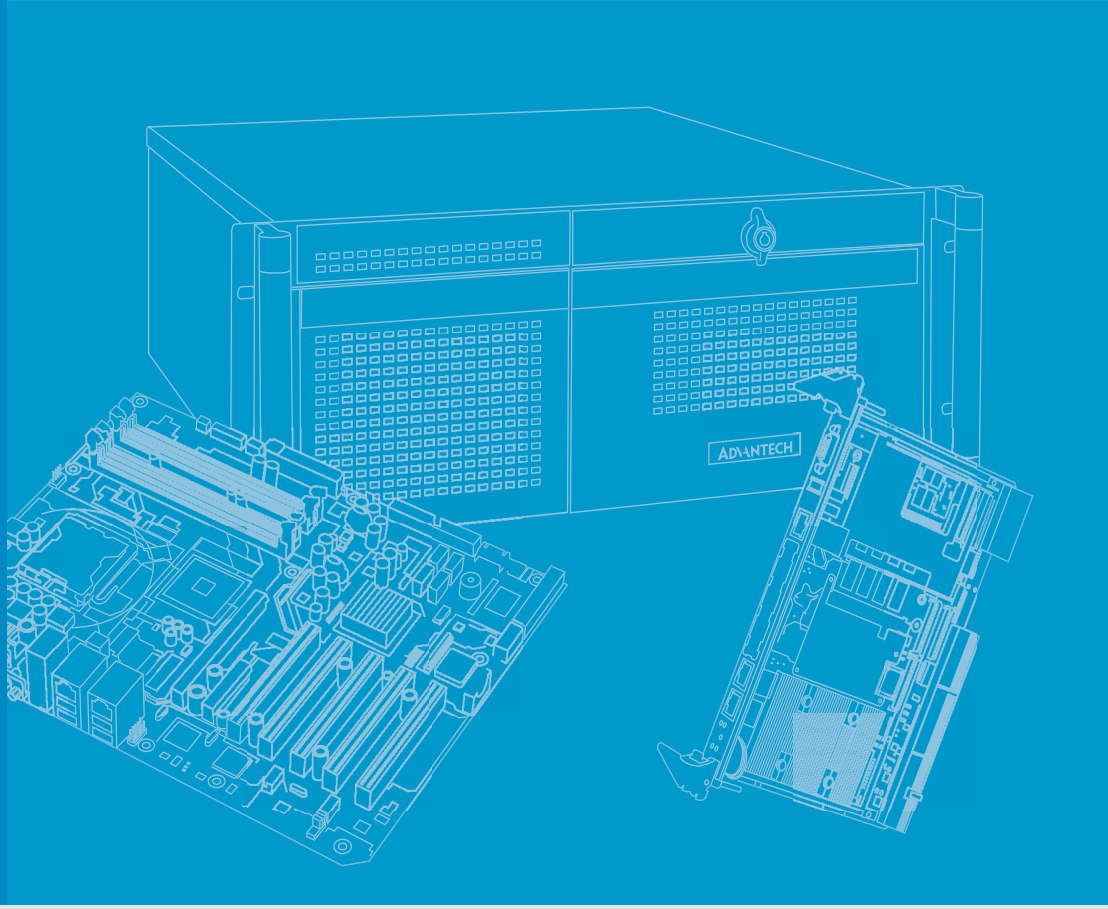

User Manual

MIC-3666

Dual 10 Gigabit Ethernet XMC

Trusted ePlatform Services

ADVANTECH

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Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

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Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from Advantech. Please contact your local supplier for ordering information.

FCC Class A

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FM

This equipment has passed the FM certification. According to the National Fire Protection Association, work sites are classified into different classes, divisions and groups, based on hazard considerations. This equipment is compliant with the specifications of Class I, Division 2, Groups A, B, C and D indoor hazards.

Technical Support and Assistance

1. Visit the Advantech web site at http://support.advantech.com where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Warnings, Cautions and Notes

Warning! *Warnings indicate conditions, which if disregarded, can cause personal injury!*

Caution! *Cautions are included to help you avoid damaging hardware or losing data. e.g.:*

There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Note! *Notes provide optional additional information.*

Document Feedback

To assist us in making improvements to this manual, we would welcome comments and constructive criticism. Please send all such - in writing to: support@advantech.com.

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment does not work well, or you cannot get it to work according to the user's manual.
    - The equipment has been dropped and damaged.
    - The equipment has obvious signs of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
16. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- Disconnect power before making any configuration changes. The sudden rush of power (electrostatic discharge) as you connect a jumper or install a card may damage sensitive electronic components.

We Appreciate Your Input

Please let us know of any aspect of this product, including the manual, which could use improvement or correction. We appreciate your valuable input in helping make our products better.

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Chapter 1

General Information

1.1 Introduction

The MIC-3666 is a low power, dual-port 10 GbE XMC, with SFP+ pluggable modules for multi-mode and single-mode fiber media and is based on the Intel® 82599ES 10 Gigabit Ethernet controller. The XMC provides a high performance PCIe x8 interface at 5 Gb/s per lane at an outstanding low power dissipation of less than 10 W. Support for Intel's offloading and platform enhancement features yields maximum network throughput while preserving valuable CPU cycles for application processing.

The MIC-3666 features an Intel® 82599 which provides Intel® Virtualization Technology for Connectivity (VT-c) including Virtual Machine Device Queues (VMDq) and PCI SIG compliant Single Root I/O Virtualization (SR-IOV), helping to reduce I/O bottlenecks, boost throughput, and reduce latency. Where virtualization is required, VMDqs improve performance by offloading the data-sorting burden from the virtual machine manager (VMM) to the network controller. The MIC-3666's specialized features include Layer 2 & 3 security with IPSec & LinkSec; Intel® I/OAT Acceleration Technology v3.0; VLAN tagging, stripping and packet filtering; and TCP, iSCSI, and Fiber Channel over Ethernet (FCoE) offload.

1.2 Specifications

1.2.1 Ethernet

- Two 10 Gigabit Ethernet channels on the front panel
- SFP+ connectors on the front panel - compatible with Finisar FTLX8571D3BCL SFP+ transceiver module.
- One Intel® 82599ES Ethernet controller
- Supports PCI Express 2.0 (5 GT/s)
- Supports Intel® Virtualization Technology for Connectivity (VT-c) including Virtual Machine Device Queues[2] (VMDq) and Virtual Machine Direct Connect (VMDc), which is based on the PCI SIG compliant Single Root I/O Virtualization (SR-IOV)
- Integrated IPSec & LinkSec security engines
- Implements TCP segmentation offload (TSO), Receive Side Coalescing (RSC), iSCSI and Fiber Channel over Ethernet (FCoE) offload
- Two LEDs per channel signal both LAN link and activity status

1.2.2 PCI Express

- PCIe x8 interface at 5 Gb/s per lane
- Both lanes on XMC Connector P15

1.2.3 Power Consumption

- +3.3 V, 0.25 A max.
- VPWR (+5 V), 1.5 A max.

1.2.4 Mechanical and Environmental Specifications

- Operating temperature: 0 ~ 55° C (32 ~ 131° F)
- Storage Temperature: -40 ~ 80° C (-40 ~ 176° F)
- Humidity (operating): 95% @ 40° C (non-condensing)
- Humidity (non-operating): 95% @ 60° C (non-condensing)
- Board size: 74 x 149 mm (2.9” x 5.78”)
- Weight: 0.104 kg (0.23 lb)

1.2.5 Software Support

- Drivers from Intel® for Windows® and Linux

1.2.6 Compliance

- IEEE Std 1386.1-2001 PMC specification
- VITA 42.0-2005, 42.3-2006 XMC specifications

1.3 Safety Precautions

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electric shock, always disconnect the power from your system chassis before you work on it. Don't touch any components on the board or other boards while the system is powered.
- Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a board may damage sensitive electronic components.
- Always ground yourself to remove any static charge before you touch your CPU board. Be particularly careful not to touch the chip connectors.
- Modern integrated electronic devices, especially CPUs and memory chips, are extremely sensitive to electrostatic discharge and electrical fields. Keep the board in its antistatic packaging when it is not installed in the chassis, and place it on a static dissipative mat when you are working with it. Wear a grounding wrist strap for continuous protection.

Chapter 2

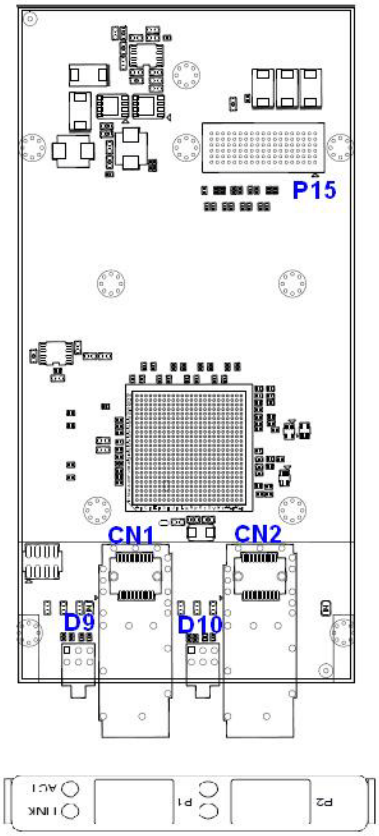
Hardware and Driver Installation

2.1 Initial Inspection

We carefully inspected the MIC-3666 mechanically and electronically before we shipped it. It should be free of marks and scratches and in perfect working order on receipt. As you unpack the MIC-3666, check it for signs of shipping damage (damaged box, scratches, dents, etc.). If it is damaged or fails to meet specifications, notify our service department or your local sales representative immediately. Also notify the carrier that was used to ship the product to your location from our factory or distributor. Retain the shipping carton and packing material for inspection by the carrier. We will make arrangements to repair or replace the unit after an inspection. When you handle the MIC-3666, remove it from its protective packaging by grasping the front metal panel. Keep the anti-vibration packing. Whenever you remove the card from the PC, store it in this package for protection.

Warning! *Discharge your body's static electric charge by touching the back of the grounded chassis of the system unit (metal) before handling the board. You should avoid contact with materials that hold a static charge such as plastic, vinyl and styrofoam. Handle the board only by its edges to avoid static damage to its integrated circuits. Avoid touching the exposed circuit connectors.*

2.2 Connector Locations



2.3 Card Installation

The MIC-3666 is a PCI Express bus master XMC module. It can be installed only in a CompactPCI™ board which supports XMC interface. Improper installation of a card can easily damage the backplane of the chassis. The MIC-3666 install guide helps you to install the MIC-3666 into an XMC carrier:

To install a card:

1. Shut off the system power.
2. Connect the MIC-3666 to the CompactPCI™ CPU board's PCI Express mezzanine connector and attach it with four screws.
3. Connect the SFP+ cable to the connector on the front panel.
4. Power on the system.
5. Configure your system using the network driver appropriate to your operating system.

2.4 Front Panel LED Indicators

There are two diagnostic LEDs on the front panel. These LEDs show the operating status of the MIC-3666.

- ACT: When the LED is green (blinking), it indicates active data transfer.
- LINK: When the LED is yellow (steady), it indicates the link between the hub/switch and the adapter is established.

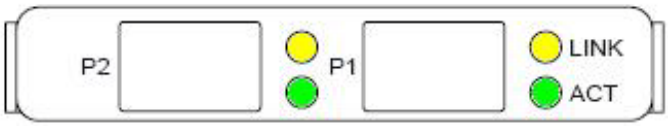


Figure 2.1 MIC-3666 front panel LEDs

2.5 Driver/Utility Installation

The MIC-3666 supports PCI Express plug and play. BIOS automatically detects the MIC-3666 while booting, and assigns an IRQ level and I/O address. No jumper or switch is required for user configuration. The MIC-3666 uses one Intel® 82599ES 10 Gigabit Ethernet controller chip. Thus it is software-compatible with Intel's® PROSet utility.

The latest drivers can be found on Intel's® website:
http://developer.intel.com/design/network/drivers/

Appendix A

Pin Assignments

A.1 P15 Connector

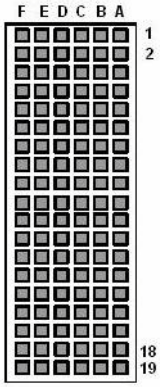


Table A.1: MIC-3666 XMC Connector P15 Pin Assignments

P15	F	E	D	C	B	A
1	VPWR	PCIE_TXN1	PCIE_TXP1	VCC3	PCIE_TXN0	PCIE_TXP0
2	PCIE_RST#	GND	GND	-	GND	GND
3	VPWR	PCIE_TXN3	PCIE_TXNP3	VCC3	PCIE_TXN2	PCIE_TXNP2
4	-	GND	GND	-	GND	GND
5	VPWR	PCIE_TXN5	PCIE_TXP5	VCC3	PCIE_TXN4	PCIE_TXP4
6	-	GND	GND	-	GND	GND
7	VPWR	PCIE_TXN7	PCIE_TXP7	VCC3	PCIE_TXN6	PCIE_TXP6
8	-	GND	GND	-	GND	GND
9	VPWR	-	-	-	-	-
10	-	GND	GND	-	GND	GND
11	VPWR	PCIE_RXN1	PCIE_RXP1	-	PCIE_RXN0	PCIE_RXP0
12	-	GND	GND	-	GND	GND
13	VPWR	PCIE_RXN3	PCIE_RXP3	-	PCIE_RXN2	PCIE_RXP2
14	PCIE_SMBDAT	GND	GND	-	GND	GND
15	VPWR	PCIE_RXN5	PCIE_RXP5	-	PCIE_RXN4	PCIE_RXP4
16	PCIE_SMBCLK	GND	GND	-	GND	GND
17	-	PCIE_RXN7	PCIE_RXP7	-	PCIE_RXN6	PCIE_RXP6
18	-	GND	GND	-	GND	GND
19	-	-	PCIE_WAKE#	-	CLK_PCIE_N	CLK_PCIE_P

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