

# IN WIN DEVELOPMENT

PCIe Retimer HBA

RT04-01

## Supported Devices

Part Number	Description
2RAKVI003300	RT04-1 PCIe Retimer AIC

Draft Version: 0.3

## History

Version	Changes	Date
0.1	First draft	2019/01/22
0.2	Added IN WIN Part Number Information Replace PCB layout with final version Added some more information	2019/03/25
0.3	Add the VPP usage Replace the graphics of the layout Adjust J7, J8, J9 location Correct Power Consumption Information	2019/04/15

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# 1 Overview

The PCIe Retimer AIC is mainly designed to bridge the connections between x16 PCIe Slot host on Motherboard to 4 x4 NVMe SSDs on backplane. Alternately, the add-in-card supports connecting to x8 or x16 devices as PCIe signal integrator.

The link speed of the HBA can support up to PCIe Gen3 speed, says 8Gb/s. Considering the x4 NVMe application, it provides 3.2GB/s throughput for each x4 lane NVMe device.

To facilitate 4 x4 NVMe application, the motherboards have to support PCIe bifurcation which divides x16 slot into 4 x4.

PCIe Retimer card plays the role to re-signal the PCIe signaling between root complex and end devices to extend the distance between root and end devices.

## 2 Technical Specifications

### 2.1 General

- Quad port PCI-E x16 Gen-3 Retimer
- Four lanes per each OcuLink port support up to 32Gbps per port
- Supports four physical NVMe devices
- Operating temperature from 10°C - 55°C
- Pure HBA

### 2.2 Dimension

- PCB Low Profile design
- 6.6" x 2.71 " (L x H)
- 1U and 2U bracket support

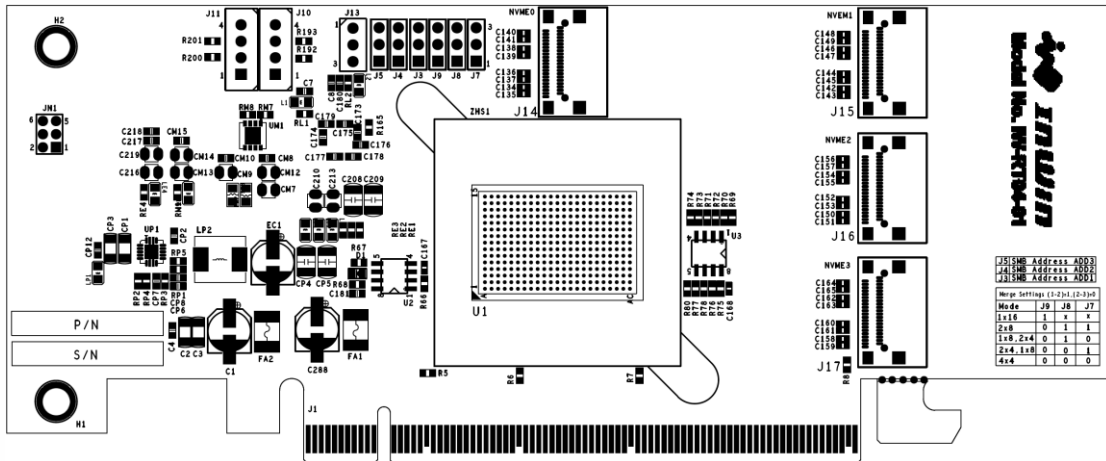
### 2.3 Power Consumption

- 9 Watts

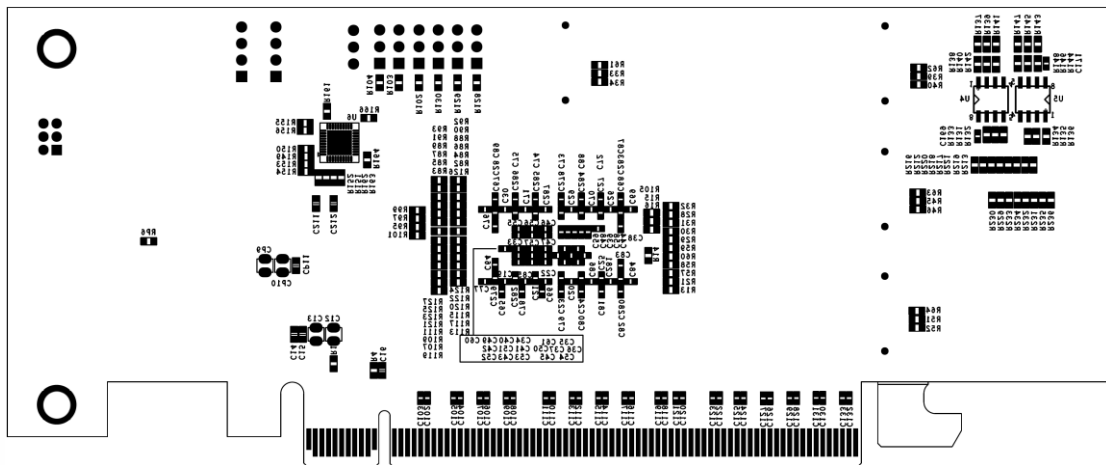
### 3 Components

#### 3.1 Layout

- TOP



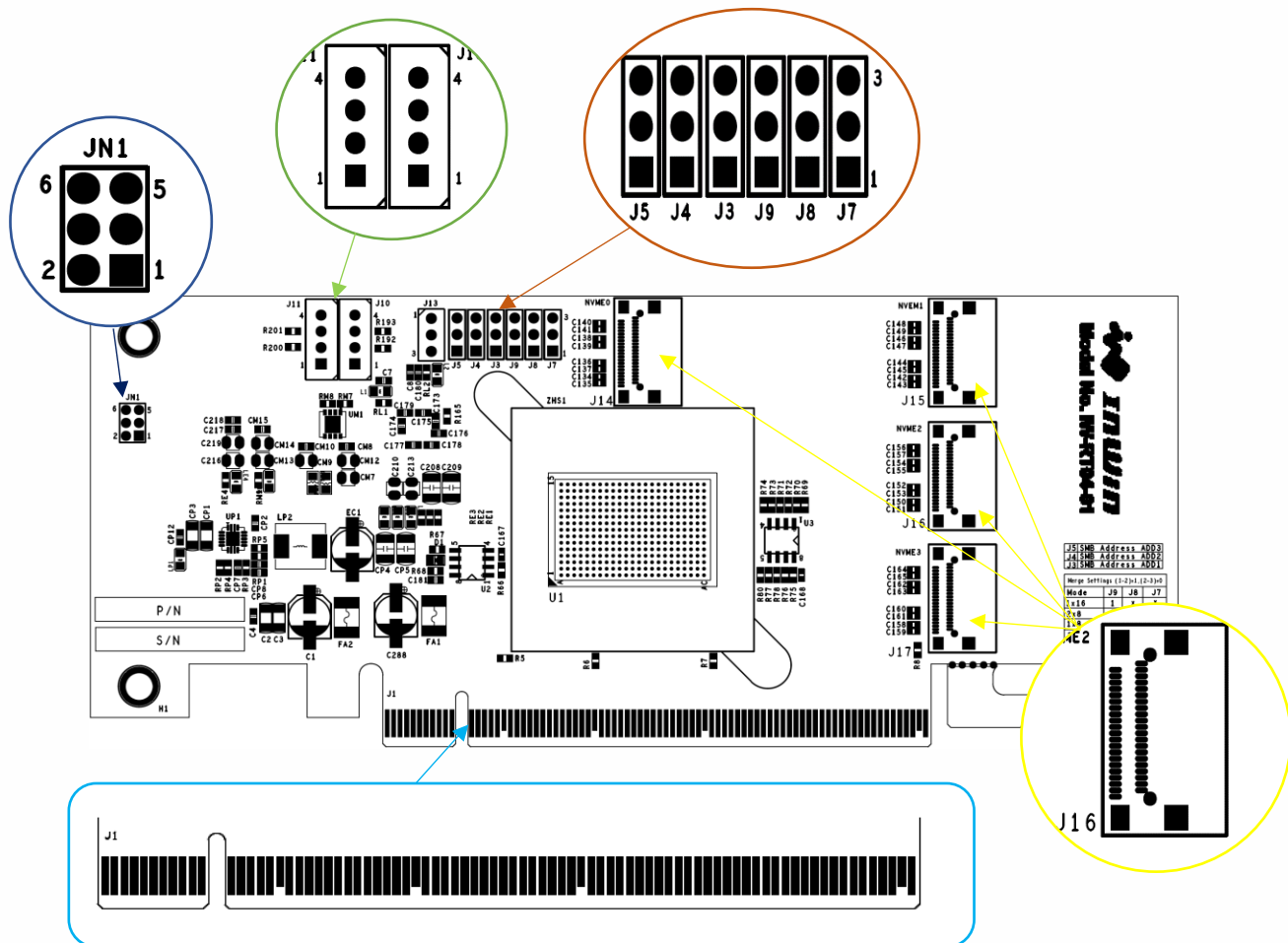
- Bottom



- Physical view



- Details view



## 3.2 Connectors

- Connectors

Symbol	Description
J1	PCIe x16 bus
J14	NMVe0 Oculink Connector
J15	NVMe1 Oculink Connector
J16	NVMe2 Oculink Connector
J17	NVMe3 Oculink Connector
J10	VPP0
J11	VPP1



### 3.3 Jumpers

- Jumper settings

Jumper Name	Function
J3, J4, J5	SMBus Address Configuration
J7, J8, J9	PCIe Mode Selection
JN1	VPP Bus Selector

JN1 is used for VPP0 and VPP1 configuration. Since come of the NVMe controller's LED management in VPP/I2C carry 2 slots information while some are carry 4 slots information. JN1 is designed for users to select what types of VPP protocol will be used in the application.

JN1: 1-3, 2-4 shunted means VPP0 and VPP1 is separated. (Default)

JN1: 3-5, 4-5 shunted means VPP0 and VPP1 is paralleled.

- SMBus Address Setting

J5	J4	J3
ADDR_3	ADDR_2	ADDR_1

Default: b'111

- PCIe Mode Selection

PCIe Mode Selection (1-2)=1 (2-3)=0			
Mode	J9	J8	J7
x16	1	x	x
x8x8	0	1	1
x8x4x4	0	1	0
x4x4x8	0	0	1
X4x4x4x4	0	0	0

Default: x4x4x4x4

## 4 Installation

### 4.1 Electrostatic Discharge Sensitive (ESDS)

Electrostatic Discharge (ESD) might damage electronic components. To prevent your Retimer card from being damaged, it is important to handle it with care. The following measures are generally sufficient to protect your device from ESD.

#### **Precautions**

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the expansion card from the antistatic bag.
- Handle the Retimer card by its edges only. Do not touch its components or peripheral chips.
- Put the Retimer card back into the antistatic bags when not in use.
- For grounding purposes, make sure that your system chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the Retimer card.