



## Main Features

- Compliant with IEEE 1000BASE-T1 (IEEE 802.3bp) and IEEE 100BASE-T1 (IEEE 802.3bw)
- Single UTP to use to reduce the overall cost
- Mini PCIe form factor for easy & quick installation
- Wide-range operating temperature
- Easy to leverage existing Ethernet environments
- Master-slave configuration via software to reduce latency during handshaking

## Product Overview

The VIOB-AE10M-02 is designed with a 1-port Automotive Ethernet interface compliant with IEEE 802.3bp and IEEE 802.3bw, meeting the requirements of modern infotainment and advanced driver-assistance system (ADAS) applications. By using only a single UTP cable, it simplifies cabling while reducing vehicle weight compared to traditional Ethernet solutions and lowering infrastructure costs.

With its Mini PCIe form factor and PCIe interface, the VIOB-AE10M-02 can be easily installed in vehicle computers or other devices equipped with a Mini PCIe slot. It is ideal for high-speed 1 Gbps/100 Mbps automotive audio and video streaming applications, as well as automotive testing and validation environments.

## Specifications

### Form Factor

- Mini PCIe form factor

### Bus

- PCIe interface

### I/O Interface

- 4-Pin wafer connector
- M12 D-Coded connector, cable length 250mm

### Network Interface

- 1-Port 1G/100M Automotive Ethernet
  - Copper MDI: full-duplex, one-pair UTP
  - IEEE 1588/802.1AS
  - Reach distance: 15m
  - Compliant to IEEE 802.3bp (1000BASE-T1) and IEEE 802.3bw (100BASE-T1)

### Mechanical

- 51mm (L) x 30mm (W) (2.01" x 1.18")
- Weight: 13g

### Environment

- Operating temperature: -40°C~85°C
- Storage temperature: -40°C~90°C

- Relative humidity (with system chassis): 5%~90%
- Vibration in operating:
  - IEC 60068-2-64, 2G
  - MIL-STD-810H, 514.8C Procedure 1, Category 4
- Vibration in storage:
  - MIL-STD-810H, 514.8E Procedure 1, Category 24
- Shock:
  - Operating: MIL-STD-810H, 516.8 Procedure I, trucks and semi-trailers=40g
  - Non-operating: MIL-STD-810H, Method 516.8, Procedure V, crash hazard shock test=75g
  - Crash hazard: procedure V, ground equipment=75g

### Operating System

- Linux kernel 6.18

## Pin Definition



**TRXP/N and LED Signal Connector**  
Connector location: J1



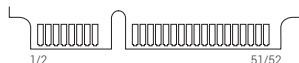
| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1   | TRXP       | 2   | TRXN       |
| 3   | LED_OUT#   | 4   | LED_VDD    |

**M12 D-Coded connector on cable**



| Pin | Definition | Pin | Definition     |
|-----|------------|-----|----------------|
| 1   | TRD +      | 2   | Do not connect |
| 3   | TRD -      | 4   | Do not connect |

**Mini PCIe Golden Finger**  
Connector location: GFM1



| Pin | Definition    | Pin | Definition |
|-----|---------------|-----|------------|
| 1   | PCIE_WAKE#    | 2   | 3V3        |
| 3   | NC            | 4   | GND        |
| 5   | NC            | 6   | NC         |
| 7   | PCIE_CLKREQ#  | 8   | NC         |
| 9   | GND           | 10  | NC         |
| 11  | PCIE_REFCLK_N | 12  | NC         |
| 13  | PCIE_REFCLK_P | 14  | NC         |
| 15  | GND           | 16  | NC         |
| 17  | NC            | 18  | GND        |
| 19  | NC            | 20  | NC         |
| 21  | GND           | 22  | SYS_RST#   |
| 23  | PCIE_RX_N     | 24  | 3V3        |
| 25  | PCIE_RX_P     | 26  | GND        |

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 27  | GND        | 28  | NC         |
| 29  | GND        | 30  | NC         |
| 31  | PCIE_TX_N  | 32  | NC         |
| 33  | PCIE_TX_P  | 34  | GND        |
| 35  | GND        | 36  | NC         |
| 37  | GND        | 38  | NC         |
| 39  | 3V3        | 40  | GND        |
| 41  | 3V3        | 42  | NC         |
| 43  | GND        | 44  | NC         |
| 45  | NC         | 46  | NC         |
| 47  | NC         | 48  | NC         |
| 49  | NC         | 50  | GND        |
| 51  | NC         | 52  | 3V3        |

## Ordering Information

### ♦ VIOB-AE10M-02 (P/N: 88V00AE1001X0)

1-port 1Gbps/100Mbps automotive Ethernet module, full-size Mini PCIe form factor, PCIe interface (IEEE 802.3bp/bw compliant) with 250mm M12 D-Coded cable

### ♦ VTK-AE10M-02 KIT (P/N: 10VK0AE1000X0)

1-port 1Gbps/100Mbps automotive Ethernet module, full-size Mini PCIe form factor, PCIe interface (IEEE 802.3bp/bw compliant) with 250mm M12 D-Coded cable