



Eagle Eyes-AIH Series Fanless Box Computer

This manual covers the following SKU's

AIH ❖ AIHL ❖ AIH-W1
AIHL-W1 ❖ AIHV-W1

User Manual

Version 1.1

Preface

Revision History

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Declaration of Conformity

FCC

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.

CE

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

Warnings, Cautions, and Notes

Warning!



Warnings indicate conditions, which if not observed, can cause personal injury!

Caution!



Cautions are included to help you avoid damaging hardware or losing data

Note:



Notes provide additional information

Safety Instructions

**Please read the following safety instructions carefully.
It is advised that you keep this manual for future reference.**

1. All cautions and warnings on the device should be noted.
2. Make sure the power source matches the power rating of the device.
3. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
4. Always completely disconnect the power before working on the system's hardware.
5. No connections should be made when the system is powered on, as a sudden rush of power may damage sensitive electronic components.
6. If the device is not used for an extended period, disconnect the device from the power supply to avoid being damaged by transient over-voltage.
7. Always unplug this device from any electrical outlet before cleaning.
8. While cleaning, use a damp cloth instead of liquid or spray detergents.
9. Make sure the device is installed near a power outlet and is easily accessible.
10. Keep this device away from any humidity.
11. Place the device on a solid surface during installation to prevent falls.
12. Do not cover the openings on the device to ensure optimal heat dissipation.
13. System enclosure may get hot during operation, use caution when handling.
14. Do not touch the heat sink or heat spreader when the system is running.
15. Never pour any liquid into the openings. This could cause fire or electric shock.
16. As most electronic components are sensitive to a static electrical charge, be sure to ground yourself to prevent static charge(s) when installing the internal components. Use a grounding wrist strap and contain all electronic components in static shielded containers.
17. If any of the following situations arises, please contact our service personnel:
 - I. Damaged power cord or plug.
 - II. Liquid intrusion to the device.
 - III. Exposure to moisture.
 - IV. The device is not working as expected or in a manner as described in this manual.
 - V. The device is dropped or damaged.
 - VI. Any visible signs of damage displayed on the device.
18. **Do Not store this device in an uncontrolled environment where the ambient temperatures are BELOW -40°C (-40°F) or ABOVE 85°C (185°F) to prevent damage.**

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Chapter 1

General Introduction

This chapter includes:

- Overview
- Common Specifications
- Comparison Table
- Supported CPU List
- Supported Memory List
- Packing List
- Ordering Information

1.1 Overview

The Eagle Eyes-AIH Fanless Box Computer is a high-performance, all-in-one integrated expandable Embedded Workstation System.

- LGA1151 Socket supports Quad Core 7th/6th Generation Intel® Xeon®/Core™ i7/i5/i3 processor (Kaby Lake-S / Skylake-S) running with workstation-grade Intel® C236 chipset.
- Dual channel DDR4 2133/2400MHz up to 64GB non-ECC or ECC memory
- Advanced Intel® HD Graphics 630/530 supporting DirectX 12, OpenGL 4.5, and OpenCL 2.0 API
- Onboard there are one VGA, one DVI-D, and two DisplayPorts (DP) video interfaces, that support Ultra HD 4K resolution

The Eagle Eye-AIH system offers leading CPU performance, power efficiency, and graphics performance with PCIe 3.0 (8GB), Multiple SATA III (6Gbps), USB 3.0 (5Gbps), PoE (1Gbps), GbE LAN, and multiple wireless connections to make transferring high-speed data as seamless as possible. Thus, delivering outstanding system performance, power productivity, and flexible manageability for performance-driven embedded computing applications such as Machine Vision, Rolling Stock, Intelligent Surveillance, Smart Manufacturing, ITS, Intelligent Automation, Vehicle Computing, and many Industry 4.0 performance-driven real-time embedded computing applications.



AIH



AIHL



AIH-W1





AIHL-W1



AIHV-W1

1.2 Common Specifications

Model Name	AIHL	AIH	AIHL-W1	AIH-W1	AIHV-W1
Mechanical					
Dimensions	260(W) mm x 206(D) mm x 77.42(H) mm (10.24" x 8.11" x 3.05")				
Weight	3.7kg				
Mounting	Rubber anti-slide pads; Optional: Wall mount bracket				
Construction	Aluminum and metal chassis with fanless design				
Battery	Easily replaceable RTC battery				
System					
Intel® Platform	Skylake S (SKL-S) / Kaby Lake S (KBL-S)				
CPU	6 th / 7 th Gen Intel® Xeon® E3/Core™ S LGA1151 Socketed CPU (supports TDP up to 35W)				
Chipset	Intel® C236 Chipset Xeon®: HD Graphics P530 (Skylake)/P630 (Kaby Lake)				
Graphics	Xeon®: HD Graphics P530 (Skylake)/P630 (Kaby Lake) Core™ i Series: HD Graphics 530 (Skylake)/630 (Kaby Lake) Pentium®/Celeron®: HD Graphics 510 (Skylake)/610 (Kaby Lake)				
Memory	2x DDR4 SO-DIMM Max. 64GB (Skylake: DDR4 2133; Kaby Lake: DDR4 2400)				
BIOS	AMI 128Mbit SPI BIOS				
AMT	iAMT 11.0 (Intel® i219)				
Watchdog Timer	Runtime: 10 – 65535 seconds Powerup: 120 – 65535 seconds				
TPM (optional)	TPM 2.0 (SLB9665) for data security				
OS	Windows / Linux				
eKit Features					
AI Controller (AIC)	AI for system monitoring and predictive analysis				
Dynamic Display Module (DDM)	0.96-inch LCM work with AIC to display system status				
API Library	DDMI & DMCI				
Power					
DC Input	9 – 36V				
Surge Protection	200V/1ms				
Input Power Protection	Reverse-Voltage, Over-Voltage, Under-Voltage, and Over-Current				
Remote Control	Yes				
Ignition Control	Yes				
Power Mode	AT/ATX (BIOS setting)				
Storage					
mSATA	3x Full-Length mSATA (muxed with Mini PCIe)				
2.5" SATA Drive Bay	3x Internal		2x Internal 1x External Hot Swappable		
RAID Mode	RAID 0/1/5				

Model Name	AIHL	AIH	AIHL-W1	AIH-W1	AIHV-W1
External IO					
Display Ports / Resolution	2x DP/4096x2304@60Hz 1x DVI-D/1920x1200@60Hz 1x VGA/1920x1200@60Hz				
Video Port Combinations	2x DP + 1x DVI-D 2x DP + 1x VGA 1x DP + 1x DVI-D + 1x VGA				
GbE	2x RJ45 (i219 + i210)				
GbE/PoE	N/A	4x RJ45 (4x i210)	N/A	4x RJ45 (4x i210)	4x M12 (4x i210)
USB	6x USB 3.0 ports via native XHCI controller (0.9A each port)				
COM	2x RS-232/422/485 (auto flow control) 4x RS-232 port				
DIO	16-bit Programmable (8-bit isolated DI and 8-bit isolated DO optional)				
Audio	ALC892 HD Audio Codec, Mic-in/Line-out				
Wi-Fi/Cellular Communication	Supports Wi-Fi/LTE modules via 3x Mini PCIe interfaces				
SIM & USIM socket support	3x SIM Push-Push Sockets – SIM supports 2G / USIM supports 3 & 4G				
Expansion Slot					
Mini PCIe	3x Full-Length Mini PCIe (muxed with mSATA, auto-detection)				
IOM	IOM1				N/A
Other					
USB 2.0 Dongle	1x Internal USB 2.0 dongle for security key				
Antenna	4x Antenna openings				
LED	Power status, SSD status, I/O status				
Environment					
Operating Temperature	Standard: -20°C to 50°C (-4°F~122°F), supporting CPU TDP up to 35W Extended temperature -25°C to 70°C (-13°F-158°F)				
Storage Temperature	-40°C - 85°C (-40°F - 185°F)				
Relative Humidity	95% @ 40°C (104°F), non-condensing				
Vibration During Operation	5Grms with SSD; 5Grms with SSD (IEC60068-2-64: Random 5~500Hz)				
Shock During Operation	50Grms with SSD; 50Grms with SSD (IEC60068-2-27: Half Sine, 11ms duration)				
Certifications					
EMC	CE/FCC Class A				
Safety Certifications	CB				

1.3 Comparison Table

Model Name	Ethernet		Digital I/O		2.5" SATA Drive Bay		IOM
	GbE	GbE/ PoE	16-bit GPIO	Isolated 8-bit DI & 8-bit DO	Internal	External	
AIHL	2x RJ45	N/A	Yes	N/A	3x	N/A	1x
AIHL-i	2x RJ45	N/A	N/A	Yes	3x	N/A	1x
AIHL-W1	2x RJ45	N/A	Yes	N/A	2x	1x	1x
AIHL-W1-i	2x RJ45	N/A	N/A	Yes	2x	1x	1x
AIH	2x RJ45	4x RJ45	Yes	N/A	3x	N/A	1x
AIH-i	2x RJ45	4x RJ45	N/A	Yes	3x	N/A	1x
AIH-W1	2x RJ45	4x RJ45	Yes	N/A	2x	1x	1x
AIH-W1-i	2x RJ45	4x RJ45	N/A	Yes	2x	1x	1x
AIHV-W1	2x RJ45	4x M12	Yes	N/A	2x	1x	N/A
AIHV-W1-i	2x RJ45	4x M12	N/A	Yes	2x	1x	N/A

1.4 Supported CPUs

The Eagle Eyes-AIH series support the 7th/6th Generation Intel® Xeon®-E3, Core™-S i7/i5/i3, Pentium® and Celeron® LGA1151 socketed CPU (Platform: Kaby Lake-S / Skylake-S).

You may select from the processors listed below according to your cost and performance requirements.

Intel® 6th Skylake

Xeon® E3-1268LV5 Processor (4 cores/8 threads, 2.4 GHz/3.4 GHz, 8MB cache, 35W TDP)

Core™ i7-6700TE Processor (4 cores/8 threads, 2.4 GHz/3.4 GHz, 8MB cache, 35W TDP)

Core™ i5-6500TE Processor (4 cores/4 threads, 2.3 GHz/3.3 GHz, 6MB cache, 35W TDP)

Core™ i3-6100TE Processor (2 cores/4 threads, 2.7 GHz, 4MB cache, 35W TDP)

Pentium® G4400TE Processor (2 cores/2 threads, 2.4 GHz, 3MB cache, 35W TDP)

Celeron® G3900TE Processor (2 cores/2 threads, 2.3 GHz, 2MB cache, 35W TDP)

Intel® 7th Kaby Lake

Core™ i7-7700T Processor (4 cores/8 threads, 2.9 GHz/3.8 GHz, 8MB cache, 35W TDP)

Core™ i5-7500T Processor (4 cores/4 threads, 2.7 GHz/3.3 GHz, 6MB cache, 35W TDP)

Core™ i3-7101TE Processor (2 cores/4 threads, 3.4 GHz, 3MB cache, 35W TDP)

1.5 Supported Memory List

The Eagle Eyes-AIH series supports two channels of DDR4 memory with a maximum of two DIMMs per channel. DDR technologies, number of DIMMs per channel, number of ranks per channel are SKU dependent.

ECC/Non-ECC UDIMM and SODIMM DDR4 support are based on the CPU SKU.

CPU Name	Memory Types	Max Memory Size	ECC Memory Supported
E3-1268LV5	DDR4 SO-DIMM	64 GB	Yes
i7-6700TE	DDR4 SO-DIMM	64 GB	No
i5-6500TE	DDR4 SO-DIMM	64 GB	No
i3-6100TE	DDR4 SO-DIMM	64 GB	Yes
G4400TE	DDR4 SO-DIMM	64 GB	Yes
G3900TE	DDR4 SO-DIMM	64 GB	Yes
i7-7700T	DDR4 SO-DIMM	64 GB	No
i5-7500T	DDR4 SO-DIMM	64 GB	No
i3-7101TE	DDR4 SO-DIMM	64 GB	Yes

DDR4 Memory Bandwidth and Data Transfer Rates

Standard	Clock Rates	Data Transfer Rate	Bandwidth
DDR4-1866 (PC4-1866)	933 MHz	1866 MT/s	29.1 GB/s
DDR4-2133 (PC4-1866)	1066 MHz	2133 MT/s	33.3 GB/s
DDR4-2400 (PC4-2400)	1200 MHz	2400 MT/s	37.5 GB/s
DDR4-2666 (PC4-2666)	1333 MHz	2666 MT/s	41.6 GB/s

1.6 Packing List

Item	Description	Qty
1	Eagle Eyes-AIH Series Embedded Box PC	1
2	Six rubber anti-slide pads	1

1.7 Ordering Information

The Eagle Eyes-AIH Base Model System

Model Name	Description	Article Number (A/N)
AIH	AIH Base Model, supports Intel® 6th/7th Gen. CPU, 16-bit DIO	010010-000000-000000
AIH-i	AIH-i Base Model, supports Intel® 6th/7th Gen. CPU, Isolated 8-bit DI & 8-bit DO	010020-000000-000000
AIH-1268L	AIH, Xeon® E3-1268LV5 CPU, 16-bit DIO	010030-000000-000000
AIH-1268L-i	AIH-i, Xeon® E3-1268LV5 CPU, Isolated 8-bit DI & 8-bit DO	010040-000000-000000
AIH-6700TE	AIH, i7-6700TE CPU, 16-bit DIO	010050-000000-000000
AIH-6700TE-i	AIH-i, i7-6700TE CPU, Isolated 8-bit DI & 8-bit DO	010060-000000-000000
AIH-6500TE	AIH, i5-6500TE CPU, 16-bit DIO	010070-000000-000000
AIH-6500TE-i	AIH-i, i5-6500TE CPU, Isolated 8-bit DI & 8-bit DO	010080-000000-000000
AIH-6100TE	AIH, i3-6100TE CPU, 16-bit DIO	010090-000000-000000
AIH-6100TE-i	AIH-i, i3-6100TE CPU, Isolated 8-bit DI & 8-bit DO	010100-000000-000000
AIH-G4400TE	AIH, i Pentium® G4400TE CPU, 16-bit DIO	010110-000000-000000

Model Name	Description	Article Number (A/N)
AIH-G4400TE-i	AIH-i, Pentium® G4400TE CPU, Isolated 8-bit DI & 8-bit DO	010120-000000-000000
AIH-G3900TE	AIH, Celeron® G3900TE CPU, 16-bit DIO	010130-000000-000000
AIH-G3900TE-i	AIH-i, Celeron® G3900TE CPU, Isolated 8-bit DI & 8-bit DO	010140-000000-000000
AIH-7700T	AIH, i7-7700T CPU, 16-bit DIO	010150-000000-000000
AIH-7700T-i	AIH-i, i7-7700T CPU, Isolated 8-bit DI & 8-bit DO	010160-000000-000000
AIH-7500T	AIH, i5-7500T CPU, 16-bit DIO	010170-000000-000000
AIH-7500T-i	AIH-i, i5-7500T CPU, Isolated 8-bit DI & 8-bit DO	010180-000000-000000
AIH-7101TE	AIH, i3-7101TE CPU, 16-bit DIO	010190-000000-000000
AIH-7101TE-i	AIH-i, i3-7101TE CPU, Isolated 8-bit DI & 8-bit DO	010200-000000-000000

The Eagle Eyes-AIH-W1 Base Model System

Model Name	Description	Article Number (A/N)
AIH-W1	AIH-W1 Base Model, supports Intel® 6th/7th Gen. CPU, 16-bit DIO	010260-000000-000000
AIH-i	AIH-W1-i Base Model, supports Intel® 6th/7th Gen. CPU, Isolated 8-bit DI & 8-bit DO	010270-000000-000000
AIH-W1-1268L	AIH-W1, Xeon® E3-1268LV5 CPU, 16-bit DIO	010280-000000-000000
AIH-W1-1268L-i	AIH-W1-i, Xeon® E3-1268LV5 CPU, Isolated 8-bit DI & 8-bit DO	010290-000000-000000
AIH-W1-6700TE	AIH-W1, i7-6700TE CPU, 16-bit DIO	010300-000000-000000
AIH-W1-6700TE-i	AIH-W1-i, i7-6700TE CPU, Isolated 8-bit DI & 8-bit DO	010310-000000-000000
AIH-W1-6500TE	AIH-W1, i5-6500TE CPU, 16-bit DIO	010320-000000-000000
AIH-W1-6500TE-i	AIH-W1-i, i5-6500TE CPU, Isolated 8-bit DI & 8-bit DO	010330-000000-000000
AIH-W1-6100TE	AIH-W1, i3-6100TE CPU, 16-bit DIO	010340-000000-000000
AIH-W1-6100TE-i	AIH-W1-i, i3-6100TE CPU, Isolated 8-bit DI & 8-bit DO	010350-000000-000000
AIH-W1-G4400TE	AIH-W1, i Pentium® G4400TE CPU, 16-bit DIO	010360-000000-000000
AIH-W1-G4400TE-i	AIH-W1-i, Pentium® G4400TE CPU, Isolated 8-bit DI & 8-bit DO	010370-000000-000000
AIH-W1-G3900TE	AIH-W1, Celeron® G3900TE CPU, 16-bit DIO	010380-000000-000000
AIH-W1-G3900TE-i	AIH-W1-i, Celeron® G3900TE CPU, Isolated 8-bit DI & 8-bit DO	010390-000000-000000
AIH-W1-7700T	AIH-W1, i7-7700T CPU, 16-bit DIO	010400-000000-000000
AIH-W1-7700T-i	AIH-W1-i, i7-7700T CPU, Isolated 8-bit DI & 8-bit DO	010410-000000-000000
AIH-W1-7500T	AIH-W1, i5-7500T CPU, 16-bit DIO	010420-000000-000000
AIH-W1-7500T-i	AIH-W1-i, i5-7500T CPU, Isolated 8-bit DI & 8-bit DO	010430-000000-000000
AIH-W1-7101TE	AIH-W1, i3-7101TE CPU, 16-bit DIO	010440-000000-000000
AIH-W1-7101TE-i	AIH-W1-i, i3-7101TE CPU, Isolated 8-bit DI & 8-bit DO	010450-000000-000000

The Eagle Eyes-AIHL Base Model System

Model Name	Description	Article Number (A/N)
AIHL	AIHL Base Model, supports Intel® 6th/7th Gen. CPU, 16-bit DIO	012010-000000-000000
AIHL-i	AIHL-i Base Model, supports Intel® 6th/7th Gen. CPU, Isolated 8-bit DI & 8-bit DO	012020-000000-000000
AIHL-1268L	AIHL, Xeon® E3-1268LV5 CPU, 16-bit DIO	012030-000000-000000
AIHL-1268L-i	AIHL-i, Xeon® E3-1268LV5 CPU, Isolated 8-bit DI & 8-bit DO	012040-000000-000000
AIHL-6700TE	AIHL, i7-6700TE CPU, 16-bit DIO	012050-000000-000000
AIHL-6700TE-i	AIHL-i, i7-6700TE CPU, Isolated 8-bit DI & 8-bit DO	012060-000000-000000
AIHL-6500TE	AIHL, i5-6500TE CPU, 16-bit DIO	012070-000000-000000
AIHL-6500TE-i	AIHL-i, i5-6500TE CPU, Isolated 8-bit DI & 8-bit DO	012080-000000-000000
AIHL-6100TE	AIHL, i3-6100TE CPU, 16-bit DIO	012090-000000-000000
AIHL-6100TE-i	AIHL-i, i3-6100TE CPU, Isolated 8-bit DI & 8-bit DO	012100-000000-000000
AIHL-G4400TE	AIHL, i Pentium® G4400TE CPU, 16-bit DIO	012110-000000-000000
AIHL-G4400TE-i	AIHL-i, Pentium® G4400TE CPU, Isolated 8-bit DI & 8-bit DO	012120-000000-000000
AIHL-G3900TE	AIHL, Celeron® G3900TE CPU, 16-bit DIO	012130-000000-000000
AIHL-G3900TE-i	AIHL-i, Celeron® G3900TE CPU, Isolated 8-bit DI & 8-bit DO	012140-000000-000000
AIHL-7700T	AIHL, i7-7700T CPU, 16-bit DIO	012150-000000-000000
AIHL-7700T-i	AIHL-i, i7-7700T CPU, Isolated 8-bit DI & 8-bit DO	012160-000000-000000
AIHL-7500T	AIHL, i5-7500T CPU, 16-bit DIO	012170-000000-000000
AIHL-7500T-i	AIHL-i, i5-7500T CPU, Isolated 8-bit DI & 8-bit DO	012180-000000-000000
AIHL-7101TE	AIHL, i3-7101TE CPU, 16-bit DIO	012190-000000-000000
AIHL-7101TE-i	AIHL-i, i3-7101TE CPU, Isolated 8-bit DI & 8-bit DO	012200-000000-000000

The Eagle Eyes-AIHL-W1 Base Model System

Model Name	Description	Article Number (A/N)
AIHL-W1	AIHL-W1 Base Model, supports Intel® 6th/7th Gen. CPU, 16-bit DIO	012260-000000-000000
AIHL-i	AIHL-W1-i Base Model, supports Intel® 6th/7th Gen. CPU, Isolated 8-bit DI & 8-bit DO	012270-000000-000000
AIHL-W1-1268L	AIHL-W1, Xeon® E3-1268LV5 CPU, 16-bit DIO	012280-000000-000000
AIHL-W1-1268L-i	AIHL-W1-i, Xeon® E3-1268LV5 CPU, Isolated 8-bit DI & 8-bit DO	012290-000000-000000
AIHL-W1-6700TE	AIHL-W1, i7-6700TE CPU, 16-bit DIO	012300-000000-000000
AIHL-W1-6700TE-i	AIHL-W1-i, i7-6700TE CPU, Isolated 8-bit DI & 8-bit DO	012310-000000-000000
AIHL-W1-6500TE	AIHL-W1, i5-6500TE CPU, 16-bit DIO	012320-000000-000000
AIHL-W1-6500TE-i	AIHL-W1-i, i5-6500TE CPU, Isolated 8-bit DI & 8-bit DO	012330-000000-000000
AIHL-W1-6100TE	AIHL-W1, i3-6100TE CPU, 16-bit DIO	012340-000000-000000
AIHL-W1-6100TE-i	AIHL-W1-i, i3-6100TE CPU, Isolated 8-bit DI & 8-bit DO	012350-000000-000000
AIHL-W1-G4400TE	AIHL-W1, i Pentium® G4400TE CPU, 16-bit DIO	012360-000000-000000
AIHL-W1-G4400TE-i	AIHL-W1-i, Pentium® G4400TE CPU, Isolated 8-bit DI & 8-bit DO	012370-000000-000000

Model Name	Description	Article Number (A/N)
AIHL-W1-G3900TE	AIHL-W1, Celeron® G3900TE CPU, 16-bit DIO	012380-000000-000000
AIHL-W1-G3900TE-i	AIHL-W1-i, Celeron® G3900TE CPU, Isolated 8-bit DI & 8-bit DO	012390-000000-000000
AIHL-W1-7700T	AIHL-W1, i7-7700T CPU, 16-bit DIO	012400-000000-000000
AIHL-W1-7700T-i	AIHL-W1-i, i7-7700T CPU, Isolated 8-bit DI & 8-bit DO	012410-000000-000000
AIHL-W1-7500T	AIHL-W1, i5-7500T CPU, 16-bit DIO	012420-000000-000000
AIHL-W1-7500T-i	AIHL-W1-i, i5-7500T CPU, Isolated 8-bit DI & 8-bit DO	012430-000000-000000
AIHL-W1-7101TE	AIHL-W1, i3-7101TE CPU, 16-bit DIO	012440-000000-000000
AIHL-W1-7101TE-i	AIHL-W1-i, i3-7101TE CPU, Isolated 8-bit DI & 8-bit DO	012450-000000-000000

The Eagle Eyes-AIHV-W1 Base Model System

Model Name	Description	Article Number (A/N)
AIHV-W1	AIHV-W1 Base Model, supports Intel® 6th/7th Gen. CPU, 16-bit DIO	014010-000000-000000
AIHV-W1-i	AIHV-W1-i Base Model, supports Intel® 6th/7th Gen. CPU, Isolated 8-bit DI & 8-bit DO	014020-000000-000000
AIHV-W1-1268L	AIHV-W1, Xeon® E3-1268LV5 CPU, 16-bit DIO	014030-000000-000000
AIHV-W1-1268L-i	AIHV-W1-i, Xeon® E3-1268LV5 CPU, Isolated 8-bit DI & 8-bit DO	014040-000000-000000
AIHV-W1-6700TE	AIHV-W1, i7-6700TE CPU, 16-bit DIO	014050-000000-000000
AIHV-W1-6700TE-i	AIHV-W1-i, i7-6700TE CPU, Isolated 8-bit DI & 8-bit DO	014060-000000-000000
AIHV-W1-6500TE	AIHV-W1, i5-6500TE CPU, 16-bit DIO	014070-000000-000000
AIHV-W1-6500TE-i	AIHV-W1-i, i5-6500TE CPU, Isolated 8-bit DI & 8-bit DO	014080-000000-000000
AIHV-W1-6100TE	AIHV-W1, i3-6100TE CPU, 16-bit DIO	014090-000000-000000
AIHV-W1-6100TE-i	AIHV-W1-i, i3-6100TE CPU, Isolated 8-bit DI & 8-bit DO	014100-000000-000000
AIHV-W1-G4400TE	AIHV-W1, i Pentium® G4400TE CPU, 16-bit DIO	014110-000000-000000
AIHV-W1-G4400TE-i	AIHV-W1-i, Pentium® G4400TE CPU, Isolated 8-bit DI & 8-bit DO	014120-000000-000000
AIHV-W1-G3900TE	AIHV-W1, Celeron® G3900TE CPU, 16-bit DIO	014130-000000-000000
AIHV-W1-G3900TE-i	AIHV-W1-i, Celeron® G3900TE CPU, Isolated 8-bit DI & 8-bit DO	014140-000000-000000
AIHV-W1-7700T	AIHV-W1, i7-7700T CPU, 16-bit DIO	014150-000000-000000
AIHV-W1-7700T-i	AIHV-W1-i, i7-7700T CPU, Isolated 8-bit DI & 8-bit DO	014160-000000-000000
AIHV-W1-7500T	AIHV-W1, i5-7500T CPU, 16-bit DIO	014170-000000-000000
AIHV-W1-7500T-i	AIHV-W1-i, i5-7500T CPU, Isolated 8-bit DI & 8-bit DO	014180-000000-000000
AIHV-W1-7101TE	AIHV-W1, i3-7101TE CPU, 16-bit DIO	014190-000000-000000
AIHV-W1-7101TE-i	AIHV-W1-i, i3-7101TE CPU, Isolated 8-bit DI & 8-bit DO	014200-000000-000000

Optional Modules

Model Name	Description	Article Number (A/N)
iDIO-8I8O	8-bit isolated DI & 8-bit isolated DO module	9206-9002

IOM1 Module

Model Name	Description	Article Number (A/N)
IOMH-4GMP	IOM Module - 4x M12 GbE with PoE (30.4W each port)	9103-1001
IOMH-4GM	IOM Module - 4x M12 GbE	9103-1002
IOMH-4GRP	IOM Module - 4x RJ45 GbE with PoE (30.4W each port)	9101-1001
IOMH-4GR	IOM Module - 4x RJ45 GbE	9101-1002
IOMH-2SFP	IOM Module - 2x 10GbE Fiber ethernet	9101-1003
IOMH-4U3	IOM Module - 4x USB 3.0	9104-1001

IOM1 Module with Metal Cover

Model Name	Description	Article Number (A/N)
IOMH1-4GMP	IOM Module with IOM1 metal cover - 4x M12 GbE with PoE (30.4W each port)	9103-1101
IOMH1-4GM	IOM Module with IOM1 metal cover - 4x M12 GbE	9103-1102
IOMH1-4GRP	IOM Module with IOM1 metal cover - 4x RJ45 GbE with PoE (30.4W each port)	9101-1101
IOMH1-4GR	IOM Module with IOM1 metal cover - 4x RJ45 GbE	9101-1102
IOMH1-2SFP	IOM Module with IOM1 metal cover - 2x 10GbE Fiber ethernet	9101-1103
IOMH1-4U3	IOM Module with IOM1 metal cover - 4x USB 3.0	9104-1101

Optional Accessories

Model Name	Description	Article Number (A/N)
CBL-S01	SATA (Data + Power) cable, 230mm	9992-0301
TBP5-S03	3-Pin, pitch 5.08mm Female Terminal Block Plug for DC input x1	9993-0105
TBP3-S05	5-Pin, pitch 3.81mm Female Terminal Block Plug for Remote Connector x1	9993-0303
TBP3-D20	2x10-Pin, pitch 3.5mm Female Terminal Block Plug for DIO Connector x1	9993-0620
WBK-AIH	Wall Mount Bracket x2 with four (4) M2.5x6 screws	9994-0201

CPU

Model Name	Description – CPU Options	Article Number (A/N)
E3-1268Lv5	6 th Skylake Intel® Xeon® E3-1268LV5 Processor (4 cores/8 threads, 2.4 GHz/3.4 GHz, 8MB cache, 35W TDP)	9860-1268
i7-6700TE	6 th Skylake Intel® Core™ i7-6700TE Processor (4 cores/8 threads, 2.4 GHz/3.4 GHz, 8MB cache, 35W TDP)	9867-6700TE
i5-6500TE	6 th Skylake Intel® Core™ i5-6500TE Processor (4 cores/4 threads, 2.3 GHz/3.3 GHz, 6MB cache, 35W TDP)	9865-6500TE
i3-6100TE	6 th Skylake Intel® Core™ i3-6100TE Processor (2 cores/4 threads, 2.7 GHz, 4MB cache, 35W TDP)	9863-6100TE
G4400TE	6 th Skylake Intel® Pentium® G4400TE Processor (2 cores/2 threads, 2.4 GHz, 3MB cache, 35W TDP)	9862-4400TE
G3900TE	6 th Skylake Intel® Celeron® G3900TE Processor (2 cores/2 threads, 2.3 GHz, 2MB cache, 35W TDP)	9861-3900TE
i7-7700T	7 th Kaby Lake Intel® Core™ i7-7700T Processor (4 cores/8 threads, 2.9 GHz/3.8 GHz, 8MB cache, 35W TDP)	9877-7700T
i5-7500T	7 th Kaby Lake Intel® Core™ i5-7500T Processor (4 cores/4 threads, 2.7 GHz/3.3 GHz, 6MB cache, 35W TDP)	9875-7500T
i3-7101TE	7 th Kaby Lake Intel® Core™ i3-7101TE Processor (2 cores/4 threads, 3.4 GHz, 3MB cache, 35W TDP)	9873-7101TE

Memory- Standard Temperature Grade (0°C - 60°C)

Model Name	Description – Memory Options	Article Number (A/N)
DDR4-2133-4G	SO-DIMM DDR4-2133, 4GB	9913-3004
DDR4-2133-8G	SO-DIMM DDR4-2133, 8GB	9913-3008
DDR4-2133-16G	SO-DIMM DDR4-2133, 16GB	9913-3016
DDR4-2133-32G	SO-DIMM DDR4-2133, 32GB	9913-3032
DDR4-2133-64G	SO-DIMM DDR4-2133, 64GB	9913-3064
DDR4-2400-2G	SO-DIMM DDR4-2400, 2GB	9913-4002
DDR4-2400-4G	SO-DIMM DDR4-2400, 4GB	9913-4004
DDR4-2400-8G	SO-DIMM DDR4-2400, 8GB	9913-4008
DDR4-2400-16G	SO-DIMM DDR4-2400, 16GB	9913-4016
DDR4-2400-32G	SO-DIMM DDR4-2400, 32GB	9913-4032
DDR4-2400-64G	SO-DIMM DDR4-2400, 64GB	9913-4064
DDR4-2666-4G	SO-DIMM DDR4-2666, 4GB	9913-5004
DDR4-2666-8G	SO-DIMM DDR4-2666, 8GB	9913-5008
DDR4-2666-16G	SO-DIMM DDR4-2666, 16GB	9913-5016
DDR4-2666-32G	SO-DIMM DDR4-2666, 32GB	9913-5032
DDR4-2666-64G	SO-DIMM DDR4-2666, 64GB	9913-5064

Memory - Industrial Temperature Grade (-40°C - 85°C)

Model Name	Description – Memory Options	Article Number (A/N)
DDR4-2133-4G(i)	SO-DIMM DDR4-2133, 4GB, Industrial	9923-3004
DDR4-2133-8G(i)	SO-DIMM DDR4-2133, 8GB, Industrial	9923-3008
DDR4-2133-16G(i)	SO-DIMM DDR4-2133, 16GB, Industrial	9923-3016
DDR4-2133-32G(i)	SO-DIMM DDR4-2133, 32GB, Industrial	9923-3032
DDR4-2133-64G(i)	SO-DIMM DDR4-2133, 64GB, Industrial	9923-3064
DDR4-2400-4G(i)	SO-DIMM DDR4-2400, 4GB, Industrial	9923-4004
DDR4-2400-8G(i)	SO-DIMM DDR4-2400, 8GB, Industrial	9923-4008
DDR4-2400-16G(i)	SO-DIMM DDR4-2400, 16GB, Industrial	9923-4016
DDR4-2400-32G(i)	SO-DIMM DDR4-2400, 32GB, Industrial	9923-4032
DDR4-2400-64G(i)	SO-DIMM DDR4-2400, 64GB, Industrial	9923-4064
DDR4-2666-4G(i)	SO-DIMM DDR4-2666, 4GB, Industrial	9923-5004
DDR4-2666-8G(i)	SO-DIMM DDR4-2666, 8GB, Industrial	9923-5008
DDR4-2666-16G(i)	SO-DIMM DDR4-2666, 16GB, Industrial	9923-5016
DDR4-2666-32G(i)	SO-DIMM DDR4-2666, 32GB, Industrial	9923-5032
DDR4-2666-64G(i)	SO-DIMM DDR4-2666, 64GB, Industrial	9923-5064

Storage - mSATA Standard Temperature Grade (0°C - 60°C)

Model Name	Description – Storage Options	Article Number (A/N)
mSATA-8G	mSATA, 8GB	9933-1008
mSATA-16G	mSATA, 16GB	9933-1016
mSATA-32G	mSATA, 32GB	9933-1032
mSATA-64G	mSATA, 64GB	9933-1064
mSATA-128G	mSATA, 128GB	9933-1128
mSATA-256G	mSATA, 256GB	9933-1256
mSATA-512G	mSATA, 512GB	9933-1512
mSATA-1T	mSATA, 1TB	9933-5001

Storage mSATA- Industrial Temperature Grade (-40°C - 85°C)

Model Name	Description – Storage Options	Article Number (A/N)
mSATA(i)-8G	mSATA, 8GB, Industrial	9943-1008
mSATA(i)-16G	mSATA, 16GB, Industrial	9943-1016
mSATA(i)-32G	mSATA, 32GB, Industrial	9943-1032
mSATA(i)-64G	mSATA, 64GB, Industrial	9943-1064
mSATA(i)-128G	mSATA, 128GB, Industrial	9943-1128
mSATA(i)-256G	mSATA, 256GB, Industrial	9943-1256
mSATA(i)-512G	mSATA, 512GB, Industrial	9943-1512
mSATA(i)-1T	mSATA, 1TB, Industrial	9943-5001

2.5-inch SSD- Standard Temperature Grade (0°C - 60°C)

Model Name	Description – Storage Options	Article Number (A/N)
2.5" SSD-32G	2.5" SSD, 32GB	9934-1032
2.5" SSD-64G	2.5" SSD, 64GB	9934-1064
2.5" SSD-128G	2.5" SSD, 128GB	9934-1128
2.5" SSD-256G	2.5" SSD, 256GB	9934-1256
2.5" SSD-512G	2.5" SSD, 512GB	9934-1512
2.5" SSD-1T	2.5" SSD, 1TB	9934-5001
2.5" SSD-2T	2.5" SSD, 2TB	9934-5002

2.5-inch SSD - Industrial Temperature Grade (-40°C - 85°C)

Model Name	Description– Storage Options	Article Number (A/N)
2.5" SSD(i)-32G	2.5" SSD, 32GB, Industrial	9944-1032
2.5" SSD(i)-64G	2.5" SSD, 64GB, Industrial	9944-1064
2.5" SSD(i)-128G	2.5" SSD, 128GB, Industrial	9944-1128
2.5" SSD(i)-256G	2.5" SSD, 256GB, Industrial	9944-1256
2.5" SSD(i)-512G	2.5" SSD, 512GB, Industrial	9944-1512
2.5" SSD(i)-1T	2.5" SSD, 1TB, Industrial	9944-5001
2.5" SSD(i)-2T	2.5" SSD, 2TB, Industrial	9944-5002

2.5-inch HDD -Standard Temperature Grade (0°C - 60°C)

Model Name	Description– Storage Options	Article Number (A/N)
2.5" HDD-500G	2.5" HDD, 500GB	9935-1500
2.5" HDD-1T	2.5" HDD, 1TB	9935-5001
2.5" HDD-2T	2.5" HDD, 2TB	9935-5002
2.5" HDD-4T	2.5" HDD, 4TB	9935-5004
2.5" HDD-5T	2.5" HDD, 5TB	9935-5005

AC-DC Power Adapter - Options

Model Name	Description	Article Number (A/N)
ADT-24V60-T3A	24V/60W AC-DC power adapter with pitch 5.08 mm 3-pin terminal block plug	9952-1822
ADT-24V90-T3A	24V/90W AC-DC power adapter with pitch 5.08 mm 3-pin terminal block plug	9952-1823
ADT-24V120-T3A	24V/120W AC-DC power adapter with pitch 5.08 mm 3-pin terminal block plug	9952-1824
ADT-24V160-T3A	24V/160W AC-DC power adapter with pitch 5.08 mm 3-pin terminal block plug	9952-1825
ADT-24V220-T3A	24V/220W AC-DC power adapter with pitch 5.08 mm 3-pin terminal block plug	9952-1826
ADT-24V280-T3A	24V/280W AC-DC power adapter with pitch 5.08 mm 3-pin terminal block plug	9952-1827

AC Power Cord - Options

Model Name	Description	Article Number (A/N)
PCBL-B12	YP12-YC12: category B type plug, H05VV-F 3G 0.75 mm, 1.8m, 250V, 10A, TW/JP/US/CA/TH/PH/Central America	9959-1111
PCBL-D03	YP03-YC12: category D type plug, H05VV-F 3G 0.7 mm, 1.8m, 250V, 10A, CN	9959-1211
PCBL-D35	YP35-YC12: category D type plug, H05VV-F 3G 0.75 mm, 1.8m, 250V, 10A, AU/NZ	9959-1311
PCBL-G22	YP22-YC12: category G type plug, H05VV-F 3G 0.75 mm, 1.8m, 250V, 10A, DE	9959-1411
PCBL-I61	"YP61-YC12: category I type plug, H05VV-F 3G 0.75 mm, 1.8m, 250V, 10A, UK/HK/MO/SG/MY"	9959-1511

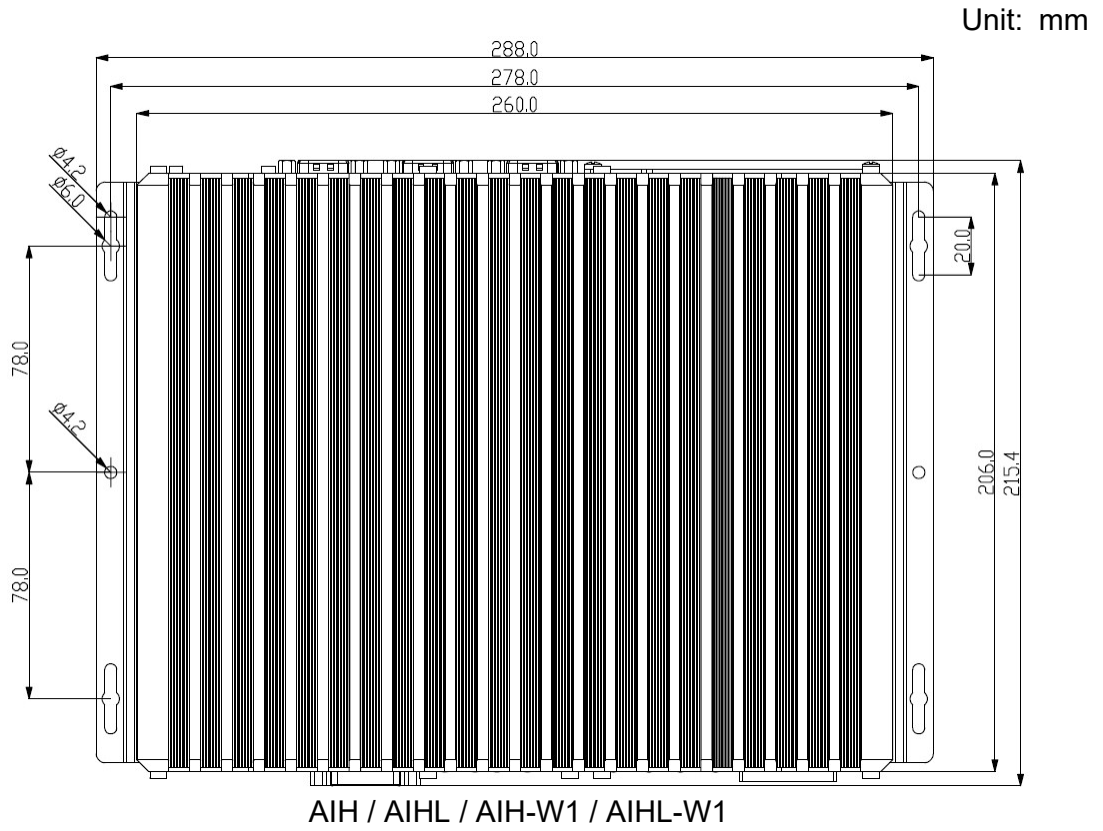
Chapter 2

Mechanical Dimensions

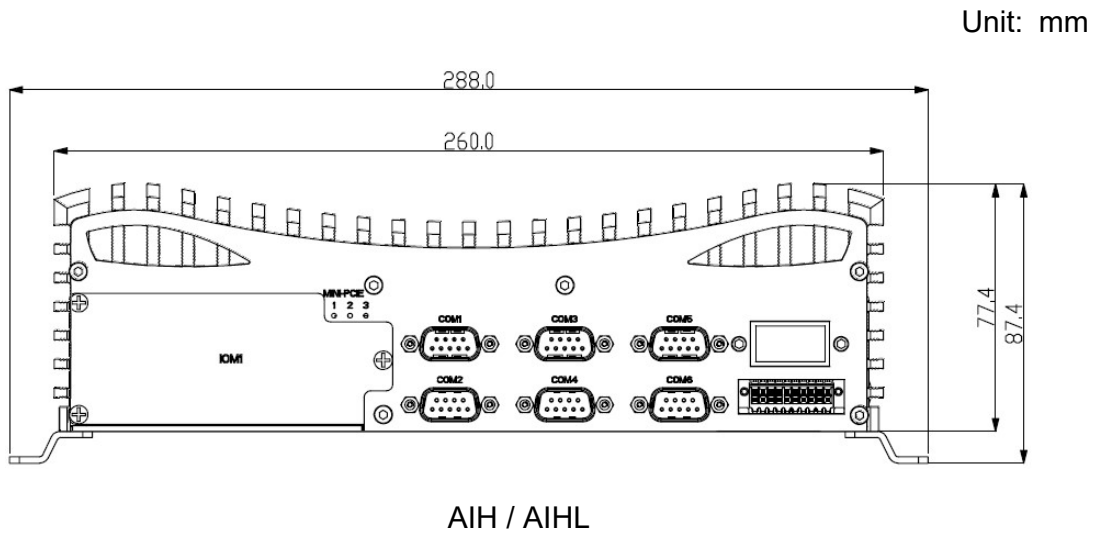
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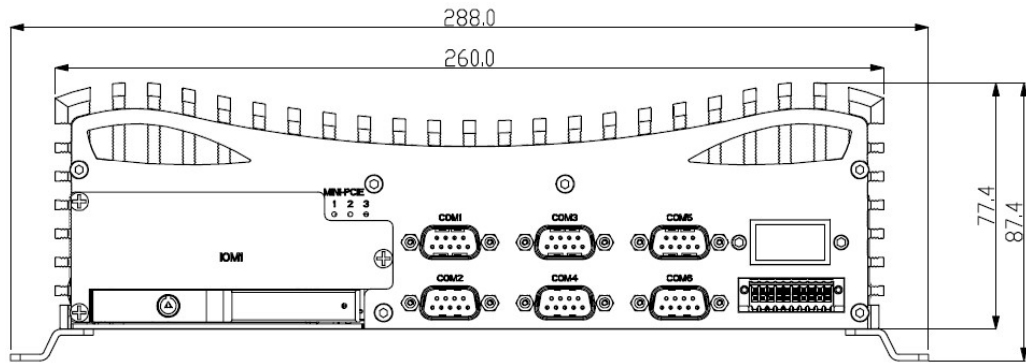
- Top View
- Front View
- Rear View
- Left-Side View
- Right-Side View
- Bottom View

2.1 Top View

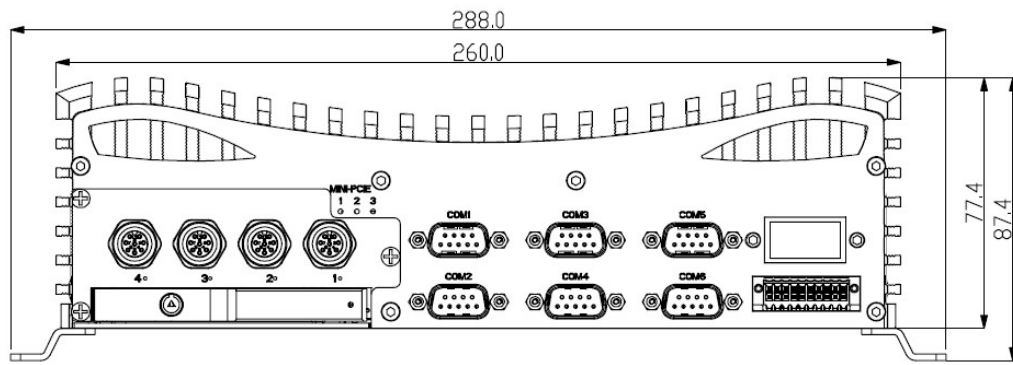


2.2 Front View





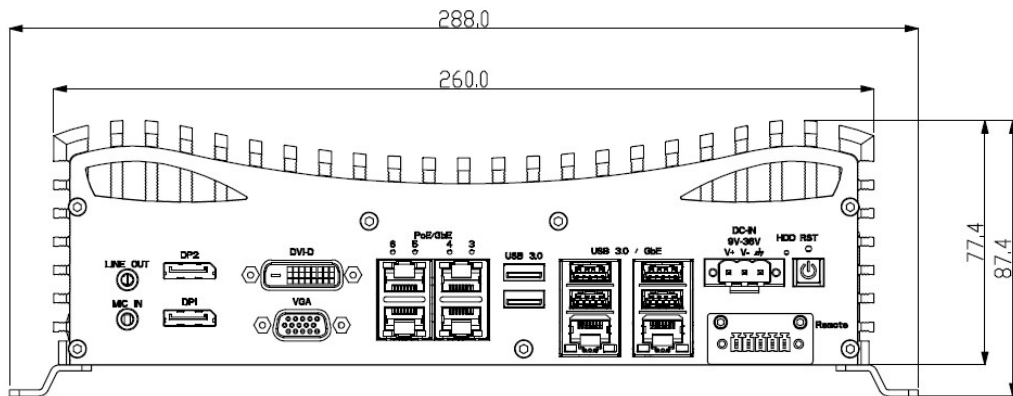
AIH-W1 / AIHL-W1



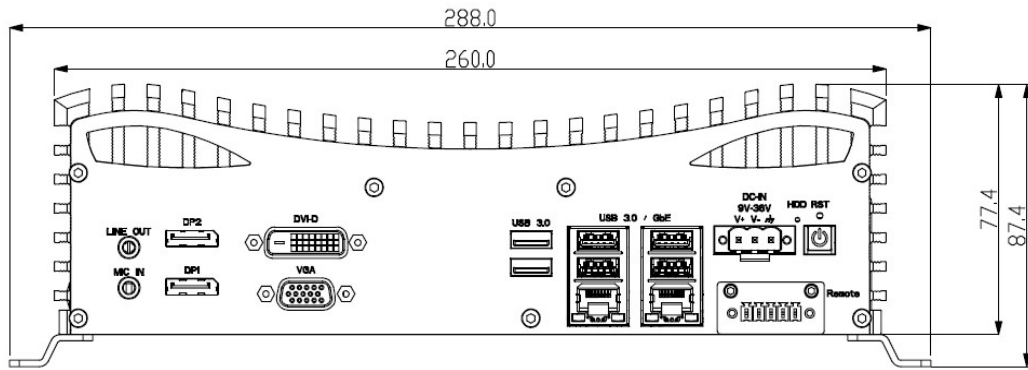
AIHV-W1

2.3 Rear View

Unit: mm



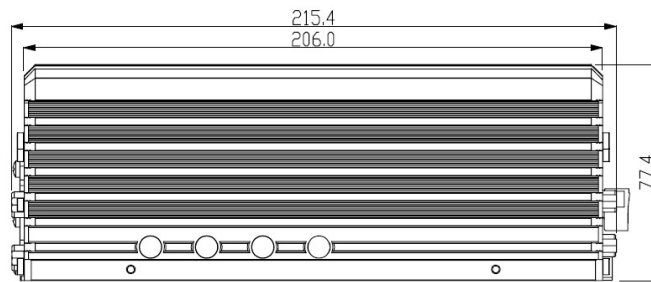
AIH / AIH-W1



AIHL / AIHL-W1 / AIHV-W1

2.4 Right-Side View

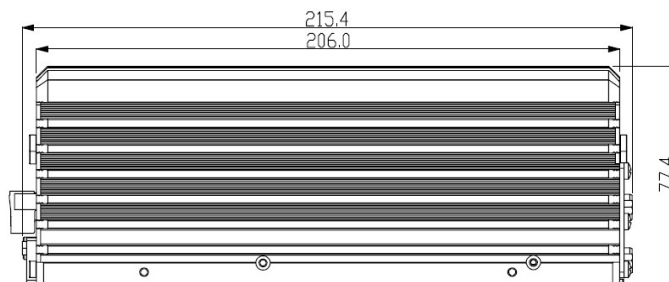
Unit: mm



AIH / AIHL / AIH-W1 / AIHL-W1 / AIHV-W1

2.5 Left-Side View

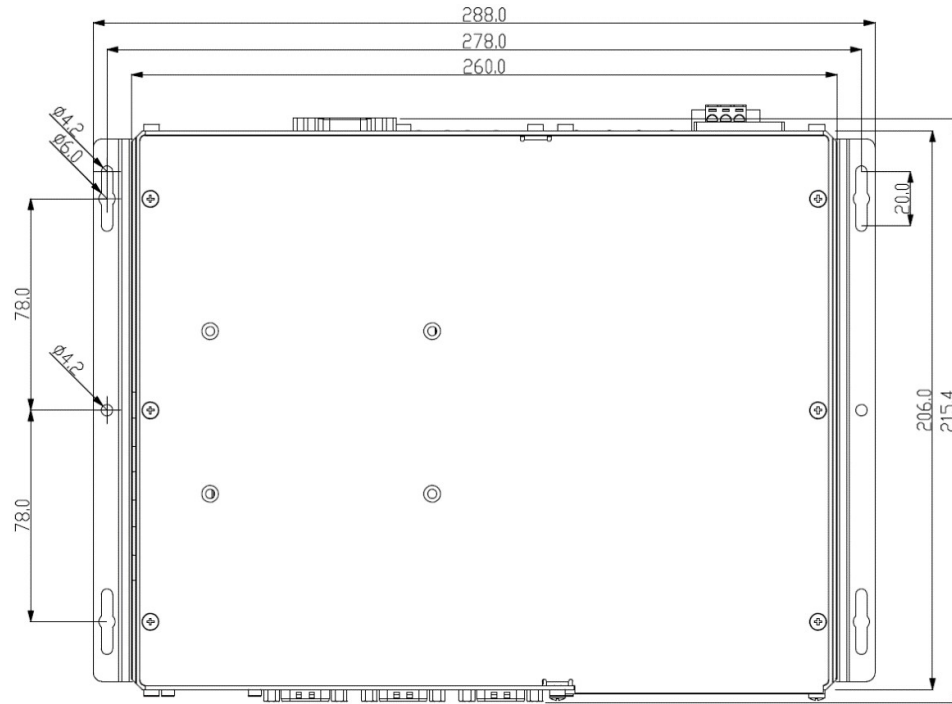
Unit: mm



AIH / AIHL / AIH-W1 / AIHL-W1 / AIHV-W1

2.6 Bottom View

Unit: mm



AIH / AIHL / AIH-W1 / AIHL-W1 / AIHV-W1

Chapter 3

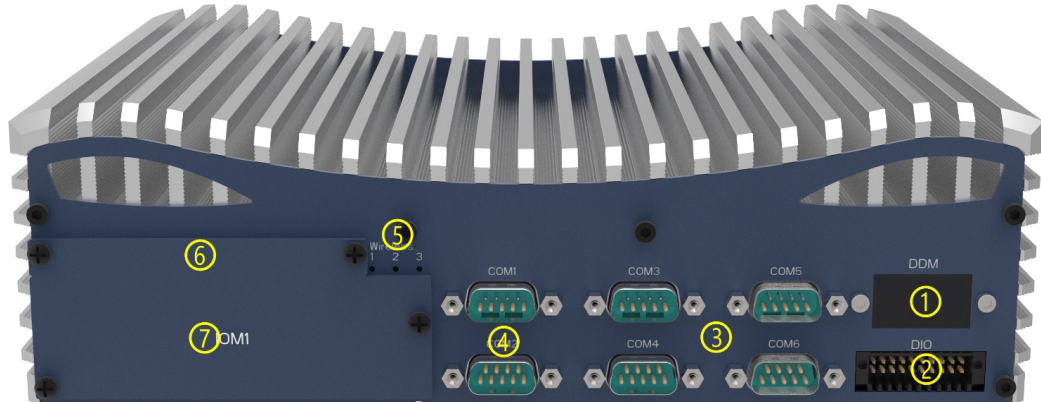
Hardware Function Description

This chapter includes:

- I/O Layout
- Front Panel I/O Function
- Rear Panel I/O Function
- Right-Side I/O Function
- SSD Disk Drive Bay
- IOM
- Card Expansion

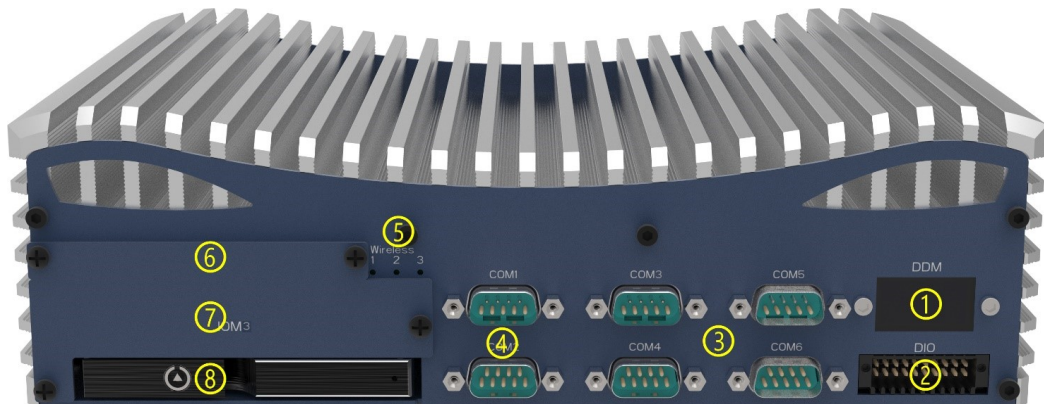
3.1 I/O Layout

Front I/O – AIH / AIHL



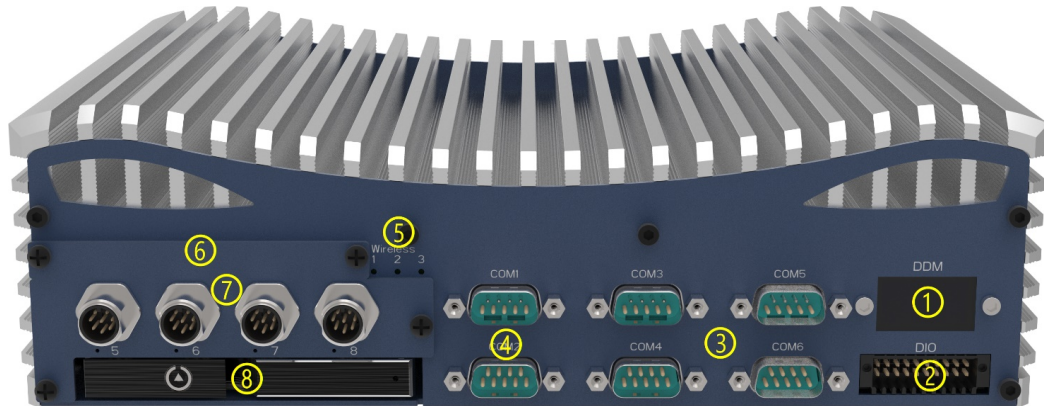
- ① DDM (Dynamic Display Module) ② GPIO or Isolated DI & DO
- ③ RS-232: COM3~COM6 (4 ports) ④ RS-232/422/485: COM1, COM2 (2 ports)
- ⑤ Wireless module LED for Mini PCIe (3 LEDs) ⑥ SIM sockets (3 sockets)
- ⑦ IOM1

Front I/O – AIH-W1 / AIHL-W1



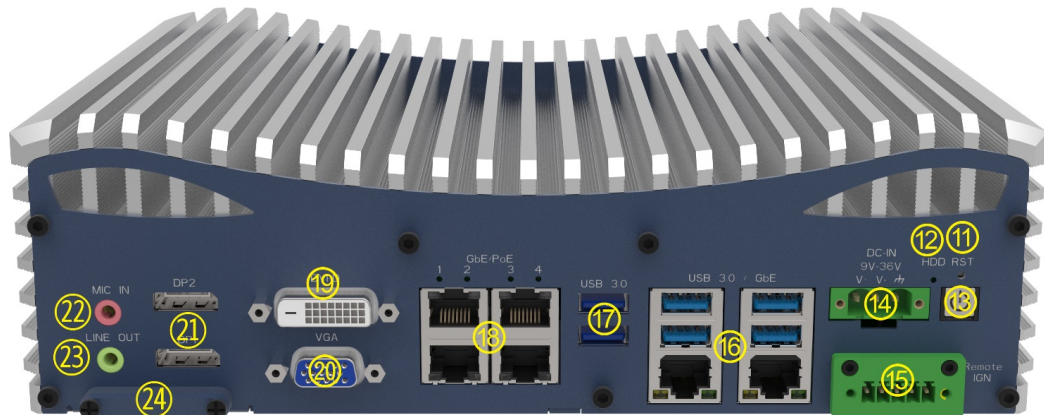
- ① DDM (Dynamic Display Module) ② GPIO or Isolated DI & DO
- ③ RS-232: COM3~COM6 (4 ports) ④ RS-232/422/485: COM1, COM2 (2 ports)
- ⑤ Wireless module LED for Mini PCIe (3 LEDs) ⑥ SIM sockets (3 sockets)
- ⑦ IOM3 ⑧ 2.5" Hot-swappable drive bay (1 tray)

Front I/O – AIHV-W1



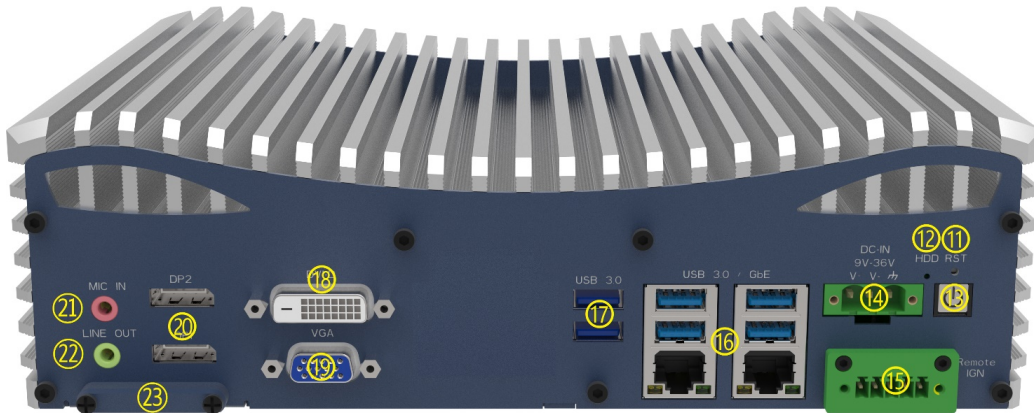
- ① DDM (Dynamic Display Module) ② GPIO or Isolated DI & DO
- ③ RS-232: COM3~COM6 (4 ports) ④ RS-232/422/485: COM1, COM2 (2 ports)
- ⑤ Wireless module LED for Mini PCIe (3 LEDs) ⑥ SIM sockets (3 sockets)
- ⑦ M12 A-code GbE (4 ports) ⑧ 2.5" Hot-swappable disk drive bay

Rear I/O – AIH / AIH-W1



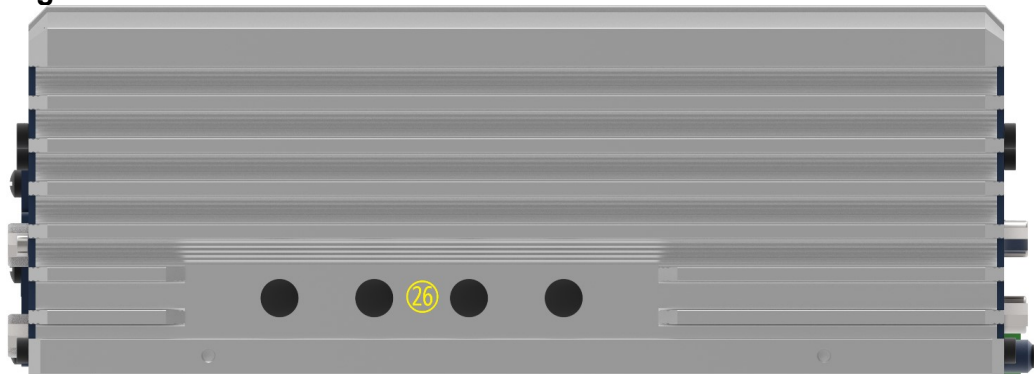
- ⑪ Reset button ⑫ SSD/HDD LED ⑬ Power button with Power LED
- ⑭ DC in terminal block ⑮ Remote & Ignition control terminal block
- ⑯ GbE with 2x USB 3.0 stack connector (2 connectors)
- ⑰ Dual stack USB 3.0 connector (2 connectors/4 ports)
- ⑱ Dual stack GbE/PoE (4 ports) ⑲ DVI-D port ⑳ VGA port
- ㉑ DisplayPort (2 ports) ㉒ Mic-In ㉓ Line-Out ㉔ RTC battery

Rear I/O – AIHL / AIHL-W1 / AIHV-W1



- ⑪ Reset button ⑫ SSD/HDD LED ⑬ Power button with Power LED
- ⑭ DC in terminal block ⑮ Remote & Ignition control terminal block
- ⑯ GbE with 2x USB 3.0 stack connector (2 connectors)
- ⑰ Dual stack USB 3.0 connector (2 connectors/4 ports)
- ⑱ DVI-D port ⑲ VGA port ⑳ DisplayPort (2 ports)
- ㉑ Mic-In ㉒ Line-Out ㉓ RTC battery

Right-Side I/O – AIH / AIHL / AIH-W1 / AIHL-W1 / AIHV-W1



- ⑳ Antenna hole: 4 holes

3.2 Front Panel I/O Function

Most standard computer I/O functions are placed on the front panel. This section describes each I/O function on the front panel.

3.2.1 Dynamic Display Module (DDM)

The Dynamic Display Module (DDM) is a 0.96" LCM module, and it displays the following information:

- Customer's information
- Logo
- Part Number
- CPU Temperature
- Power Consumption
- RTC Battery Voltage
- DC in Voltage
- Warning Message
- PoE Status
- POST Code
- Hardware Status
- Customized Information

3.2.2 GPIO / Isolated DIO

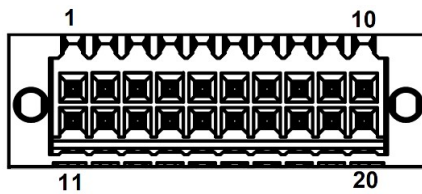
The Eagle Eyes-AIH series offers 16-bit digital programmable general-purpose input and output (GPIO). The Isolated 8-bit DI & 8-bit DO is optional. The GPIO support 3.3V or 5V signal and can be configured by the BIOS or an Application Program.

DI/DO Safety-Related Certifications

DI	DO
2500-V PART NUMBER PACKAGE BODY SIZE (NOM) RMS Isolation for 1 minute per UL 1577	2500-V PART NUMBER PACKAGE BODY SIZE (NOM) RMS Isolation for 1 minute per UL 1577
Approved by VDE, DIN EN60747-5-2() (as an option), file No. 40009162 (as model No. PC3H4)	4242-V ISO7131CC PK Isolation per DIN V VDE V 0884-10 (VDE V 0884-10):2006-12, 566 V ISO7140CC PK Working Voltage
UL flammability grade (94V-0)	CSA Component Acceptance Notice 5A, IEC ISO7141CC 60950-1 and IEC 61010-1 End Equipment ISO7141FCC Standards
	CQC Certification per GB 4943.1-2011(Mfg. Cert)

DI / DO Operation Characteristics

Parameter	DI	DO
Operation Voltage	5 - 48V DC	Source Mode: 5 - 48V DC Sink Mode: 5 - 40V DC
Input/output Current Limit	25 uS	100mA
Turn On Delay Time (Max.)	25 uS	Source Mode: 15 uS Sink Mode: 60 uS
Turn Off Delay Time (Max.)	25 uS	Source Mode: 15 uS Sink Mode: 60 uS

GPIO / Isolated DIO Terminal Block**Programmable DIO**

Pin	Description	Pin No.	Description
1	GPIO10 (Default GPI bit0)	11	GPIO0 (Default GPO bit0)
2	GPIO11 (Default GPI bit1)	12	GPIO1 (Default GPO bit1)
3	GPIO12 (Default GPI bit2)	13	GPIO2 (Default GPO bit2)
4	GPIO13 (Default GPI bit3)	14	GPIO3 (Default GPO bit3)
5	GPIO14 (Default GPI bit4)	15	GPIO4 (Default GPO bit4)
6	GPIO15 (Default GPI bit5)	16	GPIO5 (Default GPO bit5)
7	GPIO16 (Default GPI bit6)	17	GPIO6 (Default GPO bit6)
8	GPIO17 (Default GPI bit7)	18	GPIO7 (Default GPO bit7)
9	Digital Input COM	19	GND
10	GND	20	VCC

Isolated DIO

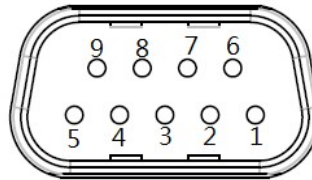
Pin	Description	Pin No.	Description
1	Isolated DI bit0	11	Isolated DO bit0
2	Isolated DI bit1	12	Isolated DO bit1
3	Isolated DI bit2	13	Isolated DO bit2
4	Isolated DI bit3	14	Isolated DO bit3
5	Isolated DI bit4	15	Isolated DO bit4
6	Isolated DI bit5	16	Isolated DO bit5
7	Isolated DI bit6	17	Isolated DO bit6
8	Isolated DI bit7	18	Isolated DO bit7
9	Digital Input COM	19	Isolated GND
10	Isolated GND	20	Isolated VCC

3.2.3 UART Ports

The Eagle Eyes-AIH series provides two RS-232/422/485 ports and four RS-232 ports for communication with external devices. COM1~COM6 are located on the I/O panel via 9-pin D-Sub male connectors. COM1 and COM2 can be configured for full RS-232, RS-422, or RS-485 with auto flow control communication. Mode selection is by BIOS or eKit tools. The default definition is RS-232.

Each of the serial ports individually contains a programmable baud rate generator, which can divide the input clock by a number ranging from 1 to 65535. The data rate of each serial port can be programmed from 115.2K baud (COM1 baud rate up to 912.6Kbit/s) and down to 50 baud. The character options are programmable for 1 start bit; 1, 1.5 or 2 stop bits; even, odd, stick or no parity; and privileged interrupts. Each port supports 128 bytes RX FIFO depths and 16 bytes TX FIFO depths.

All transmitter outputs and receiver inputs feature robust electrostatic discharge (ESD) protection to $\pm 15\text{kV}$ Human Body Model (HBM) and $\pm 8\text{kV}$ IEC-61000-4-2 Contact. Each receiver output has full fail-safe protection to avoid system lockup, oscillation, or indeterminate states by defaulting to logic-high output level when the inputs are open, shorted, or terminated, but undriven.



The following table describes the pin definition of UART ports.

COM1, COM2

UART Mode		RS-232	RS-422 (5-wire)	RS-422 (9-wire)	RS-485 (3-wire)
D-Sub 9 Male COM1, COM2	Pin 1	DCD#	TxD-	TxD-	Data-
	Pin 2	RxD	TxD+	TxD+	Data+
	Pin 3	TxD	RxD+	RxD+	N/A
	Pin 4	DTR#	RxD-	RxD-	N/A
	Pin 5	GND	GND	GND	GND
	Pin 6	DSR	N/A	RTS-	N/A
	Pin 7	RTS#	N/A	RTS+	N/A
	Pin 8	CTS#	N/A	CTS+	N/A
	Pin 9	RI#/+12V/+5V	N/A	CTS-	N/A

COM3, COM4

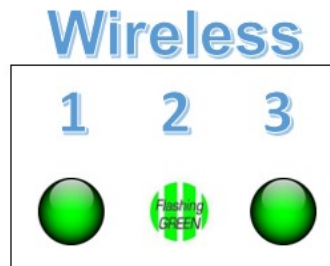
UART Mode	RS-232	Description	
D-Sub 9 Male COM3, COM4	Pin 1	DCD#	Data Carrier Detect
	Pin 2	RxD	Receive Data
	Pin 3	TxD	Transmit Data
	Pin 4	DTR#	Data Terminal Ready
	Pin 5	GND	System Ground
	Pin 6	DSR	Data Set Ready
	Pin 7	RTS#	Request to Send
	Pin 8	CTS#	Clear to Send
	Pin 9	RI#/+12V/+5V	Ring Indicator/+12V/+5V

COM5, COM6

UART Mode	RS-232	Description	
D-Sub 9 Male COM5, COM6	Pin 1	DCD#	Data Carrier Detect
	Pin 2	RxD	Receive Data
	Pin 3	TxD	Transmit Data
	Pin 4	DTR#	Data Terminal Ready
	Pin 5	GND	System Ground
	Pin 6	DSR	Data Set Ready
	Pin 7	RTS#	Request to Send
	Pin 8	CTS#	Clear to Send
	Pin 9	RI#	Ring Indicator

3.2.4 Wireless Module LED for Mini PCIe

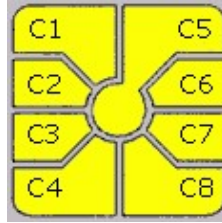
The Eagle Eyes-AIH supports 3 USIM sockets and 3 Mini PCIe slots. It can support any WWAN / WLAN / WPAN Mini PCIe wireless module, such as Wi-Fi, Bluetooth, 3G / 4G / LTE, etc. When a Mini PCIe wireless module is installed and activated, the corresponding LED will light as described below.



Mini Card LED	LED Status
WWAN Linked	Solid Green
WWAN Active	Flash Green
WLAN Linked	Solid Green
WLAN Active	Flash Green
WPAN Linked	Solid Green
WPAN Active	Flash Green

3.2.5 USIM Socket

The Eagle Eyes-AIH series provides 3 USIM sockets for wireless applications when 3G/4G wireless modules are installed in the full-length Mini PCIe slots.



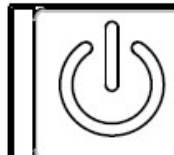
Pin	Name	Description
C1	VCC	+5V DC power supply input (optional use by the card)
C2	RESET	Reset signal, used to reset the card's communications. Either used itself (reset signal supplied from the interface device) or in combination with an internal reset control circuit (optional use by the card). If internal reset is implemented, the voltage supply on VCC is mandatory
C3	CLOCK	Provides the card with a clock signal, from which data communications timing is derived
C4	RESERVED	AUX1, optionally used for USB interfaces and other uses.
C5	GND	Ground (reference voltage)
C6	VPP	Programming voltage input (optional). This contact may be used to supply the voltage required to program or to erase the internal non-volatile memory. ISO/IEC 7816-3:1997 designated this as a programming voltage: an input for a higher voltage to program persistent memory (e.g., EEPROM). ISO/IEC 7816-3:2006 designates it SPU, for either standard or proprietary use, as input and/or output.
C7	I/O	Input or Output for serial data (half-duplex) to the integrated circuit inside the card.
C8	RESERVED	AUX2, optionally used for USB interfaces and other uses.

3.3 Rear Panel I/O Function

To fit more general application requirements, the Eagle Eyes-AIH offers more I/O functions on its rear panel. In this section, we'll illustrate each I/O function on the rear panel.

3.3.1 Power Button with Power LED

The Power Button is a non-latched switch with a dual-color LED indicator. It indicates power status: S0, S3, and S5.



LED Color	Power Status	System Status
Solid Blue	S0	System working
Solid Orange	S3, S5	Suspend to RAM, System off with standby power

More detailed LED indications are listed as follows:

Power Mode	Power On	Power Off	Suspend to RAM, Hibernate
ATX Mode	Solid Blue	Solid Orange	Solid Orange
AT Mode	Solid Blue	-	-
Ignition Mode	Solid Blue	-	-

Note:



ATX Mode:

Press the power button to power on the system. The blue LED will turn on. When the system is powered off, the orange LED will turn on. In case of system error, you can just press the power button for 4 seconds to shut down the system directly.

AT Mode:

Plug in the DC input power, the system will auto power on and the blue LED will turn on. When the system is powered off, the system will turn-off the LED. In case of system error, you can just press the power button for 4 seconds to shut down the system directly

Ignition Mode:

External ignition switch turn-on, the system will power on and the blue LED will turn on. Then plug in the DC input power. External ignition switch turn-off, the system will turn off and the LED will turn off. The power button will be not function at ignition.

3.3.2 Reset Button

The hardware Reset Button is used to reset the system without powering off the system. Press the Reset Button for 4 seconds to reset the system.



3.3.3 SSD/HDD LED

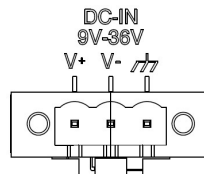
If the LED is on, it indicates that the system's storage is functional. If the **LED is off**, that will indicate that the system's **storage is not functional**. If the LED is flashing, that will indicate data access activity.



SSD LED	LED Status
Storage Active	Flash Green

3.3.4 System DC Input (3-Pin Euro Type Terminal Block)

The Eagle Eyes-AIH allows a wide range of DC power input from 9V to 36V. It offers a 3-pin, pitch 5.0 mm Euro Type pluggable terminal block. The 3-pin power connector is used to connect the power plug of an AC/DC adapter. It's convenient for indoor usage where AC power is usually available. Since there is no specific rule of pin definition for this type of connector, please always confirm the polarity of the power source prior to plugging it into the system if you're not using the power adapter provided by EFCO.



Pin	Name	Description
1	DC V+	DC INPUT +
2	DC V-	DC INPUT -
3	Ground	Earth Ground or Chassis Ground

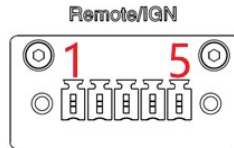
Caution!



Make sure the polarity of the power plug is correct before plugging it into the system.

Please make sure the voltage of DC power supply is correct before you connect it to the Eagle Eyes-AIH system. Supplying a voltage over 36V will damage the system.

3.3.5 Power Remote & Ignition Control (5-Pin Euro Type Terminal Block)

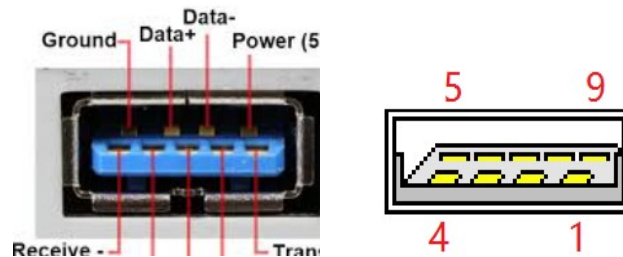


Pin	Name	Description
1	IGN-	Ignition Control Signal-
2	IGN PWR+	Ignition Power V+
3	Remote +	Remote Control +
4	Remote GND	Remote Control Ground
5	PLED+	Power LED+

3.3.6 USB 3.0 Connector

There are four USB 3.0 Type A connectors with signals directly connected to the Intel® XHCI controller. Each port supports up to 5GBs and 5V/0.9A power. They are compliant with Super Speed, High Speed, Full Speed, and Low Speed USB signaling rates. Each port can be powered on/off by the BIOS or EFCO Application Program.

USB 3.0 Connector



Pin	Name	Description
1	VBus	+5V Power
2	USB D-	USB 2.0 data
3	USB D+	
4	GND	Ground for power return
5	StdA SSRX-	SuperSpeed receiver
6	StdA SSRX+	SuperSpeed receiver
7	GND DRAIN	Ground for signal return
8	StdA SSTX-	SuperSpeed transmitter
9	StdA SSTX+	SuperSpeed transmitter

3.3.7 PoE/Gigabit Ethernet Ports

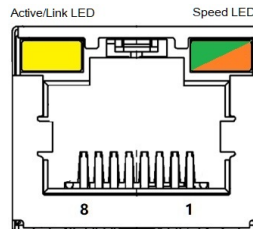
The GbE ports are located on the front panel.

Gigabit Ethernet **Ports 1 - 2** are powered by the Intel i219 Ethernet controller, supporting 10/100/1000 Mbps, PXE, Wake on LAN, and iAMT11, with an RJ45 connector and LED indicators.

The GbE ports are located on the front panel, and each port supports IEEE 802.3at (PoE+) Power over Ethernet connection delivering up to 30W/54V per port and 1000 BASE-T GigE data signals over a standard Ethernet Cat 5/Cat 6 cable.

PoE Ethernet **Ports 3 - 6** are powered by the Intel i210 Ethernet controller, supporting 10/100/1000 Mbps, PXE, Wake on LAN, and IEEE-1588 header, with an RJ45 connector with LED indicators or an M12 A-code connector depending on the model.

RJ45 Connector



Pin No	10 / 100 Mbps	1000 Mbps	Description	PoE (optional)
1	TX+	BI DA+	Bi-directional pair A +	PoE+
2	TX-	BI DA-	Bi-directional pair A -	PoE+
3	RX+	BI DB+	Bi-directional pair B +	PoE-
4	N/A	BI DC+	Bi-directional pair C +	N/A
5	N/A	BI DC-	Bi-directional pair C -	N/A
6	RX-	BI DB-	Bi-directional pair B -	PoE-
7	N/A	BI DD+	Bi-directional pair D +	N/A
8	N/A	BI DD-	Bi-directional pair D -	N/A

Ethernet Active/Link LEDs

Active/Link LED (Left)	Status
Off	Disconnected
Solid Yellow	Connected, no data transmission
Flashing Yellow	Connected, data transmitting/receiving

Ethernet Speed LED

Right Top Link LED	Status
Off	10 Mbps Link
Solid Green	100 Mbps Link
Solid Orange	1000 Mbps Like

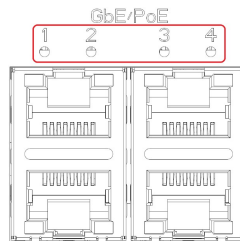
M12 A-code Connector



Pin No	10 / 100 Mbps	1000 Mbps	Description	PoE (optional)
1	N/A	BI DC+	Bi-directional pair C +	N/A
2	N/A	BI DD+	Bi-directional pair D +	N/A
3	N/A	BI DD-	Bi-directional pair D -	N/A
4	TX-	BI DA-	Bi-directional pair A -	PoE+
5	RX+	BI DB+	Bi-directional pair B +	PoE-
6	TX+	BI DA+	Bi-directional pair A +	PoE+
7	N/A	BI DC-	Bi-directional pair C -	N/A
8	RX-	BI DB-	Bi-directional pair B -	PoE-

3.3.8 PoE LEDs

The Eagle Eyes-AIH offers 4 LED lights to indicate the PoE status. The LED will light up when the PoE port links to the PoE PD of each device.



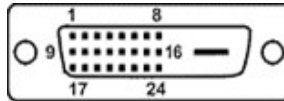
Note:



The photo above is only for AIH and AIH-W1.

3.3.9 DVI-D Connector

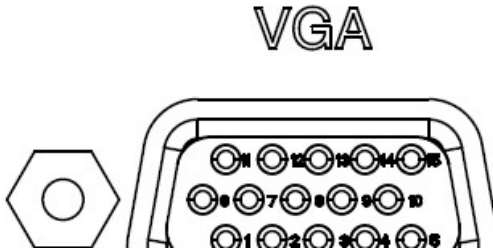
The DVI-D connector on the rear panel supports DVI-D display. This connector can send out a DVI signal. The DVI-D output mode supports up to 1920 x 1200 resolution. The DVI is automatically selected according to the connected display. You will need a DVI-D cable when connecting to a display device.



Pin	Signal
1	T.M.D.S DATA 2-
2	T.M.D.S DATA 2+
3	T.M.D.S DATA 2/4 SHIELD
4	T.M.D.S DATA 4-
5	T.M.D.S DATA 4+
6	DDC CLOCK
7	DDC DATA
8	ANALOG VERT. SYNC
9	T.M.D.S DATA 1-
10	T.M.D.S DATA 1+
11	T.M.D.S DATA 1/3 SHIELD
12	T.M.D.S DATA 3-
13	T.M.D.S DATA 3+
14	+5V POWER
15	GND
16	HOT PLUG DETECT
17	T.M.D.S DATA 0-
18	T.M.D.S DATA 0+
19	T.M.D.S DATA 0/5 SHIELD
20	T.M.D.S DATA 5-
21	T.M.D.S DATA 5+
22	T.M.D.S CLOCK SHIELD
23	T.M.D.S CLOCK+
24	T.M.D.S CLOCK-

3.3.10 VGA Connector

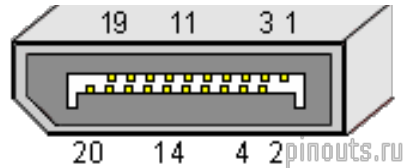
The Eagle Eyes-AIH system provides a high-resolution VGA video port on the front panel. It supports video resolutions up to 1920x1080.



Pin	Name	Description
1	RED	Red Video (75-ohm, 0.7 V p-p)
2	GREEN	Green Video (75-ohm, 0.7 V p-p)
3	BLUE	Blue Video (75-ohm, 0.7 V p-p)
4	RES/NC	Reserved
5	GND	Ground
6	RGND	Red Ground
7	GGND	Green Ground
8	BGND	Blue Ground
9	DDC +5V	+5 VDC
10	SGND	Sync Ground
11	ID0	Monitor ID Bit 0 (optional)
12	SDA	DDC Serial Data Line
13	HSYNC or CSYNC	Horizontal Sync (or Composite Sync)
14	VSYNC	Vertical Sync
15	SCL	DDC Data Clock Line

3.3.11 DisplayPort Connectors

The Eagle Eyes-AIH system provides two high-resolution DisplayPorts (DP) output on the I/O panel, with a display resolution up to 4096x2304@60Hz.



Pin	Name	Description
1	ML Lane 0 (p)	Lane 0 (positive)
2	GND	Ground
3	ML Lane 0 (n)	Lane 0 (negative)
4	ML Lane 1 (p)	Lane 1 (positive)
5	GND	Ground
6	ML Lane 1 (n)	Lane 1 (negative)
7	ML Lane 2 (p)	Lane 2 (positive)
8	GND	Ground
9	ML Lane 2 (n)	Lane 2 (negative)
10	ML Lane 3 (p)	Lane 3 (positive)
11	GND	Ground
12	ML Lane 3 (n)	Lane 3 (negative)
13	CONFIG1	Connected to Ground. Pins 13 and 14 may either be directly connected to ground or connected to ground through a pulldown device.
14	CONFIG2	Connected to Ground
15	AUX CH (p)	Auxiliary Channel (positive)
16	GND	Ground
17	AUX CH (n)	Auxiliary Channel (negative)
18	Hot Plug	Hot Plug Detect
19	Return	Return for Power
20	DP PWR	Power for the connector (3.3 V 500 mA)

The Eagle Eyes-AIH also supports Multi-Stream Transport (MST) as shown in the following MST Display Resolutions Table:

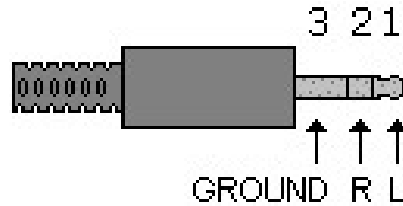
Multi-Stream Transport Display	Max. Resolution
One Display	4096x2304@60Hz
Two Displays concurrently	2880x1800@60Hz
Three Displays concurrently	2304x1440@60Hz

To achieve optimal DP output resolution in Windows, you need to install the corresponding graphics driver.

3.3.12 Audio Line-out and Mic-in Audio Jacks

The Eagle Eyes-AIH system provides audio functions using Intel® High Definition Audio and Realtek ALC892 codec. There are two 3.5mm audio jacks on the front panel. One is Line-out (Left/Right stereo), another is Mic-in (Mono) signals. To utilize the audio function in Windows, you need to install corresponding drivers.

Line-out and Mic-in Plug connector



Pin Number	Pin Name	Description
1	Line-out L/Mic-in L	Left Audio signal
2	Line-out R/Mic-in R	Right Audio signal
3	GND	Audio Ground

3.3.13 RTC CMOS Battery Tray

The Eagle Eyes-AIH supports an easily swappable RTC CMOS battery.



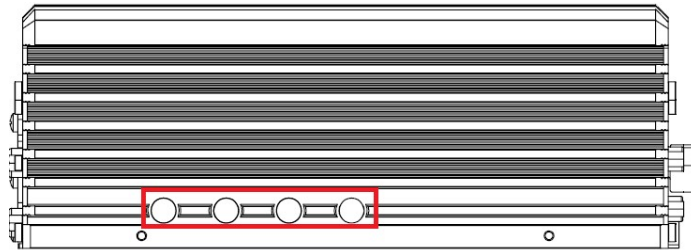
Caution!



Risk of explosion if the battery is replaced by an incorrect type. Dispose of used batteries according to your local guidelines.

3.4 Antenna Holes

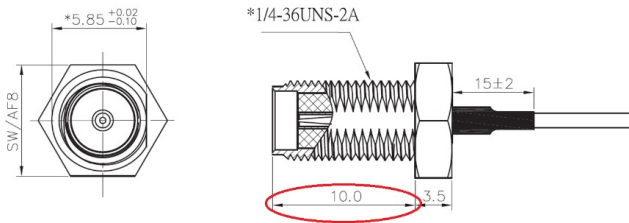
The Eagle Eyes-AIH system provides four antenna holes on its right-side panel



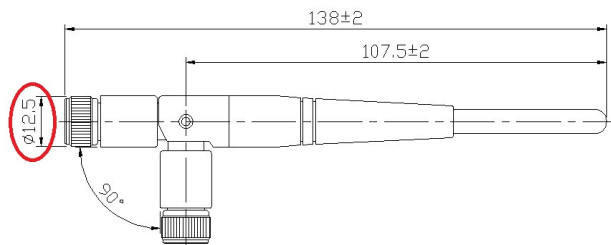
Caution!



1. Proposed SMA connector SPEC:
SMA screw length "**minimum 10mm**"



2. Proposed Antenna connector SPEC:
Antenna screw size "**maximum 15mm.**"

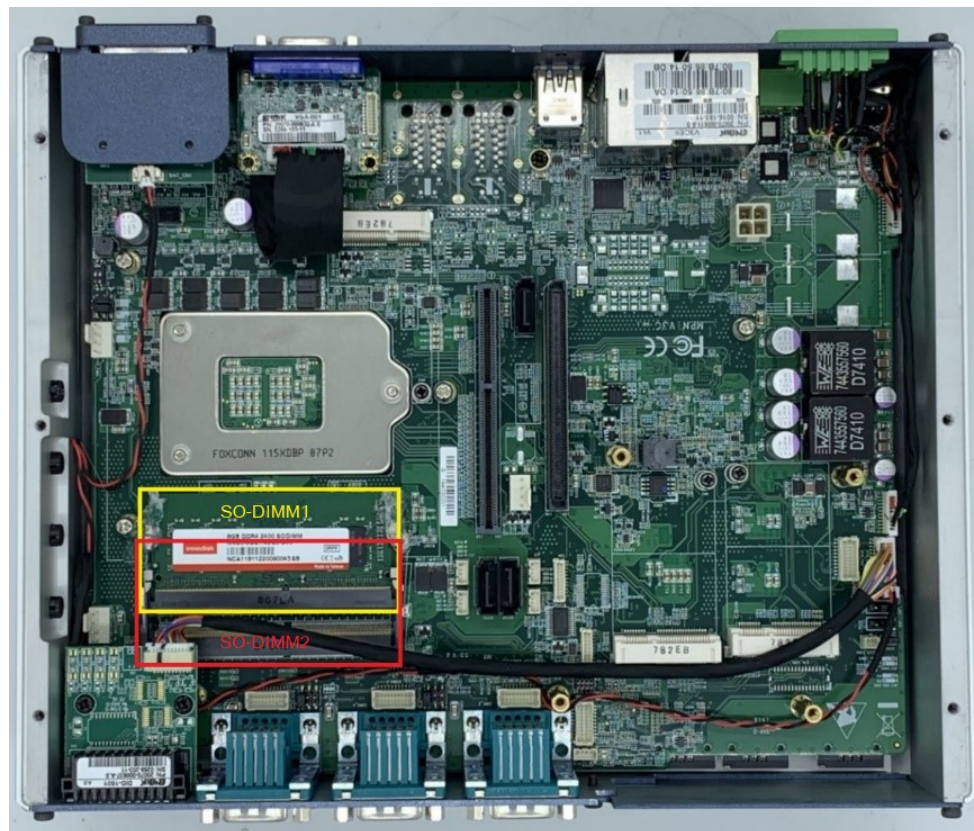


3.5 Internal I/O Functions

In addition to I/O connectors on the front/rear panel, the Eagle Eyes-AIH system provides other useful features via its on-board connectors, such as mSATA socket, Mini PCIe slots. This section describes these internal I/O functions.

3.5.1 DDR4 SO-DIMM Socket

Dual Channel DDR4 SO-DIMM slot supports DDR4 2133 (Skylake) or DDR4 2400 (Kaby Lake), up to 64GB (ECC/Non-ECC) memory.



Note:

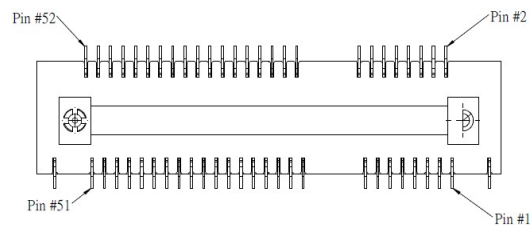
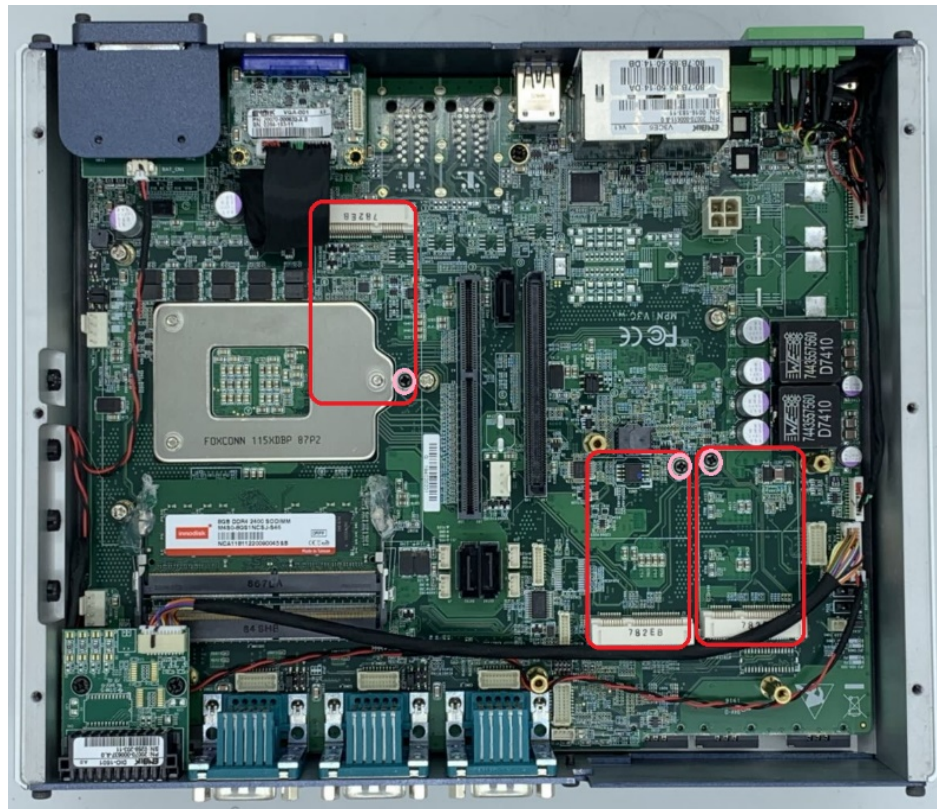


The memory module is installed on the SO-DIMM1 socket first.

3.5.2 Mini PCIe slot / mSATA Socket

The Eagle Eyes-AIH system provides three on-board full-length Mini PCIe slots with USIM socket. By installing a Mini PCIe module, your system can have expanded features such as Wi-Fi, 3G, 4G, GPS, Bluetooth, etc.

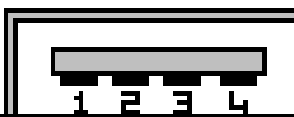
The full-length Mini PCIe slot supports Mini PCIe / mSATA modes selected by BIOS setup. SIM card socket supports +3.3V Power On/Off control by EFCO Application Program, and one Card Detection LED (WWAN, WLAN, and WPAN) on the front panel. This slot allows your system to connect to the internet through the available telecom operator's GPRS/3G/4G network or Wi-Fi/3G/4G communications. Eagle Eyes-AIH system provides multiple SMA antenna apertures on the right panel for multi-antenna configuration.



Top Side		Bottom Side	
1	PCIe 3Wake#	2	3.3V
3	Reserved	4	GND
5	Reserved	6	1.5V
7	PCIe CLKREQ#	8	UIM PWR
9	GND	10	UIM DATA
11	PCIe REFCLK-	12	UIM CLK
13	PCIe REFCLK+	14	UIM RESET
15	GND	16	UIM VPP
17	Reserved (UIM C8)	18	GND
19	Reserved (UIM C4)	20	Reserved
21	GND	22	PCIe RST#
23	PCIe PERn0/SATA-Tx+	24	+3.3V SB
25	PCIe PERp0/SATA-TX-	26	GND
27	GND	28	+1.5V
29	GND	30	SMB CLK
31	PCIe PETn0/SATA-RX-	32	SMB DATA
33	PCIe PETp0/SATA-RX+	34	GND
35	GND	36	USB D-
37	GND	38	USB D+
39	+3.3V	40	GND
41	+3.3V	42	LED WWAN#
43	GND	44	LED WLAN#
45	Reserved	46	LED WPAN#
47	Reserved	48	+1.5V
49	Reserved	50	GND
51	Reserved	52	+3.3V

3.5.3 Internal USB 2.0 Ports for USB 2.0 Dongle

The Eagle Eyes-AIH system provides one internal USB 2.0 Type A connector. The internal USB port is designed to allow users to attach a protection dongle inside the chassis.



Pin	Name	Description
1	VCC	+5 VDC
2	D-	Data -
3	D+	Data +
4	GND	Ground

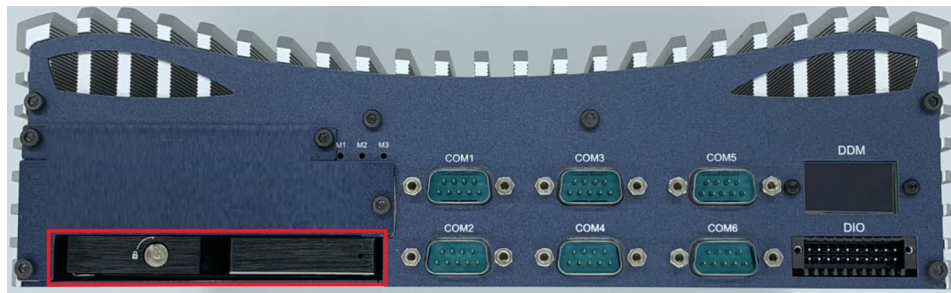
3.6 SATA and SATA Power Connector

The Eagle Eyes-AIH series provides three SATA ports for 2.5" SSD Drive Bay.

The Eagle Eyes-AIH / AIHL series support three internal SATA ports for 2.5" SSD Drive Bay.

3.6.1 External 2.5" Hot-Swappable SATA SSD Disk Drive Tray

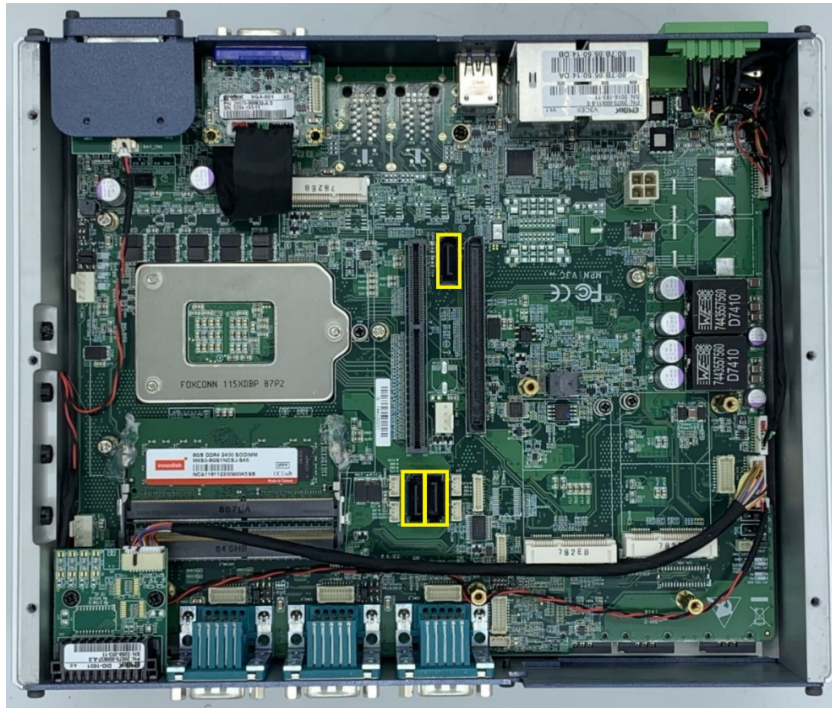
The Eagle Eyes-AIH-W1 / AIHL-W1 / AIHV-W1 series support one 2.5" hot-swappable SATA SSD drive tray on the front panel (pictured below), and two internal SATA ports for 2.5" SSD Drive Bay.



3.6.2 Internal SATA and SATA Power Connector

The Eagle Eyes-AIH provides three internal SATA connectors and four SATA Power connectors.

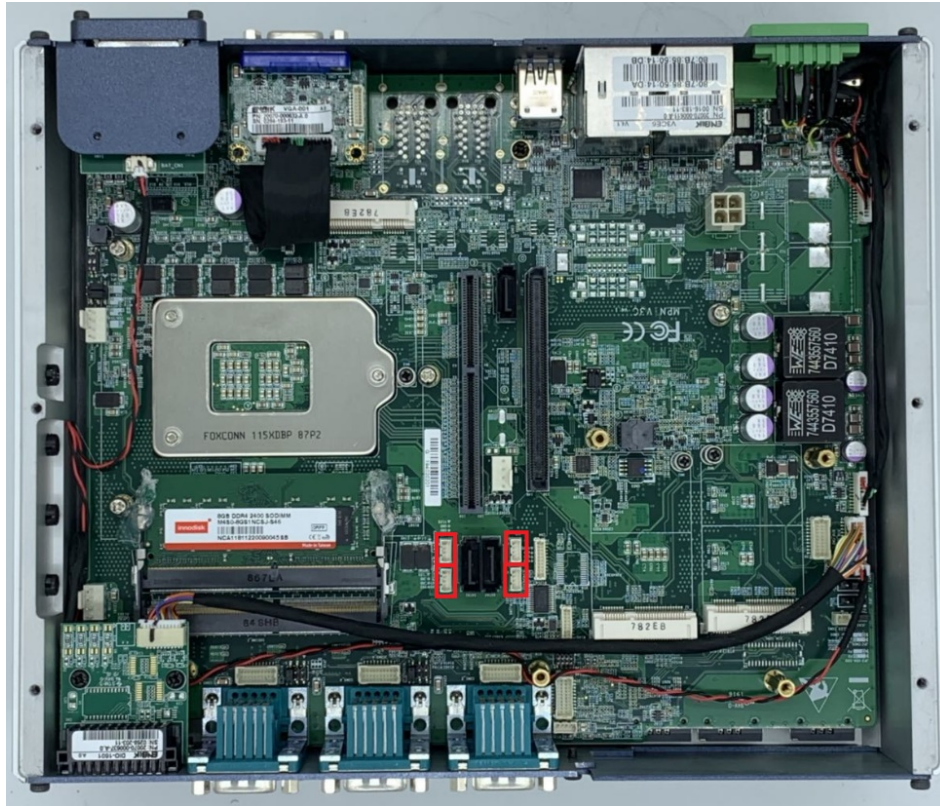
SATA Connector



SATA Data Pinout

Pin	Name	Function
1	GND	Ground
2	A+	Transmit+
3	A-	Transmit-
4	GND	Ground
5	B-	Receive-
6	B+	Receive+
7	GND	Ground

SATA Power Connector



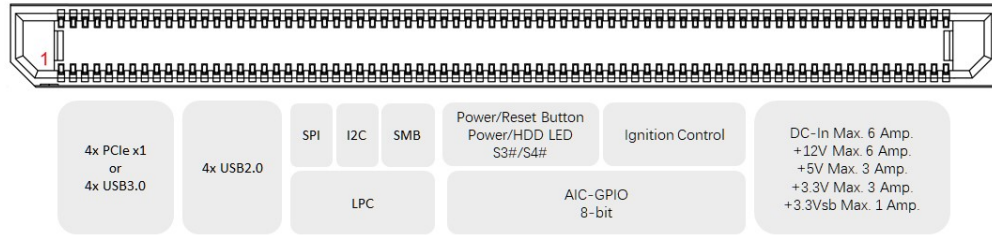
SATA Power Pinout

Pin	Name	Function
1	12VS	DC 12V
2	GND	Ground
3	GND	Ground-
4	5VS	DC 5V

3.7 IOM

In addition to I/O expansion on the rear panel, the Eagle Eyes-AIH provides other useful features by adding IOM options.

The Eagle Eyes-AIH provides one IOM space to enable more functionality. By installing an IOM module, your system can have more features such as 4x GbE, 4x GbE/PoE, 4x USB 3.0, 2x 10GbE, etc.



Following is the IOM module list for Eagle Eyes-AIH.

A/N	Model Name	Specifications
9103-1001	IOMH-4GMP	IOM Module - 4x M12 GbE with PoE (30.4W each port)
9103-1002	IOMH-4GM	IOM Module - 4x M12 GbE
9101-1001	IOMH-4GRP	IOM Module - 4x RJ45 GbE with PoE (30.4W each port)
9101-1002	IOMH-4GR	IOM Module - 4x RJ45 GbE
9101-1003	IOMH-2SFP	IOM Module - 2x 10GbE Fiber ethernet
9104-1001	IOMH-4U3	IOM Module - 4x USB 3.0

3.7.1 IOM1

The Eagle Eyes-AIH / AIHL provides an IOM slot to enable more I/O functions. IOM1 Module List: (including IOM1 metal cover)

A/N	Model Name	Specification
9103-1101	IOMH1-4GMP	IOM Module with IOM1 metal cover for all AIH-EP series-4x M12 GbE with PoE (30.4W each port)
9103-1102	IOMH1-4GM	IOM Module with IOM1 metal cover for all AIH-EP series-4x M12 GbE
9101-1101	IOMH1-4GRP	IOM Module with IOM1 metal cover for all AIH-EP series-4x RJ45 GbE with PoE (30.4W each port)
9101-1102	IOMH1-4GR	IOM Module with IOM1 metal cover for all AIH-EP series-4x RJ45 GbE
9101-1103	IOMH1-2SFP	IOM Module with IOM1 metal cover for all AIH-EP series-2x 10GbE Fiber ethernet
9104-1101	IOMH1-4U3	IOM Module with IOM1 metal cover for all AIH-EP series-4x USB 3.0

3.7.2 IOM3

The Eagle Eyes- AIH-W1 / AIHL-W1 provides an IOM slot to enable more I/O functions. IOM3 Module List: (including IOM1 metal cover)

A/N	Model Name	Specification
9103-1301	IOMH3-4GMP	IOM Module with IOM3 metal cover for all AIH-W1 series- 4x M12 GbE with PoE (30.4W each port)
9103-1302	IOMH3-4GM	IOM Module with IOM3 metal cover for all AIH-W1 series- 4x M12 GbE
9101-1301	IOMH3-4GRP	IOM Module with IOM3 metal cover for all AIH-W1 series- 4x RJ45 GbE with PoE (30.4W each port)
9101-1302	IOMH3-4GR	IOM Module with IOM3 metal cover for all AIH-W1 series- 4x RJ45 GbE
9104-1301	IOMH3-4U3	IOM Module with IOM3 metal cover for all AIH-W1 series- 4x USB 3.0

Chapter 4

Hardware Installation

This chapter includes:

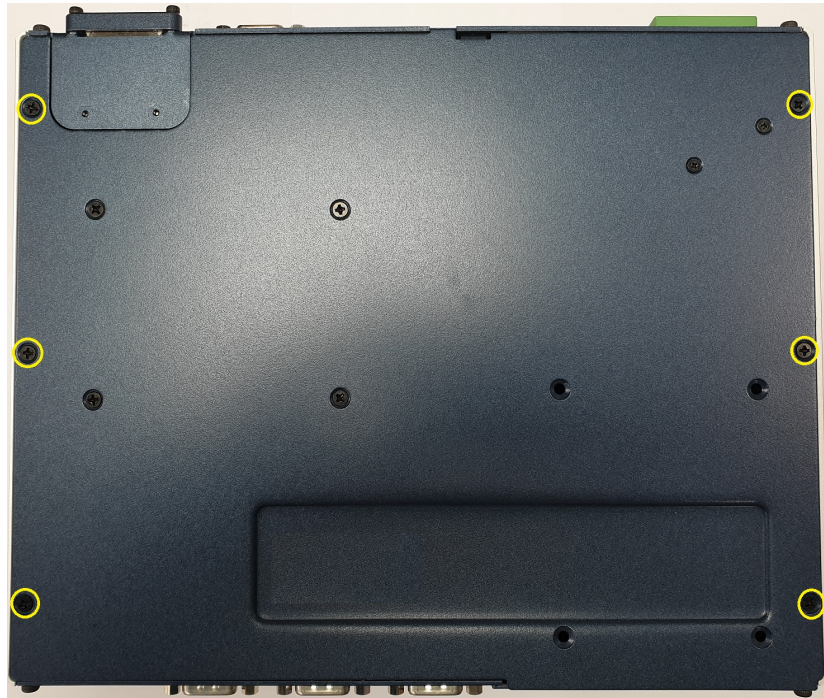
- SO-DIMM Memory Installation
- Mini PCIe / mSATA Module Installation
- 2.5" SATA SSD/HDD? Installation
- IOM Installation
- Mounting Bracket Installation

4.2 SO-DIMM Memory Installation

1. Remove one M3*6 hexapod screw.



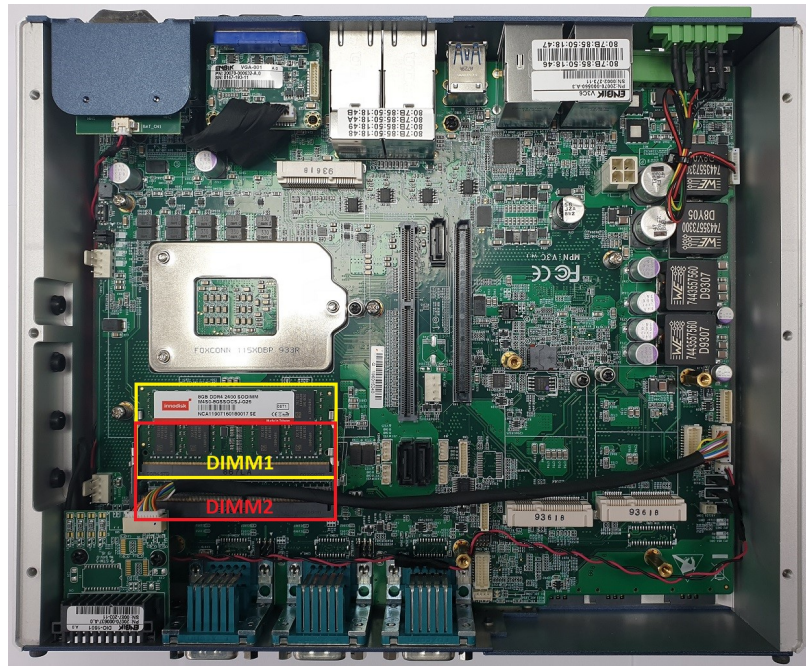
2. Remove six M3*6mm screws from the bottom cover.



3. Open bottom cover to disconnect USB, SATA & SATA power cables, then remove the bottom cover.



4. Install or replace your memory.



Note:



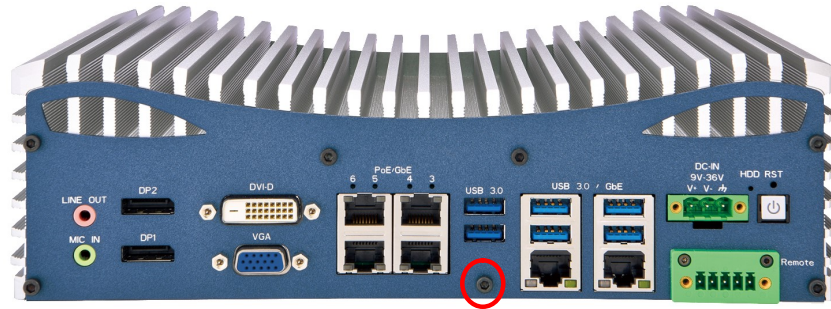
If only one memory, please install it in DIMM1.
Reconnect USB, SATA & SATA power cables, then close the bottom cover.



6. Replace six M3*6mm screws on the bottom cover.



7. Replace one M3*6 hexapod screw.



4.3 Mini PCIe / mSATA Module Installation

1. Remove one M3*6 hexapod screw.



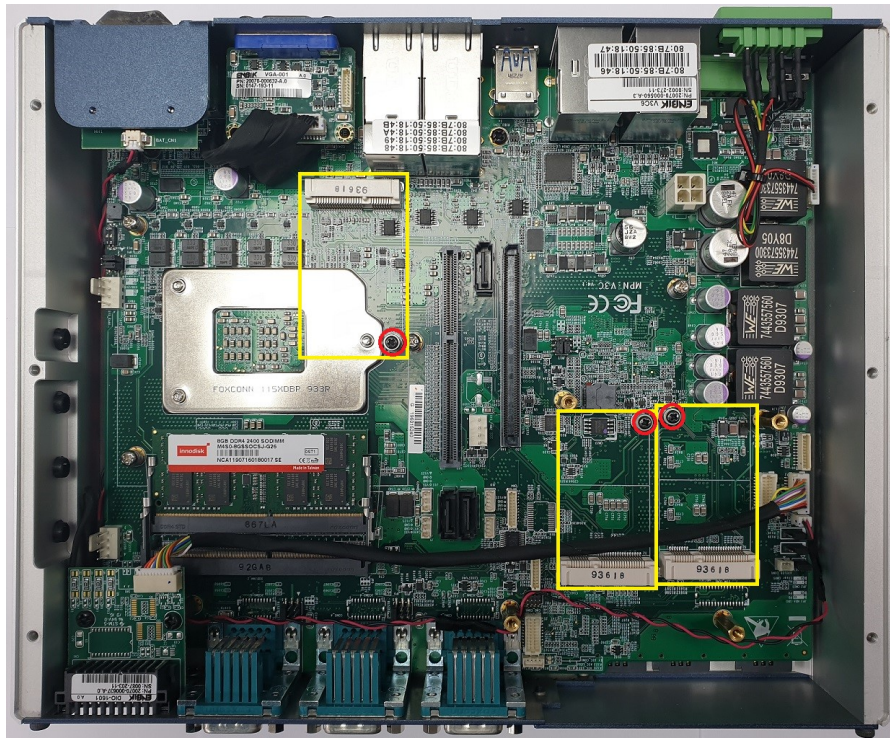
2. Remove six M3*6mm screws on the bottom cover.



3. Open bottom cover to disconnect USB, SATA & SATA power cables, then remove the bottom cover.



4. Install or replace the Mini PCIe / mSATA device in the below three slots.



5. Reconnect USB, SATA & SATA power cables, then close the bottom cover.



6. Replace six M3*6mm screws on the bottom cover.



7. Replace one M3*6 hexpod screw.



4.4 2.5" SATA SSD / HDD Installation

1. Remove one M3*6 hexapod screws & 4 copper pillars then remove the rear cover.



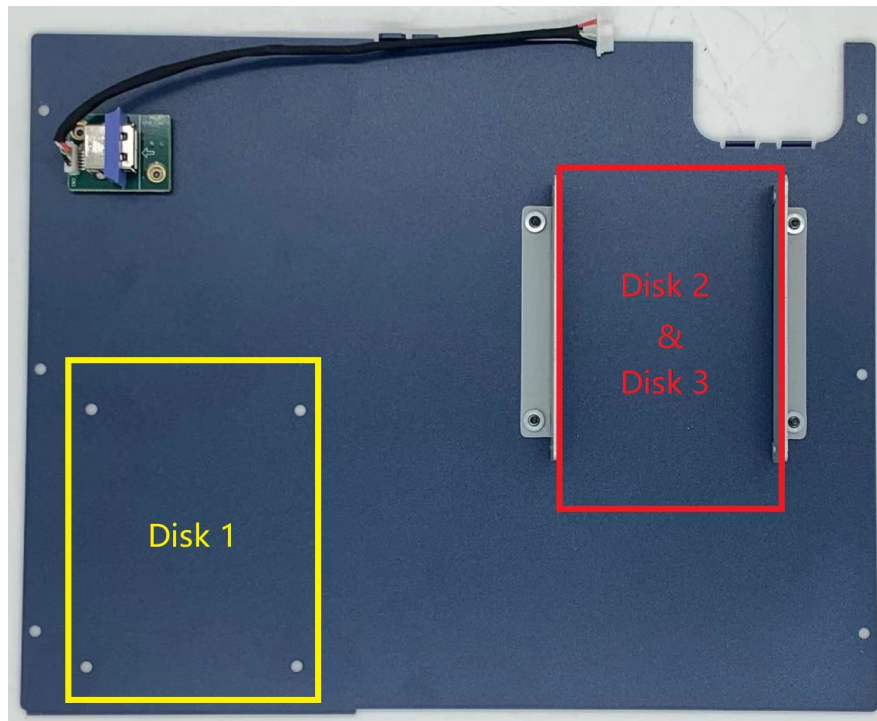
2. Remove six M3*6mm screws on the bottom cover.



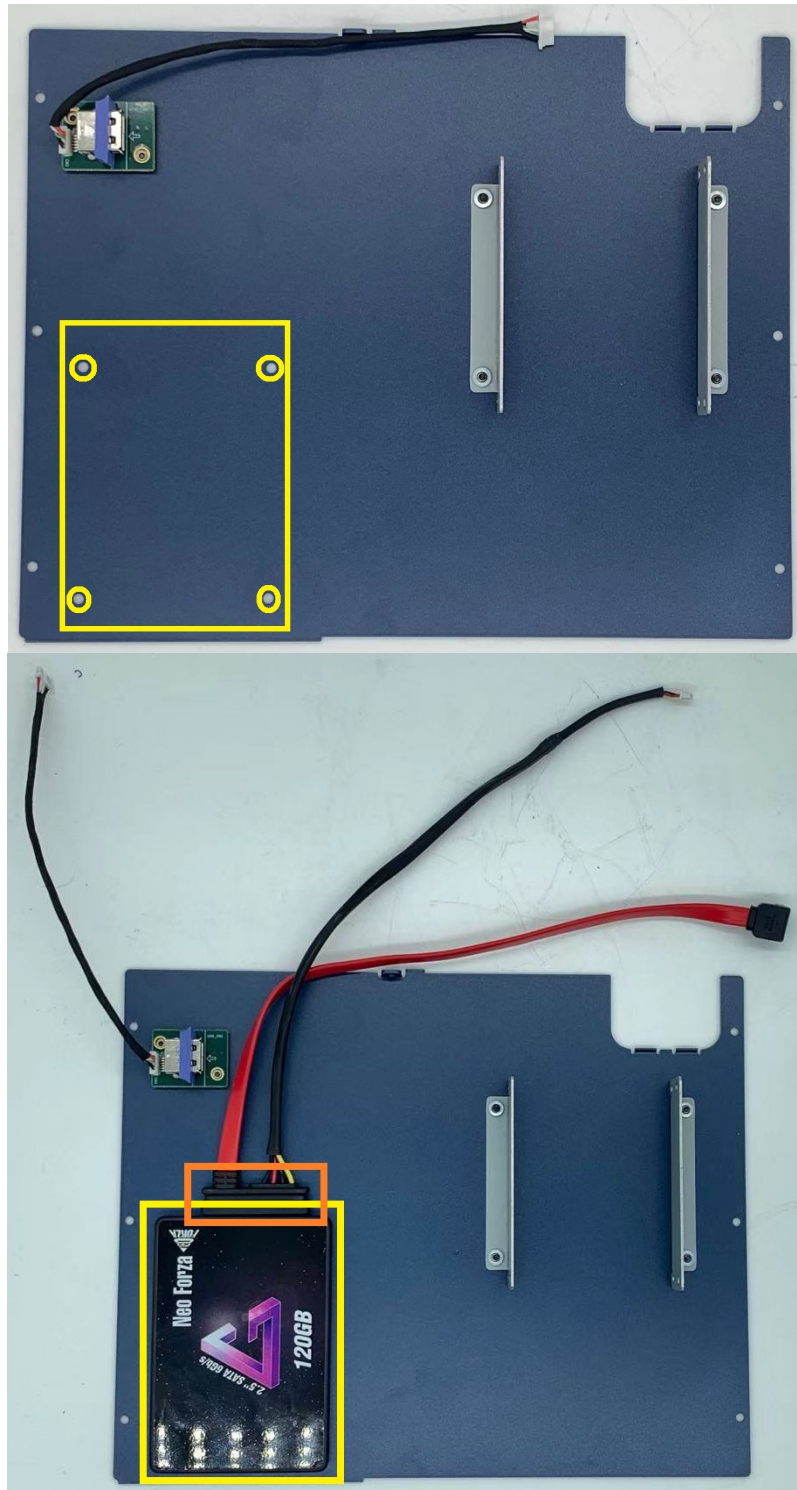
3. Open bottom cover to disconnect USB, SATA & SATA power cables, then remove the bottom cover.



4. Install 2.5" storage in Disk1, Disk2, or Disk3 area of the bottom cover inside.



5. Connect SATA & SATA power cable in 2.5" storage, then fix the storage to the bottom cover by 4 M3*4 screws.



6. Reconnect USB, SATA & SATA power cables, then close the bottom cover.



7. Replace six M3*6mm screws on the bottom cover.



8. Replace one M3*6 hexpod screw.

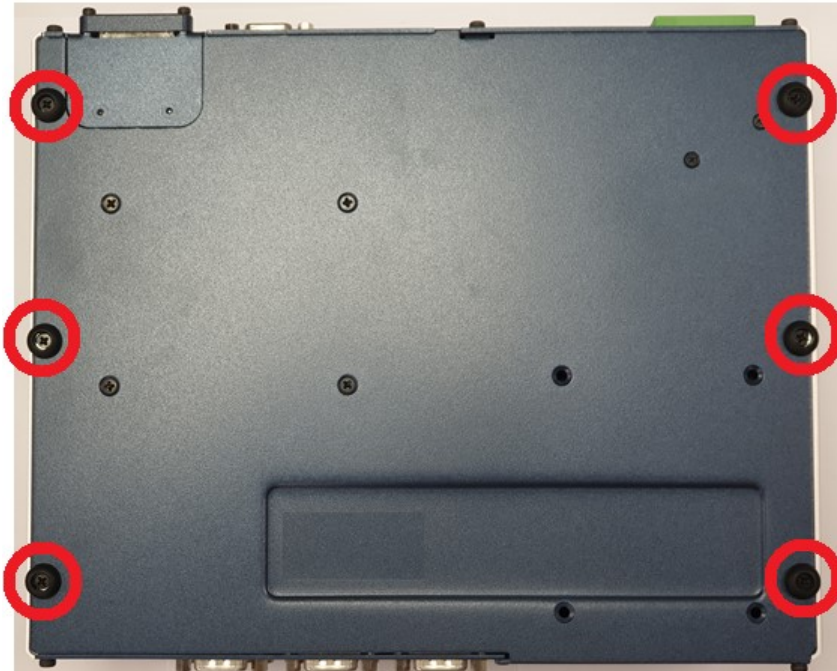


4.5 Rubber Anti-Slide Pad Installation

1. Remove six M3*6mm screws on the bottom cover.



2. Install rubber anti-slide pads on the bottom, then use six M3*6mm screws to secure it.

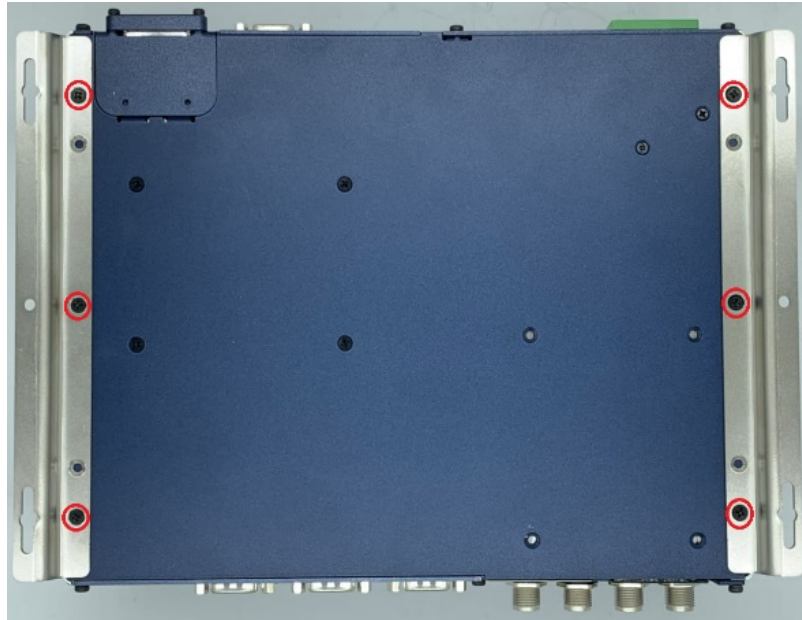


4.6 Mounting Bracket Installation

3. Remove six M3*6mm screws on the bottom cover.



4. Install mounting bracket on the bottom, then use six M3*6mm screws to secure it.



Caution!



The Eagle Eyes-AIH's wall mount placement must be lower than 2 meters from the ground when mounting on a wall.

Chapter 5

Function Settings

This section includes:

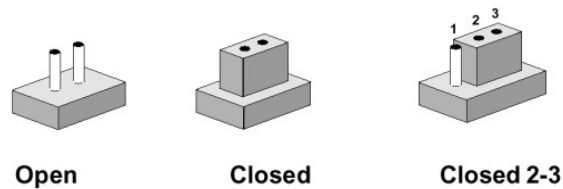
- Jumper and Dip Switch
- Clear CMOS
- Serial Port (UART)
RI / +12V / +5V Setting(s)
- PEG (PCIe x 16)
Bifurcation
- PEG (PCIe x16) Lane
Reversal

5.1 Jumper and DIP Switch

5.1.1 Jumper

You can configure your board to match the needs of your application by setting jumpers. A jumper is the most straightforward kind of electric switch.

It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper, you connect the pins with the clip. To “open” a jumper, you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either two pins.



The jumper settings are schematically depicted in this manual as follows:



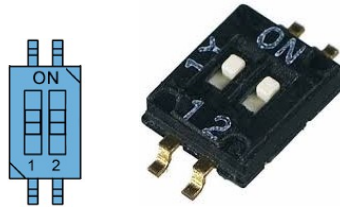
A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

5.1.2 DIP Switch

A DIP switch is a manual electric switch that is boxed with others in a group or a standard dual-in-line unit (DIP). The term may refer to each individual switch, or to the unit as a whole. This type of switch is designed to be used on a printed circuit board along with other electronic components. It is commonly used to customize the behavior of an electronic device for specific situations.

DIP switches are an alternative to jumper blocks. Their main advantages are that they are quicker to change, and there are no parts to lose.

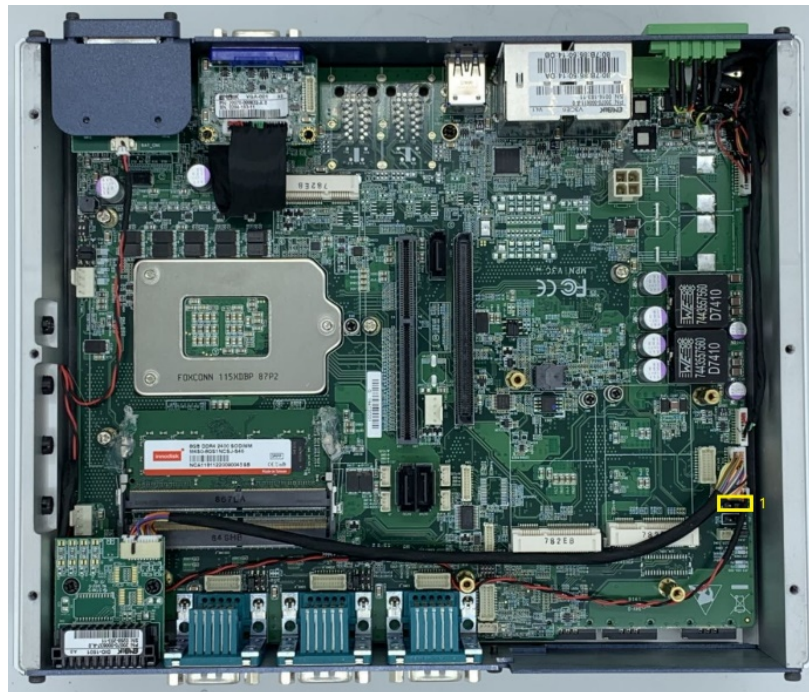


The following tables list the function of each of the board's jumpers and DIP switches.

Label	Function	Note
JP2	Clear CMOS	3 x 1 header, pitch 2.00 mm
JP9	Serial Port (COM3) RI/+12V/+5V Setting	3 x 2 header, pitch 2.00 mm
JP10	Serial Port (COM3) RI/+12V/+5V Setting	3 x 2 header, pitch 2.00 mm
JP1	PEG (PCIe x16) Bifurcation Setting	3 x 2 header, pitch 2.00 mm
SW2	PEG (PCIe x16) Lane Reversal Setting	2 SPST DIP switch

5.2 Clear CMOS (JP2)

You can use Switch SW1 to clear CMOS and Intel® Management Engine settings.

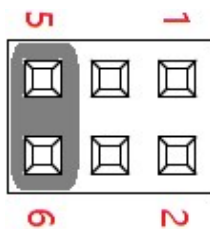
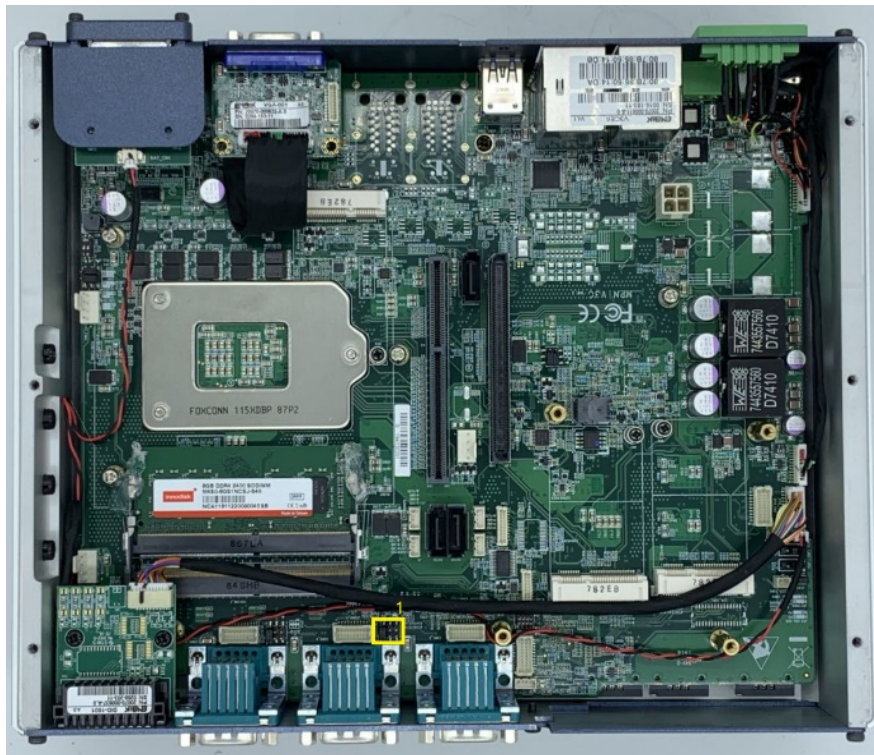




Closed Pin	Function	Note
1-2	Normal	Default
2-3	Clear CMOS	

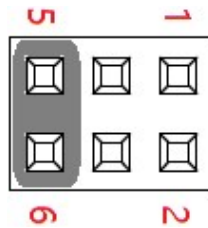
5.3 Serial Port (UART) RI / +12V / +5V Setting

5.3.1 COM3 - JP9



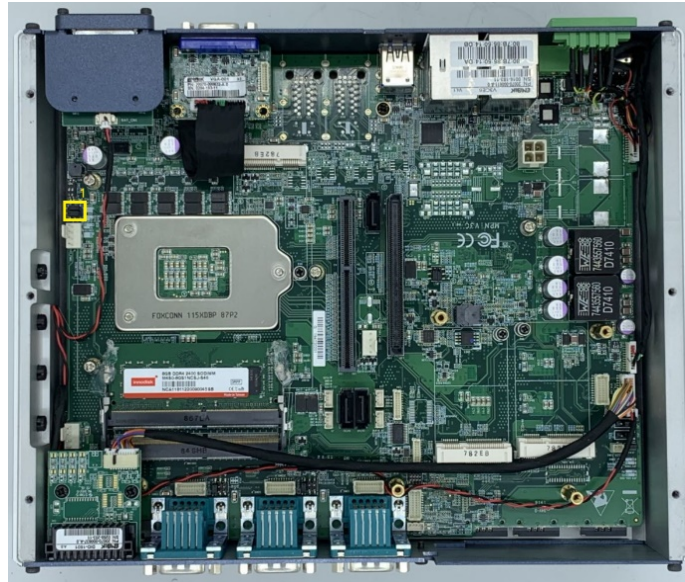
Closed Pin	RI/+5V/+12V
1-2	+5V
3-4	+12V
5-6	RI

5.3.2 COM4 - JP10



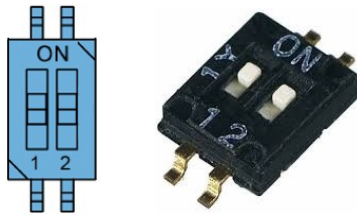
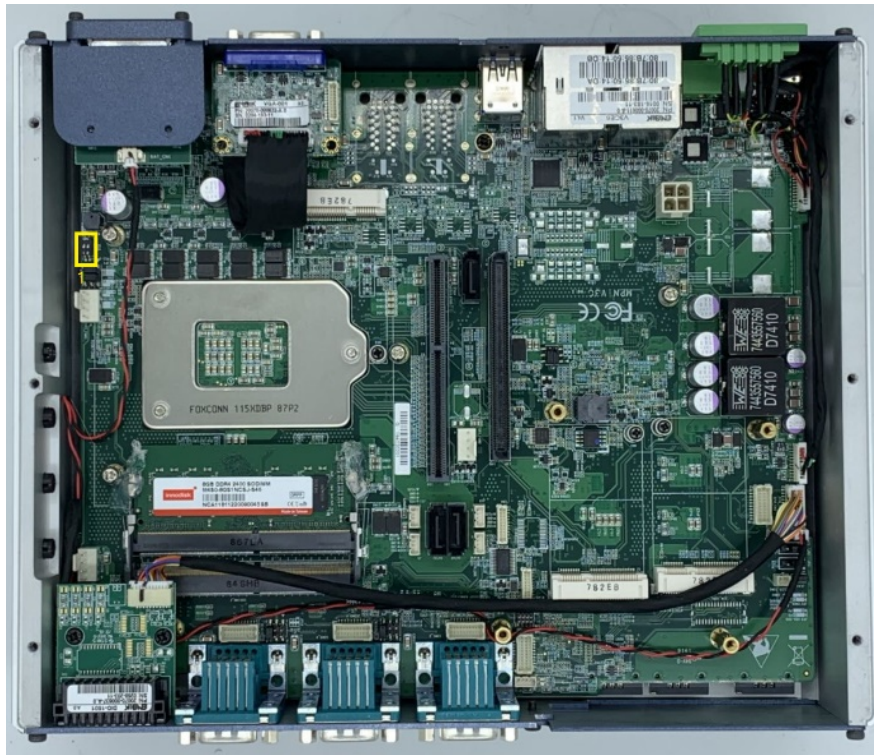
Closed Pin	RI/+5V/+12V
1-2	+5V
3-4	+12V
5-6	RI

5.4 PEG (PCIe x16) Bifurcation - JP1



Closed Pin	Setting	Function	Note
1-3 2-4		1x PCIe16	Default
1-3 4-6		2x PCIe x8	
3-5 2-4		Reserve	
3-5 4-6		1x PCIe x8 + 2x PCIe x4	

5.5 PEG (PCIe x16) Lane Reversal - SW2



SW2:1	SW2:2	Description	Note
On	On	Reversal	
Off	On	Reserve	
On	Off	Reserve	
Off	Off	Normal	(Default)

Appendix

This section includes:

- APPENDIX A – Active Video Display Combinations
- APPENDIX B – DisplayPort Multi-Stream Transport (MST) Capabilities
- APPENDIX C – How to use GPIO

Appendix A: Active Video Combinations

The Eagle Eyes-AIH series support four video connectors – 2 DP, 1 DVI-D, and 1 VGA. The processor supports a total of three streaming independent and simultaneous video combinations of DisplayPort/DVI-D/VGA monitors. In the case where four monitors are plugged in, the software policy will determine which three will be used. Following is the combination list:

Active Display1	Active Display2	Active Display3
DP	DP	DVI
DP	DP	VGA
DP	DVI	VGA

A.1 Multiple Display Configurations

The following multiple video configuration modes are supported (with appropriate driver software):

- Single Display is a mode with one video port activated to display the output to one video device.
- Intel Display Clone is a mode with up to three video ports activated to drive the video content of the same color depth setting but potentially different refresh rate and resolution settings to all the active video devices connected.
- Extended Desktop is a mode with up to three video ports activated to drive the content with potentially different color depth, refresh rate, and resolution settings on each of the active video devices connected.

The following table shows examples of three valid video configurations through the processor.

Standard	Maximum Resolution
DP	4096x2304 @ 60Hz, 24bpp
DVI-D	1920x1200 @ 60Hz, 24bpp
VGA	1920x1200 @ 60Hz, 24bpp

Note:



1. Supports up to four devices, but only three can be active at the same time.
2. In the case of connecting more than one active video port, the processor frequency may be lower than the base frequency at a thermally limited scenario.
3. Only two devices can be active at the same time under DOS mode.

A.2 Display Combination Table

Attached Display Monitor	Active Display on BIOS SETUP	Active Display on Windows	Active Display on DOS
DP1+DP2	DP1 + DP2	DP1+DP2	DP1
DP1+DVI-D	DP1 + DVI-D	DP1+DVI-D	DP1
DP1+VGA	DP1 + VGA	DP1+VGA	DP1
DP1+DP2+DVI-D	DP1 + DVI-D	DP1+DP2+DVI-D	DP1
DP1+DP2+VGA	DP1 + VGA	DP1+DP2+VGA	DP1
DP1+DVI-D+VGA	DP1 + VGA	DP1+DVI-D+VGA	DP1
DP1+DP2+DVI-D+VGA	DP1 + VGA	DP1+DP2+VGA	DP1
DP2+DVI-D	DP2 + DVI-D	DP2+DVI-D	DP2
DP2+VGA	DP2 + VGA	DP2+VGA	DP2
DP2+DVI-D+VGA	DP2 + VGA	DP2+DVI-D+VGA	DP2
DVI-D+VGA	DVI-D + VGA	DVI-D+VGA	DVI-D

Appendix B: DisplayPort Multi-Stream Transport (MST) Capabilities

The Eagle Eyes-AIH DisplayPorts (DP1, DP2) support Multi-Stream Transport (MST), enabling multiple monitors to be used via a single DisplayPort connector.



MST	Max. Resolution	Pixel Clock	One Display Bandwidth [Gbps]	Total Bandwidth for all display [Gbps]
1 display	3840x2160 @60Hz	533.25	16	16
	4096x2304 @60Hz	605.0	18.5	18.15
2 concurrent	2880x1800 @60Hz	337.75	10.13	20.26

Note:

1. Multi-Stream Transport (MST) enables multiple monitors via a single DisplayPort* connector.
2. Total bandwidth for all displays must be lower than the Max theoretical bandwidth of $5.4 \times 4 = 21.6$ [Gbps].
3. Additional cooling is required.



Appendix C: How to use GPIO

Description of Functions

GPIO signals are accessed via a 2.54mm 2x10-pin terminal block, including isolated DI 8 bit, DO 8-bit, DI Com, Power, and GND.

DI/DO supports NPN (Sink) and PNPO (Source) mode.



DI mode is selected by an external H/W connection. DO mode is selected by a BIOS setting or Application Program.

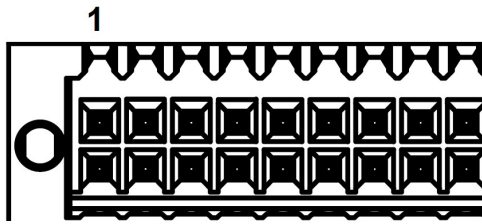
DI/DO Safety-Related Certifications

DI	DO
2500-V PART NUMBER PACKAGE BODY SIZE (NOM) RMS Isolation for 1 minute per UL 1577	2500-V PART NUMBER PACKAGE BODY SIZE (NOM) RMS Isolation for 1 minute per UL 1577
Approved by VDE, DIN EN60747-5-2() (as an option), file No. 40009162 (as model No. PC3H4)	4242-V ISO7131CC PK Isolation per DIN V VDE V 0884-10 (VDE V 0884-10):2006-12, 566 V ISO7140CC PK Working Voltage
UL flammability grade (94V-0)	CSA Component Acceptance Notice 5A, IEC ISO7141CC 60950-1 and IEC 61010-1 End Equipment ISO7141FCC Standards
CQC Certification per GB 4943.1-2011(Vendor Certification)	

DI/DO Operation Characteristics

Parameter	DI	DO
Operation Voltage	5 - 48V DC	Source Mode:5 - 48V DC Sink Mode: 5 - 40V DC
Input/Output Current Limit	25 uS	100mA
Turn On Delay Time (Max.)	25 uS	Source Mode: 15 uS Sink Mode: 60uS
Turn Off Delay Time (Max.)	25 uS	Source Mode: 15 uS Sink Mode: 60uS

Pin Definition

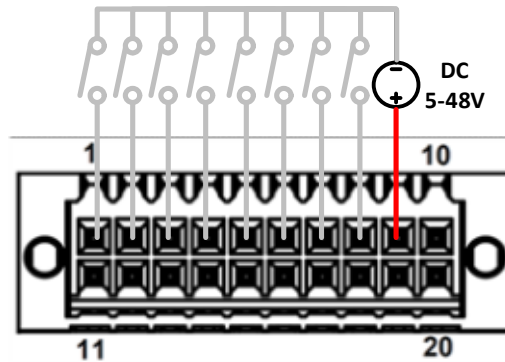


Pin	Description	Pin	Description
1	Isolated DI bit0	11	Isolated DO bit0
2	Isolated DI bit1	12	Isolated DO bit1
3	Isolated DI bit2	13	Isolated DO bit2
4	Isolated DI bit3	14	Isolated DO bit3
5	Isolated DI bit4	15	Isolated DO bit4
6	Isolated DI bit5	16	Isolated DO bit5
7	Isolated DI bit6	17	Isolated DO bit6
8	Isolated DI bit7	18	Isolated DO bit7
9	Digital Input COM	19	Isolated GND
10	Isolated GND	20	Isolated VCC

Isolation Digital Input Connection Method

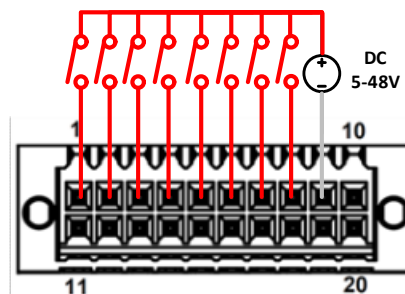
Digital Input Sink Mode Connection Method

Pin 9 digital input COM pin connection to V+. Input Pins (1-8) control by V-.



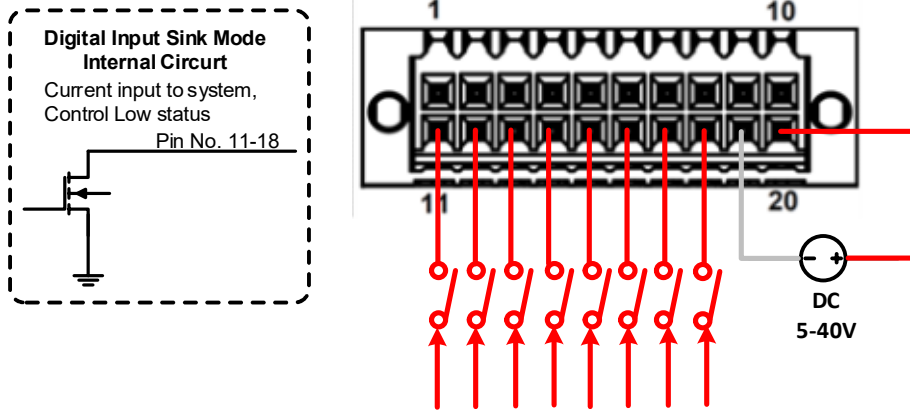
Digital Input Source Mode Connection Method

Pin 9 digital input COM pin connection to V-. Input Pins (1-8) control by V+.



Isolation Digital Output Connection Method

Digital Output Sink Mode Connection Method



Digital Output Source Mode Connection Method

