# PCIe-AE304bp

4-port 100/1000BASE-T1 Automotive Ethernet 802.3bw/bp PCIe Card

## Key Features

- **4x IEEE 802.3bw/bp 1000/100BASE-T1 via H-MTD connectors**
- **Driver-ready and software-configurable master/slave 1000/100BASE-T1**
- **Support hardware PTP Timestamping (IEEE 1588 V1/V2 & IEEE 802.1AS)**
- **x4 Gen2 PCI Express interface (x4 slot)**
- **Single-slot, half-length PCIe card form factor**
- **-25°C to 70°C fanless operation**
- **Support Linux Ubuntu OS**

CONTACT US GET QUOTE

## Introduction

PCIe-AE304bp is a wide-temperature, fanless, four-port Automotive Ethernet PCIe card designed for in-vehicle test, validation, and edge computing applications. It provides direct 100/1000BASE-T1 connectivity for x86-based test platforms and edge systems interfacing with high-bandwidth sensors such as LiDARs and radars.

The adoption of Automotive Ethernet adoption is accelerating across ADAS and autonomous driving applications, where 100/1000BASE-T1 enables high-bandwidth, scalable communication over single twisted-pair cabling. By reducing cable weight, space requirements, and wiring complexity, BASE-T1 technology provides an efficient networking backbone for the next-generation vehicle electronics. 1000BASE T-1 supports data-intensive sensors such as LiDAR, while 100BASE-T1 is widely adopted for radar and other automotive devices. As more in-vehicle sensors transition to Ethernet-based communication, BASE-T1 has become a critical interface for ADAS development, autonomous driving validation, and automotive electronics testing.

Designed as a single-slot, half-length PCIe add-on card, PCIe-AE304bp integrates four Marvell 88Q2221 Automotive Ethernet PHYs, enabling software-configurable 100/1000BASE-T1 communication with flexible master/slave configuration. Requiring a PCIe Gen2 x4 lane signal in standard x4 slot, the card installs directly into standard host systems without additional external media converters, or cabling. The locking automotive interface also eliminates the vibration-related connection issues commonly associated with traditional RJ45-based solutions. Support for IEEE 1588 Precise Time Protocol (PTP) enables accurate time synchronization with connected sensors, achieving sub-microsecond accuracy.

Compared with external media convertor architectures that add cost, latency, cabling complexity, and system footprint, PCIe-AE304bp offers four native Automotive Ethernet ports through a single PCIe slot. It simplifies BASE-T1 integration for engineers developing ADAS test benches, autonomous driving solutions, and vehicle electronics validation systems using standard computing platforms.

## Specifications

| | |
|---|---|
| **Bus Interface** | Gen2 x4 PCI Express |
| **1000/100BASE-T1** | 4× IEEE 802.3bw/bp 100/1000BASE-T1 H-MTD ports powered by four Marvell 88Q2221M transceivers, supporting 100/1000Mbps link speeds |
| **Cable Requirement** | Supports up to 15 meters of unshielded twisted pair (UTP) cable |
| **H-MTD connector type** | Z code |
| **Dimension** | 167.7mm (W) x 111 mm (H) |
| **Storage Temperature** | -40°C to 85°C |
| **Operating Temperature** | -25°C to 70°C fanless operation |
| **Humidity** | 10% to 90%, non-condensing |
| **EMC** | CE/ FCC Class A, according to EN 55032 & EN 55035 |

## Ordering Information

| *Model No.* | *Product Description* |
|---|---|
| ***PCIe-AE304bp*** | 4-port 100/1000BASE-T1 Automotive Ethernet 802.3bw/bp PCIe Card |