PC-B#01
Series Model	:	E%PC-B#01 (%: 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:SATA, X:Multi,Z:Others) #: Output items: (1:1Port,2:2Ports,3:3Ports,4:4Ports,A~Z:TBD,X:Multi))
Applicant	:	Innodisk Corporation
Report No.	:	FD180523D03

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
May 30, 2018

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August 22, 2021