innodisk

Total Solution For
Embedded Peripherals

EGPU-3201

M.2 to dual USB 3.0 Module

Customer: _____

Customer Part Number: _____

Innodisk Part Number: _____

Innodisk Model Name: _____

Date: _____

Innodisk Approver	Customer Approver

Table of Contents

REVISION HISTORY

Revision	Description	Date
1.0	First Released	Dec, 2021

List of Tables

List of Figures

1. Product Introduction

1.1. Overview

Innodisk EGPU-3201 is designed with standard Mini PCI Express form factor, EGPU-3201 supports PCIe Gen 2.0 with a single lane to two independent USB 3.0 ports. EGPU-3201 supports USB battery charging specification rev. 1.2 and compliant with xHCI 1.0, USB 3.0 rev 1.0 which brings you a flexible design for small form factor or embedded systems.

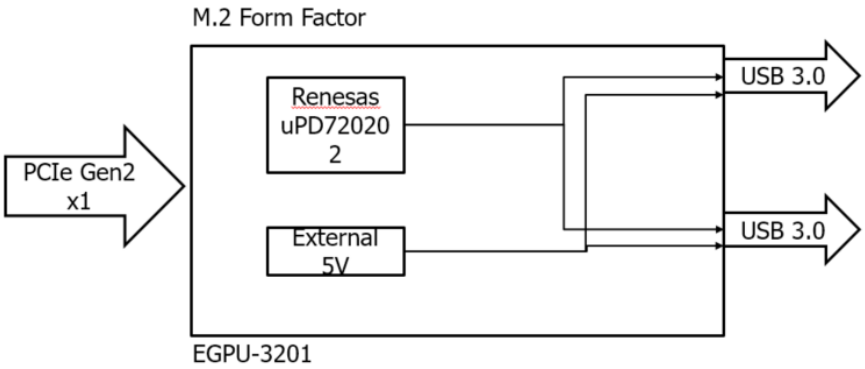


Figure 1: Block Diagram

1.2. Features

- Alternative M.2 2260 or 2280 B-M key
- Compliant with PCI Express Base Specification Revision 2.0
- Compliant with USB 3.0 Specification Revision 1.0, up to 5 Gbs
- Compliant with xHCI 1.0
- Supports 2 USB 3.0 ports (Share PCIe Gen2 x1 bandwidth)
- Supports each USB port output power up to 5V 900ma with external power in (200mA per port without external power)
- Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV
- Optional Industrial Temperature (-40°C to +85°C) support

Figure 2: M.2 2280 Board Picture

Figure 3: 19pin Pitch 2.0 Connector to 2 USB 3.0 Cable

Figure 4: 4pin Power Cable

2. Product Specifications

2.1. Device Parameters

Table 1: Device Parameters

Form Factor	M.2 2260/2280 B+M Key
Input I/F	PCI Express 2.0 x 1
Output I/F	USB 3.0 x 2
Output Connector	19 Pin Pitch 2.0 Connector
Dimension (WxLxH)	M.2 2260: 22.0 x 60.0 x 8.4 mm M.2 2280: 22.0 x 80.0 x 8.4 mm

2.2. Electrical Specifications

2.2.1. Power Requirement

Table 2: Power Requirement

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

2.2.2. Power Consumption

Table 3: Power Consumption

Full Load (mA)	Voltage (V)
303	3.3

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)
EGPU-3201-C1	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	16,730,134
EGPU-3201-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	17,143,322

2.4. CE and FCC Compatibility

EGPU-3201 conforms to CE and FCC requirements.

2.5. RoHS Compliance

EGPU-3201 is fully compliant with RoHS directive.

2.6. Hardware

2.6.1. Layout

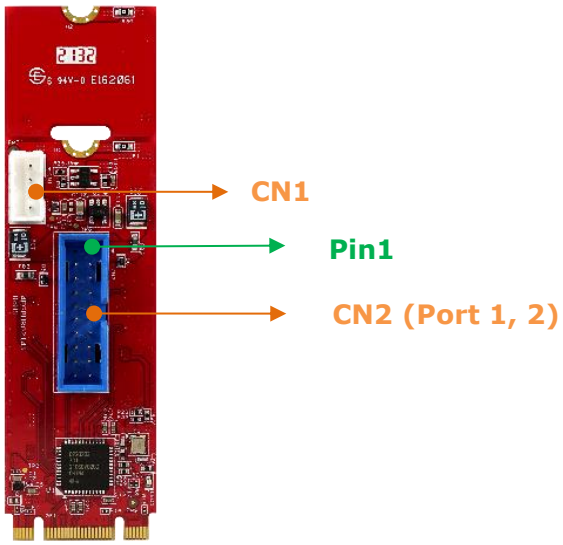


Table 7: M.2 2280 B-M Key PCB Layout Legend

Label	Connector Type	Function
CN1	4 Pin Header P:2.0mm	External 5V Power *Please note that only 200mA in each port if 4pin power cable is not connected.
CN2	DIP 2*10P(cut 1pin) 90° P:2.0mm	USB 3.0 Signal

2.6.2. How to Unplug USB 3.0 19pin Connectors from Mainboard

The USB 3.0 19pin connector is a standard connector that is not designed for multi-times plug/unplug usage. The purpose of the USB 3.0 19pin connector is to securely connect when the cable is plugged in, not to allow users to unplug easily. Therefore, there are small tabs located on the cable connector that clips into the pin header connector from the inside.

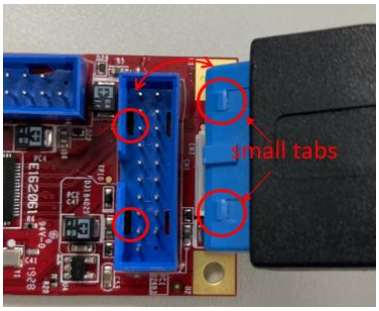


Figure 5. Small tabs on the USB 3.0 19pin connector

To pull off the USB 3.0 cable, DO NOT unplug the USB cable from the module directly, Wiggle Left-Right to release the small tabs from sockets then unplug the cable, refer to the below pictures for example:

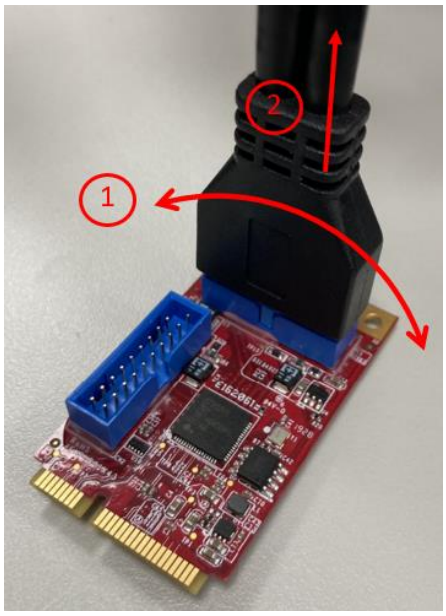


Figure 6. Wiggle Left- Right then unplug the cable

2.6.3. Pin Define

Table 8: 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
PE_WAKE_N	**54**	**55**	CLK+
CLK_REQ	**52**	**53**	CLK-
PE_RST	**50**	**51**	GND
NC	**48**	**49**	RX+
NC	**46**	**47**	RX-
NC	**44**	**45**	GND
NC	**42**	**43**	TX+

NC	**40**	**41**	TX-
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

2.6.4. I/O Connector Mechanical Drawing & Pin Defines

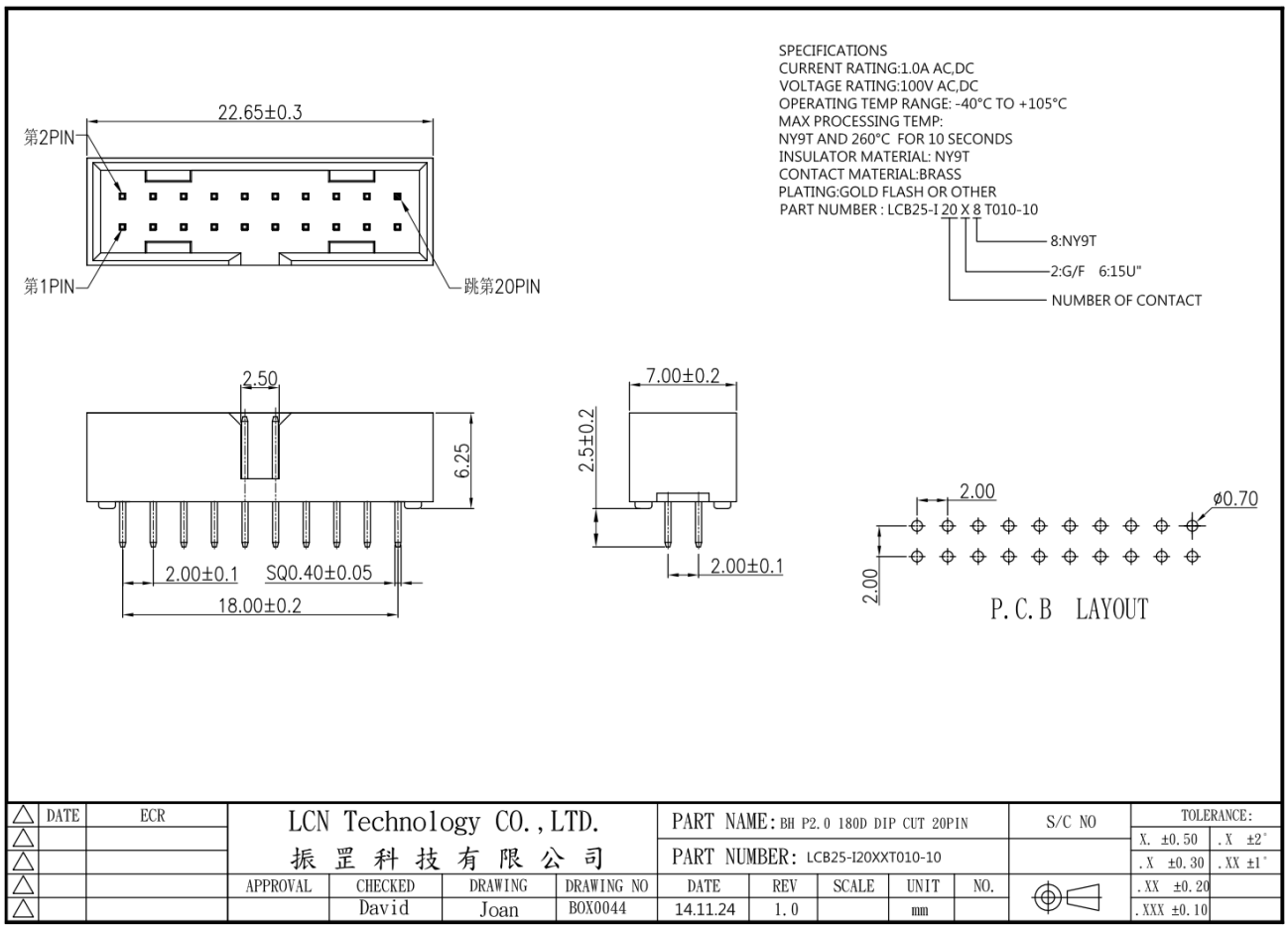


Figure 7: Wire to Board SMD 2*10P (cut 1pin) Connector Drawing

Table 9: Wire to Board SMD 2*10P (cut 1pin) Connector (CN2) Pin Define

Signal Name	Pin #	Pin #	Signal Name
NC	**10**	**11**	U2P2_D+
U2P1_D+	**9**	**12**	U2P2_D-
U2P1_D-	**8**	**13**	GND
GND	**7**	**14**	U3P2_TXDP
U3P1_TXDP	**6**	**15**	U3P2_TXDN
U3P1_TXDN	**5**	**16**	GND
GND	**4**	**17**	U3P2_RXDP
U3P1_RXDP	**3**	**18**	U3P2_RXDN
U3P1_RXDN	**2**	**19**	5V_P2
5V_P1	**1**		

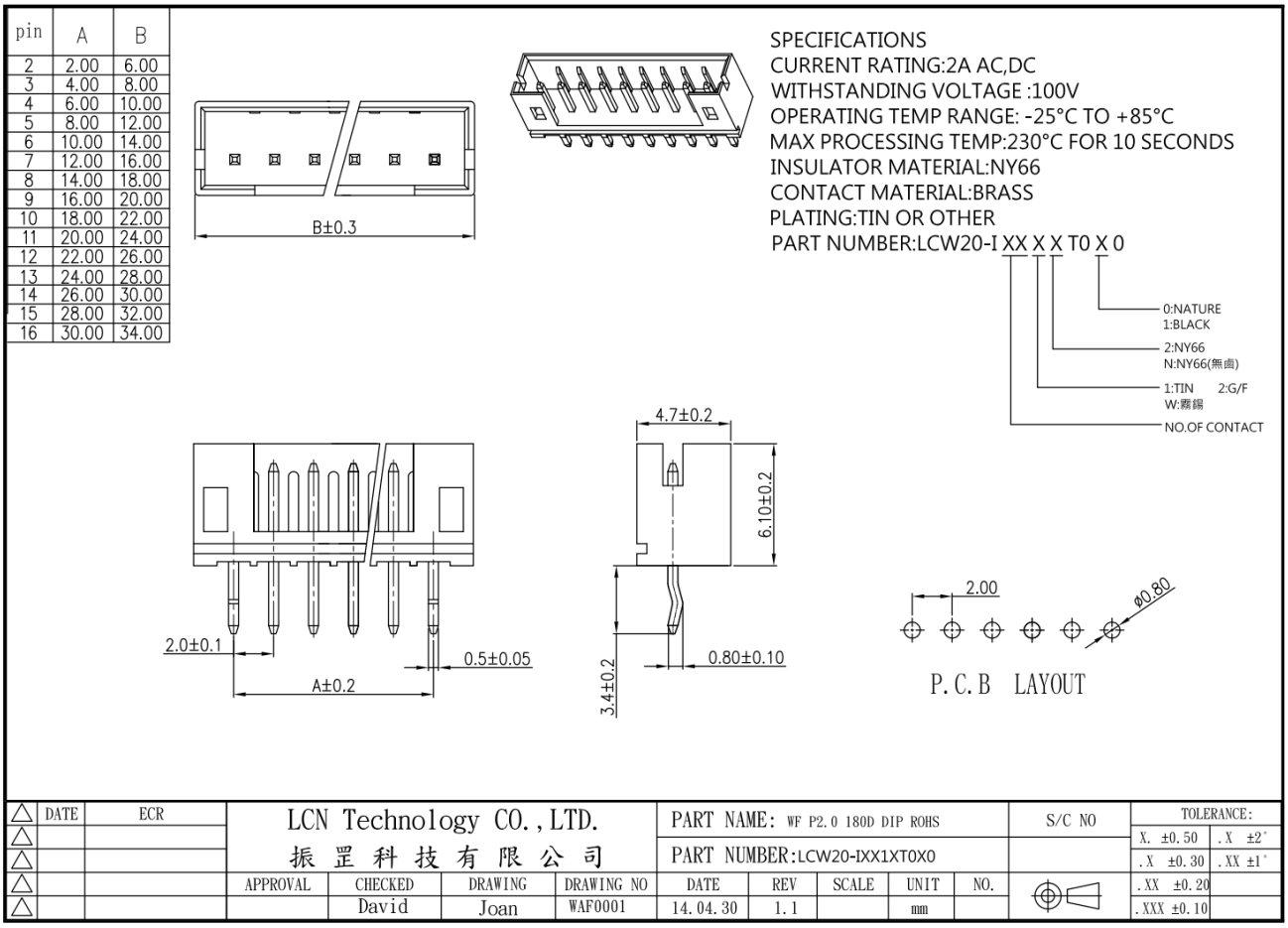


Figure 8: 4 Pin Header P:2.0mm Drawing

Table 10: 4 Pin Header (CN1) Pin Define

Signal Name	Pin #
5V	**1**
GND	**2**
GND	**3**
5V	**4**

2.6.5. EGPU-3201 Mechanical Drawing

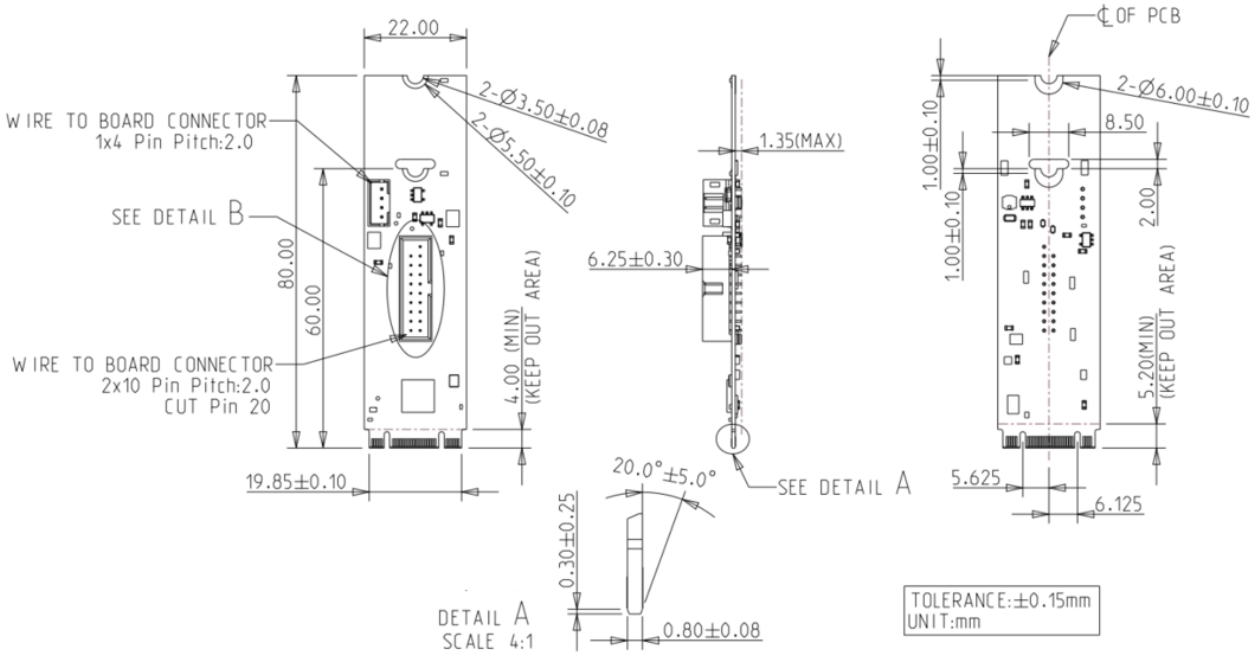
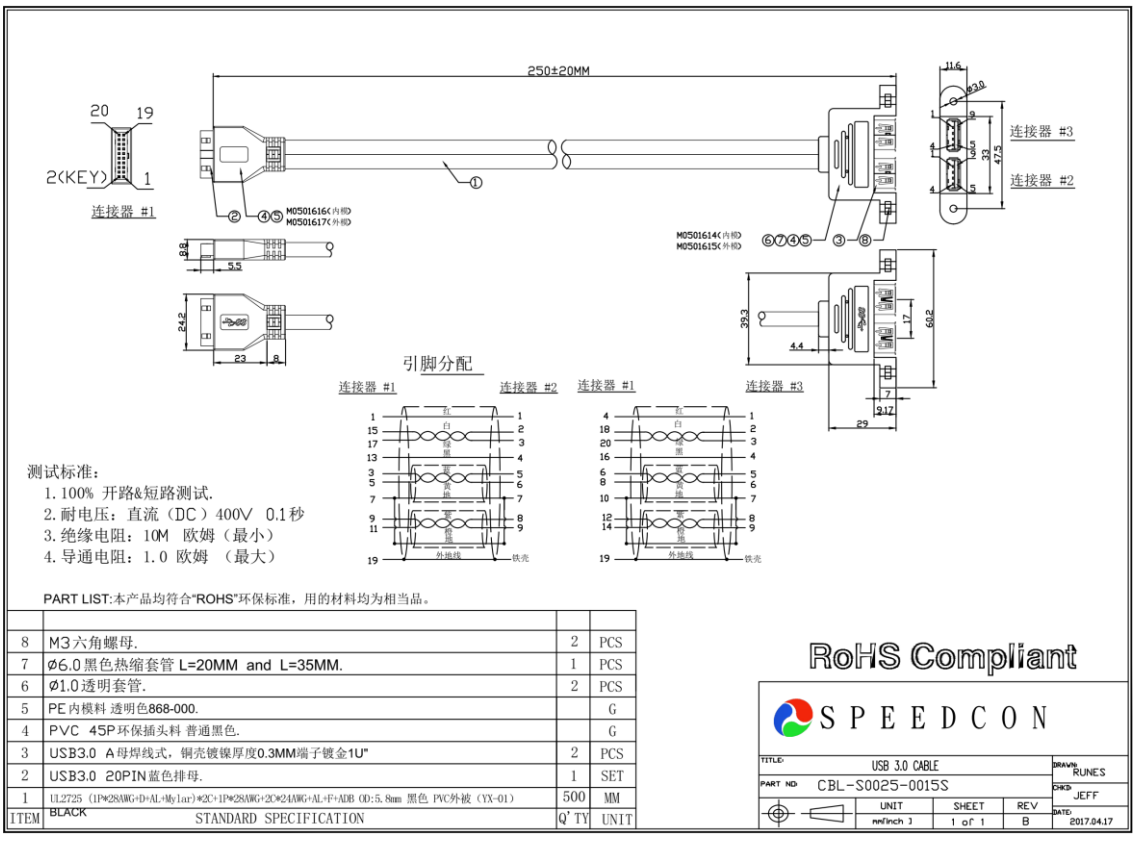


Figure 9: EGPU-3201 M.2 B-M Key Board Drawing

2.6.6. Cable Mechanical Drawing



ITEM		Q'TY	UNIT
8	M3六角螺母.	2	PCS
7	ø6.0黑色热缩套管 L=20MM and L=35MM.	1	PCS
6	ø1.0透明套管.	2	PCS
5	PE内模料 透明色868-000.		G
4	PVC 45P环保插头料 普通黑色.		G
3	USB3.0 A母焊线式，铜壳镀镍厚度0.3MM端子镀金1U"	2	PCS
2	USB3.0 20PIN蓝色排母.	1	SET
1	UL2725 (1P*28AWG+D+AL+Mylar)*2C+1P*28AWG+2C*24AWG+AL+F+ADB OD:5.8mm 黑色 PVC外被 (YX-01)	500	MM

Figure 10: 19pin Pitch 2.0 Connector to 2 USB Cable Drawing

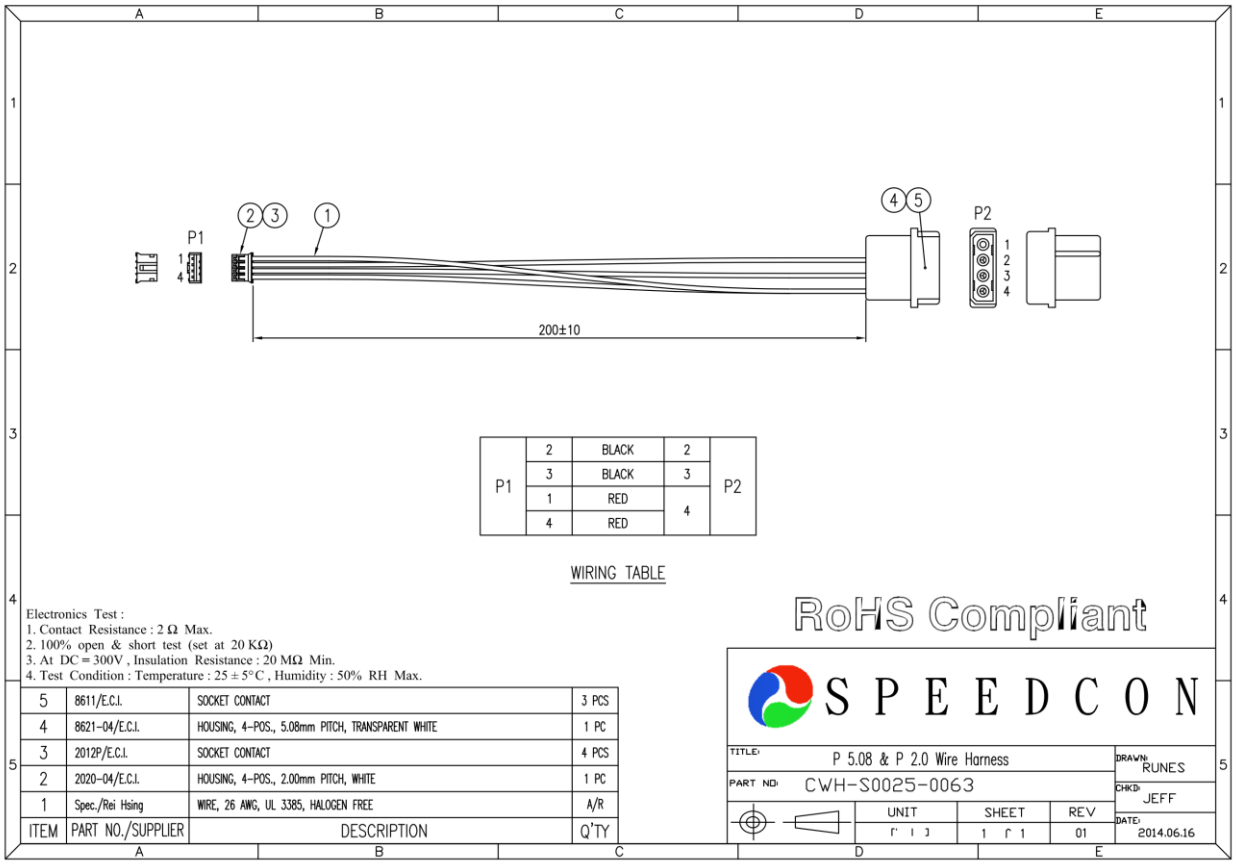


Figure 11: 4 Pin Header Pitch 2.0 Power Cable Drawing

2.6.7. Packing List

- EGPU-3201 M.2 B-M Key Board x 1
- 19pin Pitch 2.0 Connector to 2 USB Cable x 1
- 4pin Pitch 2.0 Power Cable x 1

2.7. Software Support

- Windows: XP(32bit), 7(32/64bit), 8/8.1(32/64 bit), 10(32/64bit)
- Linux: Kernel 2.6 above.

➢ After Win8 and Linux Kernel v2.6.31 supports built-in xHCI 1.0 driver.

2.8. Application Note

EGPU-3201 module doesn’t support OC(Over Current) warning.

3. Appedix

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

INNODISK

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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

CERTIFICATE OF CONFORMITY

Product	:	M.2 to Dual USB3 Module
Brand	:	Innodisk
Test Model	:	EGPU-3201
Series Model:	:	E%PU-3201 %: 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-P21100284

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 (Not applicable)
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 (Not applicable)
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.

Jim Hsiang / Associate Technical Manager
2021/11/2

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http://www.bureauveritas-adt.com E-Mail: service.adt@tw.bureauveritas.com

CERTIFICATE OF CONFORMITY

Product	:	M.2 to Dual USB3 Module
Brand	:	Innodisk
Test Model	:	EGPU-3201
Series Model	:	E%PU-3201 %: 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-P21100284

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

Jim Hsiang / Associate Technical Manager
2021/11/2

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March 26, 2024