innodisk

Total Solution For
Embedded Peripherals

EGP2-X401

M.2 to four RS232/422/485

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	Nov, 2020

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1. Product Introduction

1.1. Overview

Innodisk EGP2-X401 is designed with M.2 2242 form factor, EGP2-X401 supports PCIe Gen 2.0 with a single lane to four independent UARTs RS232/422/485, optimized for higher performance and lower power, which brings you a flexible expansion solution for embedded systems.

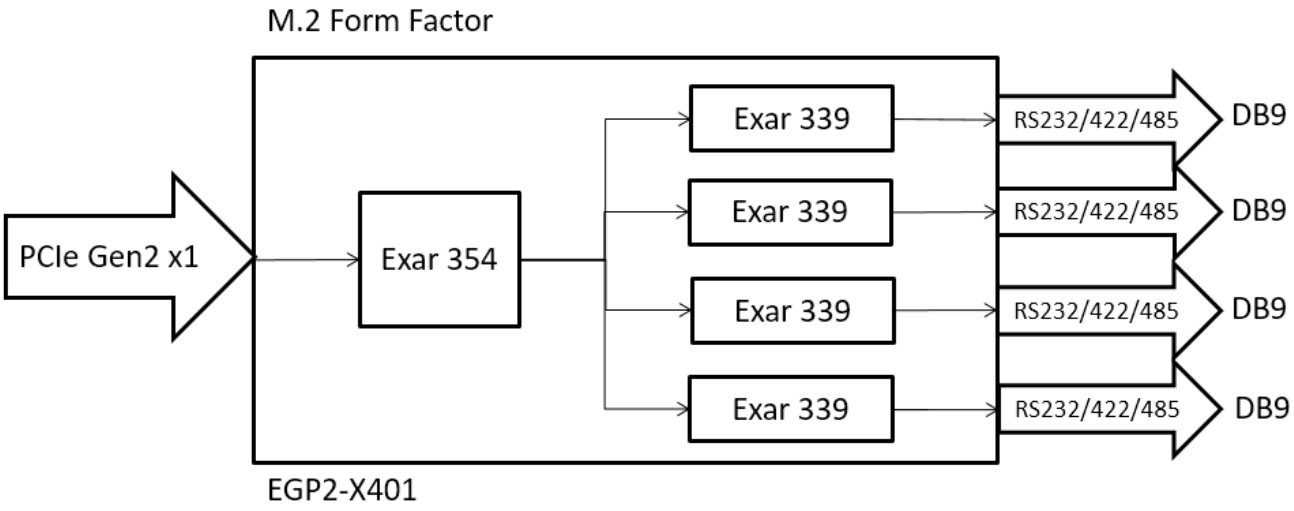


Figure 1: Block Diagram

1.2. Features

- PCIe 2.0 compliant. RS-232/422/485 modes configurable by software
- 4800 to 3Mbps serial data rate (RS-232 921.6Kbps) serial data rate. 16C550 compatible. 256-byte FIFOs
- Alternative vertical or horizontal connector
- Full RS-232 functions with DB9 connector
- Termination resistor enabled/disabled by DIP switch
- Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV
- Industrial temperature -40 ºC to 85 ºC

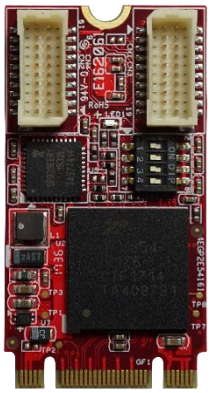


Figure 2: Picture

2. Product Specifications

2.1. Device Parameters

Table 1: Device Parameters

Form Factor	M.2 2242
Input I/F	PCI Express 2.0 x 1
Output I/F	RS-232/422/485
Output Connector	DB-9 x 4
Dimension (WxLxH)	Vertical: 22 x 42 x 6.45mm Horizontal: 22 x 42 x 7.65mm

2.2. Performance

Table 2: RS232/422/485 Performance (unit: second)

Baud Rate	Transmission Data Size	RS232	RS485 Half Duplex		RS485 Full Duplex (RS422)	
		10m	100m	200m	100m	200m
9600	5Kbyte	5	5	5	5	5
	1Mbyte	1,266	1,267	1,267	1,267	1,267
115200	1Mbyte	105	106	106	106	106
460800	1Mbyte	26	26	26	28	27
921600	1Mbyte	13	13	13	13	14

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)
176	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)
EGP2-X401	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

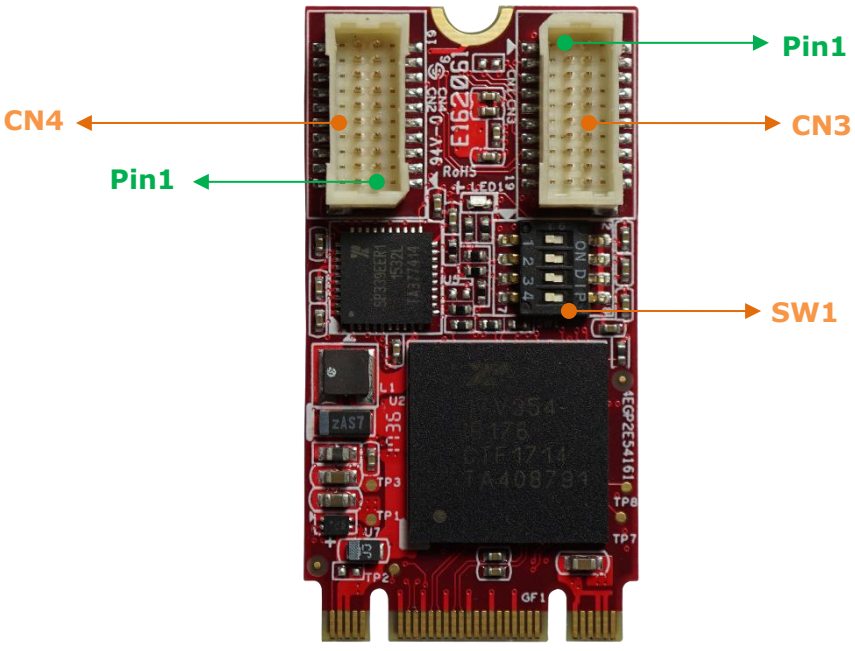
EGP2-X401 conforms to CE and FCC requirements.

2.6. RoHS Compliance

EGP2-X401 is fully compliant with RoHS directive.

2.7. Hardware

2.7.1. Layout



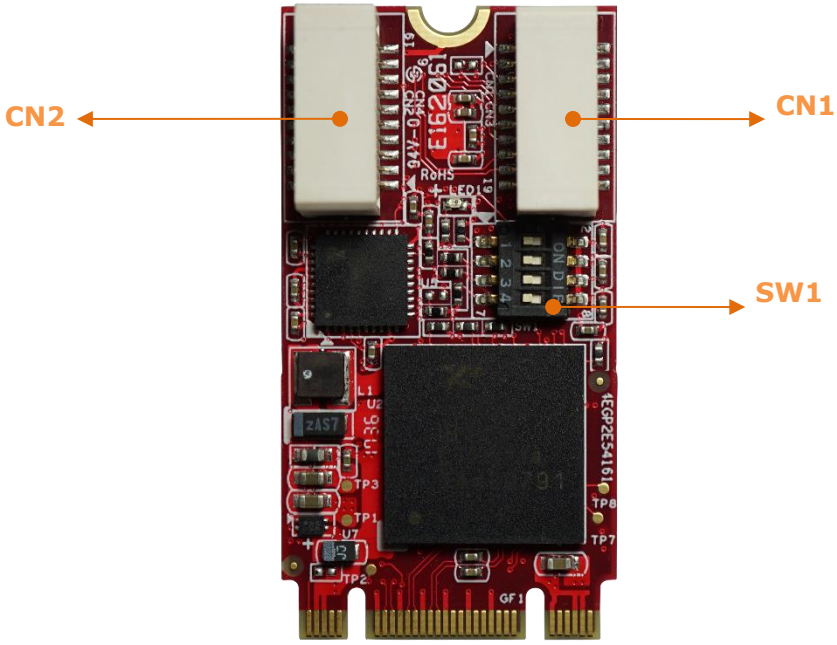


Table 8: PCB Layout Legend

Label	Connector Type	Function
CN1	Wafer DIP 2*10P 90° P:1.0mm	RS-232/422/485 Port 1, 4
CN2	Wafer DIP 2*10P 90° P:1.0mm	RS-232/422/485 Port 2, 3
CN3	Wafer DIP 2*10P 180° P:1.0mm	RS-232/422/485 Port 1, 4
CN4	Wafer DIP 2*10P 180° P:1.0mm	RS-232/422/485 Port 2, 3
SW1	DIP Switch, 8pin SMD 180°	RS-232/422/485 Terminal resistor on/off

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
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**	NC
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	NC

2.7.3. I/O Connector Mechanical Drawing & Pin Defines

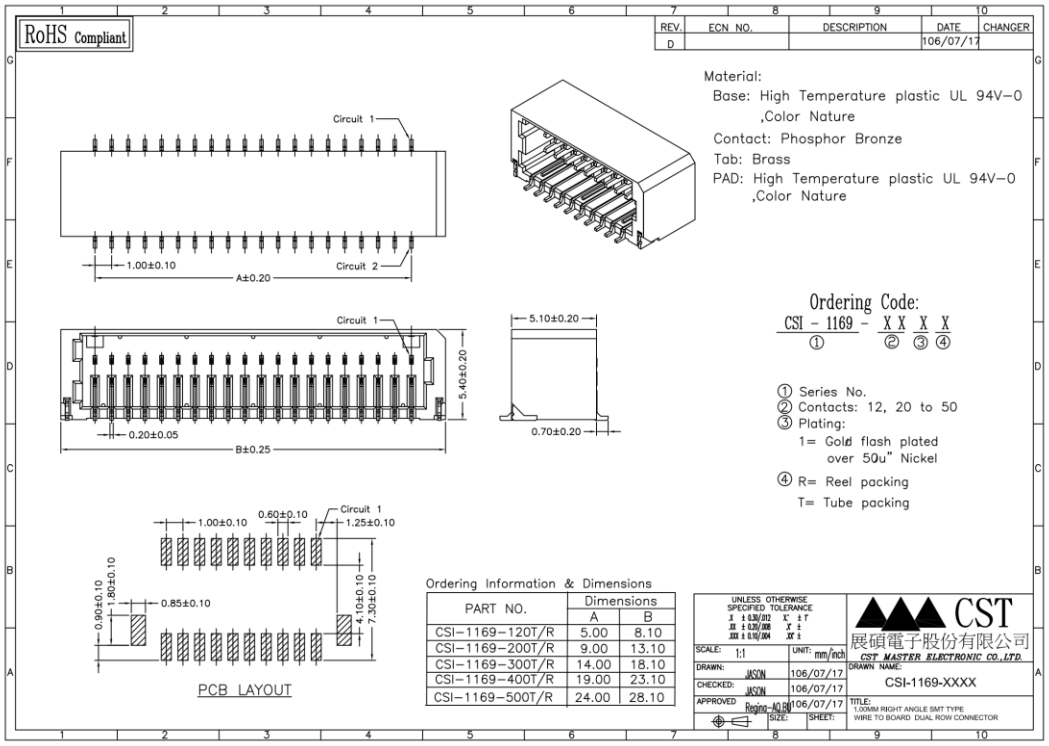


Figure 3: Wire to Board SMD 2*10P 90D Connector Drawing (CN1/CN2)

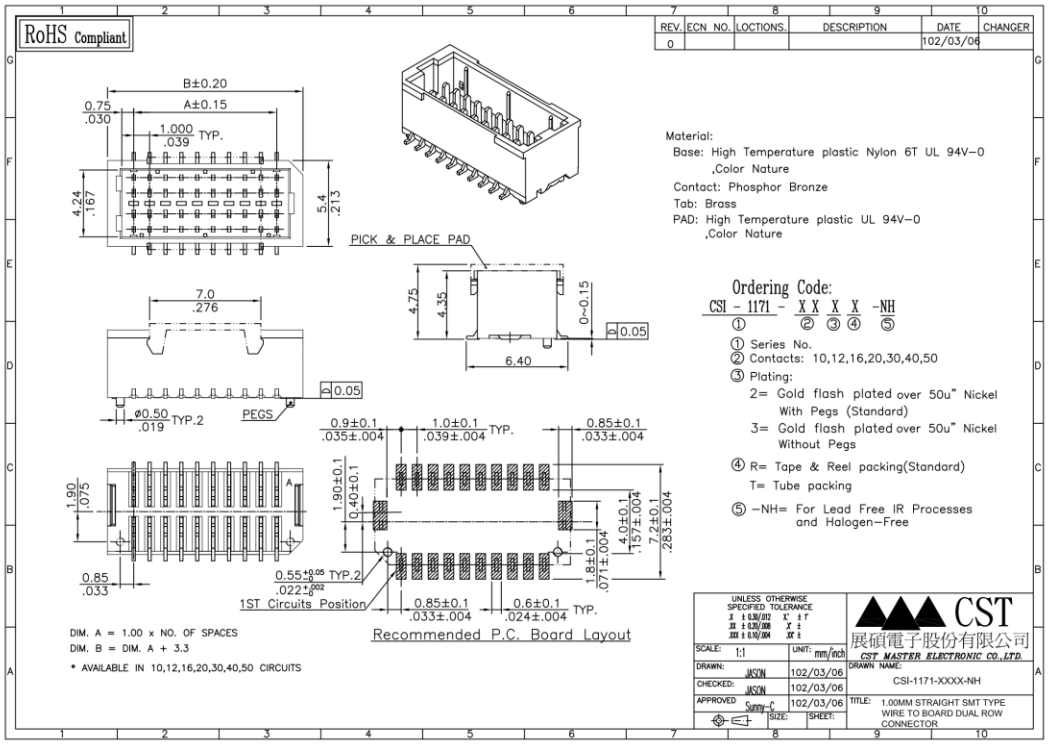


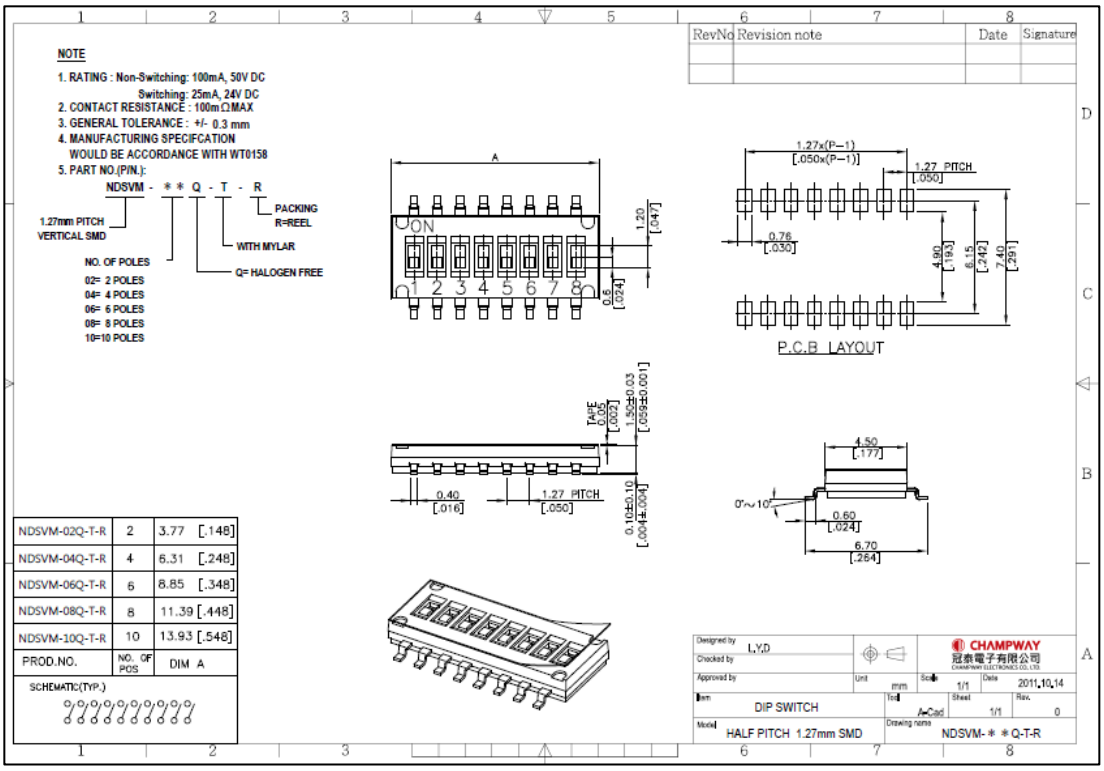
Figure 4: Wire to Board SMD 2*10P 180D Connector Drawing (CN3/CN4)

Table 10: Wire to Board SMD 2*10P Connector Pin Define (CN1/CN3)

Signal Name	Pin #	Pin #	Signal Name
CD_P1	**2**	**1**	CD_P4
RX_P1	**4**	**3**	RX_P4
TX_P1	**6**	**5**	TX_P4
DTR_P1	**8**	**7**	DTR_P4
GND	**10**	**9**	GND
DSR_P1	**12**	**11**	DSR_P4
RTS_P1	**14**	**13**	RTS_P4
CTS_P1	**16**	**15**	CTS_P4
RI_P1	**18**	**17**	RI_P4
NC	**20**	**19**	NC

Table 11: Wire to Board SMD 2*10P Connector Pin Define (CN2/CN4)

Signal Name	Pin #	Pin #	Signal Name
CD_P3	**2**	**1**	CD_P2
RX_P3	**4**	**3**	RX_P2
TX_P3	**6**	**5**	TX_P2
DTR_P3	**8**	**7**	DTR_P2
GND	**10**	**9**	GND
DSR_P3	**12**	**11**	DSR_P2
RTS_P3	**14**	**13**	RTS_P2
CTS_P3	**16**	**15**	CTS_P2
RI_P3	**18**	**17**	RI_P2
NC	**20**	**19**	NC



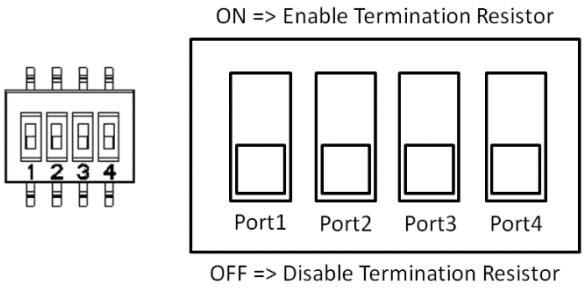


Figure 5: DIP Switch 8pin Drawing (SW1)

2.7.4. EGP2-X401 Mechanical Drawing

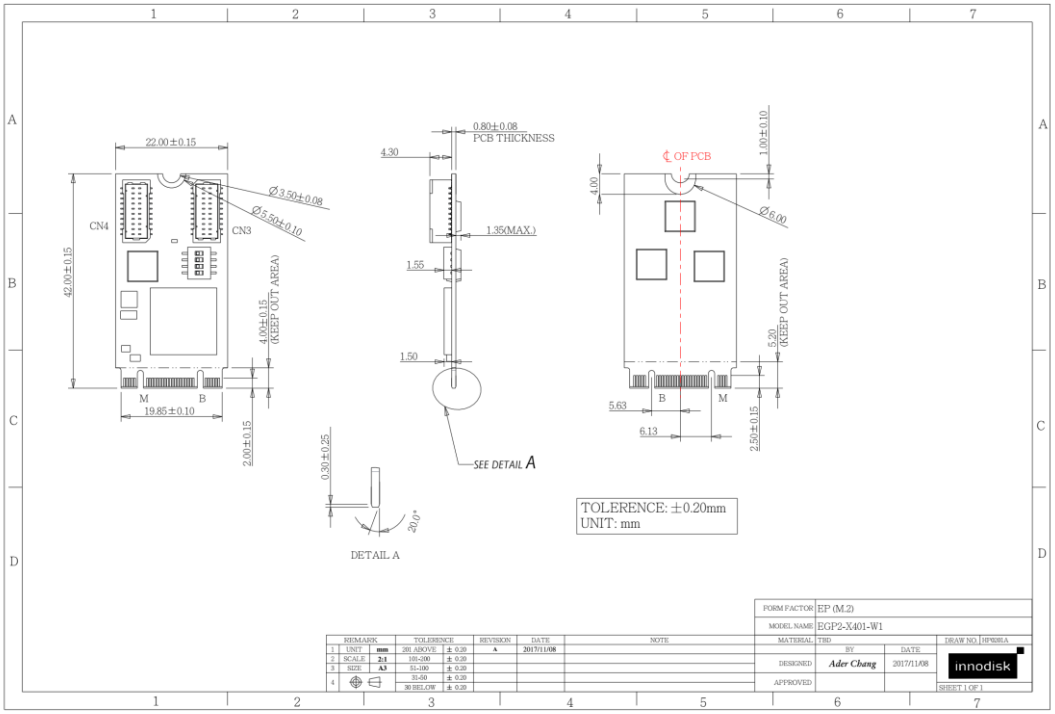


Figure 6: EGP2-X401-W1 Drawing

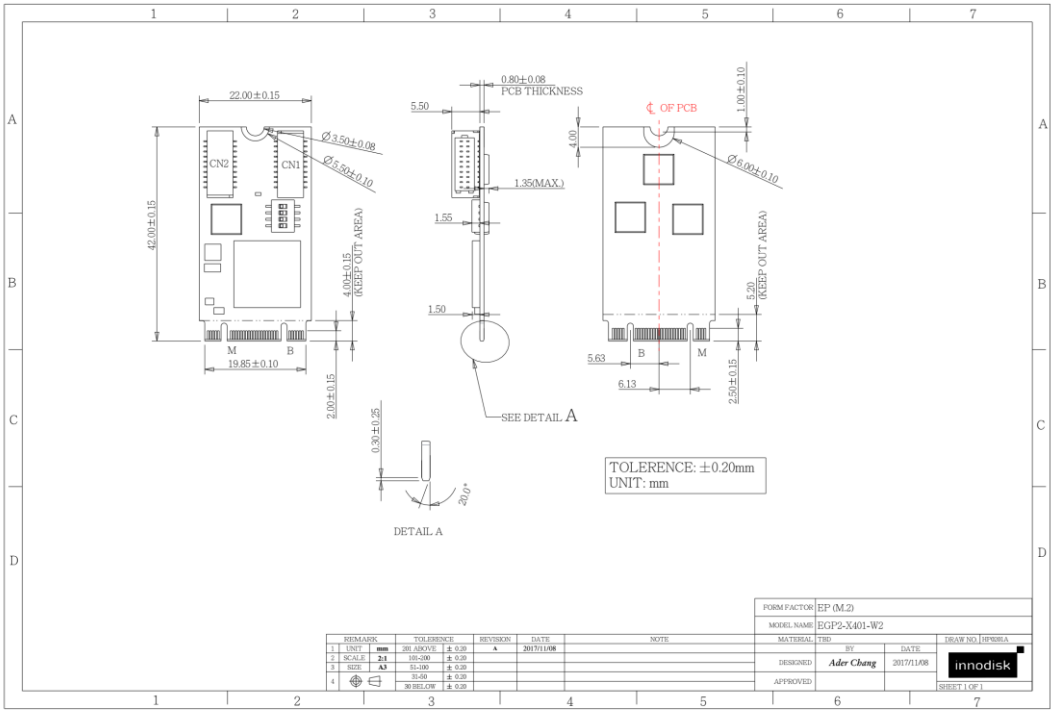


Figure 7: EGP2-X401-W2 Drawing

2.7.5. Cable Mechanical Drawing & Pin defines

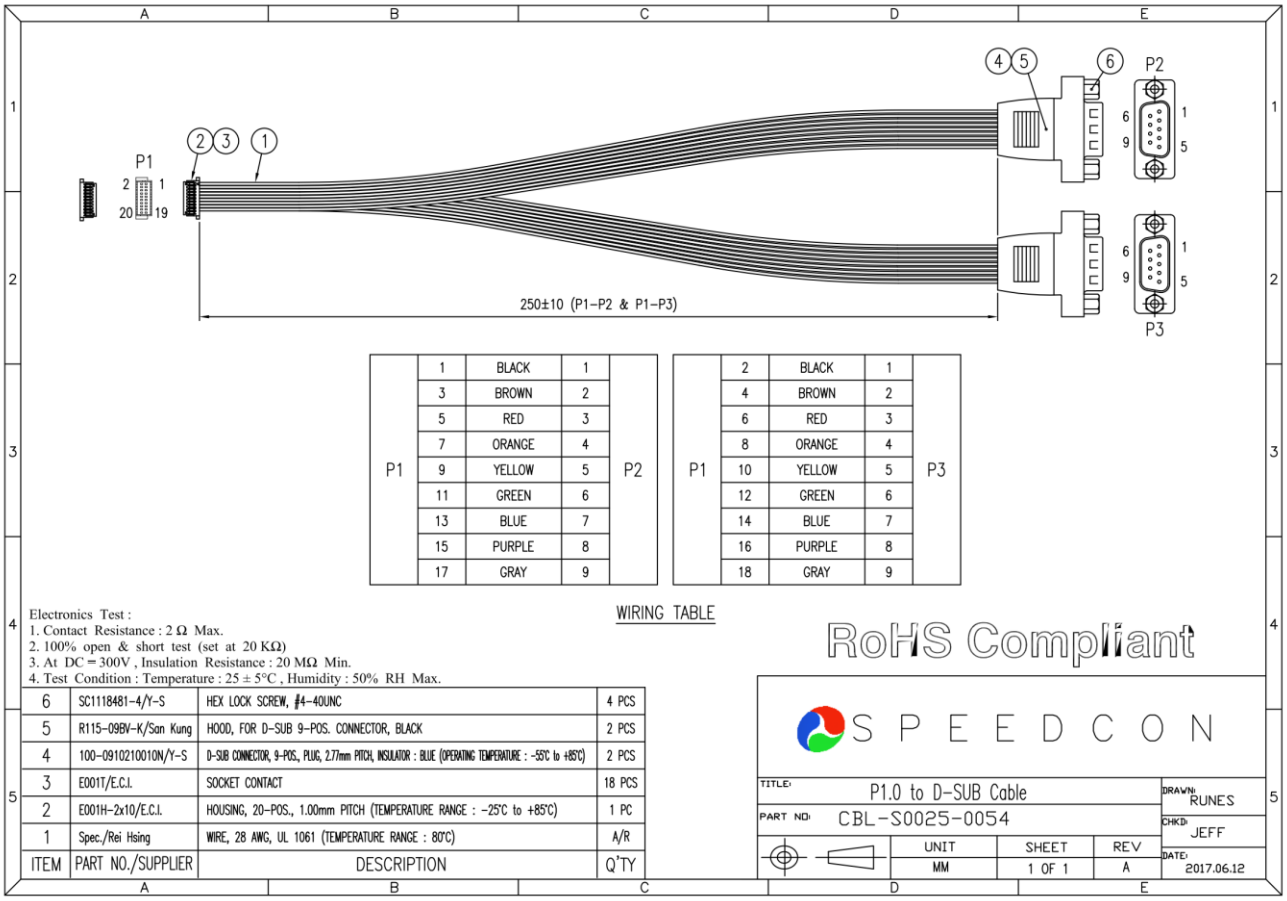


Figure 8: DB9 Cable Drawing

Table 12: DB9 Cable Pin Define

Pin #	1	2	3	4	5	6	7	8	9
RS-232	CD	RXD	TXD	DTR	GND	DSR	RTS	CTS	RI
RS-422	TX-	TX+	RX+	RX-	GND				
RS-485	D-	D+			GND				

2.7.6. Packing List

- EGP2-X401 x1
- DB9 Cable x2

2.8. Software Support

- Windows: XP, Windows 7, 8 , 8.1, 10, WES7, CE7.0
- Linux: Kernel 2.6.x and above.(Linux source code for modification)

3. Installation Guide

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

4. Appedix

宜鼎國際股份有限公司
Innodisk Corporation

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

REACH Declaration of Conformity

Manufacturer Product:All Innodisk EP products

1.宜鼎國際股份有限公司（以下稱本公司）特此保證此售予貴公司之產品，皆符合歐盟化學品法案(Registration , Evaluation and Authorization of Chemicals；REACH)之規定(http://www.echa.europa.eu/de/candidate-list-table **last updated: 15/01/2018**)。所提供之產品包含：(1) 產品或產品所使用到的所有原物料；(2)包裝材料；(3)設計、生產及重工過程中所使用到的所有原物料。

We Innodisk Corporation hereby declare that our products are in compliance with the requirements according to the REACH Regulation (http://www.echa.europa.eu/de/candidate-list-table **last updated: 15/01/2018**). Products include： 1) Product and raw material used by the product； 2) Packaging material ；3) Raw material used in the process of design, production and rework

2.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.

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： 2018 / 02 / 08

宜鼎國際股份有限公司
Innodisk Corporation
Tel:(02)7703-3000 Fax:(02) 7703-3555 Internet: http://www.innodisk.com/

RoHS 自我宣告書(RoHS Declaration of Conformity)

Manufacturer Product: All Innodisk 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.

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： 2018 / 02 / 08

CERTIFICATE OF CONFORMITY

Product	:	M.2 to RS232/422/485 Module
Brand	:	Innodisk
Test Model	:	E%P2-X#01
Series Model	:	E%P2-X#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.	:	CE171109D04

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 B

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

Dec. 1, 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

Product	:	M.2 to RS232/422/485 Module
Brand	:	Innodisk
Test Model	:	E%P2-X#01
Series Model	:	E%P2-X#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))
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47 CFR FCC Part 15, Subpart B, Class B

ICES-003:2016 Issue 6, Class B

ANSI C63.4:2014

Henry Lai / Director
Dec. 1, 2017

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September 28, 2021