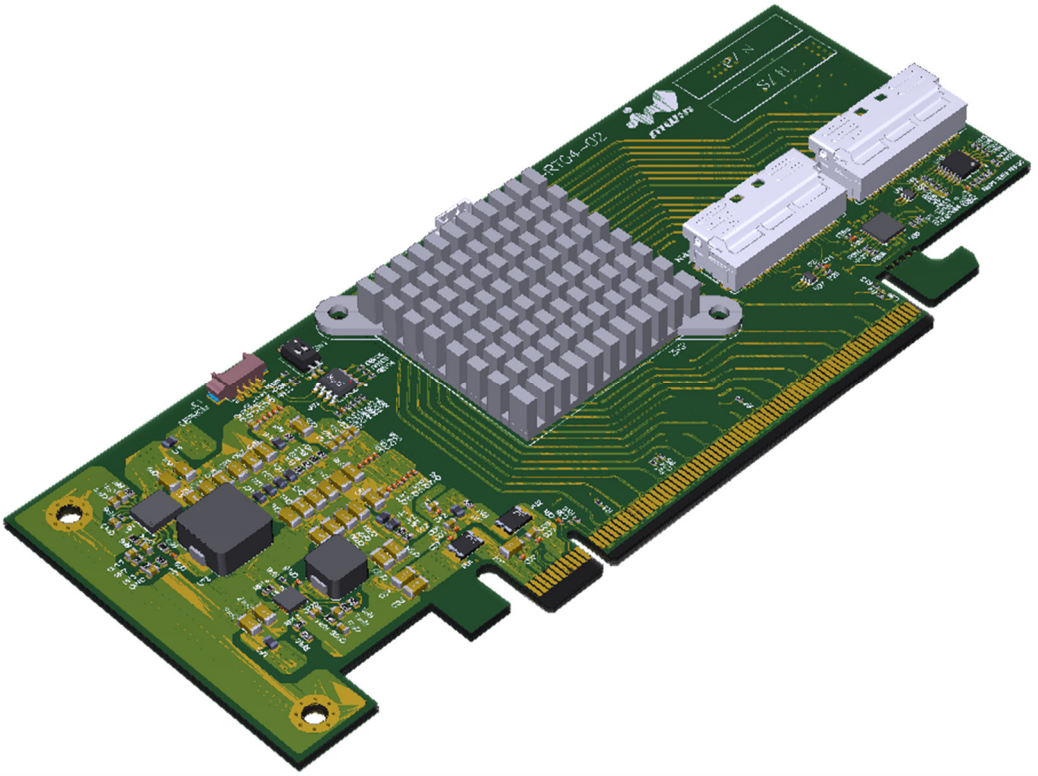
PCIE RETIMER CARD

USER'S MANUAL

Model Name ： IW-RT04-02-GEN5



Revision : V1.0

Revision History

Rev.	Description	Date	Drawn	Mechanical	EE Engineer	Auditor	Approval
1.0	Initial Release	2024/09/03	Elsa Lin	Otis Chen	Sherry	Eric Lin	Alex Chen

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Overview

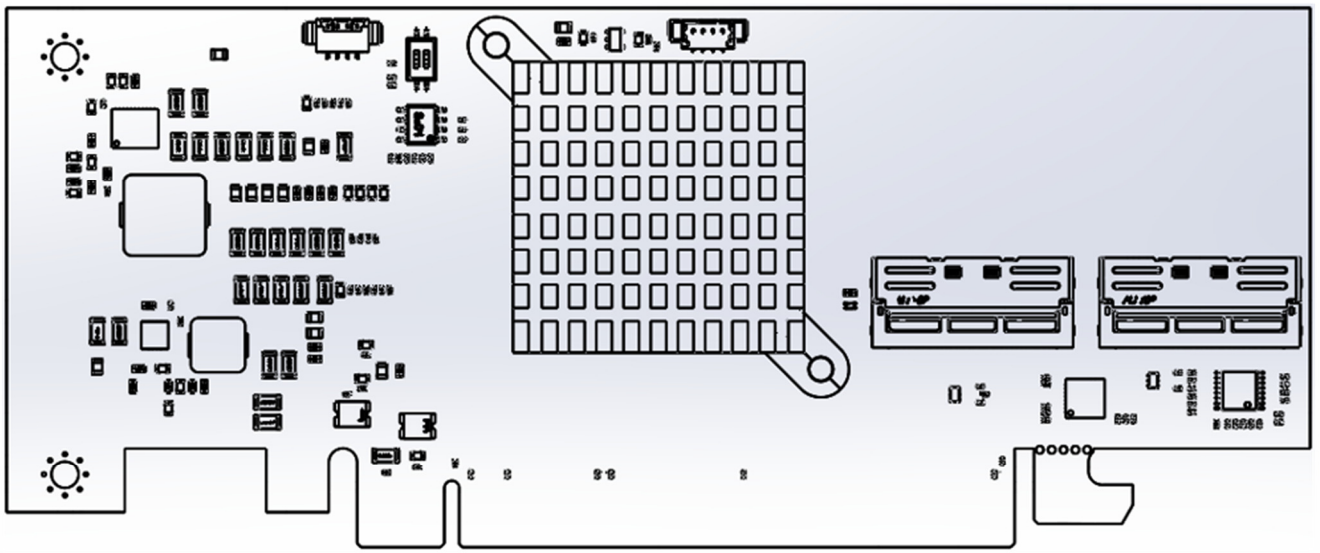
The PCIe Retimer AIC is a high-performance 16-lane Retimer IC designed for PCIe 5.0 applications, supporting data rates of up to 32 Gbps per lane. This technology is built to extend the reach and reliability of PCIe connections across various physical mediums, including motherboards, interconnect cables, and MCIO8i x 2 connectors.

The primary function of this PCIe Retimer AIC is to bridge the connection between a x16 PCIe slot on the motherboard and four x4 NVMe SSDs on a backplane. Supporting PCIe Gen5, it can handle speeds up to 32 Gbps, which is double the data rate of PCIe Gen4. Additionally, PCIe Gen5 offers enhanced signal integrity and reduced latency, making it ideal for high-speed data transfer applications.

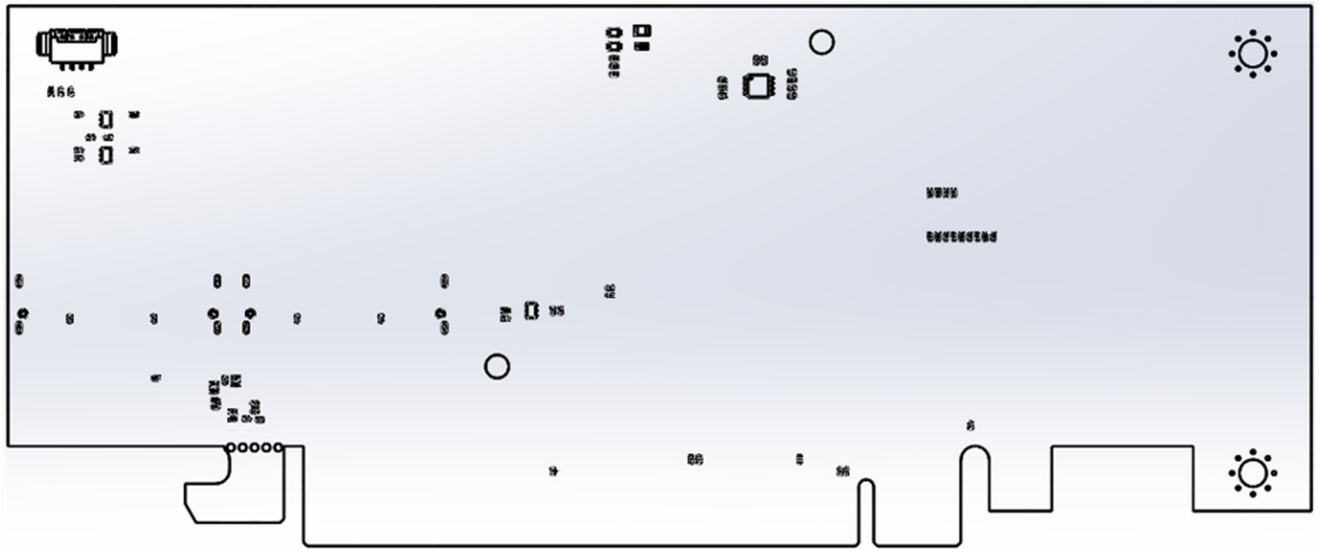
For motherboards that need to accommodate four x4 NVMe setups, PCIe bifurcation is required, which splits a x16 slot into four x4 lanes. The PCIe Retimer card re-amplifies the PCIe signals between the root complex and the end devices, allowing for greater distances between them while maintaining signal quality and performance.

Diagram

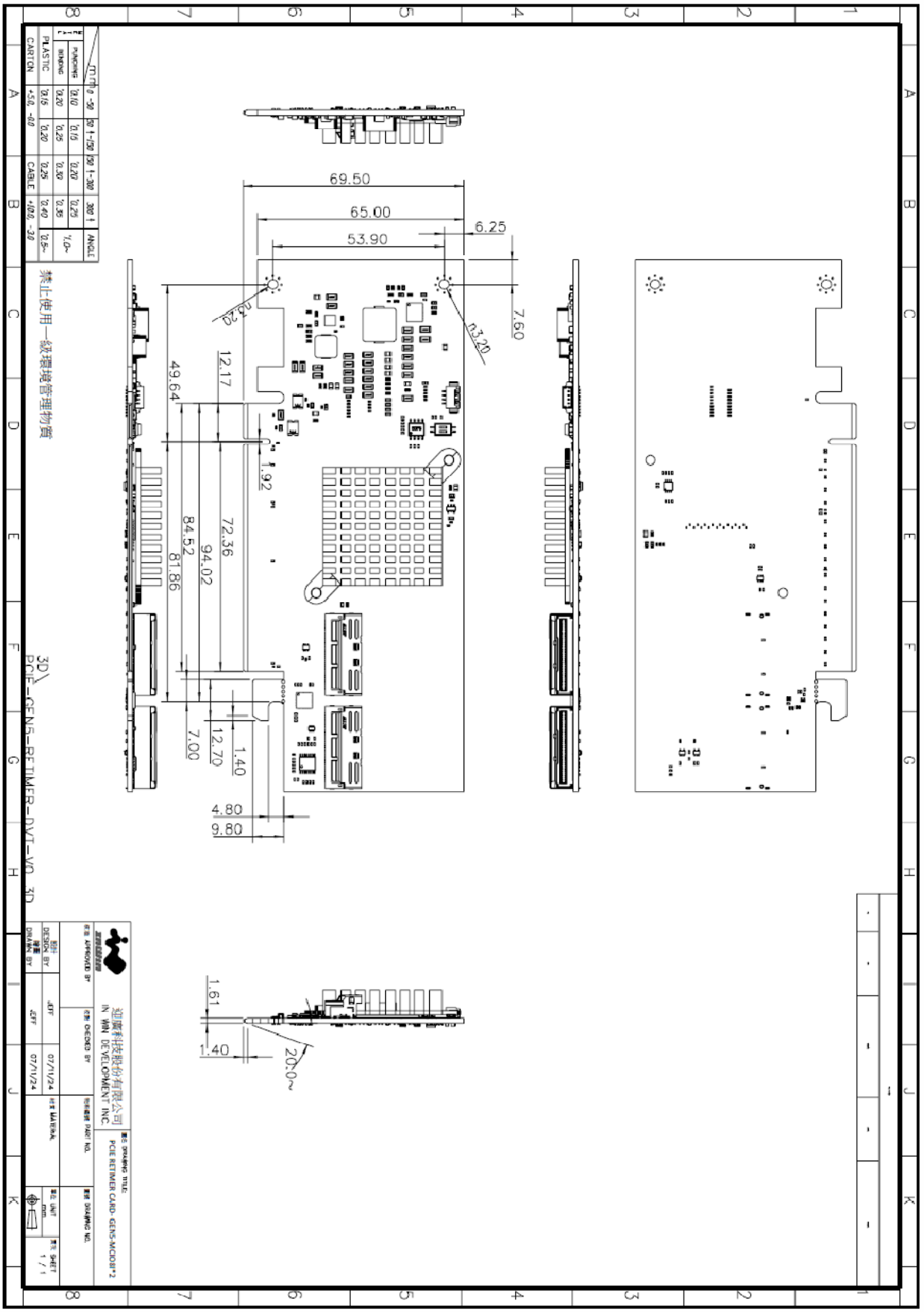
TOP-SIDE



BOTTOM-SIDE



Mechanical


69.50
65.00
53.90
6.25
7.60
n3.20
n3.20
49.64
12.17
1.92
84.52
81.86
94.02
72.36
7.00
12.70
1.40
4.80
9.80
1.61
1.40
20.0~
禁止使用一級環境管理物質
3D\
PCIE-GEN5-RETIMER-DVT-V0.3D
迎廣科技股份有限公司
IN WIN DEVELOPMENT INC.
PCIE RETIMER CARD-GEN5-MCIO8I*2
DESIGN BY
DRAWN BY
JEFF
07/11/24
07/11/24
SHEET
1 / 1

Hardware Specification

- General ：
  - PCI-E Gen-5 Retimer Card (16 bidirectional lanes)
  - Compliant with CXL 2.0 and support up to 32 Gbps per lane
  - Supports common clock, SRIS, SRNS, lane reversal and polarity inversion
  - There are two MCIO8i ports and link bifurcation supports 4x4 to supports four NVMe SSD devices (hot plug)
  - Operating temperature from 10℃ - 55℃.
  - Power Consumption：25 Watts.
- Dimension :
  - PCB Low Profile design.
  - 6.6" x 2.71 " (L x H).G
  - 1U and 2U bracket support.

4x4 Link Bifurcation

Configuring a 4x4 link bifurcation in the motherboard BIOS typically involves navigating through the BIOS settings to adjust the PCIe slot configuration. Here's an example of how you might do it:

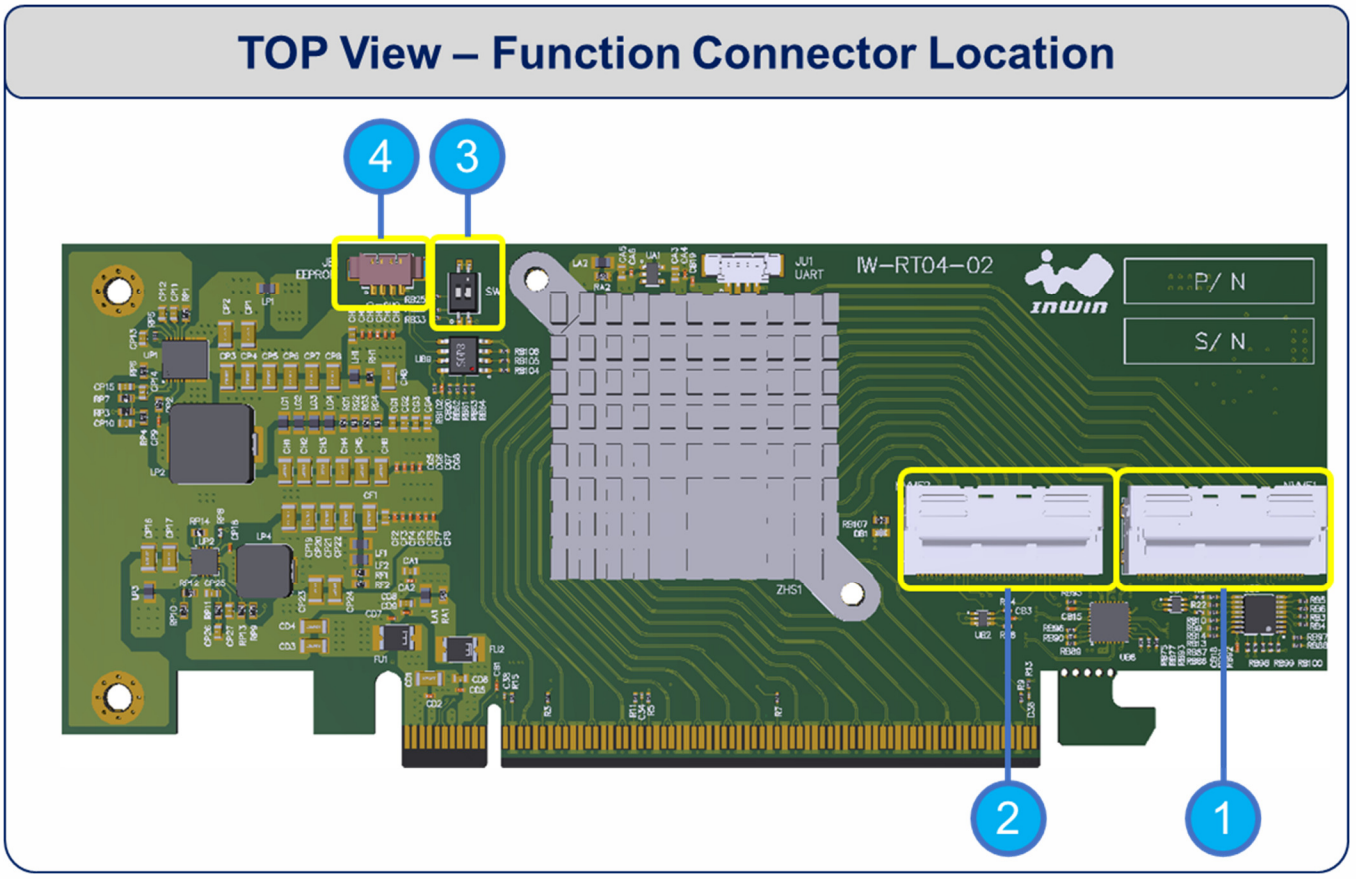
1. Enter BIOS Setup
   Power on your computer and press the designated key (often Del, F2, or Esc) to enter the BIOS setup during the boot process.
2. Navigate to the Advanced Settings
   Once in the BIOS, look for an "Advanced" tab or section. This may also be labeled as "Chipset" or "PCIe Configuration", depending on your motherboard.
3. Locate PCIe Slot Configuration
   Under the advanced settings, find the option for "PCIe Slot Configuration" or "PCIe Bifurcation". This option might be located under a subsection such as "System Agent Configuration" or "Chipset Configuration".
4. Set Bifurcation Mode
   Select the PCIe slot you want to configure. Change the setting from x16 to 4x4x4x4 or simply 4x4, depending on the number of lanes you wish to divide.
   The actual label might vary, but it should indicate the breakdown of the PCIe lanes. For instance, if you're using a x16 slot and want it divided into four x4 links, you would choose the option that indicates 4x4x4x4.
5. Save and Exit
   After setting the desired bifurcation, save your changes. This is typically done by pressing

F10 and then selecting “Yes” to confirm.

6. Verify Configuration
   Once the system restarts, you can verify the configuration in the BIOS or through the operating system using diagnostic tools that display PCIe lane distribution.

This setup allows the PCIe slot to split its lanes, enabling it to support multiple devices like NVMe SSDs on a single x16 slot by treating them as four separate x4 links. The exact wording and location of these settings can vary depending on the motherboard’s manufacturer and model. Always refer to the motherboard manual for the most accurate guidance.

Function Connector & Switch Location



No	Description	No	Description
1	MCIO 8i Connector : NVME1	3	SMBUS Addressing Switch : SW1
2	MCIO 8i Connector : NVME2	4	EEPROM Programming Connector : JE1