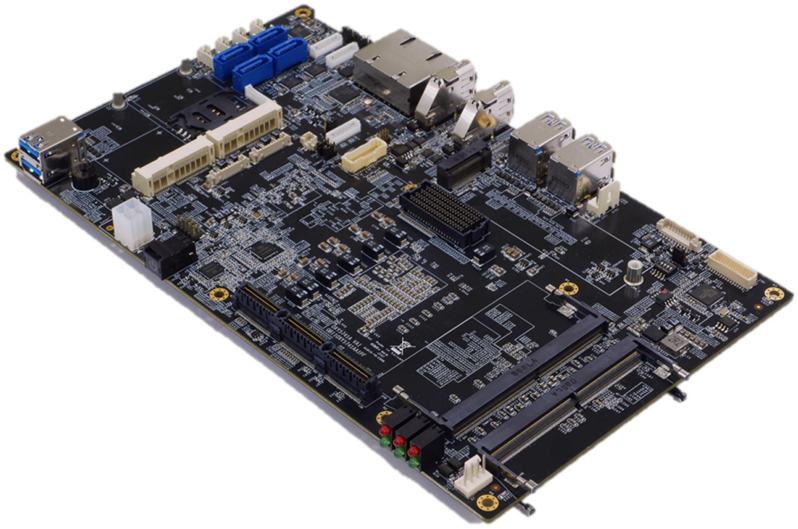
OXY5741A

Ruggedised Open-Standard EBX SBC Expansion,

Extend Temperture -40°C~85°C



User's Manual

Revision Date: Apr. 22. 2021

Safety Information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area.
- If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your local distributor.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter any technical problems with the product, contact your local distributor

Statement

Revision History

Revision	Date (yyyy/mm/dd)	Changes
V1.0	2021/04/22	First release
V1.0	2021/05/27	Add Mechanical Dimensions

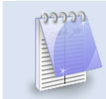
Packing List

Item	Description	Q'ty
1	OXY5741A EBX SBC	1
2	CD(Drivier + User's manual)	1

Ordering information

OXY5741A

Ruggedised Open-Standard EBX SBC Expansion, Extend Temperture -40°C~85°C



If any of the above items is damaged or missing, please contact your local distributor.

RoHS Compliance

Perfectron RoHS Environmental Policy and Status Update

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

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

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

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

Table Contents

Chapter 1 : Product Introduction

1.1 Specifications

System

CPU	Intel® Core™ i7-9850HE Processor (6 Cores/12 Threads, 9M Cache, up to 4.40 GHz), 45W Intel® Core i7-9850HL ((6 Cores/12 Threads, 9M Cache, up to 4.10 GHz), 25W XEON E-2276ME (6 Cores/12 Threads, 12M Cache, up to 4.50 GHz), 45W XEON E-2276ML (6 Cores/12 Threads, 12M Cache, up to 4.20 GHz), 25W Intel® Core™ i5-8400H Processor (6 Cores/12 Threads, 8M Cache, up to 4.20 GHz) TDP: 45W
Memory type	4 x DDR4 2666MHz SODIMM up to 128GB
Chipset	CM246
BIOS Code	AMI UEFI BIOS
BIOS Flash	SPI Flash
Super I/O	ITE 8786
TPM	SLB9665 TPM2.0
iAMT	iAMT12.0
WatchDog	1-255 sec. or 1-255 min. software programmable and can be generate system reset

Display

Display Port	Resolution up to 4096 x 2304
Chipset	Intel®UHD Graphics 630
Vedio Memory	Shared Memory
LVDS	1*Dual Channel 24bit LVDS (w/auto-dimming support)

Audio

Codec	ALC887

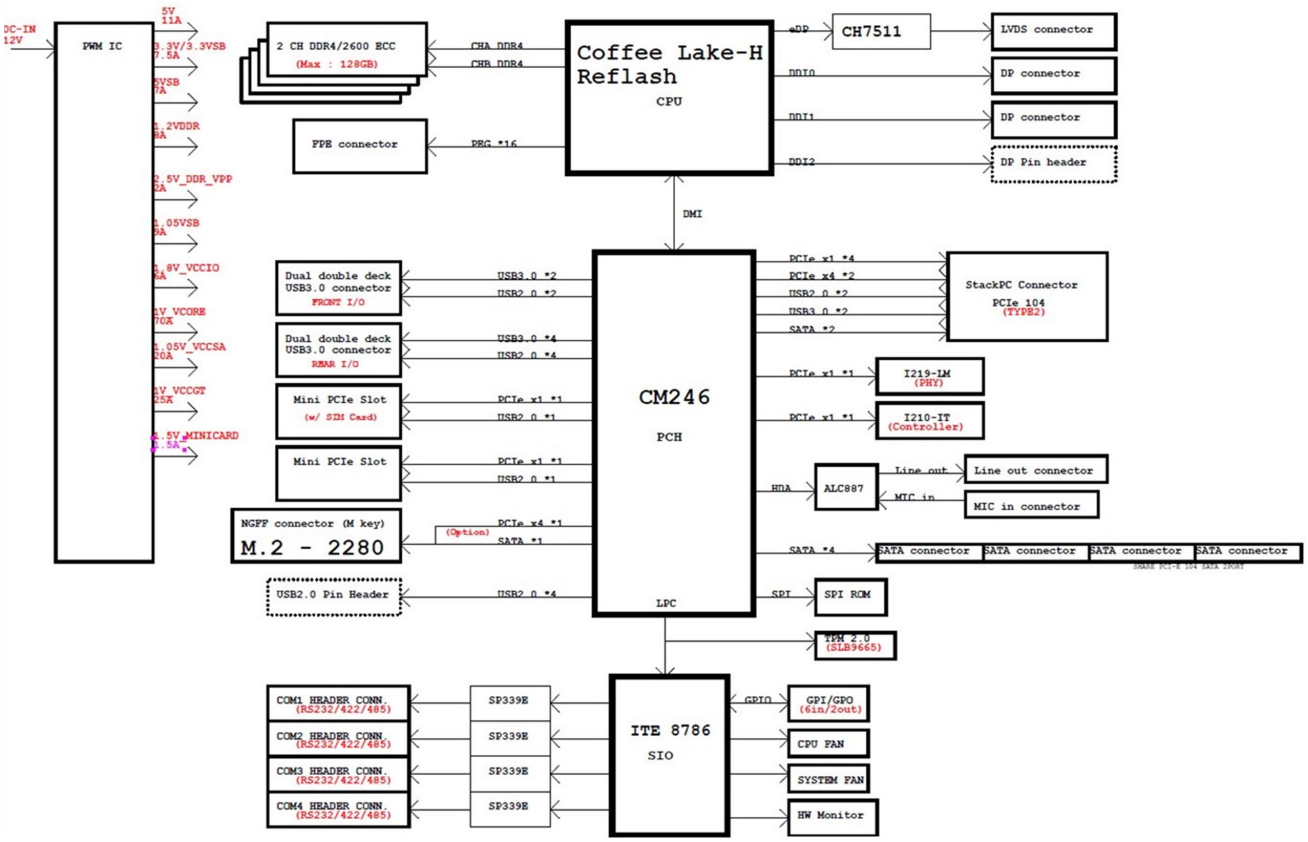
Expansion

M.2	1 x M.2(M-key,Type : 2280, SATA/PCIe 3.0x4 NVMe)
mPCIe	2 x Full size(PCIe x1, USB 2.0 and SIM Card)
PCIe/104	Type2
FPE	1 x FPE slot

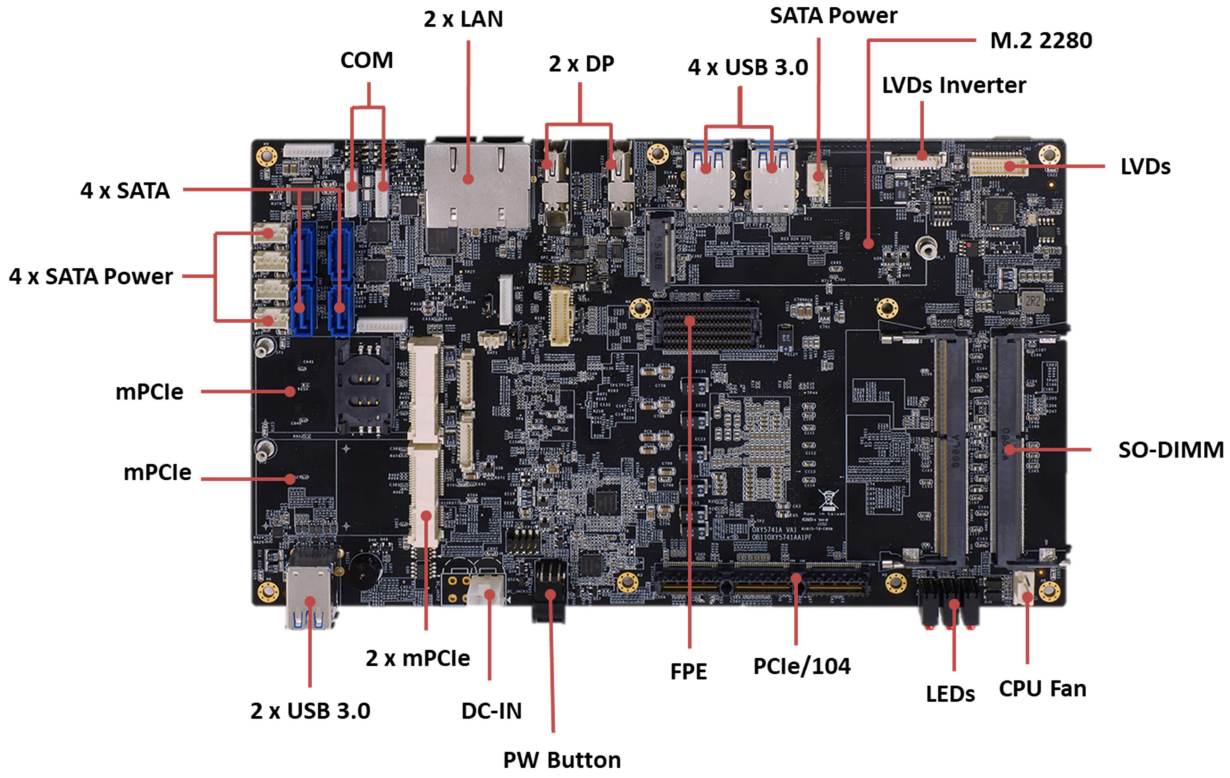
Ethernet	
Chipset	Intel®I210 & I219LM GbE LAN(10/100/1000 Mbps support)
Disable LAN though BIOS	Yes
WOL	Yes
Boot from LAN	Yes for PXE
Rear I/O	
Display Port	2*DIP Display Port Female 20P 90D upright
USB 3.0	2*DIP Double USB3.0 , A Type
LAN	Conn Dip RJ45 1x Tap up w/transformer 10/100/1000 Base-T w/LED Female
Front I/O	
USB3.0(2.0)	1*DIP Double USB3.0(2.0) , A Type
LED(Red/Green)	6 (HDD, 2 x LAN ACT+ Link) Red / Green LED
Power Button	1 (With LED)
Internal I/O header(no edge I/O Needed)	
SATA	4xSATAIII (RAID 0,1,5) , from 2 up to 4 ports
SATA power	4
LVDS	1(1 x 30pin) or equal → w/Auto-dimming supports), Brightlight control
Inverter connector	1 (1 x 10pin)
COM	2 x RS232/422/485 (2 x 10pin)
SIM card holder	1 (Micro SIM) in mPCIe slot
USB 2.0	2 x (2x5pin) box header
LPC	1
Front Panel	1 (2x5pin) Power BTN/HDD LED/Reset BTN/PWR LED
Smart Fan	1 x CPU Fan → 1 x 4pin for CPU(PWM mode)
Audio(MIC-IN / LINE OUT)	1 (1 x 10pin)
Battery	1 x RTC battery holder
Power connector	1 (4x2pin) horizontal type

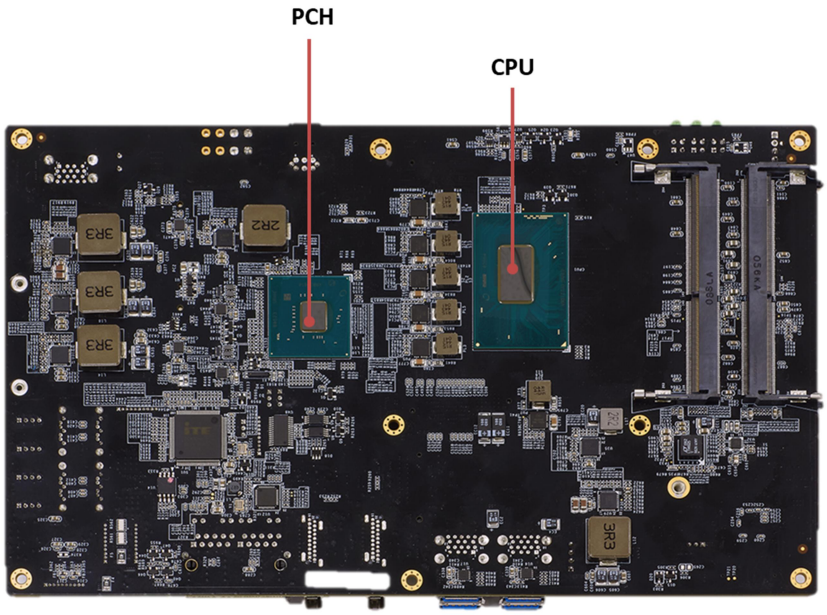
Mechanical and environmental	
Form Factor	EBX
Dimension	146mm x 243mm
Power Type	12V DC-IN
Power Consumption	250W
Operation Temperture	-20 to 60°C (ambient with air flow)
Storage Temperture	-40 to 85°C
Relative Humidity	10% to 90%, non-condensing
Standard Compliance	
Standart Compliance	CE / FCC

1.2 Block Diagram

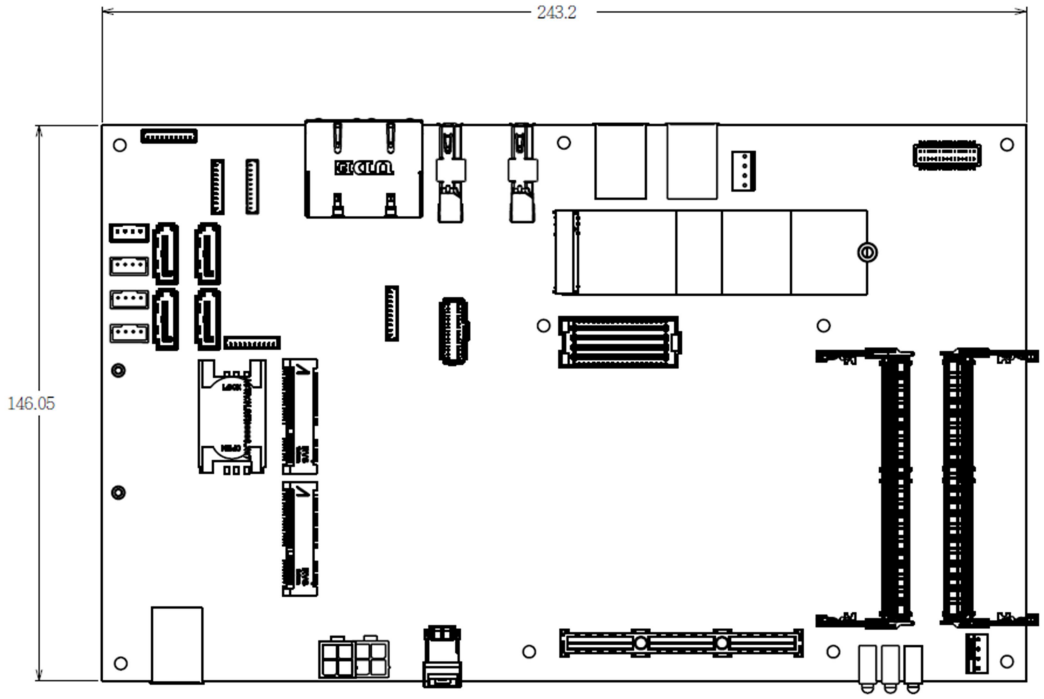


1.3 Board Placement





1.4 Mechanical Dimensions



Chapter 2 : Jumpers and Connectors Loacation

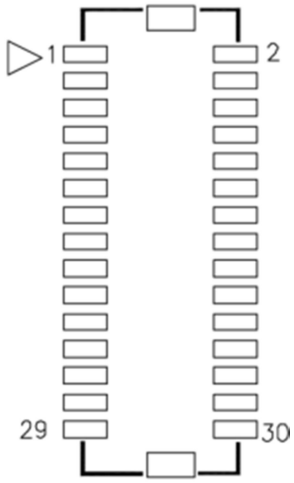
2.1 Jumpers and connectors list

Label	Function
BAT1	BATTERY connector
DIMM0	DDR4 SO DIMM Socket
DIMM1	DDR4 SO DIMM Socket
DIMM2	DDR4 SO DIMM Socket
DIMM3	DDR4 SO DIMM Socket
CN2	LVDS CONNECTOR
MCARD1	Mini PCIE Card Slot<Full size Co-lay mSATA>
MCARD2	Mini PCIE Card Slot<Full size Co-lay mSATA>
CN9/CN11/CN13/CN15	Serial ATA Connectors
CN10/CN12/CN14/CN16	SATA Power
LAN1	INTEL I219-LM
LAN2	INTEL I210-IT
CN6/CN7	USB2.0 (Total 4 Port)
CN3/CN4	USB3.0 x 2 (Total 4 Port)
CN5	USB3.0 x 2
J1	Front side MIC-In/ Line-Out Connector
J2	Digital I/O Box Head
CN17	LPC connector (Update BIOS)
DP1	DISPLAY PORT
DP2	DISPLAY PORT
DP3	DISPLAY PORT HEADER
SIM_CARD1	SIM card socket
JP3	COM1 +12/+5V selection
JP1	LVDS_VDD select
JP4	COM2 +12/+5V selection
J3	RS232/422/485 with 5V/12V selectable
J4	RS232/422/485 with 5V/12V selectable
DC_JACK1	ATX12V DC connector
J5	SYSTEM FAN CONNECTOR
FPE1	FPE Top connector
STACKPC1	PCIe/104 connector
LED2	LAN1 LED STATUS
LED3	LAN2 LED STATUS
LED4	Power/HDD LED
SW1	LVDS Resolution selection
CN1	Inverter connector
SW2	Power Button
SW3	PCIE CFG[5:6]
FP1	Front Panel
JCMOS1	ME Flash Security
JCMOS2	RTC Reset
JP5	AT/ATX Mode
CN8	M.2 M KEY Connector

2.2 Jumper Settings

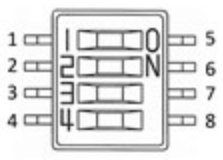
CN2: LVDS CONNECTOR

PIN	DEFINITION	PIN	DEFINITION
1	LVDS_BCLK	2	GND
3	LVDS_BCLK#	4	LVDS_A3
5	GND	6	LVDS_A3#
7	LVDS_B3	8	GND
9	LVDS_B3#	10	LVDS_ACLK
11	LVDS_B2	12	LVDS_ ACLK #
13	LVDS_B2#	14	GND
15	LVDS_B1	16	LVDS_A2
17	LVDS_B1#	18	LVDS_A2#
19	LVDS_B0	20	LVDS_A1
21	LVDS_B0#	22	LVDS_A1#
23	GND	24	LVDS_A0
25	LVDS_DCC_SC	26	LVDS_A0#
27	LVDS_DCC_SD	28	GND
29	LVDS_VDD (define by JP3)	30	LVDS_VDD (define by JP3)



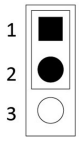
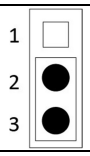
SW1: LVDS Resolution select

SW1				
1	2	3	4	DEFINITION
off	off	off	off	800*600/18bit (single)
off	off	off	on	1024*768/18bit (single)
off	off	on	off	1024*768/24bit (single)
off	off	on	on	1280*800/18bit (single)
off	on	off	off	1280*1024/24bit (dual)
off	on	off	on	1366*768/24bit (single)
off	on	on	off	1440*900/24bit (dual)



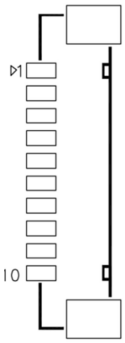
off	on	on	on	1920*1080/24bit (dual)	

JP1: LVDS_VDD select

Jumper	Function description	Setting
1-2	3.3V	
2-3	5V	
Default setting: 2-3		

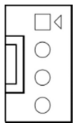
CN1: Inverter connector

PIN	DEFINITION
1	12V
2	12V
3	12V
4	5VS
5	5VS
6	GND
7	GND
8	BL_EN
9	LVDS0_BKL_CTRL_R
10	GND



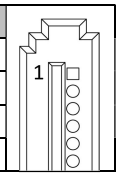
J5: SYSTEM FAN Connector

PIN	DEFINITION
1	CPUFAN_PWN
2	CPUFAN_IO
3	CPUFAN_VCC
4	GND



CN9/CN11/CN13/CN15: Serial ATA Connectors

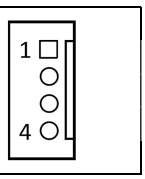
PIN	DEFINITION
1	GND
2	TXP
3	TXN
4	GND



5	RXN	
6	RXP	
7	GND	

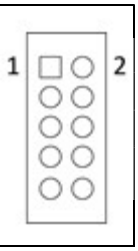
CN10/CN12/CN14/CN16: SATA POWER Connector

PIN	DEFINITION
• 1	12V
2	GND
3	GND
4	5VS



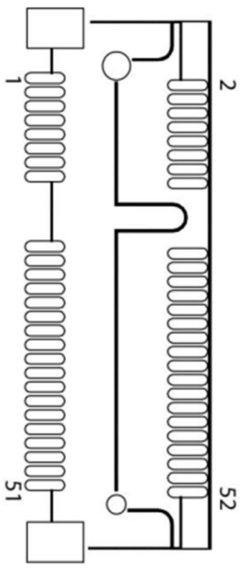
J2: Digital I/O Box Head

PIN	DEFINITION	PIN	DEFINITION
1	VCC	2	GND
3	DI_0	4	DI_1
5	DI_2	6	DI_3
7	DI_4	8	DI_5
9	DO_0	10	DO_1



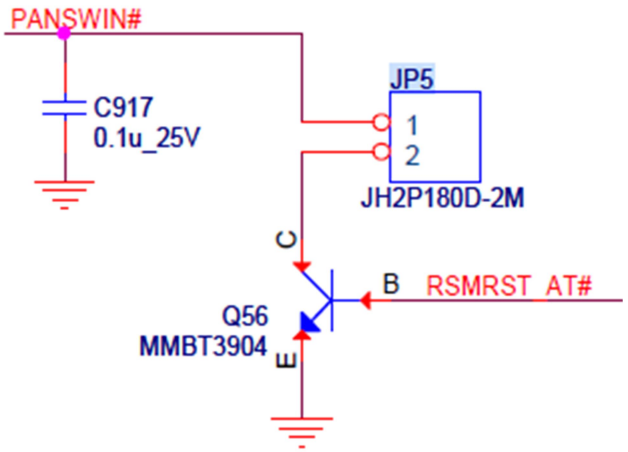
MCARD1: Mini PCIE Card Slot<COLAY M SATA>

PIN	DEFINITION	PIN	DEFINITION
1	WAKE#	2	3.3VAUX
3	NC	4	GND
5	NC	6	1.5V
7	CLKREQ#	8	UIM_PWR
9	GND	10	UIM_DATA
11	REFCLK-	12	UIM_CLK
13	REFCLK+	14	UIM_RESET
15	GND	16	UIM_VPP
17	NC	18	GND
19	NC	20	W_Disable#
21	GND	22	PERST#
23	PERn0	24	+3.3Vaux
25	PERp0	26	GND
27	GND	28	1.5V
29	GND	30	SMB_CLK
31	PETn0	32	SMB_DATA
33	PETp0	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	+3.3VAUX	40	GND
41	+3.3VAUX	42	NC
43	GND	44	NC



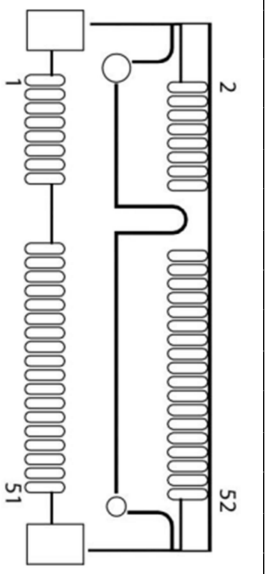
45	NC	46	NC	
47	NC	48	1.5V	
49	NC	50	GND	
51	NC	52	3.3VAUX	

JP5 : AT/ATX Mode Selection, Default: 1-2 or OPEN TBD on VA2 Stage



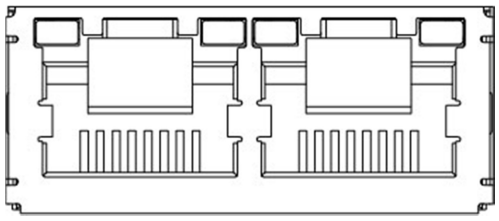
MCARD2: Mini PCIE Card Slot

PIN	DEFINITION	PIN	DEFINITION
1	WAKE#	2	3.3V
3	NC	4	GND
5	NC	6	1.5V
7	CLKREQ#	8	NC
9	GND	10	NC
11	REFCLK-	12	NC
13	REFCLK+	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	W_Disable#
21	GND	22	PERST#
23	PERn0	24	3.3Vaux
25	PERp0	26	GND
27	GND	28	1.5V
29	GND	30	SMB_CLK
31	PETn0	32	SMB_DATA
33	PETp0	34	GND
35	GND	36	USB_D-
37	NC	38	USB_D+
39	3V3_MINI2	40	GND
41	3V3_MINI2	42	NC
43	NC	44	NC
45	NC	46	NC
47	NC	48	1.5V
49	NC	50	GND
51	NC	52	3.3V



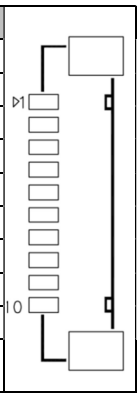
LAN1: Intel I219LM
LAN2: Intel I210IT

LAN1		LAN2	
PIN	DEFINITION	PIN	DEFINITION
A1	I218_LAN1_MDI0_DP	B1	LAN2_MDIP0
A2	I218_LAN1_MDI0_DN	B2	LAN2_MDIN0
A3	I218_LAN1_MDI1_DP	B3	LAN2_MDIP1
A4	I218_LAN1_MDI1_DN	B4	LAN2_MDIN1
A7	I218_LAN1_MDI2_DP	B7	LAN2_MDIP2
A8	I218_LAN1_MDI2_DN	B8	LAN2_MDIN2
A9	I218_LAN1_MDI3_DP	B9	LAN2_MDIP3
A10	I218_LAN1_MDI3_DN	B10	LAN2_MDIN3



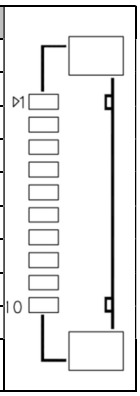
CN6: USB 2.0

PIN	DEFINITION
1	5V
2	USB1-
3	USB1+
4	GND
5	GND
6	5V
7	USB2-
8	USB2+
9	GND
10	GND



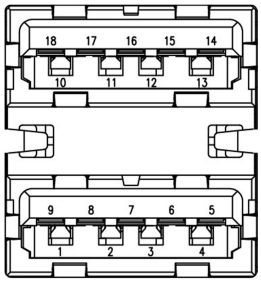
CN7: USB 2.0

PIN	DEFINITION
1	5V
2	USB1-
3	USB1+
4	GND
5	GND
6	5V
7	USB2-
8	USB2+
9	GND
10	GND



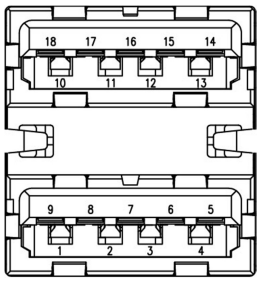
CN3: USB3.0 *2

LOWER USB		UPPER USB	
PIN	DEFINITION	PIN	DEFINITION
1	USB_VCC0	10	USB_VCC1
2	USBD2-	11	USBD3-
3	USBD2+	12	USBD3+
4	GND	13	GND
5	USB_SSRX1N_C	14	USB_SSRX2N_C
6	USB_SSRX1P_C	15	USB_SSRX2P_C
7	GND	16	GND
8	USB3TN1	17	USB3TN2
9	USB3TP1	18	USB3TP2



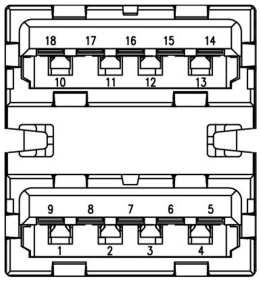
CN4: USB3.0 *2

LOWER USB		UPPER USB	
PIN	DEFINITION	PIN	DEFINITION
1	USB_VCC2	10	USB_VCC3
2	USBD0-	11	USBD1-
3	USBD0+	12	USBD1+
4	GND	13	GND
5	USB_SSRX3N_C	14	USB_SSRX4N_C
6	USB_SSRX3P_C	15	USB_SSRX4P_C
7	GND	16	GND
8	USB3TN3	17	USB3TN4
9	USB3TP3	18	USB3TP4



CN5: USB3.0 *2

LOWER USB		UPPER USB	
PIN	DEFINITION	PIN	DEFINITION
1	USB_VCC2	10	USB_VCC3
2	USBD0-	11	USBD1-
3	USBD0+	12	USBD1+
4	GND	13	GND
5	USB_SSRX3N_C	14	USB_SSRX4N_C
6	USB_SSRX3P_C	15	USB_SSRX4P_C
7	GND	16	GND
8	USB3TN3	17	USB3TN4
9	USB3TP3	18	USB3TP4

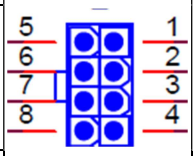


J1: Audio Connector

PIN	DEFINITION
1	GND
2	MIC1_JD
3	MIC1_R
4	MIC1_L
5	FRONT_JD
6	FRONT_R
7	FRONT_L
8	NC
9	NC
10	NC

DC_JACK1: DC-IN

PIN	DEFINITION	PIN	DEFINITION
1	GND	2	GND
3	GND+VIN	4	GND
5	+VIN	6	+VIN
7	+VIN	8	+VIN

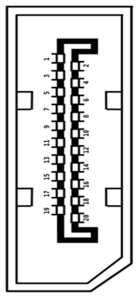


CN17: LPC

PIN	DEFINITION
1	GND
2	INT_SERIRQ
3	3.3V
4	LPC_AD0
5	LPC_AD1
6	LPC_AD2
7	LPC_AD3
8	LPC_FRAME#
9	CHIP_PLTRST#
10	CLK

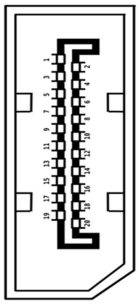
DP1: DISPLAY PORT

PIN	DEFINITION	PIN	DEFINITION
1	DPC_LANEP0	2	GND
3	DPC_LANEN0	4	DPC_LANEP1
5	GND	6	DPC_LANEN1
7	DPC_LANEP2	8	GND
9	DPC_LANEN2	10	DPC_LANEP3
11	GND	12	DPC_LANEN3
13	DDIC_DDC_AUX_SEL	14	GND
15	DPC_AUXP	16	GND
17	DPC_AUXN	18	DPC_DET
19	GND	20	DPC_PWR



DP2: DISPLAY PORT

PIN	DEFINITION	PIN	DEFINITION
1	DPD_LANEP0	2	GND
3	DPD_LANEN0	4	DPD_LANEP1
5	GND	6	DPD_LANEN1
7	DPD_LANEP2	8	GND
9	DPD_LANEN2	10	DPD_LANEP3
11	GND	12	DPD_LANEN3
13	DDID_DDC_AUX_SEL	14	GND
15	DDID_ AUXP	16	GND
17	DDID_ AUXN	18	DPD_DET
19	GND	20	DPD_PWR

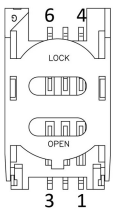


DP3: DISPLAY PORT HEADER

PIN	DEFINITION	PIN	DEFINITION
1	GND	2	GND
3	DDI3_TXP0_DP-C	4	NC
5	DDI3_TXN0_DP-C	6	NC
7	DDI3_TXP1_DP-C	8	NC
9	DDI3_TXN1_DP-C	10	NC
11	DDI3_TXP2_DP-C	12	NC
13	DDI3_TXN2_DP-C	14	NC
15	DDI3_TXP3_DP-C	16	NC
17	DDI3_TXN3_DP-C	18	NC
19	DDI3_AUX_P_C	20	NC
21	DDI3_AUX_N_C	22	NC
23	GND	24	GND
25	DDI3_DDC_AUX_SEL	26	NC
27	DP3_DET	28	NC
29	DP3_PWR	30	NC
31	GND	32	GND

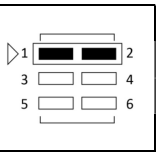
SIM_CARD1: SIM card socket

PIN	DEFINITION
1	VCC
2	RESET
3	CLOCK
4	GND
5	VPP
6	DATA



JP3: COM1 5V/12V selection

PIN	DEFINITION	PIN	DEFINITION
1	RI1#_OPTO	2	COM1P9SEL
3	5V	4	COM1P9SEL
5	12V	6	COM1P9SEL



Default :1-2 short

JP4: COM2 5V/12V selection

PIN	DEFINITION	PIN	DEFINITION
1	RI1#_OPTO	2	COM2P9SEL
3	5V	4	COM2P9SEL
5	12V	6	COM2P9SEL

Default :1-2 short

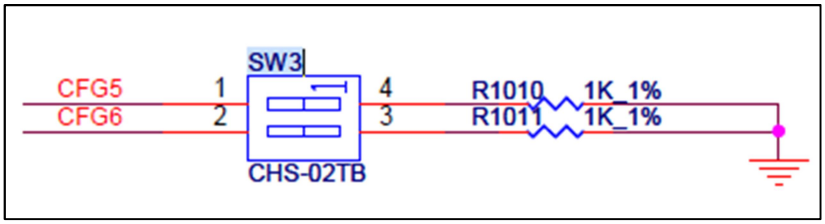
JP3: RS232/422/485 with 5V/12V selectable

PIN	DEFINITION
1	5VS
2	GND
3	COM1P9SEL
4	DTR-
5	CTS2-
6	TXD2-
7	RTS2-
8	RXD-
9	DSR-
10	DCD-

JP4: RS232/422/485 with 5V/12V selectable

PIN	DEFINITION
1	5VS
2	GND
3	COM2P9SEL
4	DTR-
5	CTS-
6	TXD-
7	RTS-
8	RXD-
9	DSR-
10	DCD-

SW3 : CFG5/CFG6



CFG [6:5]:

00=1 x8, 2 x4 PCI Express.

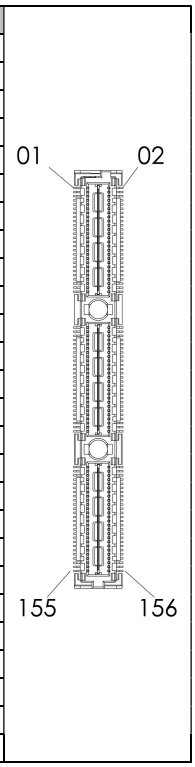
01=Reserved.

10=2 x8 PCI Express.

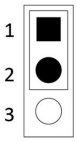
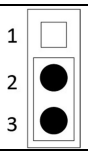
*11=1 x16 PCI Express.

STACKPC1: CONNECTOR A TOP

PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION
1	USB_OC#	2	PE_RST#	53	STK0/WAKE#	54	STK1/PEG_ENA#	105	STK2/SDVO_DAT	106	SDVO_CLK
3	3.3V	4	3.3V	55	GND	56	GND	107	GND	108	GND
5	USB_1p	6	USB_0p	57	PEx16_0T(8)p	58	PEx16_0T(0)p	109	PEx16_0R(8)p	110	PEx16_0R(0)p
7	USB_1n	8	USB_0n	59	PEx16_0T(8)n	60	PEx16_0T(0)n	111	PEx16_0R(8)n	112	PEx16_0R(0)n
9	GND	10	GND	61	GND	62	GND	113	GND	114	GND
11	PEx1_1Tp	12	PEx1_0Tp	63	PEx16_0T(9)p	64	PEx16_0T(1)p	115	PEx16_0R(9)p	116	PEx16_0R(1)p
13	PEx1_1Tn	14	PEx1_0Tn	65	PEx16_0T(9)n	66	PEx16_0T(1)n	117	PEx16_0R(9)n	118	PEx16_0R(1)n
15	GND	16	GND	67	GND	68	GND	119	GND	120	GND
17	PEx1_2Tp	18	PEx1_3Tp	69	PEx16_0T(10)p	70	PEx16_0T(2)p	121	PEx16_0R(10)p	122	PEx16_0R(2)p
19	PEx1_2Tn	20	PEx1_3Tn	71	PEx16_0T(10)n	72	PEx16_0T(2)n	123	PEx16_0R(10)n	124	PEx16_0R(2)n
21	GND	22	GND	73	GND	74	GND	125	GND	126	GND
23	PEx1_1Rp	24	PEx1_0Rp	75	PEx16_0T(11)p	76	PEx16_0T(3)p	127	PEx16_0R(11)p	128	PEx16_0R(3)p
25	PEx1_1Rn	26	PEx1_0Rn	77	PEx16_0T(11)n	78	PEx16_0T(3)n	129	PEx16_0R(11)n	130	PEx16_0R(3)n
27	GND	28	GND	79	GND	80	GND	131	GND	132	GND
29	PEx1_2Rp	30	PEx1_3Rp	81	PEx16_0T(12)p	82	PEx16_0T(4)p	133	PEx16_0R(12)p	134	PEx16_0R(4)p
31	PEx1_2Rn	32	PEx1_3Rn	83	PEx16_0T(12)n	84	PEx16_0T(4)n	135	PEx16_0R(12)n	136	PEx16_0R(4)n
33	GND	34	GND	85	GND	86	GND	137	GND	138	GND
35	PEx1_1Clkp	36	PEx1_0Clkp	87	PEx16_0T(13)p	88	PEx16_0T(5)p	139	PEx16_0R(13)p	140	PEx16_0R(5)p
37	PEx1_1Clkn	38	PEx1_0Clkn	89	PEx16_0T(13)n	90	PEx16_0T(5)n	141	PEx16_0R(13)n	142	PEx16_0R(5)n
39	+5V_SB	40	+5V_SB	91	GND	92	GND	143	GND	144	GND
41	PEx1_2Clkp	42	PEx1_3Clkp	93	PEx16_0T(14)p	94	PEx16_0T(6)p	145	PEx16_0R(14)p	146	PEx16_0R(6)p
43	PEx1_2Clkn	44	PEx1_3Clkn	95	PEx16_0T(14)n	96	PEx16_0T(6)n	147	PEx16_0R(14)n	148	PEx16_0R(6)n
45	DIR	46	PWRGOOD	97	GND	98	GND	149	GND	150	GND
47	SMB_DAT	48	PEx16_Clkp	99	PEx16_0T(15)p	100	PEx16_0T(7)p	151	PEx16_0R(15)p	152	PEx16_0R(7)p
49	SMB_CLK	50	PEx16_Clkn	101	PEx16_0T(15)n	102	PEx16_0T(7)n	153	PEx16_0R(15)n	154	PEx16_0R(7)n
51	SMB_ALERT	52	PSON#	103	GND	104	GND	155	GND	156	GND



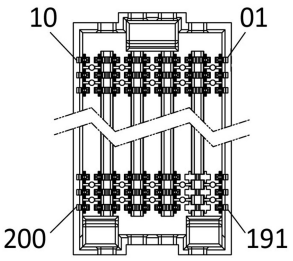
JCMOS1: ME Flash Security

Jumper	Function description	Setting
1-2	ME Lock	
2-3	ME Unlock	
Default setting: 1-2		

FPE1: FPE Top Connector

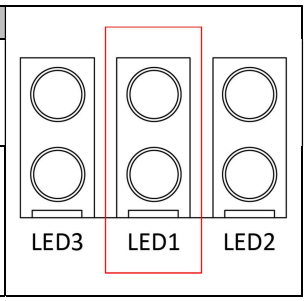
PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION
1	NC	2	NC	3	NC	4	NC	5	NC
11	GND	12	NC	13	GND	14	NC	15	GND
21	NC	22	NC	23	NC	24	GND	25	NC
31	NC	32	NC	33	NC	34	NC	35	NC
41	GND	42	NC	43	GND	44	NC	45	GND
51	NC	52	GND	53	NC	54	GND	55	NC
61	NC	62	NC	63	NC	64	NC	65	NC
71	GND	72	NC	73	GND	74	NC	75	GND
81	PEG_TXP0	82	NC	83	PEG_TXP2	84	GND	85	PEG_TXP4
91	PEG_TXN0	92	PEG_TXP1	93	PEG_TXN2	94	PEG_TXP3	95	PEG_TXN4
101	GND	102	PEG_TXN1	103	GND	104	PEG_TXN3	105	GND
111	PEG_RXP_0	112	GND	113	PEG_RXP_2	114	GND	115	PEG_RXP_4
121	PEG_RXN_0	122	PEG_RXP_1	123	PEG_RXN_2	124	PEG_RXP_3	125	PEG_RXN_4
131	GND	132	PEG_RXN_1	133	GND	134	PEG_RXN_3	135	GND
141	PEG_TXP8	142	GND	143	PEG_TXP10	144	GND	145	PEG_TXP12
151	PEG_TXN8	152	PEG_TXP9	153	PEG_TXN10	154	PEG_TXP11	155	PEG_TXN12
161	GND	162	PEG_TXN9	163	GND	164	PEG_TXN11	165	GND
171	PEG_RXP_8	172	GND	173	PEG_RXP_10	174	GND	175	PEG_RXP_12
181	PEG_RXN_8	182	PEG_RXP_9	183	PEG_RXN_10	184	PEG_RXP_11	185	PEG_RXN_12
191	GND	192	PEG_RXN_9	193	GND	194	PEG_RXN_11	195	GND

PIN	NAME	PIN	NAME	PIN	NAME	PIN	NAME	PIN	NAME
6	NC	7	NC	8	NC	9	NC	10	NC
16	NC	17	GND	18	NC	19	NC	20	NC
26	GND	27	NC	28	GND	29	NC	30	NC
36	NC	37	NC	38	NC	39	NC	40	NC
46	NC	47	GND	48	NC	49	GND	50	NC
56	GND	57	NC	58	GND	59	NC	60	NC
66	NC	67	NC	68	NC	69	SPKR	70	NC
76	NC	77	GND	78	NC	79	GND	80	NC
86	GND	87	PEG_TXP6	88	GND	89	NC	90	CFG5
96	PEG_TXP5	97	PEG_TXN6	98	PEG_TXP7	99	NC	100	CFG6
106	PEG_TXN5	107	GND	108	PEG_TXN7	109	GND	110	BUF_PLT_RST-
116	GND	117	PEG_RXP_6	118	GND	119	PEG_A_CLK_P	120	GND
126	PEG_RXP_5	127	PEG_RXN_6	128	PEG_RXP_7	129	PEG_A_CLK_N	130	3V3_DU
136	PEG_RXN_5	137	GND	138	PEG_RXN_7	139	GND	140	3V3_DU
146	GND	147	PEG_TXP14	148	GND	149	PEG_B_CLK_P	150	GND
156	PEG_TXP13	157	PEG_TXN14	158	PEG_TXP15	159	PEG_B_CLK_N	160	GND
166	PEG_TXN13	167	GND	168	PEG_TXN15	169	GND	170	NC
176	GND	177	PEG_RXP_14	178	GND	179	NC	180	12V
186	PEG_RXP_13	187	PEG_RXN_14	188	PEG_RXP_15	189	NC	190	12V
196	PEG_RXN_13	197	GND	198	PEG_RXN_15	199	NC	200	12V



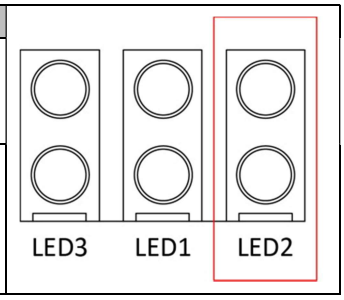
LED2: LAN1 LED STATUS

LED1	Light	Dark	Flash
RED	1000M	100M	NA
GREEN	LINK	UNLINK	ACTIVITY



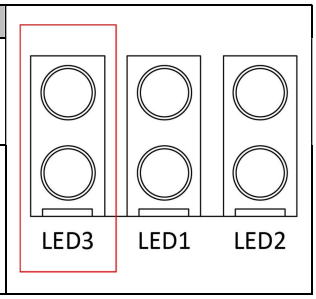
LED3: LAN2 LED STATUS

LED2	Light	Dark	Flash
RED	1000M	100M	NA
GREEN	Link	Un-link	Activity



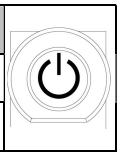
LED4: POWER/HDD LED

LED2	Light	Dark	Flash
RED	NA	HDD un-access	HDD access
GREEN	Power On	Power Off	NA



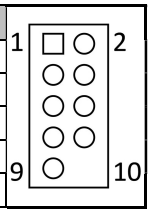
SW2: POWER BUTTON

PIN	DEFINITION
ON	NO LIGHT
OFF	BLUE LIGHT

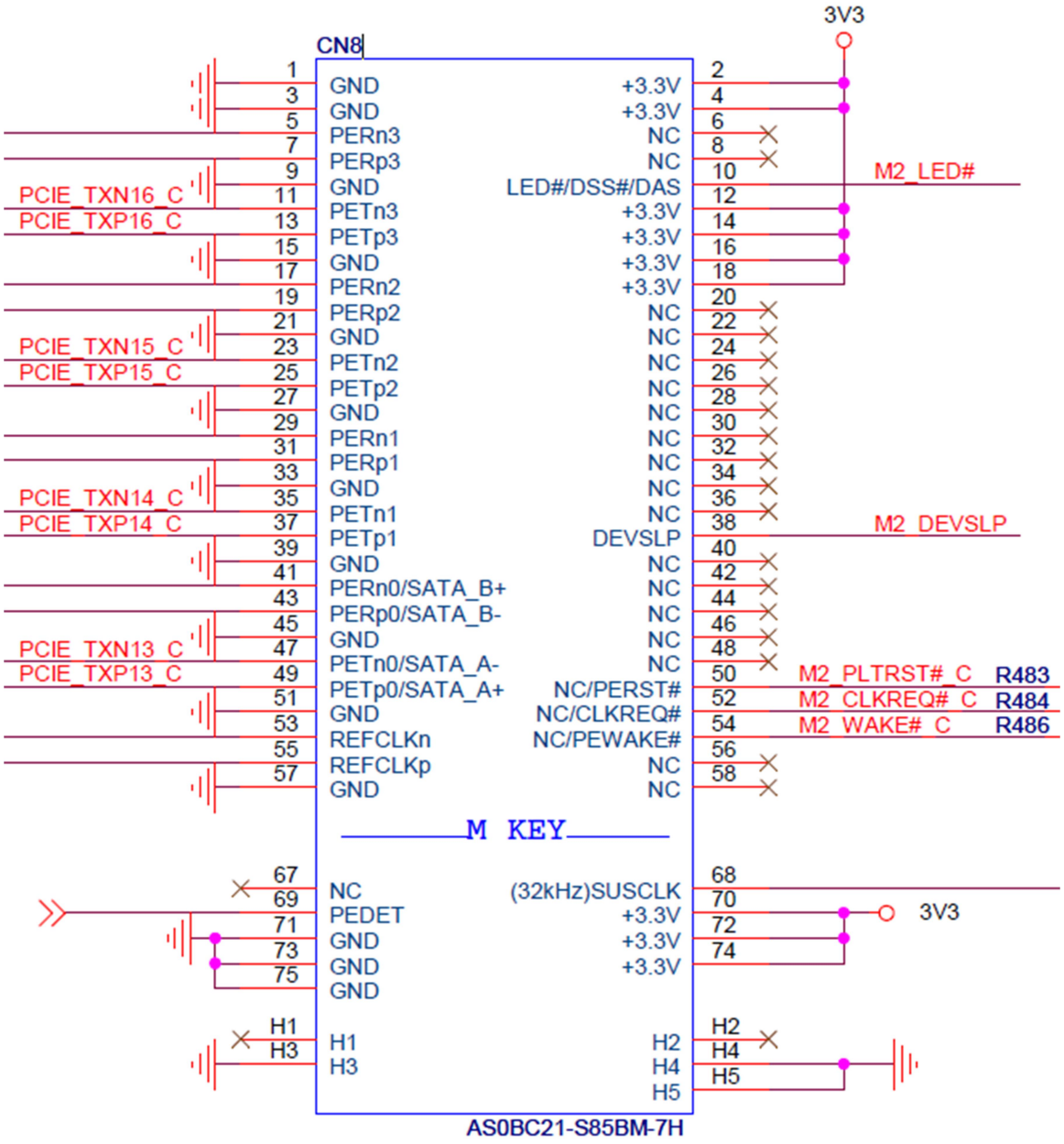


FP1: Front Panel

PIN	DEFINITION	PIN	DEFINITION
1	HDLED+	2	PLED+
3	HDLED-	4	GND
5	GND	6	EC_PWR_BTN
7	EXT_RESET#	8	GND
9	NC	10	NC



CN8: M.2 M Key Connector



Chapter 3: AMI BIOS UTILITY

This chapter provides users with detailed descriptions on how to set up a basic system configuration through the AMI BIOS setup utility.

3.1 Starting

To enter the setup screens, perform the following steps:

• Turn on the computer and press the <Del> key immediately.

• After the <Del> key is pressed, the main BIOS setup menu displays. Other setup screens can be accessed from the main BIOS setup menu, such as the Chipset and Power menus.

3.2 Navigation Keys

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.

Some of the hot keys are <F1>, <F10>, <Enter>, <ESC>, and <Arrow> keys.

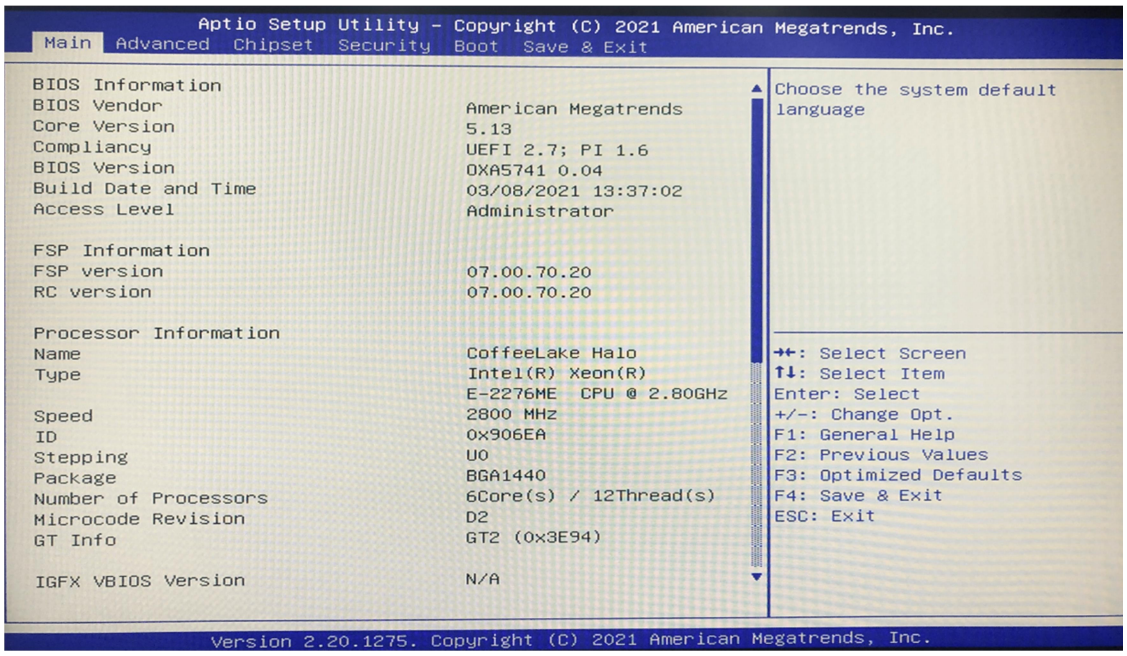
Some of the navigation keys may differ from one screen to another.

Left/Right	The Left and Right <Arrow> keys moves the cursor to select a menu.
Up/Down	The Up and Down <Arrow> keys moves the cursor to select a setup screen or sub-screen.
+– Plus/Minus	The Plus and Minus <Arrow> keys changes the field value of a particular setup setting.
Tab	The <Tab> key selects the setup fields.
F1	The <F1> key displays the General Help screen.
F10	The <F10> key saves any changes made and exits the BIOS setup utility.
Esc	The <Esc> key discards any changes made and exits the BIOS setup utility.
Enter	The <Enter> key displays a sub-screen or changes a selected or highlighted option in each menu.

3.3 Main Menu

The Main menu is the screen that first displays when BIOS Setup is entered, unless an error has occurred.

When you first enter the BIOS Setup Utility, you will encounter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.



The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

- **System Date**

Use this function to change the system date.

Select System Date using the Up and Down <Arrow> keys. Enter the new values through the keyboard. Press the Left and Right <Arrow> keys to move between fields.

The date setting must be entered in MM/DD/YY format.

- **System Time**

Use this function to change the system time.

Select System Time using the Up and Down <Arrow> keys. Enter the new values through the keyboard. Press the Left and Right <Arrow> keys to move between fields.

The time setting is entered in HH:MM:SS format.

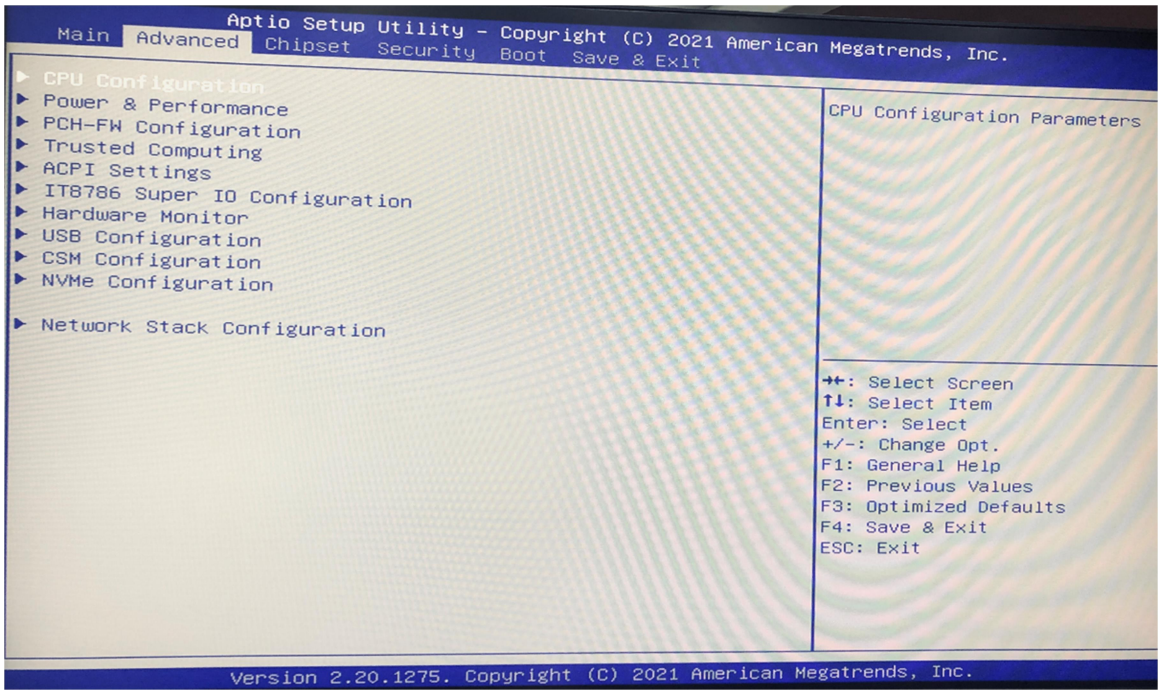
Note: The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30 P.M. as 17:30:00.

- **Access Level**

Display the access level of the current user in the BIOS.

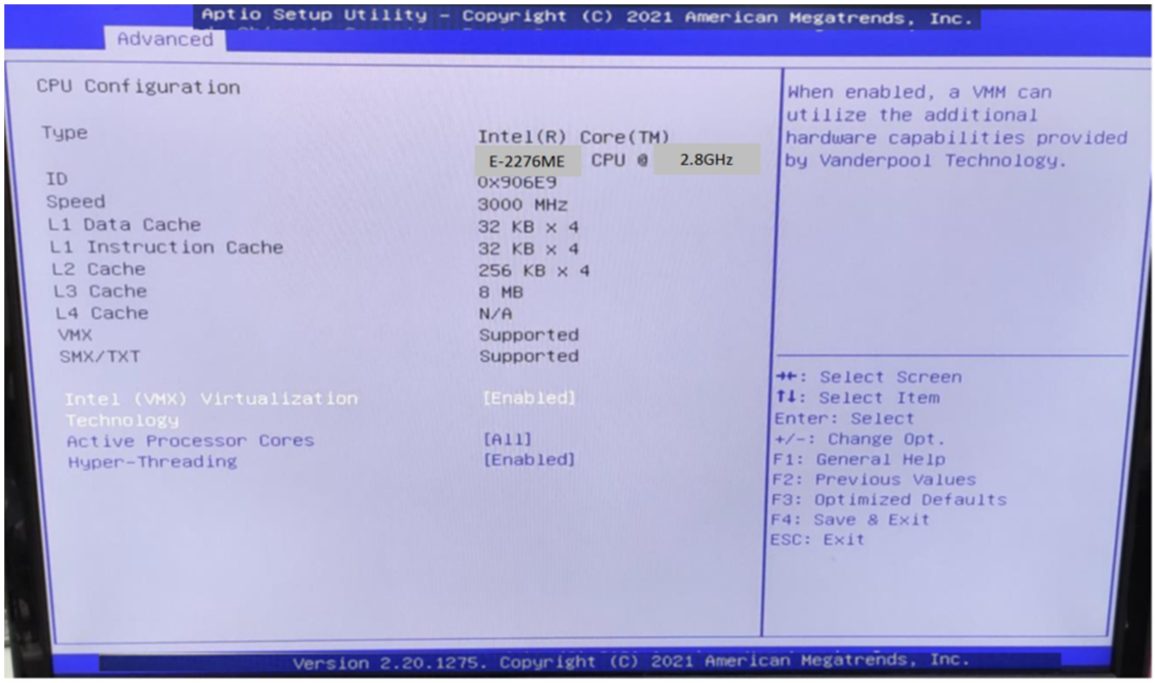
3.4 Advanced Menu

The Advanced Menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference. ***Setting incorrect field values may cause the system to malfunction.***

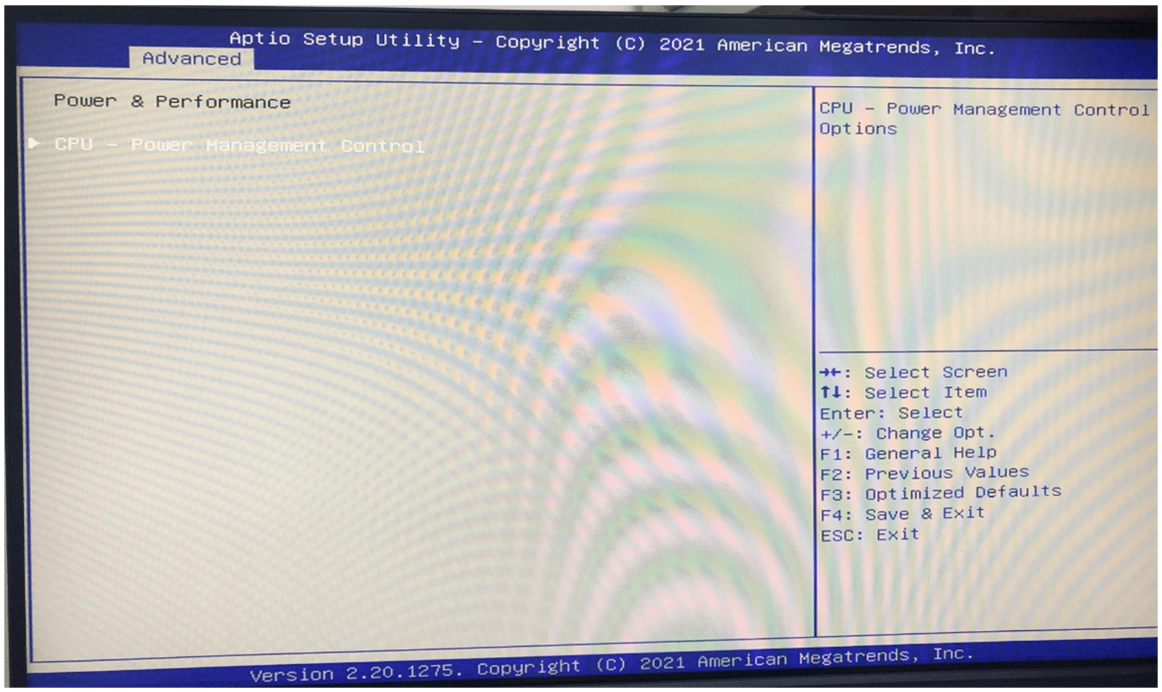


3.4.1 CPU Configuration

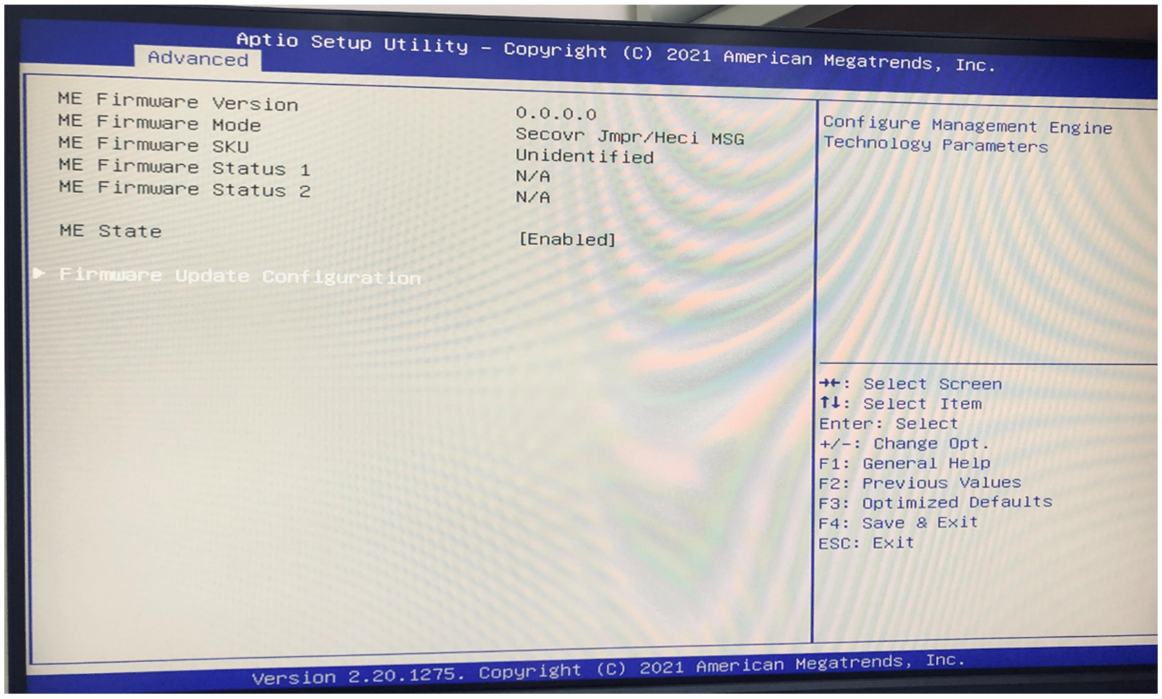
This section is used to view CPU status and configure CPU parameters.



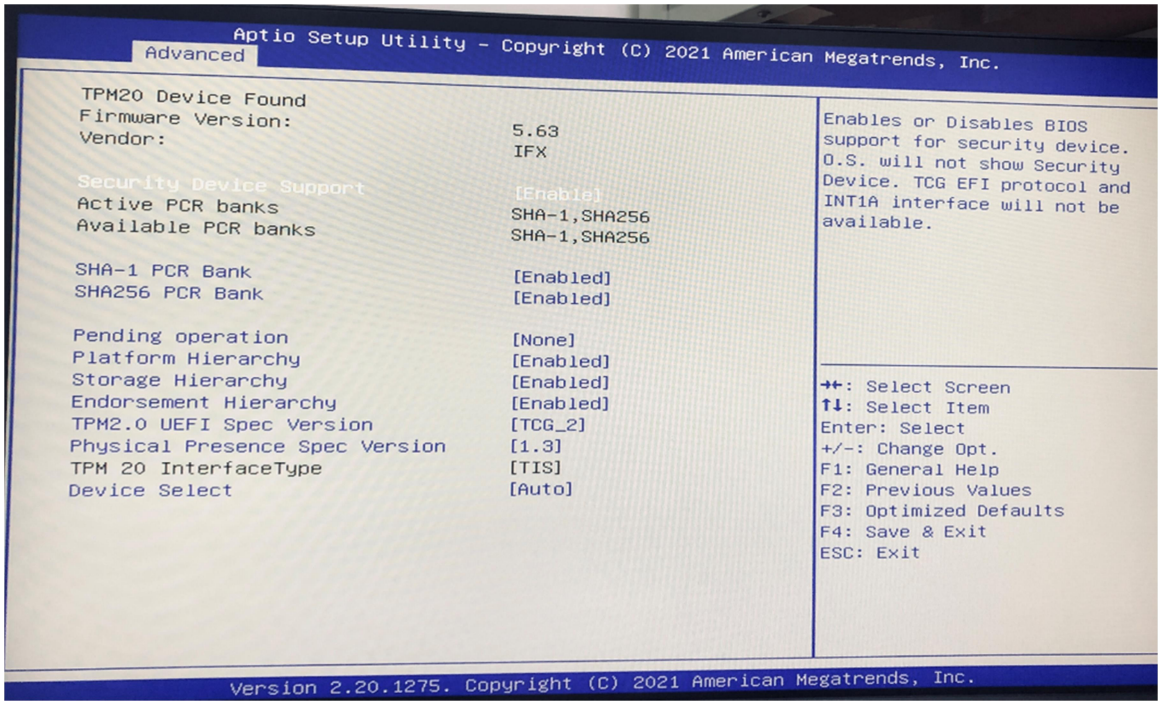
3.4.2 Power & Performance



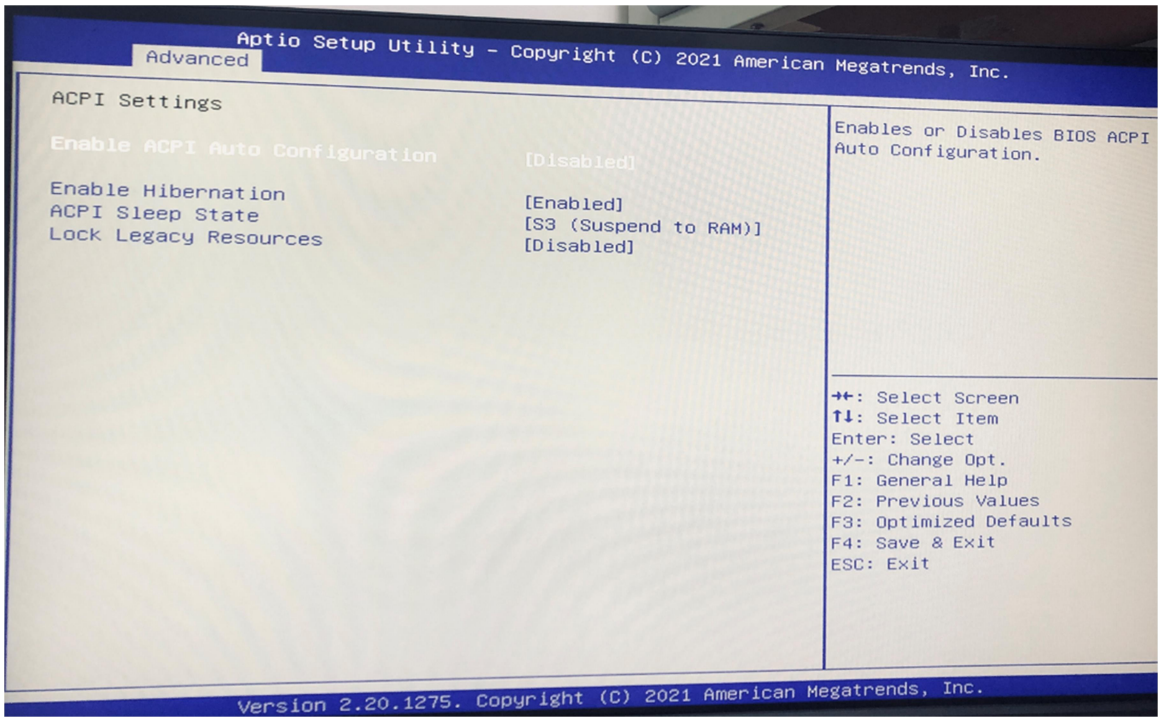
3.4.3 PCH-FW Configuration



3.4.4 Trusted Computing



3.4.5 ACPI Setting



- **Enable ACPI Auto Configuration**

Enable or disable BIOS ACPI auto configuration.

- **Enable Hibernation**

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

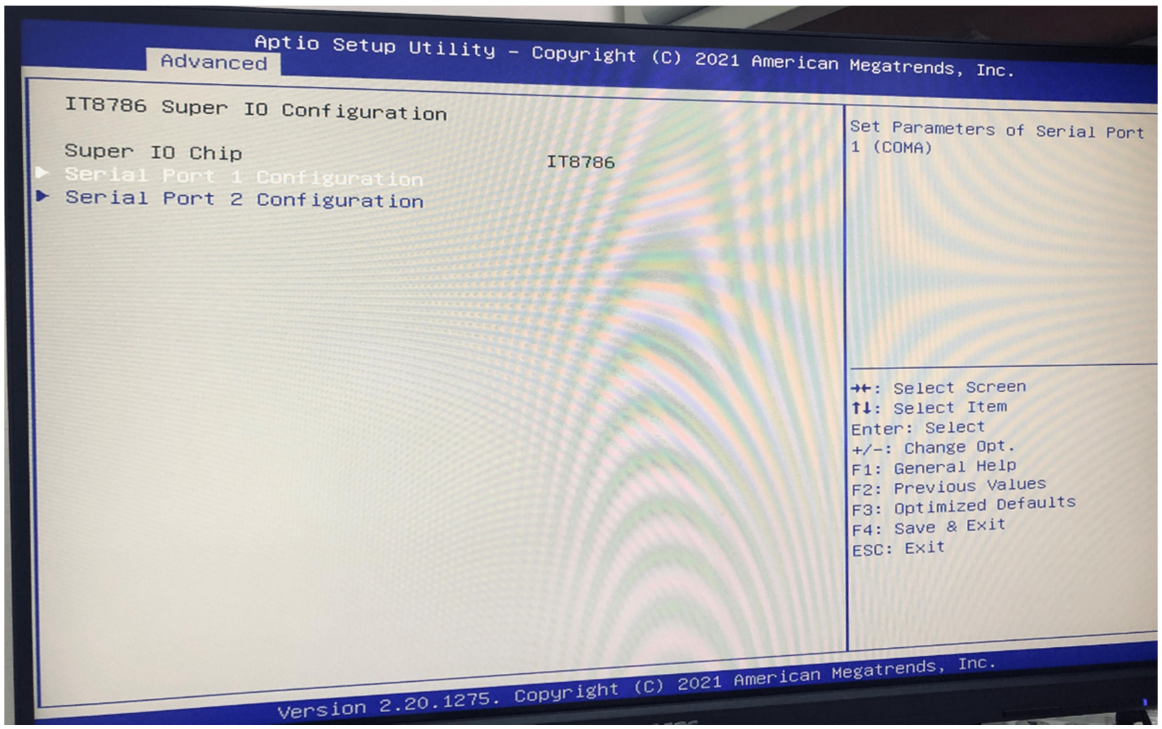
- **ACPI Sleep State**

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

- **Lock Legacy Resources**

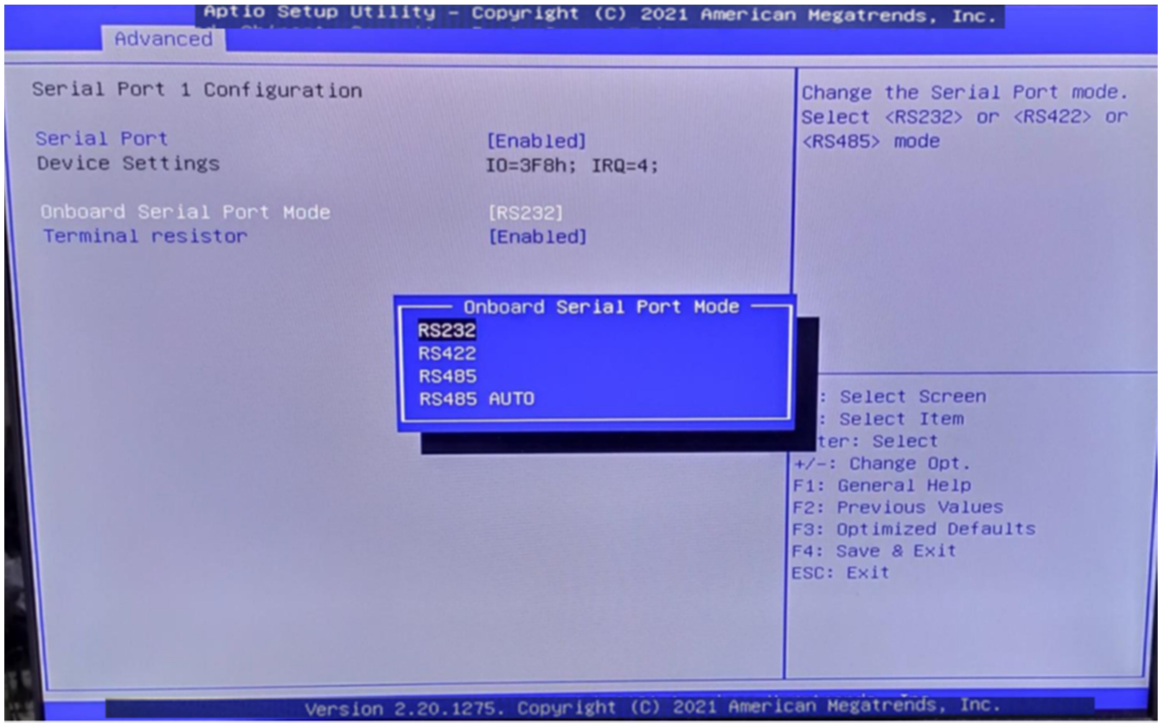
Enables or Disables Lock of Legacy Resources

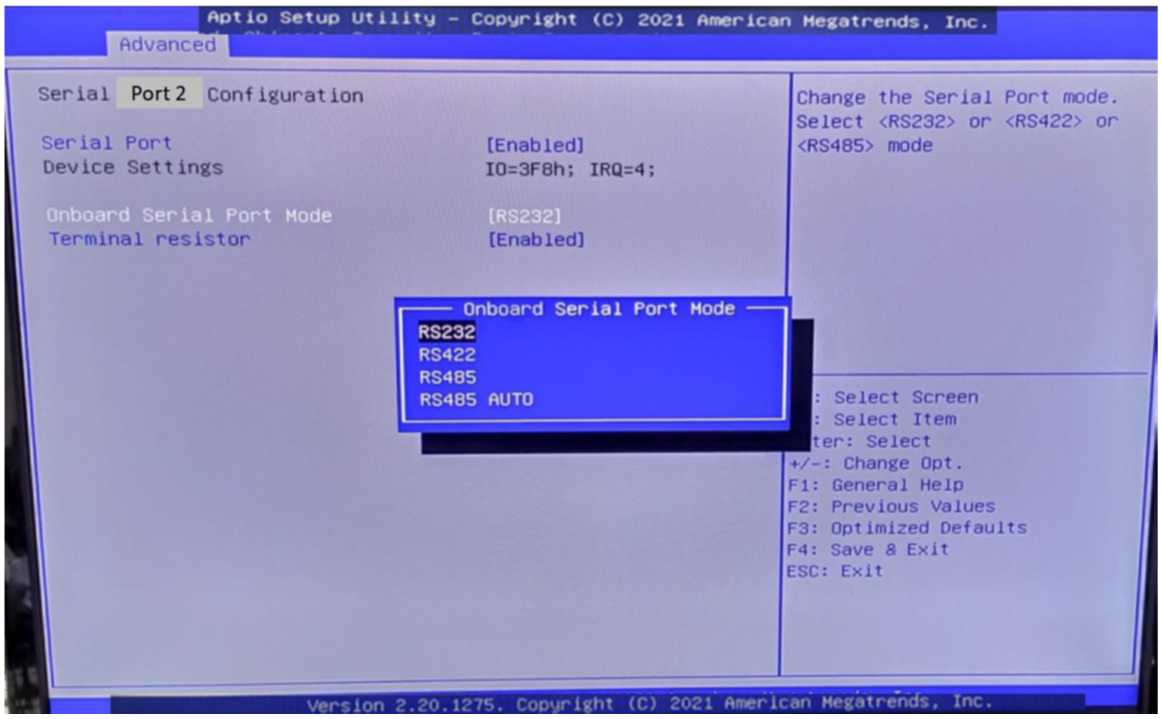
3.4.6 IT8786 Super IO Configuration



User can choose a mode (RS232/RS422/RS485) on Serial Port 1.

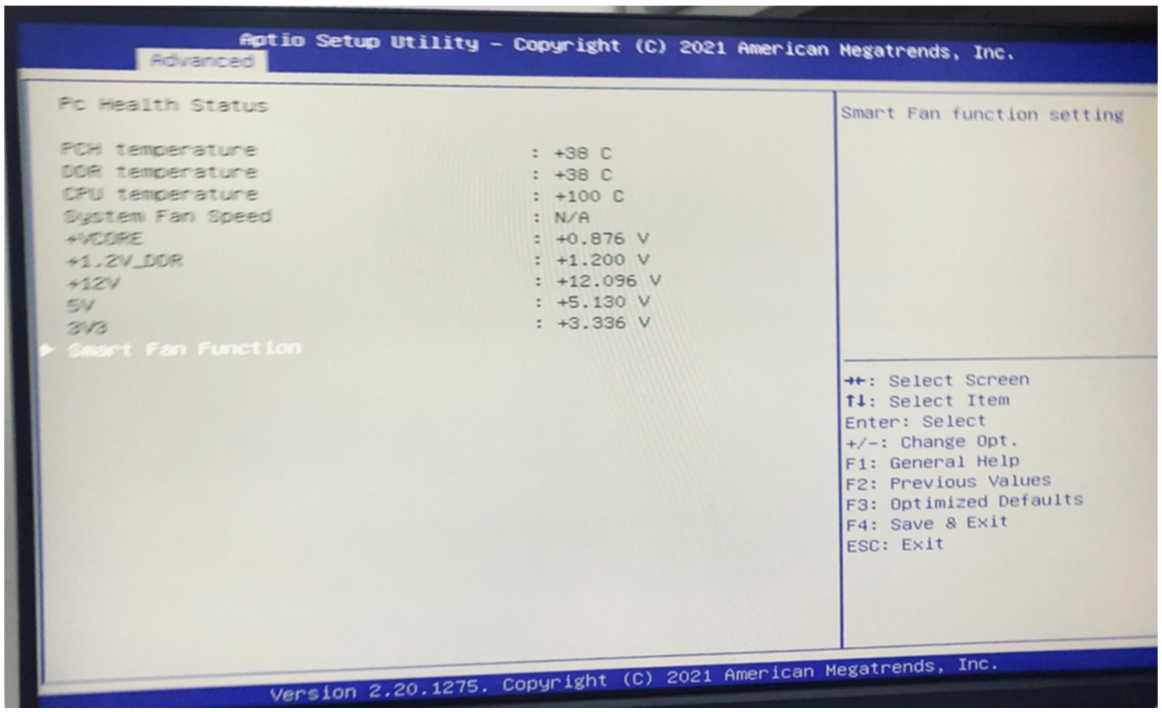
Serial Port 2/3/4 only support RS232





3.4.7 HardwareMonitor

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



- **CPU Temperature**

Detects and displays the current CPU temperature.

- **System Temperature**

Detects and displays the current system temperature.

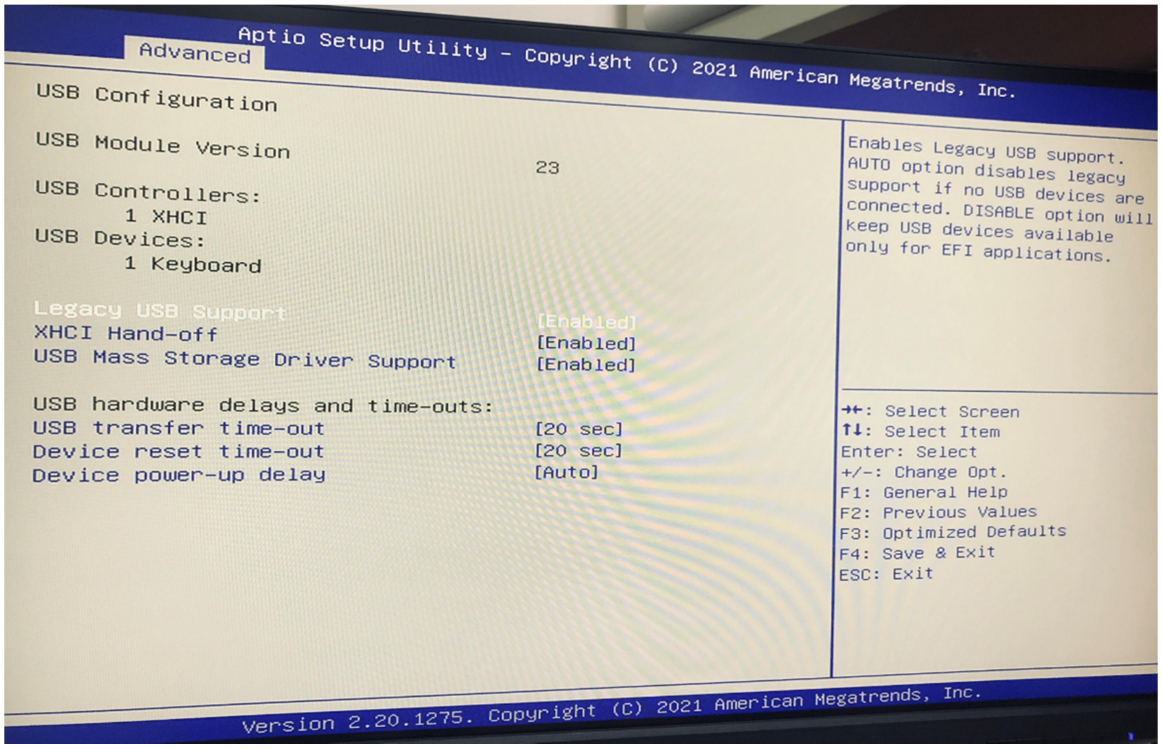
- **CPU Fan Speed**

Detects and displays the current CPU fan speed.

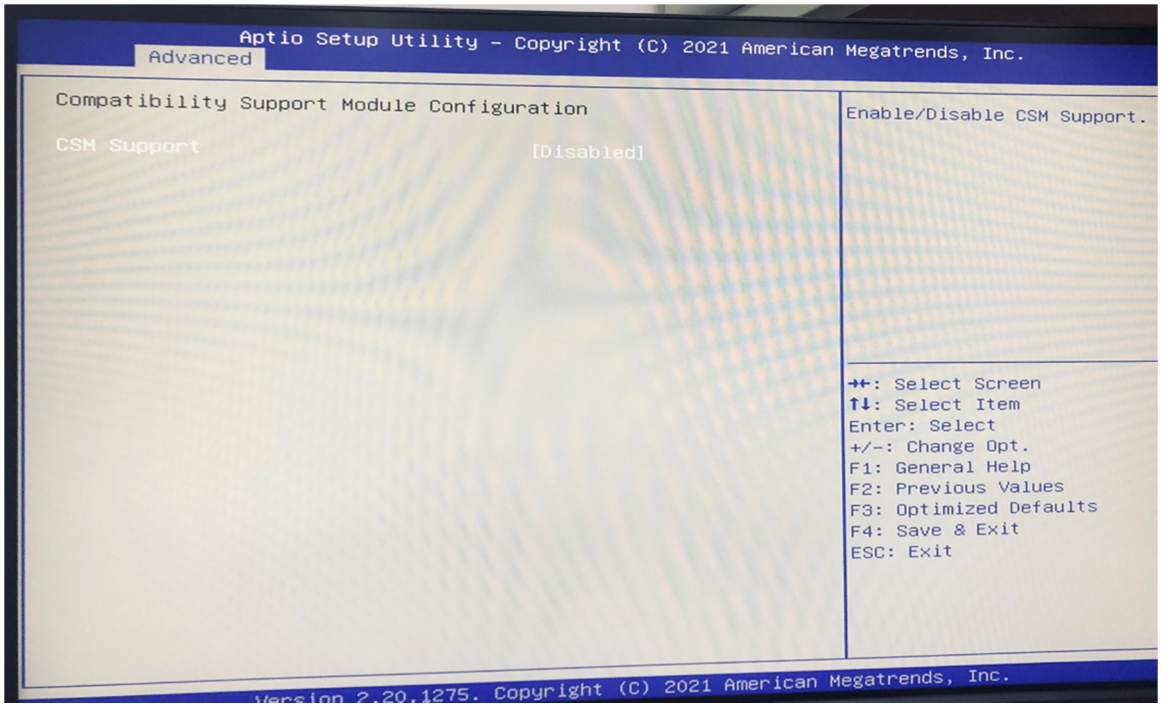
- **VCORE to 1.35VDUAL**

Detects and displays the output voltages.

3.4.8 USB configuation



3.4.9 CSM Configuration

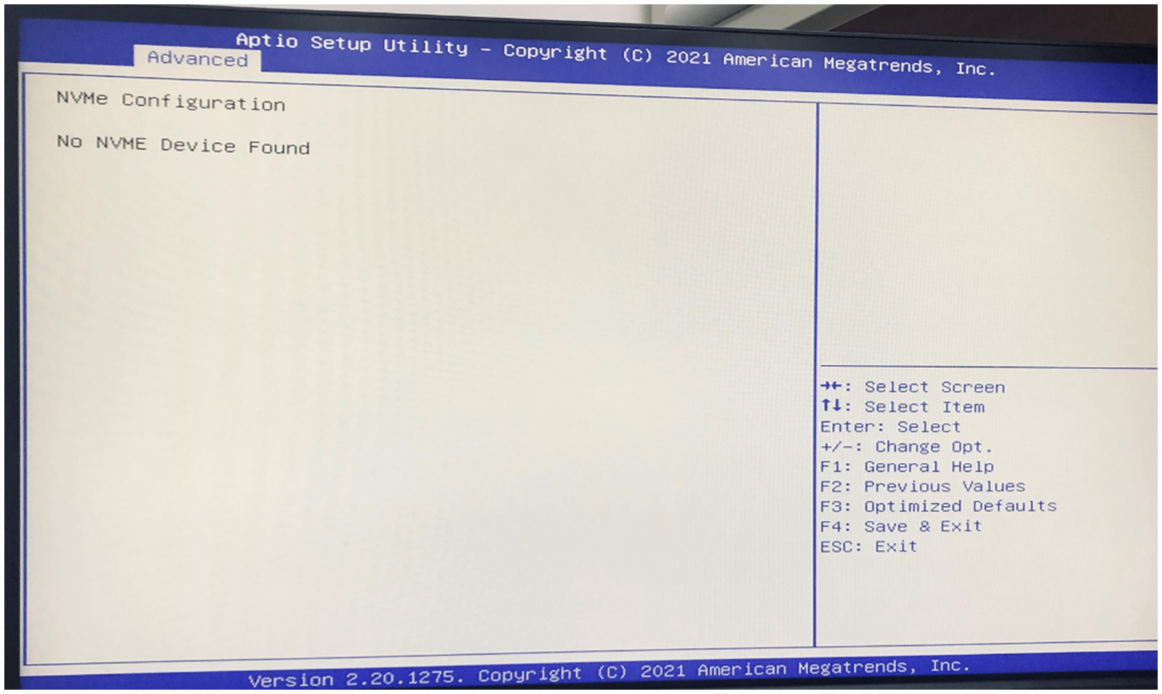


CSM Support for debug purpose

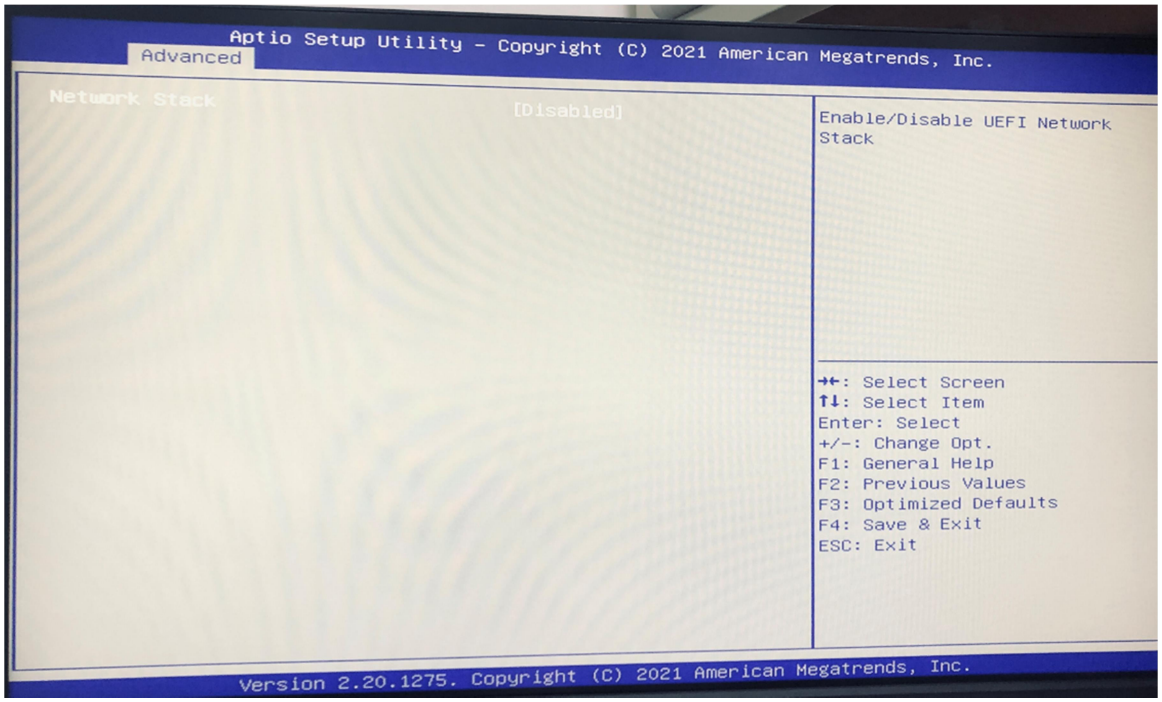
- **CSM Support**

Enable/Disable CSM Support.

3.4.10 NVMe Configuration

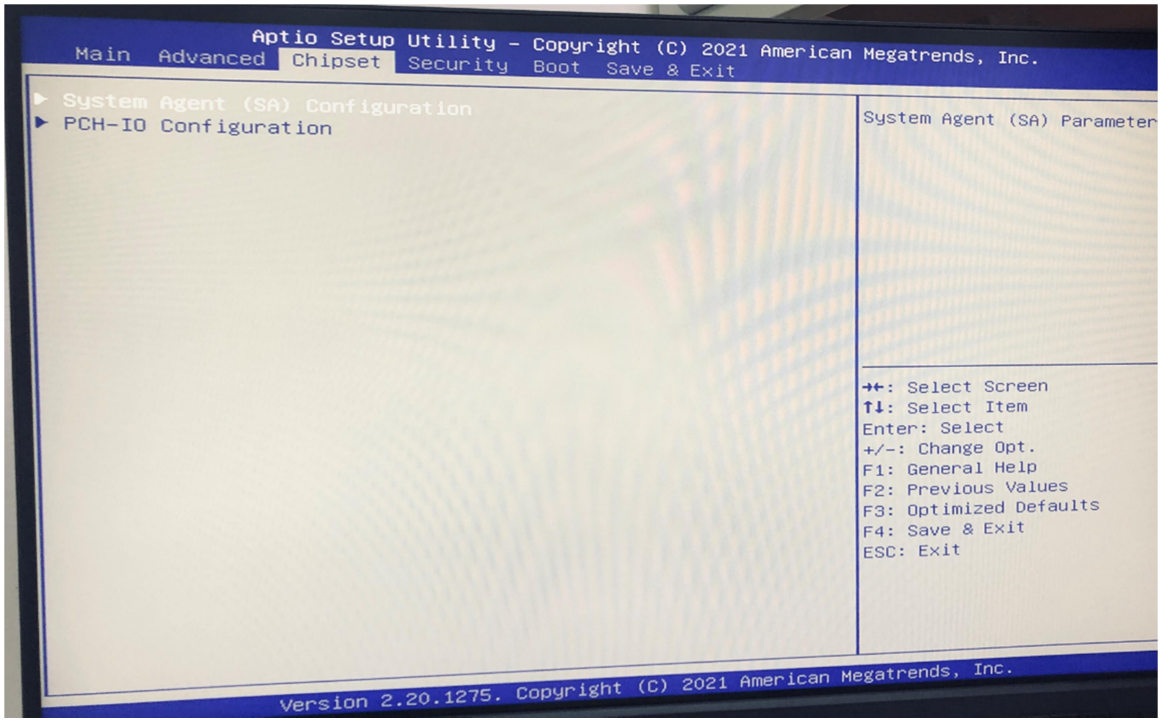


3.4.11 Network Stack Configuration

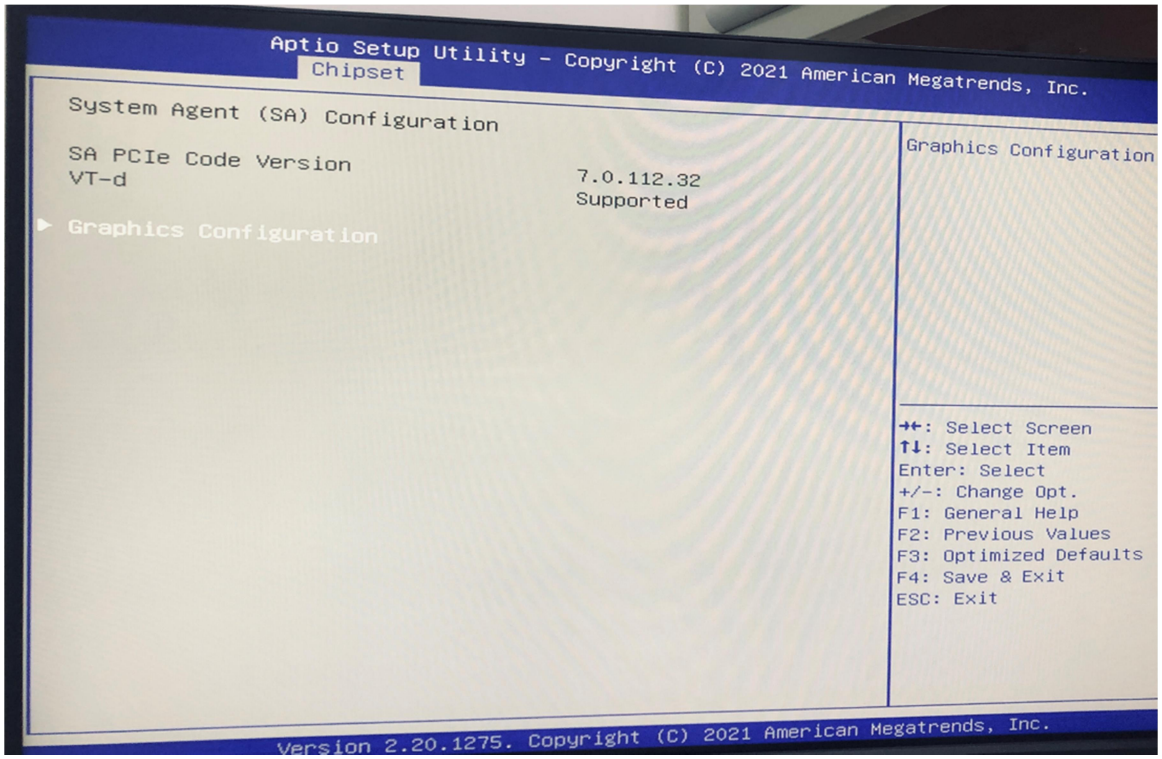


3.5 Chipset

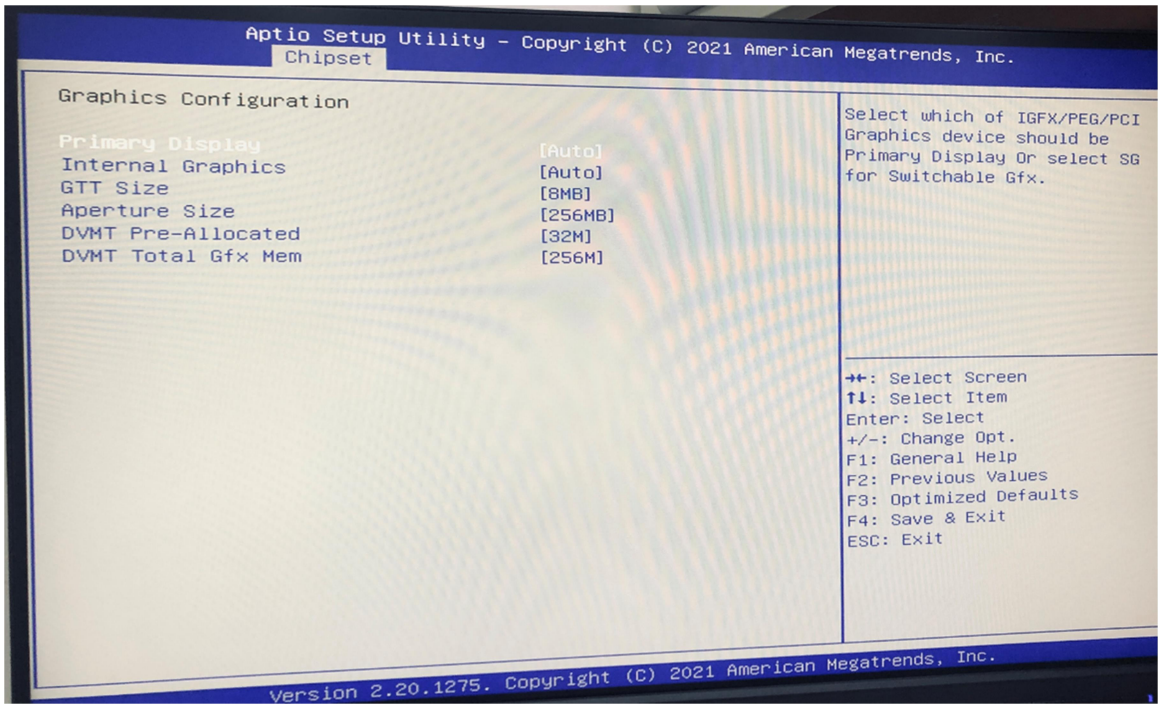
This section is used to configure the system based on the specific features of the chipset.



3.5.1 SA Configuration

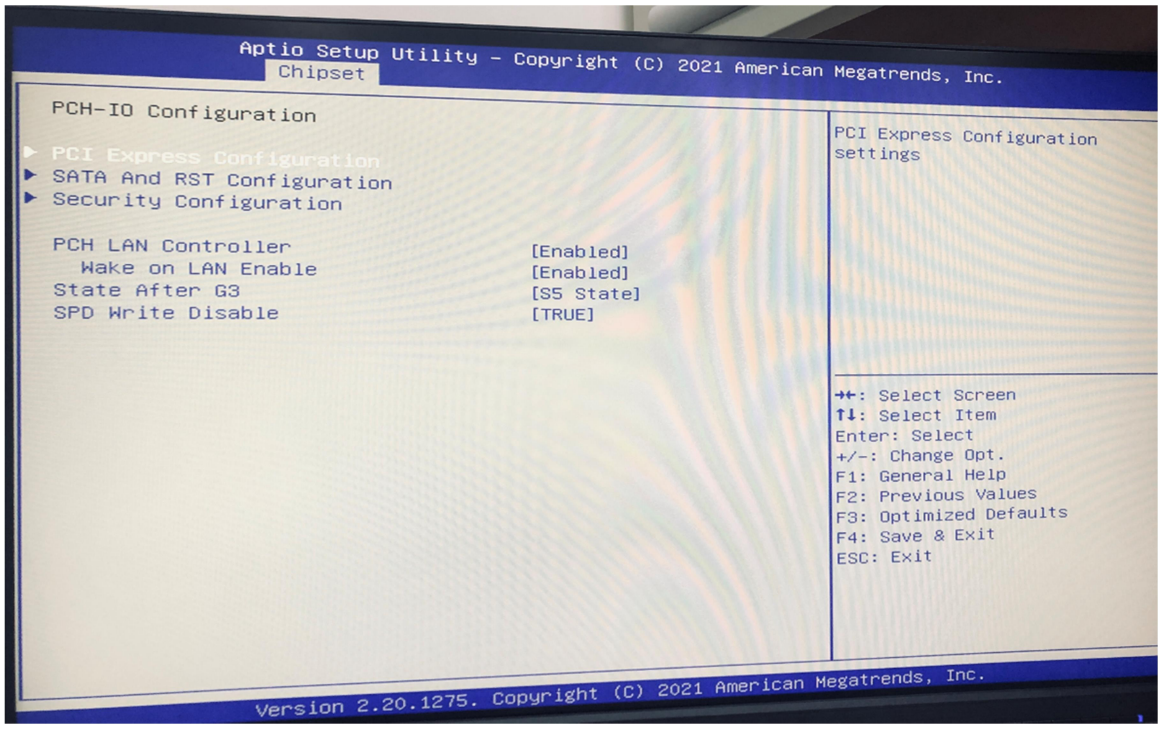


3.5.1.1 Graphics Configuration

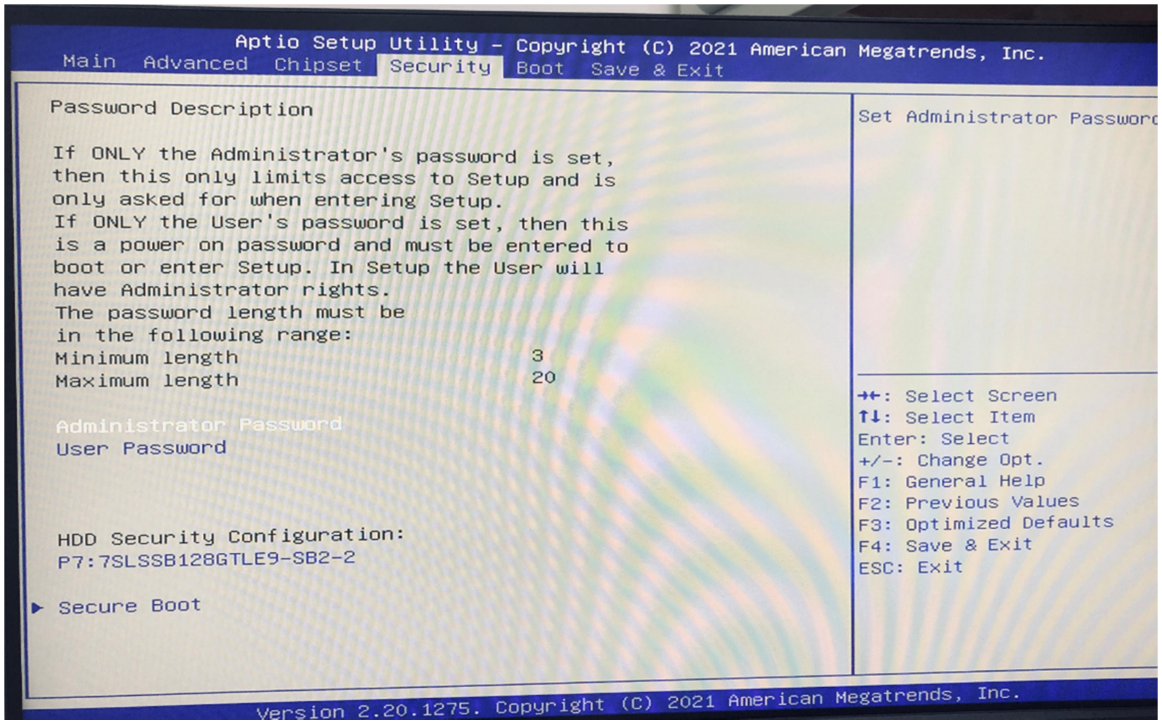


3.5.1.2 LCD Control

3.5.2 PCH-IO Configuration



3.6 Security



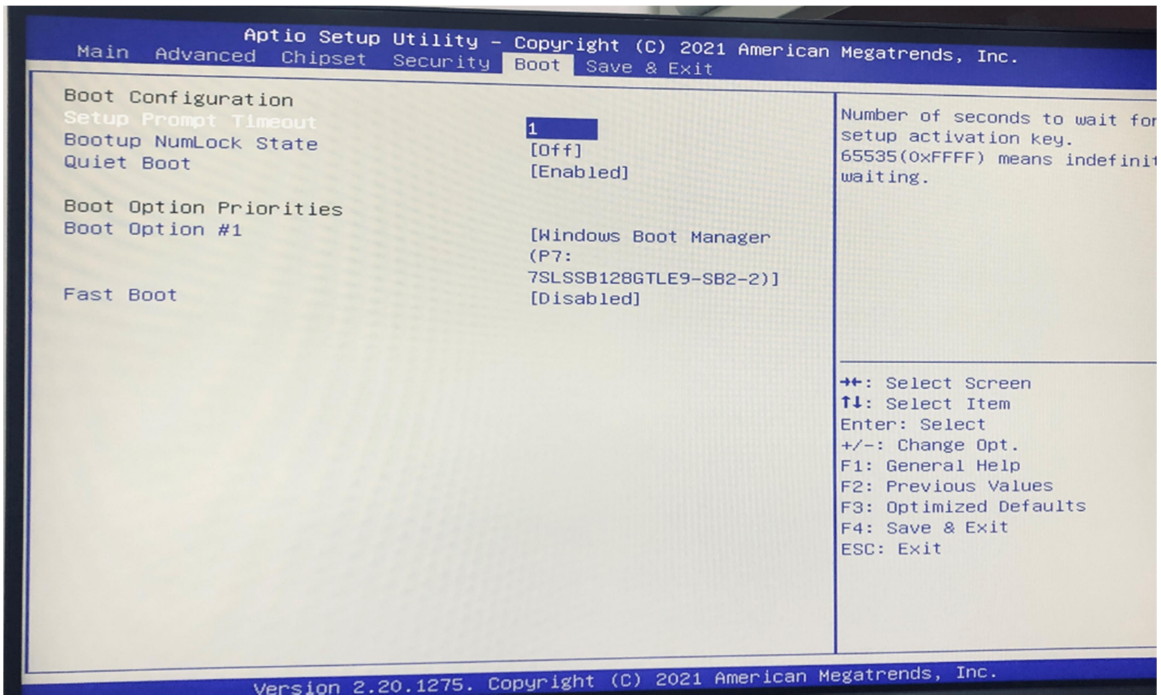
All Security Setup options, such as password protection and virus protection are described in this section. To access the sub menu for the following items, select the item and press

<Enter>:

- **Change Administrator / User Password**

Select this option and press to access the sub menu, and then type in the password.

3.7 Boot



- **Bootup NumLock State:**

Select the keyboard NumLock state.

- **Quiet Boot:**

Enables or disables Quiet Boot option.

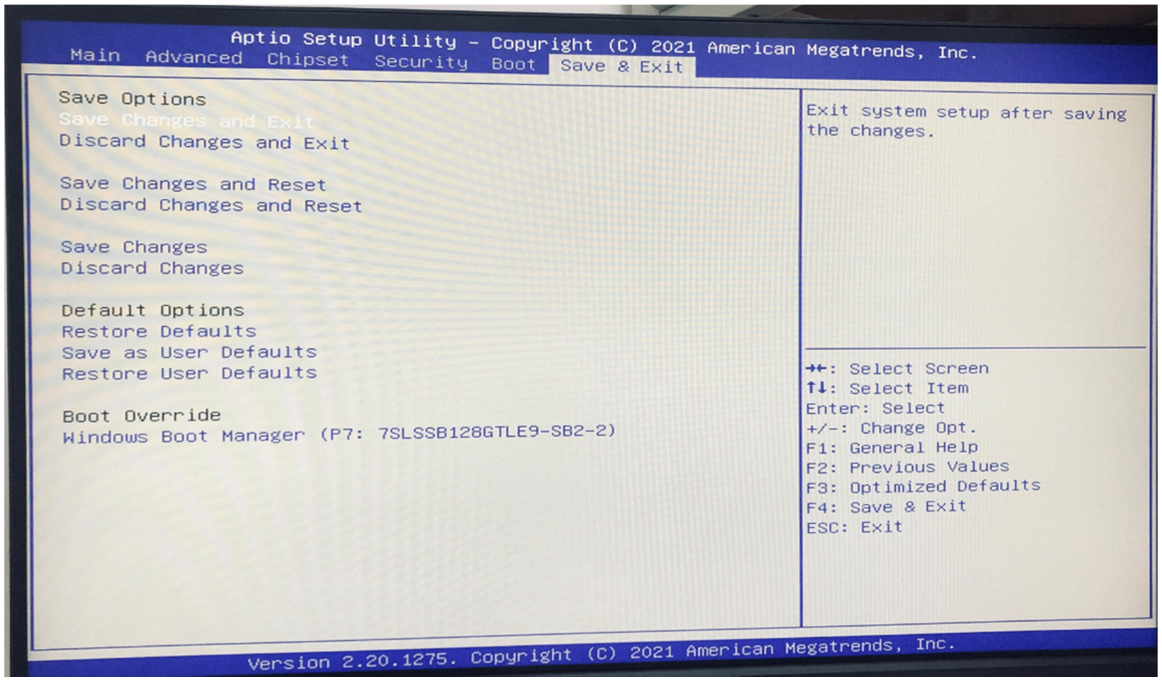
- **Fast Boot:**

Enables or disables boot with initialization of a minimal set of devices required to launch active boot option.Has no effect for BBS boot options.

- **Boot option priorities**
- **Boot Option #1:**

Sets the system boot order.

3.8 Save & Exit



This screen provides functions for handling changes made to the BIOS settings and the exiting of the Setup program.

- **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 Options

- **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.