AbraxSys
RUGGED LCD SOLUTIONS

USER GUIDE

PANEL PC

FCC Statement

THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES. THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS.

OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

Notice

This guide is designed for experienced users to setup the system within the shortest time.
For detailed information, please always refer to the electronic user's manual.

Each and every AbraxSys product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new AbraxSys device is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name AbraxSys has come to be known.

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1. Introduction

1.1 SAFETY PRECAUTIONS

WARNING!

Always completely disconnect the power cord from your chassis whenever you work with the hardward.
Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

1.2 SYSTEM SPECIFICATIONS

Product Specification	
CPU	Onboard Tiger Lake U 11th Intel® Core™ SoC i7/i5/i3 & Celeron®BGA Processor Intel® CoreTM i7-1185G7E, i7-1185GRE (up to 4.4GHz, quad-core, 12M Cache, TDP: 28/15/12W)* Intel® Core™ i5-1145G7E, i5-1145GRE (up to 4.1GHz, quad-core, 8M Cache, TDP: 28/15/12W)* Intel® Core™ i3-1115G4E, i3-1115GRE (up to 3.9GHz, dual-core, 6M Cache, TDP: 28/15/12W)* Intel® Celeron® 6305E (up to 1.8GHz, dual-core, 4M Cache, TDP: 15W) *Intel spec, check with PM's order information.
BIOS	AMI UEFI BIOS, 256Mbit SPI Flash ROM
I/O Chip	EC-IT8528E Fintek F81216HD-I
System Memory	Two 260-pin DDR4 3200 MHz SO-DIMM socket, supports up to 64GB Max (non ECC only)
Watchdog Timer	H/W Reset, 1sec. - 65535sec./min. 1sec. or 1min. step
H/W Status Monitor	CPU temperature monitoring Voltages monitoring CPU fan speed control

RAID	Core i SKU CPU support RAID Celeron SKU CPU no support RAID SATA1 & 2 (RAID0/1)
TPM	Onboard NuvoTon NPCT754AADYX support TPM 2.0
iAMT	Core i5/7 SKU CPU support IAMT Celeron SKU CPU no support iAMT

Expansion Slot	
M.2	1 x M.2 Type B 3042/3052/2242/2260/2280 Support (*1)2x PCIE X1/(*2)1x SATA/1xUSB3.0/1xUSB2.0 with 1 x SIM card slot, support WWAN+GNSS or NVMe (SATA) SSD * 1: If M.2 Key B needs to support 2 x PCI-e x 1, The LAN4 needs to be removed by BOM optional. Support PCI-e x2 function, need to modify the ME settings. *1: Where there is no LAN4, 2nd PCI-e functionable (By BOM): When support PCI-e x2 function, need request ME setting. *2: SATA 2 share with M.2 key B SATA Only supports one SIM card Does not support 12S and PCM functions 1 x M.2 Key E 2230 support WiFi module and CNVi (1 x PCI-e x1 & USB 2.0 Signal) Does not support PCM/12S and UART/SDIO functions *Due to support Intel CNVI function, please do not use support UART or SDIO module to avoid misfunction.

Storage	
M.2	1 x M.2 Type B 3042/3052/2242/2260/2280 NVMe SSD *SATA 2 share with M.2 key B SATA
SATA	2 x SATA III, 1 x SATA Power *SATA 2 share with M.2 key B SATA

Edge I/O	
LAN	1 x Intel® 1225IT 2.5 Gigabit Ethernet 1 x Intel® 1219LM Gigabit Ethernet PHY 2 x Intel® 1210IT Gigabit Ethernet (BOM optional for Thin Mini ITX design SKU)
USB 3.1	3 x USB3.1 Gen2, 1 x USB 3.1 Gen1 at I/O
DP	2 x DP++ (Thin Mini ITX) 2 x DP++, 2x DP (Full height Mini ITX)
DC Input	Mini Din 4-pin DC in Jack

Onboard I/O	
COM	COM: COM 1 & COM2: COM 1 & COM2 support RS232/422/485 connector, with / +5V & +12V Supported and RS422/485 by BIOS setting 2 x 2 x 5 pin, pitch 2.00mm connector support RS-232 connector, Pin 9 with / +5V & +12V Supported 2 x 2 x3 pin, pitch 2.00mm connector support RS422/485 connector, Pin 5 with / +5V Supported COM3 to 6: 1 x 2 x 20 pin, pitch 2.00mm connector for COM3-6: support RS-232 connector
USB 2.0	2 x 2 x 5 pin, pitch 2.54mm connector for 4 USB 2.0
GPIO	1 x 2 x 10 pin, pitch 2.00mm connector for GPIO: 16 bits & +3.3S Level SMBus
SATA Power	2 x SATA III, 1 x SATA Power
CPU/System FAN	1 x 1 x 4 pin, pitch 2.54mm CPU fan connector with smart fan function supported
Buzzer	Onboard Buzzer
Front Panel	2 x 2 x 5 pin, pitch 2.54mm connector for front panel

RTC Battery	1x 2 Pin Pitch 1.25mm horizontal type battery connector (CR2032 Battery)
AT/ATX Selector	1 x 1 x 3 pin pitch 2.54mm connector for AT/ATX jumper
Clear CMOS	1 x 3 pin, pitch 2.00mm connector for CMOS clear
LVDS	1 x 2 x 20 pin, pitch 1.25mm connector for LVDS
LCD Backlight Brightness	2 x 1 x 5 pin, pitch 2.00mm Wafer connector for LCD inverter backlight connector (5V/12V) 1 x 1 x 3 pin, pitch 2.00mm connector LCD backlight brightness adjustment (PWM/DC)
LCD Inverter	2 x 1 x 5 pin, pitch 2.00mm Wafer connector for LCD inverter backlight connector
eDP	1 x 2 x 10 pin, pitch 1.25mm connector for eDP
LCP	1 x 2 x 5 pin, pitch 2.0mm connector for LPC debug
BIOS SPI	1 x 2 x 4 pin, pitch 2.00mm connector for BIOS SPI
EC Debug	1 x 2 x 5 pin, pitch 2.00mm connector for EC SPI
Audio	1 x 2 x 6 pin, pitch 2.00mm connector for front Audio
Audio AMP	1 x 4 pin, pitch wafer 2.00mm connector for 6W x 2 Speaker
Power input connector	1 x 2 x 2 pin, pitch 4.20mm connector for power input connector
DC-Input	Mini Din 4-pin DC in Jack

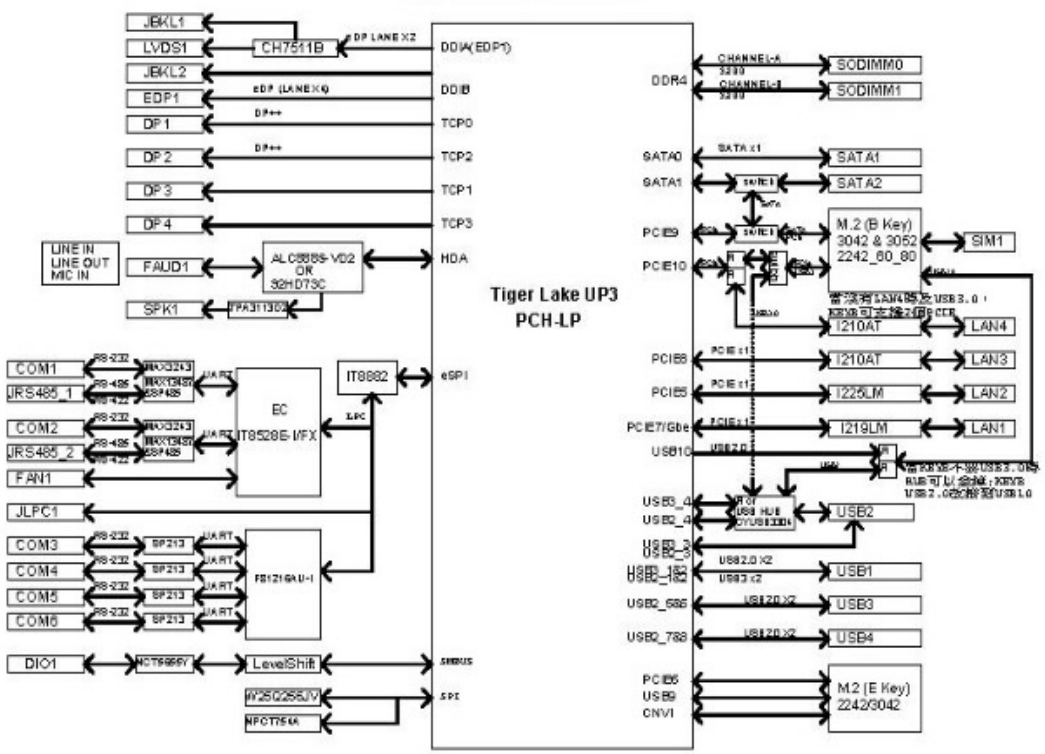
Display	
Graphic Chipset	Intel® 12th Generation CPU integrated
Spec. & Resolution	DP1+DP2 (DP1.4): Max: 7680 x 4329@60 Hz DP3+DP4 (DP1.4): Max: 7680 x 4329@60 Hz Single DP port (2021/2 Lab test): 5120 x 2160 @60 Hz, DVT check Max: 7680 x 4329@60 Hz Note: This resolution is actual test result. Intel resolution as below: 2 x DP++: 1920 x 1080@60 Hz 2 x DP: 4096 x 2304@60 Hz LVDS: 1920 x 1080 Dual channel 18/24-bits LVDS (Chrontel CH7511B eDP to LVDS) eDP 4096 x 2304@60 Hz *2 x DP++, LVDS, eDP Default (Thin Mini ITX), Optional: DP3 and DP4 for full height (Maximum: 6 for quadruple independent displays)
Multiple Display	Quadruple Independent Display: 2 x DP++, LVDS, eDP (Thin Mini ITX) Six display for quadruple Independent Display: 2 x DP++, LVDS, eDP, 2 x DP (Full height Mini ITX) **Multiple priority: LVDS > eDP> DP1 > DP2> DP3 > DP4**

Audio	
Audio Codec	Realtek ALC897 co-lay ALC888S & Tempo 92HD73 (Default: Tempo 92HD73)
Amplifier	TI TPA3113D2PWP Stereo Class-D 6W x 2 Audio Amplifier

Ethernet	
LAN Chipset	1 x Intel® 1225IT 2.5 Gigabit Ethernet (LAN2) 1 x Intel® 1219LM Gigabit Ethernet PHY (LAN1) 2 x Intel® 1210IT Gigabit Ethernet (LAN3, LAN4)(BOM optional for Thin Mini ITX design SKU)
LAN Spec.	10/100/1000 Base-Tx GbE compatible & 2.5 Gigabit Ethernet

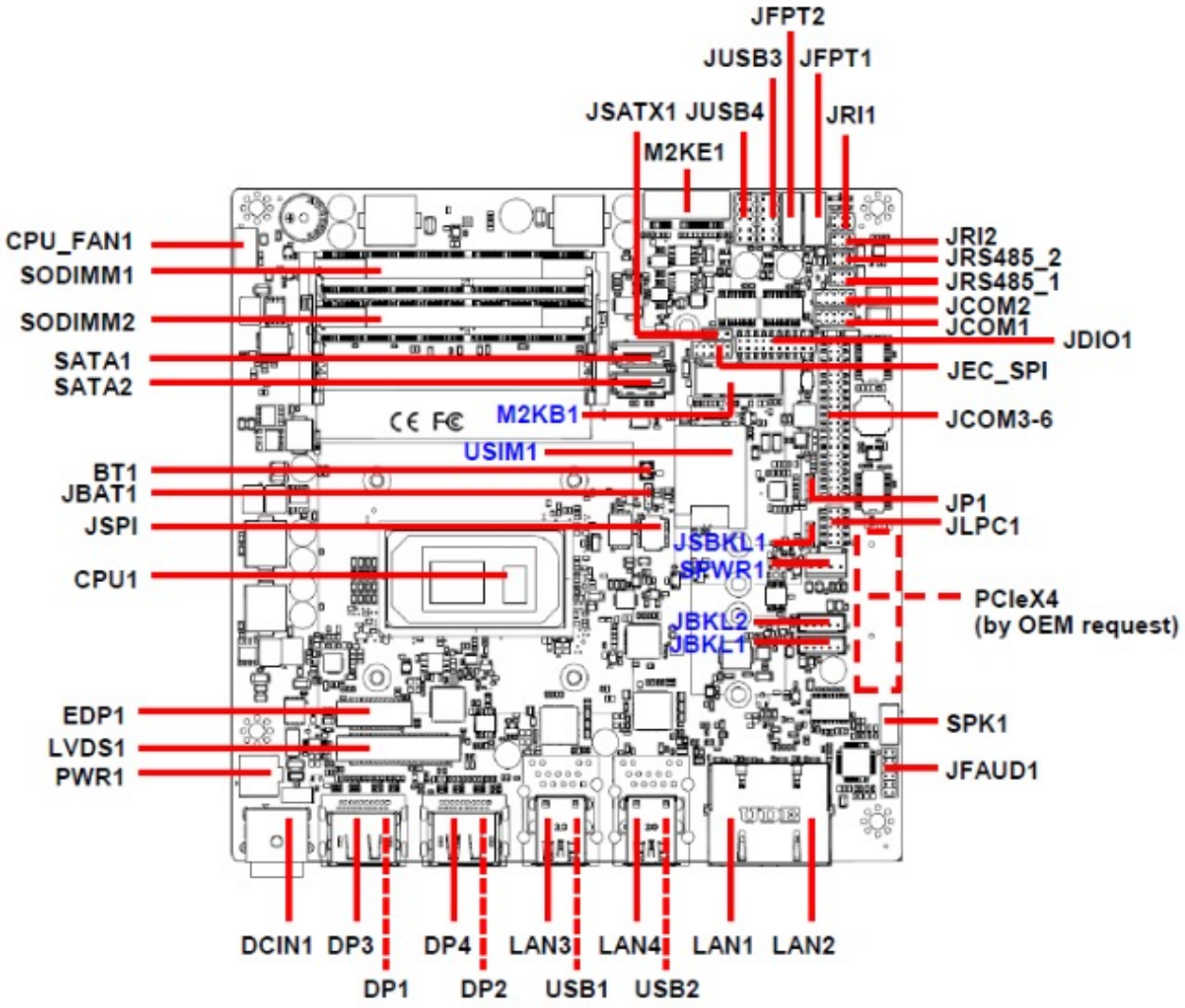
Mechanical & Environmental Specification	
Power Requirement	DC in +12V ~ +24V
ACPI	Single power ATX Support S0, S3, S4, S5 ACPI 5.0 Compliant
Power Mode	AT/ATX mode Switchable Through Jumper
Operating Temp.	Intel@wide temperature CPU SKU Support: -20~60C Intel@ CPU SKU support: 0~60C
Storage Temp.	-40~+75°C
Operating Humidity	40°C @ 95% Relative Humidity, Non-condensing

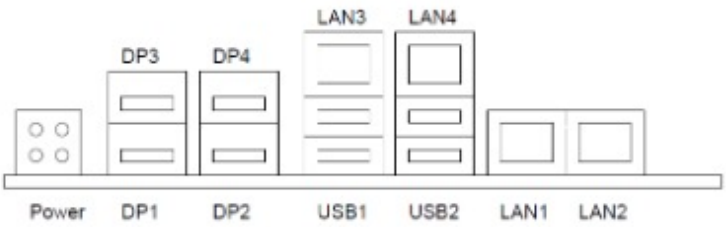
1.2 SYSTEM SPECIFICATIONS



2. Hardware Configuration

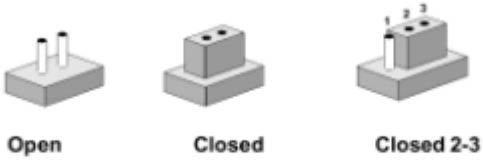
2.1 PRODUCT OVERVIEW





2.2 JUMPER AND CONNECTOR LIST

You can configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip. To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either two pins.



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

A pair of needle-nose pliers may be helpful when working with jumpers. Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application. If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

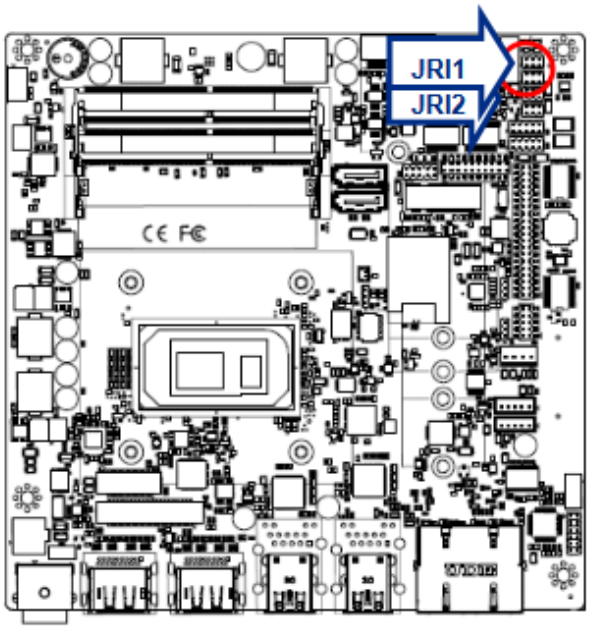
The following tables list the function of each of the board’s jumpers and connectors.

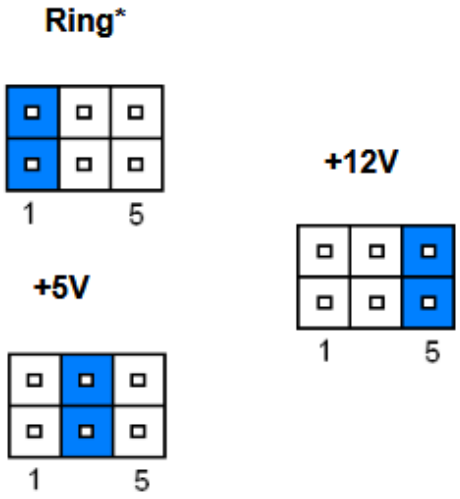
Jumpers		
Label	**Function**	**Note**
JRI1/2	Serial port 1/2 pin9 signal select	3 x 2 header, pitch 2.00mm
JSBKL1	LVDS Back Light power selection	3 x 1 header, pitch 2.00mm
JSATX1	AT/ATX Power Mode Select	3 x 1 header, pitch 2.54mm
JP1	M2KB1 Voltage setting	3 x 1 header, pitch 2.00mm
JBAT1	Clear CMOS	2 x 1 header, pitch 2.00mm

Connectors		
Label	**Function**	**Note**
FPT1	Miscellaneous setting connector 1	5 x 2 header, pitch 2.54mm
FPT2	Miscellaneous setting connector 2	5 x 2 header, pitch 2.54mm
SODIMM1/2	206-pin DDR4 SO-DIMM socket	
JFAUD1	Front Audio connector	6 x 2 header, pitch 2.00mm
JBKL1/2	LCD Inverter connector	5 x 1 wafer, pitch 2.00mm
JSPI1	SPI connector	4 x 2 header, pitch 2.00mm
JEC_SPI	EC Debug	5 x 2 header, pitch 2.00mm
JCOM1	Serial Port 1 connector	5 x 2 header, pitch 2.00mm
JCOM2	Serial Port 2 connector	5 x 2 header, pitch 2.00mm
JCOM3-6	Serial Port 3-6 connector	20 x 2 header, pitch 2.00mm
JDIO1	General purpose I/O connector	10 x 2 header, pitch 2.00mm
SPK1	Speaker connector	4 x 1 wafer, pitch 2.00mm
LVDS1	LVDS Connector	20 x 2 wafer, pitch 1.25mm
EDP1	eDP_Panel connector	10 x 2 wafer, pitch 1.25mm
USB1/2	USB connector 1/2	
JUSB3/4	USB connector 3/4	5 x 2 header, pitch 2.54mm
LAN1/2/3/4	RJ-45 Ethernet 1/2/3/4	
BT1	Battery connector	2 x 1 wafer, pitch 1.25mm
M2KE1	M.2 2230 Type E Slot	
M2KB1	M.2 3042/2242/2260/2280 Type B Slot	
DP1/2/3/4	DP connector 1/2/3/4	
JRS485_1/2	Serial Port 1/2 RS485/422 Mode connector	3 x 2 header, pitch 2.00mm
JLPC	LPC connector	5 x 2 header, pitch 2.00mm
DCIN1	DC Power-in connector	
PWR1	Power connector	2 x 2 wafer, pitch 4.20mm
SATA1/2	Serial ATA connector 1/2	
SPWR1	SATA Power connector 1	4 x 1 wafer, pitch 2.54mm
USIM1	USIM card slot	
CPU_FAN1	CPU fan connector	4 x 1 wafer, pitch 2.54mm
PCIEX4_1	PCIe connector	By OEM request. Due to poor compatibility concern, remove this connector.

2.3 SETTING JUMPERS & CONNECTORS

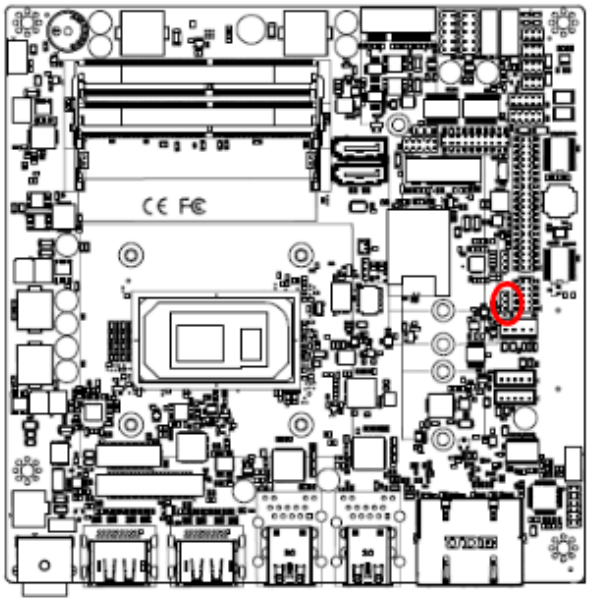
2.3.1 Serial port 1/2 pin9 signal select (JRI1/JR12)

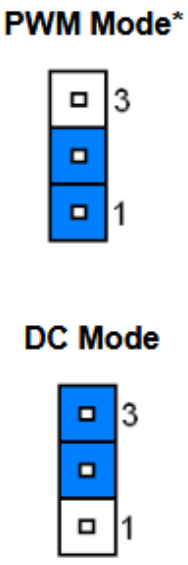




*** Default**

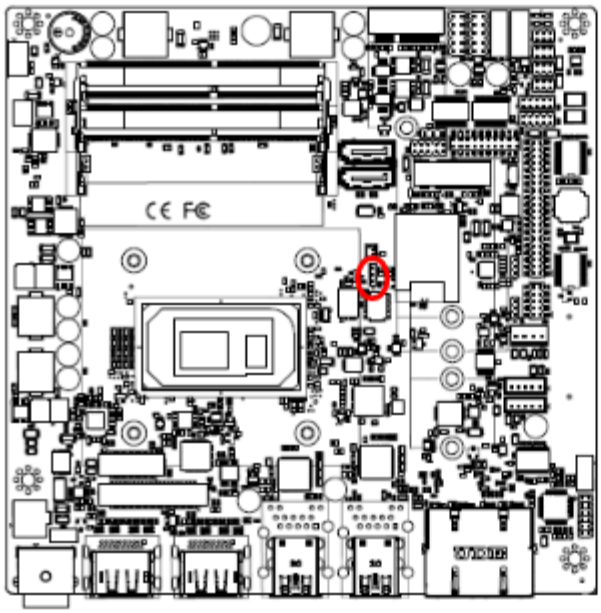
2.3.2 M2KB1 Voltage setting (JP1)

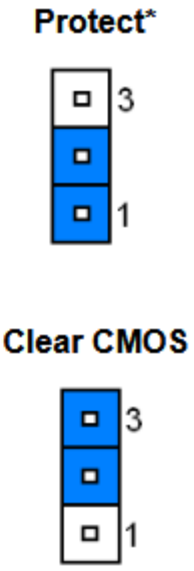




*** Default**

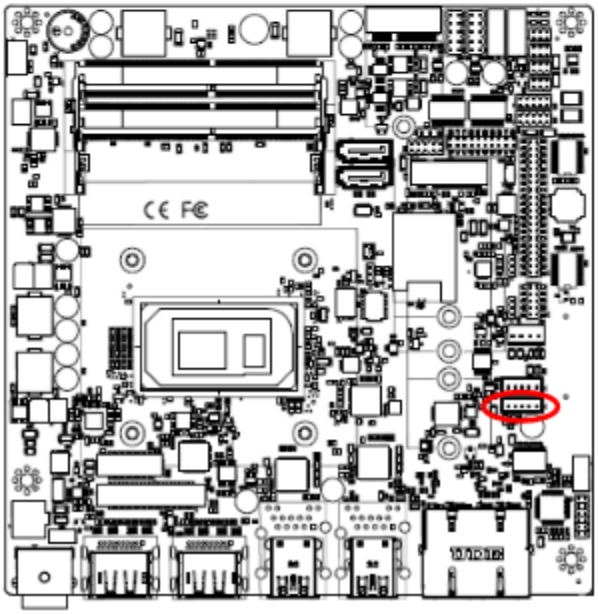
2.3.3 Clear CMOS (JBAT1)





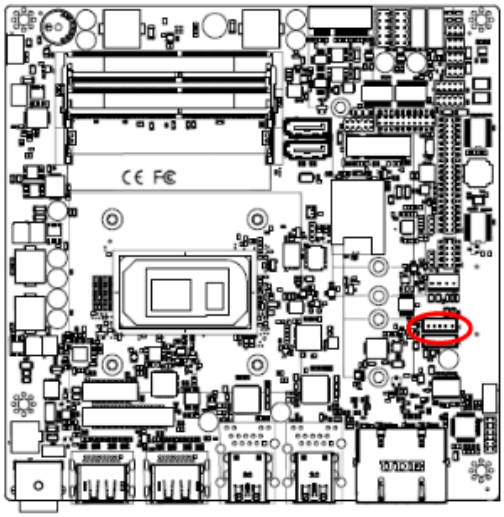
* Default

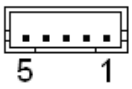
2.3.4 LCD Inverter connector (JBKL1)



PIN	Signal
1	+12V
2	GND
3	LVDS_BKLT_EN
4	LVDS_BKLTCTL
5	+5V

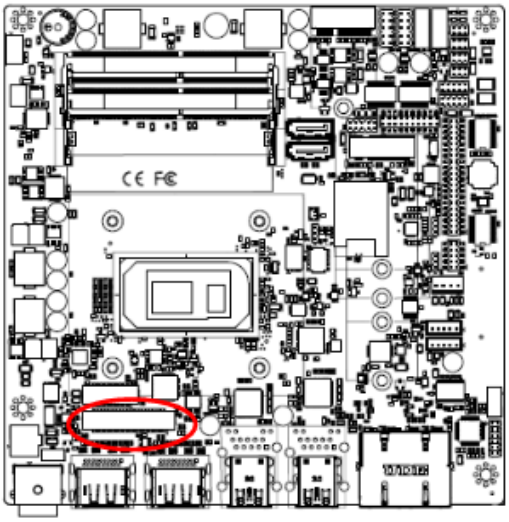
2.3.5 LCD Inverter connector (JBKL2)

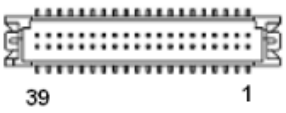




PIN	Signal
1	+12V
2	GND
3	EDP2_BKLTEN
4	EDP2_BKLT_CTL
5	+5V

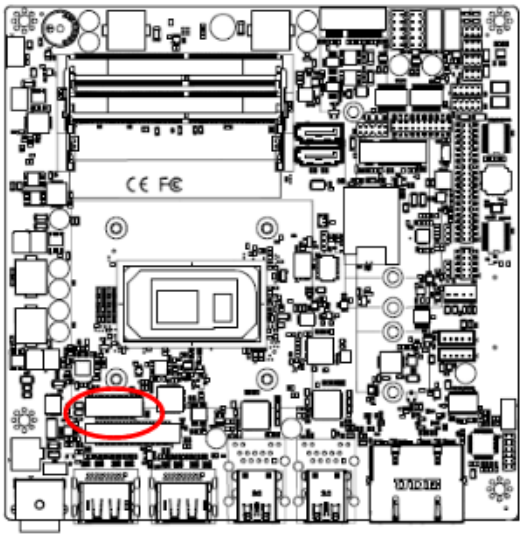
2.3.6 LVDS connector (LVDS1)

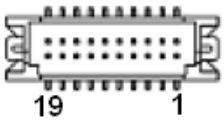




Signal	PIN	PIN	Signal
+V5S_LVDS	2	1	+ V3.3S_LVDS
+V5S_LVDS	4	3	+ V3.3S_LVDS
NC	6	5	NC
GND	8	7	GND
LVDS_DATA0_P	10	9	LVDS_DATA1_P
LVDS_DATA0_N	12	11	LVDS_DATA1_N
GND	14	13	GND
LVDS_DATA2_P	16	15	LVDS_DATA3_P
LVDS_DATA2_N	18	17	LVDS_DATA3_N
GND	20	19	GND
LVDS_DATA4_P	22	21	LVDS_DATA5_P
LVDS_DATA4_N	24	23	LVDS_DATA5_N
GND	26	25	GND
LVDS_DATA6_P	28	27	LVDS_DATA7_P
LVDS_DATA6_N	30	29	LVDS_DATA7_N
GND	32	31	GND
LVDS_CLK1_P	34	33	LVDS_CLK2_P
LVDS_ CLK1_N	36	35	LVDS_ CLK2_N
GND	38	37	GND
+V12S_LVDS	40	39	+V12S_LVDS

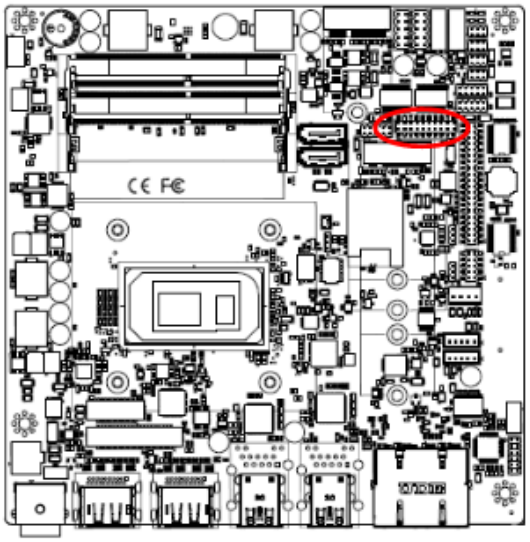
2.3.7 eDP_Panel connector (EDP1)

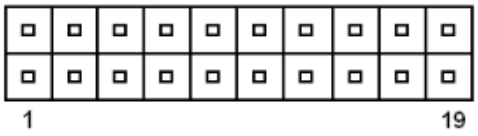




Signal	PIN	PIN	Signal
GND	1	2	GND
EDP_PANEL_TXN0	3	4	EDP_PANEL_TXN3
EDP_PANEL_TXP0	5	6	EDP_PANEL_TXP3
GND	7	8	NC
EDP_PANEL_TXN1	9	10	GND
EDP_PANEL_TXP1	11	12	EDP_PANEL_AUXN
GND	13	14	EDP_PANEL_AUXP
EDP_PANEL_TXN2	15	16	GND
EDP_PANEL_TXP2	17	18	EDP_PANEL_HPD
+V35_EDP	19	20	+V35_EDP

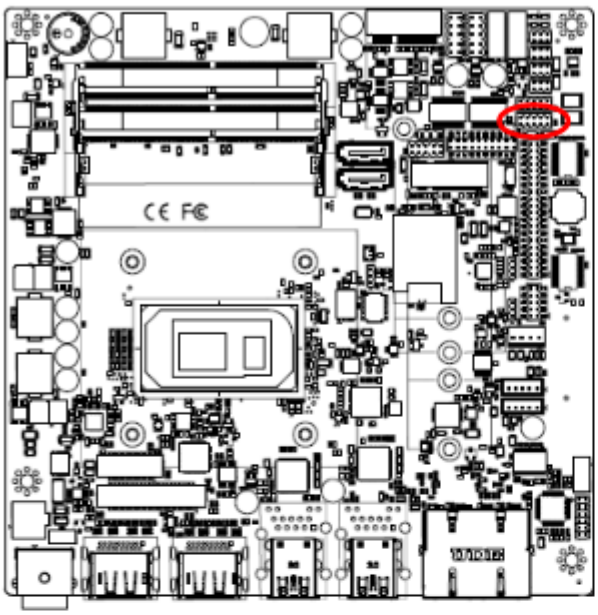
2.3.8 General purpose I/O connector (DIO1)

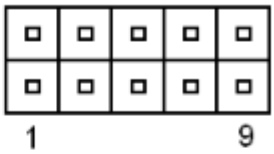




Signal	PIN	PIN	Signal
DI0	1	2	DO0
DI1	3	4	DO1
DI2	5	6	DO2
DI3	7	8	DO3
DI4	9	10	DO4
DI5	11	12	DO5
DI6	13	14	DO6
DI7	15	16	DO7
SMB_SCL_S0_3P3EXT	17	18	SMB_SDA_S0_3P3EXT
GND	19	20	+5V (Max current = 0.5A)

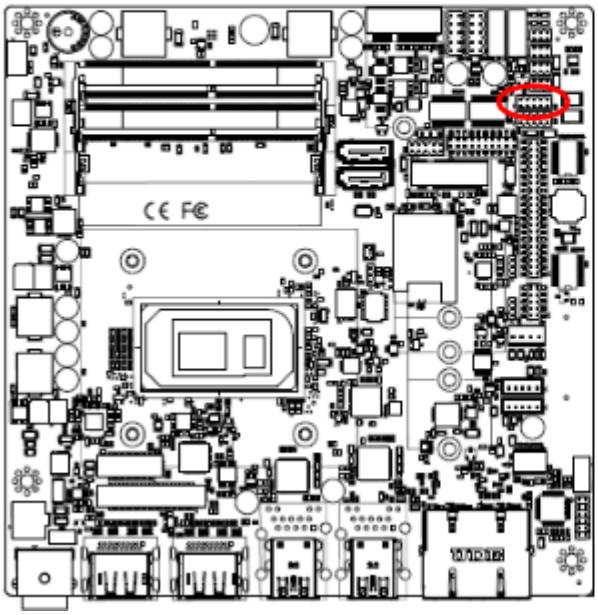
2.3.9 Serial port1 connector (JCOM1)

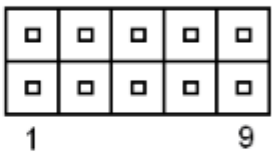




Signal	PIN	PIN	Signal
COM_DCD#_1	1	2	COM_RXD_1
COM_TXD_1	3	4	COM_DTR#_1
GND	5	6	COM_DSR#_1
COM_RTS#_1	7	8	COM_CTS#_1
COM_RI#_1	9	10	NC

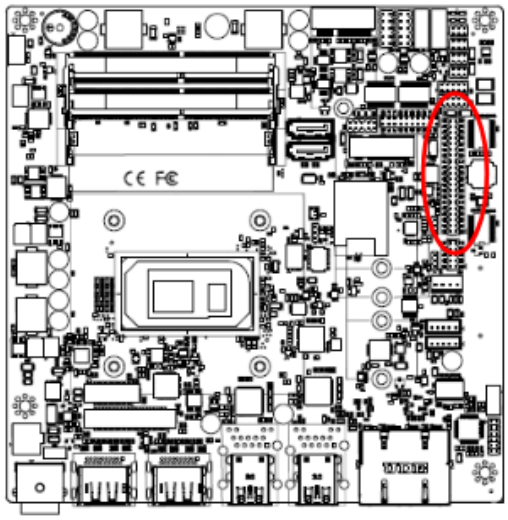
2.3.10 Serial port2 connector (JCOM2)

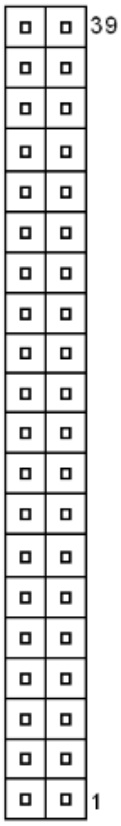




Signal	PIN	PIN	Signal
COM_DCD#_2	1	2	COM_RXD_2
COM_TXD_2	3	4	COM_DTR#_2
GND	5	6	COM_DSR#_2
COM_RTS#_2	7	8	COM_CTS#_2
COM_RI#_2	9	10	NC

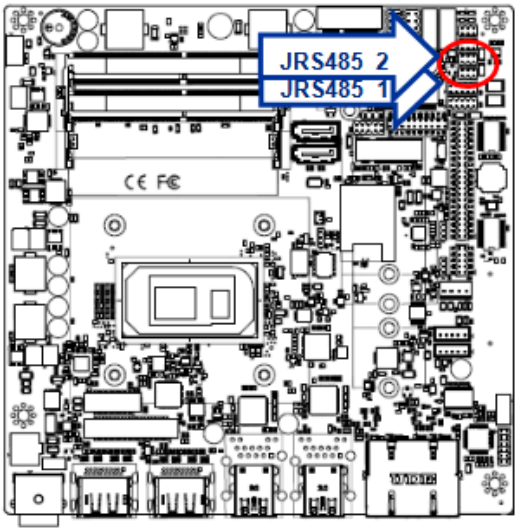
2.3.11 Serial port 3/4/5/6 connector (JCOM3/4/5/6)

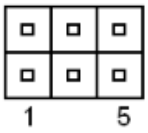




Signal	PIN	PIN	Signal
NC	40	39	COM_RI#_6
COM_CTS#_6	38	37	COM_RTS#_6
COM_DSR#_6	36	35	GND
COM_DTR#_6	34	33	COM_TXD_6
COM_RXD_6	32	31	COM_DCD#_6
NC	30	29	COM_RI#_5
COM_CTS#_5	28	27	COM_RTS#_5
COM_DSR#_5	26	25	GND
COM_DTR#_5	24	23	COM_TXD_5
COM_RXD_5	22	21	COM_DCD#_5
NC	20	19	COM_RI#_4
COM_CTS#_4	18	17	COM_RTS#_4
COM_DSR#_4	16	15	GND
COM_DTR#_4	14	13	COM_TXD_4
COM_RXD_4	12	11	COM_DCD#_4
NC	10	9	COM_RI#_3
COM_CTS#_3	8	7	COM_RTS#_3
COM_DSR#_3	6	5	GND
COM_DTR#_3	4	3	COM_TXD_3
COM_RXD_3	2	1	COM_DCD#_3

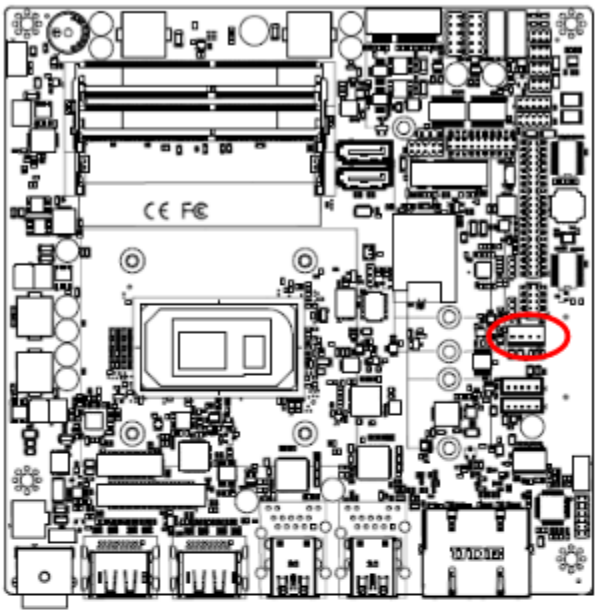
2.3.12 Serial Port 1/2 RS485/422 Mode connector (JRS485_1/2)

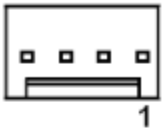




Signal	PIN	PIN	Signal
485_422TX-	1	2	422RX-
485_422TX+	3	4	422RX+
+5V	5	6	GND

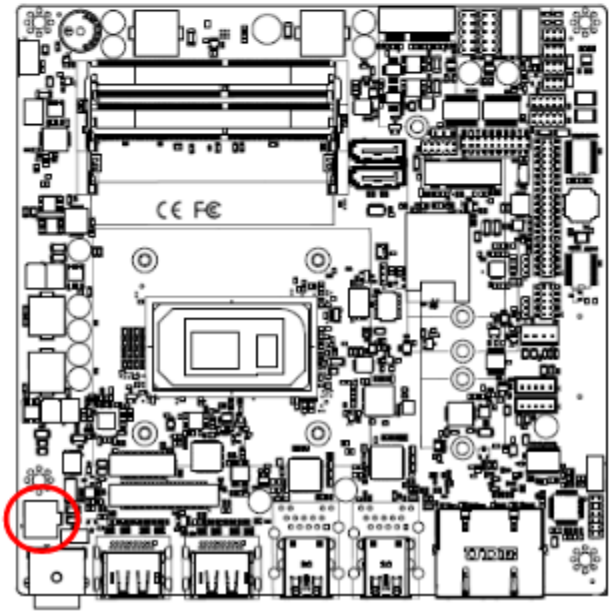
2.3.13 SATA Power connector 1 (SPWR1)

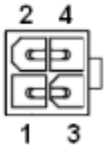




PIN	Signal
1	+V5S_SATA
2	GND
3	GND
4	+V12S_SATA

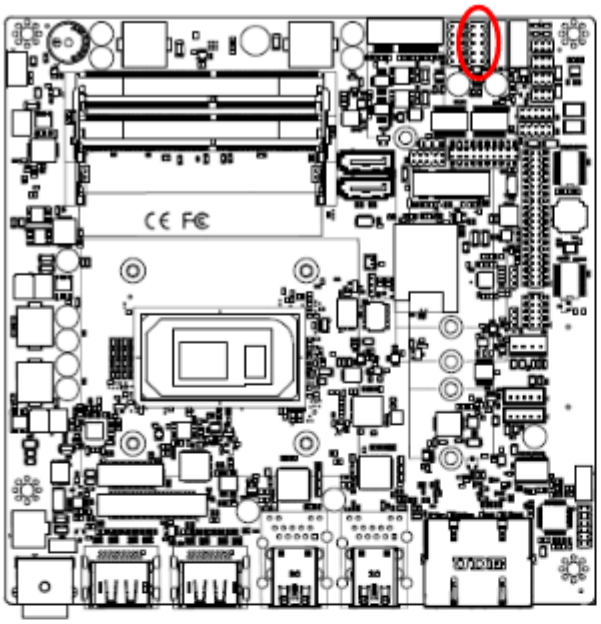
2.3.14 Power connector (PWR1)

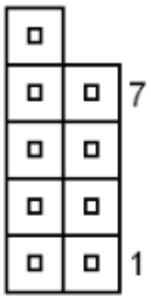




Signal	PIN	PIN	Signal
GND	2	4	+VIN
GND	1	3	+VIN

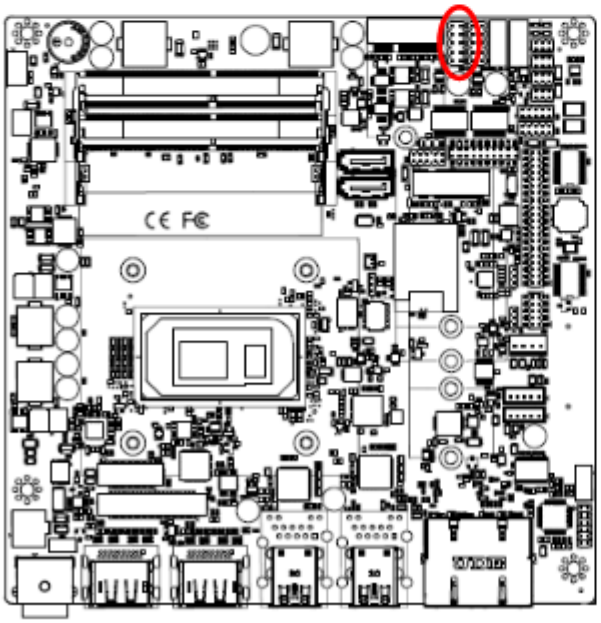
2.3.15 USB connector 3 (JUSB3)

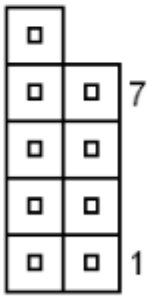




Signal	PIN	PIN	Signal
+V5A_USB56	1	2	+V5A_USB56
USB_DN5	3	4	USB_DN6
USB_DP5	5	6	USB_DP6
GND	7	8	GND
		10	GND

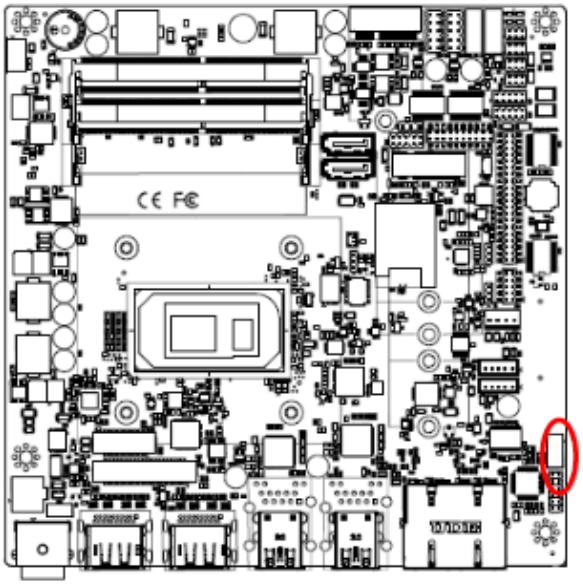
2.3.16 USB connector 4 (JUSB4)

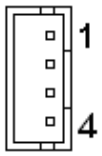




Signal	PIN	PIN	Signal
+V5A_USB78	1	2	+V5A_USB78
USB_DN7	3	4	USB2_ DN8
USB_DP7	5	6	USB2_ DP8
GND	7	8	GND
		10	GND

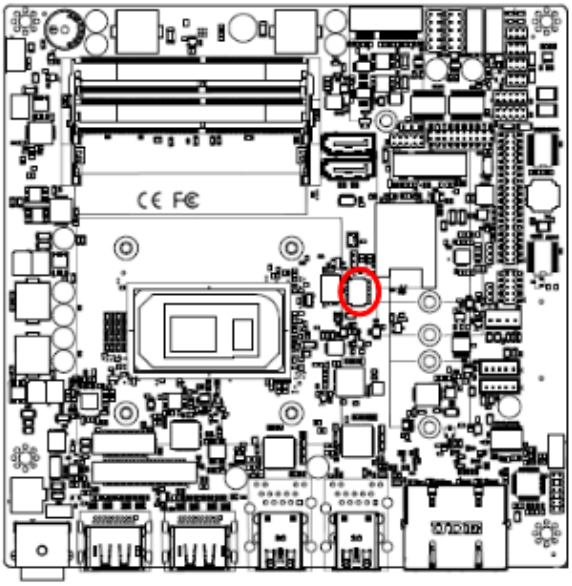
2.3.17 Speaker connector (SPK1)

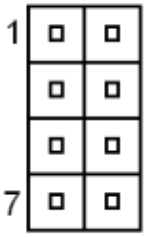




Signal	PIN
SPK_L+	1
SPK_L-	2
SPK_R+	3
SPK_R-	4

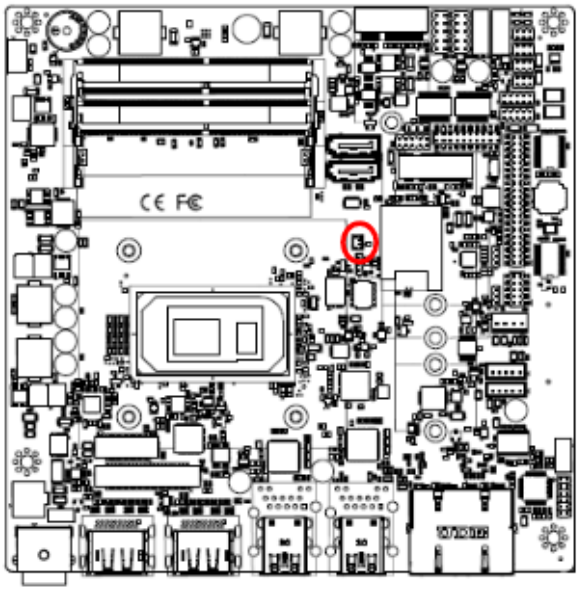
2.3.18 SPI connector (JSPI1)





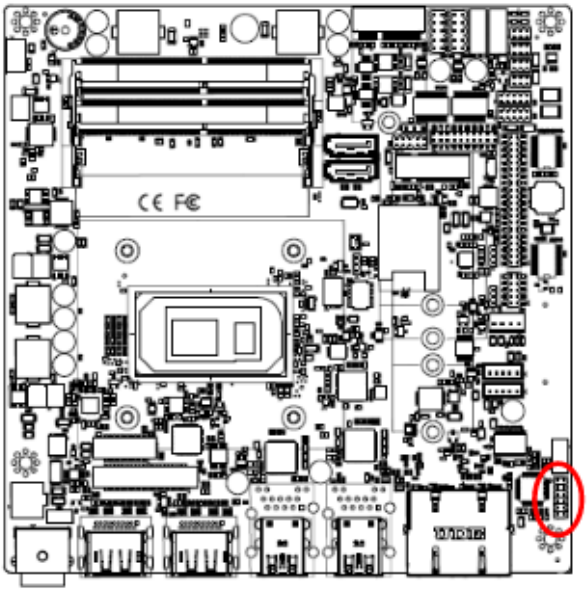
Signal	PIN	PIN	Signal
+V3.3A_1.8A_SPI	1	2	GND
SPI0_CS0#	3	4	SPI0_BIOS_CLK
SPI0_BIOS_MISO	5	6	SPI0_BIOS_MOSI
BIOS_HOLD#	7	8	BIOS_WP#

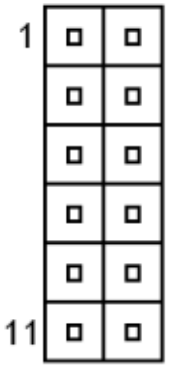
2.3.19 Battery connector (BT1)



PIN	Signal
1	+RTCBAT
2	GND

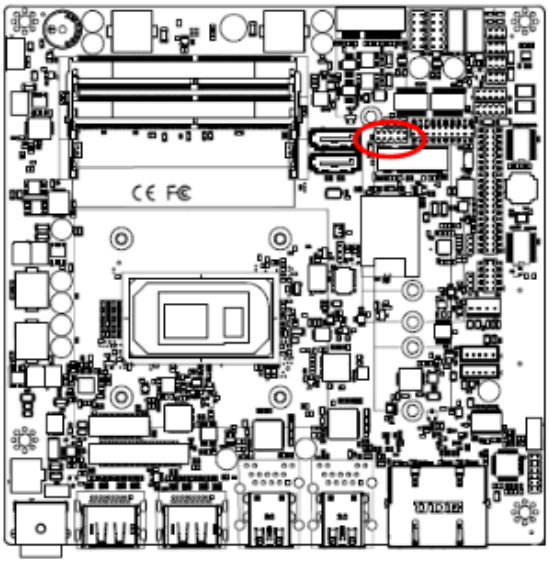
2.3.20 Audio connector (JFAUD1)

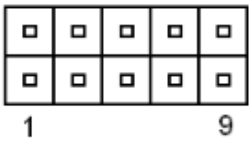




Signal	PIN	PIN	Signal
LINEOUT_R	1	2	LINEOUT_L
GND_AUD	3	4	GND_AUD
LINEIN_R	5	6	LINEIN_L
MICIN_R	7	8	MICIN_L
LINEOUT1_JD	9	10	LINE1-JD
MIC1_JD	11	12	GND_AUD

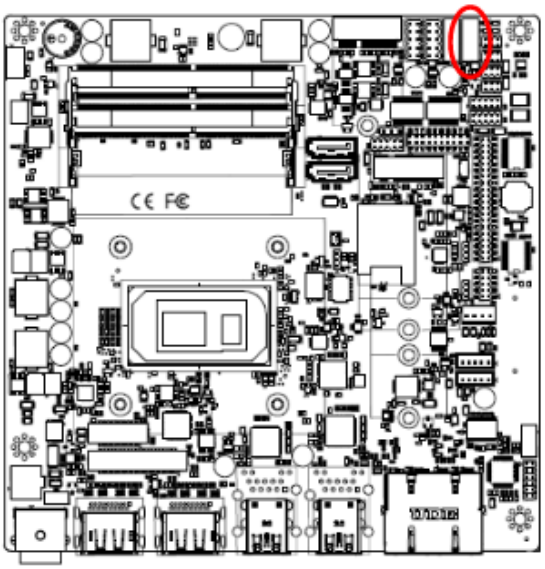
2.3.21 EC Debug (JEC_SPI)

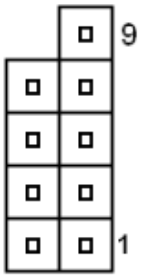




Signal	PIN	PIN	Signal
+V3.3A_EC	1	2	GND
EC_FSCE#	3	4	EC_FSCK
EC_FMISO	5	6	EC_FMOSI
EC_HOLD#	7	8	NC
EC_SMCLK_DEBUG	9	10	EC_SMDAT_DEBUG

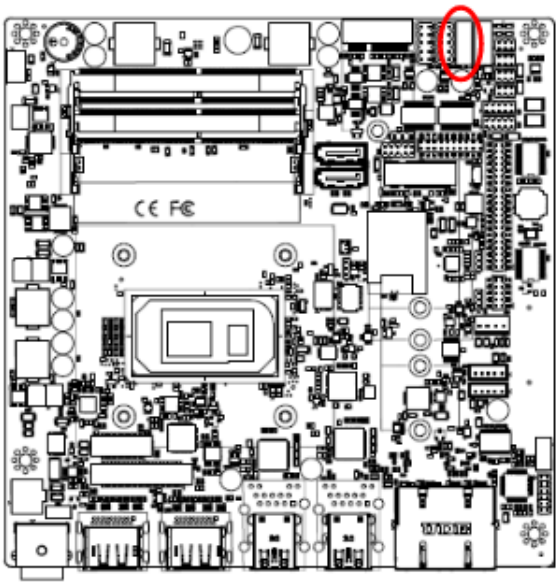
2.3.22 Miscellaneous setting connector 1 (JFPT1)

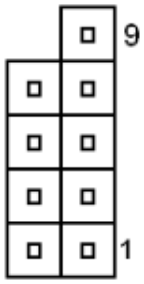




Signal	PIN	PIN	Signal
		9	NC
-PWR_BNT	8	7	-Reset
+PWR_BNT	6	5	+Reset
-PWR_LED	4	3	-HD_LED
+PWR_LED	2	1	+HD_LED

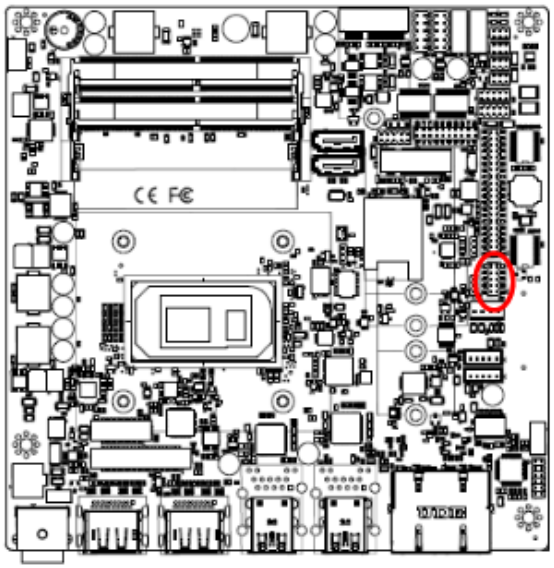
2.3.23 Miscellaneous setting connector 2 (FRT2)

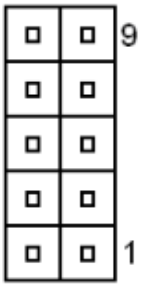




Signal	PIN	PIN	Signal
		9	NC
GND	8	7	Speaker-
BLK_DN	6	5	NC
BLK_UP	4	3	NC
BLK_VR(10K)	2	1	Speaker+

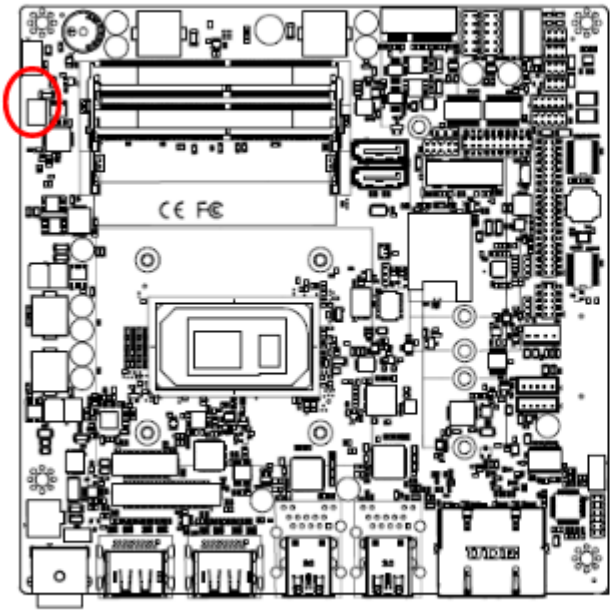
2.3.24 LPC connector (JLPC1)





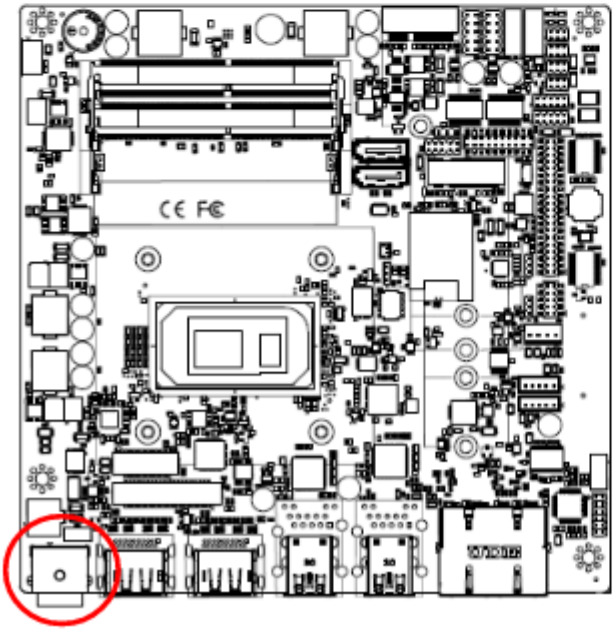
Signal	PIN	PIN	Signal
LPC_AD0	1	2	+3.3V
LPC_AD1	3	4	PLT_BUF_RST#
LPC_AD2	5	6	LPC_LFRAME#
LPC_AD3	7	8	CLK_24M_80
LPC_SERIRQ	9	10	GND

2.3.25 CPU fan connector (CPU_FAN1)



Signal	PIN
GND	1
+12V	2
CPU_FANIN	3
FAN_PWM0	4

2.3.26 Power connector (DCIN1)



Signal	PIN	PIN	Signal
+VIN_12-24V	1	2	+VIN_12-24V
GND	3	4	GND

Note: Vin = 12~24V

3. BIOS Setup

3.1 INTRODUCTION

The BIOS setup program allows users to modify the basic system configuration. In this following chapter will describe how to access the BIOS setup program and the configuration options that may be changed.

3.2 STARTING SETUP

The AMI BIOSTM is immediately activated when you first power on the computer. The BIOS reads the system information contained in the NVRAM and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways: by pressing <Del> or <F2> immediately after switching the system on, or by pressing the <Del> or <F2> key when the following message appears briefly at the left-top of the screen during the POST (Power On Self Test).

Press <Del> or <F2> to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to.

Press F1 to Continue, DEL to enter SETUP

3.3 USING SETUP

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and Page Down keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Button	Description
↑↓→←	Move
Enter	Select
+/-	Value
Esc	Exit
F1	General Help
F2	Previous Values
F3	Optimized Defaults
F4	Save & Exit Setup
<K>	Scroll help area upwards
<M>	Scroll help area downwards

Navigating Through The Menu Bar

Use the left and right arrow keys to choose the menu you want to be in.
Note: Some of the navigation keys differ from one screen to another.

To Display a Sub Menu

Use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>.
A ">" pointer marks all sub menus.

3.4 GETTING HELP

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or <Enter> key.

3.5 IN CASE OF PROBLEMS

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AMI BIOS supports an override to the NVRAM settings which resets your system to its defaults.

The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

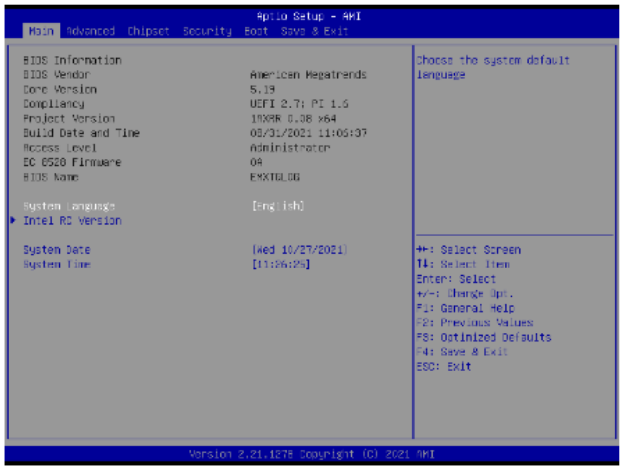
3.6 BIOS Setup

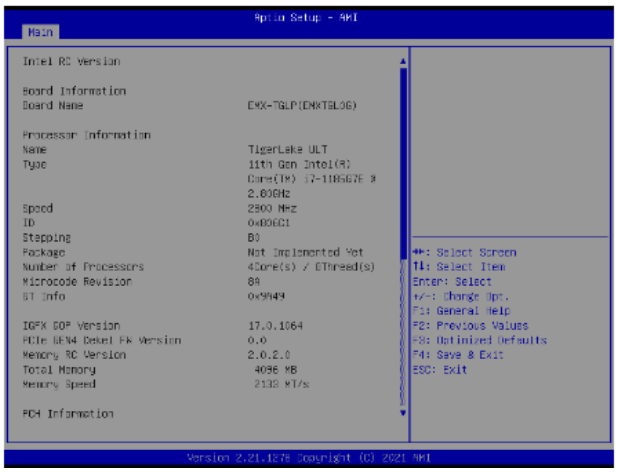
Once you enter the Aptio Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

3.6.1 Main Menu

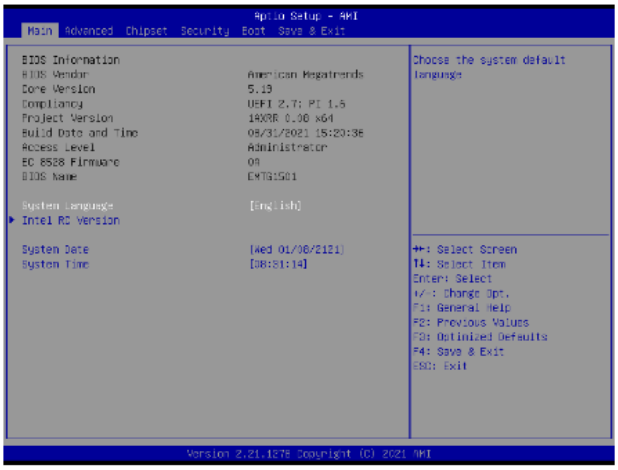
This section allows you to record some basic hardware configurations in your computer and set the system clock.

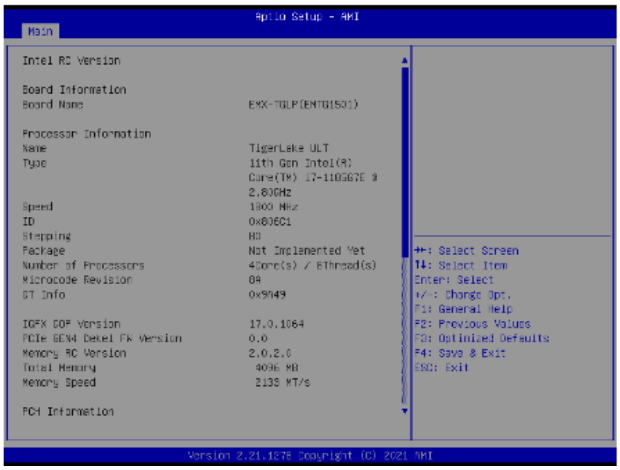
3.6.1.1 TDP-28W BIOS





3.6.1.2 TDP-15W BIOS





3.6.1.3 System Language

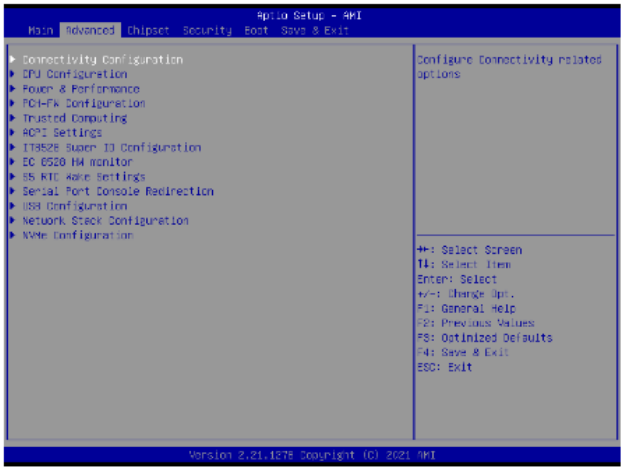
This option allows choosing the system default language.

3.6.1.4 System Date

Use the system date option to set the system date. Manually enter the day, month, and year.

3.6.1.5 System Time

Use the system time option to set the system time. Manually enter the hours, minutes, and seconds.
Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.



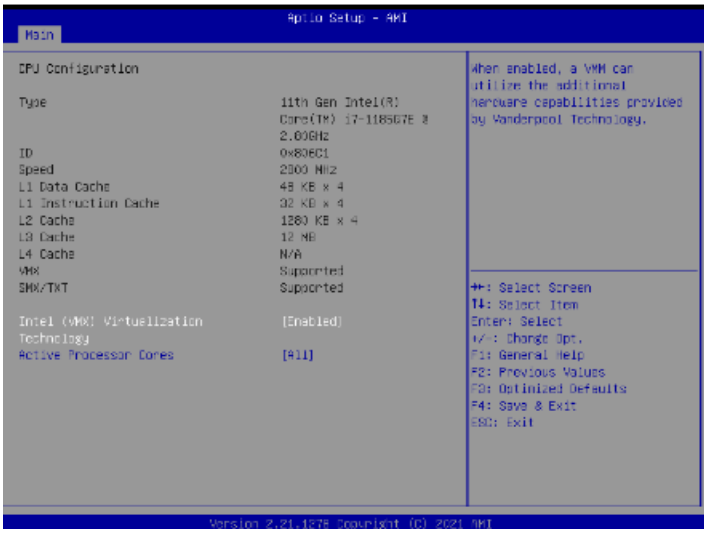
3.6.2 Advanced Menu

This section allows you to configure your CPU and other system devices for basic operation through the following sub-menus.

3.6.2.1 Connectivity Configuration

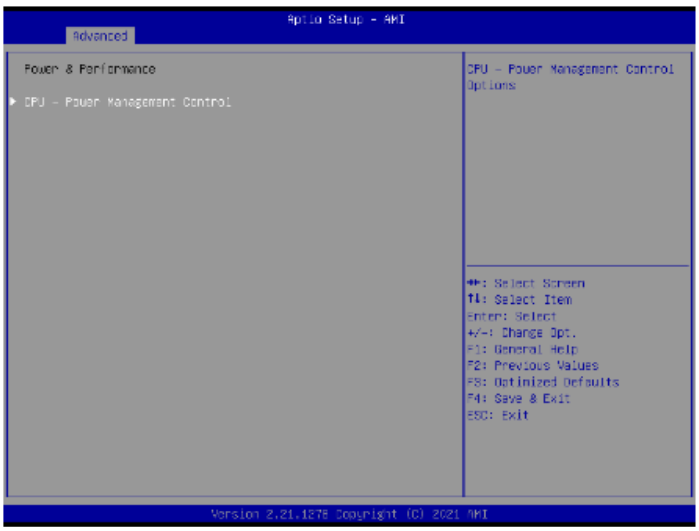
Item	Options	Description
CNVi Mode	Disable Integrated [Default] Auto Detection	This option configures Connectivity. [Auto Detection] means that if Discrete solution is discovered it will be enabled by default. Otherwise Integrated solution (CNVi) will be enabled; [Disable Integrated] disables Integrated Solution. NOTE: When CNVi is present, the GPIO pins that are used for radio

3.6.2.2 CPU Configuration

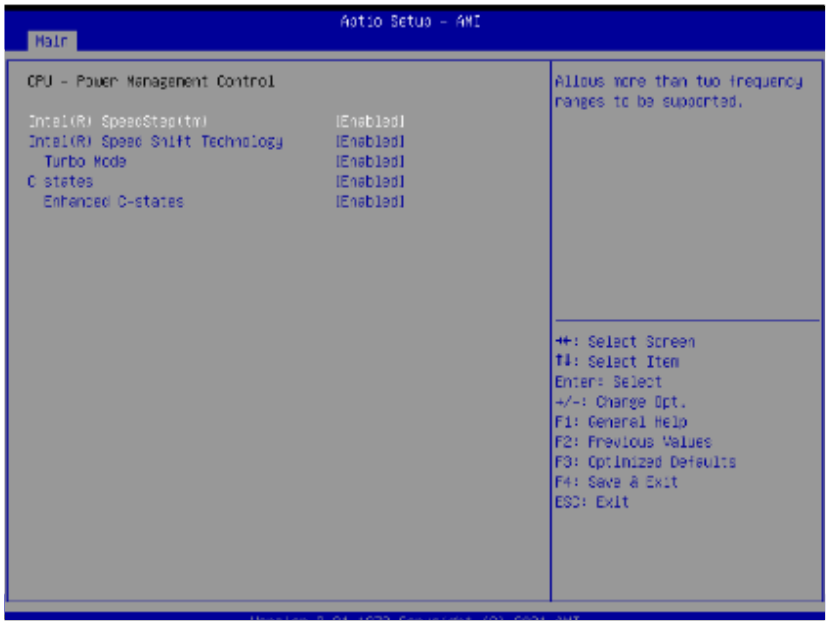


Item	Options	Description
Intel (VMX) Virtualization Technology	Disabled, Enabled [Default]	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Active Processor Cores	All [Default] 1, 2, 3	Number of cores to enable in each processor package

3.6.2.3 Power & Performance

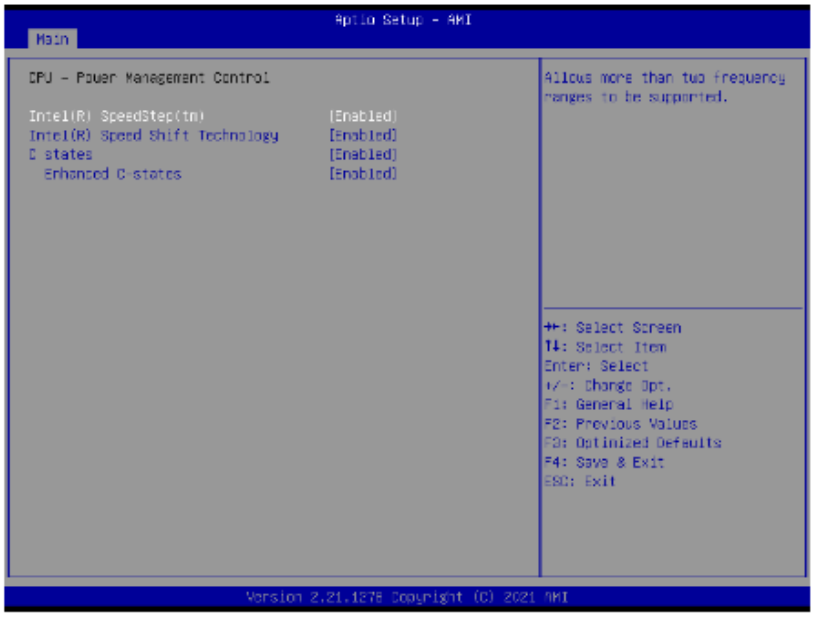


3.6.2.3.1 CPU - Power Management Control (TDP-28W BIOS)



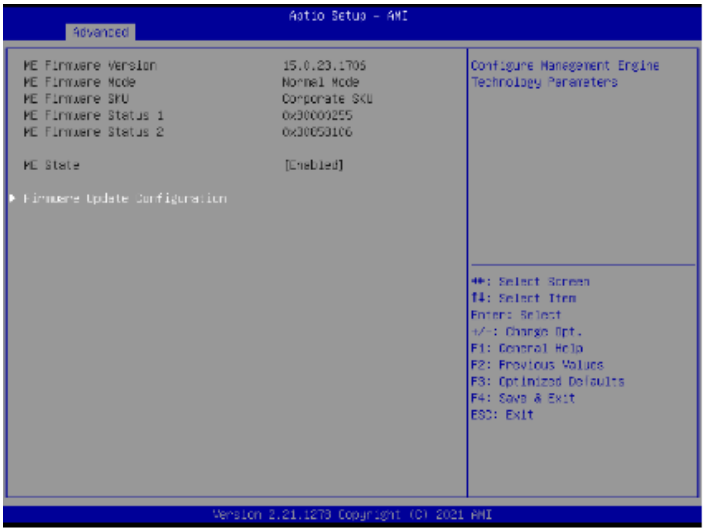
Item	Options	Description
Intel® Speed Step™	Disabled, Enabled [Default]	Allows more than two frequency ranges to be supported.
Intel® Speed Shift Technology	Disabled, Enabled [Default]	Enable/Disable Intel® Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states.
Turbo Mode	Disabled, Enabled [Default]	Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled.
C-states	Disabled, Enabled [Default]	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.
Enhanced C-states	Disabled, Enabled [Default]	Enable/Disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-State.

3.6.2.3.2 CPU - Power Management Control (TDP-15W BIOS)

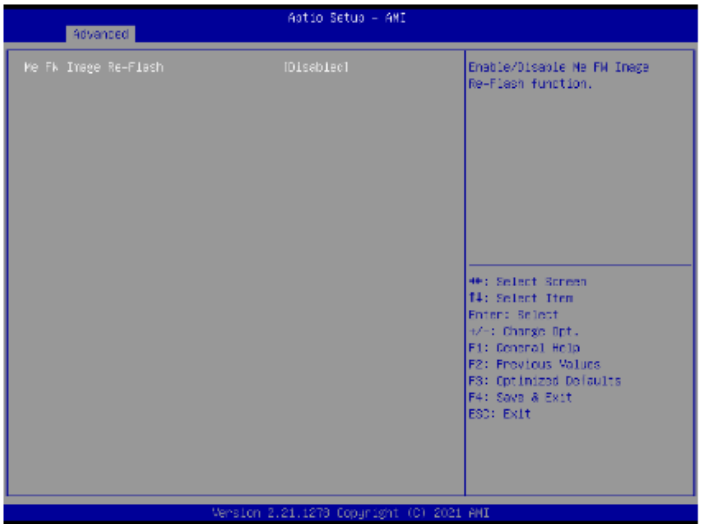


Item	Options	Description
Intel® Speed Step™	Disabled, Enabled [Default]	Allows more than two frequency ranges to be supported.
Intel® Speed Shift Technology	Disabled, Enabled [Default]	Enable/Disable Intel® Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states.
C-states	Disabled, Enabled [Default]	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.
Enhanced C-states	Disabled, Enabled [Default]	Enable/Disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-State.

3.6.2.4 PCH-FW Configuration



3.6.2.4.1 Firmware Update Configuration

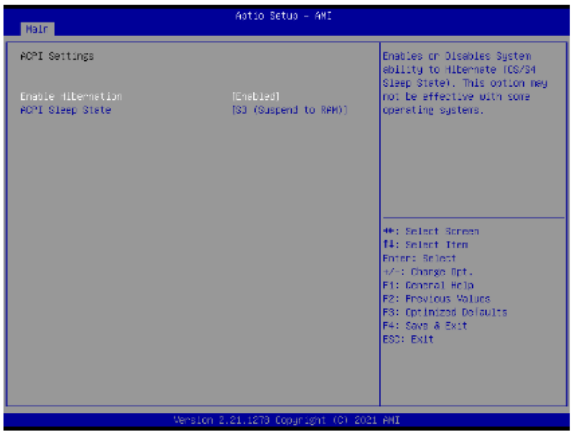


Item	Options	Description
Me FW Image Re-Flash	Disabled [Default], Enabled	Enable/Disable Me FW Image Re-Flash function.

3.6.2.5 Trusted Computing

Item	Options	Description
Security Device Support	Disabled, Enabled [Default]	Enables or Disables BIOS support for security device. O.S. will not show Secuity Device. TCG EFI protocol and INT1A interface will not be available.

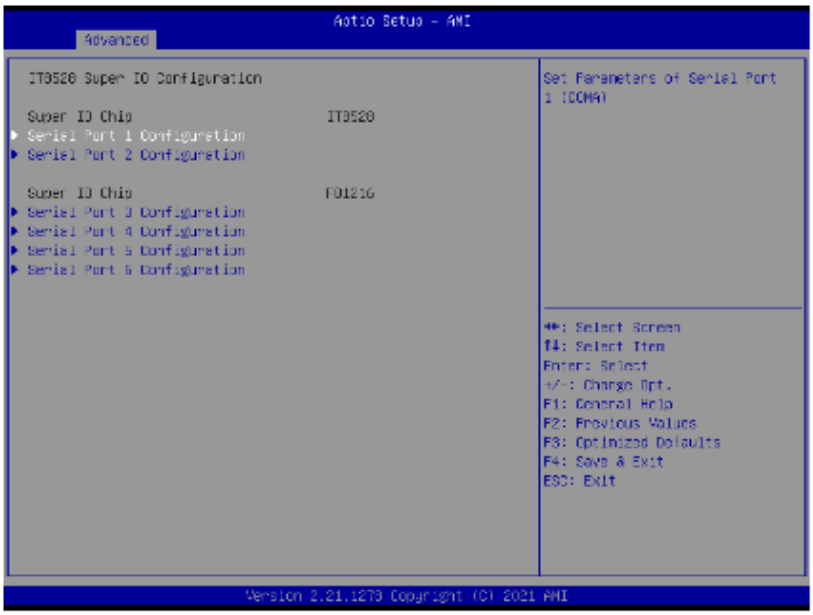
3.6.2.6 ACPI Settings



Item	Options	Description
Enable Hibernation	Disabled, Enabled [Default]	Enables or Disables System ability to Hibernate (OS/S4 Sleep state). This option may be not effective with some OS.
ACPI Sleep State	Suspend Disabled, S3 (Suspend to RAM) [Default]	Select the highest ACPI sleep state the system will enter when the SUSPEDN button is pressed.

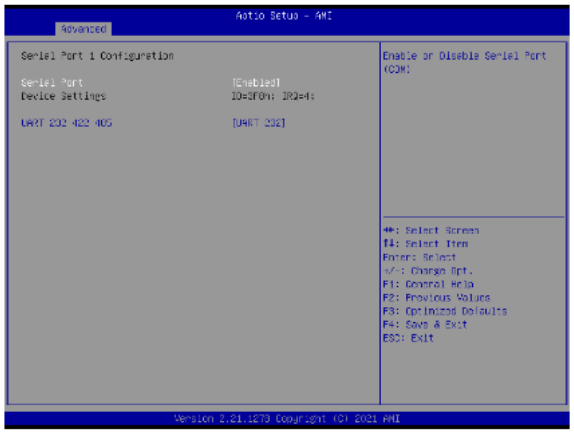
3.6.2.7 IT8528 Super IO Configuration

You can use this iten to set up or change the IT8528 Super IO configuration for serial ports. Please refer to 3.6.2.5.1~ 3.6.2.5.6 for more information.



Item	Description
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA).
Serial Port 2 Configuration	Set Parameters of Serial Port 2 (COMB).
Serial Port 3 Configuration	Set Parameters of Serial Port 3 (COMC).
Serial Port 4 Configuration	Set Parameters of Serial Port 4 (COMD).
Serial Port 5 Configuration	Set Parameters of Serial Port 5 (COME).
Serial Port 6 Configuration	Set Parameters of Serial Port 6 (COMF).

3.6.2.7.1 Serial Port 1 Configuration



Item	Options	Description
Serial Port	Disabled, Enabled [Default]	Enable or Disable Serial Port (COM).
UART 232 422 485	UART 232 [Default], UART 422, UART 485	Change the Serial Port as RS232/422/485

3.6.2.7.2 Serial Port 2 Configuration

Item	Options	Description
Serial Port	Disabled, Enabled [Default]	Enable or Disable Serial Port (COM).
UART 232 422 485	UART 232 [Default], UART 422, UART 485	Change the Serial Port as RS232/422/485

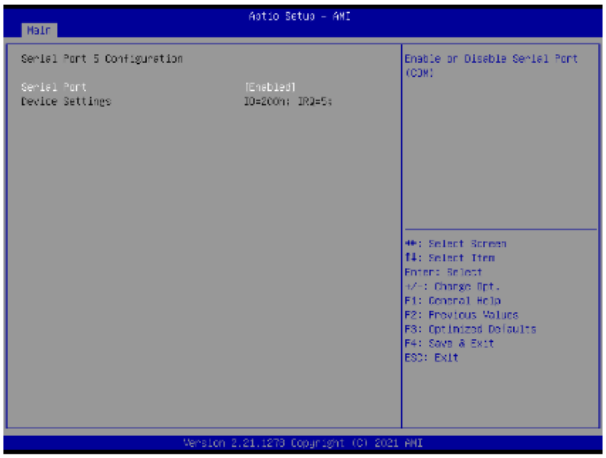
3.6.2.7.3 Serial Port 3 Configuration

Item	Options	Description
Serial Port	Enabled [Default], Disabled	Enable or Disable Serial Port (COM).

3.6.2.7.4 Serial Port 4 Configuration

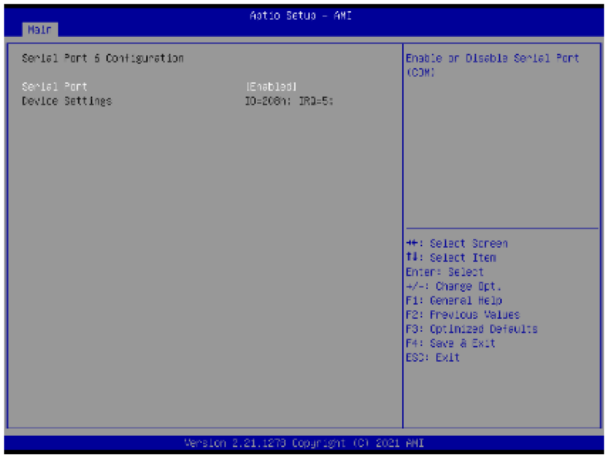
Item	Options	Description
Serial Port	Enabled [Default], Disabled	Enable or Disable Serial Port (COM).

3.6.2.7.5 Serial Port 5 Configuration



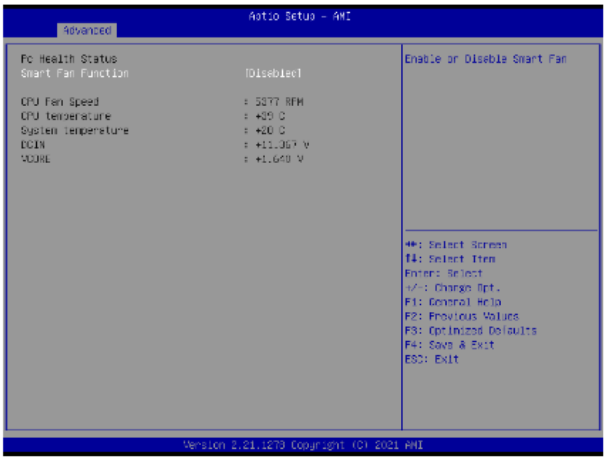
Item	Options	Description
Serial Port	Enabled [Default], Disabled	Enable or Disable Serial Port (COM).

3.6.2.7.6 Serial Port 6 Configuration



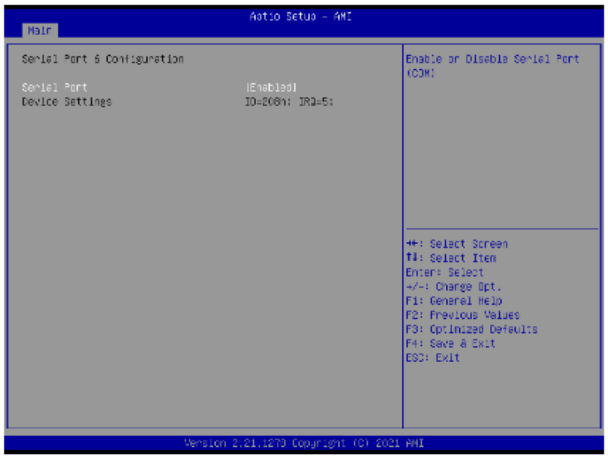
Item	Options	Description
Serial Port	Enabled [Default], Disabled	Enable or Disable Serial Port (COM).

3.6.2.8 EC 8528 H/W monitor



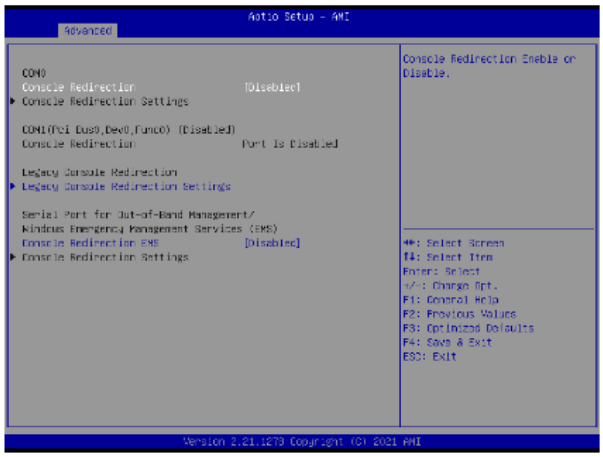
Item	Options	Description
Smart Fan Function	Disabled [Default], Enabled	Enable or Disable Smart Fan.

3.6.2.9 S5 RTC Wake Settings



Item	Options	Description
Wake System from S5	Disabled [Default], Fixed Time, Dynamic Time	Enable or Disable System wake on alarm event. Select Fixed Time, system will wake on the hr::min::sec specified. Select Dynamic Time, System will wake on the current time + Increase minute(s)

3.6.2.10 Serial Port Console Redirection



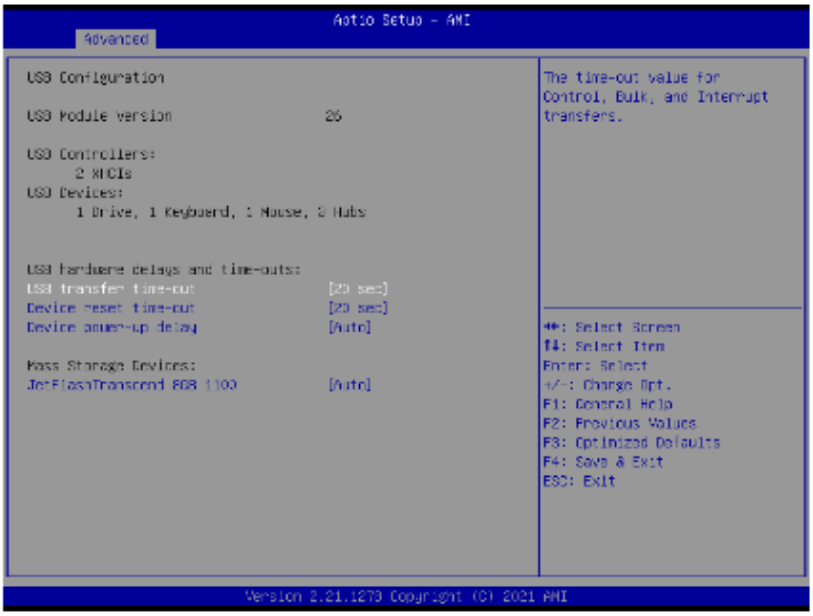
Item	Options	Description
Console Redirection	Disabled [Default], Enabled	Console Redirection Enable or Disable.
Console Redirection EMS	Disabled [Default], Enabled	Console Redirection Enable or Disable.

3.6.2.10.1 Legacy Console Redirection Settings

Item	Options	Description
Redirectioin COM Port	COM0	Select a COM port to display redirecyion of Legacy OS and Legacy OPROM Messages

3.6.2.11 USB Configuration

The USB Configuration menu helps read USB information and configures USB settings.

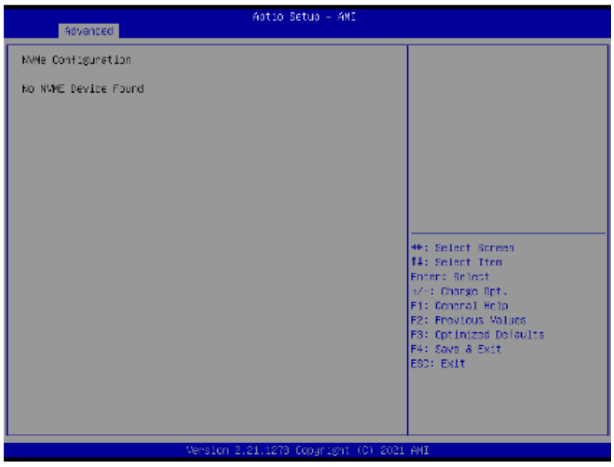


Item	Options	Description
USB transfer time-out	1 sec, 5 sec, 10 sec, 20 sec [Default]	The time-out value for Control, Bulk, and Interrupt transfers
Device reset time-out	10 sec, 20 sec [Default], 30 sec, 40 sec	USB mass storage device Start Unit command time-out
Device power-up delay	Auto [Default], Manual	Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.
Mass Storage Devices	Auto [Default], Floppy, Forced FDD, Hard Disk, CD-ROM	Mass storage device emulation type. 'AUTO' enumerates devices according to their media format. Optical drives are emulated as 'CDROM', drives with no media will be emulated according to a drive type.

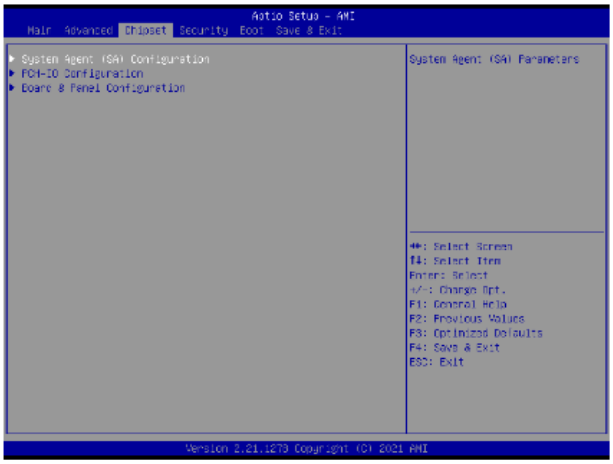
3.6.2.12 Network Stack Configuration

Item	Options	Description
Network Stack	Enabled, Disabled [Default]	Enable/Disable UEFI Network Stack.

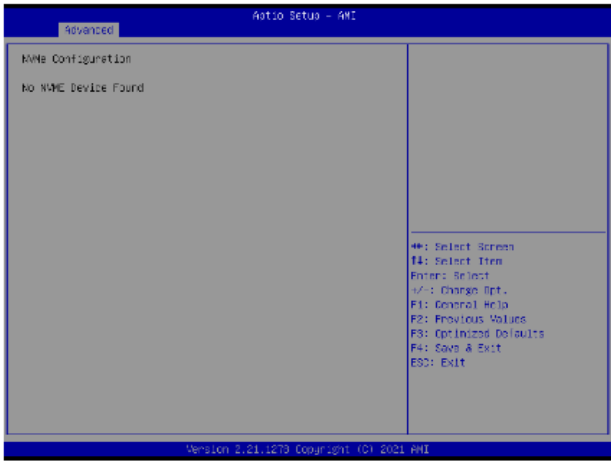
3.6.2.13 NVMe Configuration



3.6.3 Chipset

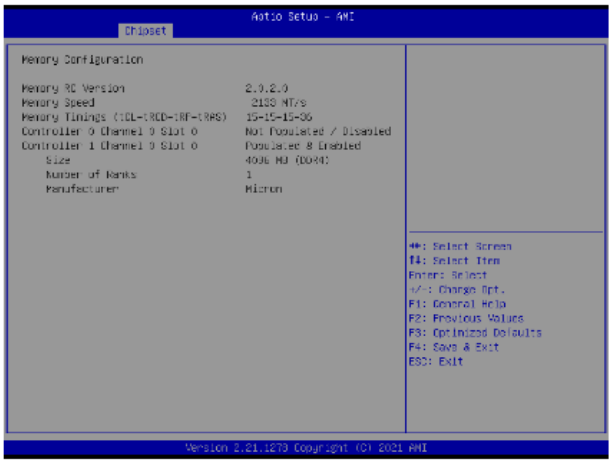


3.6.3.1 System Agent (SA) Configuration

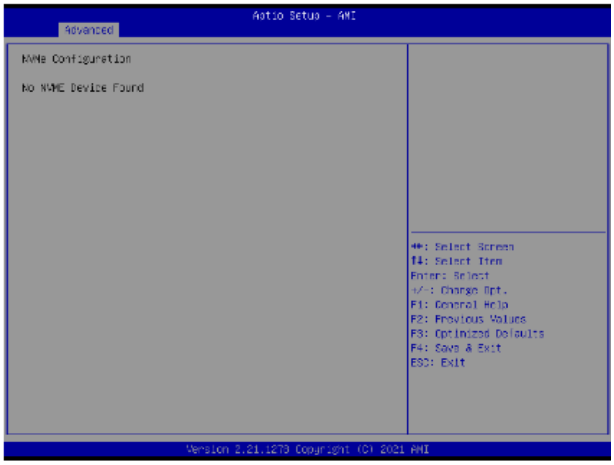


Item	Options	Description
VT-d	Disabled, Enabled [Default]	VT-d capability

3.6.3.1.1 Memory Configuration

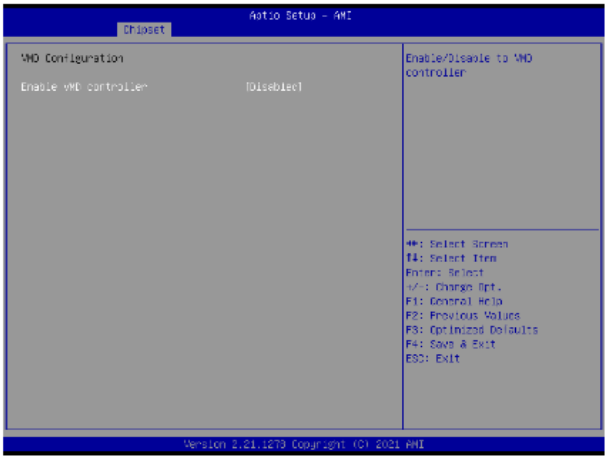


3.6.3.1.2 Graphics Configuration



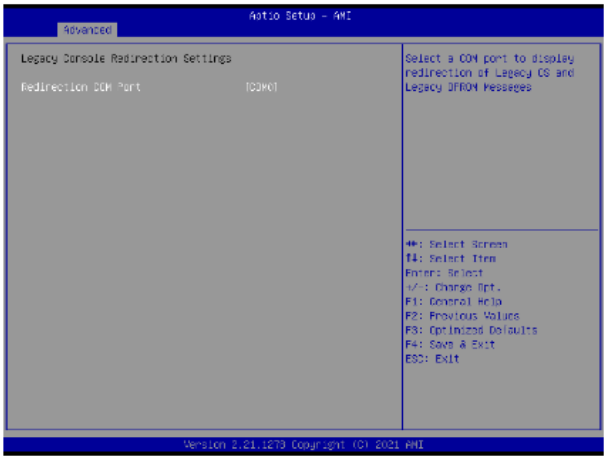
Item	Options	Description
Primary Display	Auto [Default], IGFX	Select which of IGFX/PEG/PCI Graphics device should be Primary Display or select HG for Hybrid Gfx

3.6.3.1.3 VMD Configuration



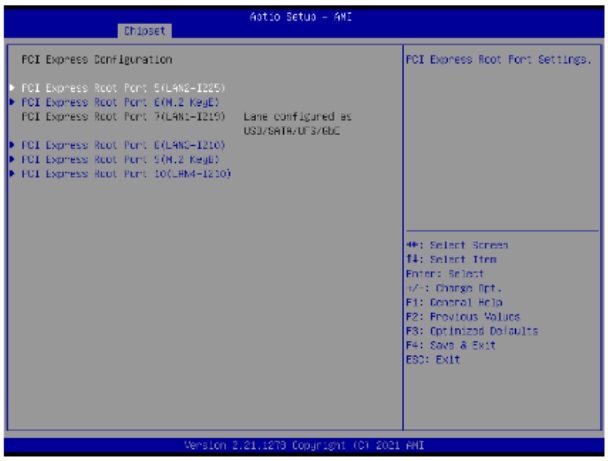
Item	Options	Description
Enable VMD controller	Disabled [Default], Enabled	Enable/Disable to VMD controller

3.6.3.2 PCH-IO Configuration

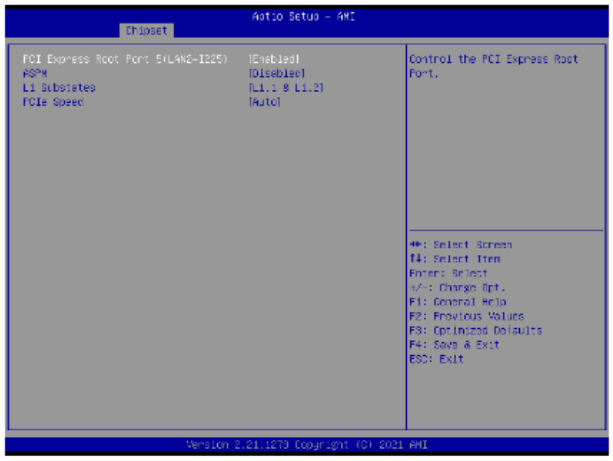


Item	Options	Description
PCH LAN Controlled	Enabled [Default], Disabled	Enable/Disable onboard NIC.

3.6.3.2.1 PCI Express Configuration

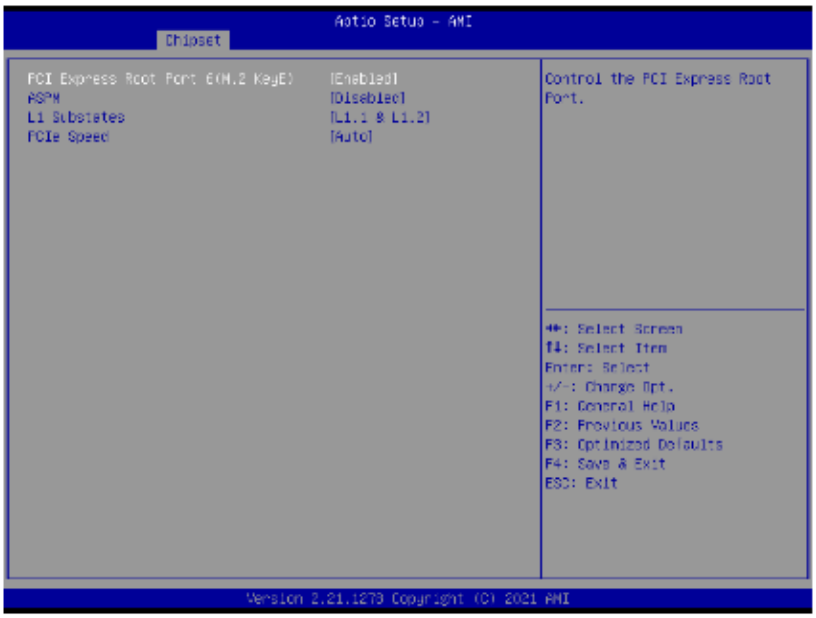


3.6.3.2.1.1 PCI Express Root Port 5(LAN2-1225)



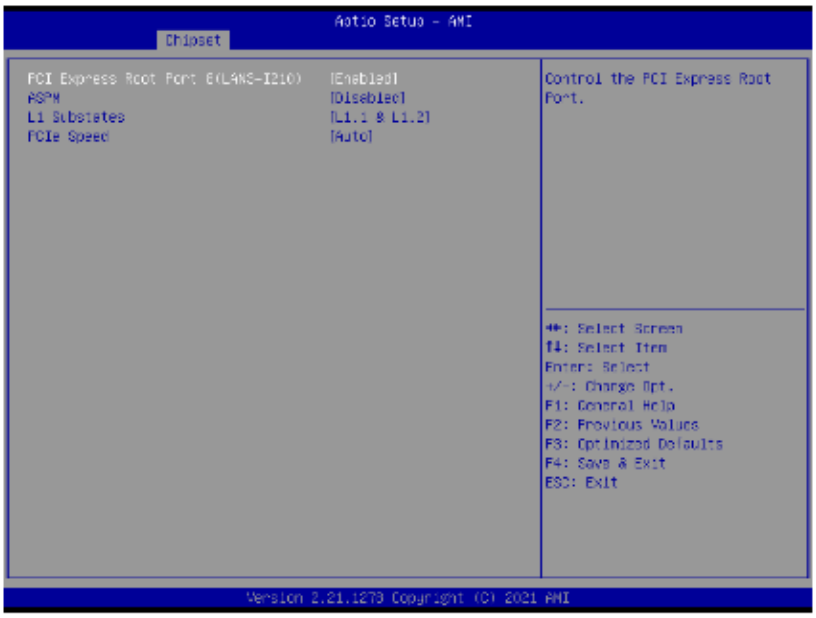
Item	Options	Description
PCI Express Root Port 5(LAN2-1225)	Disabled, Enabled [Default]	Control the PCI Express Root Port.
ASPM	Disabled, L0s, L1, L0sL1, Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled, L1.1, L1.1 & L1.2 [Default]	PCI Express L1 Substates settings.
PCIe Speed	Auto [Default], Gen1, Gen2, Gen3	Select PCIe speed.

3.6.3.2.1.2 PCI Express Root Port 6(M.2 KeyE)



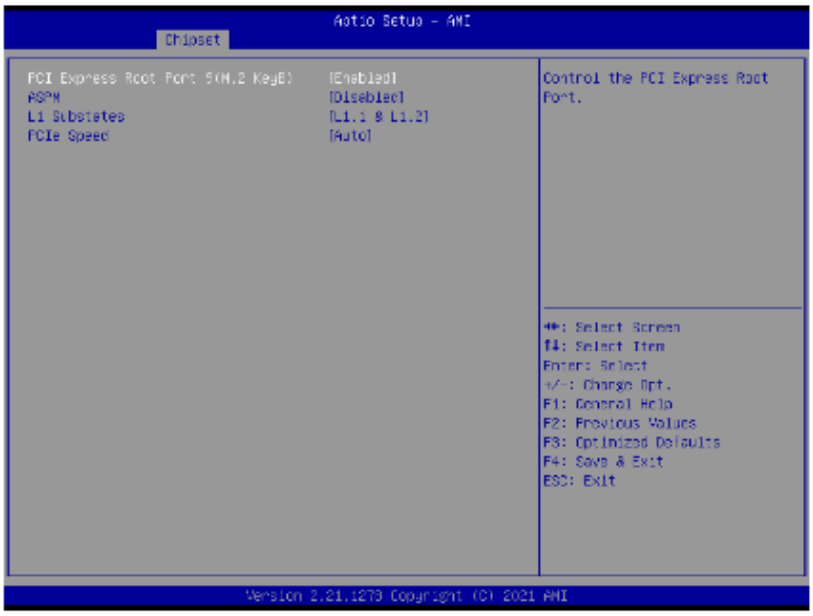
Item	Options	Description
PCI Express Root Port 6(M.2 KeyE)	Disabled, Enabled [Default]	Control the PCI Express Root Port.
ASPM	Disabled [Default], L0s, L1, L0sL1, Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE - Disables ASPM.
L1 Substates	Disabled, L1.1, L1.1 & L1.2 [Default]	PCI Express L1 Substates settings.
PCIe Speed	Auto [Default], Gen1, Gen2, Gen3	Select PCIe speed.

3.6.3.2.1.3 PCI Express Root Port 8(LAN3-I210)



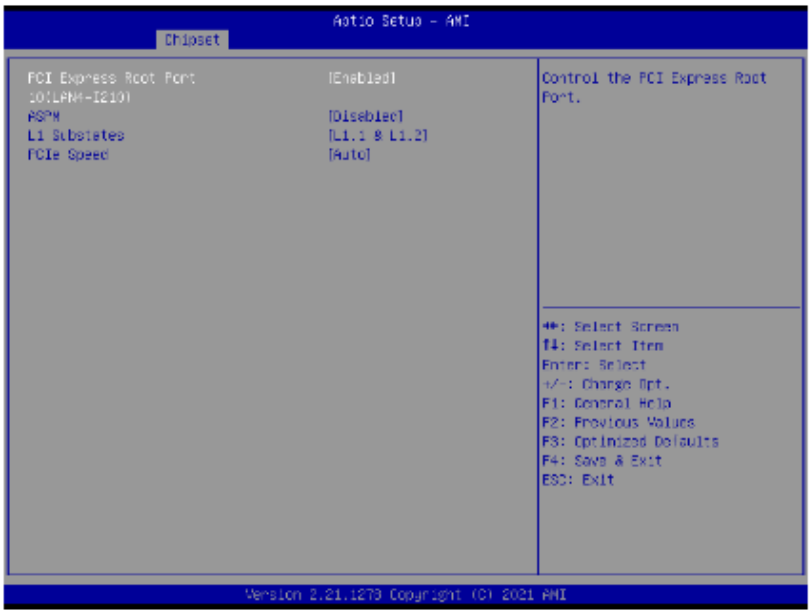
Item	Options	Description
PCI Express Root Port 8(LAN3-I210)	Disabled, Enabled [Default]	Control the PCI Express Root Port.
ASPM	Disabled [Default], L0s, L1, L0sL1, Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE - Disables ASPM.
L1 Substates	Disabled, L1.1, L1.1 & L1.2 [Default]	PCI Express L1 Substates settings.
PCIe Speed	Auto [Default], Gen1, Gen2, Gen3	Select PCIe speed.

3.6.3.2.1.4 PCI Express Root Port 9(M.2 KeyB)



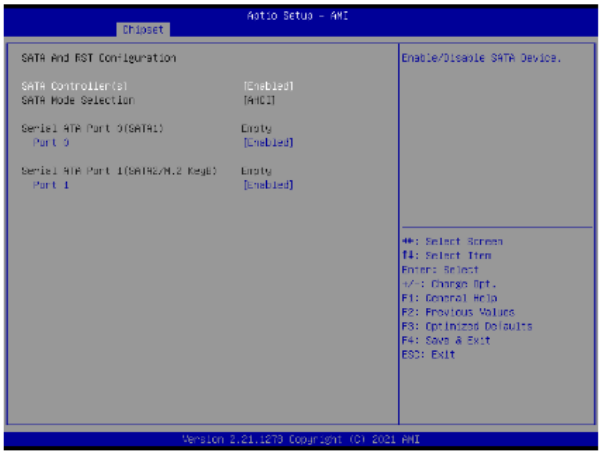
Item	Options	Description
PCI Express Root Port 9 (M.2 KeyB)	Disabled, Enabled [Default]	Control the PCI Express Root Port.
ASPM	Disabled [Default], L0s, L1, L0sL1, Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE - Disables ASPM.
L1 Substates	Disabled, L1.1, L1.1 & L1.2 [Default]	PCI Express L1 Substates settings.
PCIe Speed	Auto [Default], Gen1, Gen2, Gen3	Select PCIe speed.

3.6.3.2.1.5 PCI Express Root Port 10(LAN4-I210)



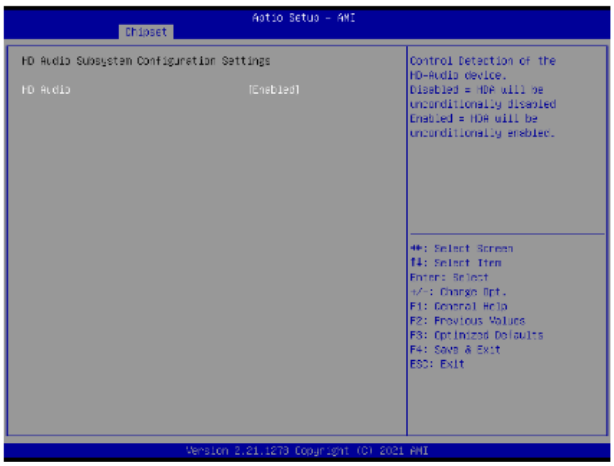
Item	Options	Description
PCI Express Root Port 10(LAN4-I210)	Disabled, Enabled [Default]	Control the PCI Express Root Port.
ASPM	Disabled [Default], L0s, L1, L0sL1, Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE - Disables ASPM.
L1 Substates	Disabled, L1.1, L1.1 & L1.2 [Default]	PCI Express L1 Substates settings.
PCIe Speed	Auto [Default], Gen1, Gen2, Gen3	Select PCIe speed.

3.6.3.2.2 SATA and RST Configuration



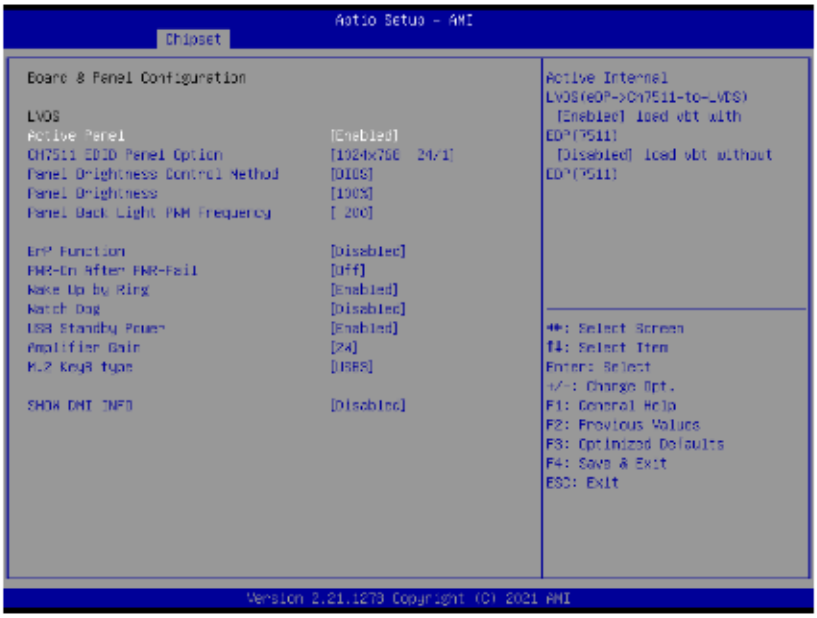
Item	Options	Description
SATA Controller(s)	Disabled, Enabled [Default]	Enable/Disable SATA Device
Port 0	Disabled, Enabled [Default]	Enable/Disable SATA Device
Port 1	Disabled, Enabled [Default]	Enable/Disable SATA Device

3.6.3.2.3 HD Audio Configuration



Item	Options	Description
HD Audio	Disabled, Enabled [Default]	Control Detection of the HD-Audio device. Disable = HDA will be unconditionally disabled, Enabled = HDA will be unconditionally enabled.

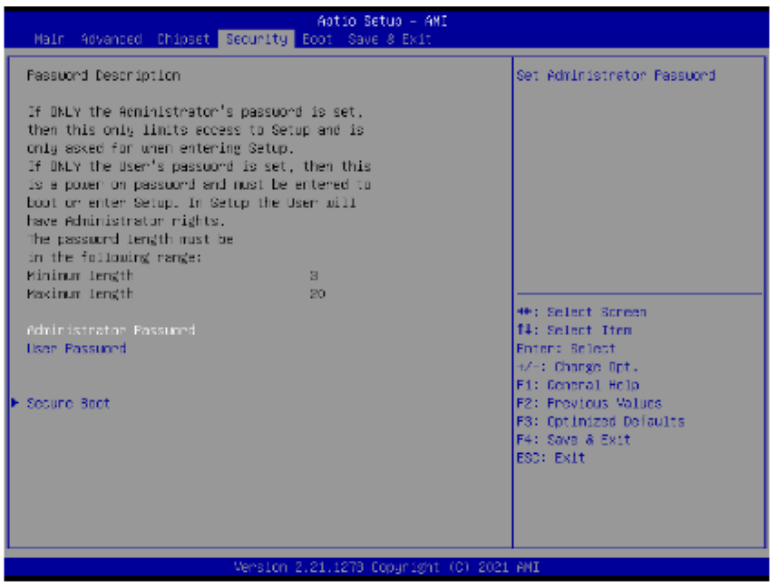
3.6.3.3 Board & Panel Configuration



Item	Options	Description
Active Panel	Disabled, Enabled [Default]	Active Internal LVDS (eDP→Ch7511-to-LVDS) [Enabled] load vbt with EDP(7511) [Disabled] load vbt without EDP(7511)
CH7511 EDID Panel Option	1024 x 768 24/1[Default] 800 x 600 18/1 1024 x 768 18/1 1366 x 768 18/1 1024 x 600 18/1 1280 x 800 18/1 1920 x 1200 24/2 1920 x 1080 18/2 1280 x 1024 24/2 1440 x 900 18/2 1600 x1200 24/2 1366x768 24/1 1920x1080 24/2 1680 x1050 24/2	Port1-EDP to LVDS (Chrotel 7511) Panel EDID Option

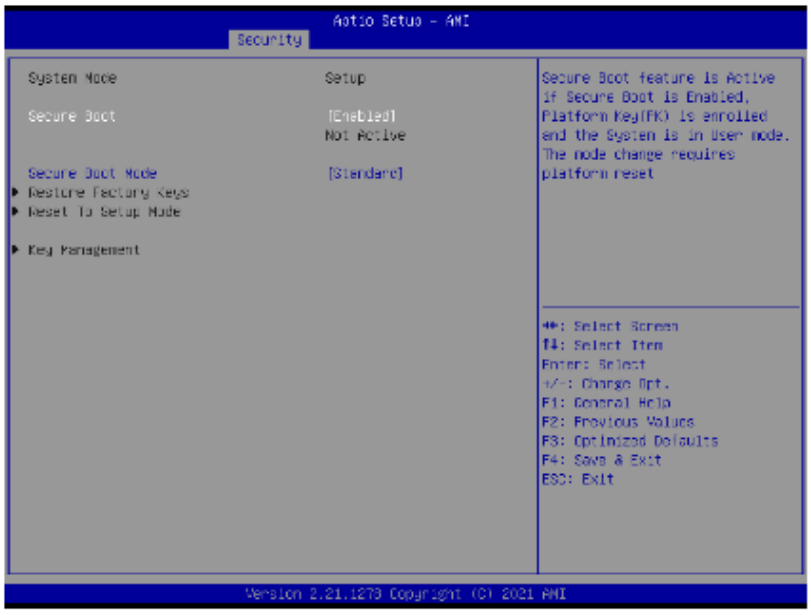
Panel Brightness Control Method	BIOS [Default], BR Button, VR, OS Driver	Panel Brightness Control Method. 1. BIOS 2. Brightness Button 3. VR 4.OS Driver
Panel Brightness	00%, 25%, 50%, 75%, 100% [Default]	Select Panel back light PWM duty.
Panel Back Light PWM Frequency	200 [Default], 300, 400, 500, 700, 1k, 2k, 3k, 5k, 10k, 20k	Select Panel back light PWM Frequency
ErP Function	Disabled [Default], Enabled	AC loss resume.
PWR-On After PWR-Fail	Off [Default], On, Last State	ErP Function
Wake Up by Ring	Disabled, Enabled [Default]	Wake Up by Ring from S3/S4/S5
Watch Dog	Disabled [Default], 30 sec, 40 sec, 50 sec, 1 min, 2 min, 10 min, 30 min	Select Watch Dog.
USB Standby Power	Disabled, Enabled [Default]	Enabled/Disabled USB Standby Power during S3/S4/S5
Amplifier Gain	2W [Default], 6W	Amplifier Gain
M.2 KeyB type	USB3 [Default], PCIE	M.2 KeyB type
SHOW DMI INFO	Disabled [Default], Enabled	SHOW DMI INFO

3.6.4 Security



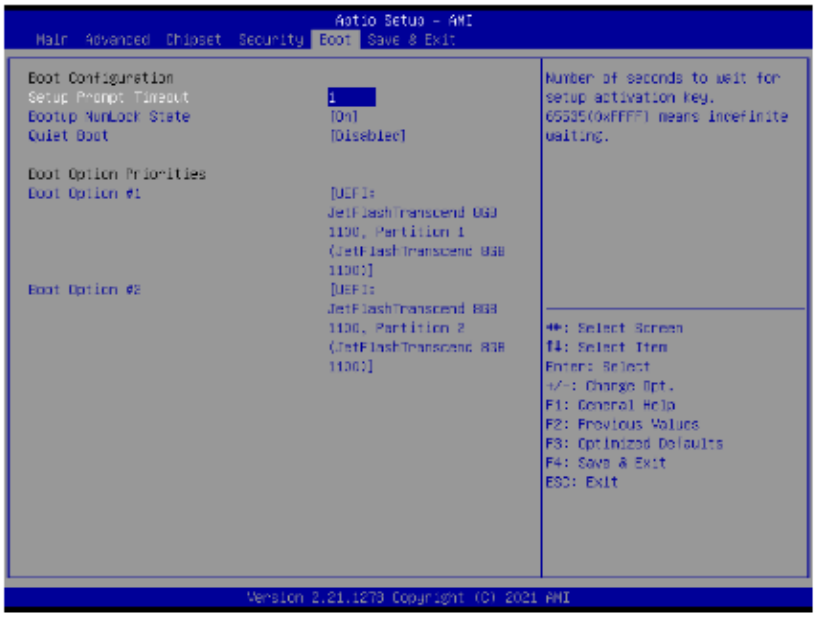
- **Set Administrator Password**
- **Set User Password**

3.6.4.1 Secure Boot Menu



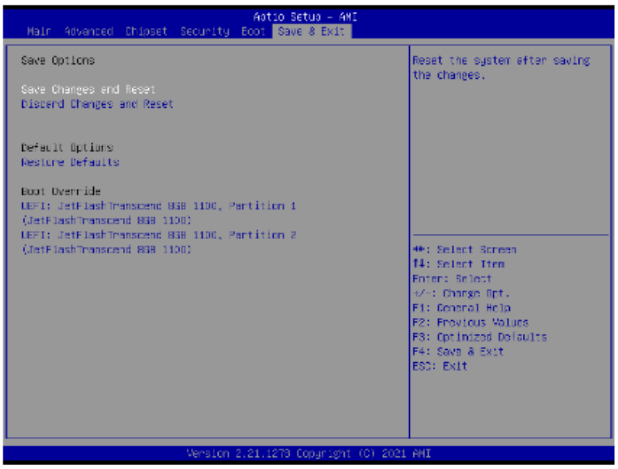
Item	Options	Description
Secure Boot	Disabled, Enabled [Default]	Secure Boot feature is Active if Secure Boot is Enabled, Platform Key (PK) is enrolled and the System is in User mode. The mode change requires platform reset.
Secure Boot Mode	Standard [Default], Custom	Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

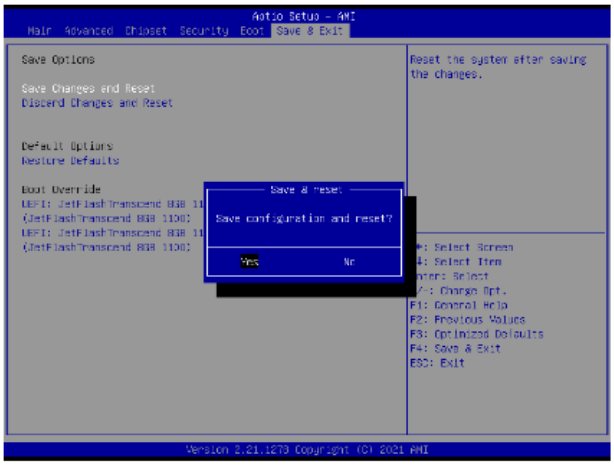
3.6.5 Boot



Item	Options	Description
Setup Prompt Timeout	1	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting
Bootup NumLock State	On [Default], Off	Select the Keyboard NumLock state
Quiet Boot	Disabled [Default], Enabled	Enables or disables Quiet Boot options
Boot Option #1	Set the system boot order.	
Bootup N	Set the system boot order.	

3.6.6 Save and Exit





3.6.6.1 Save Changes and Reset

Reset the system after saving the changes.

3.6.6.2 Discard Changes and Resest

Reset system setup without saving any changes.

3.6.6.3 Restore Defaults

Restore/Load Default values for all the setup options.

3.6.6.4 Launch EFI Shell from Filesystem Device

Attemps to Launch EFI Shell application (Shell.efi) from one of the available filesystem devices.

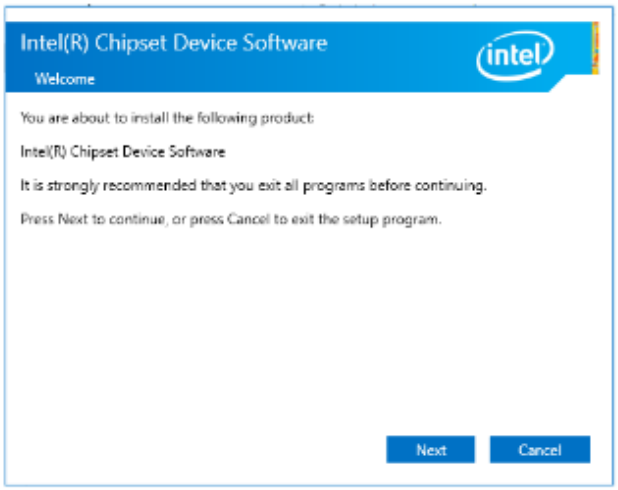
4. Drivers Installation

4.1 INSTALL CHIPSET DRIVER

All drivers can be found on the Avalue Official Website:

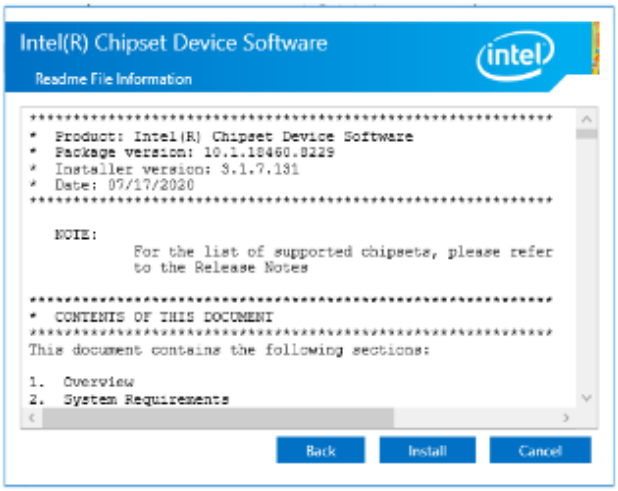
http://www.avalue.com.tw

Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears during the installation process, click Continue to go on.



Step 1. Click **Next**

Step 2. Accept



Step 3. Click **Install**

Step 4. Complete Setup

4.2 INSTALL VGA DRIVER

All drivers can be found on the Avalue Official Website:

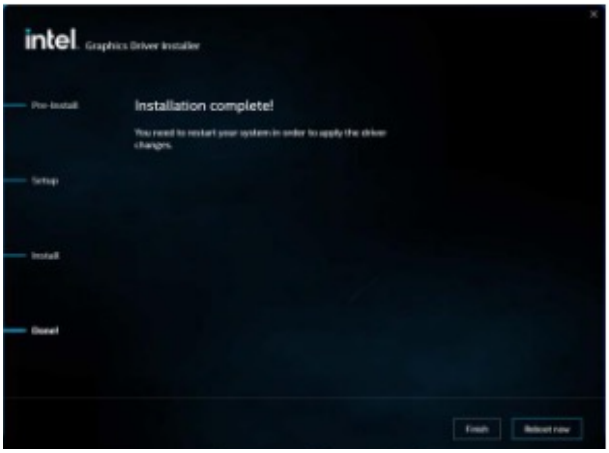
http://www.avalue.com.tw

Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears during the installation process, click Continue to go on.

Step 1. Click **Begin Installation**

Step 2. Click **Next** to accept license agreement

Step 3. Click **Start**



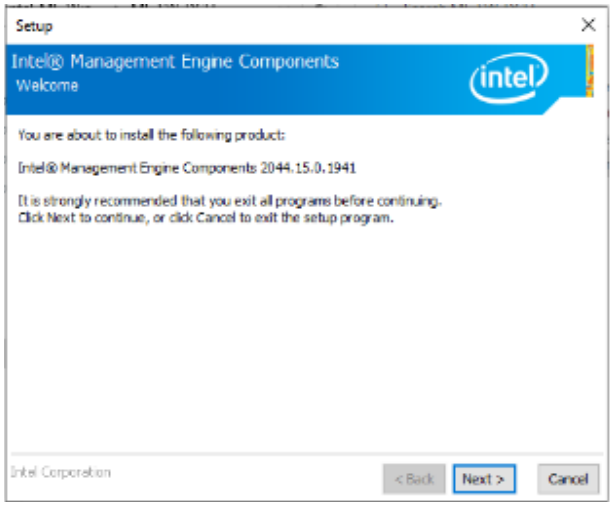
Step 4. Click **Reboot now.**

4.3 INSTALL ME DRIVER

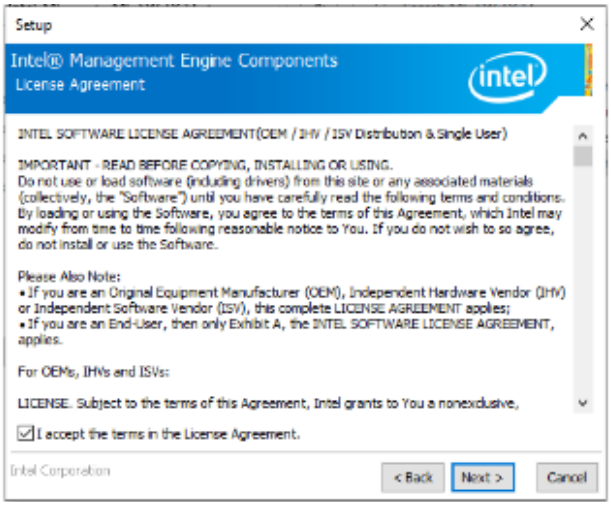
All drivers can be found on the Avalue Official Website:

http://www.avalue.com.tw

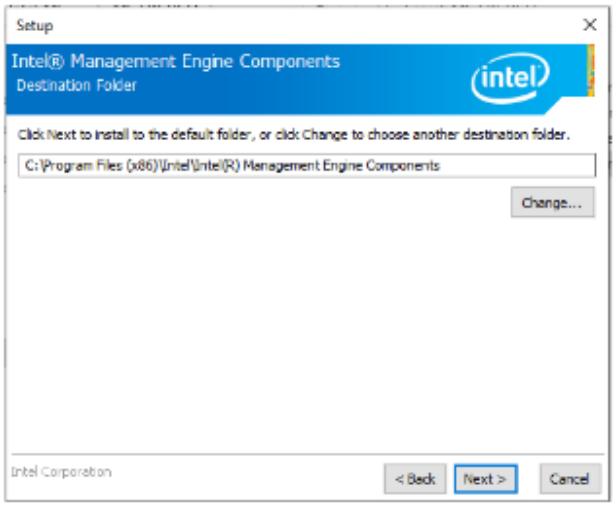
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears during the installation process, click Continue to go on.



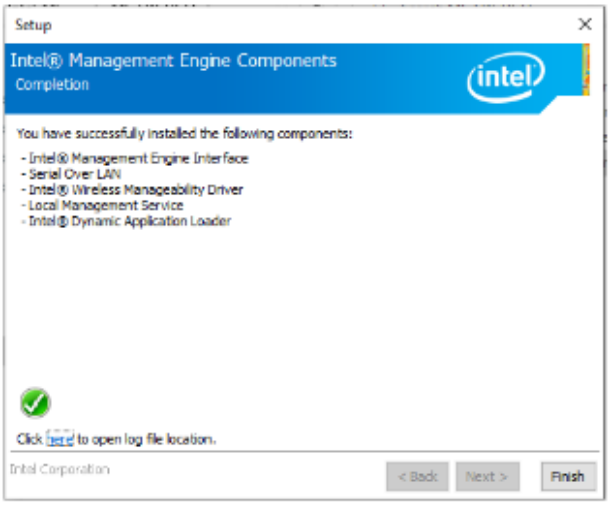
Step 1. Click **Next** to continue setup



Step 2. Accept



Step 3. Click **Next**



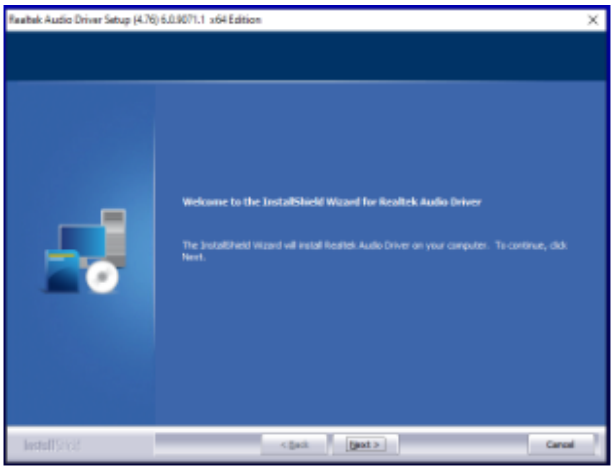
Step 4. Click **Finish** to complete setup

4.4 INSTALL AUDIO DRIVER (For Realtek ALC897 and ALC888S HD Audio)

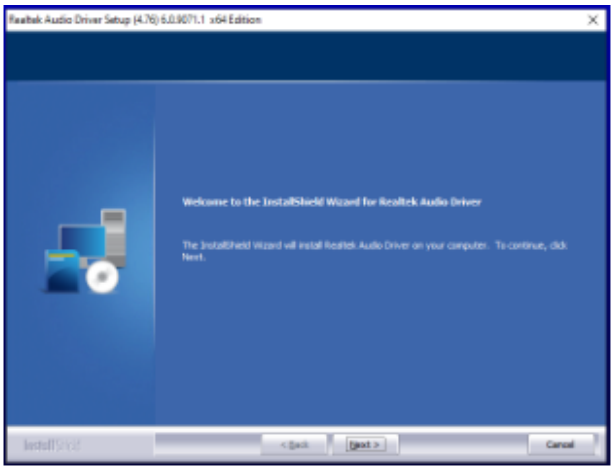
All drivers can be found on the Avalue Official Website:

http://www.avalue.com.tw

Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears during the installation process, click Continue to go on.



Step 1. Click **Next** to Install



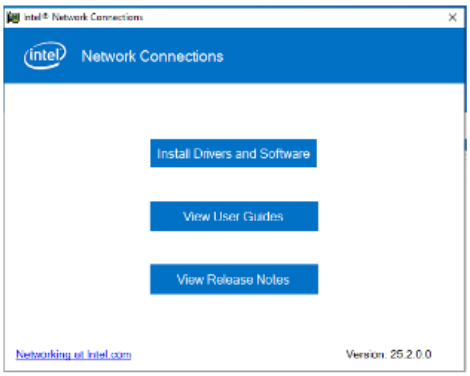
Step 2. Click **Finish** to complete setup

4.5 INSTALL LAN DRIVER

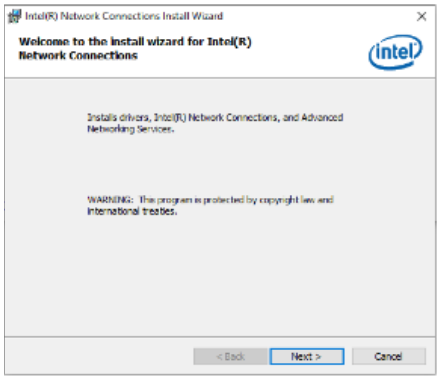
All drivers can be found on the Avalue Official Website:

http://www.avalue.com.tw

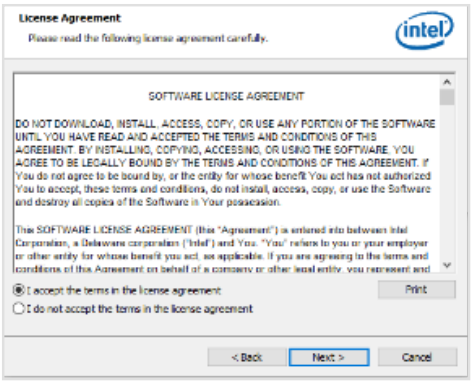
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears during the installation process, click Continue to go on.



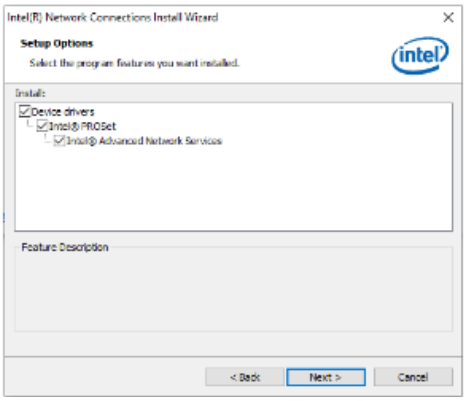
Step 1. Click **Next** to continue installation



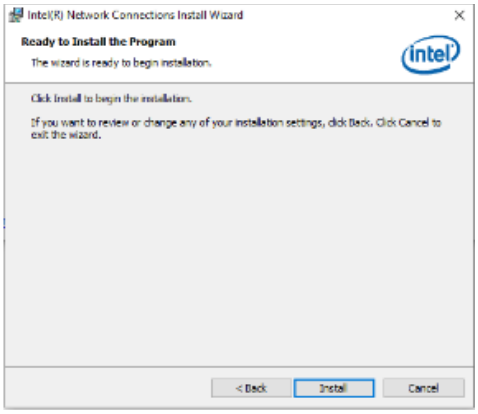
Step 2. Click **Next**



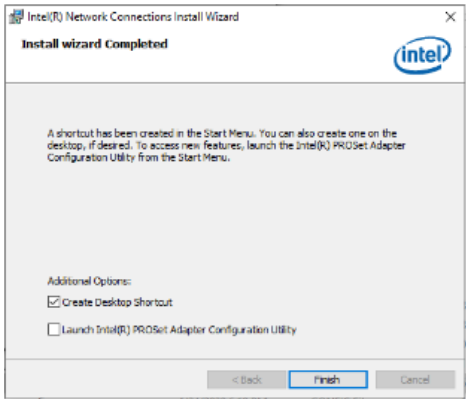
Step 3. Click **Next**



Step 4. Click **Next**



Step 5. Click **Install**



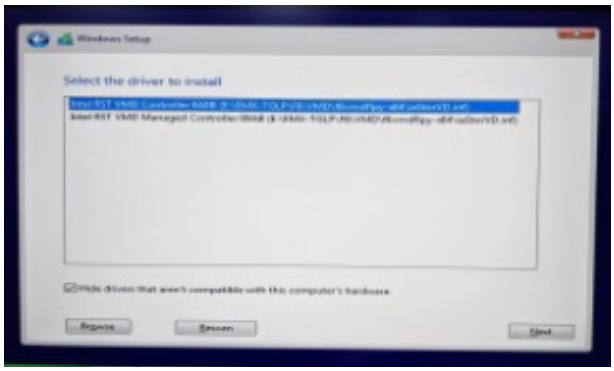
Step 6. Click **Finish** to complete setup

4.6 INSTALL RST FOR RAID DRIVER

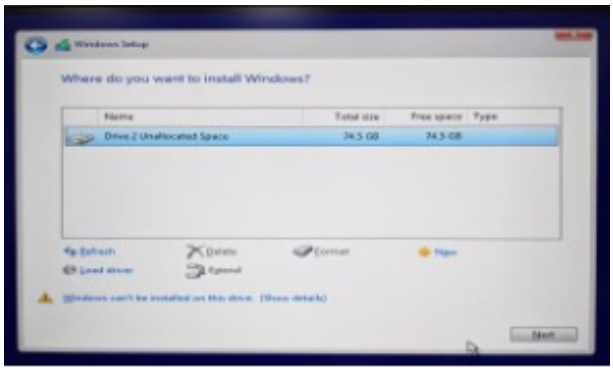
All drivers can be found on the Avalue Official Website:

http://www.avalue.com.tw

Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears during the installation process, click Continue to go on.



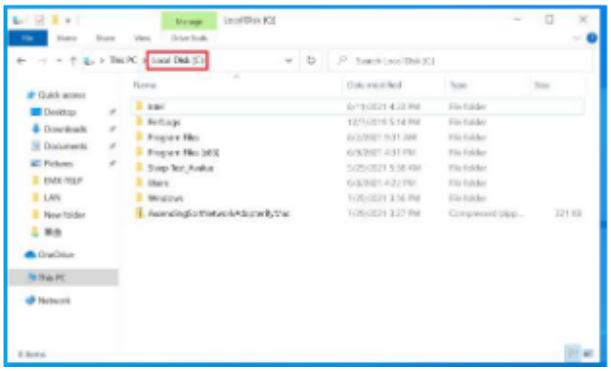
Step 1. Click **Next** to continue installation



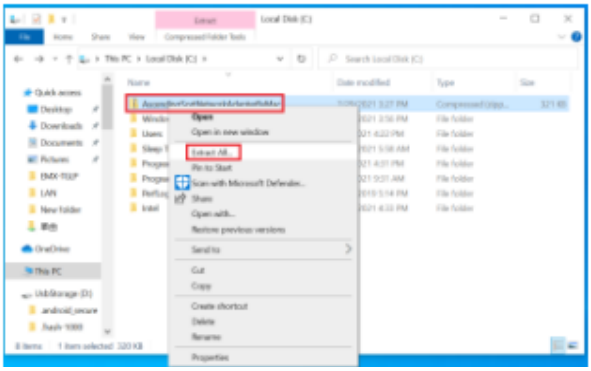
Step 2. Click **Next**

4.7 ASCENDING NETWORK ADAPTER

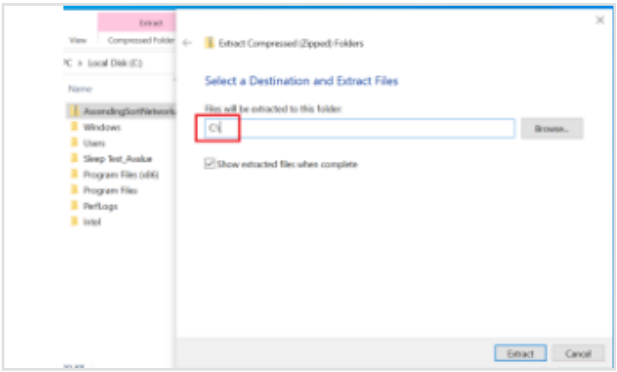
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears during the installation process, click Continue to go on.



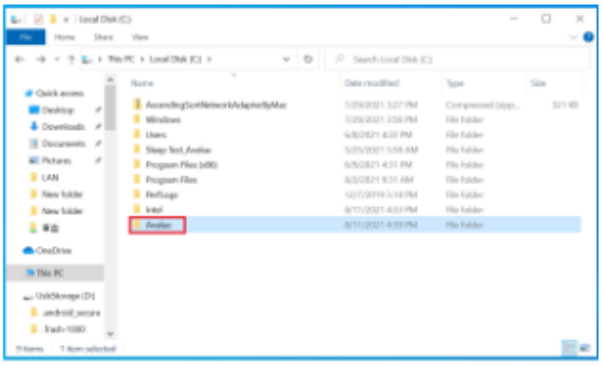
Step 1. Copy file: "**AscendingSortNetwork AdapterByMac.zip"** to C:\



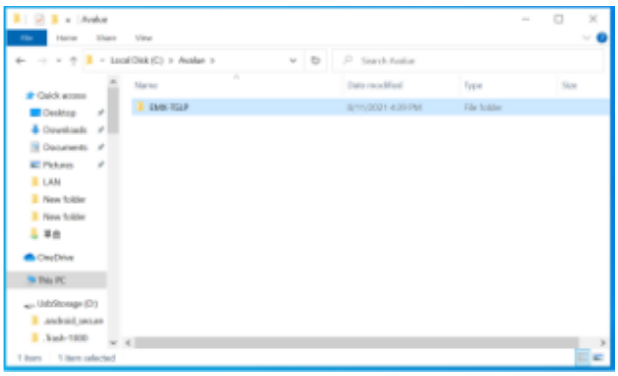
Step 2. Unzip file: "**AscendingSortNetworkAdapterByMac.zip"**



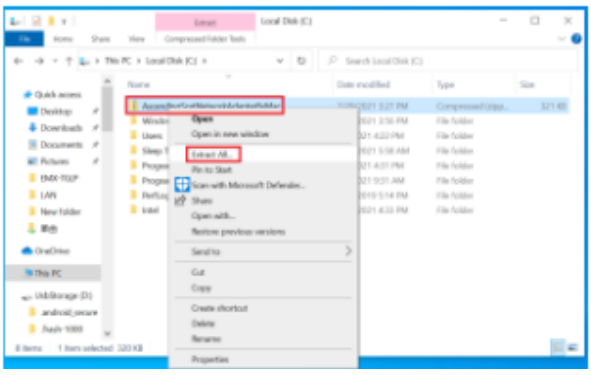
Step 3. Change path to **C:** and execute the file



Step 4. It will generate **Avalue** folder

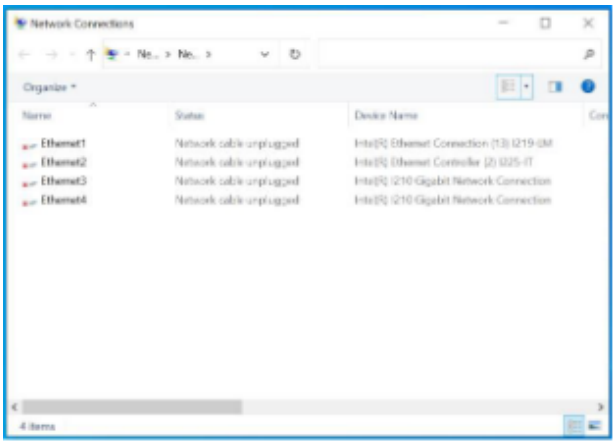


Step 5. Click and enter C:\Avalue**EMX-TGLP** folder, execute administratoramode "Execute AscendingSortNetworkAdaptersX64.bat".



Step 6. After executing "ExecuteAscending SortNetworkAdaptersX64.bat" it will auto Restart.

4.7 ASCENDING NETWORK ADAPTER (Continued)



Step 7.
Ethernet1 → INTEL I219LM
Ethernet2 → INTEL I225IT
Ethernet3 → INTEL I210
Ethernet4 → INTEL I210

Note: If customer would like to patch LAN order sequence, please refer to Avalue website for EMX-TGLP Sort Network Adapter by Mac Address.

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Other

No.	Release Date	Model	Description	Download
1	2021-08-12	EMX-TGLP	SortNetwork Tool Device:Other	

5. Product Safety Precautions

- Ensure that sufficient space is available around the display to provide the circulation necessary for cooling.
- Ensure that the ambient air temperature will not exceed the specified maximum temperature.
- Do not attempt to service this display yourself. The rear chassis has a seal so that non-qualified personnel will not expose themselves to dangerous voltages or other risks.
- To protect from electrical shock, unplug the display power supply from the wall before moving.
- Do not expose the display to direct sunlight or heat.
- Do not use this display near water.
- Do not place any heavy objects on the power cords. Damage may cause electrical shock.
- Unplug the power supply from the wall or unit if one of the following conditions exists:
    - Power cord or plug is damaged or frayed.
    - Liquid is spilled onto the display or the display is exposed to rain or water.
    - The display does not operate normally when the operating instructions are followed.
    - The display has been dropped or the enclosure has been damaged.
    - The display exhibits a distinct change in performance, indicating a need for service.

6. Inspection of your AbraxSys PC

The PC is supplied with different accessories depending on the model configuration purchased. Verify the model and accessories that were ordered. Contact your AbraxSys salesperson should there be any discrepancies.

7. Unpacking your AbraxSys PC

Your new rugged LCD PC package will consist of a variation of the components listed below (section 5), depending on model, configuration, and options ordered. Open shipping container and place all the components on a flat clean surface. Contact your AbraxSys salesperson should there be any discrepancies and/or packaging damage. Packaging type will depend on model size. 'Cable Kits' are clearly labeled on a box inside the shipping container which will include not only all associated cables, but as well necessary mounting hardware, user manual (USB flash drive), etc. If the kit box is missing, please contact AbraxSys immediately. Additionally, on the outside of each packaging container you will notice a white AbraxSys product label. Printed information on this label will be Model, Model Configuration, Date Code, Serial Number, Invoice number, customer PO number, customer requested reference information, and the AbraxSys Production work-order number.

8. What is included with your AbraxSys PC

Depending on model, configuration, and options ordered will dictate what has been supplied. In general, the PC will be ~6ft (~1.82m) power cables and mounting washers and locking nuts.

9. Connecting the AbraxSys PC

1. Connect all cables to the computer first.
2. After connecting the cables, connect the Power Cable to the PC and the customer supplied DC or AC voltage source. Check the display unit label to determine the correct DC voltage.
3. Turn the DC voltage source on. The display will be active.
4. Turn on your computer. The display should now operate showing your OS or the video that is being supplied to the flat panel.

10. Power

General

AbraxSys typically offers the following power options:

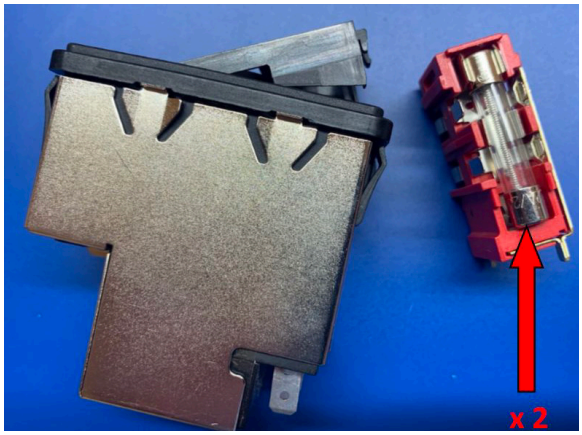
- 90-264V AC 110/220
- 12V DC FIXED
- 24V DC Variable
- 9 to 36V DC Variable
- 20 to 53V DC Variable

Alternating Current [AC] Power

AC Power with an In-Line Corcom Transient Noise and EMI / RFI Filter
Auto Switching @ 50/60 Hz (Internal)

- Current - IEC 6A
- Voltage - IEC 120VAC
- Current - UL 6A
- Voltage - UL 250VAC

This power module has a field replaceable fuse port. Below is shown how to change the fuses (x2). Use two Glass 2A 250VAC 3AB 3AG Fuses. AbraxSys suggests Littlefuse p/n 0313002.HXP.



Power (Continued)

Direct Current [DC] Power

AbraxSys typically provides one of these two types of DC power connectors, although a Terminal Block is a possibility, too.

DC with Locking Connector

Yellow = Positive
Black = Negative

Its Mating Cable

Its Mating Cable

Red = Positive
Black = Negative

12V DC Fixed

12V is FIXED and cannot handle spikes and/or small deviations. Must be CONSTANT 12V.

24V DC Variable

This is a variable DC option and can handle a fairly wide deviation from 24V.

9 to 36V DC Variable

INDUSTRIAL TYPE: 9 to 36V DC Variable
This variable configuration will take variations from 9V DC all the way through 36V DC.

MOBILE TYPE: 9 to 36V DC Variable
This variable configuration will take variations from 9V DC all the way through 36V DC.

MARINE GRADE TYPE: 9 to 36V DC Variable
This variable configuration will take variations from 9V DC all the way through 36V DC with reverse polarity protection.

20 to 53V DC Variable

This variable configuration will take variations from 20V DC all the way through 53V DC.

11. Care & Cleaning

Occasionally clean the display panel and cabinet with a soft cloth dampened (not soaked) with a mild (non-abrasive) glass cleaner. Keep turning a fresh side of the cloth toward the screen surface to avoid scratching it with accumulated grit.

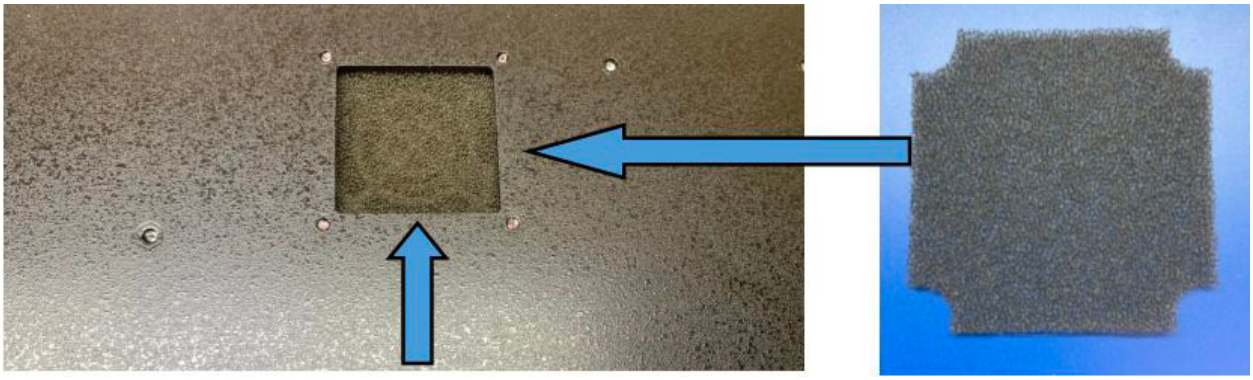
Note: The solvent should be applied only to the cloth, and not directly on the monitor screen.

Do not use paper products as they may scratch the surface. To minimize the risk of abrasion, allow the screen to stand dry. Special care should be taken when cleaning a touch screen or polycarbonate shield that is installed over the screen. Abrasive and certain chemical cleaners can easily damage the surface. Never use alcoholic or ammoniac cleaners to clean the polycarbonate shield or a touch screen.

Note: For best results cleaning a monitor with the optional antireflective tempered glass display shield, a solution of denatured alcohol is recommended to thoroughly clean the display.

Replacing a Line Cord: To avoid shock and fire hazards, the monitor's power cord should be replaced if the insulation becomes broken or if it develops a loose internal connection.

Fan Filter: A fan is not integrated into all AbraxSys models, but those that have a fan at the backside of the monitor the fan filter should be changed regularly, especially in very dirty environments. Replacement filters can be obtained by calling AbraxSys, (800) 883-9050.



Qualified service personnel should perform all maintenance, except for the power cord replacement described above.

12. Mounting

Panel Mount

1. Cut and drill the panel (refer to panel mount drawing). Measurements are in inches and millimeters.
2. If access to the side of the monitor is not available following installation, attach the power and video cables to the side of the monitor at this time.
3. Install the monitor in the prepared cutout.
4. Install the lock nuts and washers, supplied with the monitor, behind the holes running along the sides and top/bottom of the cutout in the panel. Extra lock nuts and washers are provided.
5. Tighten mounting nuts evenly to provide adequate seal and avoid potential damage to the unit. AbraxSys assumes no responsibility for water or chemical damage due to improper installation.
6. Attach the power, video cables, and touch cables (if applicable) if you have not already done so.

13. Touchscreen (optional feature)

Introduction

Touch screens are a common means to interface operator inputs to a system. The universal standard of Windows GUI (Graphical User Interface) has significantly increased the use of touch screens. There are several main touch technologies. The technologies are resistive, surface acoustic wave (SAW), surface capacitive, infra-red (IR), Optical, projective capacitive, and AbraxSys' Hardened Armored Resistive Touch. Each touch technology has advantages and disadvantages based on different user applications. Currently, AbraxSys only supports: Projected Capacitive, 5-wire Resistive, or Hardened Armored Resistive. These three are deemed the best for harsh-duty environments.

Typically, for 5-wire Resistive or Hardened Armored Resistive configurations, AbraxSys provides both Serial (RS232) and USB ports on its monitors. In some instances, only one will be present if the mechanical rear chassis is too small to accommodate both, at which point only one or the other will be resident. This will have been discussed and selected at the time of order. Projected Capacitive Touch configurations will have only USB. RS232 is not offered or available.

Touchscreen (continued)

Installation

All AbraxSys displays configured with a touch screen (“Resistive” and/or “Hardened Armored Resistive” only) are supplied with a USB thumb-drive which includes the drivers for various operating systems. Insert the supplied USB removable drive into the computer’s applicable USB port and follow the installation instructions that will appear on the screen.

Drivers can also be downloaded from here:

Microsoft

https://www.eeti.com/drivers_Win.html

Windows 10 Windows 8.1 Windows 8 Windows Embedded 8 Embedded 8.1 Industry Embedded 8.1 Pro Embedded 8 Standard Windows 7 Windows Embedded 7 Embedded Enterprise 7 Embedded Standard 7 Embedded POSReady 7 Windows XP Windows Embedded POSReady 2009 Windows 2000	5.14.0.18411 USB / RS-232 For Surface Capacitive / Resistive / Surface Acoustic Wave / infrared.	2019/02/11
	For Projected Capacitive. The driver is a mouse emulation driver. If your USB interface touch device is projected capacitive type and Windows version is Windows 7 or later, we suggest you do not install this driver. There is a HID touch digitizer build-in driver in Windows 7 or later. If your need RS-232 interface driver for projected capacitive type touch device , please contact us.	2018/06/19

Linux

https://www.eeti.com/drivers_Linux.html

Kernel 2.6.24 Upward and 3.x.x / 4.x.x	USB / UART / PS2	
X86 (32/64bits)	eGTouch_v2.5.7413.L-x	2019/03/13
ARM / MIPS	eGTouch_v2.5.7413.L-ma	2019/03/13
1. Available for multi-touch as kernel version is 2.6.36 above. If kernel version below 2.6.35, it could only support single point. 2. Available for non-Xwindow system. 3. Support Multi-controller & Multi- monitor. 4. Support Right-Click		

Touchscreen (continued)

For those systems specifically configured with an ELO Resistive Touch (only) controller, drivers can be downloaded from here:

https://www.elotouch.com/support/downloads#/category/346LYmeuAUEI4Qa0sSyiSa

NOTE: Projected Capacitive touch screens (PCAP for short) are USB only devices and do NOT need drivers or calibration. They are HID devices (Human Interface Device) and all Windows and Linux based operating systems, Win7 and above, are all HID-enabled.

The HID standard was adopted primarily to enable innovation in PC input devices and to simplify the process of installing such devices. Prior to the introduction of the HID concept, devices usually conformed to strictly defined protocols for mouse, keyboards, touch screens, and joysticks. The HID protocol enables all modern mainstream operating systems to recognize standard USB HID devices, again, such as touch screens, keyboards, and mice, without needing a specialized driver. When installed, a message saying "An HID-compliant device has been recognized" generally appears on screen.

Technical support is available by contacting AbraxSys' customer support at 800-883-9050.

14. Dimming (optional)

AbraxSys offers several types of dimming controls:

- Rear Mounted User Keypad with Up/Down arrows to control dimming
- Front Mounted User Keypad with Up/Down arrows to control dimming
- Manual Full-Range Dimming Turn-Pot from 0 to 100% brightness
- Automatic Ambient Light Sensor
- Remote Dimming by Turn-Pot
- Command Dimming by Serial (RS232) Port (not available on all models)

Dimming (Continued)

Rear or Front Mounted Keypad

While the Up/Down arrows also control menu movement within the OSD, the keypad has been pre-programmed to also do quick brightness adjustments by simply pressing the Up or Down arrows to control dimming levels.

Manual Full-Range Dimming Turn-Pot

With this option, if ordered, a sealed potentiometer 'knob' has been integrated into a lower corner of the front bezel. Turn left to reduce the monitor's brightness, turn the knob right to increase luminance. All the way 'right' will be at full brightness and all the way left will produce a black screen....even though the monitor is still 'on'.

Automatic Ambient Light Sensor

With this option, if ordered, a small sealed light sensor has been integrated into the front bezel. It automatically senses ambient light levels and provides continuous self-regulating control of the LCD's LED backlights for daylight and nighttime operation. Ideal for unsupervised Kiosks, outdoor control panels, vehicle operation, etc. and works by monitoring daylight conditions, then controlling the monitor's luminance so as to ensure that adequate lighting levels are maintained. The sensor will not reduce brightness down to a black screen, or zero 'nits'. Typically, about 20% of maximum brightness is as low as it will go. Please note as well, that when operating the monitor inside the brightness will appear about as bright as a standard office LCD, so do not be alarmed if the brightness is not super bright. You can take a flashlight and direct it closely over the light sensor and see the luminance increase. The sensor is meant only for very bright environments.

Remote Dimming

Same as **" Manual Full-Range Dimming Turn-Pot "** but the potentiometer is provided with wire leads so you can mount remotely, like on a ship's console or within a Pelican case.

For all other support questions or product issues,
please contact AbraxSys at (800) 883-9050 or by email
customerservice@abraxsyscorp.com

AbraxSys
RUGGED LCD SOLUTIONS

(800) 883-9050
contact@abraxsyscorp.com

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