

SAMTEC 120-pin x1 to GMSL2 FAKRA Z x4  
Capture Card

**EB120-1S4F**

# User Manual

Customer :

Customer Part Number :

Innodisk Part Number :

Innodisk Model Name :

Date :

Innodisk Approver

Customer Approver

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# Revision History

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| Revision | Description    | Date        |
|----------|----------------|-------------|
| 1.0      | First Released | 2 Apr, 2026 |
|          |                |             |
|          |                |             |
|          |                |             |
|          |                |             |

# 1. Product Introduction

## 1.1 Overview

The SAMTEC 120-pin x1 to GMSL2 FAKRA Z x4 Capture Card is a high-performance interface solution for camera integration, testing, and platform validation. It connects up to four GMSL2 cameras to a single host board through a SAMTEC 120-pin connector, delivering stable, high-speed data transfer for multi-camera applications.

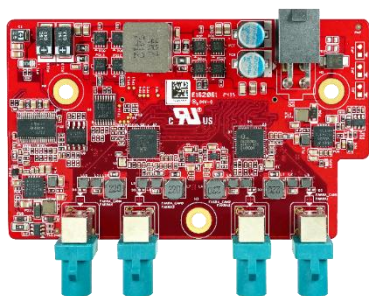
Designed for developers, engineers, and system integrators in AI vision, embedded systems, robotics, and machine vision, this capture card provides reliable performance with a 3-year warranty. By streamlining camera connectivity, it reduces development effort and shortens time-to-market.

## 1.2 Product List

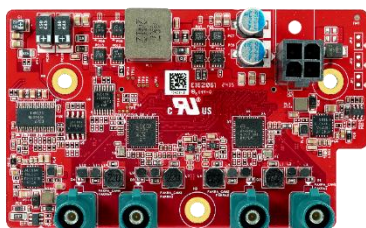
| P/N           | Description                                                                                                                                                                      |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EB120-1S4F-11 | SAMTEC 120-pin x1 to GMSL2 FAKRA Z x4 Capture Card<br>4 x Horizontal FAKRA connectors with low-profile SAMTEC connector<br>Dimension : 91.6 x 55mm (12V DC power cable included) |
| EB120-1S4F-12 | SAMTEC 120-pin x1 to GMSL2 FAKRA Z x4 Capture Card<br>4 x Vertical FAKRA connectors with low-profile SAMTEC connector<br>Dimension : 91.6 x 55mm (12V DC power cable included)   |
| EB120-1S4F-13 | SAMTEC 120-pin x1 to GMSL2 FAKRA Z x4 Capture Card<br>4 x Vertical FAKRA connectors with high-profile SAMTEC connector<br>Dimension : 91.6 x 55mm (12V DC power cable included)  |
| 7W8000000120  | 12V DC Power Cable                                                                                                                                                               |
| 9Z9000000350  | Adapter, 100 ~ 240V AC, 12V DC, 60W, DC Jack                                                                                                                                     |

Table 1: Product List

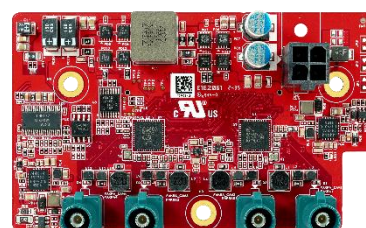
### 1.3 Product Picture



EB120-1S4F-11



EB120-1S4F-12



EB120-1S4F-13

Figure 1: Product Picture



Figure 2: Cable Picture

## 2. Product Specification

### 2.1. Product Parameter

|                                 |                                                                                                                   |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>Model Name</b>               | EB120-1S4F                                                                                                        |
| <b>Module Type</b>              | SAMTEC 120-pin x1 to GMSL2 FAKRA Z x4 Capture Card                                                                |
| <b>Camera I/F</b>               | GMSL2                                                                                                             |
| <b>Camera I/F Port</b>          | 4                                                                                                                 |
| <b>Host I/F</b>                 | SAMTEC 120-pin                                                                                                    |
| <b>Host I/F Port</b>            | 1                                                                                                                 |
| <b>Chipset</b>                  | MAXIM MAX9296                                                                                                     |
| <b>Power Source</b>             | 12V DC Jack                                                                                                       |
| <b>Power Consumption (Avg.)</b> | 9.38W                                                                                                             |
| <b>Operating Temperature</b>    | -30°C ~ 70°C                                                                                                      |
| <b>Dimension (W x L x H/mm)</b> | 91.6 x 55.0 x 17.27 (EB120-1S4F-11)<br>91.6 x 55.0 x 20.07 (EB120-1S4F-12)<br>91.6 x 55.0 x 40.04 (EB120-1S4F-13) |
| <b>Warranty</b>                 | 2 Years                                                                                                           |
| <b>Module Weight</b>            | 65.17 g (EB120-1S4F-11)<br>58.00 g (EB120-1S4F-12)<br>66.34 g (EB120-1S4F-13)                                     |

Table 2: Product Parameter

## 2.2 Electrical Specifications

| Item                 | Value  | Unit |
|----------------------|--------|------|
| Input Voltage        | 12     | V    |
| Current @Idle        | 353    | mA   |
| Current @Average     | 782    | mA   |
| Current @Maximum     | 1173   | mA   |
| Idle Power Rating    | 4.236  | W    |
| Average Power Rating | 9.384  | W    |
| Maximum Power Rating | 14.076 | W    |

**Table 3: Power Consumption**

## 2.3 Operating Temperature Range

| Temperature | Range        |
|-------------|--------------|
| Operation   | -30°C ~ 70°C |
| Storage     | -40°C ~ 85°C |

**Table 4: Operating Temperature Range.**

## 2.4 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.

| Product    | Condition                                                                                                                                                     | MTBF (Hours) |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| EB120-1S4F | 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 | 5,740,582    |

**Table 5: Mean Time between Failure (MTBF)**

## 3. Hardware Information

### 3.1 Connector

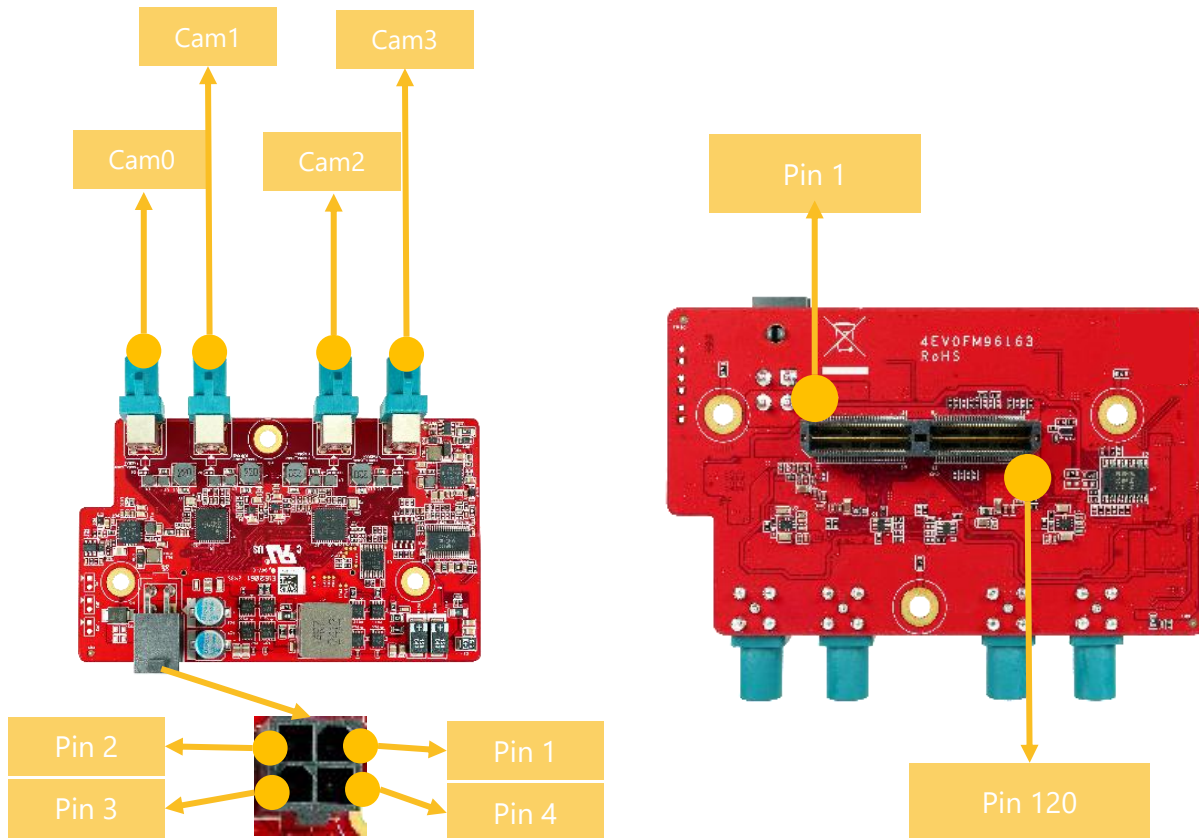


Figure 3: Connector Picture

| Location | Connector Type                                                    |
|----------|-------------------------------------------------------------------|
| FAKRA    | (有鹵)DIP(9.40x19.55x10.95)90D,Female PA9T<br>Water Blue -40~+105°C |
| SAMTEC   | (無鹵)SMD/2x60/180D/Female P:0.5mm H:4.27mm<br>LCP -55~+125C        |
| POWER    | (無鹵)DIP/90D 2x2P P:4.2mm 黑色,LCP -40~+85C                          |

Table 6: Connector Location

### 3.2 Pin Define

| Pin Number | Pin Name   | Pin Number | Pin Name   |
|------------|------------|------------|------------|
| Pin 1      | CSI0_D0_P  | Pin 2      | CSI1_D0_P  |
| Pin 3      | CSI0_D0_N  | Pin 4      | CSI1_D0_N  |
| Pin 5      | GND        | Pin 6      | GND        |
| Pin 7      | CSI0_CLK_P | Pin 8      | NC         |
| Pin 9      | CSI0_CLK_N | Pin 10     | NC         |
| Pin 11     | NC         | Pin 12     | GND        |
| Pin 13     | CSI0_D1_P  | Pin 14     | CSI1_D1_P  |
| Pin 15     | CSI0_D1_N  | Pin 16     | CSI1_D1_N  |
| Pin 17     | GND        | Pin 18     | GND        |
| Pin 19     | CSI2_D0_P  | Pin 20     | CSI3_D0_P  |
| Pin 21     | CSI2_D0_N  | Pin 22     | CSI3_D0_N  |
| Pin 23     | GND        | Pin 24     | GND        |
| Pin 25     | CSI2_CLK_P | Pin 26     | NC         |
| Pin 27     | CSI2_CLK_N | Pin 28     | NC         |
| Pin 29     | GND        | Pin 30     | GND        |
| Pin 31     | CSI2_D1_P  | Pin 32     | CSI3_D1_P  |
| Pin 33     | CSI2_D1_N  | Pin 34     | CSI3_D1_N  |
| Pin 35     | GND        | Pin 36     | GND        |
| Pin 37     | CSI4_D0_P  | Pin 38     | CSI6_D0_P  |
| Pin 39     | CSI4_D0_N  | Pin 40     | CSI6_D0_N  |
| Pin 41     | GND        | Pin 42     | GND        |
| Pin 43     | CSI4_CLK_P | Pin 44     | CSI6_CLK_P |
| Pin 45     | CSI4_CLK_N | Pin 46     | CSI6_CLK_N |
| Pin 47     | GND        | Pin 48     | GND        |
| Pin 49     | CSI4_D1_P  | Pin 50     | CSI6_D1_P  |
| Pin 51     | CSI4_D1_N  | Pin 52     | CSI6_D1_N  |
| Pin 53     | GND        | Pin 54     | GND        |
| Pin 55     | NC         | Pin 56     | NC         |
| Pin 57     | NC         | Pin 58     | NC         |
| Pin 59     | CSI5_D0_P  | Pin 60     | CSI7_D0_P  |
| Pin 61     | CSI5_D0_N  | Pin 62     | CSI7_D0_N  |
| Pin 63     | GND        | Pin 64     | GND        |
| Pin 65     | NC         | Pin 66     | NC         |
| Pin 67     | NC         | Pin 68     | NC         |
| Pin 69     | GND        | Pin 70     | GND        |

| Pin Number | Pin Name  | Pin Number | Pin Name  |
|------------|-----------|------------|-----------|
| Pin 71     | CSI5_D1_P | Pin 72     | CSI7_D1_P |
| Pin 73     | CSI5_D1_N | Pin 74     | CSI7_D1_N |
| Pin 75     | I2C3_CLK  | Pin 76     | NC        |
| Pin 77     | I2C3_DAT  | Pin 78     | NC        |
| Pin 79     | GND       | Pin 80     | GND       |
| Pin 81     | NC        | Pin 82     | NC        |
| Pin 83     | NC        | Pin 84     | NC        |
| Pin 85     | NC        | Pin 86     | NC        |
| Pin 87     | I2C2_CLK  | Pin 88     | NC        |
| Pin 89     | I2C2_DAT  | Pin 90     | NC        |
| Pin 91     | NC        | Pin 92     | NC        |
| Pin 93     | NC        | Pin 94     | NC        |
| Pin 95     | NC        | Pin 96     | NC        |
| Pin 97     | NC        | Pin 98     | NC        |
| Pin 99     | GND       | Pin 100    | GND       |
| Pin 101    | NC        | Pin 102    | NC        |
| Pin 103    | NC        | Pin 104    | NC        |
| Pin 105    | NC        | Pin 106    | NC        |
| Pin 107    | NC        | Pin 108    | NC        |
| Pin 109    | NC        | Pin 110    | NC        |
| Pin 111    | NC        | Pin 112    | NC        |
| Pin 113    | NC        | Pin 114    | NC        |
| Pin 115    | GND       | Pin 116    | GND       |
| Pin 117    | NC        | Pin 118    | NC        |
| Pin 119    | NC        | Pin 120    | NC        |

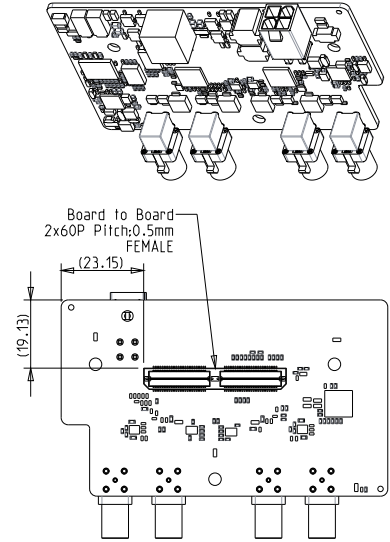
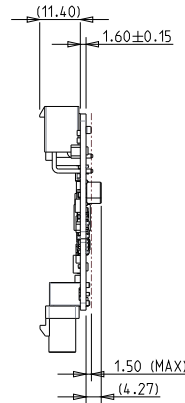
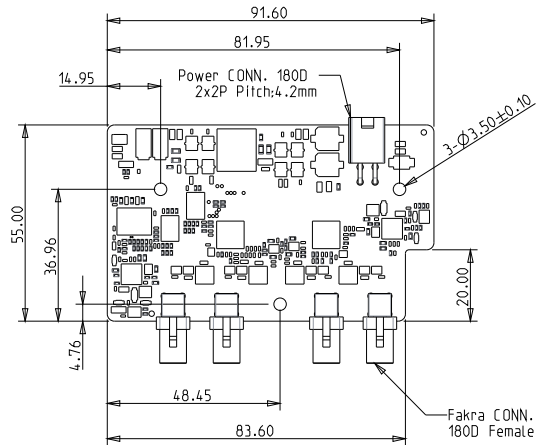
Table 7: 120-Pin Define

| Pin Number | Pin Name |
|------------|----------|
| Pin 1      | Ground   |
| Pin 3      | Ground   |
| Pin 5      | DC 12V   |
| Pin 7      | DC 12V   |

Table 8: Power Connector Pin Define

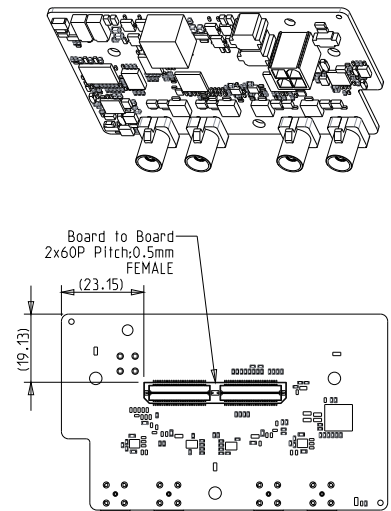
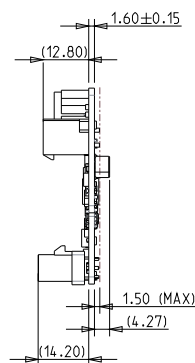
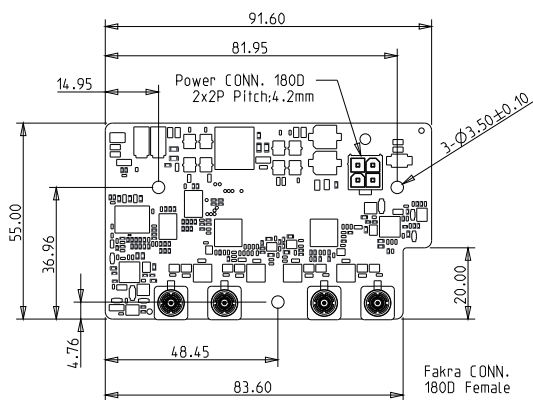
### 3.3 Product Drawing

#### EB120-1S4F-11



TOLERANCE:  $\pm 0.15$ mm  
UNIT: mm

#### EB120-1S4F-12



TOLERANCE:  $\pm 0.15$ mm  
UNIT: mm

EB120-1S4F-13

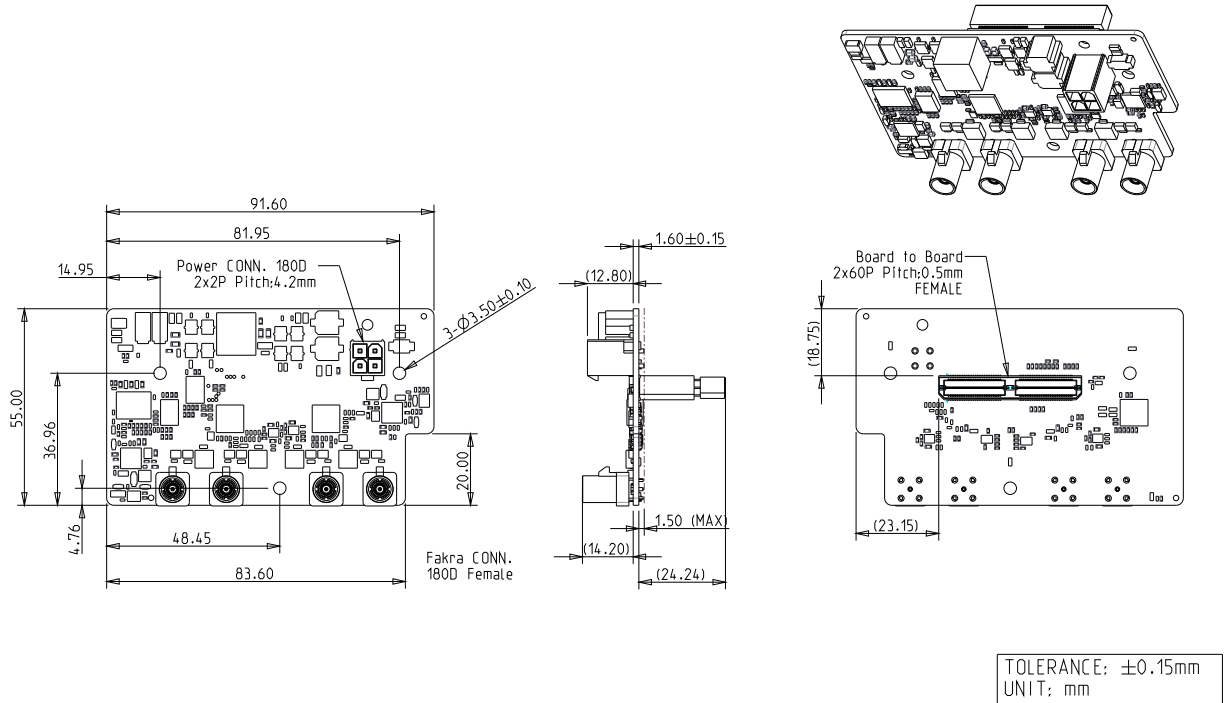


Figure 4: Product Drawing

## 4. Packing List

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| P/N          | Description                                        | Qty. |
|--------------|----------------------------------------------------|------|
| EB120-1S4F   | SAMTEC 120-pin x1 to GMSL2 FAKRA Z x4 Capture Card | 1    |
| 7W8000000120 | 12V DC Power Cable                                 | 1    |

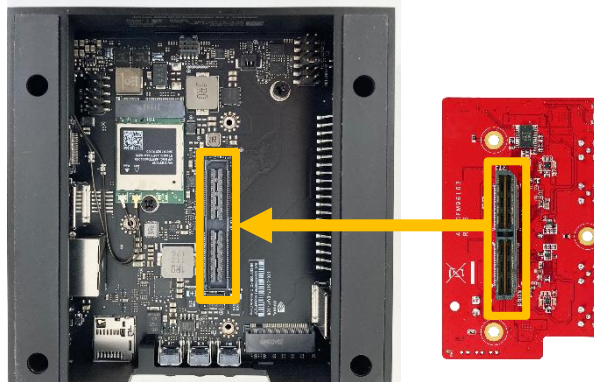
**Table 9: Packing List**

## 5. Installation Guide

Connect the camera using the GMSL coaxial cable as shown below:

Install the SAMTEC 120-pin x1 to GMSL2 FAKRA Z x4 Capture board (EB120-1S4F-13) onto the main board by aligning the 120-pin connector and pressing it down evenly until it is fully seated.

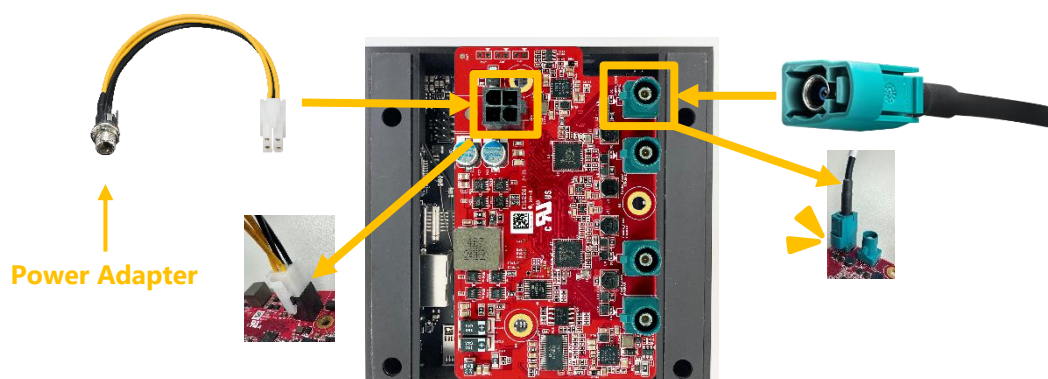
Ensure the Capture board is properly secured and correctly aligned with the main board connector.



\*Ensure the correct orientation when connecting the SAMTEC 120-pin connector. The connector is equipped with a keying mechanism to prevent incorrect insertion.

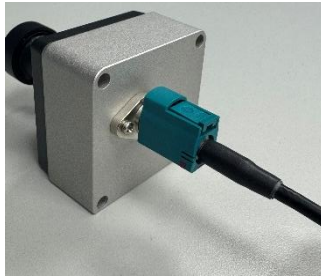
**Figure 5: Capture Card connect with AGX DevKit Picture**

Align the FAKRA connector with one of the GMSL2 FAKRA ports on the Capture board, then push it straight in until it clicks into place, and using power cable to connect with power adapter from DC jack side ( Suggest using 12V, 60W ).



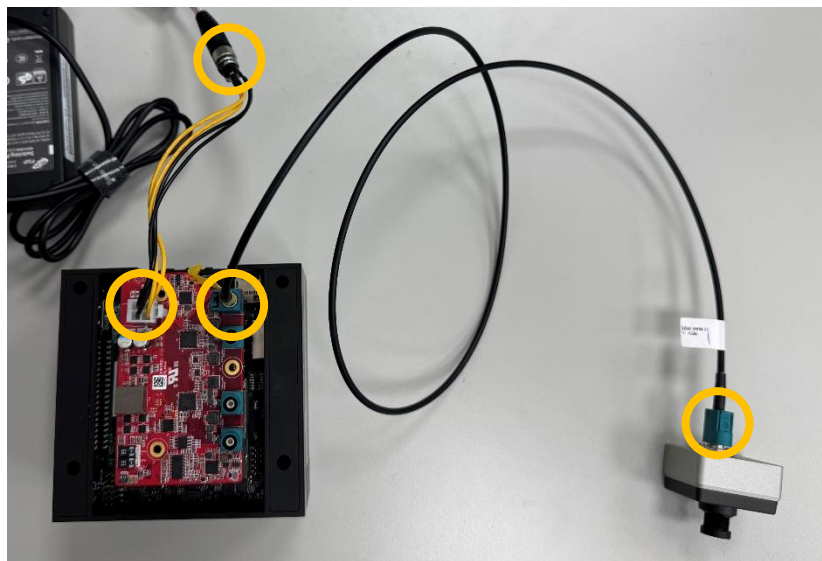
**Figure 6: Capture Card insert power cable and coaxial cable Picture**

Insert the other end of the coaxial cable into the camera module's FAKRA connector, ensuring proper alignment before pushing it in until it is fully locked.



**Figure 7: Coaxial cable connector with GMSL2 Camera module Picture**

Double-check that the Capture board is firmly installed, both FAKRA connectors are securely fastened, and that the coaxial cable is routed without sharp bends, excessive tension, or twists.



**Figure 8: Installation Guide Picture**

## 6. Declaration And Certification



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.**

**(Standard finished products, excluding all of customized products & EOL 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 247 substances (release date: 21-JAN-2025) 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: Quality Assurance Div. SR. Manager 品保處經理

Date 日期: 2025 / 02 / 24



### RoHS 自我宣告書 (RoHS Declaration of Conformity)

Manufacturer Products: All Innodisk Flash Memory, DRAM Module and Embedded Peripherals

- 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                  |
| 鄰苯二甲酸二異丁酯 (DIBP)            | < 1000 ppm                  |

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Innodisk Corporation

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：Quality Assurance Div. SR. Manager 品保處經理

Date 日期：2025 / 02 / 24