

# MTC-8000 USER

10.1"/15"/15.6"/21.5" Fanless Multi-Touch Computer with  
Intel Atom® x7-E3950 Processor, 2 GigE LAN, 4 USB, 2 COM, DC 9-36V

# Manual

## Record of Revision

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Version	Date	Page	Description	Remark
1.00	2021/07/07	All	Official Release	
1.10	2022/01/27	15	Update	

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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 it is not installed and used in accordance with the instruction manual, it 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 products described in this manual comply 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.

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## Order Information

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Part Number	Description
MTC-8010W-3950	10.1" Fanless Multi-Touch panel PC, Intel® Atom™ x7-E3950, 2 GbE LAN, 2 COM, 4 USB, DC-in 12V
MTC-8015-3950	15" Fanless Multi-Touch panel PC, Intel® Atom™ x7-E3950, 2 GbE LAN, 2 COM, 4 USB, DC-in 9-36V
MTC-8015W-3950	15.6" Fanless Multi-Touch panel PC, Intel® Atom™ x7-E3950, 2 GbE LAN, 2 COM, 4 USB, DC-in 9-36V
MTC-8021W-3950	21.5" Fanless Multi-Touch panel PC, Intel® Atom™ x7-E3950, 2 GbE LAN, 2 COM, 4 USB, DC-in 9-36V

## Optional Accessories

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Part Number	Description
DDR3L 4G	Certified DDR3L 4GB 1600/1866 MHz RAM
DDR3L 8G	Certified DDR3L 8GB 1600/1866 MHz RAM
PWA-120W1	120W, 24V, 90VAC to 264VAC Power Adapter with 3-pin Terminal Block
4G Module	Mini PCIe 4G/GPS Module with Antenna
WiFi & Bluetooth Module	WiFi+Bluetooth Module with Antenna

Note : Vecow suggest to install wide operation temperature memory and storage devices when system work under rush environment.

# Table of Contents

<b>CHAPTER 1</b>	<b>GENERAL INTRODUCTION</b>	<b>1</b>
1.1	Overview	1
1.2	Features	2
1.3	Product Specification	3
1.3.1	Specifications of MTC-8010W	3
1.3.2	Specifications of MTC-8015	5
1.3.3	Specifications of MTC-8015W	7
1.3.4	Specifications of MTC-8021W	9
1.4	Mechanical Dimension	11
1.4.1	MTC-8010W Mechanical Drawing	11
1.4.2	MTC-8015 Mechanical Drawing	11
1.4.3	MTC-8015W Mechanical Drawing	12
1.4.4	MTC-8021W Mechanical Drawing	12
<b>CHAPTER 2</b>	<b>GETTING TO KNOW YOUR MTC-8000</b>	<b>13</b>
2.1	Packing List	13
2.2	I/O & Functions	14
2.3	Connector/Jumper Locations	18
2.4	Main Board Jumper Settings	23
<b>CHAPTER 3</b>	<b>SYSTEM SETUP</b>	<b>26</b>
3.1	Installing HDD/SDD Storage Devices	26
3.1.1	MTC-8010	26
3.1.2	MTC-8015/8015W/8021W	27
3.2	Installing Mini PCIe Cards	30
3.3	Mounting For MTC-8000 Series	31

<b>CHAPTER 4</b>	<b>BIOS SETUP</b>	<b>32</b>
4.1	Entering Setup	32
4.2	Main Menu	33
4.3	Advanced	33
4.4	Chipset	39
4.5	Security	45
4.6	Boot	46
4.7	Save & Exit	47

# 1

## GENERAL INTRODUCTION

### 1.1 Overview

Vecow's MTC-8000 series products are 10.1", 15", 15.6", and 21.5 fanless, high performance, low-power, all-in-one multi-touch panel computers which use as control panel on automation equipment, HMI for production line, control panel for self-service devices in digital signage, showroom interactive signage, and public service terminals, like meeting room control panel.

MTC-8000 series adopt Intel Atom<sup>®</sup> quad-core x7-E3950 processor (Apollo Lake), single DDR3L SO-DIMM supports up to 8GB memory; Advanced Intel<sup>®</sup> HD graphics 505 supports DirectX 12, OpenGL 4.3 and OpenCL 2.1 API, up to 4K resolution. With different size LCD panel with LED backlight to fulfill your different applications, Projected Capacitive 10-point Multi-Touch Screen with 7H Anti- Scratch Surface, 9V to 36V wide range power input with up to 80V smart surge protection, all-in-one fanless design, -10°C to 60°C wide operating temperature, and IP65 front panel protection design, MTC-8000 series bring your more reliable using experience in your applications.



## 1.2 Features

- Intel Atom® x7-E3950 Processor
- 1 DDR3L memory slot, up to 8GB
- Different Size LCD Panel with LED Backlight Control
  - 10.1" : 1280 \* 800
  - 15" : 1024 \* 768
  - 15.6" : 1366 \* 768
  - 21.5" : 1920 \* 1080
- 10-point Projected Capacitive Multi-Touch Screen with 7H Anti-Scratch Surface
- 2 GigE LAN Supporting IEEE 1588 Precision Time Protocol (PTP)
- Supports Landscape and Portrait screen
- DC 9V to 36V Wide Range Power Input (MTC-8010W is DC 12V)
- 2 Mini PCIe for WiFi/4G/3G/LTE/GPRS/UMTS
- IP65 Front Panel Protection
- Fanless Design

## 1.3 Product Specification

### 1.3.1 Specifications of MTC-8010W

<b>Panel</b>	
Panel Type	WSVGA TFT LED LCD
Size	10.1"
Max Resolution	1280 x 800
Display Color	262k
Brightness (cd/m <sup>2</sup> )	300
Viewing Angle	170°/170° (H/V)
Contrast Ratio	1300 : 1
<b>Touch Screen</b>	
Touch Screen Type	10-point Projected Capacitive
Transparency	≥ 91%
Surface Hardness	7H Surface Hardness
Control Interface	USB Interface
<b>System</b>	
Processor	Intel Atom® x7-E3950 Processor
Chipset	Intel® Apollo Lake PCH-LP
Memory	1 DDR3L 1866MHz SO-DIMM, up to 8GB
Graphics	Intel® HD Graphics 505
<b>I/O Interface</b>	
LAN	LAN 1/2 : Intel® I210 GigE LAN supports IEEE 1588, RJ45 Type
Serial	2 COM RS-232/422/485 (DB9 Type)
USB	<ul style="list-style-type: none"> <li>• 2 USB 3.0 Type A</li> <li>• 2 USB 2.0 Type A</li> </ul>
Display	<ul style="list-style-type: none"> <li>• VGA : Up to 1920 x 1440 @60Hz</li> <li>• HDMI : Up to 3840 x 2160 @60Hz</li> </ul>
<b>Storage</b>	
SATA	1 2.5" SATA III (6Gbps)
mSATA	1 SATA III (Mini PCIe Type, 6Gbps)
<b>Expansion</b>	
Mini PCIe	2 Full Size Mini PCIe Socket : <ul style="list-style-type: none"> <li>• 1 Full-size for PCIe/USB/Internal SIM Card</li> <li>• 1 Full-size for PCIe/USB/mSATA</li> </ul>

<b>Power</b>	
Power Input	12V, DC-in
Power Interface	3-pin Terminal Block : V+, V-, Frame Ground
Power Adapter	AC to DC 120W Power Adapter (Optional Accessory)
<b>Others</b>	
TPM	Optional Infineon SLB9665 supports TPM 2.0, LPC Interface
Watchdog Timer	Reset : 1 to 255 sec./min. per step
Smart Management	Wake on LAN, PXE supported
HW Monitor	Monitoring temperature, voltages. Auto throttling control when CPU overheats.
<b>Software Support</b>	
Microsoft	Window 10
Linux	Fedora 19, Ubuntu 10.04 LTS, or Linux Kernel 3.0 above
<b>Mechanical</b>	
Dimension	256.5mm x 178.3mm x 69.1mm (10.10" x 7.02" x 2.72")
Weight	1.85kg (4.08 lb)
Front Panel Protection	IP65 Compliant
Mounting	<ul style="list-style-type: none"> <li>• Panel Mount</li> <li>• VESA 75</li> </ul>
<b>Environment</b>	
Operating Temperature	-10°C to 60°C (14°F to 140°F)
Storage Temperature	-20°C to 60°C (-4°F to 140°F)
Humidity	10% to 95% Humidity, non-condensing
Relative Humidity	95% at 60°C
Shock	<ul style="list-style-type: none"> <li>• IEC 60068-2-27</li> <li>• 20G, Half-sine, 11ms</li> </ul>
Vibration	<ul style="list-style-type: none"> <li>• IEC 60068-2-64</li> <li>• Non-operation : 10Hz to 200Hz, 1Grms, X, Y, Z, 30 mins each Axis</li> </ul>
EMC	CE, FCC

### 1.3.2 Specifications of MTC-8015

<b>Panel</b>	
Panel Type	XGA TFT LED LCD
Size	15"
Max Resolution	1024 x 768
Display Color	16.7M
Brightness (cd/m <sup>2</sup> )	250
Viewing Angle	160°/140° (H/V)
Contrast Ratio	700:1
<b>Touch Screen</b>	
Touch Screen Type	10-point Projected Capacitive
Transparency	≥ 91%
Surface Hardness	7H Surface Hardness
Control Interface	USB Interface
<b>System</b>	
Processor	Intel Atom® x7-E3950 Processor
Chipset	Intel® Apollo Lake PCH-LP
Memory	1 DDR3L 1866MHz SO-DIMM, up to 8GB
Graphics	Intel® HD Graphics 505
<b>I/O Interface</b>	
LAN	LAN 1/2 : Intel® I210 GigE LAN supports IEEE 1588, RJ45 Type
Serial	2 COM RS-232/422/485 (DB9 Type)
USB	<ul style="list-style-type: none"> <li>• 2 USB 3.0 Type A</li> <li>• 2 USB 2.0 Type A</li> </ul>
Display	<ul style="list-style-type: none"> <li>• VGA : Up to 1920 x 1440 @60Hz</li> <li>• HDMI : Up to 3840 x 2160 @60Hz</li> </ul>
<b>Storage</b>	
SATA	1 2.5" SATA III (6Gbps)
mSATA	1 SATA III (Mini PCIe Type, 6Gbps)
<b>Expansion</b>	
Mini PCIe	2 Full Size Mini PCIe Socket : <ul style="list-style-type: none"> <li>• 1 Full-size for PCIe/USB/Internal SIM Card</li> <li>• 1 Full-size for PCIe/USB/mSATA</li> </ul>

<b>Power</b>	
Power Input	9V to 36V, DC-in
Power Interface	3-pin Terminal Block : V+, V-, Frame Ground
Power Adapter	AC to DC 120W Power Adapter (Optional Accessory)
<b>Others</b>	
TPM	Optional Infineon SLB9665 supports TPM 2.0, LPC Interface
Watchdog Timer	Reset : 1 to 255 sec./min. per step
Smart Management	Wake on LAN, PXE supported
HW Monitor	Monitoring temperature, voltages. Auto throttling control when CPU overheats.
<b>Software Support</b>	
Microsoft	Window 10
Linux	Fedora 19, Ubuntu 10.04 LTS, or Linux Kernel 3.0 above
<b>Mechanical</b>	
Dimension	360.9mm x 277.8mm x 77.1mm (14.20" x 10.94" x 3.04")
Weight	3.5kg
Front Panel Protection	IP65 Compliant
Mounting	<ul style="list-style-type: none"> <li>• Panel Mount</li> <li>• VESA 75</li> </ul>
<b>Environment</b>	
Operating Temperature	-10°C to 60°C (14°F to 140°F)
Storage Temperature	-20°C to 60°C (-4°F to 140°F)
Humidity	10% to 95% Humidity, non-condensing
Relative Humidity	95% at 60°C
Shock	<ul style="list-style-type: none"> <li>• IEC 60068-2-27</li> <li>• 20G, Half-sine, 11ms</li> </ul>
Vibration	<ul style="list-style-type: none"> <li>• IEC 60068-2-64</li> <li>• Non-operation : 10Hz to 200Hz, 1Grms, X, Y, Z, 30 mins each Axis</li> </ul>
EMC	CE, FCC

### 1.3.3 Specifications of MTC-8015W

<b>Panel</b>	
Panel Type	WXGA TFT LED LCD
Size	15.6"
Max Resolution	1366 x 768
Display Color	16.7M
Brightness (cd/m <sup>2</sup> )	400
Viewing Angle	170°/160°(H/V)
Contrast Ratio	500:1
<b>Touch Screen</b>	
Touch Screen Type	10-point Projected Capacitive
Transparency	≥ 91%
Surface Hardness	7H Surface Hardness
Control Interface	USB Interface
<b>System</b>	
Processor	Intel Atom® x7-E3950 Processor
Chipset	Intel® Apollo Lake PCH-LP
Memory	1 DDR3L 1866MHz SO-DIMM, up to 8GB
Graphics	Intel® HD Graphics 505
<b>I/O Interface</b>	
LAN	LAN 1/2 : Intel® I210 GigE LAN supports IEEE 1588, RJ45 Type
Serial	2 COM RS-232/422/485 (DB9 Type)
USB	<ul style="list-style-type: none"> <li>• 2 USB 3.0 Type A</li> <li>• 2 USB 2.0 Type A</li> </ul>
Display	<ul style="list-style-type: none"> <li>• VGA : Up to 1920 x 1440 @60Hz</li> <li>• HDMI : Up to 3840 x 2160 @60Hz</li> </ul>
<b>Storage</b>	
SATA	1 2.5" SATA III (6Gbps)
mSATA	1 SATA III (Mini PCIe Type, 6Gbps)
<b>Expansion</b>	
Mini PCIe	2 Full Size Mini PCIe Socket : <ul style="list-style-type: none"> <li>• 1 Full-size for PCIe/USB/Internal SIM Card</li> <li>• 1 Full-size for PCIe/USB/mSATA</li> </ul>

<b>Power</b>	
Power Input	9V to 36V, DC-in
Power Interface	3-pin Terminal Block : V+, V-, Frame Ground
Power Adapter	AC to DC 120W Power Adapter (Optional Accessory)
<b>Others</b>	
TPM	Optional Infineon SLB9665 supports TPM 2.0, LPC Interface
Watchdog Timer	Reset : 1 to 255 sec./min. per step
Smart Management	Wake on LAN, PXE supported
HW Monitor	Monitoring temperature, voltages. Auto throttling control when CPU overheats.
<b>Software Support</b>	
Microsoft	Window 10
Linux	Fedora 19, Ubuntu 10.04 LTS, or Linux Kernel 3.0 above
<b>Mechanical</b>	
Dimension	391.5mm x 242.0mm x 66.1mm (15.41" x 9.53" x 2.60")
Weight	3.6kg
Front Panel Protection	IP65 Compliant
Mounting	<ul style="list-style-type: none"> <li>• Panel Mount</li> <li>• VESA 75</li> </ul>
<b>Environment</b>	
Operating Temperature	-10°C to 60°C (14°F to 140°F)
Storage Temperature	-20°C to 60°C (-4°F to 140°F)
Humidity	10% to 95% Humidity, non-condensing
Relative Humidity	95% at 60°C
Shock	<ul style="list-style-type: none"> <li>• IEC 60068-2-27</li> <li>• 20G, Half-sine, 11ms</li> </ul>
Vibration	<ul style="list-style-type: none"> <li>• IEC 60068-2-64</li> <li>• Non-operation : 10Hz to 200Hz, 1Grms, X, Y, Z, 30 mins each Axis</li> </ul>
EMC	CE, FCC

### 1.3.4 Specifications of MTC-8021W

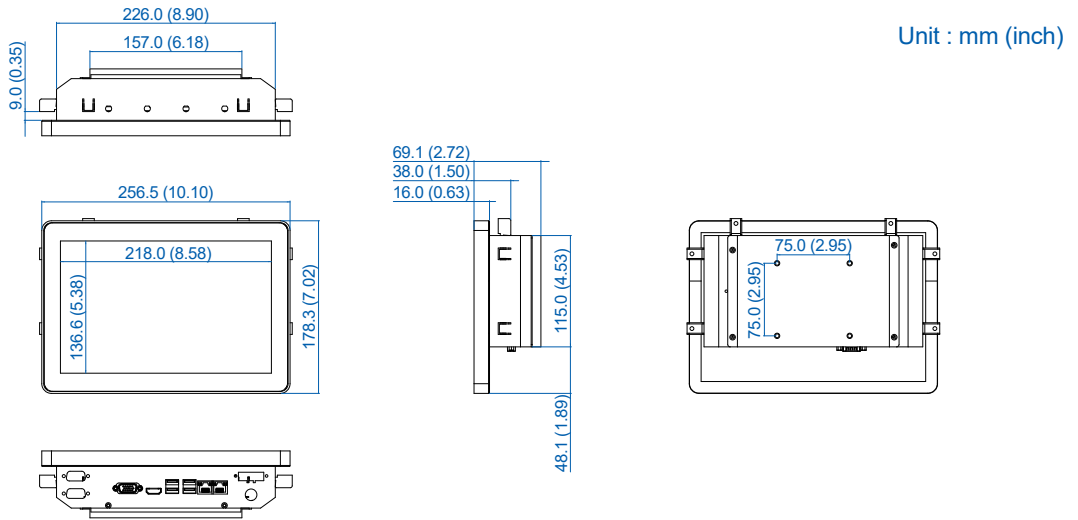
<b>Panel</b>	
Panel Type	FHD TFT LED LCD
Size	21.5"
Max Resolution	1920 x 1080
Display Color	16.7M
Brightness (cd/m <sup>2</sup> )	250
Viewing Angle	178°/178° (H/V)
Contrast Ratio	3000 : 1
<b>Touch Screen</b>	
Touch Screen Type	10-point Projected Capacitive
Transparency	≥ 91%
Surface Hardness	7H Surface Hardness
Control Interface	USB Interface
<b>System</b>	
Processor	Intel Atom® x7-E3950 Processor
Chipset	Intel® Apollo Lake PCH-LP
Memory	1 DDR3L 1866MHz SO-DIMM, up to 8GB
Graphics	Intel® HD Graphics 505
<b>I/O Interface</b>	
LAN	LAN 1/2 : Intel® I210 GigE LAN supports IEEE 1588, RJ45 Type
Serial	2 COM RS-232/422/485 (DB9 Type)
USB	<ul style="list-style-type: none"> <li>• 2 USB 3.0 Type A</li> <li>• 2 USB 2.0 Type A</li> </ul>
Display	<ul style="list-style-type: none"> <li>• VGA : Up to 1920 x 1440 @60Hz</li> <li>• HDMI : Up to 3840 x 2160 @60Hz</li> </ul>
<b>Storage</b>	
SATA	1 2.5" SATA III (6Gbps)
mSATA	1 SATA III (Mini PCIe Type, 6Gbps)
<b>Expansion</b>	
Mini PCIe	2 Full Size Mini PCIe Socket : <ul style="list-style-type: none"> <li>• 1 Full-size for PCIe/USB/Internal SIM Card</li> <li>• 1 Full-size for PCIe/USB/mSATA</li> </ul>



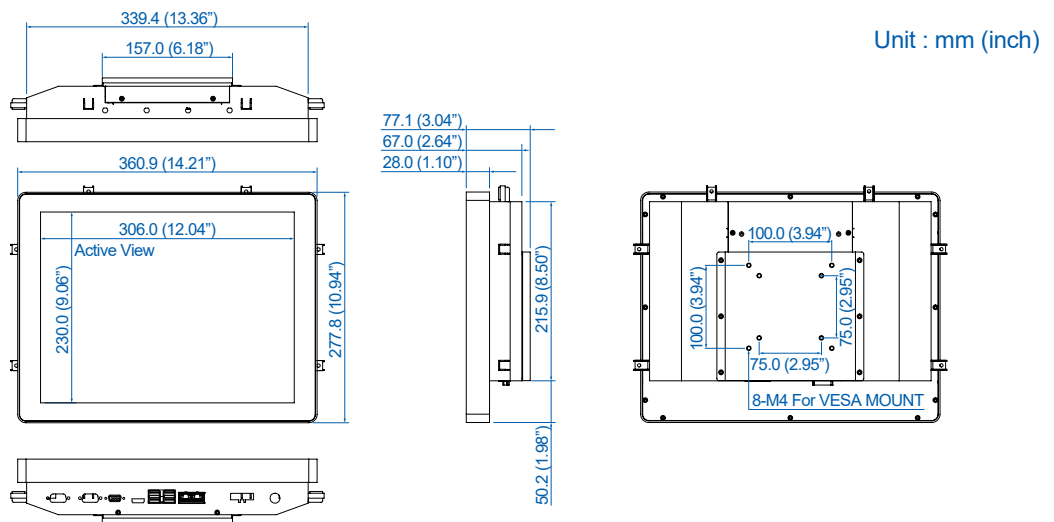
<b>Power</b>	
Power Input	9V to 36V, DC-in
Power Interface	3-pin Terminal Block : V+, V-, Frame Ground
Power Adapter	AC to DC 120W Power Adapter (Optional Accessory)
<b>Others</b>	
TPM	Optional Infineon SLB9665 supports TPM 2.0, LPC Interface
Watchdog Timer	Reset : 1 to 255 sec./min. per step
Smart Management	Wake on LAN, PXE supported
HW Monitor	Monitoring temperature, voltages. Auto throttling control when CPU overheats.
<b>Software Support</b>	
Microsoft	Window 10
Linux	Fedora 19, Ubuntu 10.04 LTS, or Linux Kernel 3.0 above
<b>Mechanical</b>	
Dimension	537.8mm x 329.0mm x 77.1mm (21.17" x 12.95" x 3.04")
Weight	6.35kg
Front Panel Protection	IP65 Compliant
Mounting	<ul style="list-style-type: none"> <li>• Panel Mount</li> <li>• VESA 75</li> </ul>
<b>Environment</b>	
Operating Temperature	-10°C to 60°C (14°F to 140°F)
Storage Temperature	-20°C to 60°C (-4°F to 140°F)
Humidity	10% to 95% Humidity, non-condensing
Relative Humidity	95% at 60°C
Shock	<ul style="list-style-type: none"> <li>• IEC 60068-2-27</li> <li>• 20G, Half-sine, 11ms</li> </ul>
Vibration	<ul style="list-style-type: none"> <li>• IEC 60068-2-64</li> <li>• Non-operation : 10Hz to 200Hz, 1Grms, X, Y, Z, 30 mins each Axis</li> </ul>
EMC	CE, FCC

# 1.4 Mechanical Dimension

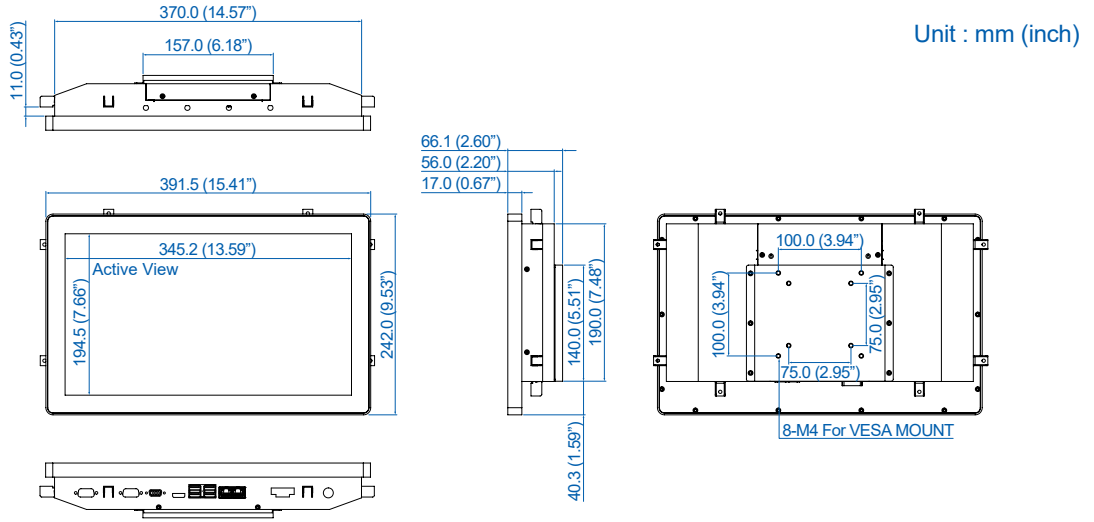
## 1.4.1 MTC-8010W Mechanical Drawing



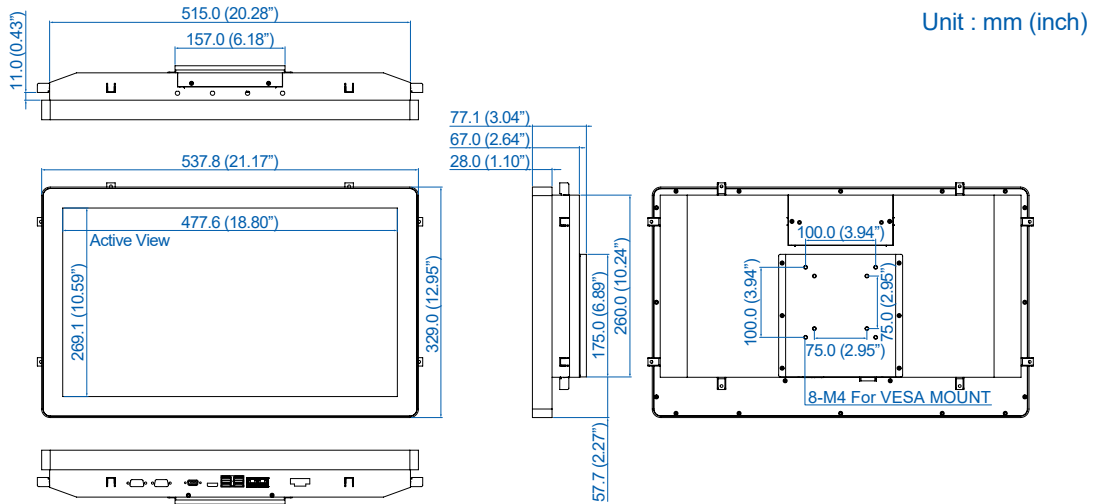
## 1.4.2 MTC-8015 Mechanical Drawing



### 1.4.3 MTC-8015W Mechanical Drawing



### 1.4.4 MTC-8021W Mechanical Drawing



# 2

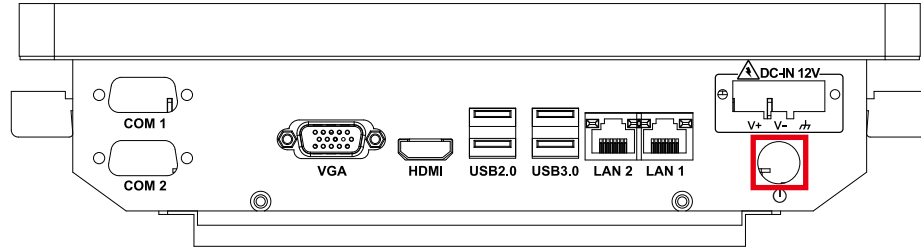
## GETTING TO KNOW YOUR MTC-8000

### 2.1 Packing List

Item	Description	Qty
1	MTC-8000 Series Panel PC, (10.1" – 21.5")	1
2	Driver/User Manual DVD	1
3	<ul style="list-style-type: none"><li>• Waterproof rubber when panel mount use</li><li>• Mounting clip</li><li>• M2.5x6L screw for Mini PCIe Socket (P/N : 53-2426906-30B)</li><li>• M4x10 screw for VESA mount kit</li><li>• Screws for HDD bracket</li></ul>	 1 8 2 4 4

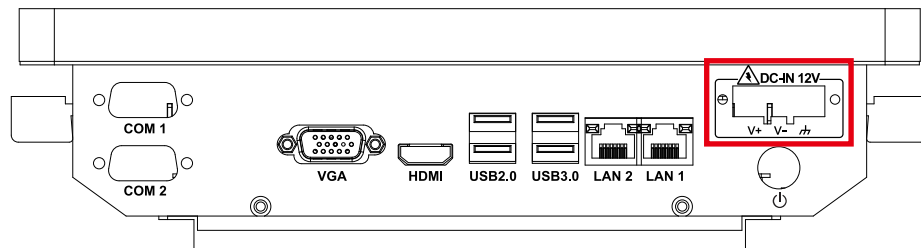
## 2.2 I/O & Functions

### 2.2.1 Power Button



The power button is a non-latched switch. In case of system halts, you can press and hold the power button for 4 seconds to compulsorily shut down the system. Please note that a 4 seconds interval is kept by the system between two on/off operations (i.e. once turning off the system, you shall wait for 4 seconds to initiate another power-on operation).

### 2.2.2 Power Input

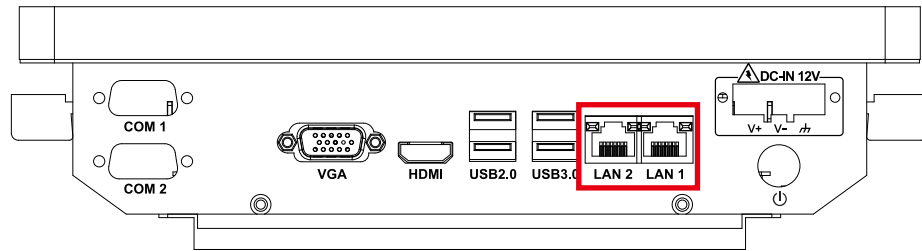


MTC-8000 supports 9V to 36V DC power input.

Note : MTC-8010W is only DC 12V power input only

Pin No.	Definition
1	V+
2	V-
3	Earth GND

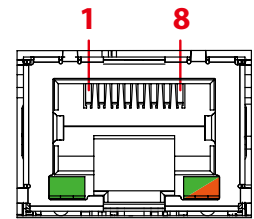
### 2.2.3 LAN Connector



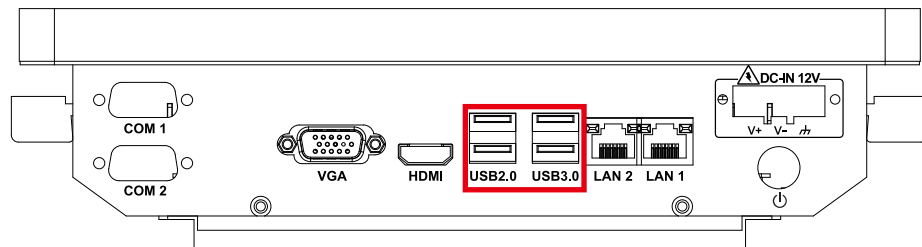
There are two RJ-45 LAN ports supporting 10/100/1000 Mbps Ethernet connections in the front side. LAN 1 (Left side) and LAN 2 (Right side) are powered by Intel® I210 Ethernet engine with IEEE 1588, The Precision Time Protocol (PTP) function.

The LED indicator on the right bottom corner lightens in solid green when the cable is properly connected to a 100Mbps Ethernet network; The LED indicator on the right bottom corner lightens in solid orange when the cable is properly connected to a 1000Mbps Ethernet network; The left LED will keep twinkling/off when Ethernet data packets are being transmitted/received.

LED Location	LED Color	10Mbps	100Mbps	1000Mbps
Right	Green/ Orange	Off	Solid Green	Solid Orange
Left	Green	Twinkling Green	Twinkling Green	Twinkling Green

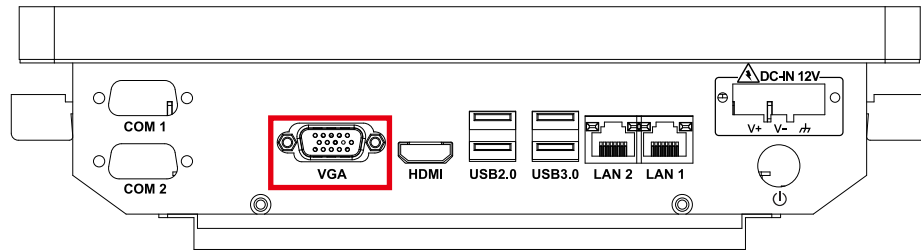


### 2.2.4 USB Connector



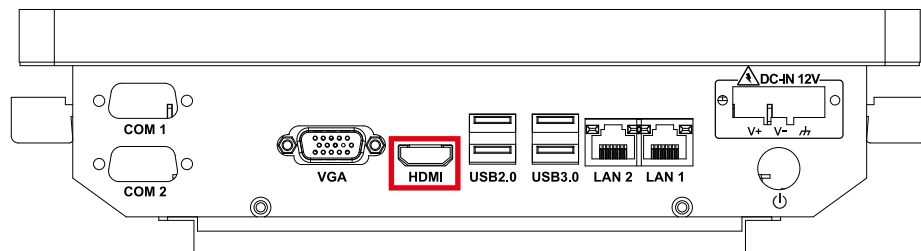
There are 2 standard USB 2.0 connections available supporting up to 480MB per second data rate and 2 standard USB 3.0 connections available supporting up to 5GB per second data rate. It also compliant with the requirements of Super Speed (SS), high speed (HS), full speed (FS) and low speed (LS).

## 2.2.5 VGA Connector



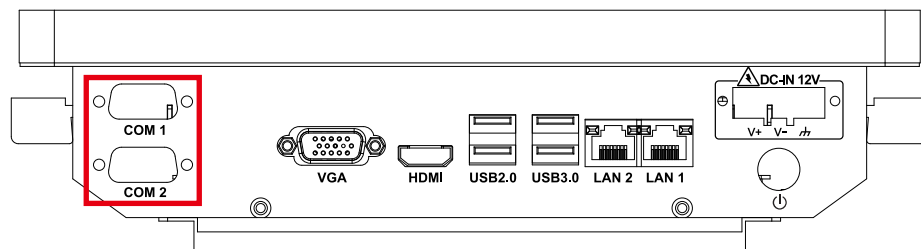
The VGA Port supports auxiliary channel mode. The connection supports up to resolution 1920 x 1440 at 60Hz.

## 2.2.6 HDMI



Onboard HDMI Port supports DDC channel mode. The connection supports up to 3840 x 2160 resolution at 30Hz.

## 2.2.7 Series Port



Serial port can be configured for RS-232, RS-422, or RS-485 with auto flow control communication. The default definition is RS-232, but if you want to change to RS-422 or RS-485, you can find the settings in BIOS.

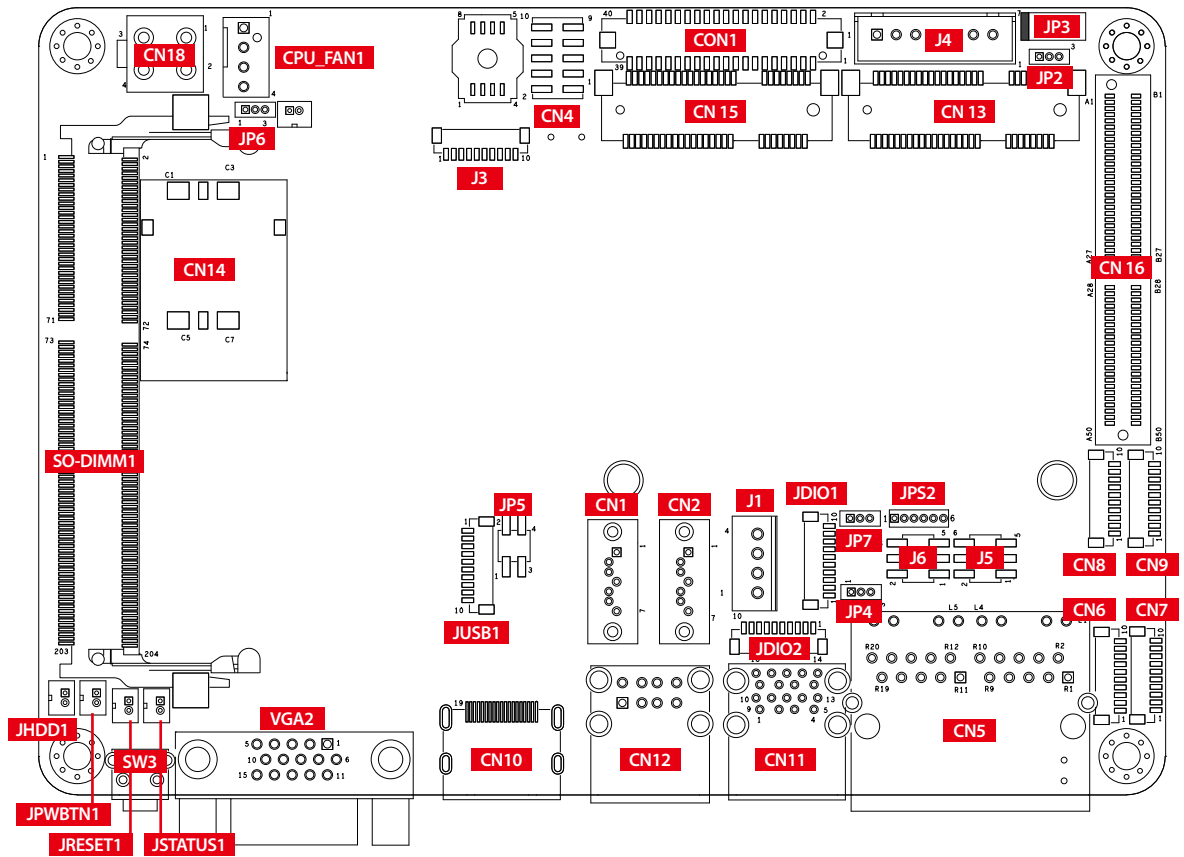
BIOS Setting	Function
COM 1 COM 2	RS-232
	RS-422 (5-wire)
	RS-422 (9-wire)
	RS-485
	RS-485 w/z auto-flow control
	MDI1_N
	MDI3_P
	MDI3_N

The pin assignments are listed in the following table :

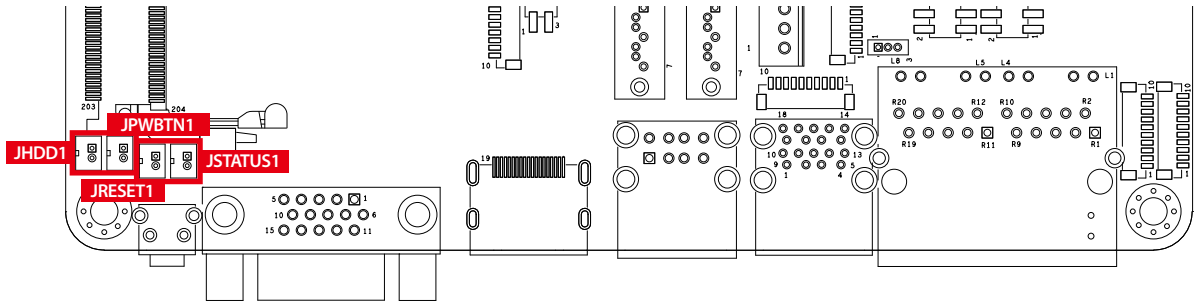
Serial Port	Pin No.	RS-232	RS-422 (5-wire)	RS-422 (9-wire)	RS-485 (3-wire)
1, 2	1	DCD	TXD-	TXD-	DATA-
	2	RXD	TXD+	TXD+	DATA+
	3	TXD	RXD+	RXD+	-----
	4	DTR	RXD-	RXD-	-----
	5	GND	GND	GND	GND
	6	DSR	-----	RTS-	-----
	7	RTS	-----	RTS+	-----
	8	CTS	-----	CTS+	-----
	9	RT	-----	CTS-	-----
	10	DCD	TXD-	TXD-	DATA-



## 2.3 Connector/Jumper Locations



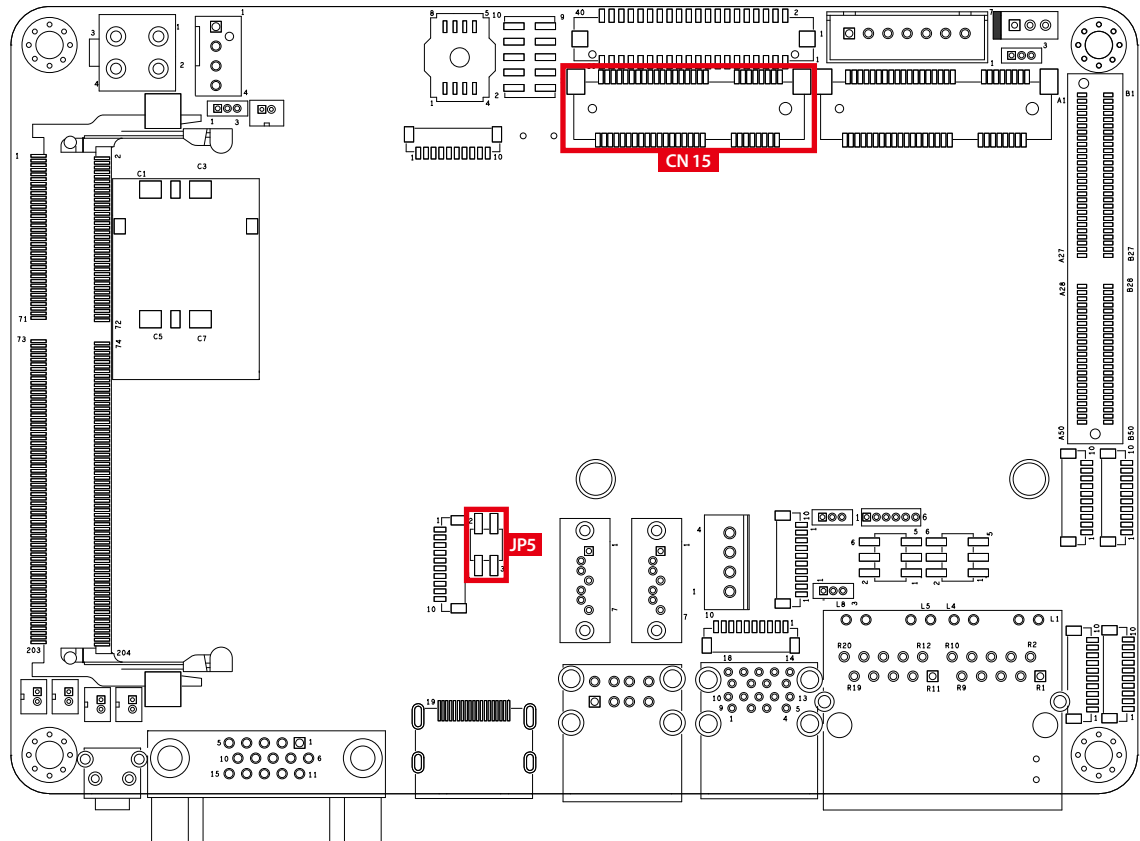
### 2.3.1 JPW BTN, JRESET, JSTATUS, JHDD : Miscellaneous Pin Header



These pin headers can be used as a backup for following functions, hard drive LED indicator, reset button, power LED indicator, and power-on/off button, which already be accessed by the front and top panels. The pinouts of Miscellaneous port are listed in following table :

Group	Pin No.	Description
	2	FP_PWR_BTN_IN
JRESET	1	GND
	2	FP_RST_BTN_N
JSTATUS	1	PWR_LED_N
	2	PWR_LED_P
JHDD	1	HDD_LED_N
	2	HDD_LED_P

### 2.3.2 JP5, CN15 : Mini PCIe, mSATA

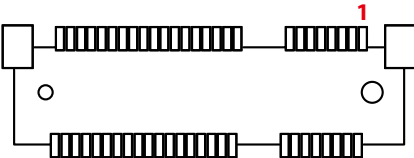


Both mSATA and Mini PCIe share the same form factor and similar electrical pinout assignments on their connectors. You can adjust JP5 to choose mSATA or Mini PCIe function. The pin assignments of CN15 and JP5 are listed in the following table :

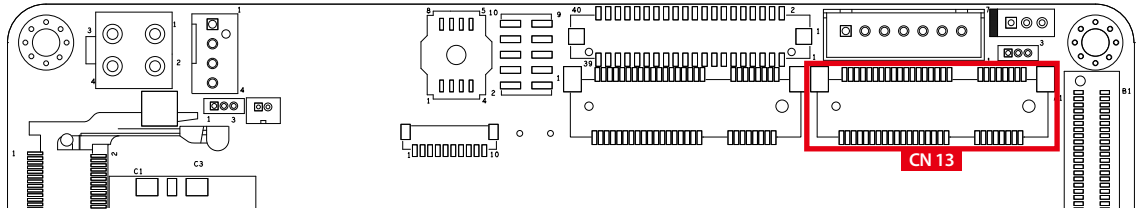
### JP5

	Pin No.	Function
	1-3/2-4	mSATA
	NC	Mini PCIe (Default)

### CN15

			
Pin No.	Signal Name	Pin No.	Signal Name
51	Reserved	52	+3.3Vaux
49	Reserved	50	GND
47	Reserved	48	+1.5V
45	Reserved	46	Reserved
43	Status	44	Reserved
41	+3.3Vaux	42	Reserved
39	+3.3Vaux	40	GND
37	GND	38	USB_D+
35	GND	36	USB_D-
33	PETp0	34	GND
31	PETn0	32	SMB_DATA
29	GND	30	SMB_CLK
27	GND	28	+1.5V
25	PERp0	26	GND
23	PERn0	24	+3.3Vaux
21	GND	22	PERST#
19	Reserved	20	Reserved
17	Reserved	18	GND
Mechanical Key			
15	GND	16	UIM_VPP
13	REFCLK+	14	UIM_RESET
11	REFCLK-	12	UIM_CLK
9	GND	10	UIM_DATA
7	CLKREQ#	8	UIM_PWR
5	Reserved	6	1.5V
3	Reserved	4	GND
1	WAKE#	2	3.3Vaux

### 2.3.3 CN13, SIM : Mini PCIe

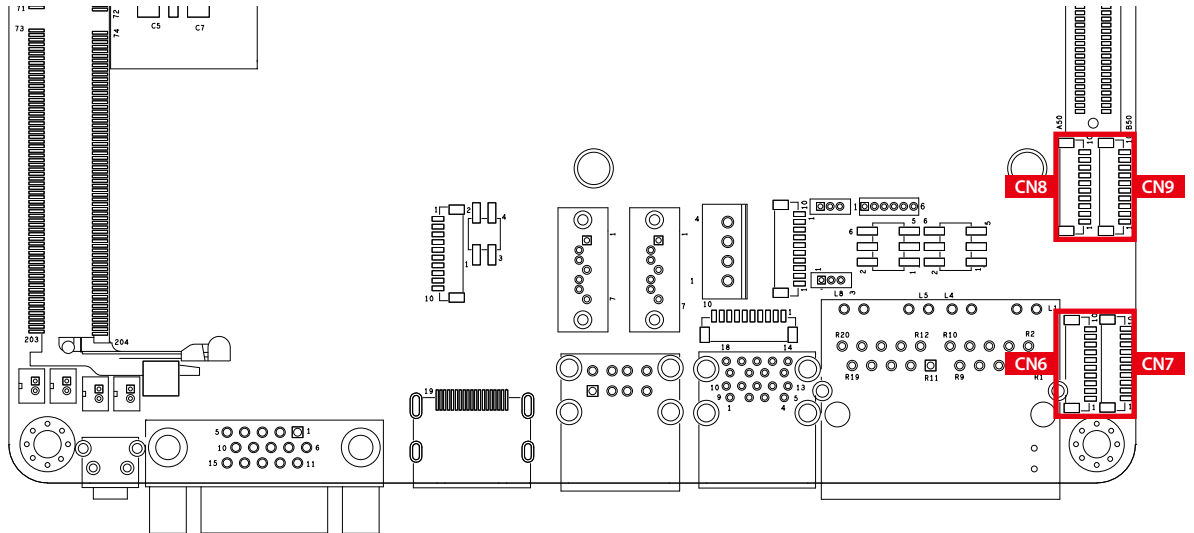


Note : The SIM card socket does not support hot-plug. Please make sure to unplug the system power before inserting the SIM card(s).

The pin assignments of CN13 are listed in the following table :

Pin No.	Signal Name	Pin No.	Signal Name
51	Reserved	52	+3.3Vaux
49	Reserved	50	GND
47	Reserved	48	+1.5V
45	Reserved	46	Reserved
43	Status	44	Reserved
41	+3.3Vaux	42	Reserved
39	+3.3Vaux	40	GND
37	GND	38	USB_D+
35	GND	36	USB_D-
33	PETp0	34	GND
31	PETn0	32	SMB_DATA
29	GND	30	SMB_CLK
27	GND	28	+1.5V
25	PERp0	26	GND
23	PERn0	24	+3.3Vaux
21	GND	22	PERST#
19	Reserved	20	Reserved
17	Reserved	18	GND
<b>Mechanical Key</b>			
15	GND	16	UIM_VPP
13	REFCLK+	14	UIM_RESET
11	REFCLK-	12	UIM_CLK
9	GND	10	UIM_DATA
7	CLKREQ#	8	UIM_PWR
5	Reserved	6	1.5V
3	Reserved	4	GND
1	WAKE#	2	3.3Vaux

### 2.3.4 CN6 To CN9 : COM 1 To COM 4 Serial Port



Serial port 1 to 4 can be configured for RS-232, RS-422, or RS-485 with auto flow control communication. The default definition of COM 1 to 4 is RS-232, if you want to change to RS-422 or RS-485, you can find the setting in BIOS.

BIOS Setting	Function
COM 1 (CN6) COM 2 (CN7) COM 3 (CN8) COM 4 (CN9)	RS-232
	RS-422 (5-wire)
	RS-422 (9-wire)
	RS-485
	RS-485 w/z auto-flow control

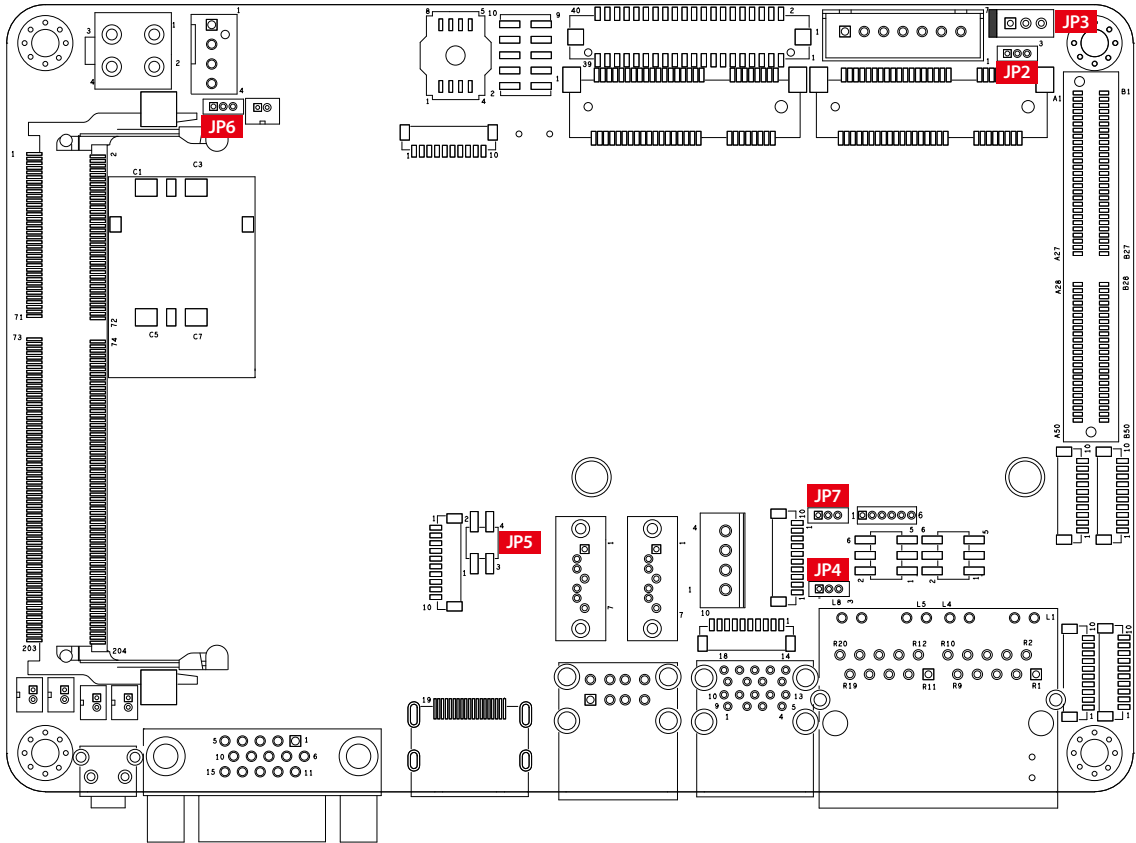
The pin assignments of CN13 are listed in the following table :

Serial Port	Pin No.	RS-232	RS-422 (5-wire)	RS-422 (9-wire)	RS-485 (3-wire)
1, 2, 3, 4	1	DCD	TXD-	TXD-	DATA-
	2	RXD	TXD+	TXD+	DATA+
	3	TXD	RXD+	RXD+	-----
	4	DTR	RXD-	RXD-	-----
	5	GND	GND	GND	GND
	6	DSR	-----	RTS-	-----
	7	RTS	-----	RTS+	-----
	8	CTS	-----	CTS+	-----
	9	RI	-----	CTS-	-----
	10	DCD	TXD-	TXD-	DATA-

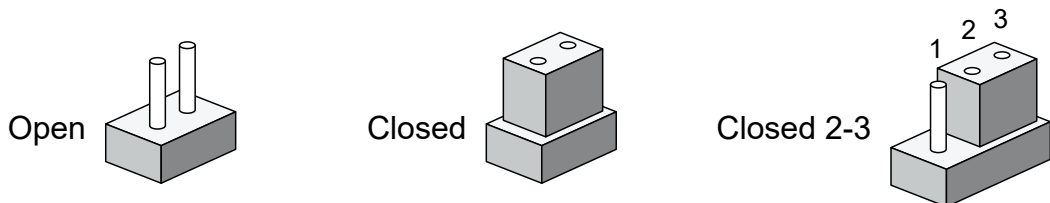
## 2.4 Main Board Jumper Settings

### 2.4.1 Front View of MTC-8010W Main Board With Jumper Location

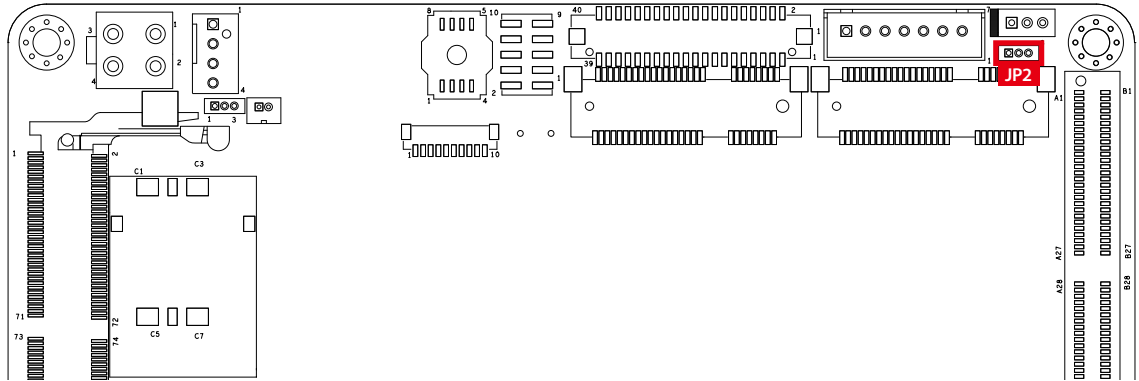
The figure below is the top view of the MTC-8010W main board. It shows the location of the jumpers.



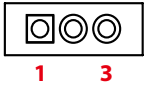
You may configure your card to match the needs of your application by setting jumpers. A jumper is a metal bridge used to close an electric circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper, 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 pins 1 and 2, or 2 and 3.



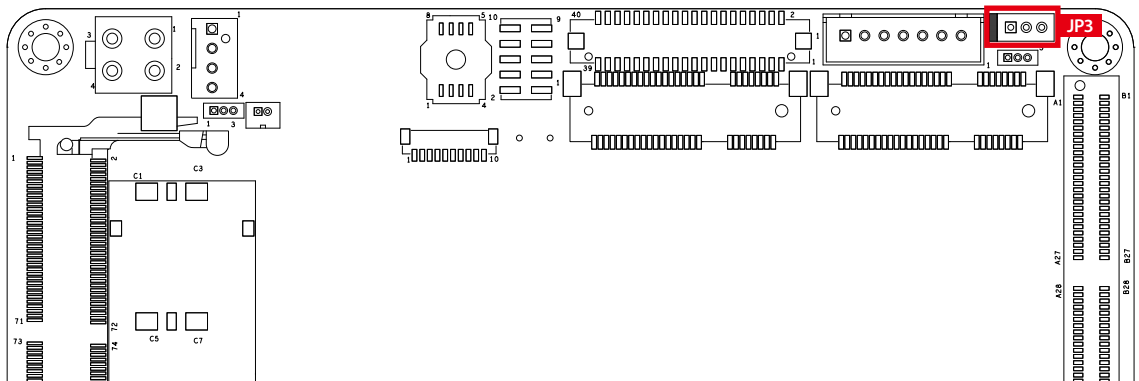
## 2.4.2 JP2 : Backlight Control Level Select



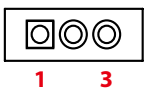
JP2 provides LVDS backlight control selection function, closing Pin 1, 2 is for 3.3V and closing Pin 2, 3 is for 5V.

	Pin No.	Function
	1-2	+3.3V (Default)
	2-3	+5V

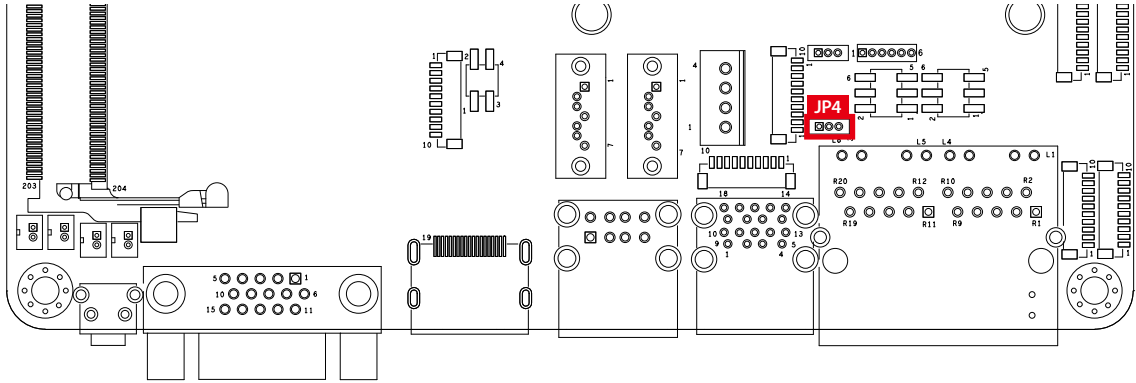
## 2.4.3 JP3 : LVDS Module, Power Selection

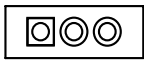


JP3 provides LVDS voltage selection function, Closing Pin 1 and Pin 2 is for 3.3V LVDS power input; closing Pin 2 and Pin 3 is for 5V LVDS power input.

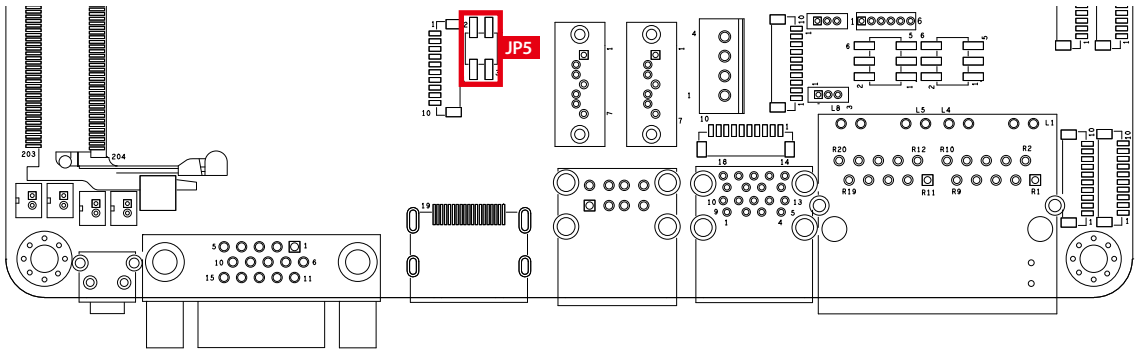
	Pin No.	Function
	1-2	+3.3V (Default)
	2-3	+5V System Power



## 2.4.4 JP4 : USB Power Select



	Pin No.	Function
	1-2	+5V Standby Power (Default)
	2-3	+5V System Power

## 2.4.5 JP5 : CN13 mSATA/Mini PCIe; CN1 SATA/NC Select



	Pin No.	CN15	CN1
	1-3/2-4	mSATA	N/C
	N/C	Mini PCIe (Default)	SATA (Default)



# 3

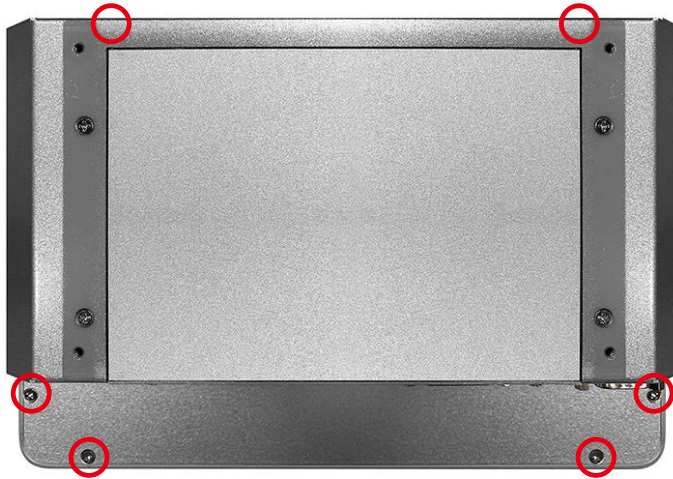
## SYSTEM SETUP

### 3.1 Installing HDD/SDD Storage Devices

#### 3.1.1 MTC-8010

**Step 1** Remove 4pcs screws from system chassis.

Please take care of internal LVDS cable, backlight control cable and touch cable when opening back chassis.



**Step 2** Remove 4pcs M3x4 screws of SSD/HDD Tray from back cover.

**Step 3** Lock up 2.5" SSD/HDD on HDD bracket and plug-in SATA cable to SSD/HDD.

**Step 4** Lock up 4pcs screws (marked in red) to fix the SSD/HDD on the tray.



Note 1 :

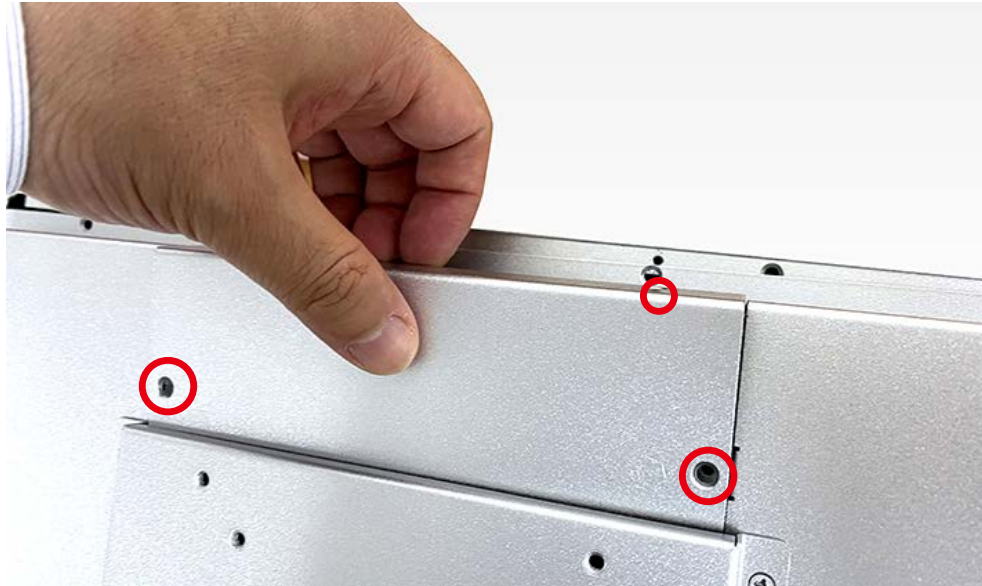
We strongly recommend you to buy wide temp. RAM and pre-install by VECOW for MTC-8000 series panel pc.

Note 2 :

We strongly recommend you to buy storage and pre-install by VECOW for MTC-8010W, 10.1" Multi-touch panel pc.

### 3.1.2 MTC-8015/8015W/8021W

**Step 1** Remove 4pcs screws from external storage cover.



**Step 2** Loosen 2pcs screws from SSD/HDD bracket.



**Step 3** Put 2.5" SDD/HDD on HDD bracket and lock up storage with 4 pcs screws on the 2.5" SSD/HDD back side.

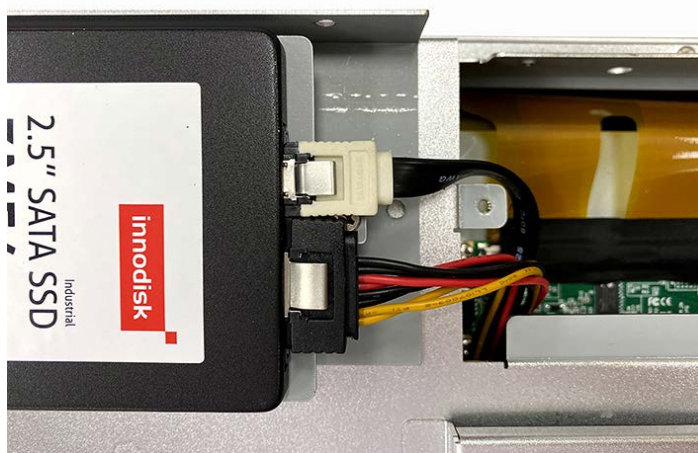
Note : Please notice direction of SATA connector when lock up storage device.



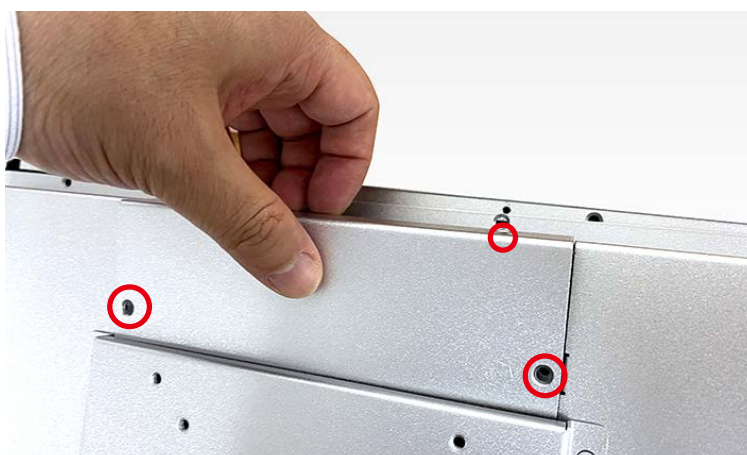
**Step 4** Lock up HDD bracket on HDD cover with 2 pcs screws.



**Step 5** Plug STAT cable and power cable on your storage.



**Step 6** Put back storage cover with storage bracket to system and puck up it with 4 pcs screws.



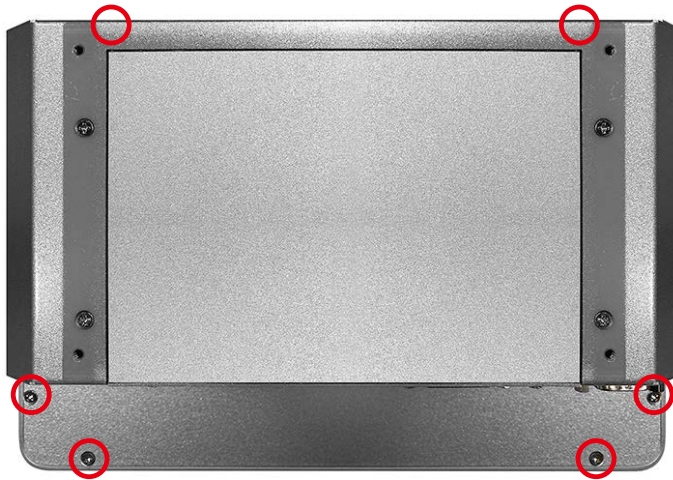
Note 1 : We strongly recommend you to buy wide temp. RAM and pre-install by VECOW for MTC-8000 series panel pc.

Note 2 : We strongly recommend you to buy storage and pre-install by VECOW for MTC-8010W, 10.1" Multi-touch panel pc.

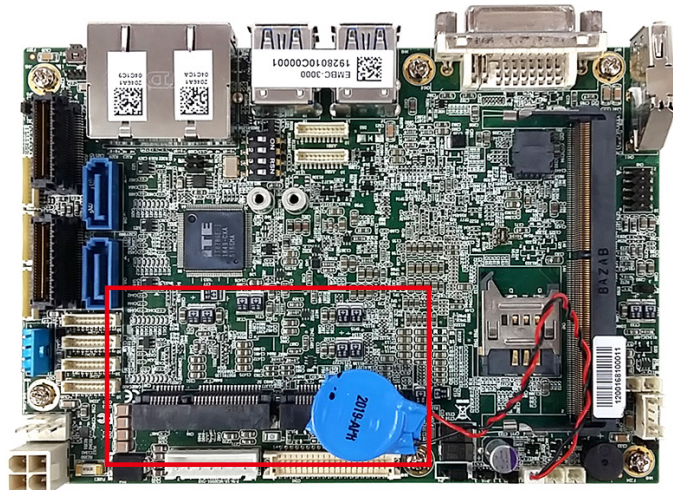


## 3.2 Installing Mini PCIe Cards

**Step 1** Remove 4pcs screws from system chassis.



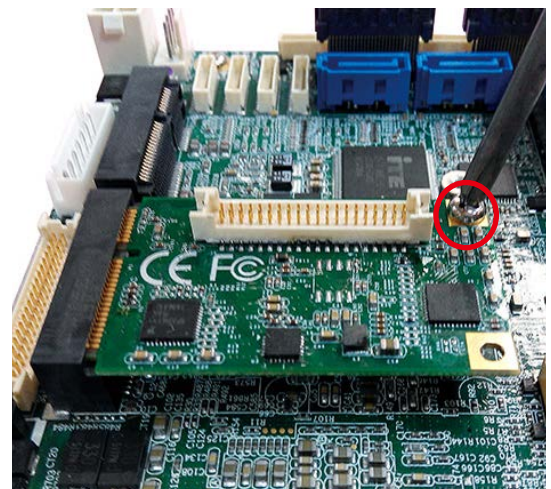
**Step 2** Install Mini PCIe card into Mini PCIe socket.



**Step 3** Install Mini PCIe card into the Mini PCIe slot.



**Step 4** Fasten one M2.5 screw.



### 3.3 Mounting For MTC-8000 Series

**Step 1** Put the panel PC into the wall or device you want.

**Step 2** Put our panel mounting clips and fasten it to panel mount hole.



**Step 3** Lock screw and finish.



# 4

## BIOS SETUP

### 4.1 Entering Setup

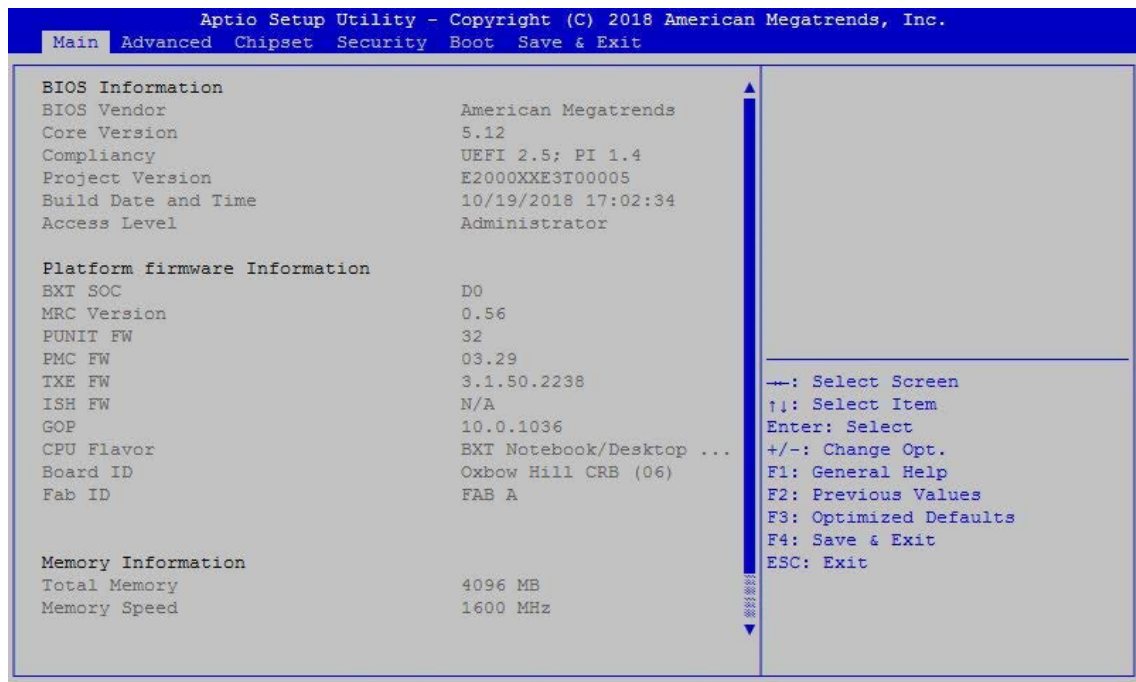


Figure 4-1 : Entering Setup Screen

BIOS provides an interface for users to check and change system configuration. The BIOS setup program is accessed by pressing the <Del> key when POST display output is shown.



## 4.2 Main Menu

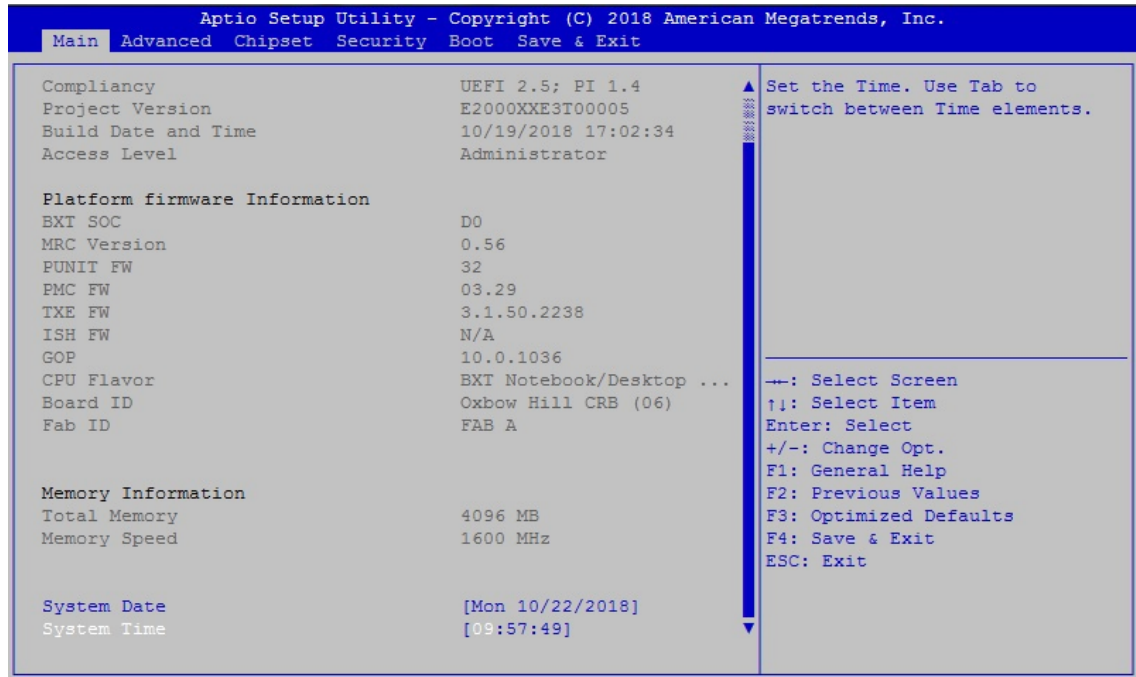


Figure 4-2 : BIOS Main Menu

The Main menu displays BIOS version and system information. There are two options on Main menu.

### System Data

Set the date. Use <Tab> to switch between date elements.

### System Time

Set the time. Use <Tab> to switch between time elements.

## 4.3 Advanced

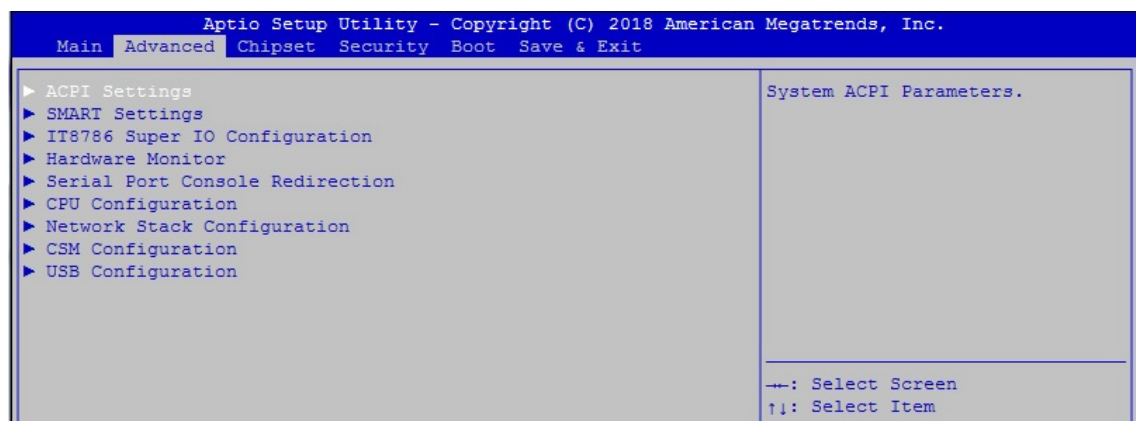


Figure 4-3 : BIOS Advanced menu

Select advanced tab to enter advanced BIOS setup options, such as CPU configuration, Network configuration, and USB configuration.



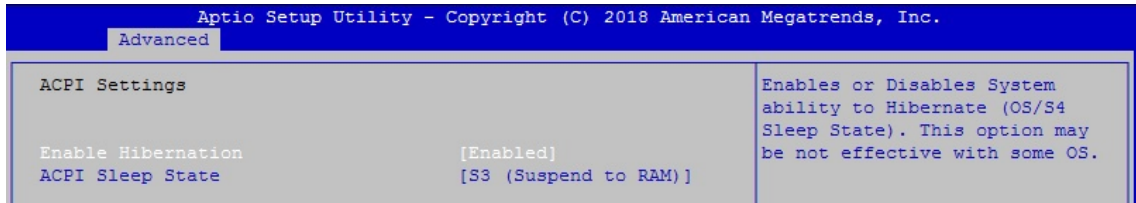


Figure 4-3-1 : ACPI Settings

### Enable Hibernation

Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

### ACPI Sleep State

Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

## 4.3.2 SMART Settings

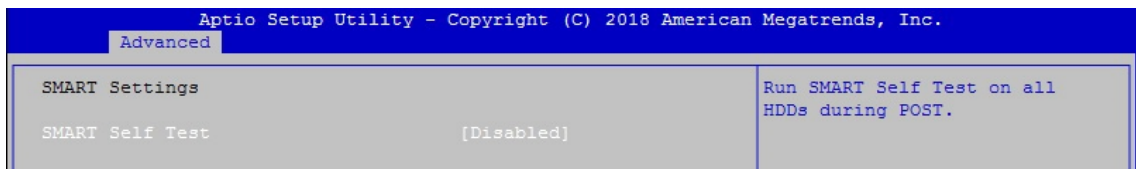


Figure 4-3-2 : SMART Settings

### SMART Self Test

Run SMART Self Test on all HDDs during POST.

## 4.3.3 IT8786 Super IO Configuration

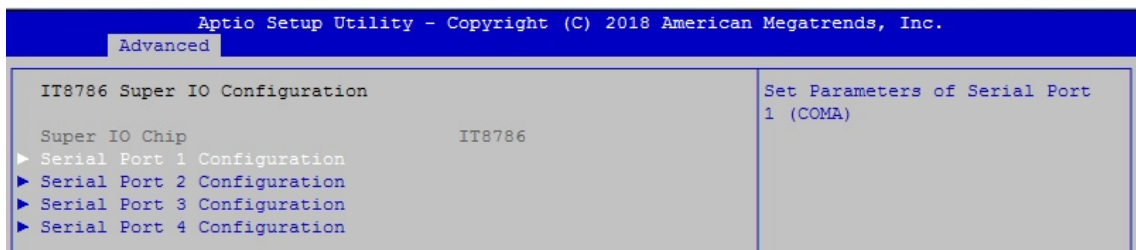


Figure 4-3-3-1 : Super IO Settings

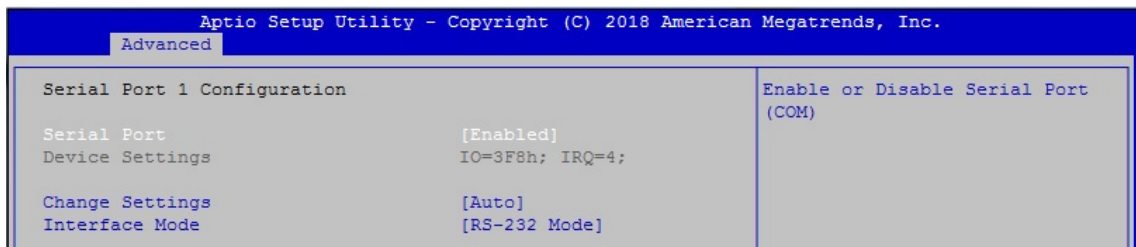


Figure 4-3-3-2 : Super IO Serial Port Configuration

### Serial Port 1 to port 4 Configuration

Options for Serial Port 1 to Serial Port 4.

Entering the corresponding Port option then end user can change the settings such as I/O resource and UART mode.

### 4.3.4 Hardware Monitor

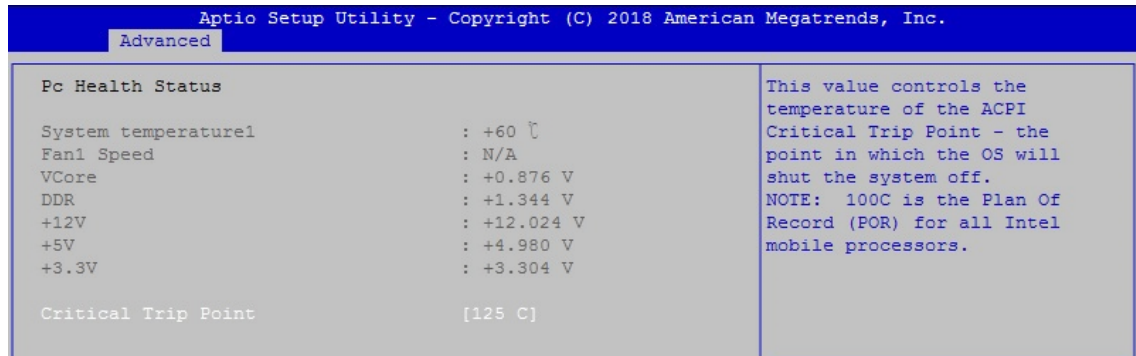


Figure 4-3-4 : Hardware Monitor Settings

The IT8786 SIO features an enhanced hardware monitor providing thermal, fan speed, and system voltage's status monitoring.

#### Critical trip Point

This value controls the temperature of the ACPI Critical Trip Point - the point in which the OS will shut the system off.

### 4.3.5 Serial Port Console Redirection

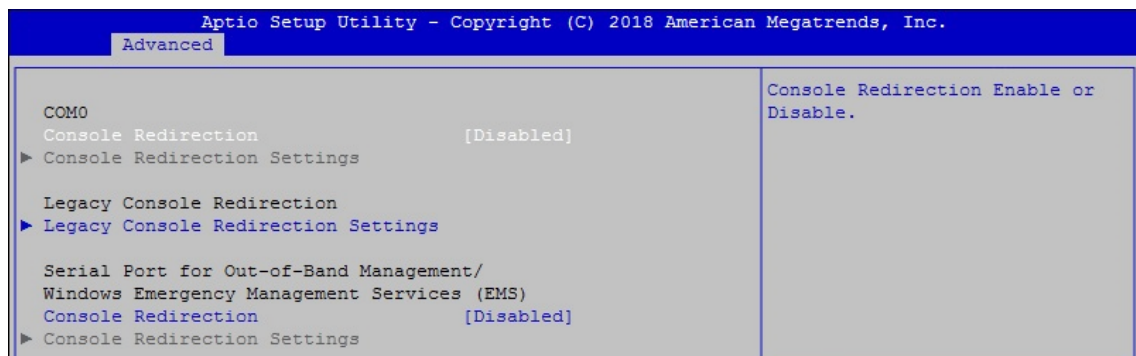


Figure 4-3-5 : Serial Port Console Redirection Settings

#### Console Redirection

Console Redirection Enable or Disable.

#### Console Redirection Settings

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

#### Legacy Console Redirection

Legacy Console Redirection Settings.

#### Serial Port for Out-of-Band Management/Windows Emergency Management Services (EMS)

Console redirection enable or disable.

### 4.3.6 CPU Configuration

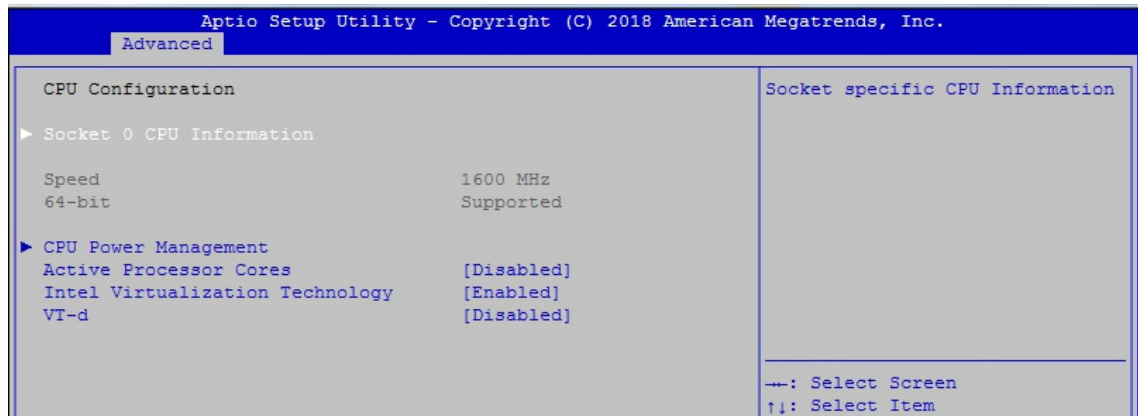


Figure 4-3-6-1 : CPU Configuration

#### Active Processor Cores

Enable this to disable core in each processor package.

#### Intel Virtualization Technology

When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

#### VT-d

Enable/Disable CPU VT-d.

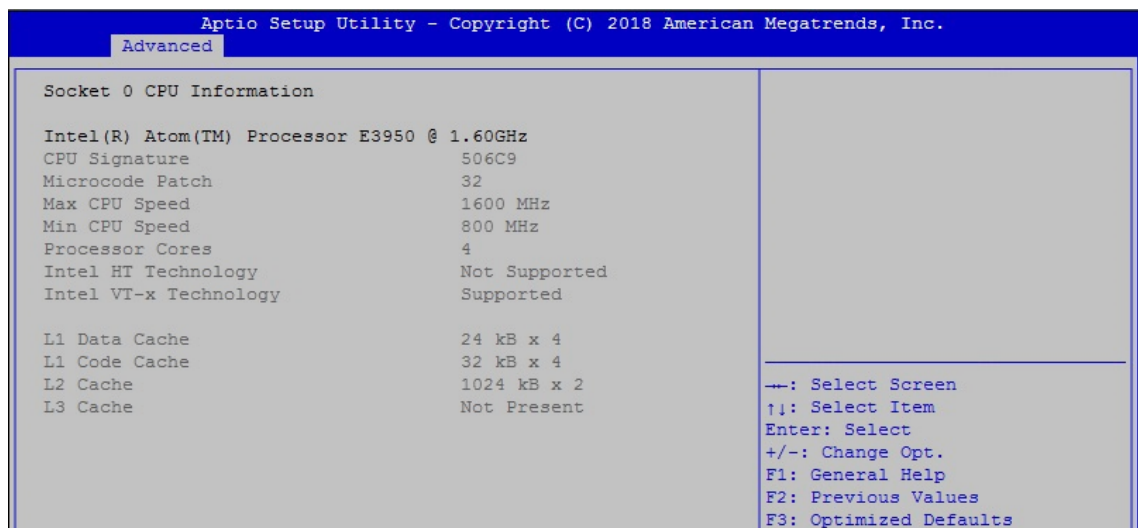


Figure 4-3-6-2 : CPU Information

Socket specific CPU Information.

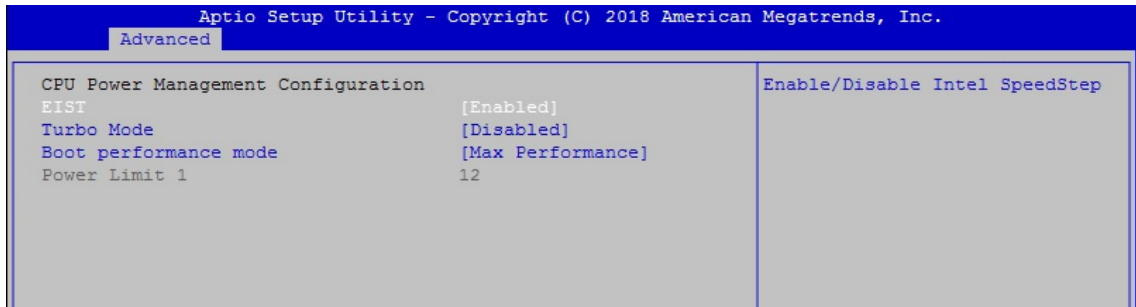


Figure 4-3-6-3 : CPU Power Management

### EIST

Enable/Disable Intel SpeedStep.

### Turbo Mode

Turbo Mode.

### Boot performance mode

Select the performance state that the BIOS will set before OS handoff.

## 4.3.7 Network Stack Configuration

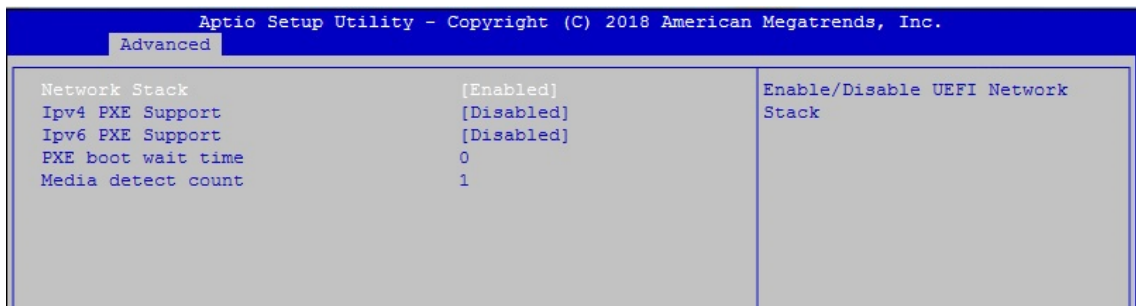


Figure 4-3-7 : Network Stack Settings

### Network Stack

Enable/Disable UEFI Network Stack.

### Ipv4 PXE Support

Enable Ipv4 PXE Boot Support. If disabled IPV4 PXE boot option will not be created.

### Ipv6 PXE Support

Enable Ipv6 PXE boot Support. If disabled IPV6 PXE boot option will not be created.

### PXE boot wait time

Wait time to press ESC key to abort the PXE boot.

### Media detect count

Number of times presence of media will be checked.

## 4.3.8 CSM Configuration

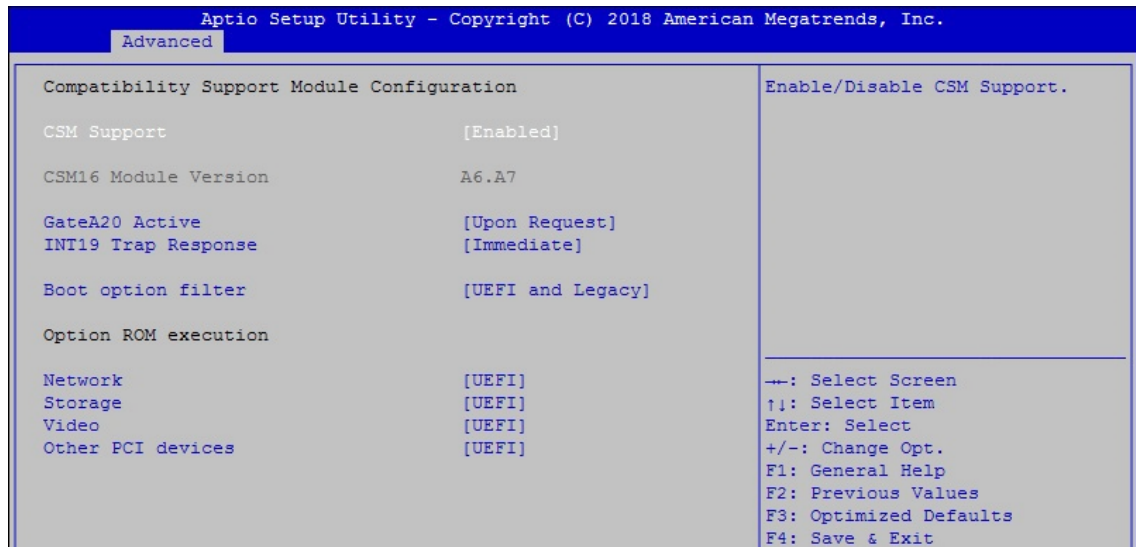


Figure 4-3-8 : CSM Settings

### CSM Support

Enable/Disable CSM support.

### GateA20 Active

UPON REQUEST - GA20 can be disabled using BIOS services. ALWAYS - do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.

### INT19 Trap Response

BIOS reaction on INT19 trapping by Option ROM : IMMEDIATE - execute the trap right away; POSTPONED - execute the trap during legacy boot.

### Boot option filter

This option controls Legacy/UEFI ROMs priority.

### Network

Controls the execution of UEFI and Legacy PXE OpROM.

### Storage

Controls the execution of UEFI and Legacy Storage OpROM.

### Video

Controls the execution of UEFI and Legacy Video OpROM.

### Other PCI devices

Determines OpROM execution policy for devices other than Network, Storage, or Video.

## 4.4 Chipset

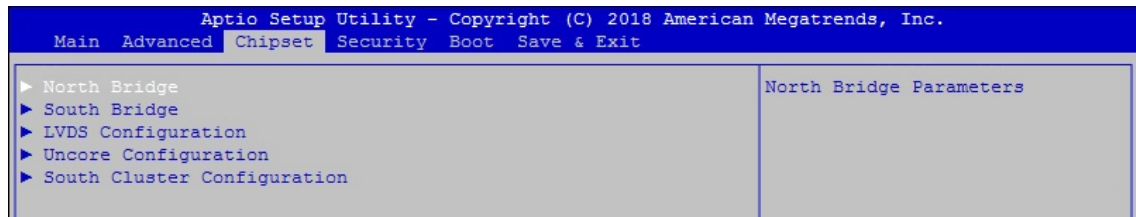


Figure 4-4 : Chipset

### North Bridge

North Bridge Parameters.

### South Bridge

South Bridge Parameters.

### LVDS Configuration

LVDS Configuration.

### Uncore Configuration

Uncore Configuration.

### South Cluster Configuration

South Cluster Configuration.

## 4.4.1 North Bridge

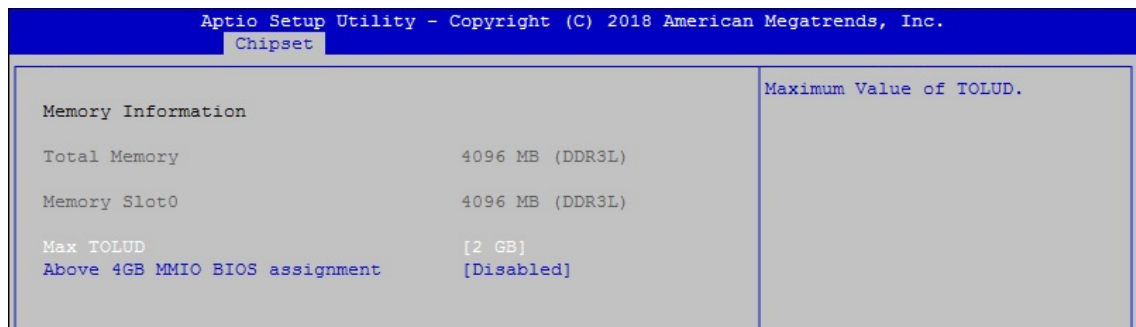


Figure 4-4-1 : North Bridge Settings

### Max TOLUD

Maximum Value of TOLUD.

### Above 4GB MMIO BIOS assignment

Enable/Disable above 4GB MemoryMappedIO BIOS assignment. This is disabled automatically when Aperture Size is set to 2048MB.

## 4.4.2 South Bridge

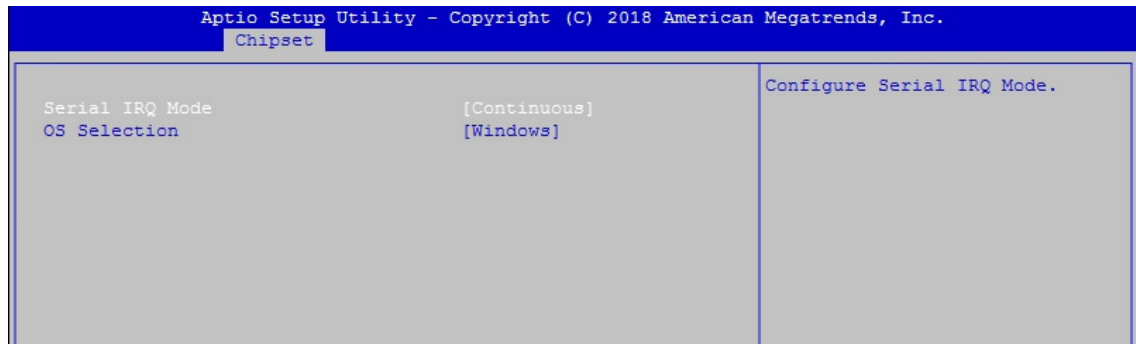


Figure 4-4-2 : South Bridge

### Serial IRQ Mode

Configure Serial IRQ Mode.

### OS Selection

Select the target OS.

## 4.4.3 LVDS Configuration

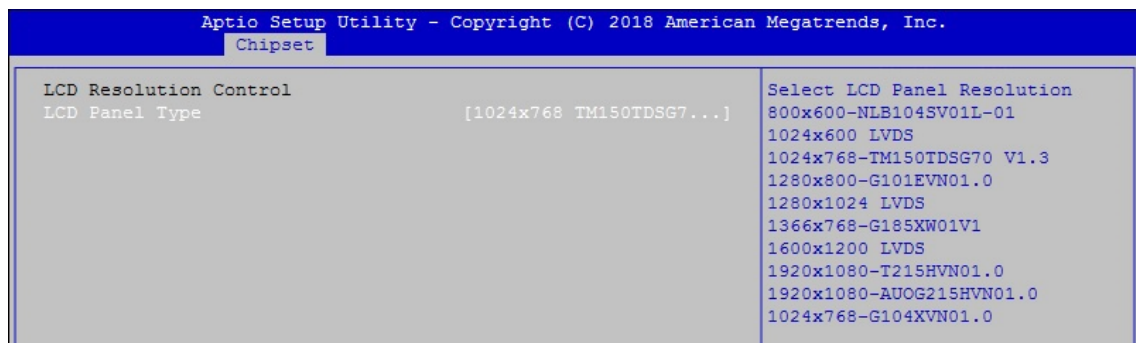


Figure 4-4-3 : LVDS Panel Settings

The LVDS Configuration option will be present if LVDS panel is connected on system.

### LCD Panel Type

Select LCD Panel Resolution.



## 4.4.4 Uncore Configuration

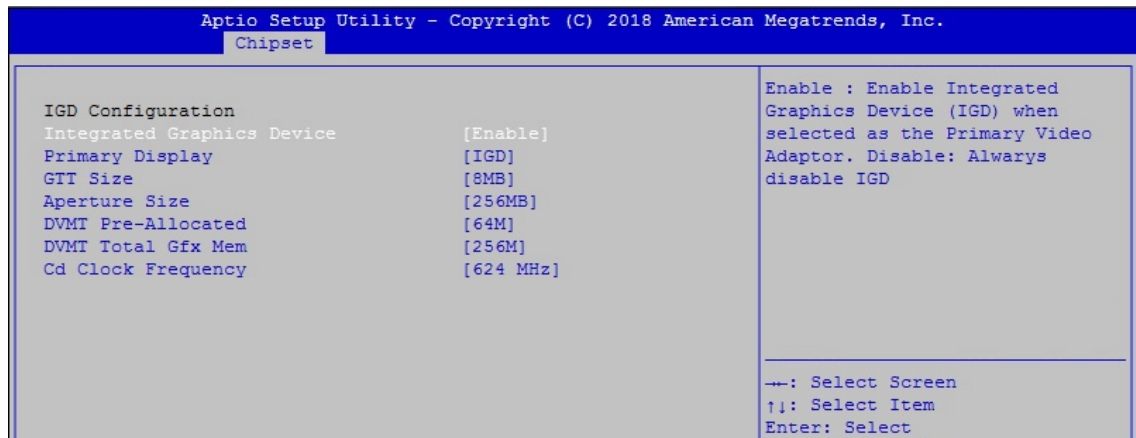


Figure 4-4-4 : Uncore Configuration

### Integrated Graphics Device

Enable : Enable Integrated Graphics Device (IGD) when selected as the Primary Video Adaptor. Disable : Always disable IGD.

### Primary Display

Select which of IGD/PCI Graphics device should be Primary Display

### GTT Size

Select the GTT Size

Aperture Size

Select the Aperture Size

### DVMT Pre-Allocated

Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device

### DVMT Total Gfx Mem

Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device

### Cd Clock Frequency

Select the highest Cd Clock frequency supported by the platform



## 4.4.5 South Cluster configuration

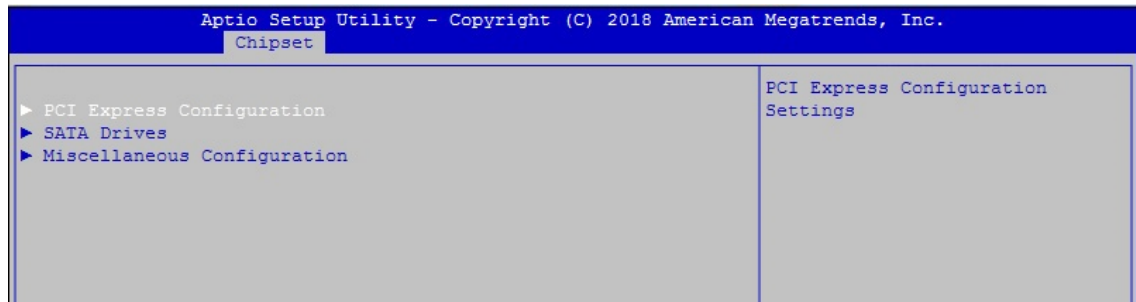


Figure 4-4-5 : South Cluster Settings

### 4.4.5.1 PCI Express Configuration

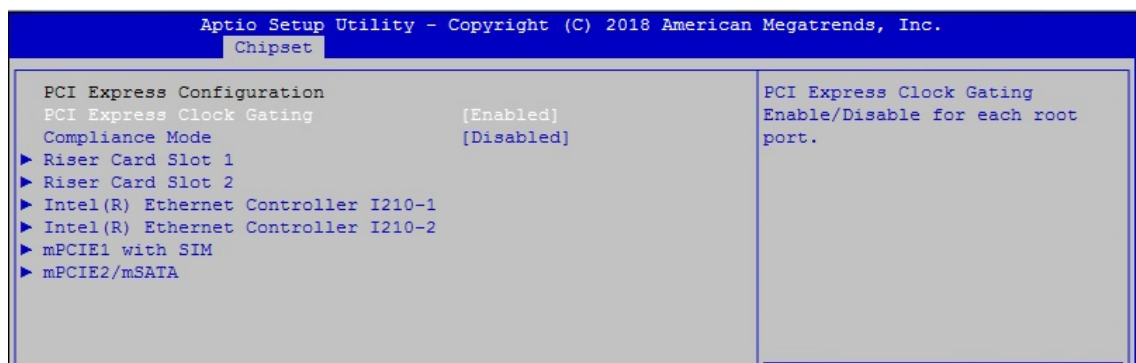


Figure 4-4-5-1 : PCI Express Settings

#### PCI Express Clock Gating

PCI Express Clock Gating Enable/Disable for each root port.

#### Compliance Mode

Compliance Mode Enable/Disable.

#### Riser Card Slot

Riser Card Slot settings.

#### Intel(R) Ethernet Controller I210

Intel(R) Ethernet Controller I210 Settings

#### Mini PCIe Slot with SMI

Mini PCIe Slot with SIM settings.

#### Mini PCIe/mSATA

Mini PCIe/mSATA Slot Settings.

## 4.4.5.2 SATA Drivers

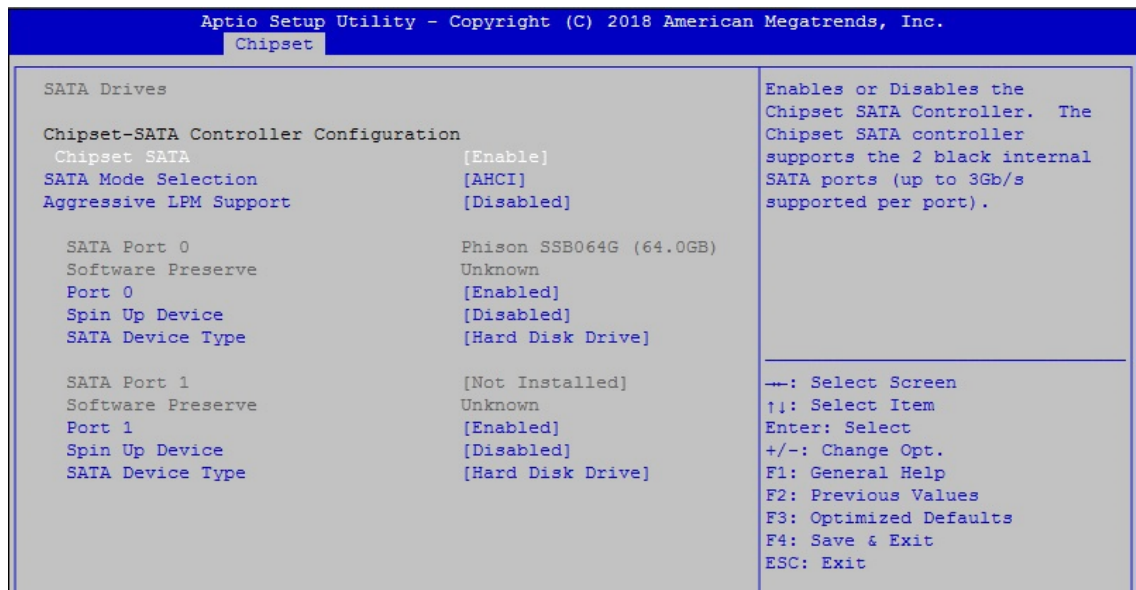


Figure 4-4-5-2 : SATA Devices Settings

### Chipset SATA

Enables or Disables the Chipset SATA Controller. The Chipset SATA controller supports the 2 black internal SATA ports (up to 3Gb/s supported per port).

### SATA Mode Selection

Determines how SATA controller(s) operate.

### Aggressive LPM Support

Enable PCH to aggressively enter link power state.

### Options for each SATA port :

#### Port 0/1

Enable or Disable SATA Port.

### Spin up Device

If enabled for any of ports Staggered Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.

### SATA Device Type

Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.

### 4.4.5.3 Miscellaneous Configuration

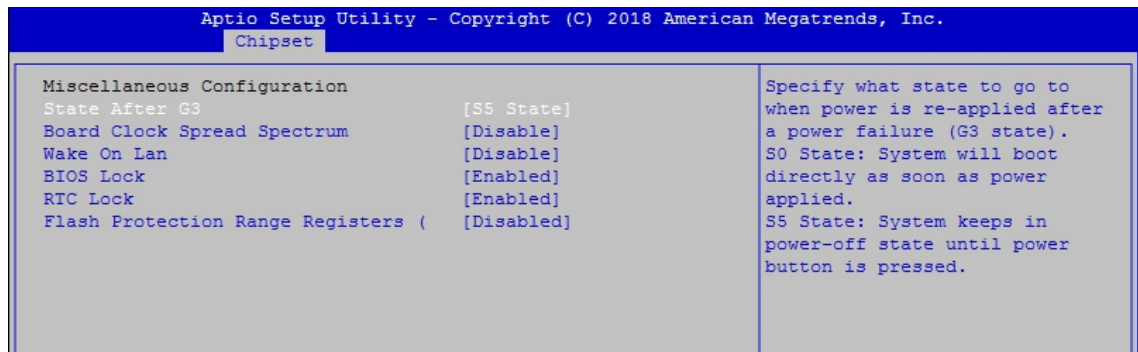


Figure 4-4-5-3 : Miscellaneous Configuration

#### State After G3

Specify what state to go to when power is re-applied after a power failure (G3 state). S0 State : System will boot directly as soon as power applied. S5 State : System keeps in power-off state until power button is pressed.

#### Board Clock Spread Spectrum

Enable Clock Chip's Spread Spectrum feature.

#### Wake On Lan

Enable or Disable the Wake on Lan.

#### BIOS Lock

Enable/Disable the SC BIOS Lock Enable feature. Required to be enabled to ensure SMM protection of flash.

#### RTC Lock

Enable will lock bytes 38h-3Fh in the lower/upper 128-byte bank of RTC RAM.

#### Flash Protection Range Registers (FPRR)

Enable Flash Protection Range Registers.

## 4.5 Security

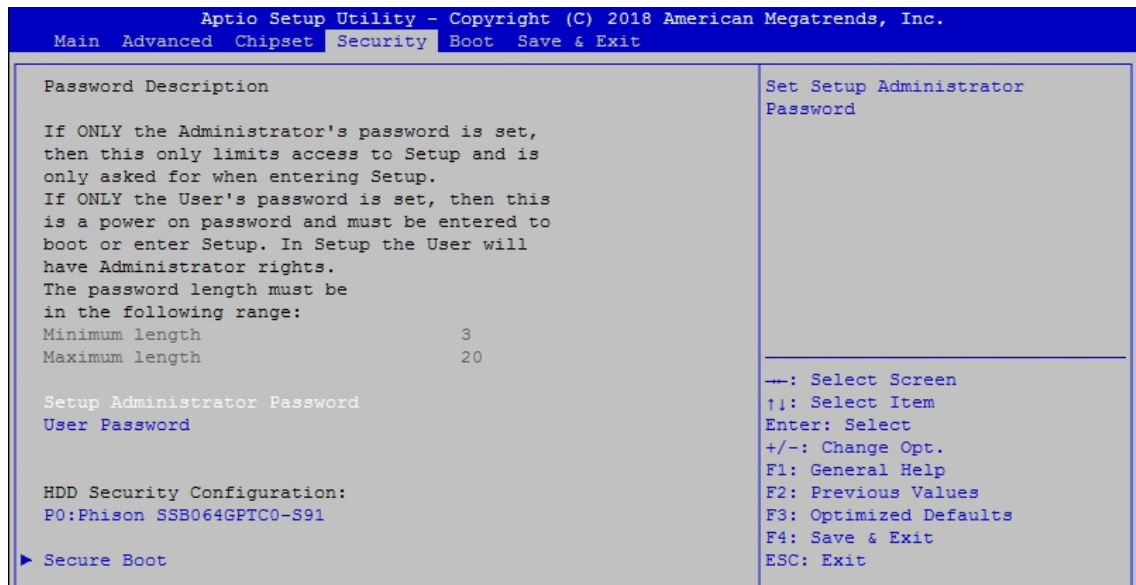


Figure 4-5 : BIOS Security Menu

### Setup Administrator Password

Set Setup Administrator Password

### User Password

Set User Password

### Secure Boot

Customizable Secure Boot Settings.

## 4.5.1 HDD Security Configuration

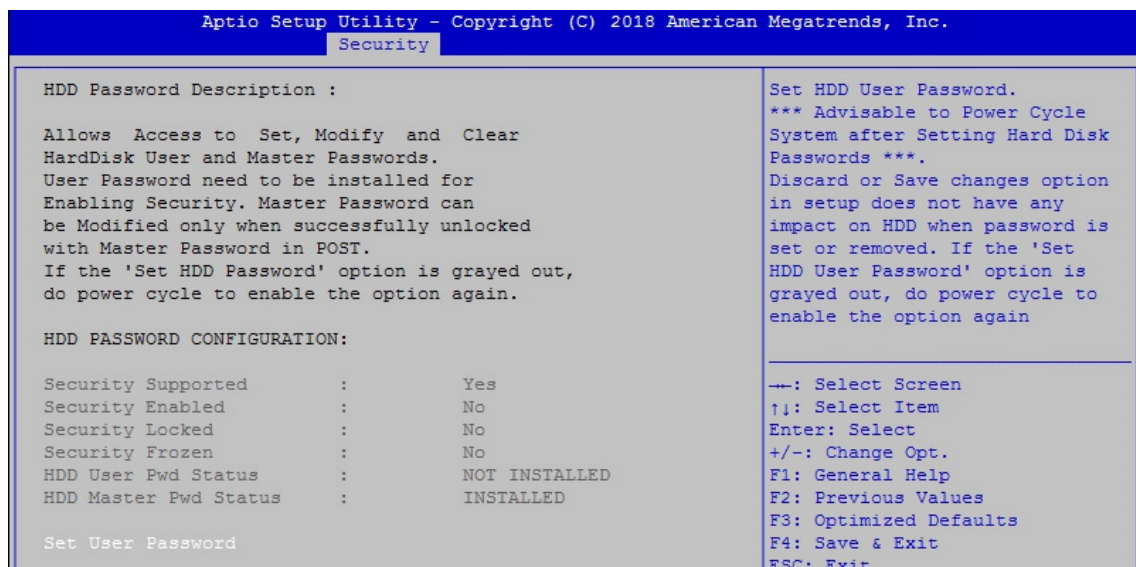


Figure 4-5-1 : HDD Security Settings

### Set User Password

Set HDD user password.

\*\*\*Advisable to Power Cycle System after Setting Hard Disk Passwords\*\*\*

Discard or save changes option in setup does not have any impact on HDD when password is set or removed. If the "Set HDD User Password" option is grayed out, do power cycle to enable the option again.

## 4.5.2 Security Boot

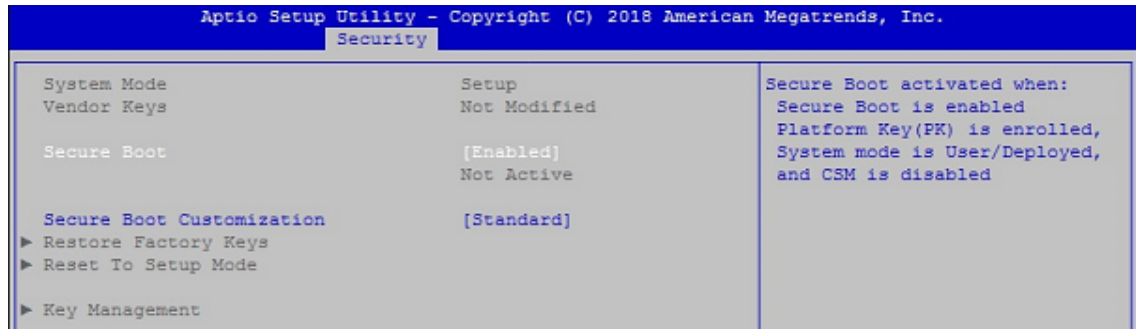


Figure 4-5-2 : Security Boot Settings

### Secure Boot

Secure Boot activated when : Secure Boot is enabled Platform Key (PK) is enrolled, System mode is User/Deployed, and CSM is disabled.

### Secure Boot Customization

Secure Boot mode – Custom & Standard, Set UEFI Secure Boot mode to STANDARD mode or CUSTOM mode, this change is effect after save. And after reset, the mode will return to STANDARD mode.

### Key Management

Enables expert users to modify Secure Boot Policy variables without full authentication.

## 4.6 Boot

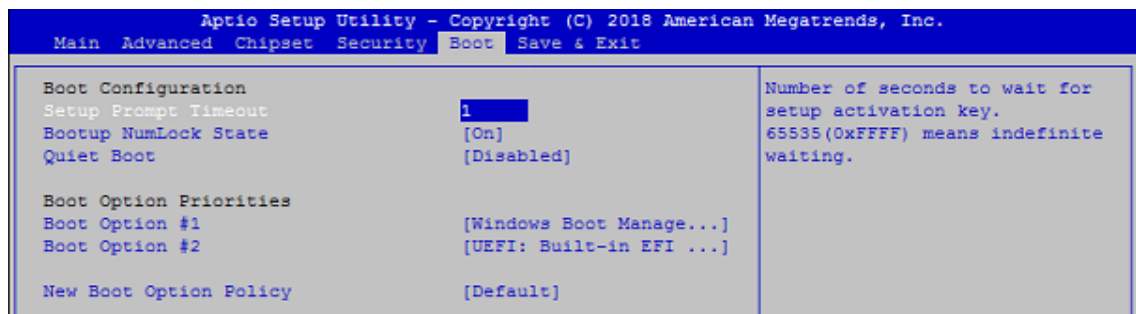


Figure 4-6 : BIOS Boot Menu

### Setup Prompt Timeout

Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

### Bootup NumLock State

Select the keyboard NumLock state.

### Quiet Boot

Enables or disables Quiet Boot option.

### Boot Option #x

Sets the system boot order.

### New Boot Option Policy

Controls the placement of newly detected UEFI boot options.

## 4.7 Save & Exit

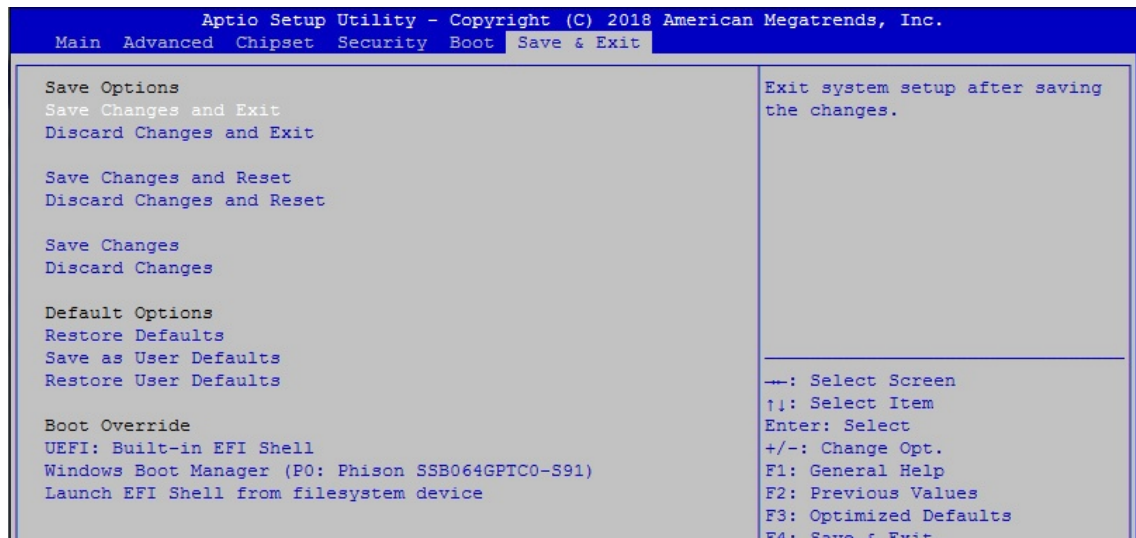


Figure 4-7 : BIOS Save and Exit Menu

### Save Changes and Exit

Exit system setup after saving the changes.

### Discard Changes and Exit

Exit system setup without saving any changes.

### Save Changes and Reset

Reset the system after saving the changes.

### Discard Changes and Reset

Reset system setup without saving any changes.

### Save Changes

Save Changes done so far to any of the setup options.

### Discard Changes

Discard Changes done so far to any of the setup options.

### Default options :

#### Restore Defaults

Restore/Load Default values for all the setup options.

#### Save as User Defaults

Save the changes done so far as User Defaults.

#### Restore User Defaults

Restore the User Defaults to all the setup options.



For further support information, please visit [www.vecow.com](http://www.vecow.com)

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