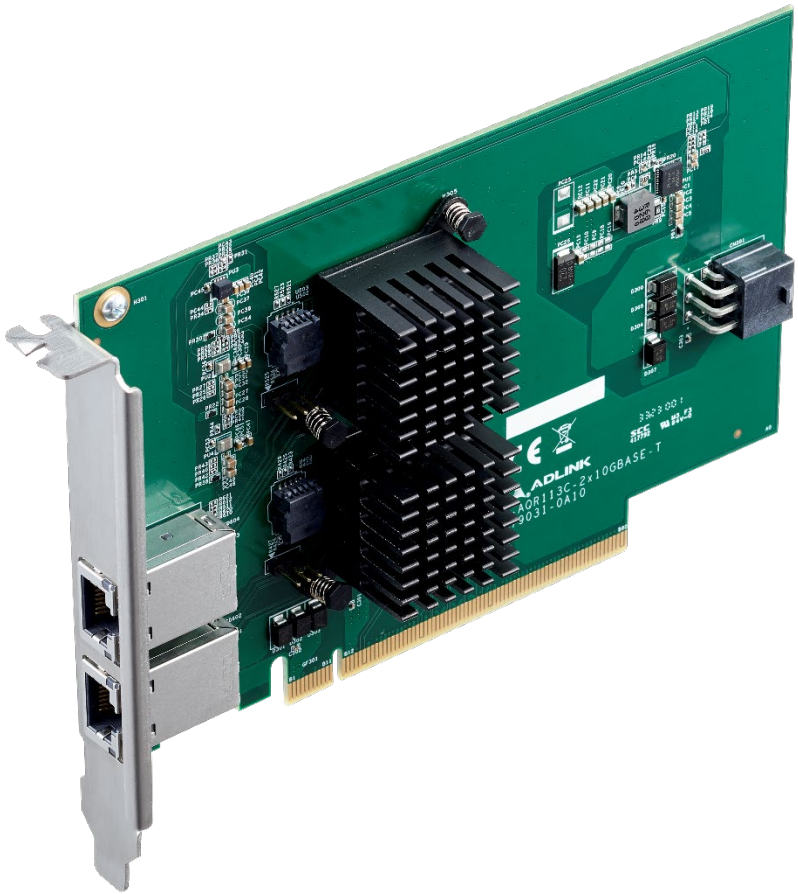
CEI-2x10GBASE-T

Network Adapter Card for Express-VR7

User's Guide



COM Express®

Revision:	1.0
Date:	2024-05-20
Part Number:	50M-79031-1000

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Revision History

Revision	Description	Date	Author
1.0	Initial release	2024-05-20	AL

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Preface

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Safety Instructions

For user safety, please read and follow all Instructions, **WARNING**s, **CAUTION**s, and **NOTE**s marked in this manual and on the associated equipment before handling/operating the equipment.

Read these safety instructions carefully.

- Keep this manual for future reference.
- Read the specifications section of this manual for detailed information on the operating environment of this equipment.
- Turn off power and unplug any power cords/cables when installing/mounting or un-installing/removing equipment.
- To avoid electrical shock and/or damage to equipment:
- Keep equipment away from water or liquid sources;
- Keep equipment away from high heat or high humidity;
- Keep equipment properly ventilated (do not block or cover ventilation openings);
- Make sure to use recommended voltage and power source settings;
- Always install and operate equipment near an easily accessible electrical socket outlet;
- Secure the power cord (do not place any object on/over the power cord);
- Only install/attach and operate equipment on stable surfaces and/or recommended mountings;
- If the equipment will not be used for long periods of time, turn off the power source and unplug the equipment.

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Conventions

The following conventions may be used throughout this manual, denoting special levels of information

Note: This information adds clarity or specifics to text and illustrations.

Caution: This information indicates the possibility of minor physical injury, component damage, data loss, and/or program corruption.

Warning: This information warns of possible serious physical injury, component damage, data loss, and/or program corruption.

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1. Introduction

The ADLINK CEI-2x10GBASE-T card is a 10GBASE-T network adapter card that is dedicated to Express-VR7 module. Delivering 10Gbps network within the guidelines of **PICMG COM.0 R3.1 specification**, the adapter card converts up to two 10GBASE-KR interfaces, and related CEI sideband signals, to two 10GBASE-T interfaces via RJ45 connectors, through Marvell AQR113C PHY and multiple I/O expanders.

The CEI-2x10GBASE-T card can only be used with ADLINK Express-VR7 COM Express module (PICMG COM.0 R3.1 Type7 compliant)

Utilizing the CEI-2x10GBASE-T card along with an Express-VR7 COM Express module and Express-BASE7 Plus reference carrier board, you can easily emulate the functionality of your end product for software development and hardware verification. Applications include entry level switch, cloud storage platforms, communications servers, and more.

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2. Specifications

2.1. Interface

Input

Up to 2x 10GBASE-KR and related CEI sideband signals from a dedicated COM Express Type 7 module through 164-pin edge connector (PCIe x16 slot PCIEKR on Express-BASE7 Plus)

Output

Up to 2x 10GBASE-T interfaces via 2x RJ45 connectors

2.2. 10GbE PHY

PHY

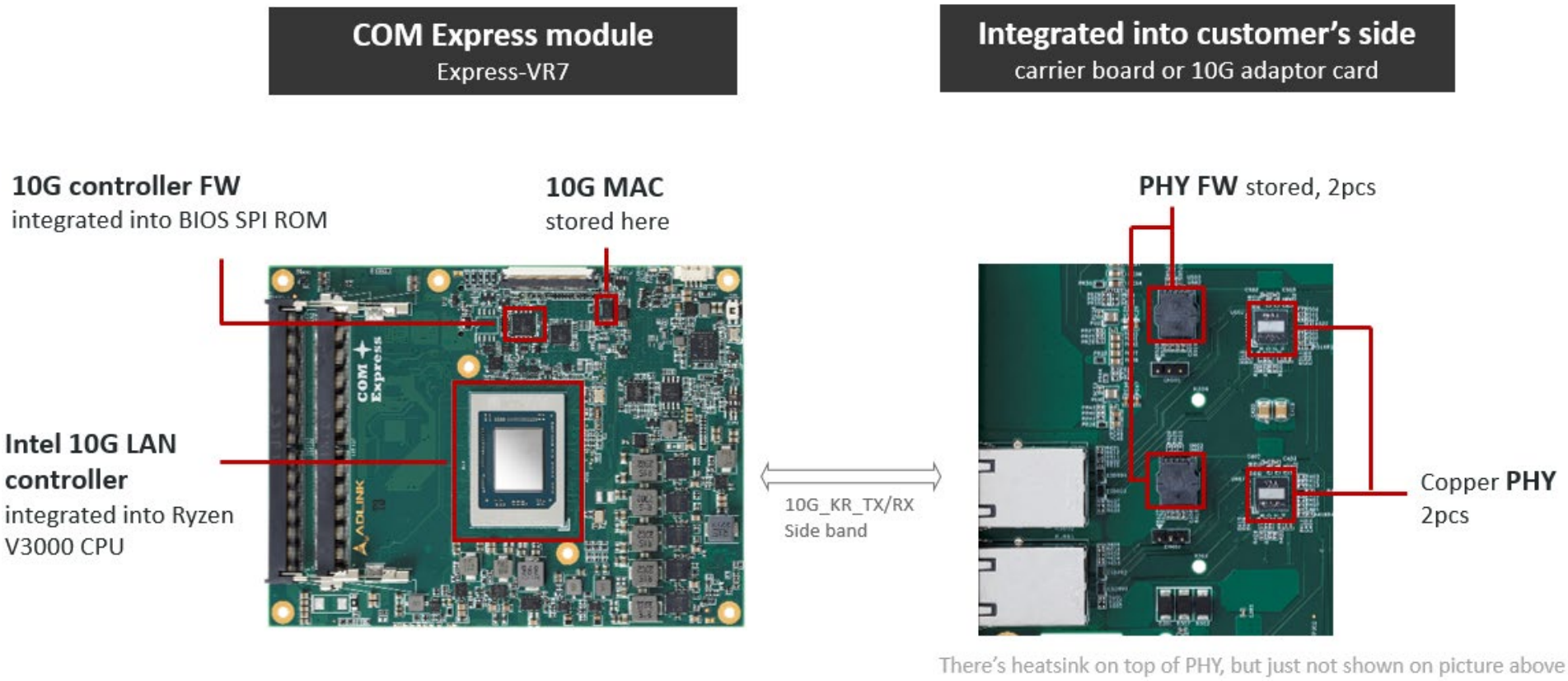
Marvell AQR113C

Converts 10GBASE-KR and sidebands to 10GBASE-T interface

PHY Firmware on SPI ROM

Dedicated ROM for storing PHY firmware

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2.3. Dimensions

168 mm x 107 mm (PCB only, including edge connector)

2.4. Operating Temperature

0°C to 85°C

2.5. Specification Compliance

PICMG COM.0 Rev 3.1 Type 7

2.6. I/O Expander & EEPROM

There’re no additional I/O expander and EEPROM required

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3. Block Diagram

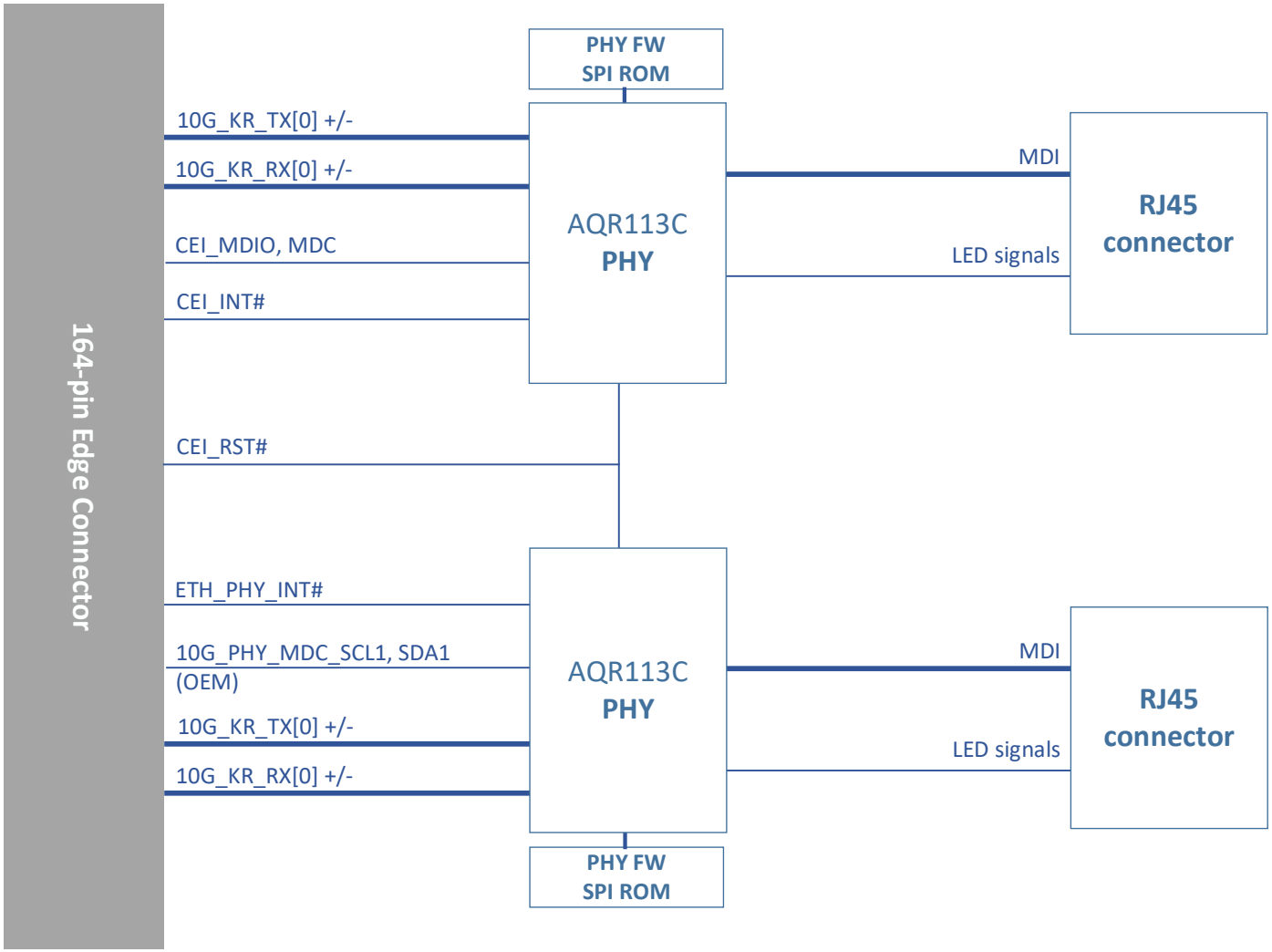


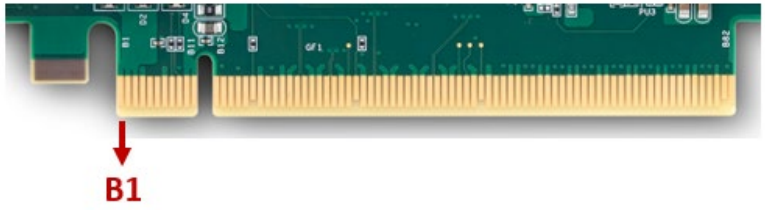
Figure 1 – CEI-2x10GBASE-T function diagram

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4. Pinout and Signal Descriptions

4.1. Input Interface Definitions

The table below is a comprehensible list of all signal pins supported on the 164-pin Edge connector of the CEI-2x10GBASE-T card. Signal names follow the PICMG COM.0 R3.1 specification. Signals described in the specification but not supported on the CEI-2x10GBASE-T card are marked with strikethrough. ~~STRIKETHROUGH.~~



Row B		Row A	
Pin	**Name**	**Pin**	**Name**
B1	12V	A1	NC
B2	12V	A2	12V
B3	12V	A3	12V
B4	GND	A4	GND
B5	NC	A5	NC
B6	NC	A6	NC
B7	GND	A7	GND
B8	CEI_SDA	A8	NC
B9	CEI_SCL	A9	NC
B10	NC	A10	GND
B11	NC	A11	NC
B12	NC	A12	GND

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Row B		Row A	
Pin	**Name**	**Pin**	**Name**
B13	5VSB	A13	NC
B14	5VSB	A14	NC
B15	NC	A15	GND
B16	ETH_PHY_INT# (or named as 10G_INT1-L on schematic)	A16	NC
B17	CEI_INT# (or named as 10G_INT0-L on schematic)	A17	NC
B18	GND	A18	GND
B19	NC	A19	NC
B20	NC	A20	GND
B21	GND	A21	NC
B22	GND	A22	NC
B23	NC	A23	GND
B24	NC	A24	GND
B25	GND	A25	NC
B26	GND	A26	NC
B27	NC	A27	GND
B28	NC	A28	GND
B29	GND	A29	NC
B30	NC	A30	NC
B31	10G_PHY_RST_01	A31	GND
B32	GND	A32	NC
B33	10G_KR_RX1+ (or named as L_KR_RX1_P on schematic)	A33	NC
B34	10G_KR_RX1- (or named as L_KR_RX1_N on schematic)	A34	GND
B35	GND	A35	10G_KR_TX1+ (or named as L_KR_TX1_P on schematic)
B36	GND	A36	10G_KR_TX1- (or named as L_KR_TX1_N on schematic)
B37	10G_PHY_MDIO_SDA1	A37	GND

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Row B		Row A	
Pin	**Name**	**Pin**	**Name**
	(special pin defined for OEM usage)		
B38	10G_PHY_MDC_SCL1 (special pin defined for OEM usage)	A38	GND
B39	GND	A39	CEI_MDIO (or named as 10G_PHY_MDIO_SDA0 on schematic)
B40	GND	A40	CEI_MDC (or named as 10G_PHY_MDIC_SCL0 on schematic)
B41	10G_KR_RX0+ (or named as L_KR_RX0_P on schematic)	A41	GND
B42	10G_KR_RX0- (or named as L_KR_RX0_N on schematic)	A42	GND
B43	GND	A43	10G_KR_TX0+ (or named as L_KR_TX0_P on schematic)
B44	GND	A44	10G_KR_TX0- (or named as L_KR_TX0_N on schematic)
B45	NC	A45	GND
B46	NC	A46	GND
B47	GND	A47	NC
B48	NC	A48	NC
B49	GND	A49	GND
B50	NC	A50	NC
B51	NC	A51	GND
B52	GND	A52	NC
B53	GND	A53	NC
B54	NC	A54	GND
B55	NC	A55	GND
B56	GND	A56	NC
B57	GND	A57	NC
B58	NC	A58	GND
B59	NC	A59	GND
B60	GND	A60	NC
B61	GND	A61	NC

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Row B		Row A	
Pin	**Name**	**Pin**	**Name**
B62	NC	A62	GND
B63	NC	A63	GND
B64	GND	A64	NC
B65	GND	A65	NC
B66	NC	A66	GND
B67	NC	A67	GND
B68	GND	A68	NC
B69	GND	A69	NC
B70	NC	A70	GND
B71	NC	A71	GND
B72	GND	A72	NC
B73	GND	A73	NC
B74	NC	A74	GND
B75	NC	A75	GND
B76	GND	A76	NC
B77	GND	A77	NC
B78	NC	A78	GND
B79	NC	A79	GND
B80	GND	A80	NC
B81	NC	A81	NC
B82	NC	A82	GND

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5. Module Interfaces and Configuration

This chapter describes connectors, LEDs and switches that are used on the CEI-2x10GBASE-T card.

5.1. Connector and LED Locations

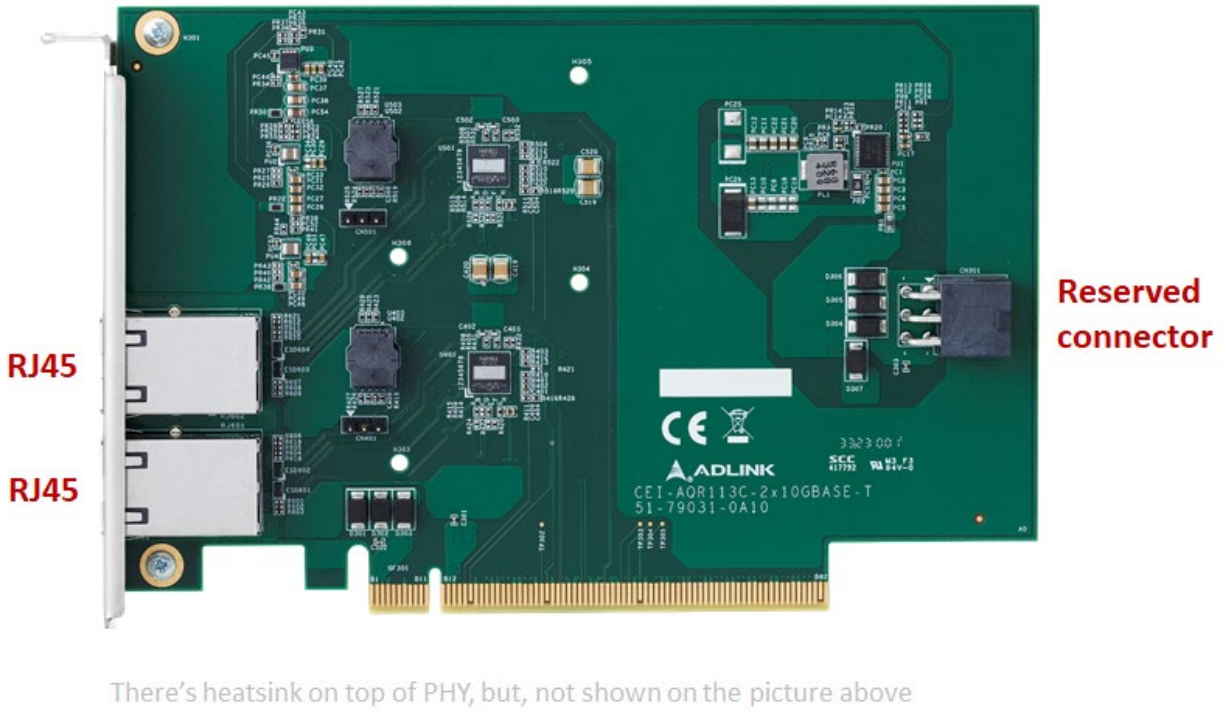


Figure 2 – Adapter card feature locations

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5.2. LAN LED Behavior

LED Function	LED Color	LED State	Description
Speed	Green/Yellow	Off	Lower than 1G
		Green	1G
		Yellow	10G
Status & Activity	Yellow	Off	No link
		Steady On	Link established, no activity detected
		Blinking	Link established, activity detected

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5.3. Network Adaptor Card Installation

Below is an example (for illustration purposes only) of the CEI-2x10GBASE-T card installed on an Express-BASE7 Plus carrier board with a Type 7 COM Express module.

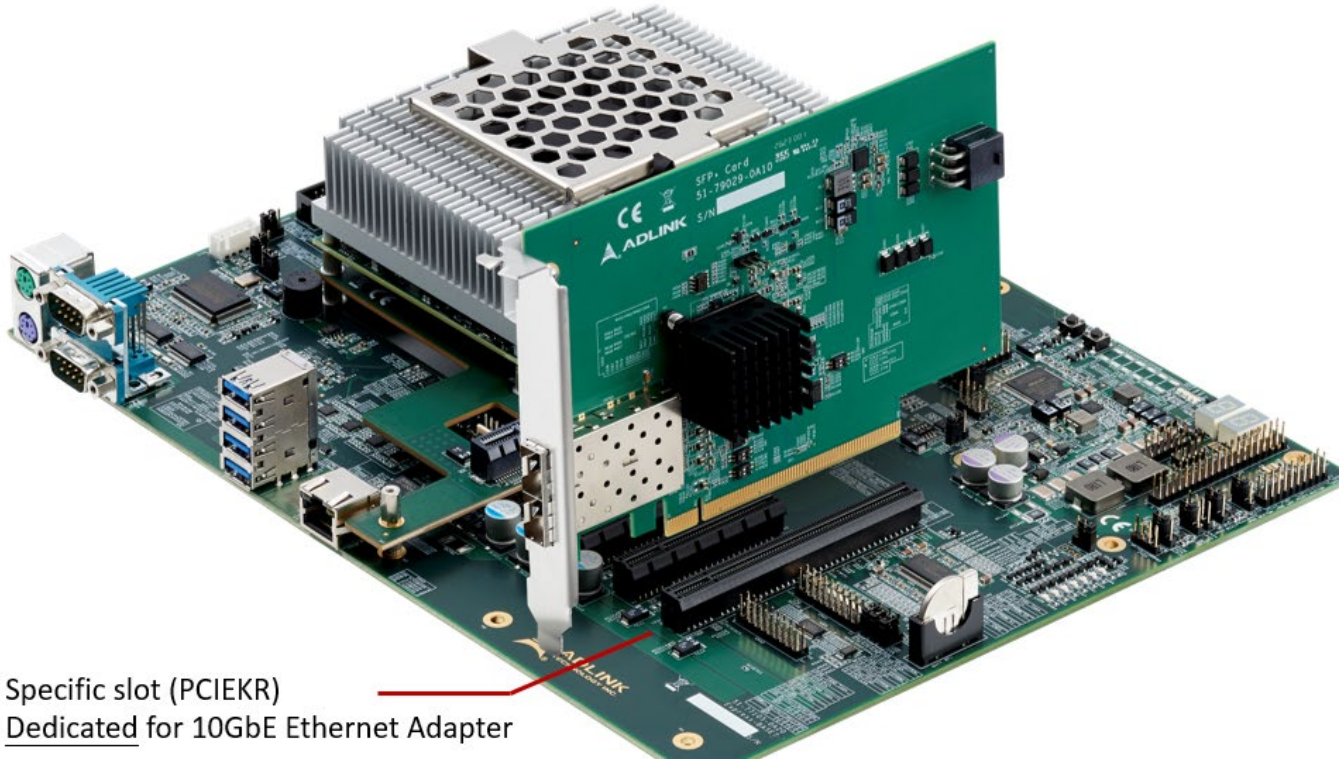


Figure 3 – Adapter card installation illustration

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6. Mechanical

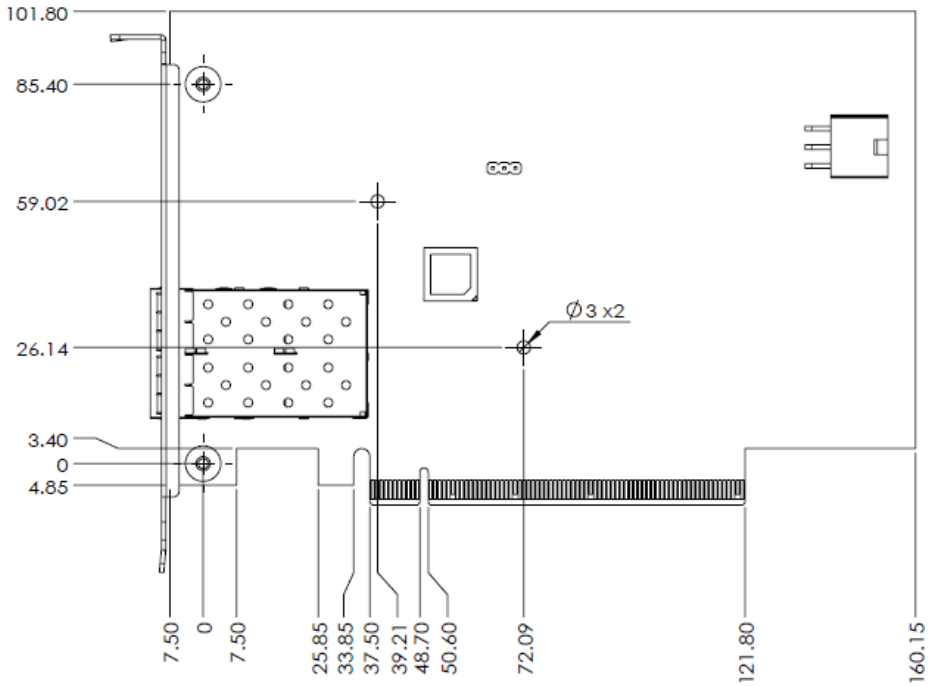


Figure 4 – Mechanical dimensions

Note: All dimensions are shown in millimeters with a tolerance of ± 0.25mm unless otherwise noted.

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