

# **OPS Box DS M535-6440EQ/-6820EQ**

## **PKDS1045/-1**

### User Manual

Published July 2016



# CONTENTS

## Preface

- Copyright ..... iv
- Disclaimer ..... iv
- Acknowledgements ..... iv
- Regulatory Compliance Statements ..... iv
- Declaration of Conformity ..... iv
- RoHS Compliance ..... v
- Warranty and RMA ..... vi
- Safety Information ..... viii
- Installation Recommendations ..... viii
- Safety Precautions ..... ix
- Technical Support and Assistance ..... x
- Conventions Used in this Manual ..... x
- Package Contents ..... xiii
- Ordering Information ..... xiv

## Chapter 1: Product Introduction

- Overview ..... 1
- Key Features ..... 1
- Physical Features ..... 2
  - Front Panel ..... 2
  - Rear Panel ..... 2
- Hardware Specifications ..... 3
- Mechanical Dimensions ..... 4

## Chapter 2: Jumpers and Connectors

- Before You Begin ..... 5
- Precautions ..... 5
- Locations of the Jumpers and Connectors for OPS Box DS M535 ..... 6
  - OPS Box DS M535 ..... 6
    - Top View ..... 6
    - Bottom View ..... 7
- Jumper Settings ..... 8
- Jumpers ..... 9
  - RTC Clear Jumper ..... 9
  - COM4 RI Voltage Select ..... 9
- Connector Pin Definitions ..... 10
  - External I/O Interfaces - Front Panel ..... 10
    - Power Button ..... 10
    - LED Connector ..... 10
    - Reset Button ..... 11
    - COM1 to COM4 Connectors ..... 11
    - USB 3.0 Ports ..... 12
  - External I/O Interfaces - Rear Panel ..... 13
    - DC Jack Connector ..... 13
    - HDMI Connectors ..... 13
    - USB 3.0 Ports ..... 14
    - LAN Connectors ..... 14
    - Audio Connectors ..... 15
- Internal Connectors ..... 16
  - USB Connectors ..... 16

SIM Card Slot.....	16
Debug 80 Port Connector .....	17
SATA Connector (7-pin and 15-pin).....	17
Battery Connector.....	18
GPIO .....	18
FAN Connectors.....	19
COM3 & COM4 Connectors (Co-layout with J5 & J4).....	19
Line-in.....	20
DC-in Power Connector (Co-layout with CN6).....	20
Mini-PCIe Connectors (Top).....	21
Mini-PCIe Connector (Bottom) .....	22

## Chapter 3: System Setup

Removing the Chassis Cover .....	23
Installing SO-DIMM Memory Modules.....	24
Installing the CPU .....	27
Installing a SATA Hard Drive .....	31
Installing a NGFF (M.2) SSD.....	34
Installing a NGFF Wireless LAN Module .....	37
Installing a Mini-PCIe WLAN Module.....	40

## Chapter 4: BIOS Setup

About BIOS Setup.....	43
When to Configure the BIOS.....	43
Default Configuration .....	44
Entering Setup .....	44
Legends.....	44
BIOS Setup Utility.....	46
Main .....	46
Advanced.....	47
Security .....	57
Boot .....	57
Save & Exit .....	58

# PREFACE

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## Disclaimer

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## Acknowledgements

OPS Box DS M535-6440EQ/-6820EQ are trademarks. All other product names mentioned herein are registered trademarks of their respective owners.

## Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices and describes how to keep the system CE compliant.

## Declaration of Conformity

### FCC

This equipment has been tested and verified to comply with the limits for a Class A digital device, pursuant to Part 15 of 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 instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their 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.

## RoHS Compliance



### **DELTA COMPONENTS RoHS Environmental Policy and Status Update**

DELTA COMPONENTS is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with

European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2011/65/EU, to be your trusted green partner and to protect our environment.

RoHS restricts the use of Lead (Pb) < 0.1% or 1,000ppm, Mercury (Hg) < 0.1% or 1,000ppm, Cadmium (Cd) < 0.01% or 100ppm, Hexavalent Chromium (Cr6+) < 0.1% or 1,000ppm, Polybrominated biphenyls (PBB) < 0.1% or 1,000ppm, and Polybrominated diphenyl Ethers (PBDE) < 0.1% or 1,000ppm.

In order to meet the RoHS compliant directives, DELTA COMPONENTS has established an engineering and manufacturing task force to implement the introduction of green products. The task force will ensure that we follow the standard DELTA COMPONENTS development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which DELTA COMPONENTS are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant.

### **How to recognize DELTA COMPONENTS RoHS Products?**

For existing products where there are non-RoHS and RoHS versions, the suffix (LF) will be added to the compliant product name.

All new product models launched after January 2013 will be RoHS compliant. They will use the usual DELTA COMPONENTS naming convention.

# Warranty and RMA

## DELTA COMPONENTS GmbH Warranty Period

DELTA COMPONENTS manufactures products that are new or equivalent to new in accordance with industry standard. DELTA COMPONENTS warrants that products will be free from defect in material and workmanship for 2 years, beginning on the date of invoice by DELTA COMPONENTS. HCP series products (Blade Server) which are manufactured by DELTA COMPONENTS are covered by a three year warranty period.

## DELTA COMPONENTS Return Merchandise Authorization (RMA)

- Customers shall enclose the DELTA COMPONENTS RMA Service Form with the returned packages.
- Customers must collect all the information about the problems encountered and note anything abnormal or, print out any on-screen messages, and describe the problems on the DELTA COMPONENTS RMA Service Form for the RMA number apply process.
- Customers can send back the faulty products with or without accessories (manuals, cable, etc.) and any components from the card, such as CPU and RAM. If the components were suspected as part of the problems, please note clearly which components are included. Otherwise, DELTA COMPONENTS is not responsible for the devices/parts.
- Customers are responsible for the safe packaging of defective products, making sure it is durable enough to be resistant against further damage and deterioration during transportation. In case of damages occurred during transportation, the repair is treated as Out of Warranty.
- Any products returned by DELTA COMPONENTS to other locations besides the customers site will bear an extra charge and will be billed to the customer.

## Repair Service Charges for Out-of-Warranty Products

NDELTA COMPONENTS will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

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## System Level

- Component fee: DELTA COMPONENTS will only charge for main components such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistor, capacitor.
- Items will be replaced with DELTA COMPONENTS products if the original one cannot be repaired. Ex: motherboard, power supply, etc.
- Replace with 3rd party products if needed.
- If RMA goods can not be repaired, DELTA COMPONENTS will return it to the customer without any charge.

## Board Level

- Component fee: DELTA COMPONENTS will only charge for main components, such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistors, capacitors.
- If RMA goods can not be repaired, DELTA COMPONENTS will return it to the customer without any charge.

## **Warnings**

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

## **Cautions**

Electrostatic discharge (ESD) can damage system components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

## Safety Information

Before installing and using the device, note the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- The load of the system unit does not solely rely for support from the rackmounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.
- The computer is provided with a battery-powered real-time clock circuit. There is a 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.

## Installation Recommendations

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

## Safety Precautions

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 stable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection to 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. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.
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:
  - a. The power cord or plug is damaged.
  - b. Liquid has penetrated into the equipment.
  - c. The equipment has been exposed to moisture.
  - d. The equipment does not work well, or you cannot get it to work according to the user's manual.
  - e. The equipment has been dropped and damaged.
  - f. The equipment has obvious signs of breakage.
15. Do not place heavy objects on the equipment.
16. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.
17. 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.

## Technical Support and Assistance

1. For the most updated information of DELTA COMPONENTS products, visit DELTA COMPONENTS website at [www.delta-components.de](http://www.delta-components.de)
2. For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:
  - Product name and serial number
  - Detailed information of the peripheral devices
  - Detailed information of the installed software (operating system, version, application software, etc.)
  - A complete description of the problem
  - The exact wordings of the error messages

### Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.
2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.

## Conventions Used in this Manual



### Warning:

Information about certain situations, which if not observed, can cause personal injury. This will prevent injury to yourself when performing a task.



### Caution:

Information to avoid damaging components or losing data.



### Note:

Provides additional information to complete a task easily.

## Package Contents

Before continuing, verify that the package that you received is complete. Your OPS Box DS M535 package should have all the items listed in the following tables.

Item	Part Number	Name	Description	Qty
1		(H)I Head Screw Long Fei: I2 x 3 ISO-NI	I2 x 3 ISO-NI	2
2		(H)I Head Screw Long Fei: I3 x 4 iso(B)	I3 x 4 Black	2
3		(H)Round Head Screw w/Spring+Flat Washer Long Fei: P3 x 6L	P3 x 6 iso/SW6 x 0.5 NI	4
4		(H)Flat Head Screw Long Fei: F3 x 5ISO + Nylok NIGP	F3 x 5 NI Nylok	4
5		(H)Copper Post Long Fei: 6.5 x 5 x M3	With Male/Female (Female) 6.5mm x (Male) 5mm x M3	1
6		Bracket VER: A JAN YU	8 x 10.4 x 95mm SPCC NI	2
7		Rubber Foot Kang Yang: RF20-5-4P	19.8 x 18 x 5.0mm	4
8		Thermal Pad VER: A EAPUS	25 x 25 x 0.2mm	2
9		Power Adapter FSP: FSP096-AHBN2	96W DC 12V/8A DC Plug 4 PIN Power Molding Type	1

## Ordering Information

The following information below provides ordering information for OPS Box DS M535.

### **PKDS1045**

OPS Box DS M535-6440EQ

Intel®Core i5-6440EQ 2.7GHz, 5x USB, 2x HDMI, 1x RJ45

### **PKDS1045-1**

OPS Box DS M535-6820EQ

Intel®Core i7-6820EQ 2.8GHz, 5x USB, 2x HDMI, 1x RJ45

# CHAPTER 1: PRODUCT INTRODUCTION

## Overview



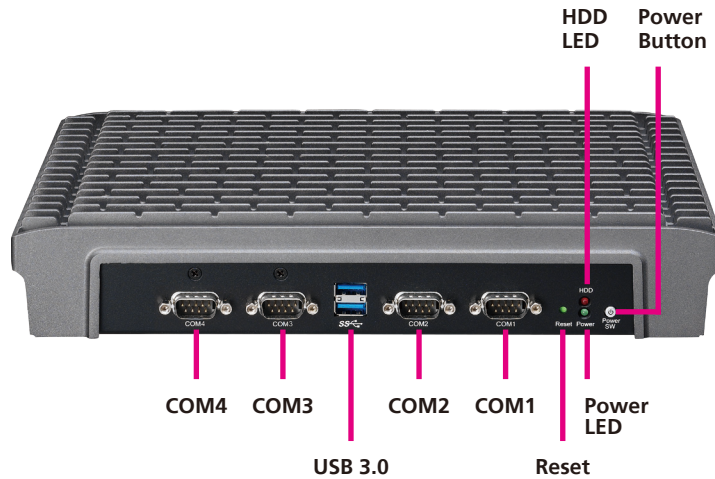
OPS Box DS M535 is a powerful digital signage player which is built around the superb technology of 6th generation Intel® Core™ processor family series and Intel® 100 Series chipset integrated graphics controller. The digital signage player can offer impressive system performance and full HD videos. With support for 4K2K video playback on three independent displays, the 4K2K signage player can fully satisfy customer's expectation and therefore be used in applications such as advertising, hospitality, brand promotion and digital menu board.

## Key Features

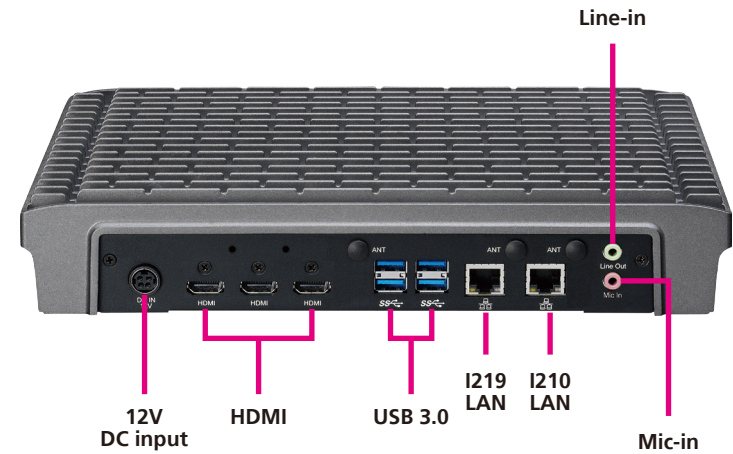
- 6th Generation Intel® Core™ processor
- Integrated Intel® HD Graphics 530
- Support 3 independent 4K2K 60Hz video out
- USB 3.0 x6, RS-232 x4, Dual GbE LAN support
- NFGG type storage and WLAN support
- DirectX® 12 support
- Fanless design

## Physical Features

### Front Panel



### Rear Panel



# Hardware Specifications

## CPU Support

- 6th generation Intel® Core™ LGA socket type processor

## Chipset

- Intel® 100 Series chipset
- Integrated Intel® HD Graphics 530

## Main Memory

- 2x 260-pin SO-DIMM Sockets, Supports DDR4 1866/2133 MHz non-ECC, un-buffered memory up to 32G (Single socket max. 16GB)

## I/O Interface-Front

- 1x Power status LED
- 1x HDD status LED
- 1x Power switch
- 1x Reset switch
- 2x USB 3.0
- 4x DB9 for RS-232

## I/O Interface-Rear

- +12V DC-in
- 3x HDMI 2.0
- 4x USB 3.0
- 2x RJ45 with LED for 10/100/1000Mbps Ethernet I219 LAN supports IAMT and PXE.
- 1x Min-in/1x Line-out
- 3x Antenna holes for Wi-Fi and TV tuner

## Storage

- 1x SATA 2.5" HDD/SSD
- 1x NGFF (M.2) SSD card slot (supports 22x42, 22x80)

## Expansion

- 1x mini-PCIe for optional WLAN/TV tuner module
- 1x NGFF (M.2) E key for optional WLAN
- 1x SIM Slot

## Construction

- Top cover made by aluminum for main heat exchange
- Chassis made by steel in black

## Dimensions

- 294mm (W) x 198mm (D) x 52mm (H) (11.6" x 7.8" x 2.0")

## Power Supply

- 1x External 96W AC/DC adapter  
Input: 100~240VAC  
Output: +12VDC

## Environment

- Operating temperature: 0°C to 40°C
- Storage temperature: -20°C to 80°C
- Humidity: 10 to 90% (non-condensing)

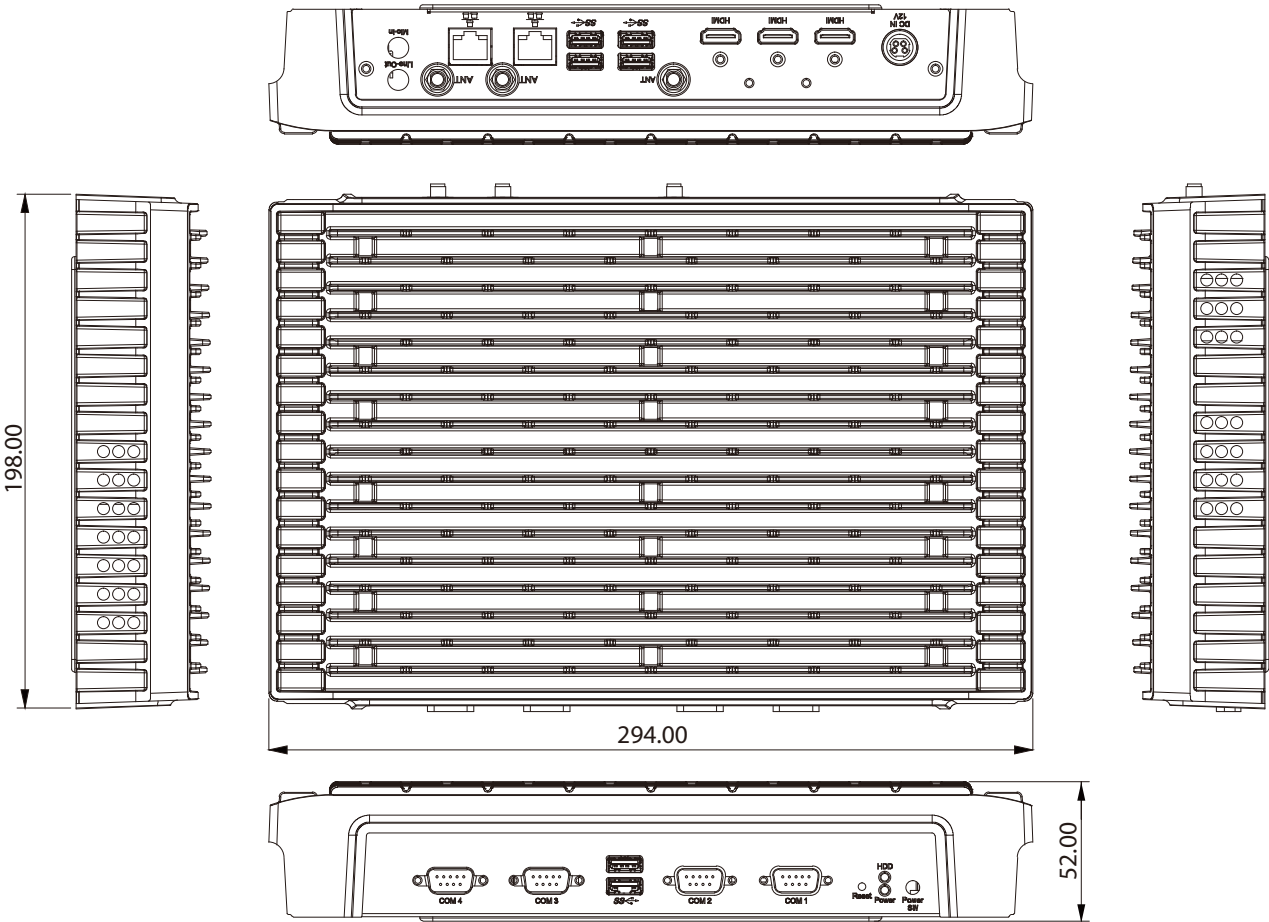
## Certification

- CE/FCC Class A

## Operating System

- Windows 7 (32/64-bit)/ Windows 8.1 (64-bit)/ Windows 10 (64-bit)

# Mechanical Dimensions



# CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the OPS Box DS M535 motherboard.

## Before You Begin

- Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
- Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:
  - A Philips screwdriver
  - A flat-tipped screwdriver
  - A set of jewelers screwdrivers
  - A grounding strap
  - An anti-static pad
- Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.
- Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environments tend to have less static electricity than

dry environments. A grounding strap is warranted whenever danger of static electricity exists.

## Precautions

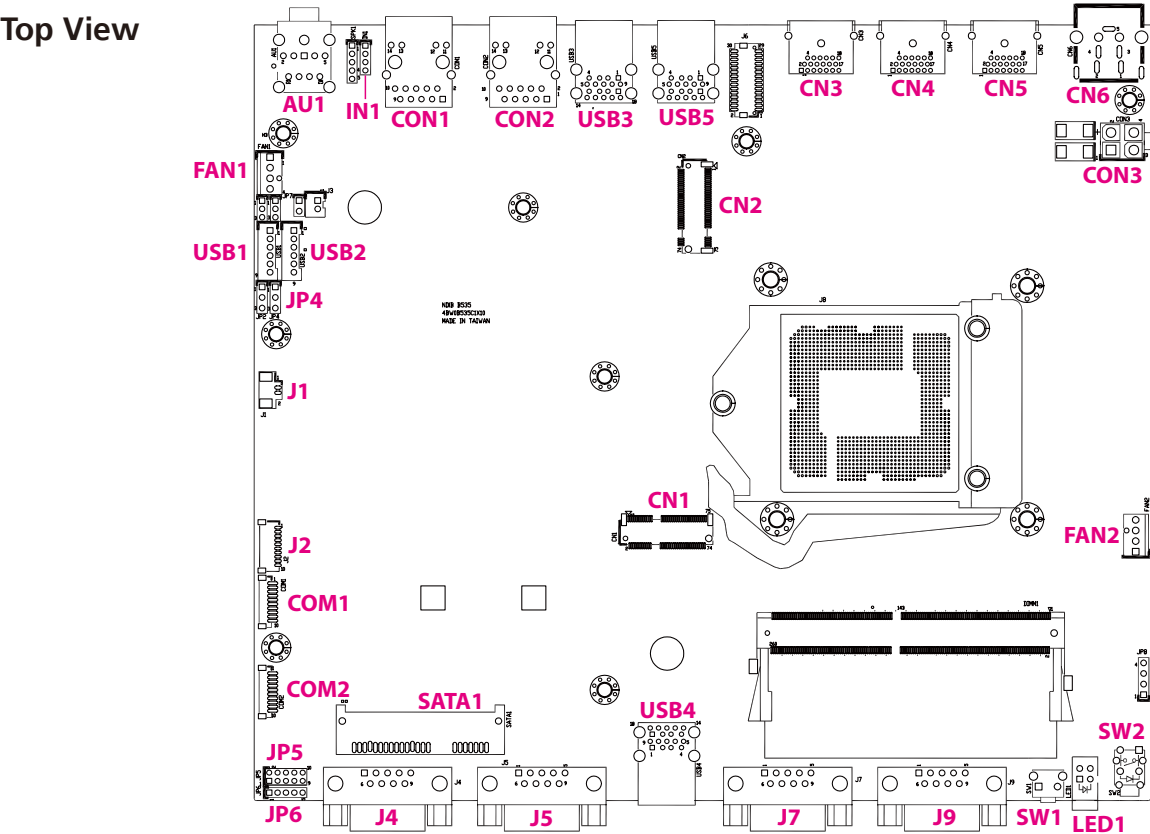
Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on computers that are still connected to a power supply can be extremely dangerous.

Follow the guidelines below to avoid damage to your computer or yourself:

- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

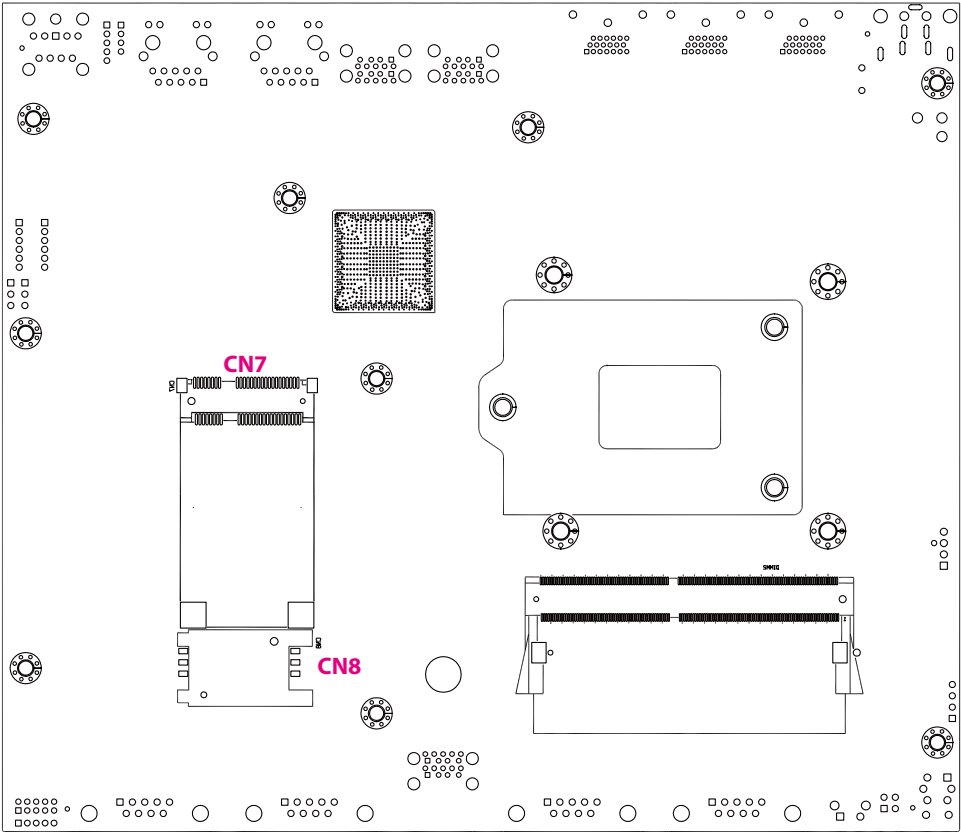
# Locations of the Jumpers and Connectors for OPS Box DS M535

The figure below is the top view of the OPS Box DS M535, which is the mainboard used in the OPS Box DS M535. It shows the locations of the jumpers and connectors.





Bottom View

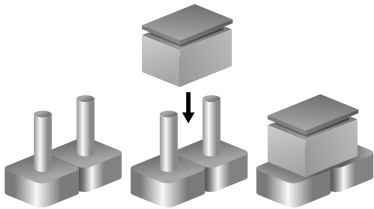


## Jumper Settings

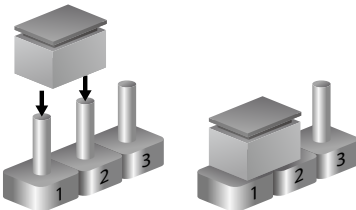
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is open.

Refer to the illustrations below for examples of what the 2-pin and 3-pin jumpers look like when they are short (on) and open (off).

Two-Pin Jumpers: Open (Left) and Short (Right)



Three-Pin Jumpers: Pins 1 and 2 are Short





# Jumpers

## RTC Clear Jumper

Connector type: 1x3 3-pin header, 2.54mm pitch  
Connector location: JP4



Pin	Settings
1-3 On	Normal
2-3 On	Clear CMOS

1-2 On: default

## COM4 RI Voltage Select

Connector type: 1x5 5-pin header, 2.0mm pitch  
Connector location: JP6



Pin	Definition	Pin	Definition
1	VCC5	2	COM_RI#4_T
3	VCC12	4	COM_RI#4_T
5	COM_RI#4	6	

# Connector Pin Definitions

## External I/O Interfaces - Front Panel

### Power Button

Connector location: SW2



Power	LED Definition
ON	Blue
OFF	Red

### LED Connector

Connector location: LED1



LEDs	LED Definition
HDD	Red
Power	Green

Reset Button

Connector location: SW1

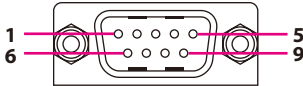


Pin	Definition
1-2	System Reset

COM1 to COM4 Connectors

Connector type: DB-9 port

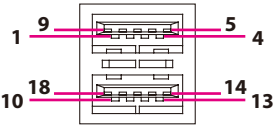
Connector location: J9 (COM1), J7 (COM2), J5 (COM3) and J4 (COM4)



Pin	Definition	Pin	Definition
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI		

### USB 3.0 Ports

Connector type: Dual USB 3.0 ports  
Connector location: USB4



Pin	Definition	Pin	Definition
1	VCC	2	USB0_N
3	USB0_P	4	GND
5	USB3_RX0_N	6	USB3_RX0_P
7	GND	8	USB3_TX0_N
9	USB3_TX0_P	10	VCC
11	USB1_N	12	USB1_P
13	GND	14	USB3_RX1_N
15	USB3_RX1_P	16	GND
17	USB3_TX1_N	18	USB3_TX1_P

External I/O Interfaces - Rear Panel

DC Jack Connector

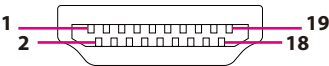
Connector location: CN6



Pin	Definition	Pin	Definition
1	12V DC_IN	2	12V DC_IN
3	GND	4	GND
5	GND		

HDMI Connectors

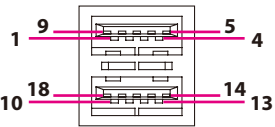
Connector type: HDMI port  
Connector location: CN5, CN4 and CN3



Pin	Definition	Pin	Definition
1	HDMI_D2+	2	GND
3	HDMI_D2-	4	HDMI_D1+
5	GND	6	HDMI_D1-
7	HDMI_D0+	8	GND
9	HDMI_D0-	10	HDMI_CLK+
11	GND	12	HDMI_CLK-
13	NC	14	NC
15	HDMI_DDC_SCL	16	HDMI_DDC_SDA
17	GND	18	VCC5
19	HDMI_HPD		

USB 3.0 Ports

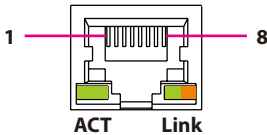
Connector type: Dual USB 3.0 ports  
Connector location: USB5 and USB3



Pin	Definition	Pin	Definition
1	VCC	2	USB0_N
3	USB0_P	4	GND
5	USB3_RX0_N	6	USB3_RX0_P
7	GND	8	USB3_TX0_N
9	USB3_TX0_P	10	VCC
11	USB1_N	12	USB1_P
13	GND	14	USB3_RX1_N
15	USB3_RX1_P	16	GND
17	USB3_TX1_N	18	USB3_TX1_P

LAN Connectors

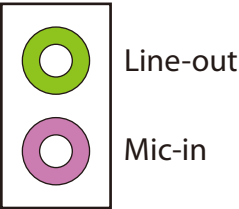
Connector type: RJ45 port with LEDs  
Connector location: CON2 and CON1



Pin	Definition	Pin	Definition
1	TCT	2	TD4-
3	TD4+	4	TD3-
5	TD3+	6	TD2-
7	TD2+	8	TD1-
9	TD1+	10	TCTG
11	Left_LED+	12	Left_LED-
13	Right_LED+	14	Right_LED-

Audio Connectors

Connector type: 2x 3.5mm jack  
Connector location: AU1



Pin	Definition	Pin	Definition
1	GND	2	FRONT-L
3	GND	4	FRONT-JD
5	FRONT-R	N/A	N/A
22	LINE-L	23	GND
24	LINE-JD	25	LINE-R

## Internal Connectors

### USB Connectors

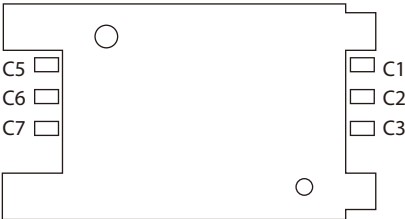
Connector type: 1x6 6-pin header JST, 2.0mm pitch  
Connector location: USB1 and USB2



Pin	Definition	Pin	Definition
1	VCC	2	USB0_N
3	USB0_P	4	USB1_N
5	USB1_P	6	GND

### SIM Card Slot

Connector location: CN8



Pin	Definition	Pin	Definition
C 1	UIM_PWR	C5	GND
C2	UIM_RST	C6	NC
C3	UIM_CLK	C7	UIM_DAT

### Debug 80 Port Connector

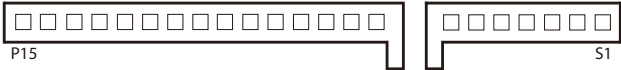
Connector type: 1x10 10-pin header, 1.0mm pitch  
Connector location: J2



Pin	Definition	Pin	Definition
1	GND	2	PCIRST#
3	33M_CLK	4	LPC_FRAME#
5	LPC_AD3	6	LPC_AD2
7	LPC_AD1	8	LPC_ADO
9	3.3V	10	3.3V

### SATA Connector (7-pin and 15-pin)

Connector type: Standard Serial ATA 7P and 15P  
Connector location: SATA1



Pin	Definition	Pin	Definition
S1	GND	S2	SATA_TXP
S3	SATA_TXN	S4	GND
S5	SATA_RXN	S6	SATA_RXP
S7	GND		
P2	NC	P3	NC
P4	GND	P5	GND
P6	GND	P7	VCC5
P8	VCC5	P9	VCC5
P10	GND	P11	NC
P12	GND	P13	VCC12
P14	VCC12	P15	VCC12

Battery Connector

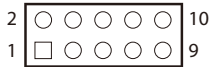
Connector type: 1x2 2-pin header JST, 1.25mm pitch  
Connector location: J1



Pin	Definition
1	GND
2	3V

GPIO

Connector type: 2x5 10-pin header  
Connector location: JP5



Pin	Definition	Pin	Definition
1	GPI1	2	GPO1
3	GPI2	4	GPO2
5	GPI3	6	GPO3
7	GPI4	8	GPO4
9	GND	10	VCC5

FAN Connectors

Connector type: 1x4 4-pin header, 2.54mm pitch  
Connector location: FAN1 and FAN2



Pin	Definition	Pin	Definition
1	GND	2	VCC
3	SPEED	4	CONTROL

COM3 & COM4 Connectors (Co-layout with J5 & J4)

Connector type: 1x10 10-pin header  
Connector location: COM1 (COM3) and COM2 (COM4)



Pin	Definition	Pin	Definition
1	COM_DCD#3	2	COM_RXD3
3	COM_TXD3	4	COM_DTR#3
5	GND	6	COM_DSR#3
7	COM_RTS#3	8	COM_CTS#3
9	COM_RI#3_T	10	GND
MH1	GND	MH2	GND

Line-in

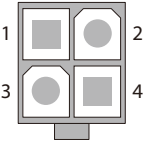
Connector type: 1x4 4-pin header, 2.0mm pitch  
Connector location: IN1



Pin	Definition	Pin	Definition
1	LINE1-L1	2	AGND
3	LINEIN_JD	4	LINE1-R1

DC-in Power Connector (Co-layout with CN6)

Connector type: 2x2 4-pin header  
Connector location: CON3

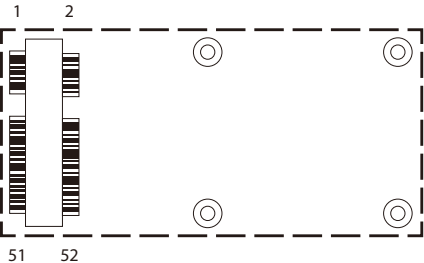


Pin	Definition	Pin	Definition
1	GND	2	GND
3	12V DC_IN	4	12V DC_IN



### Mini-PCIe Connectors (Top)

Connector location: CN1 and CN2



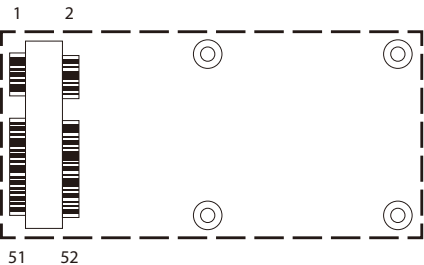
Pin	Definition	Pin	Definition
1	WAKE#	2	3.3VSB
3	NC	4	GND
5	NC	6	1.5V
7	CLK_REQ#	8	UIM_PWR
9	GND	10	UIM_DAT
11	PCIE_CLK#	12	UIM_CLK
13	PCIE_CLK	14	UIM_RST
15	GND	16	NC
17	NC	18	GND
19	NC	20	WLAN_DIS#
21	GND	22	RESET#
23	PCIE_RX_N	24	3.3VSB
25	PCIE_RX_P	26	GND

Pin	Definition	Pin	Definition
27	GND	28	1.5V
29	GND	30	SMBCLK
31	PCIE_TX_N	32	SMBDAT
33	PCIE_TX_P	34	GND
35	GND	36	USB_N
37	GND	38	USB_P
39	3.3VSB	40	GND
41	3.3VSB	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	1.5V
49	NC	50	GND
51	NC	52	3.3VSB



### Mini-PCIe Connector (Bottom)

Connector location: CN7



Pin	Definition	Pin	Definition
1	WAKE#	2	3.3VSB
3	NC	4	GND
5	NC	6	1.5V
7	CLK_REQ#	8	NC
9	GND	10	NC
11	PCIE_CLK#	12	NC
13	PCIE_CLK	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	WLAN_DIS#
21	GND	22	RESET#
23	PCIE_RX_N	24	3.3VSB
25	PCIE_RX_P	26	GND

Pin	Definition	Pin	Definition
27	GND	28	1.5V
29	GND	30	SMBCLK
31	PCIE_TX_N	32	SMBDAT
33	PCIE_TX_P	34	GND
35	GND	36	USB_N
37	GND	38	USB_P
39	3.3VSB	40	GND
41	3.3VSB	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	1.5V
49	NC	50	GND
51	NC	52	3.3VSB

# CHAPTER 3: SYSTEM SETUP

## Removing the Chassis Cover



Prior to removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

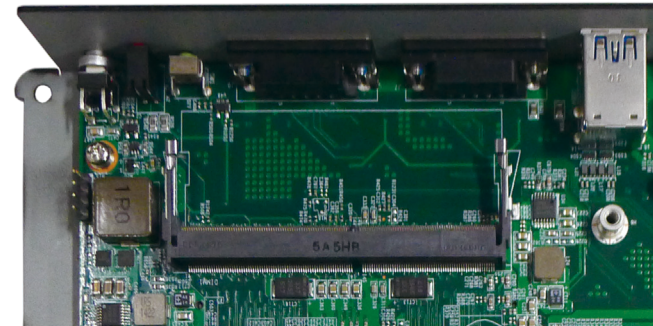
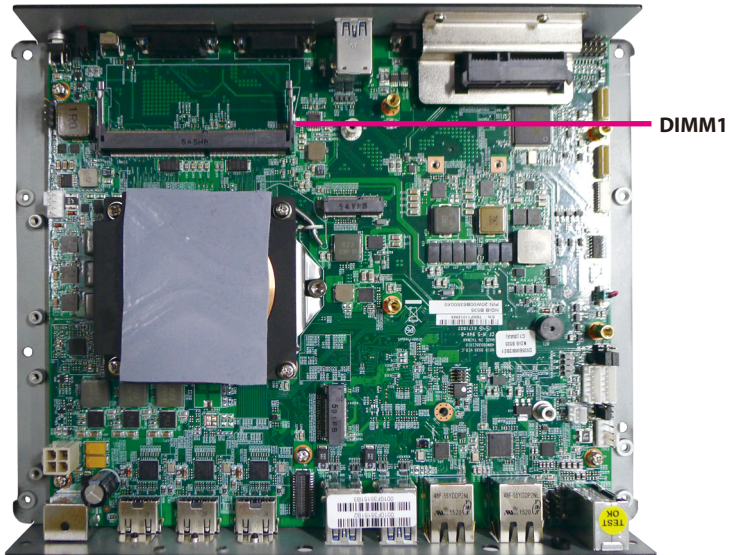
1. The screws on the front and bottom are used to secure the cover to the chassis. Remove these screws and put them in a safe place for later use.



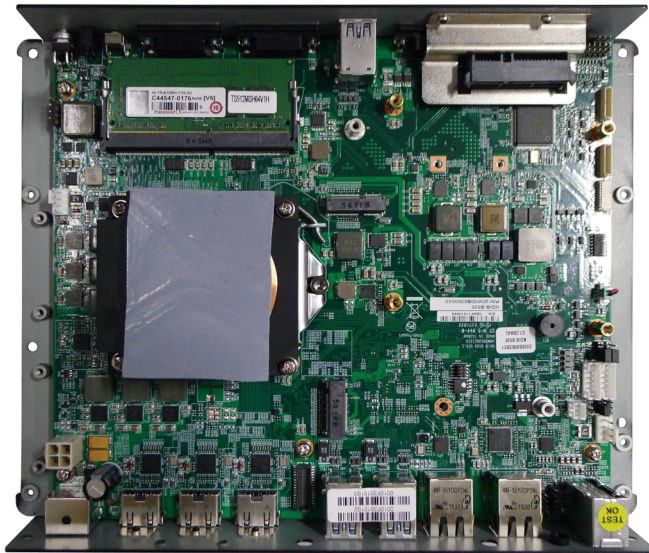
## Installing SO-DIMM Memory Modules

### DIMM1

1. Locate the DIMM1 socket on the board.



2. Insert the module into the socket at an approximately 30 degree angle. Push the module down until the clips on both sides of the socket lock into position.

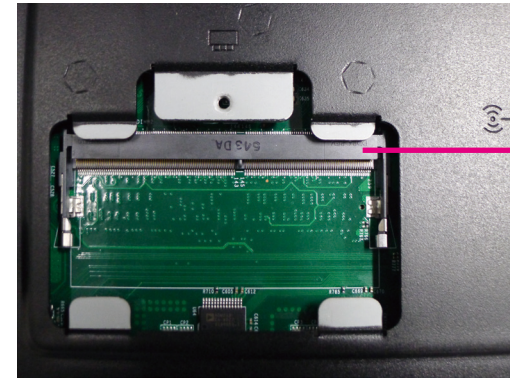


## DIMM2

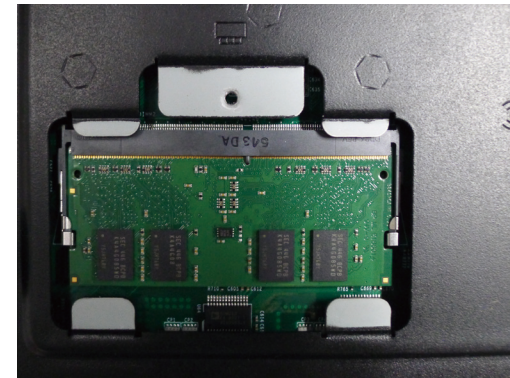
1. Loosen the screw on the SO-DIMM cover on the bottom of the chassis, then lift up the cover and remove it from the chassis it.



2. Insert the module into the socket at an approximately 30 degree angle. Push the module down until the clips on both sides of the socket lock into position.

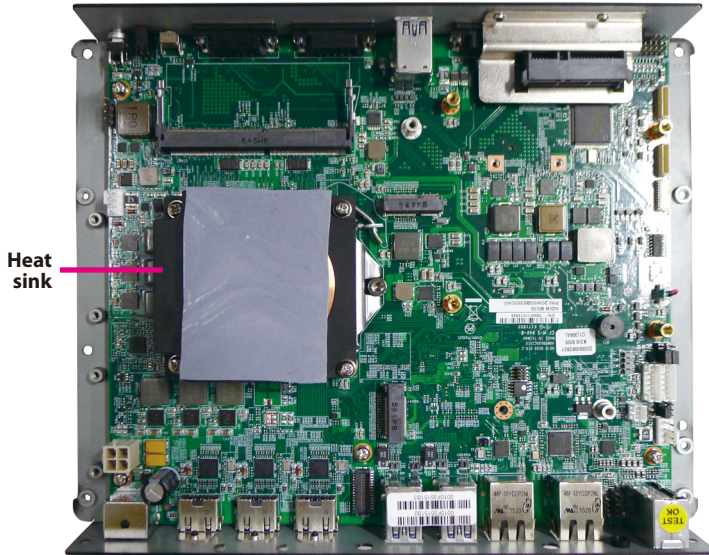


DIMM2

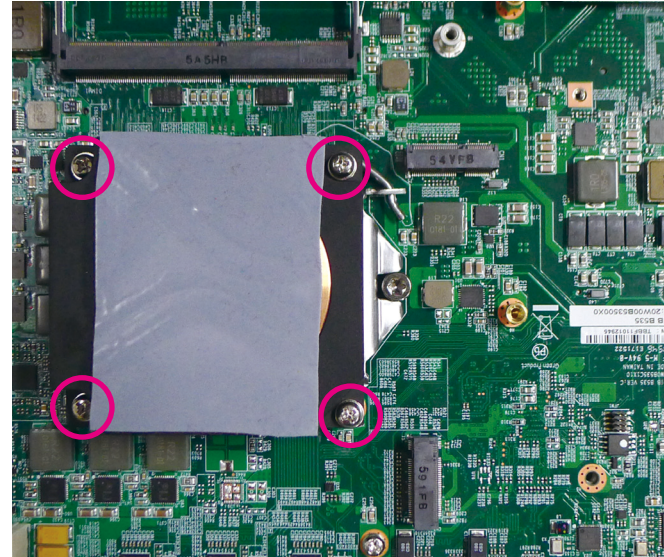


## Installing the CPU

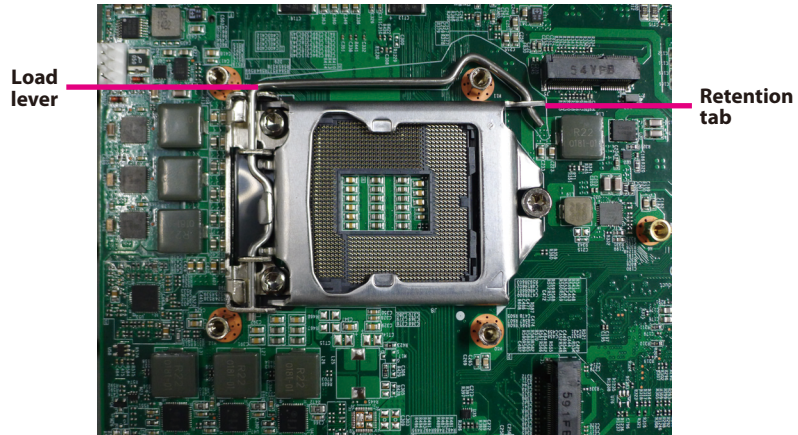
1. Locate the heat sink on the board.



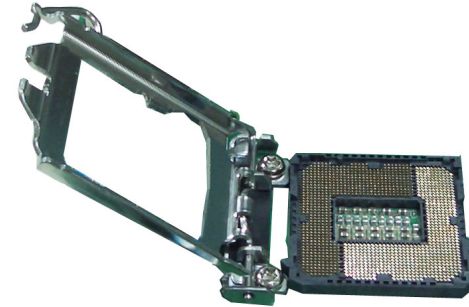
2. Loosen the mounting screws that secure the heat sink to the chassis.



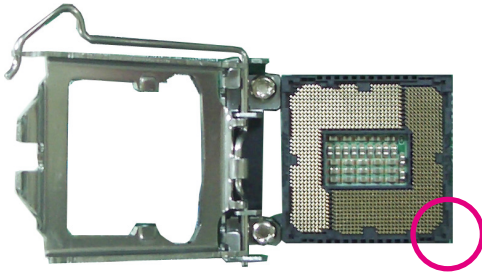
3. The CPU socket is readily accessible after you have removed the heat sink.



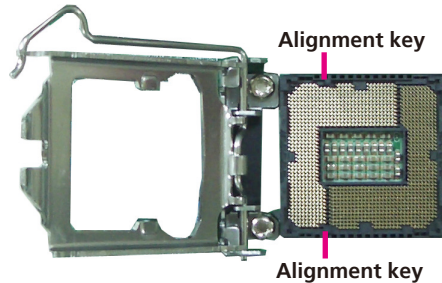
4. Unlock the socket by pushing the load lever down, moving it sideways until it is released from the retention tab; then lift the load lever up.



5. Insert the CPU into the socket. The triangular edge on the CPU must align with the corner of the CPU socket shown on the photo.



The CPU's notch will at the same time fit into the socket's alignment key.



6. Close the load plate and then hook the load lever under the retention tab.

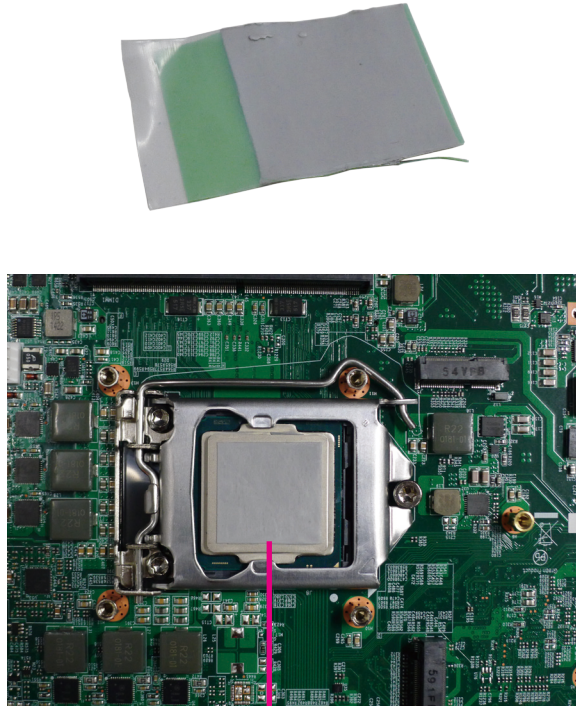


Do not force the CPU into the socket. Forcing the CPU into the socket may bend the pins and damage the CPU.



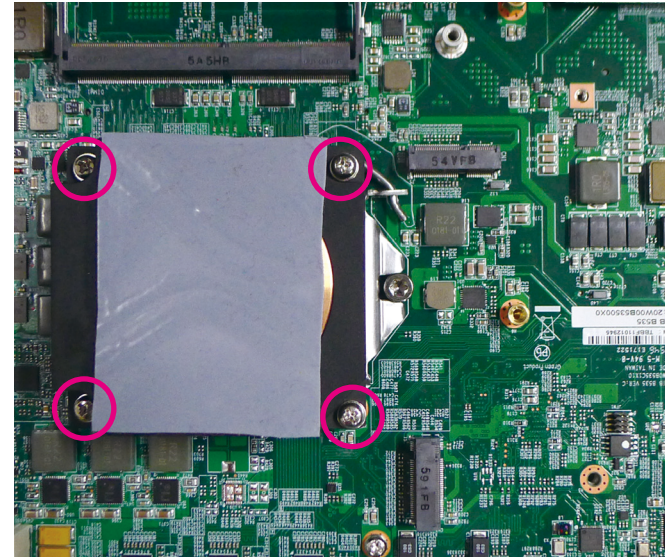
- Handle the CPU by its edges and avoid touching the pins.
- The CPU will fit in only one orientation and can easily be inserted without exerting any force.

7. Remove the adhesive film on the thermal pad and place it onto the CPU.



Thermal pad

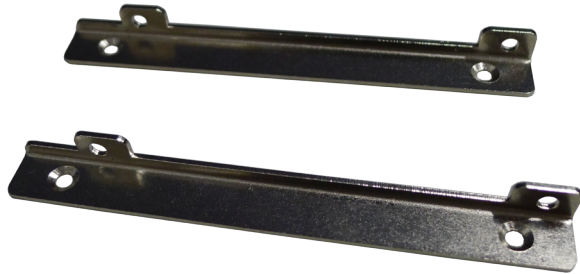
8. Tighten the screws to secure the heat sink in place.



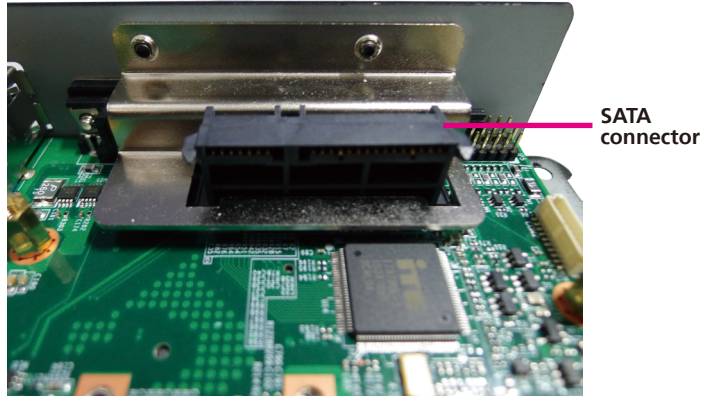
Please install the thermal pad and make sure the adhesive film on the thermal pad is removed before placing it on the heat sink.

## Installing a SATA Hard Drive

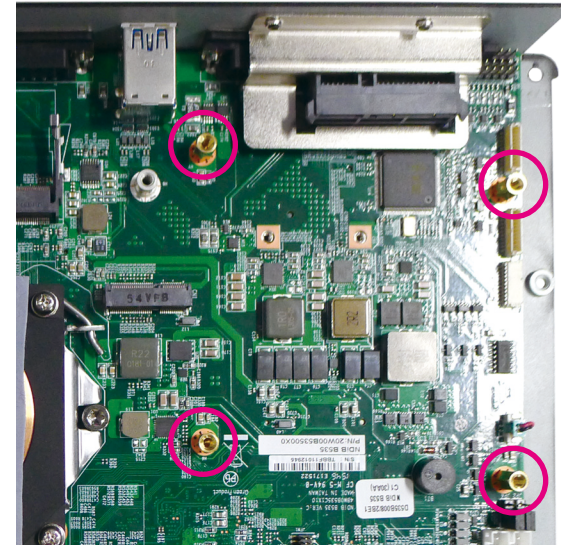
1. The drive bracket included in the package is used to hold a SATA hard drive.
2. Place the SATA hard drive onto the drive bracket. Align the mounting holes that are on the sides of the SATA drive with the mounting holes on the drive bracket, and secure the SATA drive in place with screws.



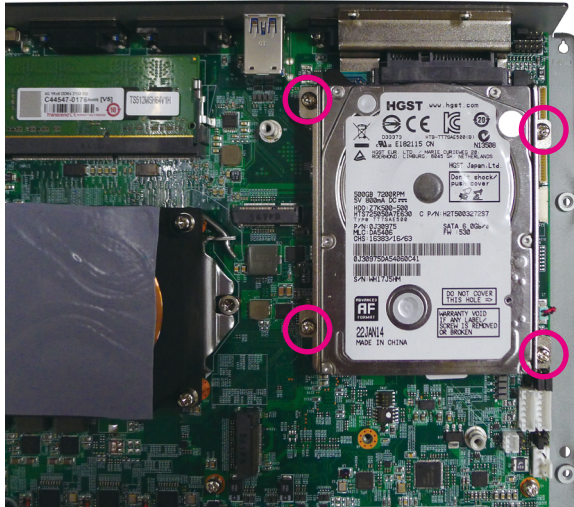
3. Locate the SATA connector on the board.



4. Fasten four copper standoffs onto the mounting holes near the SATA connector.

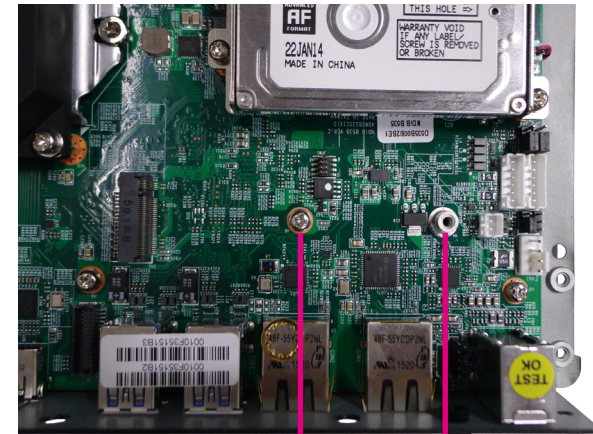
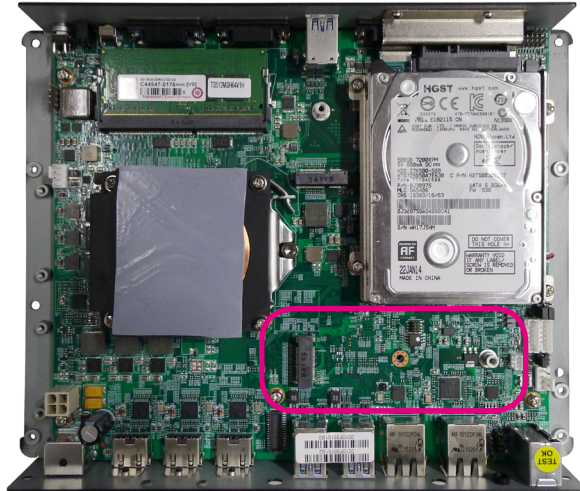


5. Align the mounting holes of the drive bracket with the standoffs on the board then use the mounting screws to secure the hard drive in place.



## Installing a NGFF (M.2) SSD

The NGFF (M.2) connector supports 22x42 and 22x80 SSD modules.

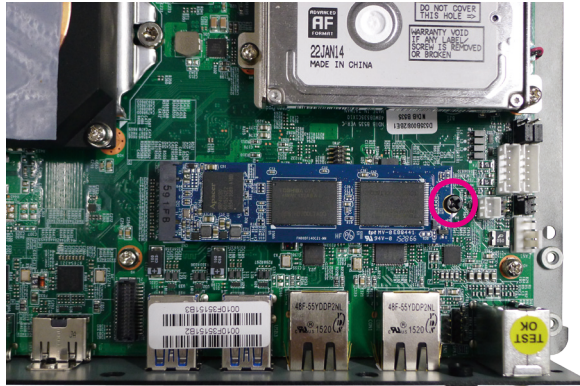


22 x 42  
mounting point

22 x 80  
mounting point

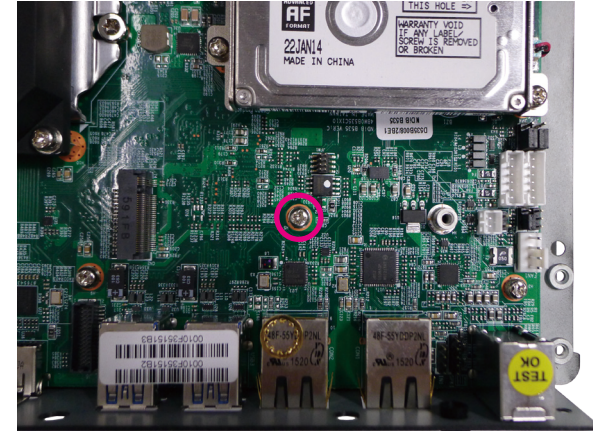
## 22 x 80 SSD Installation Instructions

1. Insert the SSD module into the NGFF slot at a 45 degree angle then push the module down and secure it with mounting screw.

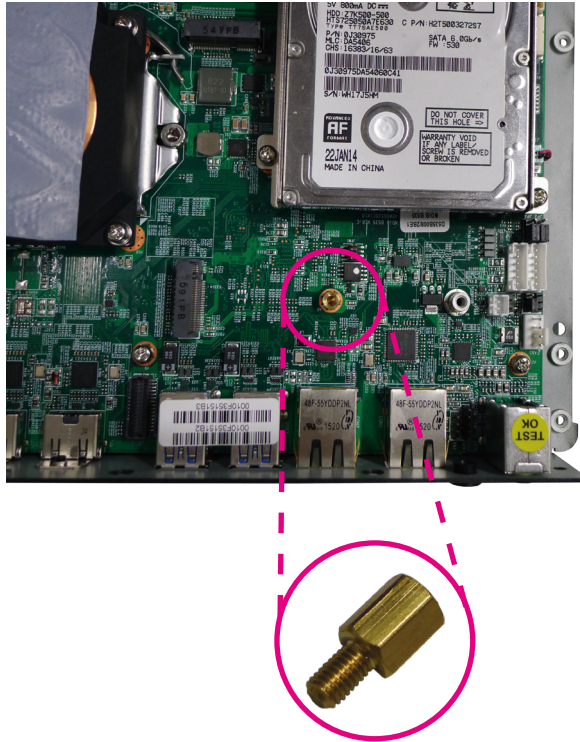


## 22 x 42 SSD Installation Instructions

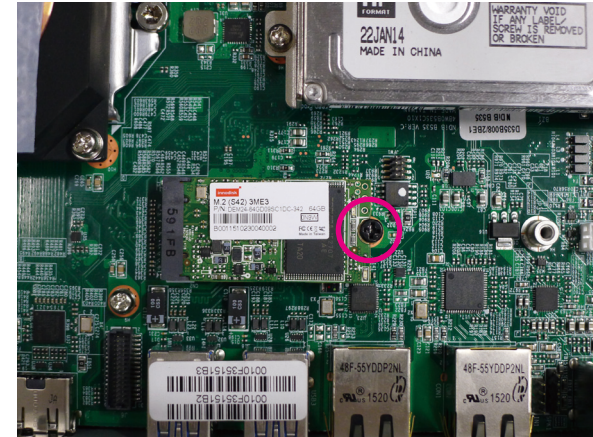
1. Remove the screw on the mounting hole for the copper standoff.



2. Fasten the copper standoff onto the mounting hole.



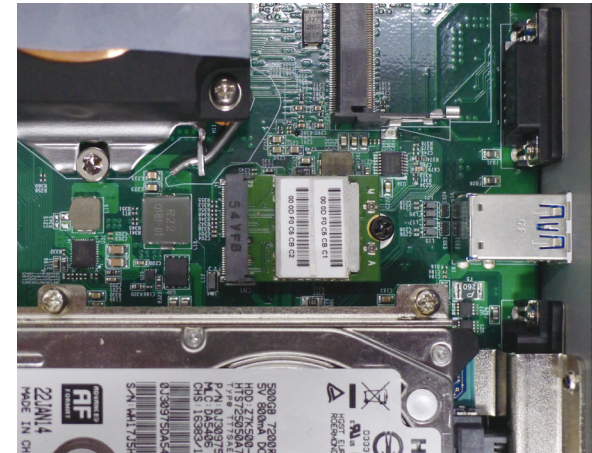
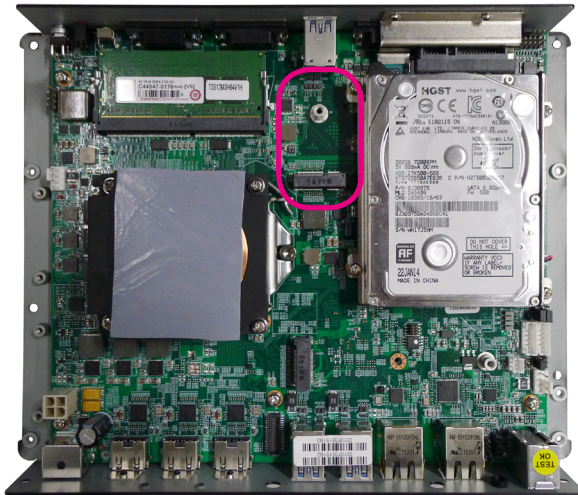
3. Insert the SSD module into the NGFF slot at a 45 degree angle then push the module down and secure it with mounting screw.



## Installing a NGFF Wireless LAN Module

The NGFF (M.2) connector for WLAN supports 16x30 and 22x30 Wi-Fi modules.

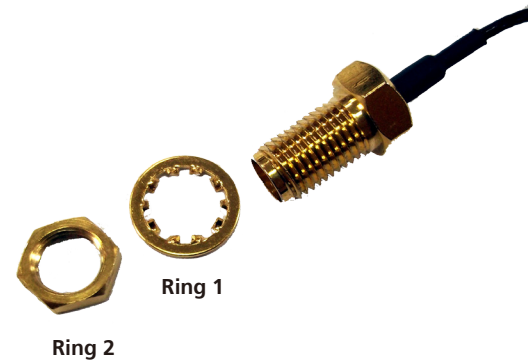
1. Insert the Wi-Fi module into the NGFF slot at a 45 degree angle then push the module down and secure it with mounting screw.



2. Locate the RF connectors on the Wi-Fi module and attach one end of the RF cables onto the Wi-Fi module.



3. Insert ring 1 into the Wi-Fi antenna jacks.



4. Mount the Wi-Fi antenna jacks to the Wi-Fi antenna holes located at the front panel of the chassis, then tighten the antenna jacks with ring 2.

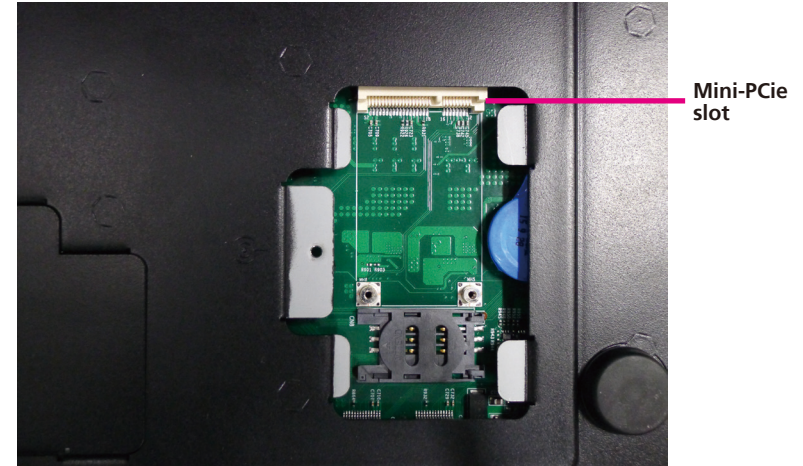


5. Connect the external antennas to the Wi-Fi antenna jacks.



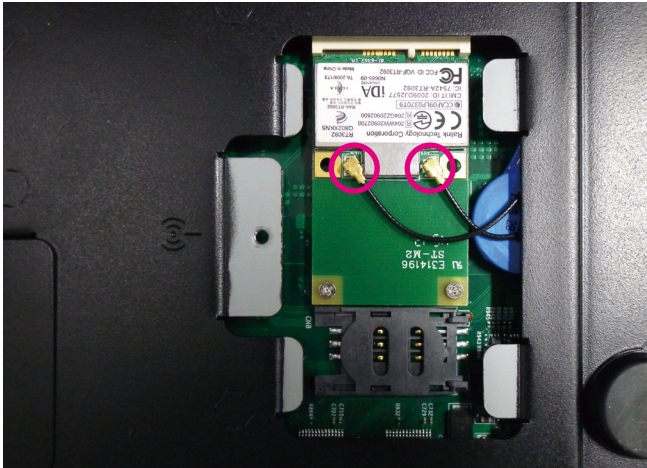
## Installing a Mini-PCle WLAN Module

1. On the bottom of the chassis, loosen the screw on the mini-PCle cover, then lift up the cover and remove it from the chassis. The mini-PCle cover is marked by the logo circled below.

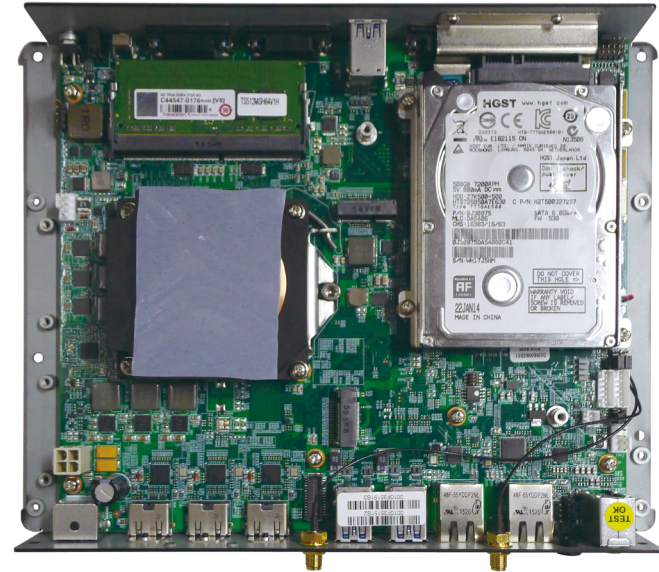


2. Insert the Wi-Fi module into the mini-PCIe slot at a 45 degree angle then push the module down and secure it with mounting screw.

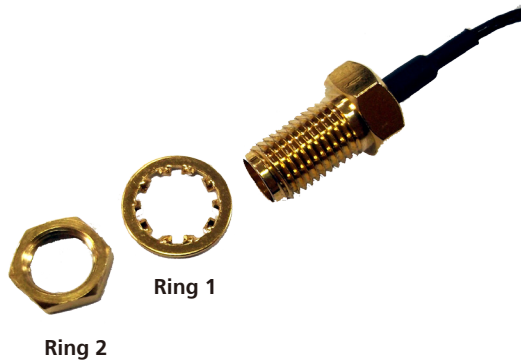
Locate the RF connectors on the Wi-Fi module and attach one end of the RF cables onto the Wi-Fi module.



3. Wire the RF cables to the top of the mainboard.



4. Insert ring 1 into the Wi-Fi antenna jacks.



5. Mount the Wi-Fi antenna jacks to the Wi-Fi antenna holes located at the front panel of the chassis, then tighten the antenna jacks with ring 2.



6. Connect the external antennas to the Wi-Fi antenna jacks.



# CHAPTER 4: BIOS SETUP

This chapter describes how to use the BIOS setup program for the OPS Box DS M535. The BIOS screens provided in this chapter are for reference only and may change if the BIOS is updated in the future.

To check for the latest updates and revisions, visit the DELTA COMPONENTS web site at [www.delta-components.de](http://www.delta-components.de).

## About BIOS Setup

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters.

These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

The settings made in the setup program affect how the computer performs. It is important, therefore, first to try to understand all the setup options, and second, to make settings appropriate for the way you use the computer.

## When to Configure the BIOS

- This program should be executed under the following conditions:
- When changing the system configuration
- When a configuration error is detected by the system and you are prompted to make changes to the setup program
- When resetting the system clock
- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

# Default Configuration


Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

# Entering Setup












When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing <Del> allows you to enter Setup.

Press the  key to enter Setup:


# Legends

Key	Function
	Moves the highlight left or right to select a menu.
	Moves the highlight up or down between sub-menus or fields.
	Exits the BIOS Setup Utility.
	Scrolls forward through the values or options of the highlighted field.
	Scrolls backward through the values or options of the highlighted field.
	Selects a field.
	Displays General Help.
	Load previous values.
	Load optimized default values.
	Saves and exits the Setup program.
	Press <Enter> to enter the highlighted sub-menu

## Scroll Bar


When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

## Submenu

When "►" appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press  .



# BIOS Setup Utility

Once you enter the AMI BIOS Setup Utility, the Main Menu will appear on the screen. The main menu allows you to select from several setup functions and one exit. Use arrow keys to select among the items and press  to accept or enter the submenu.

## Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.				
Main	Advanced	Security	Boot	Save & Exit
BIOS Information		American Megatrends		Set the Date. Use Tab to switch between Date elements.
BIOS Vendor		OPS Box DS M535		
Product Name		D535B027 x64		
BIOS Version		02/24/2016 15:24:09		
Build Date and Time				
Processor Information				
Name		SkyLake DT		
Stepping		R0/S0/N0		
Total Memory		4096 MB		
Memory Frequency		2133 MHz		
PCH Information				
PCH SKU		PCH-H Desktop Q170 SKU		
Stepping		31/D1		
LAN PHY Revision		B2		
ME FW Version		11.0.0.1178		
ME Firmware SKU		Corporate SKU		
System Date		[Wed 07/23/2092]		
System Time		[06:51:27]		
				→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.				

## System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Monday to Sunday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1999 to 2099.

## System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.



## Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

Setting incorrect field values may cause the system to malfunction.



## ACPI Settings

This section is used to configure ACPI Settings.



### Enable Hibernation

Enables or disables system ability to hibernate (OS/S4 Sleep State). This option may not be effective with some OS.

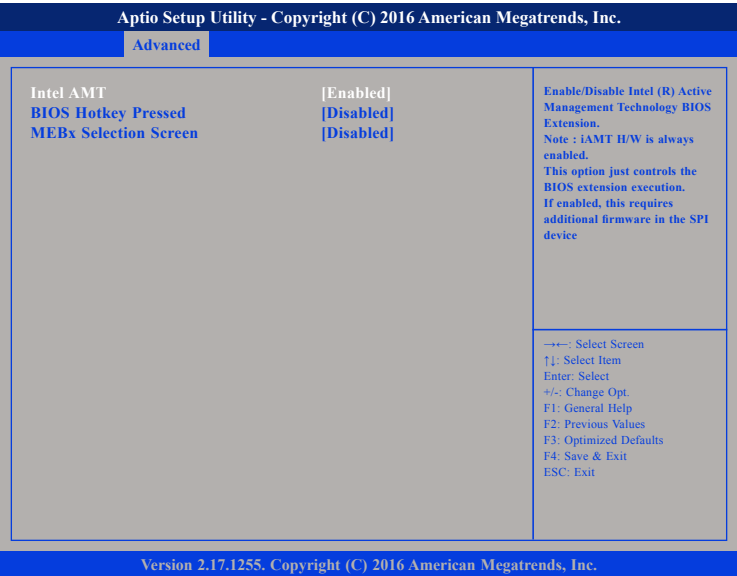
### ACPI Sleep State

Select the highest ACPI sleep state the system will enter when the suspend button is pressed. The options are Suspend Disabled and S3 (Suspend to RAM).



AMT Configuration

This section is used to configure Active Management Technology (AMT) options.



Intel® AMT

Enables or disables Intel® Active Management Technology.

BIOS Hotkey Pressed

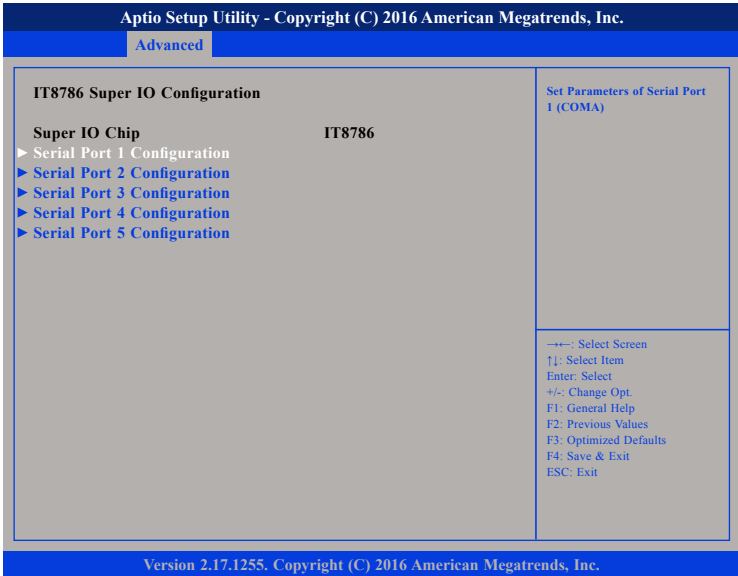
Enables or disables BIOS hotkey press.

MEBx Selection Screen

Enables or disables MEBx selection screen.

IT8786 Super IO Configuration

This section is used to configure serial ports 1 to 5.



Super IO Chip

Displays the Super I/O chip used on the board.



Serial Port 1 Configuration

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.

Advanced

Serial Port 1 Configuration

Serial Port  
Device Settings

[Enabled]  
IO=3F8h; IRQ=4;

Enable or Disable Serial Port (COM)

→←: Select Screen  
↑↓: Select Item  
Enter: Select  
+/-: Change Opt.  
F1: General Help  
F2: Previous Values  
F3: Optimized Defaults  
F4: Save & Exit  
ESC: Exit

Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.

Serial Port

Enables or disables the serial port.

Device Settings

Displays the IO address and IRQ of serial port 1.

Serial Port 2 Configuration

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Advanced

Serial Port 2 Configuration

Serial Port  
Device Settings

[Enabled]  
IO=2F8h; IRQ=3;

Enable or Disable Serial Port (COM)

→←: Select Screen  
↑↓: Select Item  
Enter: Select  
+/-: Change Opt.  
F1: General Help  
F2: Previous Values  
F3: Optimized Defaults  
F4: Save & Exit  
ESC: Exit

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Serial Port

Enables or disables the serial port.

Device Settings

Displays the IO address and IRQ of serial port 2.



Serial Port 3 Configuration

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Advanced

Serial Port 3 Configuration

Serial Port  
Device Settings

[Enabled]  
IO=3E8h; IRQ=7;

Enable or Disable Serial Port (COM)

→←: Select Screen  
↑↓: Select Item  
Enter: Select  
+/-: Change Opt.  
F1: General Help  
F2: Previous Values  
F3: Optimized Defaults  
F4: Save & Exit  
ESC: Exit

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Serial Port

Enables or disables the serial port.

Device Settings

Displays the IO address and IRQ of serial port 3.

Serial Port 4 Configuration

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Advanced

Serial Port 4 Configuration

Serial Port  
Device Settings

[Enabled]  
IO=2E8h; IRQ=5;

Enable or Disable Serial Port (COM)

→←: Select Screen  
↑↓: Select Item  
Enter: Select  
+/-: Change Opt.  
F1: General Help  
F2: Previous Values  
F3: Optimized Defaults  
F4: Save & Exit  
ESC: Exit

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Serial Port

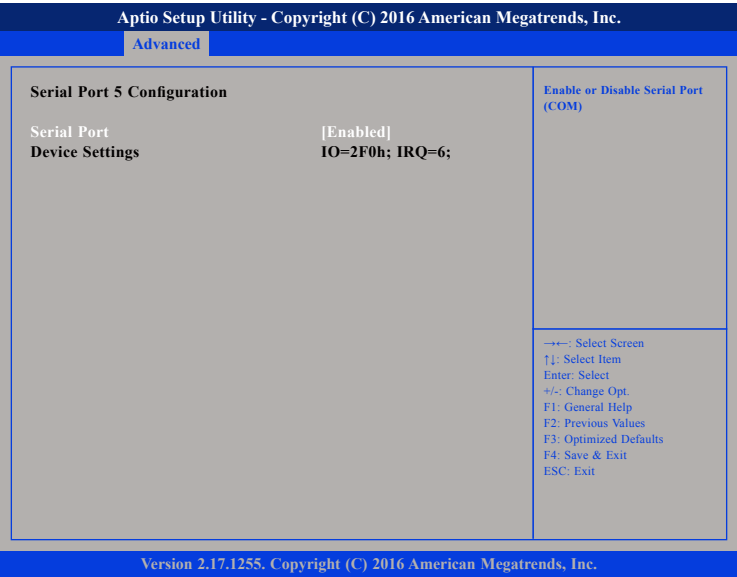
Enables or disables the serial port.

Device Settings

Displays the IO address and IRQ of serial port 4.



Serial Port 5 Configuration



Serial Port

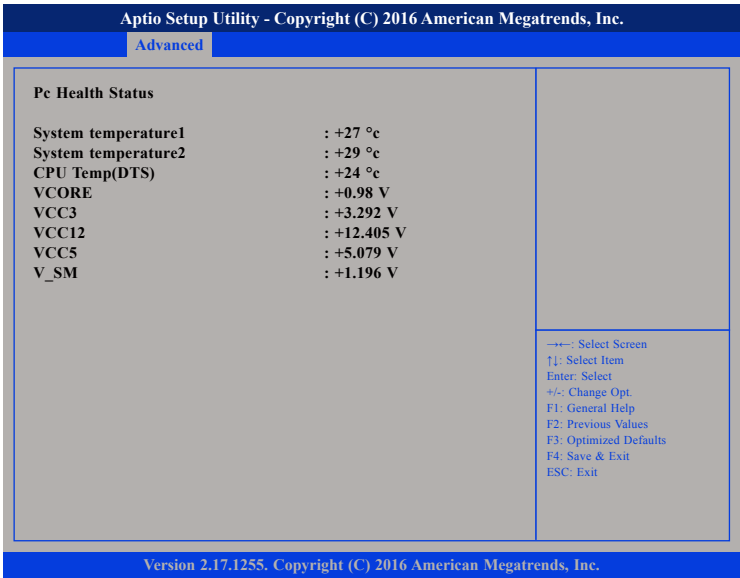
Enables or disables the serial port.

Device Settings

Displays the IO address and IRQ of serial port 5.

Hardware Monitor

This section is used to monitor hardware status such as temperature, fan speed and voltages.



System Temperature1 to System Temperature2

Detects and displays the internal temperature of the system.

CPU Temp(DTS)

Detects and displays the current CPU temperature.

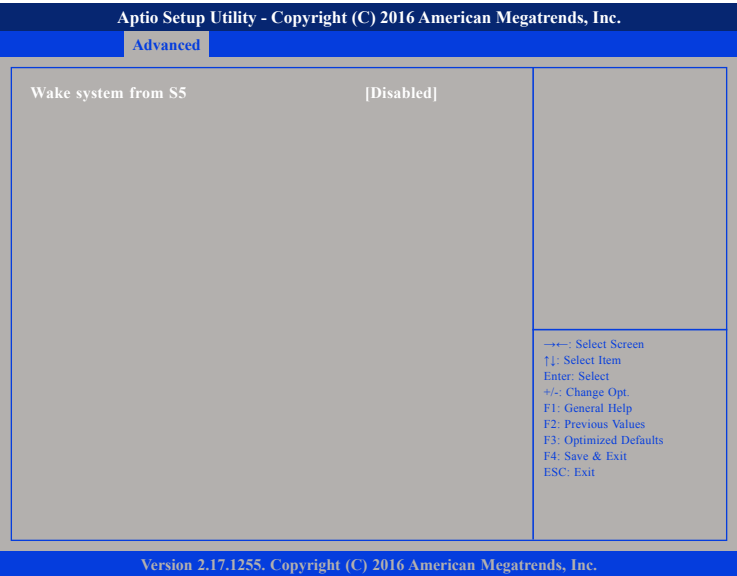
VCORE to V\_SM

Detects and displays the output voltages.



### RTC Wake Settings

This section is used to configure RTC Wake settings.



### Wake System from S5

Enables or disables system wake on alarm event. When enabled, system will wake on the hr::min::sec specified.



CPU Configuration

This section is used to configure the CPU.



Active Processor Cores

Select the number of cores to enable in each processor package.

Intel® Virtualization Technology

When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Intel® SpeedStep™

Enables or disables Intel SpeedStep.

Turbo Mode

Enables or disables turbo mode.

CPU C States

Enables or disables CPU C states.



SATA Configuration

This section is used to configure the SATA drives.



SATA Test Mode

Enables or disables SATA test mode.

SATA Mode Selection

Configures the SATA as AHCI or RAID mode.

**AHCI** This option configures the Serial ATA drives to use AHCI (Advanced Host Controller Interface). AHCI allows the storage driver to enable the advanced Serial ATA features which will increase storage performance.

**RAID** This option allows you to create RAID or Intel Matrix Storage configuration on Serial ATA devices.

Port 0 and Port 4

Enables or disables Serial ATA port 0 or port 4.

Hot Plug

Enables or disables hot plugging feature on Serial ATA port 0 or port 4.



## Network Stack Configuration

This section is used to configure the network stack settings.

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Advanced

Network Stack	[Disabled]	Enable/Disable UEFI Network Stack
		<div>→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</div>

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### Network Stack

Enables or disables UEFI network stack.



CSM Configuration

This section is used to configure the compatibility support module features.

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Advanced

Compatibility Support Module Configuration

CSM Support

[Enabled]

CSM16 Module Version

07.79

Boot option filter

[UEFI only]

Option ROM execution

Network

[UEFI]

Video

[UEFI]

→←: Select Screen  
↑↓: Select Item  
Enter: Select  
+/-: Change Opt.  
F1: General Help  
F2: Previous Values  
F3: Optimized Defaults  
F4: Save & Exit  
ESC: Exit

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CSM Support

Enables or disables Compatibility Support Module (CSM).

Boot Option Filter

This option filters which devices system can boot to.

Network

Enables or disables the boot option for legacy network devices.

Video

Enables or disables the boot option for legacy video devices.

USB Configuration

This section is used to configure the USB.

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Advanced

USB Configuration

USB Module Version

13

USB Controllers:

1 XHCI

XHCI Hand-off

[Disabled]

This is a workaround for OSs that does not support XHCI hand-off. The XHCI ownership change should be claimed by the XHCI driver.

→←: Select Screen  
↑↓: Select Item  
Enter: Select  
+/-: Change Opt.  
F1: General Help  
F2: Previous Values  
F3: Optimized Defaults  
F4: Save & Exit  
ESC: Exit

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XHCI Hand-off

This is a workaround for OSs that does not support XHCI hand-off. The XHCI ownership change should be claimed by the XHCI driver.



## Security

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MainAdvancedSecurityBootSave & Exit

Password Description

If **ONLY** the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.  
If **ONLY** the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.  
The password length must be in the following range:  
Minimum length3  
Maximum length20

Administrator Password

User Password

Set Administrator Password

→←: Select Screen  
↑↓: Select Item  
Enter: Select  
+/-: Change Opt.  
F1: General Help  
F2: Previous Values  
F3: Optimized Defaults  
F4: Save & Exit  
ESC: Exit

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### Administrator Password

Select this to reconfigure the administrator's password.

### User Password

Select this to reconfigure the user's password.

## Boot

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MainAdvancedSecurityBootSave & Exit

Boot Settings Configuration

Bootup NumLock State

[On]

Boot Option Priorities

Select the keyboard NumLock state

→←: Select Screen  
↑↓: Select Item  
Enter: Select  
+/-: Change Opt.  
F1: General Help  
F2: Previous Values  
F3: Optimized Defaults  
F4: Save & Exit  
ESC: Exit

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### Bootup NumLock State

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

57



# Save & Exit



## Save Changes and Exit

To save the changes and exit the Setup utility, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes. You can also press <F4> to save and exit Setup.

## Discard Changes and Exit

To exit the Setup utility without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting. You can also press <ESC> to exit without saving the changes.

## Restore Defaults

To restore the BIOS to default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.