innodisk

Total Solution For
Embedded Peripherals

EGP2-X4S1

M.2 to Four Isolated RS-422 / 485 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	Jul, 2025

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1. Product Introduction

1.1. Overview

The Innodisk EGP2-X4S1 is a compact M.2 2280 module that supports PCIe Gen 2.0 x1 and provides four independent RS-422/485 UART ports. It offers a simple and reliable I/O expansion solution for embedded systems, with optimized performance and low power usage.

To enhance durability and system protection, it features 2.5kV HiPOT protection, ensuring resistance against high-voltage surges in industrial environments.

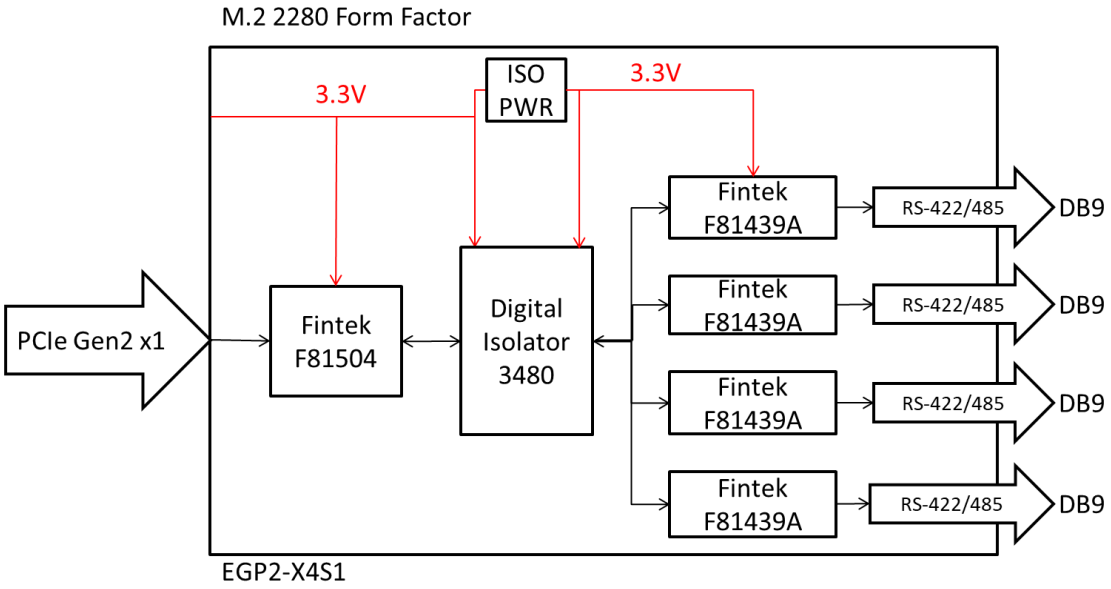
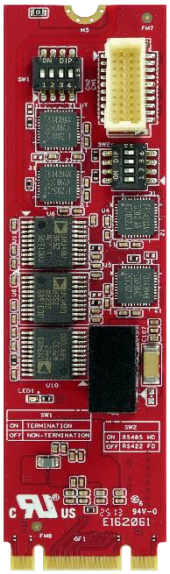


Figure 1: Block Diagram

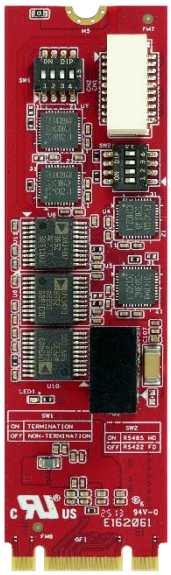
1.2. Features

- PCI-Express specification Rev. 2.0 compliant
- 4800 to 1.5Mbps serial data rate. 16C550 compatible. 256-byte FIFOs
- Supports port-to-computer isolation, complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 2.5kV HiPOT protection
- Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV
- Termination Resistor by dip switch setting
- RS-422 / 485 mode by switch setting
- Industrial temperature -40 ºC to 85 ºC

2. Product Specifications



EGP2-X4S1-W1



EGP2-X4S1-W2

Figure 2: Product Picture

2.1. Device Parameters

Table 1: Device Parameters

Form Factor	M.2 2280
Input I/F	PCI Express 2.0 x 1
Output I/F	RS-422 & RS-485
Output Connector	DB-9 x 1
Dimension (WxLxH)	Horizontal: 22 x 80 x 12.23mm

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

Voltage(V)	RMS(mA)	Max(mA)
3.3	355	557.1

2.3. Environmental Specifications

2.3.1. Temperature Ranges

Table 4: Temperature Ranges

Temperature	Range
Operating	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 Failures (MTBF)

Product	Condition	MTBF (Hours)
EGP2-X4S1-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	5,697,541
EGP2-X4S1-W2	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	5,697,541

2.4. CE and FCC Compatibility

EGP2-X4S1 conforms to CE and FCC requirements.

2.5. RoHS Compliance

EGP2-X4S1 is fully compliant with RoHS directive.

2.6. Hardware

2.6.1. Layout

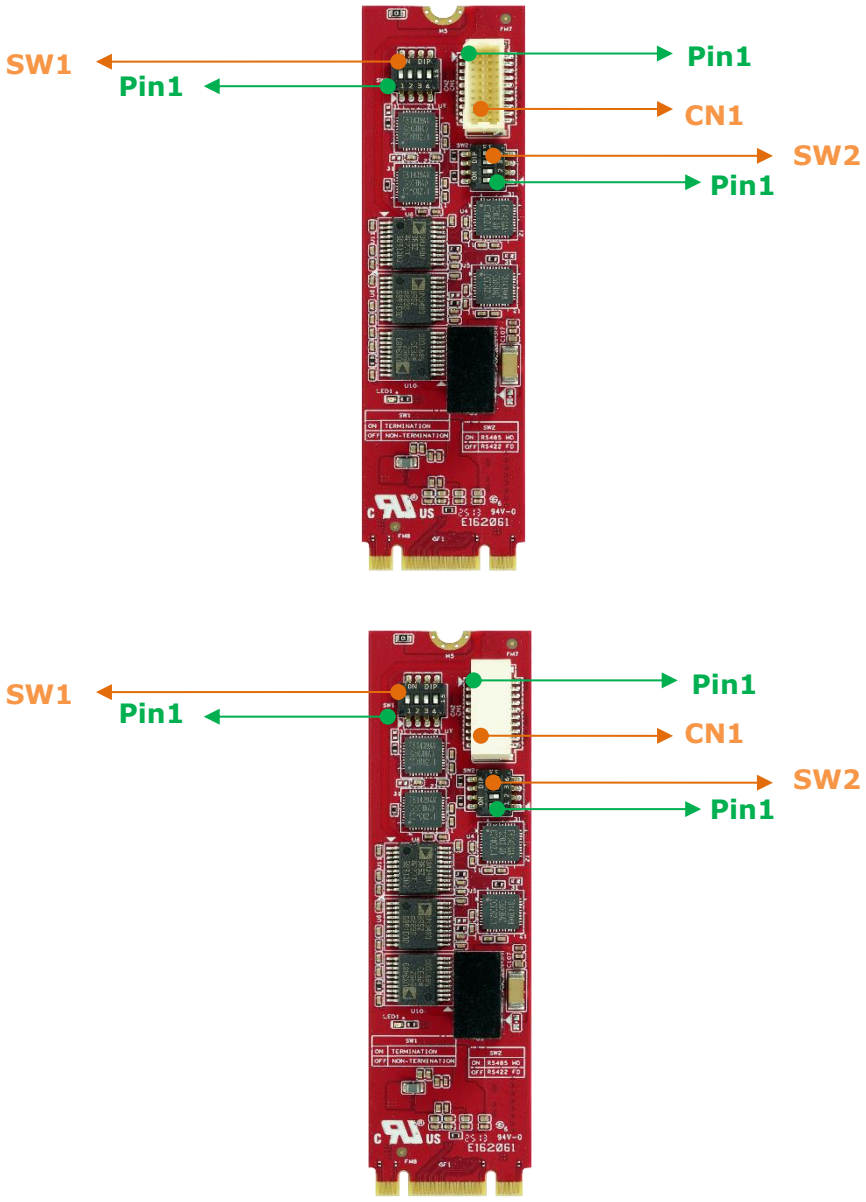


Table 7: PCB Layout Legend

Label	Connector Type	Function
CN1	Wafer DIP 2*10P 90° P:1.0mm	RS-422 /485 Port 1, 2, 3, 4
CN2	Wafer DIP 2*10P 180° P:1.0mm	RS-422 /485 Port 1, 2, 3, 4
SW1	Switch DIP 8P 180° H:1.5mm	Termination ON / OFF
SW2	Switch DIP 8P 180° H:1.5mm	RS-422 / 485 Mode

2.6.2. 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+
GND	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

2.6.3. I/O Connector Mechanical Drawing & Pin Defines

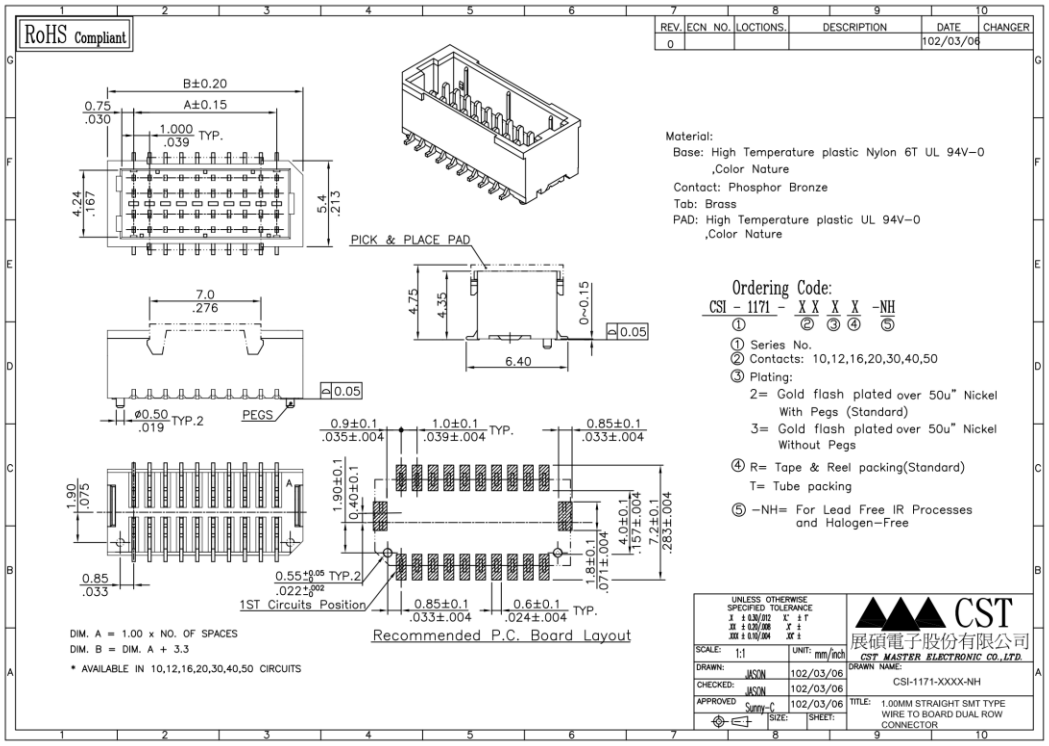


Figure 3: Wire to Board SMD 2*10P 90D Connector Drawing (CN1)

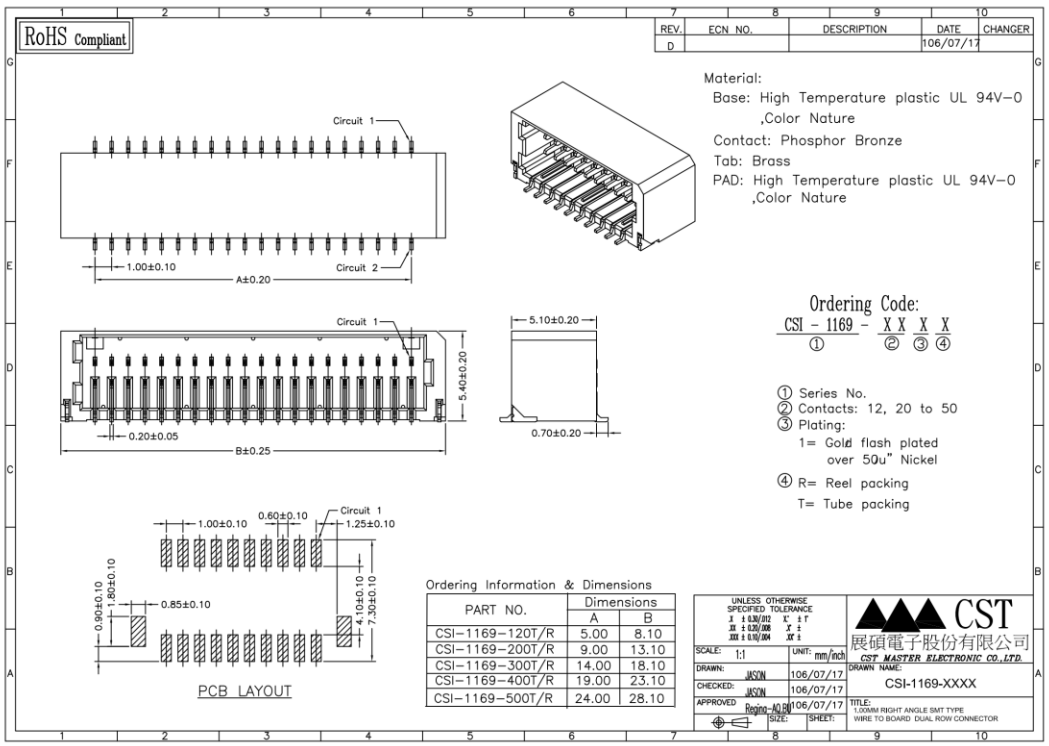


Figure 4: Wire to Board SMD 2*10P 180D Connector Drawing (CN2)

Table 9: Wire to Board SMD 2*10P Connector Pin Define (CN1)

Signal Name	Pin #	Pin #	Signal Name
TX0-	**2**	**1**	TX2-
TX0+	**4**	**3**	TX2+
RX0+	**6**	**5**	RX2+
RX0-	**8**	**7**	RX2-
GND	**10**	**9**	GND
TX1-	**12**	**11**	TX3-
TX1+	**14**	**13**	TX3+
RX1+	**16**	**15**	RX3+
RX1-	**18**	**17**	RX3-
GND	**20**	**19**	GND

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

Signal Name	Pin #	Pin #	Signal Name
TX0-	**2**	**1**	TX2-
TX0+	**4**	**3**	TX2+
RX0+	**6**	**5**	RX2+
RX0-	**8**	**7**	RX2-
GND	**10**	**9**	GND
TX1-	**12**	**11**	TX3-
TX1+	**14**	**13**	TX3+
RX1+	**16**	**15**	RX3+
RX1-	**18**	**17**	RX3-
GND	**20**	**19**	GND

2.6.4. EGP2-X403 Mechanical Drawing

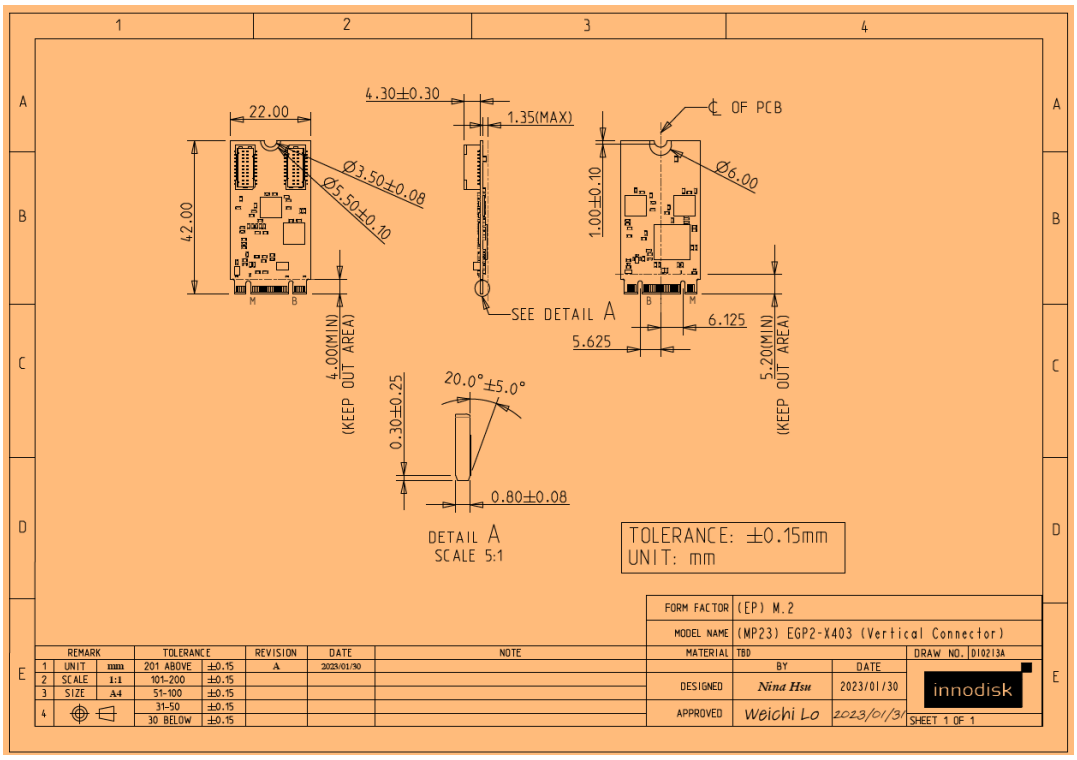


Figure 5: EGP2-X4S1-W1 Drawing

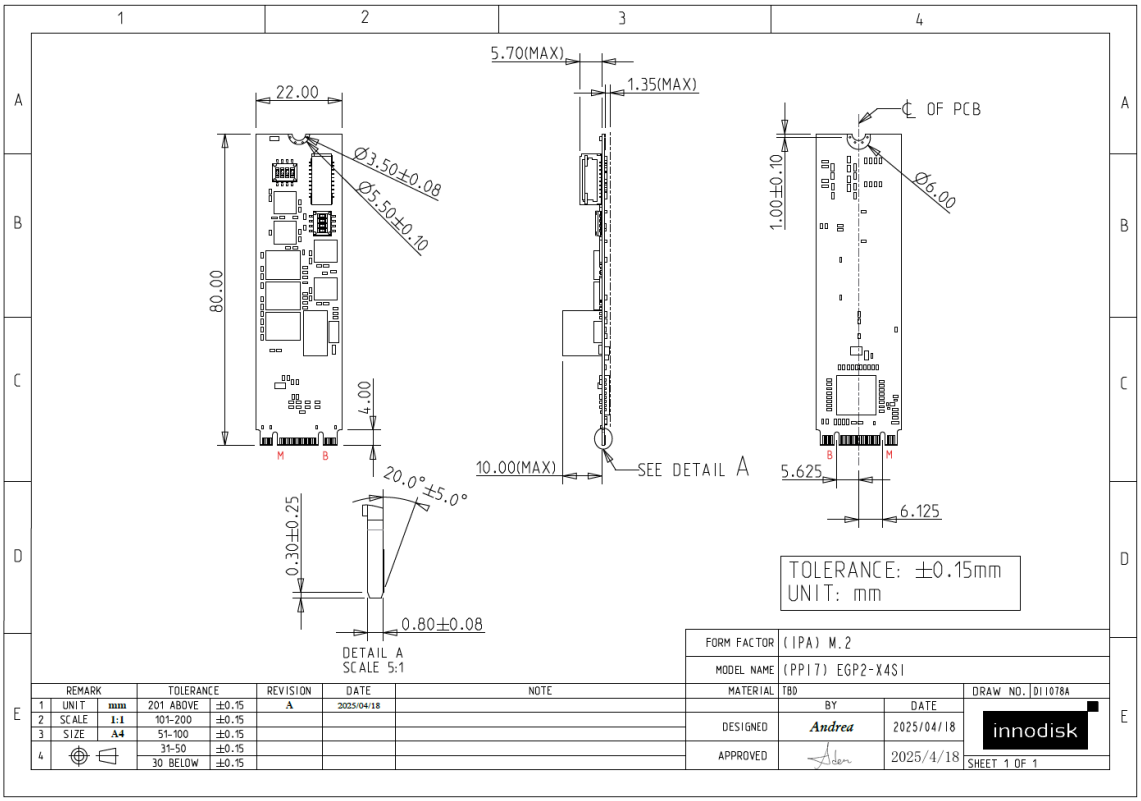


Figure 6: EGP2-X4S1-W2 Drawing

2.6.5. Cable Mechanical Drawing & Pin defines

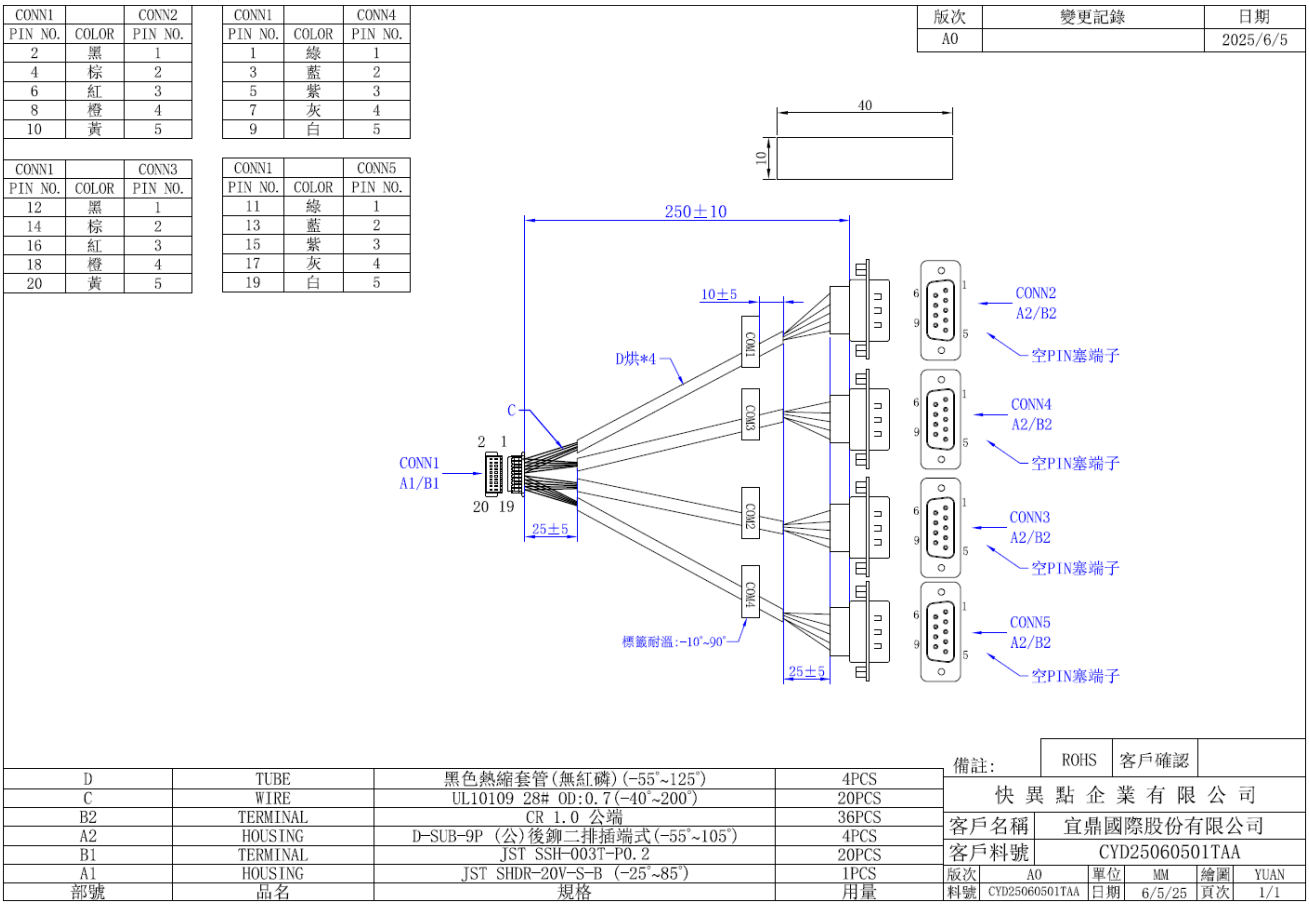


Figure 7: DB9 Cable Drawing

Table 11: DB9 Cable Pin Define

Pin #	1	2	3	4	5	6	7	8	9
RS-422 / 485 Full Duplex	TX-	TX+	RX+	RX-	GND				
RS-485 Half Duplex	D-	D+			GND				

2.6.6. Packing List

- EGP2-X4S1 x1
- DB9 Cable x1

2.7. Software Support

- Windows: 10, 11
- Linux: Kernel 2.6.x and later versions. (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

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宜鼎國際股份有限公司
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 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 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.

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：2023 / 02 / 09

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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 7(a)、7(c)-I、6(c)允許豁免。
We declare, our products permitted by the following exemptions specified in the Annex of the RoHS 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)

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

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Innodisk Corporation

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： 2021 / 06 / 09

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