IO.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



1.1.0 Edition 20220127

Record of Revision

Vers	ion	Date	Page	Description	Remark
1.00		2021/07/07	All	Official Release	
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Order Information

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

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.

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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[®] quad-core x7-E3950 processor (Apollo Lake), single DDR3L SO-DIMM supports up to 8GB memory; Advanced Intel[®] 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

Panel			
Panel Type	WSVGA TFT LED LCD		
Size	10.1"		
Max Resolution	1280 x 800		
Display Color	262k		
Brightness (cd/m ²)	300		
Viewing Angle	170°/170° (H/V)		
Contrast Ratio	1300 : 1		
Touch Screen			
Touch Screen Type	10-point Projected Capacitive		
Transparency	≥91%		
Surface Hardness	7H Surface Hardness		
Control Interface	USB Interface		
System			
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		
I/O Interface			
LAN	LAN 1/2 : Intel [®] I210 GigE LAN supports IEEE 1588, RJ45 Type		
Serial	2 COM RS-232/422/485 (DB9 Type)		
USB	 2 USB 3.0 Type A 2 USB 2.0 Type A 		
Display	 VGA : Up to 1920 x 1440 @60Hz HDMI : Up to 3840 x 2160 @60Hz 		
Storage			
SATA	1 2.5" SATA III (6Gbps)		
mSATA	1 SATA III (Mini PCIe Type, 6Gbps)		
Expansion			
Mini PCle	 2 Full Size Mini PCIe Socket : 1 Full-size for PCIe/USB/Internal SIM Card 1 Full-size for PCIe/USB/mSATA 		

Power		
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)	
Others		
ТРМ	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.	
Software Support		
Microsoft	Window 10	
Linux	Fedora 19, Ubuntu 10.04 LTS, or Linux Kernel 3.0 above	
Mechanical		
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	Panel MountVESA 75	
Environment		
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	IEC 60068-2-2720G, Half-sine, 11ms	
Vibration	 IEC 60068-2-64 Non-operation : 10Hz to 200Hz, 1Grms, X, Y, Z, 30 mins each Axis 	
EMC	CE, FCC	

1.3.2 Specifications of MTC-8015

Panel			
Panel Type	XGA TFT LED LCD		
Size	15"		
Max Resolution	1024 x 768		
Display Color	16.7M		
Brightness (cd/m ²)	250		
Viewing Angle	160°/140° (H/V)		
Contrast Ratio	700:1		
Touch Screen			
Touch Screen Type	10-point Projected Capacitive		
Transparency	≥ 91%		
Surface Hardness	7H Surface Hardness		
Control Interface	USB Interface		
System			
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		
I/O Interface			
LAN	LAN 1/2 : Intel [®] I210 GigE LAN supports IEEE 1588, RJ45 Type		
Serial	2 COM RS-232/422/485 (DB9 Type)		
USB	 2 USB 3.0 Type A 2 USB 2.0 Type A 		
Display	 VGA : Up to 1920 x 1440 @60Hz HDMI : Up to 3840 x 2160 @60Hz 		
Storage			
SATA	1 2.5" SATA III (6Gbps)		
mSATA	1 SATA III (Mini PCIe Type, 6Gbps)		
Expansion			
Mini PCle	 2 Full Size Mini PCIe Socket : 1 Full-size for PCIe/USB/Internal SIM Card 1 Full-size for PCIe/USB/mSATA 		

Power		
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)	
Others		
ТРМ	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.	
Software Support		
Microsoft	Window 10	
Linux	Fedora 19, Ubuntu 10.04 LTS, or Linux Kernel 3.0 above	
Mechanical		
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	Panel MountVESA 75	
Environment		
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	IEC 60068-2-2720G, Half-sine, 11ms	
Vibration	 IEC 60068-2-64 Non-operation : 10Hz to 200Hz, 1Grms, X, Y, Z, 30 mins each Axis 	
EMC	CE, FCC	

1.3.3 Specifications of MTC-8015W

Panel			
Panel Type	WXGA TFT LED LCD		
Size	15.6"		
Max Resolution	1366 x 768		
Display Color	16.7M		
Brightness (cd/m ²)	400		
Viewing Angle	170°/160°(H/V)		
Contrast Ratio	500:1		
Touch Screen			
Touch Screen Type	10-point Projected Capacitive		
Transparency	≥ 91%		
Surface Hardness	7H Surface Hardness		
Control Interface	USB Interface		
System			
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		
I/O Interface			
LAN	LAN 1/2 : Intel [®] I210 GigE LAN supports IEEE 1588, RJ45 Type		
Serial	2 COM RS-232/422/485 (DB9 Type)		
USB	 2 USB 3.0 Type A 2 USB 2.0 Type A 		
Display	 VGA : Up to 1920 x 1440 @60Hz HDMI : Up to 3840 x 2160 @60Hz 		
Storage			
SATA	1 2.5" SATA III (6Gbps)		
mSATA	1 SATA III (Mini PCIe Type, 6Gbps)		
Expansion			
Mini PCle	 2 Full Size Mini PCIe Socket : 1 Full-size for PCIe/USB/Internal SIM Card 1 Full-size for PCIe/USB/mSATA 		

Power		
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)	
Others		
ТРМ	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.	
Software Support		
Microsoft	Window 10	
Linux	Fedora 19, Ubuntu 10.04 LTS, or Linux Kernel 3.0 above	
Mechanical		
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	Panel MountVESA 75	
Environment		
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	IEC 60068-2-2720G, Half-sine, 11ms	
Vibration	 IEC 60068-2-64 Non-operation : 10Hz to 200Hz, 1Grms, X, Y, Z, 30 mins each Axis 	
EMC	CE, FCC	

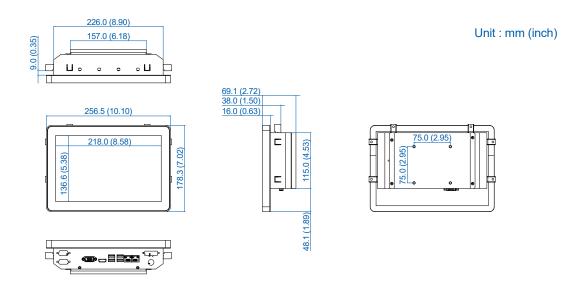
1.3.4 Specifications of MTC-8021W

Panel			
Panel Type	FHD TFT LED LCD		
Size	21.5"		
Max Resolution	1920 x 1080		
Display Color	16.7M		
Brightness (cd/m ²)	250		
Viewing Angle	178°/178° (H/V)		
Contrast Ratio	3000 : 1		
Touch Screen			
Touch Screen Type	10-point Projected Capacitive		
Transparency	≥ 91%		
Surface Hardness	7H Surface Hardness		
Control Interface	USB Interface		
System			
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		
I/O Interface			
LAN	LAN 1/2 : Intel [®] I210 GigE LAN supports IEEE 1588, RJ45 Type		
Serial	2 COM RS-232/422/485 (DB9 Type)		
USB	 2 USB 3.0 Type A 2 USB 2.0 Type A 		
Display	 VGA : Up to 1920 x 1440 @60Hz HDMI : Up to 3840 x 2160 @60Hz 		
Storage			
SATA	1 2.5" SATA III (6Gbps)		
mSATA	1 SATA III (Mini PCIe Type, 6Gbps)		
Expansion			
Mini PCle	 2 Full Size Mini PCIe Socket : 1 Full-size for PCIe/USB/Internal SIM Card 1 Full-size for PCIe/USB/mSATA 		

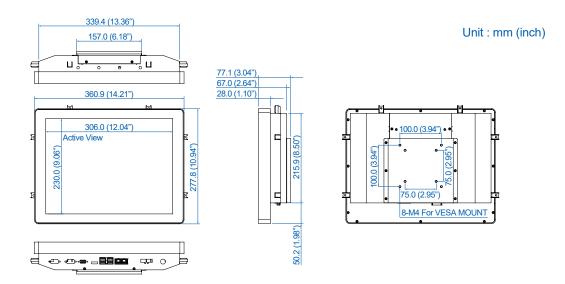
Power				
Power Input	9V to 36V, DC-in			
Power Interface	3-pin Terminal Block : V+, V-, Frame Ground			
Power Adapter	AC to DC 120W Power Adapter (Optional Accessory)			
Others				
ТРМ	Optional Infineon SLB9665 supports TPM 2.0, LPC Interface			
Watchdog Timer	Reset : 1 to 255 sec./min. per step			
Smart Management	Wake on LAN, PXE supported			
HW Monitor	Monitoring temperature, voltages. Auto throttling control when CPU overheats.			
Software Support				
Microsoft	Window 10			
Linux	Fedora 19, Ubuntu 10.04 LTS, or Linux Kernel 3.0 above			
Mechanical				
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	Panel MountVESA 75			
Environment				
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	IEC 60068-2-2720G, Half-sine, 11ms			
Vibration	 IEC 60068-2-64 Non-operation : 10Hz to 200Hz, 1Grms, X, Y, Z, 30 mins each Axis 			
EMC	CE, FCC			

1.4 Mechanical Dimension

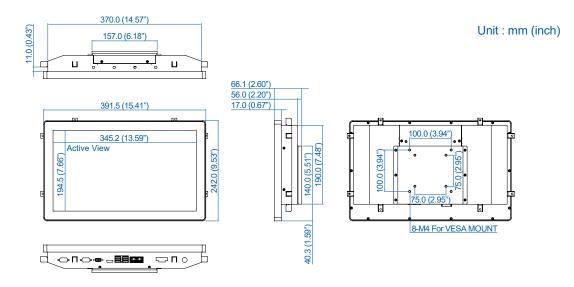
1.4.1 MTC-8010W Mechanical Drawing



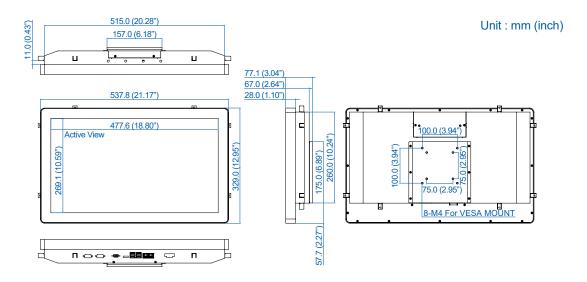
1.4.2 MTC-8015 Mechanical Drawing



1.4.3 MTC-8015W Mechanical Drawing



1.4.4 MTC-8021W Mechanical Drawing





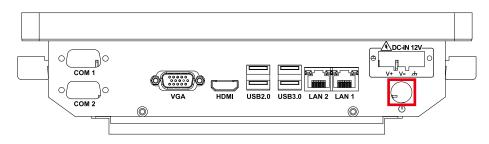
GETTING TO KNOW YOUR MTC-8000

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	 Waterproof rubber when panel mount use Mounting clip M2.5x6L screw for Mini PCIe Socket (P/N : 53-2426906-30B) M4x10 screw for VESA mount kit Screws for HDD bracket 	1 8 2 4 4

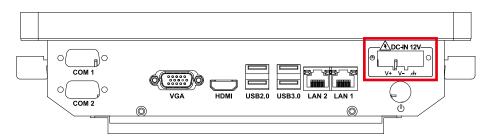
2.2 I/O & Functions

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).

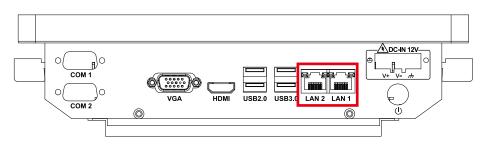
2.2.2 Power Input



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		

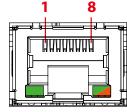
2.2.3 LAN Connector



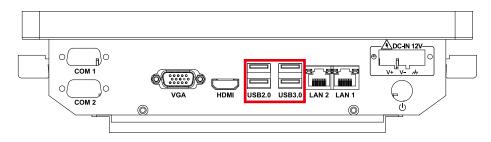
There are two RJ-45 LAN ports supporting 10/100/1000 Mbps Ethernet connections in the front side. LAN 1 (Left side) and LAN 2 (Right side) are powered by Intel[®] I210 Ethernet engine with IEEE 1588, The Precision Time Protocol (PTP) function.

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	

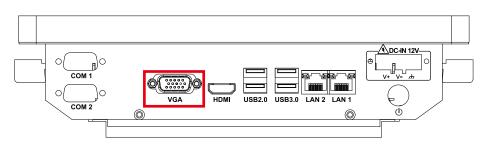


2.2.4 USB Connector



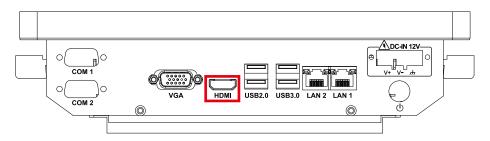
There are 2 standard USB 2.0 connections available supporting up to 480MB per second data rate and 2 standard USB 3.0 connections available supporting up to 5GB per second data rate. It also compliant with the requirements of Super Speed (SS), high speed (HS), full speed (FS) and low speed (LS).

2.2.5 VGA Connector



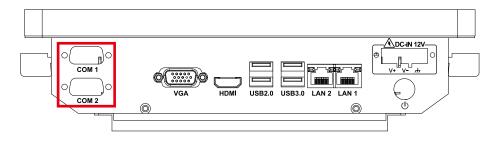
The VGA Port supports auxiliary channel mode. The connection supports up to resolution 1920 x 1440 at 60Hz.

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



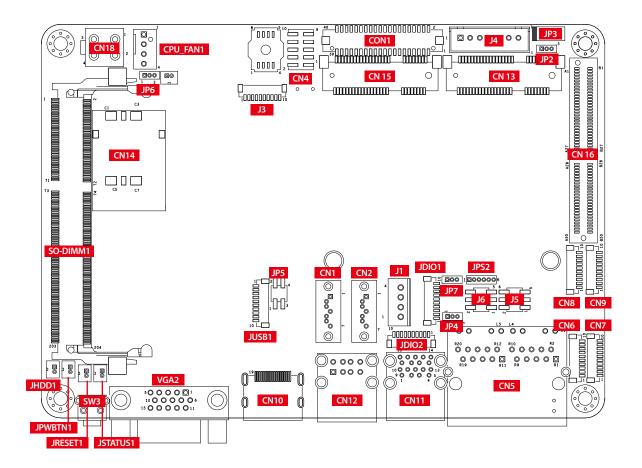
Serial port can be configured for RS-232, RS-422, or RS-485 with auto flow control communication. The default definition is RS-232, but if you want to change to RS-422 or RS-485, you can find the settings in BIOS.

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

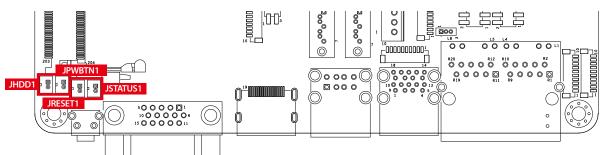
The pin assignments are listed in the following table :

Serial Port	Pin No.	RS-232	RS-422 (5-wire)	RS-422 (9-wire)	RS-485 (3-wire)
	1	DCD	TXD-	TXD-	DATA-
	2	RXD	TXD+	TXD+	DATA+
	3	TXD	RXD+	RXD+	
	4	DTR	RXD-	RXD-	
1.2	5	GND	GND	GND	GND
1, 2	6	DSR		RTS-	
	7	RTS		RTS+	
	8	CTS		CTS+	
	9	RT		CTS-	
	10	DCD	TXD-	TXD-	DATA-

2.3 Connector/Jumper Locations



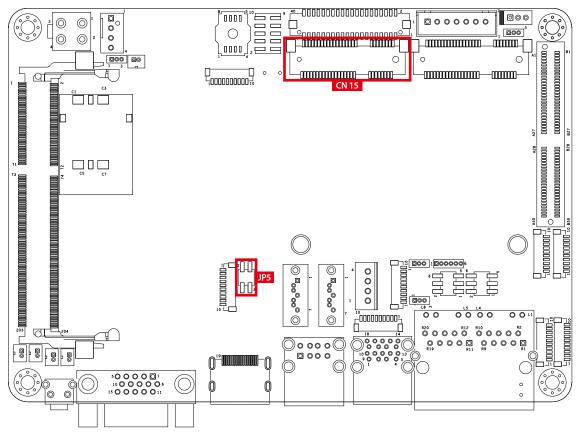
2.3.1 JPW BTN, JRESET, JSTATUS, JHDD : Miscellaneous Pin Header



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
		1	GND
	JPWBTN	2	FP_PWR_BTN_IN
	JRESET	1	GND
		2	FP_RST_BTN_N
	JSTATUS	1	PWR_LED_N
		2	PWR_LED_P
		1	HDD_LED_N
	JHDD	2	HDD_LED_P

2.3.2 JP5, CN15 : Mini PCIe, mSATA



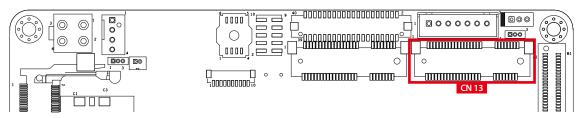
Both mSATA and Mini PCIe share the same form factor and similar electrical pinout assignments on their connectors. You can adjust JP5 to choose mSATA or Mini PCIe function. The pin assignments of CN15 and JP5 are listed in the following table : **JP5**

2 0 4 1 0 0 3	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			
	Mechan	ical 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			

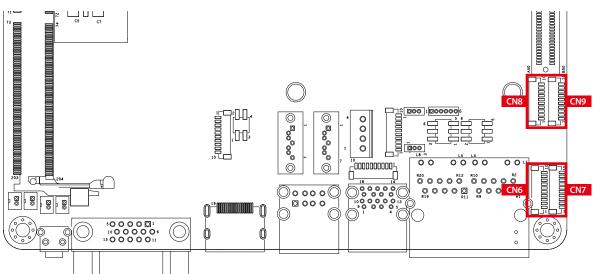
2.3.3 CN13, SIM : Mini PCIe



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		GND		
31	PETn0	32	SMB_DATA		
29	GND	30	SMB_CLK		
27	GND	28	+1.5V		
25	PERp0	26	GND		
23	23 PERn0		+3.3Vaux		
21	GND	22	PERST#		
19	Reserved	20	Reserved		
17	Reserved	18	GND		
	Mechan	ical 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		

2.3.4 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	
	RS-232	
COM 1 (CN6)	RS-422 (5-wire)	
COM 2 (CN7) COM 3 (CN8)	RS-422 (9-wire)	
COM 4 (CN9)	RS-485	
	RS-485 w/z auto-flow control	

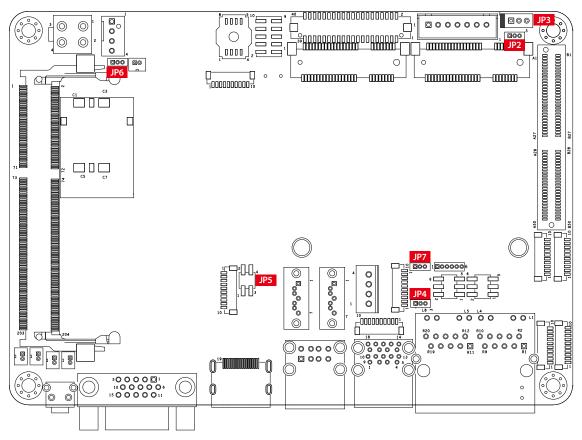
The pin assignments of CN13 are listed in the following table :

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

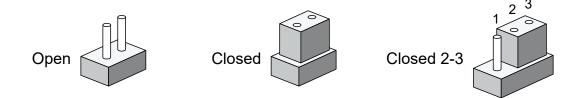
2.4 Main Board Jumper Settings

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

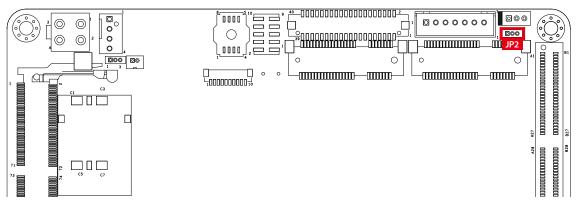
The figure below is the top view of the MTC-8010W main board. It shows the location of the jumpers.



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.



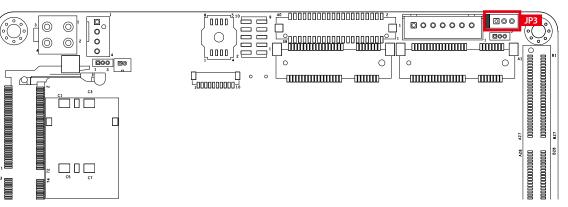
2.4.2 JP2 : Backlight Control Level Select



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)
1 3	2-3	+5V

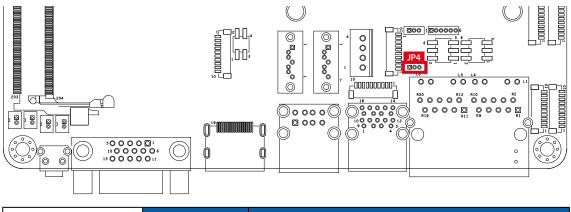
2.4.3 JP3: LVDS Module, Power Selection



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.

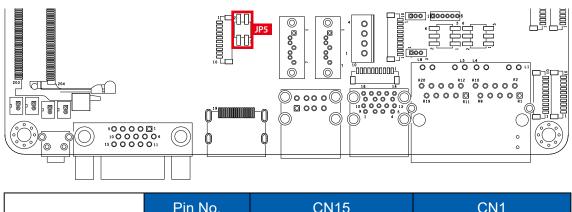
	Pin No.	Function	
	1-2	+3.3V (Default)	
1 3	2-3	+5V System Power	

2.4.4 JP4: USB Power Select



	Pin No.	Function	
000	1-2	+5V Standby Power (Default)	
1 3 2-3 +5V System Pov		+5V System Power	

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



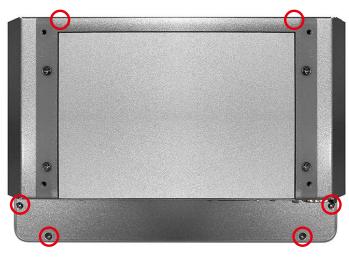
2 11 14	Pin No.	CN15	CN1
	1-3/2-4	mSATA	N/C
	N/C	Mini PCIe (Default)	SATA (Default)



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.



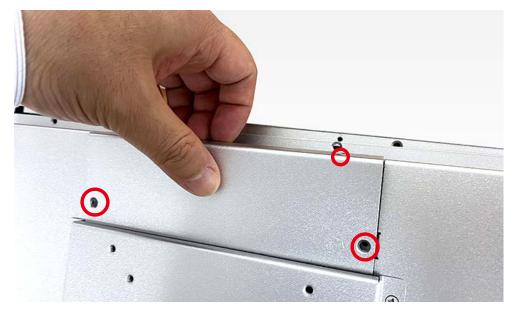
Note 1:

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.



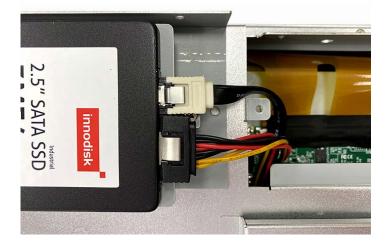
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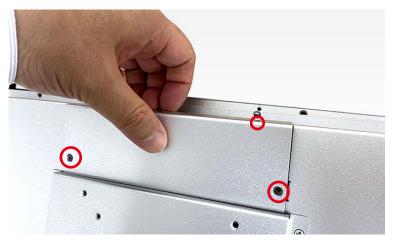
Step 4 Lock up HDD bracket on HDD cover with 2 pcs screws.



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.

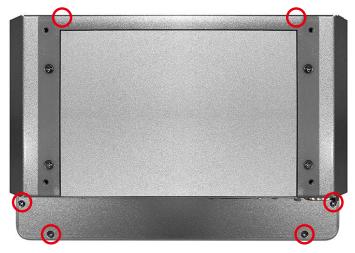


Note 1 : We strongly recommend you to buy wide temp. RAM and pre-install by VECOW for MTC-8000 series panel pc.

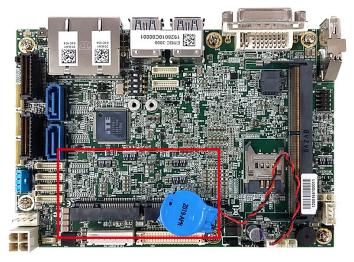
Note 2 : We strongly recommend you to buy storage and pre-install by VECOW for MTC-8010W, 10.1" Multi-touch panel pc.

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.





BIOS SETUP

4.1 Entering Setup

BIOS Information		A
BIOS Vendor	American Megatrends	
Core Version	5.12	
Compliancy	UEFI 2.5; PI 1.4	
Project Version	E2000XXE3T00005	
Build Date and Time	10/19/2018 17:02:34	
Access Level	Administrator	
Platform firmware Informatio	ñ	
BXT SOC	DO	
MRC Version	0.56	
PUNIT FW	32	
PMC FW	03.29	
TXE FW	3.1.50.2238	: Select Screen
ISH FW	N/A	↑↓: Select Item
GOP	10.0.1036	Enter: Select
CPU Flavor	BXT Notebook/Desktop	+/-: Change Opt.
Board ID	Oxbow Hill CRB (06)	F1: General Help
Fab ID	FAB A	F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit
Memory Information		ESC: Exit
Total Memory	4096 MB	
Memory Speed	1600 MHz	

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 key when POST display output is shown.

4.2 Main Menu

Aptio Setup Utility Main Advanced Chipset Securit	7 - Copyright (C) 2018 Americ Ty Boot Save & Exit	an Megatrends, Inc.
Compliancy Project Version	UEFI 2.5; PI 1.4 E2000XXE3T00005	▲ Set the Time. Use Tab to switch between Time elements.
	10/19/2018 17:02:34	
Access Level	Administrator	
Platform firmware Information		
BXT SOC	DO	
MRC Version	0.56	
PUNIT FW	32	
PMC FW	03.29	
TXE FW	3.1.50.2238	
ISH FW	N/A	
GOP	10.0.1036	
CPU Flavor	BXT Notebook/Desktop	: Select Screen
Board ID	Oxbow Hill CRB (06)	↑↓: Select Item
Fab ID	FAB A	Enter: Select
		+/-: Change Opt.
		F1: General Help
Memory Information		F2: Previous Values
Total Memory	4096 MB	F3: Optimized Defaults
Memory Speed	1600 MHz	F4: Save & Exit
		ESC: Exit
System Date	[Mon 10/22/2018]	
	[09:57:49]	T

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

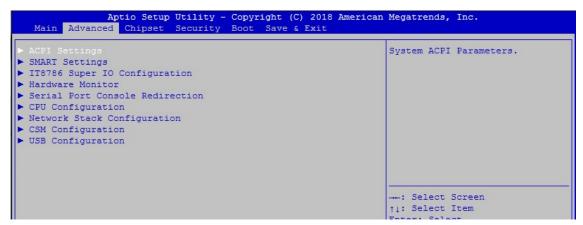


Figure 4-3 : BIOS Advanced menu

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

Aptio Setup Un Advanced	tility - Copyright (C) 2018 Ameri	can Megatrends, Inc.
ACPI Settings		Enables or Disables System ability to Hibernate (OS/S4
		Sleep State). This option may be not effective with some OS.
ACPI Sleep State	[S3 (Suspend to RAM)]	

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

	Aptio Advanced	Setup Utility -	Copyright (C	:) 2018	American	Megatrends, Inc.
SMART	Settings					Run SMART Self Test on all HDDs during POST.

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

Aptio Setup Ut Advanced	ility - Copyright (C) 2018	American Megatrends, Inc.
IT8786 Super IO Configuratio	n	Set Parameters of Serial Port 1 (COMA)
Super IO Chip > Serial Port 1 Configuration > Serial Port 2 Configuration > Serial Port 3 Configuration > Serial Port 4 Configuration	IT8786	

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

Aptio Setup U Advanced	tility - Copyright (C) 2018 Amer	ican Megatrends, Inc.
Serial Port 1 Configuration		Enable or Disable Serial Fort (COM)
Device Settings	IO=3F8h; IRQ=4;	
Change Settings	[Auto]	
Interface Mode	[RS-232 Mode]	

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

Pc Health Status		This value controls the temperature of the ACPI
System temperature1	: +60 ℃	Critical Trip Point - the
Fan1 Speed	: N/A	point in which the OS will
VCore	: +0.876 V	shut the system off.
DDR	: +1.344 V	NOTE: 100C is the Plan Of
+12V	: +12.024 V	Record (POR) for all Intel
+5V	: +4.980 V	mobile processors.
+3.3V	: +3.304 V	

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

CPU Configuration		Socket specific CPU Information
Speed	1600 MHz	
64-bit	Supported	
CPU Power Management		
Active Processor Cores	[Disabled]	
Intel Virtualization Technology	[Enabled]	
VT-d	[Disabled]	
		++: Select Screen

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.

Aptio Setup Utility - Advanced	Copyright (C) 2018 American	Megatrends, Inc.
Socket 0 CPU Information		
Intel(R) Atom(TM) Processor E3950 @	1.60GHz	
CPU Signature Microcode Patch Max CPU Speed Min CPU Speed Processor Cores Intel HT Technology Intel VT-x Technology	506C9 32 1600 MHz 800 MHz 4 Not Supported Supported	
L1 Data Cache L1 Code Cache L2 Cache L3 Cache	24 kB x 4 32 kB x 4 1024 kB x 2 Not Present	: Select Screen †1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults

Figure 4-3-6-2 : CPU Information

Socket specific CPU Information.

Aptio Setup Util Advanced	ity - Copyright (C) 2018 Ameri	ican Megatrends, Inc.
CPU Power Management Configura LIST Turbo Mode Boot performance mode Power Limit 1	[Enabled] [Disabled] [Max Performance] 12	Enable/Disable Intel SpeedStep

EIST

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

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

		Enable/Disable UEFI Network
pv4 PXE Support	[Disabled]	Stack
pv6 PXE Support	[Disabled]	
XE boot wait time	0	
ledia detect count	1	

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

Compatibility Support Module	Configuration	Enable/Disable CSM Support.
CSM16 Module Version	A6.A7	
GateA20 Active	[Upon Request]	
INT19 Trap Response	[Immediate]	
Boot option filter	[UEFI and Legacy]	
Option ROM execution		
Network	[UEFI]	: Select Screen
Storage	[UEFI]	11: Select Item
Video	[UEFI]	Enter: Select
Other PCI devices	[UEFI]	+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit

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

Aptio Setup Utility - Copyright (C) 2018 Ameri Main Advanced Chipset Security Boot Save & Exit	can Megatrends, Inc.
North Bridge	North Bridge Parameters
South Bridge	Noton bridge rarameters
LVDS Configuration	
Uncore Configuration	
South Cluster Configuration	

Figure 4-4 : Chipset

North Bridge North Bridge Parameters.

South Bridge Parameters.

LVDS Configuration LVDS Configuration.

Uncore Configuration Uncore Configuration.

South Cluster Configuration South Cluster Configuration.

4.4.1 North Bridge

Aptio Setup Utility Chipset	- Copyright (C) 2018 America	an Megatrends, Inc.
Memory Information		Maximum Value of TOLUD.
Total Memory	4096 MB (DDR3L)	
Memory Slot0	4096 MB (DDR3L)	
Max TOLUD Above 4GB MMIO BIOS assignment	[2 GB] [Disabled]	

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

Aptio Setu Chipset	up Utility - Copyright (C) 2018 Ameri t	can Megatrends, Inc.
Serial IRQ Mode OS Selection	[Continuous] [Windows]	Configure Serial IRQ Mode.

Figure 4-4-2 : South Bridge

Serial IRQ Mode Configure Serial IRQ Mode.

OS Selection

Select the target OS.

4.4.3 LVDS Configuration

Aptio Setup Utility - Chipset	– Copyright (C) 2018 American	n Megatrends, Inc.
LCD Resolution Control LCD Panel Type		Select LCD Panel Resolution 800x600-NLB1045V01L-01 1024x600 LVDS 1024x768-TM150TDSG70 V1.3 1280x800-G101EVN01.0 1280x1024 LVDS 1366x768-G185XW01V1 1600x1200 LVDS 1920x1080-T215HVN01.0 1920x1080-AUG215HVN01.0 1024x768-G104XVN01.0

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

		Enable : Enable Integrated
GD Configuration		Graphics Device (IGD) when
ntegrated Graphics Device		selected as the Primary Video
rimary Display	[IGD]	Adaptor. Disable: Alwarys
TT Size	[8MB]	disable IGD
Aperture Size	[256MB]	
OVMT Pre-Allocated	[64M]	
OVMT Total Gfx Mem	[256M]	
Cd Clock Frequency	[624 MHz]	
		: Select Screen
		ti: Select Item
		Enter: Select

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

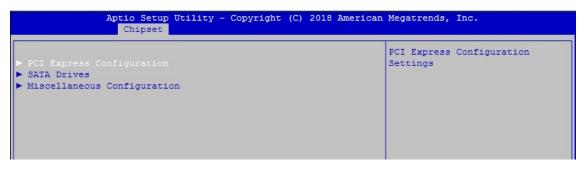


Figure 4-4-5 : South Cluster Settings

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

SATA Drives		Enables or Disables the Chipset SATA Controller. The
Chipset-SATA Controller Config	uration	Chipset SATA controller
		supports the 2 black internal
SATA Mode Selection	[AHCI]	SATA ports (up to 3Gb/s
Aggressive LPM Support	[Disabled]	supported per port).
SATA Port 0	Phison SSB064G (64.0GB)	
Software Preserve	Unknown	
Port 0	[Enabled]	
Spin Up Device	[Disabled]	
SATA Device Type	[Hard Disk Drive]	
SATA Port 1	[Not Installed]	: Select Screen
Software Preserve	Unknown	↑↓: Select Item
Port 1	[Enabled]	Enter: Select
Spin Up Device	[Disabled]	+/-: Change Opt.
SATA Device Type	[Hard Disk Drive]	F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

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 Staggerred 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

Miscellaneous Configuration		Specify what state to go to
		when power is re-applied after
Board Clock Spread Spectrum	[Disable]	a power failure (G3 state).
Wake On Lan	[Disable]	S0 State: System will boot
BIOS Lock	[Enabled]	directly as soon as power
RTC Lock	[Enabled]	applied.
Flash Protection Range Registers ([Disabled]	S5 State: System keeps in power-off state until power button is pressed.

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

	Utility - Copyright (C) 2018 Security Boot Save & Exit	American Megatrends, Inc.
Password Description		Set Setup Administrator Password
If ONLY the Administrator' then this only limits acce only asked for when enteri If ONLY the User's passwor is a power on password and boot or enter Setup. In Se have Administrator rights. The password length must b	ss to Setup and is ng Setup. d is set, then this must be entered to tup the User will	
in the following range:	3	
Minimum length Maximum length	20	
Maximum rengen	20	: Select Screen
		ti: Select Item
User Password		Enter: Select +/-: Change Opt. F1: General Help
HDD Security Configuration	:	F2: Previous Values
P0:Phison SSB064GPTC0-S91		F3: Optimized Defaults F4: Save & Exit
Secure Boot		ESC: Exit

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

Aptio Set	Securi	ty - Copyright (C) 2018 Am	erican Megatrends, Inc.
HDD Password Description :		Set HDD User Password. *** Advisable to Power Cycle	
Allows Access to Set, Modify and Clear		System after Setting Hard Disk	
HardDisk User and Maste	er Passwon	ds.	Passwords ***.
User Password need to be installed for		Discard or Save changes option	
Enabling Security. Master Password can		in setup does not have any	
be Modified only when a	successful	lly unlocked	impact on HDD when password is
with Master Password in	POST.		set or removed. If the 'Set
If the 'Set HDD Passwor	d' option	n is grayed out,	HDD User Password' option is
do power cycle to enabl	le the opt	ion again.	grayed out, do power cycle to
			enable the option again
HDD PASSWORD CONFIGURAT	CION:		
Security Supported	:	Yes	: Select Screen
Security Enabled	:	No	†↓: Select Item
Security Locked	:	No	Enter: Select
Security Frozen	:	No	+/-: Change Opt.
HDD User Pwd Status	:	NOT INSTALLED	F1: General Help
HDD Master Pwd Status	:	INSTALLED	F2: Previous Values
			F3: Optimized Defaults
			F4: Save & Exit
			ESC: Exit

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 dies 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

System Mode	Setup	Secure Boot activated when:
Vendor Keys	Not Modified	Secure Boot is enabled Platform Key(PK) is enrolled
	[Enabled] Not Active	System mode is User/Deployed, and CSM is disabled
Secure Boot Customization	[Standard]	
Restore Factory Keys		
Reset To Setup Mode		

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

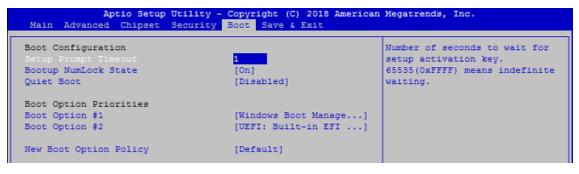


Figure 4-6 : BIOS Boot Menu

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

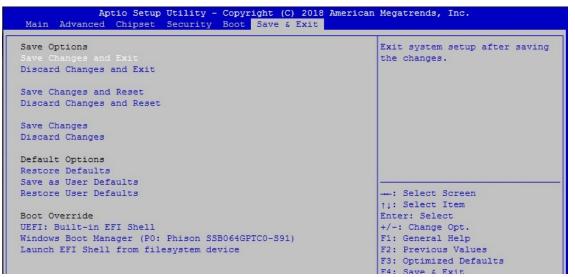


Figure 4-7 : BIOS Save and Exit Menu

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.



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