# Edge AI GPU Computing FleetPC-11 Series

User's Manual

## CarTFT.com e.K.

## **User Manual**

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## **Declaration of Conformity**

The CE symbol on your product indicates that it is in compliance with the directives of the Union European (EU). A Certificate of Compliance is available by contacting Technical Support. This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables.

## FC

This product has been tested and found to comply with the limits for a Class B device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications.

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## Safety Information

Read the following precautions before setting up a CARTFT.COM E.K. Product.

#### **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 retailer.

## **Operation safety**

User's Manual

- 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 technical problems with the product, contact a qualified service technician or your retailer.

#### **Environmental safety**

- Use this product in environments with ambient temperatures between -40°C and 70°C.
- Do not leave this product in an environment where the storage temperature may be below 40°C or above 85°C. To prevent from damages, the product must be used in a controlled environment.



Incorrectly replacing the battery may damage this computer. Replace only with the same or its equivalent as recommended by CarTFT.com e.K. Dispose used battery according to the manufacturer's instructions.

## **Technical Support**

Please do not hesitate to call or e-mail our customer service when you still cannot fix the problems.

- Tel : +49 7121 3878264
- Fax : +49 7121 3878265
- E-mail : <u>sales@cartft.com</u>
- Website : <u>https://www.cartft.com</u>

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## **Product Introduction**

## **1.0 PRODUCT INTRODUCTION**

#### 1.1 Overview

FLEETPC-11 is designed for a variety of performance demanding computing application in surveillance and field control systems. With new Intel Comet Lake 10th Gen Core i Processor's exceptional performance, FLEETPC-11 effectively enables autonomous vehicles, factory automation and license plate recognition.



#### 1.2 Feature

- Intel GEN 10th 10 Cores Xeon W-1290TE / i9-10900TE
- NVIDIA<sup>®</sup> GeForce GPU GTX-1650/ GTX-1060
- Support 1280 CUDA Cores
- 8 x DI, 4 x DO and 3 x RS-232/422/485
- 1 x M.2 B key, 1 x M.2 A-E key & 3 x miniPCle expansion slots
- Dual Hot Swappable SATA Storage RAID 0,1,5
- 9-48V DC Input and Operating Temp.: -40~70°C
- 10 x GbE RJ45 (Optional 8 x PoE and 8 x M12 X coded connectors)
- Rolling Stock EN 50155 and EN 50121-3-2 certified

## 1.3 Specification

System	
CPU	Intel Gen10 Xeon W-1290TE (20M Cache 2.0GHz up to 4.6GHz)* Intel Gen10 Core i9-10900TE (20M Cache 2.0GHz up to 4.5GHz) Intel Gen10 Core i7-10700TE (16M Cache 2.0GHz up to 4.4GHz) Intel Gen10 Core i5-10500TE (12M Cache 2.3GHz up to 3.7GHz) Intel Gen10 Core i3-10100TE (6M Cache 2.3GHz up to 3.6GHz) Intel Gen10 Core G5900TE (4M Cache 3.0GHz) *Use only with Intel W480E
Chipset	Q470E/W480E
Memory	2 x DDR4 2666/2933 MHz SO-DIMM up to 64GB (Optional ECC support with Xeon W-1290TE)
Lan Chipset	9 x Intel i210-AT and 1 x i219 (support iAMT) Gb/s Ethernet Controllers Onboard, Support PXE and WOL
Watchdog	1 ~ 255 Level Reset
TPM	2.0
Power Requirement	
Power Input	9V-48V DC Power input
Power Protection	Automatics Recovery Short Circuit Protection
Power Management	Vehicle Power Ignition for Variety Vehicle
Power Off Control	Power off Delay Time Setting by Software and BIOS
Battery Backup (Option)	Internal Battery Kit for 10 Mins Operating (P/N: BAT-5200 kit, Operating Temp20 ~ 60°C)
Storage	
Туре	2 x 2.5" Drive Bay for SATA Type HDD/SSD RAID 0, 1, 5 1 x M.2 M key 2280 slot supports NVMe and SATA SSD * Thermal heatsink is required for M.2 storage. Please contact sales window for more information.
Graphics	
Built-in Graphics	Intel <sup>®</sup> UHD Graphics 630 for z9/i9/i7/i5/i3, Intel <sup>®</sup> UHD Graphics 610 for G5900TE Max Resolution (DP 1.2) : 4096 x 2340 @ 60Hz
MXM Graphics	NVIDIA <sup>®</sup> GeForce GTX 1060 GPU (1280 CUDA Cores) w/6GB GDDR5 Max Resolution (HDMI 2.0b) : 4096 x 2160 @ 60Hz (Optional) NVIDIA <sup>®</sup> GeForce GTX 1650 GPU (896 CUDA Cores) w/4GB GDDR5 Max Resolution (HDMI 2.0b) : 4096 x 2160 @ 60Hz
I/O	
Serial Port	3 x RS 232/422/485 (option additional 1 x RS 232/422/485)

USB Port	4 x USB 3.2 Gen 1x1 Ports			
LAN	10 x RJ45 Ports for GbE (Optional 8 with M12 X coded connectors and 8 x PoE total Max.120W)			
Video Port	3 x DP (Intel built-in GPU), 2 x HDMI Ports (MXM graphics)			
DIO Port	8 x DI (5~48VDC) and 4 x DO (5VDC, 100mA)			
Audio	1 x Line-out, 1 x Line-in and 1 x Mic-in			
Expansion Bus	2 x Full Mini-PCle Slots and 1 x Full Mini-PCle Slot w/ USB interface only for WWAN sharing 2 x SIM Card Sockets with M.2 B Key 3042 slot 1x M.2 A-E Key 2230 slot, 1 x M.2 B Key 3042 slot w/ 2 x SIM Card Sockets for WWAN			
<b>Environment &amp; Mechani</b>	cal			
Operating Temp.	-40°C ~ 70°C w/ GTX 1650 (-40ºC ~ 60ºC w/GTX 1060) w/0.6 m/S airflow			
Storage Temp.	-40°C ~ 80°C			
Relative Humidity	10% RH – 90% RH (non-condensing)			
Vibration (with SSD)	IEC60068-2-64, random, 2.5G@5~500Hz, 1hr/axis MIL-STD-810G, Method 514.6, Procedure I, Cat.4, Operating			
Shock	Operating: MIL-STD-810G, Method 516.6, Procedure I, Trucks and semi-trailers=15G (11ms) with SSD			
Certifications	CE, FCC Class A, E13, EN50155			
Patent No. (Taiwan)	M592609 - Automatic SIM Card Detection M565941 - Thermal Cooling M447854 - Build-in Battery			
Construction	Aluminum Alloy			
Mounting	Wall-mount			
Weight	5300g (Barebone)			
Dimensions	260(L) x 250(W) x 95(H) mm			

## **1.4** Power Consumption

Intel i9-10900TE with GTX 1660								
Voltage Power Status	9	€V	12	2V	24	١V	48	3V
SO (Burn-In Test)	8.97A	80.73W	8.88A	106.56W	4.31A	103.44W	2.06A	98.88W
SO (Idle)	3.73A	33.57W	2.54A	30.48W	1.36A	32.64W	1.0A	48W
S3	0.32A	2.8W	0.27A	3.24W	0.21A	5.04W	0.11A	5.28W
S5	0.27A	2.43W	0.20A	2.4W	0.20A	4.8W	0.10A	4.8W
POE(120W)	23.39A	210.51W	20.08A	240.96W	9.94A	238.56W	4.68A	224.64W
Intel i9-10900TE with GTX 1650								

**1.0 Product Introduction** 

Voltage Power Status	9	€V	12	2V	24	١V	48	3V
SO (Burn-In Test)	12.91A	116.19W	10.65A	127.8W	5.24A	125.76W	2.70A	129.6W
SO (Idle)	5.40A	48.6W	6.09A	73.08W	2.25A	54W	1.29A	61.92W
S3	0.43A	3.87W	0.32A	3.84W	0.20A	4.8W	0.19A	9.12W
S5	0.34A	3.06W	0.25A	3W	0.16A	3.84W	0.17A	8.16W
POE(120W)	26.91A	242.19W	22.63A	271.56W	10.72A	257.28W	5.28A	253.48W
	Intel i9-10900TE							
Voltage Power Status	g	θV	12	2V	24	١V	48	3V
SO (Burn-In Test)	8.36A	75.24W	6.38A	76.56W	3.12A	74.88W	1.5A	72W
SO (Idle)	2.25A	20.25W	1.88A	22.56W	1.02A	24.28W	0.52A	24.96W
S3	0.32A	2.88W	0.19A	2.28W	0.12A	2.88W	0.12A	5.76W
S5	0.25A	2,25W	0.15A	1.8W	0.10A	2.4W	0.08A	3.84W
POE(120W)	21.47A	193.23W	16.13A	193.56W	8.03A	192.72W	3.96A	190.08W
		Intel i	7-10700TE	with GTX	1660			
Voltage Power Status	9	€V	12	2V	24	٩V	48	3V
SO (Burn-In Test)	9.57A	86.13W	9.11A	109.32W	4.03A	96.72W	2.01A	96.48W
SO (Idle)	3.56A	32.04W	3.02A	36.24W	1.63A	39.12W	0.73A	35.04W
S3	0.32A	2.88W	0.26A	3.12W	0.24A	5.76W	0.13A	6.24W
S5	0.27A	2.43W	0.22A	2.64W	0.21A	5.04W	0.17A	8.16W
POE(120W)	23.98A	215.82W	20.90A	250.8W	9.72A	233.28W	4.60A	220.8W
		Intel i	7-10700TE	with GTX	1650			
Voltage Power Status	<u>(</u>	€V	12	2V	24	٩V	48	3V
SO (Burn-In Test)	10.38A	93.42W	8.35A	100.2W	4.12A	98.88W	2.02A	96.96W
SO (Idle)	4.28A	38.52W	2.92A	35.04W	1.35A	32.4W	0.74A	35.52W
S3	0.45A	4.05W	0.25A	3W	0.19A	4.56W	0.22A	10.56W
S5	0.38A	3.42W	0.18A	2.16W	0.14A	3.36W	0.15A	7.2W
POE(120W)	23.77A	213.93W	19.57A	234.84W	9.56A	229.44W	4.64A	222.72W
			Intel i7-1	.0700TE				
Voltage Power Status	<u>(</u>	€V	12	2V	24	٩V	48	3V
SO (Burn-In Test)	7.68A	69.12W	6.37A	76.44W	3.28A	78.72W	1.58A	75.84W
SO (Idle)	3.03A	27.27W	2.30A	27.6W	1.29A	30.96W	0.66A	31.68W
S3	0.30A	2.7W	0.35A	4.2W	0.23A	5.52W	0.03A	1.44W
S5	0.23A	2.07W	0.29A	3.48W	0.20A	4.8W	0.02A	0.96W
POE(120W)	20.79A	187.11W	16.20A	194.4W	8.19A	196.56W	4.03A	193.44W

#### **1.5** Package Contents

Your product package should include the items listed below. If any of the items below is missing, contact the distributor or dealer from whom you purchased the product.

Item	Description	Function	Q'ty
1	Screw F Type M3*4L ISO BK	For fastening 2.5inch SATA HDD/SSD	8
2	MC101-508-05GA1F90D	Terminal block for DC power input connector	1
3	HDD-RUBBER FOR H=7 mm	Must apply this Rubber when use 7mm 2.5 inch SATA HDD/SSD.	2
4	DDR HEATSINK Kit	Heatspreder for DDR SO-DIMM	1
5	Screw I Type M2*5L ISO	For fastening miniPCIe modules	6
6	Screw I Type M2.5x5L	For fastening M.2 modules	3

#### **1.6 Ordering Information**

See homepage

## 1.6 Optional Accessory

CARTFT.COM provides optional accessories as follows. Please contact us or your dealer if you need any.

ltem	Order No.	Description
DRAM	516016100910	SO-DIMM 16GB DDR4-2666 WT ADATA -40~85°C
DRAM	516008100310	SO-DIMM 8GB DDR4-2666 WT ADATA -40~85°C
DRAM	516004100910	SO-DIMM 4GB DDR4-2666 WT ADATA -40~85°C
M.2 SATA SSD	58510000020	SSD M.2 1TB 2280 SATA TLC WT w/ Thermal Kit Type 1
M.2 SATA SSD	585051200020	SSD M.2 512GB 2280 SATA TLC WT w/ Thermal Kit Type 1
M.2 SATA SSD	585025600020	SSD M.2 256GB 2280 SATA TLC WT w/ Thermal Kit Type 1
M.2 SATA SSD	585012800020	SSD M.2 128GB 2280 SATA TLC WT w/ Thermal Kit Type 1
M.2 SATA SSD	585006400020	SSD M.2 64GB 2280 SATA TLC WT w/ Thermal Kit Type 1
M.2 NVMe SSD	585100060020	SSD M.2 1TB 2280 NVMe TLC WT w/ Thermal Kit Type 1
M.2 NVMe SSD	585051260020	SSD M.2 512GB 2280 NVMe TLC WT w/ Thermal Kit Type 1
M.2 NVMe SSD	585025660020	SSD M.2 256GB 2280 NVMe TLC WT w/ Thermal Kit Type 1
SSD	524100002020	1TB, TLC 2.5" SATA SSD -40~85°C ADATA ISSS333-001TP - 40~85°C
SSD	524051202021	512GB, TLC 2.5" SATA SSD -40~85°C ADATA ISSS333-512GP - 40~85°C
SSD	524025602023	256GB, TLC 2.5" SATA SSD -40~85°C ADATA ISSS333-256GP -

		40~85°C
SSD	524012802021	128GB, TLC 2.5" SATA SSD -40~85°C ADATA ISSS333-128GP - 40~85°C
SSD	524006402020	64B, TLC 2.5" SATA SSD -40~85°C ADATA ISSS333-064GP - 40~85°C
LTE Mini PCIe	587600140012	LTE 4G kit, SIM7600E-H-PCIE (EMEA, Korea, Thailand) Industrial Grade Mini PCIe Card-SIMCOM (Antenna kit be included) *Not for Windows 7
LTE Mini PCIe	587600140011	LTE 4G kit, SIM7600SA-H (Australia/New Zealand/South America) Industrial Grade Mini PCIe Card-SIMCOM (Antenna kit be included) *Not for Windows 7
LTE Mini PCIe	587100140010	LTE 4G Cat 3 SIM7100E-PCIE kit Full Mini PCIe Card-SIMCOM (Antenna kit be included) * For Windows 7, not for Windows 10
LTE Mini PCIe	580025140031	LTE 4G Cat 4 EG25-G Kit Mini PCle Card-Quectel Global band (Antenna kit be included)
LTE M.2	587906140010	LTE 4G Cat 6 SIM7906E M.2 Card Version:V1.1 S2-1058A (Antenna kit be included)
GPS	610810080000	VDB-810 GPS kit, u-blox M8 Engine, Concurrent Reception of GPS/QZSS, GLONASS, BeiDou (GPS Active Antenna be included)
GPS	610810080001	VDB-810G, u-blox M8 Engine, Concurrent Reception of GPS/QZSS, GLONASS, BeiDou and G-sensor (GPS Active Antenna be included)
GPS	618100080000	VDB-810DR, Embedded u-blox NEO-M8U GPS with Untethered Dead Reckoning UDR & G-Sensor Mini PCIe Card (GPS Active Antenna be included)
Wi-Fi	580261090010	WNFQ-261ACNI(BT), 802.11ac 2T2R+BT5.0 M.2 2230 E Key, QCA6174A-5 -40°C~ 85°C (Wifi Antenna Kit be included)
Wi-Fi	580234090010	WNFT-234ACN(BT) 802.11ac/b/g/n WiFi + Bluetooth M.2 Card, RTL8822BE, 2T2R 0~70C (wifi Antenna kit be included)
Battery kit	585200110000	BAT-5200 Battery kit, 5200mAH 3S-2P with charger board VIB- 5000
Power Adapter	549102428000	Power Adapter 24V/11.67A 280W with tin solder end

\*Please check with CARTFT.COM' sales representatives for the availability

## Chapter 2

I/O and Connectors

## 2.0 I/O AND CONNECTORS

## 2.1 Front I/O Information

#### 2.1.1 Power Button



- RED light: Standby
- BLUE light: Power On

#### 2.1.2 LED Indicators



ON: System on

OFF: System off

Flash: detection

Continue On: Ignition Ready

#### 2.1.3 FES-2SIM



- Support SIM Card size: Mini SIM. SIM Card is switchable, but the default setting is on SIM CARD1. Please contact your CARTFT.COM' sales representative to get the utility or software control for the SIM card switch function.
- Hot swappable design which allows SIM cards changing while system is in operating mode.
- Automatic 3G/LTE module reset after the FES-2SIM module is inserted.

#### 2.1.4 HDMI Connectors (FLEETPC-11 Series)



■ Max Resolution (HDMI 2.0b): 4096x2160@60Hz from a extended GPU card.

#### 2.1.5 LAN/PoE Ports



■ LAN/PoE Ports feature Intel i210-AT and support 10/100/1000 Mbps LAN. Optional PoE support IEEE 802.3af and total max power is 100W budget.

#### 2.1.6 SSD/HDD Holder



Support: 2.5" and 9mm thickness Drive Bay for SATA Type HDD/SSD. When using 7mm thickness HDD/SSD, please insert HDD rubber (P/N:417290370250) which can be found in the accessories packet.

#### 2.2 Rear I/O Information

#### 2.2.1 Audio Jacks



■ The system's audio function features high definition audio Realtek ALC662 codec. There are 3 female ports and a 3.5mm audio jack for mic-in, line-in, and line-out.

#### 2.2.2 DP Connectors



■ Max resolution 4096x2304@60Hz from Intel UHD Graphics 630.

#### 2.2.3 USB Connectors



■ Support USB 3.0.

#### 2.2.4 LAN Ports



- LAN1 features Intel i219 support 10/100/1000 Mbps and iAMT/PXE/Wake on.
- LAN2 features Intel i210-AT support 10/100/1000 Mbps.

#### 2.2.5 COM Ports



- COM1 and COM2 port support RS 232/422/485, default setting is RS 232.
- COM3/CAN: default setting is COM3 and RS 232 (support RS 232/422/485 set by BIOS). Please contact the CARTFT.COM' sales representative for optional CANBUS module.
- GPIO/COM4: default setting is GPIO. Please contact CARTFT.COM' sales representative for optional COM4.

#### 2.2.6 DC Input Terminal Block



Ensure all 4 pins (Passive x 2 pins and Negative x 2pins) are used and connected to the input connector as in the drawing below. Missing pins may reduce lifetime of the product.



IGN is for ignition control when installed in a Vehicle. Please see more detail for the ignition control at "4.2 Ignition Power Management Quick Guide"

#### 2.3 Illustration

#### 2.3.1 System



#### 2.3.2 Main Board

Top View





#### **Bottom View**



## 2.4 I/O Connector Definition

#### 2.4.1 Audio Connector



Connector size: 3 Pin x3 Connector type: 3.5mm Phone Jack x 3 Connector location: **AUDIO1** 

Pin	Signal	Pin	Signal
1	GND	2	MIC_R
3	MIC_JD	4	GND
5	MIC_L	22	LINE OUT_R
23	LINE OUT_JD	24	GND
25	LINE OUT_L	32	LINE IN_R
33	LINE IN_JD	34	GND
35	LINE IN_L		

#### 2.4.2 DP1 Connector



Connector size: 20 Pin Connector type: Display Port Connector location: **DP1** 

Pin	Signal	Pin	Signal
1	DP1_LANE_0P	2	GND
3	DP1_LANE_ON	4	DP1_LANE_1P
5	GND	6	DP1_LANE_1N
7	DP1_LANE_2P	8	GND
9	DP1_LANE_2N	10	DP1_LANE_3P
11	GND	12	DP1_LANE_3N
13	DP1_AUX_EN#	14	GND
15	DP1_AUXP/LK	16	GND
17	DP1_AUXN/DATA	18	DP1_HPD
19	GND	20	DP1_VCC+3.3V

#### 2.4.3 DP2 Connector

10 17 15 13 11 0 7 8 3 1 20 18 16 14 12 18 8 6 4 2

Connector size: 20 Pin Connector type: Display Port Connector location: **DP2** 

Pin	Signal	Pin	Signal
1	DP2_LANE_OP	2	GND
3	DP2_LANE_ON	4	DP2_LANE_1P
5	GND	6	DP2_LANE_1N
7	DP2_LANE_2P	8	GND
9	DP2_LANE_2N	10	DP2_LANE_3P
11	GND	12	DP2_LANE_3N
13	DP2_AUX_EN#	14	GND
15	DP2_AUXP/LK	16	GND
17	DP2_AUXN/DATA	18	DP2_HPD
19	GND	20	DP2_VCC+3.3V

Signal

#### 2.4.4 DP3 Connector

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Connector size: 20 Pin Connector type: Display Port Connector location: **DP3** 

Pin	Signal	Pin	Signal
1	DP3_LANE_OP	2	GND
3	DP3_LANE_ON	4	DP3_LANE_1P
5	GND	6	DP3_LANE_1N
7	DP3_LANE_2P	8	GND
9	DP3_LANE_2N	10	DP3_LANE_3P
11	GND	12	DP3_LANE_3N
13	DP3_AUX_EN#	14	GND
15	DP3_AUXP/LK	16	GND
17	DP3_AUXN/DATA	18	DP3_HPD
19	GND	20	DP3_VCC+3.3V

#### 2.4.5 LAN1/2 Connector



Connector size: 8 Pin Connector type: RJ45 Connector location: LANUSB1, LANUSB2

RJ45 p	oin definition		
Pin	Signal	Pin	
1	TX_D1+	2	TX_D
-			

1	TX_D1+	2	TX_D1-
3	RX_D2+	4	BI_D3+
5	BI_D3-	6	RX_D2-
7	BI D4+	8	BI D4-

#### 2.4.6 LAN3~10 Connector



Connector size: 8 Pin Connector type: RJ45 Connector location: LAN3/4, LAN5/6, LAN7/8, LAN9/10

#### RJ45 pin definition

Pin	Signal	Pin	Signal
1	TX_D1+	2	TX_D1-
3	RX_D2+	4	BI_D3+
5	BI_D3-	6	RX_D2-
7	BI_D4+	8	BI_D4-

#### 2.4.7 USB3.0\_1/2 Connector

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Pin	Signal	Pin	Signal
1	+5VSB	2	USB_DN

2.0 I/O and Connectors

Connector size: 9 Pin x2 Connector type: USB3.0 Type A x2 Connector location: **LANUSB1** 

3	USB_DP	4	GND
5	USB3_SSRX_DN	6	USB3_SSRX_DP
7	GND	8	USB3_SSTX_DN
9	USB3_SSTX_DP		

#### 2.4.8 USB3.0\_3/4 Connector

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Connector size: 9 Pin x2 Connector type: USB3.0 Type A x2 Connector location: **LANUSB2** 

Pin	Signal	Pin	Signal
1	+5VSB	2	USB_DN
3	USB_DP	4	GND
5	USB3_SSRX_DN	6	USB3_SSRX_DP
7	GND	8	USB3_SSTX_DN
9	USB3_SSTX_DP		

#### 2.4.9 COM1/2/3 Connector



Connector size: 9 Pin Connector type: D-SUB\_9P Connector location: **COM1, COM2, COM3** 

Pin	Signal		
	RS232	RS422	RS485
1	COM1_DCD	TXD-	TXD-/RXD-
2	COM1_RXD	TXD+	TXD+/RXD+
3	COM1_TXD	RXD+	NC
4	COM1_DTR	RXD-	NC
5	GND	GND	GND
6	COM1_DSR	NC	NC
7	COM1_RTS	NC	NC
8	COM1_CTS	NC	NC
9	COM1_RI	NC	NC

#### 2.4.10 GPIO Connector



Connector size: 15 Pin Connector type: D-SUB\_15P Connector location: **GPIO** 

Pin	Signal	Pin	Signal
1	D0_1 (5V~100mA)	2	D0_2 (5V~100mA)
3	D0_3 (5V~100mA)	4	D0_4 (5V~100mA)
5	GND	6	GND
7	DI_1 (5V~48V )	8	DI_2 (5V~48V )
9	DI_3 (5V~48V )	10	DI_4 (5V~48V )
11	DI_5 (5V~48V )	12	DI_6 (5V~48V )
13	DI_7 (5V~48V )	14	DI_8 (5V~48V )
15	GND		

#### 2.4.11 DC Power Connector



Connector size: 1x5 Pin Connector type: DECA 5mm-F-90D-5PIN Connector location: **Power1** 

Pin	Signal	Pin	Signal
1	GND	2	GND
3	DC_IN(+9~+48V)	4	DC_IN(+9~+48V)
5	Ignition		

#### 2.4.12 HDMI1/2 Connector



Connector size: 19 Pin Connector type: HDMI-TYPE A Connector location: **HDMI1/2** 

Pin	Signal	Pin	Signal
1	TMDS Data2+	2	GND
3	TMDS Data2-	4	TMDS Data1+
5	GND	6	TMDS Data1-
7	TMDS Data0+	8	GND
9	TMDS Data0-	10	TMDS Clock+
11	GND	12	TMDS Clock-
13	NC/CEC	14	NC
15	SCL	16	SDA
17	GND	18	VCC +5V
19	Hot Plug Detect		

#### 2.4.13 FES-2SIM SIM1/2 Connector



Connector size: 6 Pin Connector type: Full-size SIM Connector location: UPPER=**SIM1,** LOWER=**SIM2** 

Pin	Signal	Pin	Signal
1	SIM VCC	2	RESET
3	CLOCK	4	GND
5	NC	6	DATA

#### 2.5 Board Connector Definition

#### 2.5.1 MINI PCI-E 1 Slot (USB2.0 only)



Connector size: 2 X 26 = 52 Pin Connector type: MINI PCI-E CON 9.2mmH Connector location: **MINICARD1** 

Pin	Signal	Pin	Signal
1	PCIE_WAKE#	2	+3.3VSB
3	NC	4	GND
5	NC	6	NC
7	NC	8	UIM_PWR_B
9	GND	10	UIM_DAT_B
11	NC	12	UIM_CLK_B
13	NC	14	UIM_RST_B
15	GND	16	NC
17	NC	18	GND
19	NC	20	MINICARD1_DIS#
21	GND	22	PCIE_RST#
23	NC	24	+3.3VSB
25	NC	26	GND
27	GND	28	NC
29	GND	30	NC
31	NC	32	NC
33	NC	34	GND
35	GND	36	USB_7N
37	GND	38	USB_7P
39	+3.3VSB	40	GND
41	+3.3VSB	42	WWAN_LED#
43	GND	44	NC
45	NC	46	NC
47	NC	48	NC
49	NC	50	GND
51	NC	52	+3.3VSB

#### 2.5.2 MINI PCI-E 2 Slot (PCI-E&USB2.0)



Connector size: 2 X 26 = 52 Pin Connector type: MINI PCI-E CON 9.2mmH Connector location: **MINICARD2** 

Pin	Signal	Pin	Signal
1	PCIE_WAKE#	2	+3.3VSB
3	NC	4	GND
5	NC	6	+1.5V
7	MINICARD2_CLKREQ#	8	NC
9	GND	10	NC
11	PCIE_MCARD2_CLK_DN	12	NC
13	PCIE_MCARD2_CLK_DP	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	MINICARD2_DIS#
21	GND	22	PCIE_RST#
23	PCIE_MCARD2_RX_N	24	3VSB
25	PCIE_MCARD2_RX_P	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PCIE_MCARD2_TX_N	32	SMB_DATA
33	PCIE_MCARD2_TX_P	34	GND
35	GND	36	USB_8N
37	GND	38	USB_8P
39	+3.3VSB	40	GND
41	+3.3VSB	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	+1.5V
49	NC	50	GND
51	NC	52	+3.3VSB

#### 2.5.3 MINI PCI-E 3 Slot (PCI-E&USB2.0)



Connector size: 2 X 26 = 52 Pin Connector type: MINI PCI-E CON 9.2mmH Connector location: **MINICARD3** 

Pin	Signal	Pin	Signal
1	PCIE_WAKE#	2	+3.3VSB
3	NC	4	GND
5	NC	6	+1.5V
7	MINICARD3_CLKREQ#	8	NC
9	GND	10	NC
11	PCIE_MCARD3_CLK_DN	12	NC
13	PCIE_MCARD3_CLK_DP	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	MINICARD3_DI
			S#
21	GND	22	PCIE_RST#
23	PCIE_MCARD3_RX_N	24	+3.3VSB
25	PCIE_MCARD3_RX_P	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PCIE_MCARD3_TX_N	32	SMB_DATA
33	PCIE_MCARD3_TX_P	34	GND
35	GND	36	USB_9N
37	GND	38	USB_9P
39	+3.3VSB	40	GND
41	+3.3VSB	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	+1.5V
49	NC	50	GND
51	NC	52	+3.3VSB

#### 2.5.4 NGFF1 slot (PCI-E&USB2.0)



Connector size: 2230 Connector type: NGFF \_AE KEY\_H:8.5mm Connector location: **NGFF1** 

Pin	Signal	Pin	Signal
1	GND	2	+3.3VSB
3	USB_10P	4	+3.3VSB
5	USB_10N	6	NC
7	GND	8	NC
9	NC	10	NC
11	NC	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	NC
19	NC	20	NC
21	NC	22	NC
23	NC	24	KEY
25	KEY	26	KEY
27	KEY	28	KEY
29	KEY	30	KEY
31	KEY	32	NC
33	GND	34	NC
35	PCIE_M.2_TX_1P	36	NC
37	PCIE_M.2_TX_1N	38	NC
39	GND	40	NC
41	PCIE_M.2_RX_1P	42	NC
43	PCIE_M.2_RX_1N	44	NC
45	GND	46	NC
47	PCIE_M.2_CLK_1P	48	NC
49	PCIE_M.2_CLK_1N	50	NC
51	GND	52	M.2_RESET#
53	M.2_CLKREQ0#	54	M.2_DIS2#
55	PCIE_WAKE#	56	M.2_DIS1#
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	GND	64	NC
65	NC	66	M.2_RESET #
67	NC	68	M.2_CLKREQ1#
69	GND	70	PCIE_WAKE#

2.0 I/O and Connectors

71	NC	72	+3.3VSB
73	NC	74	+3.3VSB
75	GND		

#### 2.5.5 NGFF2 slot (PCI-Ex4/SATAx1)



Pin	Signal	Pin	Signal
1	GND	2	+3.3V
3	GND	4	+3.3V

2.0 I/O and Connectors

Connector size: 2280 Connector type: NGFF \_M KEY\_H:8.5mm Connector location: **NGFF2** 

5	PCIE_M.2_RX_20N	6	NC
7	PCIE_M.2_RX_20P	8	NC
9	GND	10	DAS/DSS#
11	PCIE_M.2_TX_20N	12	+3.3V
13	PCIE_M.2_TX_20P	14	+3.3V
15	GND	16	+3.3V
17	PCIE_M.2_RX_19N	18	+3.3V
19	PCIE_M.2_RX_19P	20	NC
21	GND	22	NC
23	PCIE_M.2_TX_19N	24	NC
25	PCIE_M.2_TX_19P	26	NC
27	GND	28	NC
29	PCIE_M.2_RX_18N	30	NC
31	PCIE_M.2_RX_18P	32	NC
33	GND	34	NC
35	PCIE_M.2_TX_18N	36	NC
37	PCIE_M.2_TX_18P	38	NC
39	GND	40	NC
41	SATA_M.2_RXP4	42	NC
43	SATA_M.2_RXN4	44	NC
45	GND	46	NC
47	SATA_M.2_TXN4	48	NC
49	SATA_M.2_TXP4	50	M.2_RESET#
51	GND	52	M.2_CLKREQ#
53	PCIE_M.2_CLK_N	54	PCIE_WAKE#
55	PCIE_M.2_CLK_P	56	NC
57	GND	58	NC
59	KEY	60	KEY
61	KEY	62	KEY
63	KEY	64	KEY
65	KEY	66	KEY
67	NC	68	NC
69	PEDET	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND		
## 2.5.6 NGFF3 slot (PCI-E&USB3.0&2.0)



Connector size: 3042 Connector type: NGFF \_B KEY\_H:8.5mm Connector location: **NGFF3** 

Pin	Signal	Pin	Signal
1	CONFIG3	2	+3.3VSB
3	GND	4	+3.3VSB
5	GND	6	PWR_OFF_1.8V
7	USB_5P	8	M.2_DIS1#
9	USB_5N	10	M.2WWLANLED#
11	GND	12	KEY
13	KEY	14	KEY
15	KEY	16	KEY
17	KEY	18	KEY
19	KEY	20	NC
21	NC	22	NC
23	PCIE_WAKE#	24	NC
25	DPR_1.8V	26	M.2_DIS2#1.8V
27	GND	28	NC
29	USB3-TX_5N	30	UIM_RESET1
31	USB3-TX_5P	32	UIM_CLK1
33	GND	34	UIM_DATA1
35	USB3-RX_5N	36	UIM_PWR1
37	USB3-RX_5P	38	NC
39	GND	40	NC
41	PCIE_M.2_RX_15N	42	NC
43	PCIE_M.2_RX_15P	44	NC
45	GND	46	NC
47	PCIE_M.2_TX_15N	48	NC
49	PCIE_M.2_TX_15P	50	M.2_RESET#
51	GND	52	M.2_CLKREQ#
53	PCIE_M.2_CLK_N	54	PCIE_WAKE#
55	PCIE_M.2_CLK_P	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	NC
67	M.2_RESET#	68	NC
69	CONFIG_1	70	+3.3VSB
71	GND	72	+3.3VSB
73	GND	74	+3.3VSB
75	NC		

## 2.5.7 DIO1 JST Connector



Connector size: 2 X 8 = 16 Pin Connector type: JST-2.0mm-M-180 Connector location: **DIO1** 

Pin	Signal	Pin	Signal
1	D0_1 (+5V-100mA)	2	D0_2 (+5V-100mA)
3	D0_3 (+5V-100mA)	4	D0_4 (+5V-100mA)
5	GND	6	GND
7	DI_1 (+5V~48V )	8	DI_2 (+5V~48V )
9	DI_3 (+5V~48V )	10	DI_4 (+5V~48V )
11	DI_5 (+5V~48V )	12	DI_6 (+5V~48V )
13	DI_7 (+5V~48V )	14	DI_8 (+5V~48V )
15	GND		

#### 2.5.8 COM3 JST Connector



Connector size: 2 X 5 = 10 Pin Connector type: JST-2.0mm-M-180 Connector location: **COM3** 

# 2.5.9 COM4 JST Connector



Connector size: 2 X 5 = 10 Pin Connector type: JST-2.0mm-M-180 Connector location: **COM4** 

#### 2.5.10 USB1 JST Connector



User's Manual

Pin	Signal	Pin	Signal
1	COM3_DCD	2	COM3_RXD
3	COM3_TXD	4	COM3_DTR
5	GND	6	COM3_DSR
7	COM3_RTS	8	COM3_CTS
9	COM3 RI	10	GND

Pin	Signal	Pin	Signal
1	COM4_DCD	2	COM4_RXD
3	COM4_TXD	4	COM4_DTR
5	GND	6	COM4_DSR
7	COM4_RTS	8	COM4_CTS
9	COM4_RI	10	GND

Pin	Signal	Pin	Signal
1	+5VSB	2	+5VSB
3	USB_12N	4	USB_13N
5	USB_12P	6	USB_13P
7	GND	8	GND

Connector size: 2 X 4 = 8 Pin Connector type: JST-2.0mm-M-180 Connector location: **USB1** 

#### 2.5.11 SATA1 Connector



Connector size: 1 X 7 = 7 Pin Connector type: SATA 1.27mm-M-180D Connector location: **SATA1** 

Pin	Signal
1	GND
2	SATA_TXP1
3	SATA_TXN1
4	GND
5	SATA_RXN1
6	SATA_RXP1
7	GND

#### 2.5.12 SATA2 Connector



Connector size: 1 X 7 = 7 Pin Connector type: SATA 1.27mm-M-180D Connector location: **SATA2** 

#### Pin Signal 1 GND 2 SATA\_TXP2 3 SATA\_TXN2 4 GND 5 SATA\_RXN2 SATA RXP2 6 7 GND

#### 2.5.13 SATA Power1/2 JST Connector



Connector size: 1X4 = 4 Pin Connector type: JST 2.54mm-M-180 Connector location: SPWR1, SPWR2

Pin	Signal	Pin	Signal
1	+5V	2	GND
3	GND	4	+12V

#### 2.5.14 UPS1 JST Connector



Connector size: 1 X 6 = 6 Pin Connector type: WAFER 2.0mm-M-180 Connector location: **UPS1** 

#### 2.5.15 UPS2 JST Connector



Connector size: 1 X 4 = 4 Pin Connector type: WAFER 2.0mm-M-180 Connector location: **UPS2** 

#### 2.5.16 BAT1 Power Connector



Connector size: 1 X 2 = 2 Pin Connector type: JST-1.25mm-M-180 Connector location: **BAT1** 

# 2.5.17 FAN1/2 JST Connector



Connector size: 1 X 6 = 6 Pin Connector type: WAFER 2.0mm-M-180 Connector location: **FAN1/2** 

Pin	Signal
1	GND
2	+12V
3	FAN1DET
4	FAN1CTRL
5	FAN2DET
6	FAN2CTRL

Pin	Signal
1	DC IN
2	DC IN
3	GND
4	GND

Signal

Pin

1

2

3

4

5

6

+12V UPS

+12V UPS

GND

GND

SCLK

SDA

Pin	Signal
1	BAT +3V
2	GND

# 2.5.18 CN1 JST Connector

Connector size: 2 X 15 = 30 Pin Connector type: P0.5mm-FM-90,H=9mm Connector location: **CN1** 

Pin	Signal	Pin	Signal
1	+3.3VSB	2	UIM_RESET1
3	GND	4	GND
5	USB-D6P	6	UIM_CLK1
7	USB-D6N	8	GND
9	GND	10	UIM_DATA1
11	+5VSB	12	GND
13	GND	14	UIM_PWR1
15	DET LOW	16	SIM_DET
17	NC	18	UIM_RESET2
19	GND	20	GND
21	NC	22	UIM_CLK2
23	GND	24	GND
25	NC	26	UIM_DATA2
27	GND	28	GND
29	NC	30	UIM_PWR2

#### 2.5.19 FES-2SIM CN1 JST Connector



Connector size: 2 X 15 = 30 Pin Connector type: P0.5mm-FM-90,H=9mm Connector location: **CN1** 

Pin	Signal	Pin	Signal
1	NC	2	UIM_RESET1
3	GND	4	GND
5	NC	6	UIM_CLK1
7	NC	8	GND
9	GND	10	UIM_DATA1
11	NC	12	GND
13	GND	14	UIM_PWR1
15	SIM_DET	16	SIM_DET
17	NC	18	UIM_RESET2
19	GND	20	GND
21	NC	22	UIM_CLK2
23	GND	24	GND
25	NC	26	UIM_DATA2
27	GND	28	GND
29	NC	30	UIM_PWR2

#### 2.5.20 PSE1 Slot

Connector size: 2 X 34 = 67 Pin Connector type: 2 X 34-P1.27mm-180 H9.05mm Connector location: **PSE1** 

Pin	Signal	Pin	Signal
A1	+3.3V	B1	VIN_IN
A2	+3.3V	B2	VIN_IN
A3	+5V	B3	VIN_IN
A4	GND	B4	VIN_IN
A5	GND	B5	VIN_IN
A6	GND	B6	VIN_IN
A7	SMB_CLK	B7	VIN_IN
A8	SMB_DATA	B8	VIN_IN
A9	NC	B9	VIN_IN
A10	PSE_AGND	B10	VIN_IN
A11	PSE_INT#	B11	VIN_IN
A12	PSE_AGND	B12	VIN_IN
A13	PSE_OUT1	B13	GND_C
A14	PSE_AGND	B14	GND_C
A15	PSE_OUT2	B15	GND_C
A16	PSE_AGND	B16	GND_C

A17	PSE_OUT3	B17	GND_C
A18	PSE_AGND	B18	GND_C
A19	PSE_OUT4	B19	GND_C
A20	PSE_AGND	B20	GND_C
A21	PSE_OUT5	B21	GND_C
A22	PSE_AGND	B22	GND_C
A23	PSE_OUT6	B23	GND_C
A24	PSE_AGND	B24	GND_C
A25	PSE_OUT7	B25	GND_C
A26	PSE_AGND	B26	NC
A27	PSE_OUT8	B27	NC
A28	NC	B28	NC
A29	NC	B29	NC
A30	NC	B30	GND56P_PSE
A31	NC	B31	GND56P_PSE
A32	NC	B32	NC
A33	GND56P_PSE	B33	NC
A34	GND56P_PSE	B34	NC

#### 2.5.21 MXMGF1 Connector

Connector size: 281Pin Connector type: MXM3.0 CONNECTOR\_H:5.5mm Connector location: **MXMGF1** 

Pin	Signal	Pin	Signal
E1	+12V	E2	+12V
E3	GND	E4	GND
1	+5V	2	PRSNT
3	+5V	4	NC
5	+5V	6	PWRGD
7	+5V	8	PWR_EN
9	+5V	10	NC
11	GND	12	NC
13	GND	14	NC
15	GND	16	NC
17	GND	18	PWR_LEVEL
19	NC	20	NC
21	GND	22	NC
23	NC	24	NC
25	NC	26	NC
27	NC	28	NC
29	NC/CEC	30	NC

31     NC     32     SMB_DAT       33     NC     34     SMB_CLK       35     NC     36     GND       37     GND     38     NC       39     NC     40     NC       41     NC     42     NC       43     NC     44     NC       45     NC     46     GND       47     GND     48     TX_15_N       49     RX_15_N     50     TX_14_N       51     RX_15_P     52     GND       53     GND     54     TX_14_N       55     RX_14_N     56     TX_14_P       57     RX_14_P     58     GND       59     GND     60     TX_13_N       61     RX_13_N     62     TX_13_N       63     RX_13_P     64     GND       65     GND     66     TX_12_N       65     GND     72     TX_11_N       73     RX_112_P     70 <th>24</th> <th>NC</th> <th>22</th> <th></th>	24	NC	22	
33     NC     34     SMB_CLK       35     NC     36     GND       37     GND     38     NC       39     NC     40     NC       41     NC     42     NC       43     NC     44     NC       45     NC     46     GND       47     GND     48     TX_15_N       49     RX_15_N     50     TX_15_P       51     RX_15_P     52     GND       53     GND     54     TX_14_N       55     RX_14_P     58     GND       59     GND     60     TX_13_N       61     RX_13_P     64     GND       65     GND     66     TX_12_N       67     RX_12_P     70     GND       71     GND     72     TX_11_N       73     RX_11_P     76     GND       77     GND     78     TX_10_N       69     RX_10_P     82	31	NC	32	SIVIB_DAT
35     NC     36     GND       37     GND     38     NC       39     NC     40     NC       41     NC     42     NC       43     NC     44     NC       45     NC     46     GND       47     GND     48     TX_15_N       49     RX_15_N     50     TX_115_P       51     RX_15_P     52     GND       53     GND     54     TX_14_N       55     RX_14_P     58     GND       59     GND     60     TX_13_N       61     RX_13_N     62     TX_13_N       63     RX_12_N     68     TX_12_N       64     GND     65     GND     66       71     GND     72     TX_11_N       73     RX_11_P     76     GND       74     TX_10_N     74     TX_10_N       75     RX_11_P     76     GND       77     GND	33	NC	34	SMB_CLK
37   GND   38   NC     39   NC   40   NC     41   NC   42   NC     43   NC   44   NC     43   NC   44   NC     45   NC   46   GND     47   GND   48   TX_15_N     49   RX_15_N   50   TX_15_P     51   RX_15_P   52   GND     53   GND   54   TX_14_N     55   RX_14_N   56   TX_14_P     57   RX_14_P   58   GND     61   RX_13_N   62   TX_13_N     61   RX_13_P   64   GND     65   GND   66   TX_12_N     67   RX_12_N   68   TX_12_N     67   RX_12_P   70   GND     71   GND   72   TX_11_N     73   RX_11_N   74   TX_11_N     74   TX_10_N   80   TX_10_N     69   RX_10_N   80   TX_10_N	35	NC	36	GND
39     NC     40     NC       41     NC     42     NC       43     NC     44     NC       43     NC     44     NC       45     NC     46     GND       47     GND     48     TX_15_N       49     RX_15_N     50     TX_115_P       51     RX_15_P     52     GND       53     GND     54     TX_14_N       55     RX_14_N     56     TX_14_P       57     RX_14_P     58     GND       61     RX_13_N     62     TX_13_N       61     RX_13_P     64     GND       63     RX_12_N     68     TX_12_N       64     GND     72     TX_11_N       71     GND     72     TX_11_N       73     RX_11_N     74     TX_11_N       74     GND     78     TX_10_N       69     RX_10_N     80     TX_10_N       69     RX_10_N	37	GND	38	NC
41   NC   42   NC     43   NC   44   NC     45   NC   46   GND     47   GND   48   TX_15_N     49   RX_15_N   50   TX_15_P     51   RX_15_P   52   GND     53   GND   54   TX_14_N     55   RX_14_N   56   TX_13_N     57   RX_14_P   58   GND     59   GND   60   TX_13_N     61   RX_13_N   62   TX_13_P     63   RX_12_N   68   TX_12_N     64   GND   66   TX_12_N     65   GND   66   TX_11_N     71   GND   72   TX_11_N     73   RX_11_N   74   TX_10_N     69   RX_10_N   80   TX_10_N     69   RX_10_N   80   TX_10_N     69   RX_10_N   80   TX_10_N     69   RX_10_N   80   TX_10_N     74   GND   78   S	39	NC	40	NC
43   NC   44   NC     45   NC   46   GND     47   GND   48   TX_15_N     49   RX_15_N   50   TX_15_P     51   RX_15_P   52   GND     53   GND   54   TX_14_N     55   RX_14_N   56   TX_13_N     61   RX_13_N   62   TX_13_P     63   RX_11_P   68   TX_12_N     64   GND   66   TX_12_N     65   GND   66   TX_12_N     67   RX_12_N   68   TX_12_N     68   TX_12_N   68   TX_12_N     69   RX_12_P   70   GND     71   GND   72   TX_11_N     73   RX_11_N   74   TX_11_N     74   GND   78   TX_10_N     69   RX_10_N   80   TX_10_P     81   RX_10_P   82   GND     83   GND   84   TX_9_N     85   RX_9_N   92   <	41	NC	42	NC
45     NC     46     GND       47     GND     48     TX_15_N       49     RX_15_N     50     TX_15_P       51     RX_15_P     52     GND       53     GND     54     TX_14_N       55     RX_14_N     56     TX_13_N       57     RX_14_P     58     GND       59     GND     60     TX_13_N       61     RX_13_N     62     TX_13_P       63     RX_13_P     64     GND       65     GND     66     TX_12_N       67     RX_12_N     68     TX_12_P       69     RX_12_P     70     GND       71     GND     72     TX_11_N       73     RX_11_N     74     TX_10_N       74     TX_10_N     74     TX_10_N       69     RX_10_N     80     TX_10_P       81     RX_10_P     82     GND       83     GND     84     TX_9_N       85 <td>43</td> <td>NC</td> <td>44</td> <td>NC</td>	43	NC	44	NC
47   GND   48   TX_15_N     49   RX_15_N   50   TX_15_P     51   RX_15_P   52   GND     53   GND   54   TX_14_N     55   RX_14_N   56   TX_14_P     57   RX_14_P   58   GND     59   GND   60   TX_13_N     61   RX_13_N   62   TX_12_N     63   RX_13_P   64   GND     65   GND   66   TX_12_N     67   RX_12_N   68   TX_12_P     69   RX_12_P   70   GND     71   GND   72   TX_11_N     73   RX_11_N   74   TX_10_N     74   GND   78   TX_10_N     69   RX_10_N   80   TX_10_N     69   RX_10_N   80   TX_10_N     69   RX_10_N   80   TX_10_N     69   RX_10_N   80   TX_10_N     81   RX_10_P   82   GND     83   GND   90	45	NC	46	GND
49   RX_15_N   50   TX_15_P     51   RX_15_P   52   GND     53   GND   54   TX_14_N     55   RX_14_P   56   TX_14_P     57   RX_14_P   58   GND     59   GND   60   TX_13_N     61   RX_13_N   62   TX_13_P     63   RX_13_P   64   GND     65   GND   66   TX_12_N     67   RX_12_N   68   TX_12_P     69   RX_12_P   70   GND     71   GND   72   TX_11_N     73   RX_11_N   74   TX_10_N     74   GND   78   TX_10_N     69   RX_10_N   80   TX_10_N     69   RX_10_N   80   TX_10_N     69   RX_10_N   80   TX_10_N     69   RX_9_N   82   GND     81   RX_10_P   82   GND     83   GND   90   TX_8_N     91   RX_8_N   92 <td>47</td> <td>GND</td> <td>48</td> <td>TX_15_N</td>	47	GND	48	TX_15_N
51   RX_15_P   52   GND     53   GND   54   TX_14_N     55   RX_14_P   56   TX_14_P     57   RX_14_P   58   GND     59   GND   60   TX_13_N     61   RX_13_N   62   TX_13_P     63   RX_13_P   64   GND     65   GND   66   TX_12_N     67   RX_12_N   68   TX_12_P     69   RX_12_P   70   GND     71   GND   72   TX_11_N     73   RX_11_N   74   TX_10_N     74   GND   78   TX_10_N     69   RX_10_N   80   TX_10_N     69   RX_10_N   80   TX_10_N     69   RX_10_N   80   TX_10_N     81   RX_10_P   82   GND     83   GND   84   TX_9_N     85   RX_9_N   92   TX_8_N     91   RX_8_N   92   TX_8_N     93   RX_8_N   92 </td <td>49</td> <td>RX_15_N</td> <td>50</td> <td>TX_15_P</td>	49	RX_15_N	50	TX_15_P
53   GND   54   TX_14_N     55   RX_14_P   56   TX_14_P     57   RX_14_P   58   GND     59   GND   60   TX_13_N     61   RX_13_N   62   TX_13_P     63   RX_13_P   64   GND     65   GND   66   TX_12_N     67   RX_12_N   68   TX_12_P     69   RX_12_P   70   GND     71   GND   72   TX_11_N     73   RX_11_N   74   TX_10_N     74   GND   78   TX_10_N     69   RX_10_N   80   TX_10_N     69   RX_11_N   74   TX_10_N     75   RX_11_P   76   GND     77   GND   78   TX_10_N     69   RX_10_N   80   TX_10_P     81   RX_10_P   82   GND     83   GND   94   TX_9_P     87   RX_9_P   88   GND     89   GND   90	51	RX_15_P	52	GND
55   RX_14_N   56   TX_14_P     57   RX_14_P   58   GND     59   GND   60   TX_13_N     61   RX_13_N   62   TX_13_P     63   RX_13_P   64   GND     65   GND   66   TX_12_N     67   RX_12_N   68   TX_12_P     69   RX_12_P   70   GND     71   GND   72   TX_11_N     73   RX_11_P   76   GND     75   RX_11_P   76   GND     77   GND   78   TX_10_N     69   RX_10_N   80   TX_10_P     81   RX_10_N   80   TX_9_N     83   GND   84   TX_9_N     85   RX_9_N   92   TX_8_N     91   RX_8_N   92   TX_8_N     91   RX_8_N   92   TX_7_N     97   RX_7_N   98   TX_7_N     97   RX_7_N   98   TX_7_N     99   RX_7_P   100 <td>53</td> <td>GND</td> <td>54</td> <td>TX_14_N</td>	53	GND	54	TX_14_N
57   RX_14_P   58   GND     59   GND   60   TX_13_N     61   RX_13_N   62   TX_13_P     63   RX_13_P   64   GND     65   GND   66   TX_12_N     67   RX_12_N   68   TX_12_N     67   RX_12_P   70   GND     71   GND   72   TX_11_N     73   RX_11_N   74   TX_11_P     75   RX_11_P   76   GND     77   GND   78   TX_10_N     69   RX_10_N   80   TX_10_P     81   RX_10_P   82   GND     83   GND   84   TX_9_N     85   RX_9_N   86   TX_8_N     91   RX_8_N   92   TX_8_N     91   RX_8_N   92   TX_8_N     93   RX_8_N   92   TX_7_N     97   RX_7_N   98   TX_7_N     97   RX_7_N   98   TX_7_N     99   RX_7_P   100	55	RX_14_N	56	TX_14_P
59   GND   60   TX_13_N     61   RX_13_N   62   TX_13_P     63   RX_13_P   64   GND     65   GND   66   TX_12_N     67   RX_12_N   68   TX_12_P     69   RX_12_P   70   GND     71   GND   72   TX_11_N     73   RX_11_N   74   TX_11_P     75   RX_11_P   76   GND     77   GND   78   TX_10_N     69   RX_10_N   80   TX_10_P     81   RX_10_P   82   GND     83   GND   84   TX_9_N     85   RX_9_N   86   TX_9_P     87   RX_9_P   88   GND     89   GND   90   TX_8_N     91   RX_8_P   94   GND     95   GND   96   TX_7_N     97   RX_7_P   100   GND     101   GND   102   TX_6_N     103   RX_6_N   104   T	57	RX_14_P	58	GND
61   RX_13_N   62   TX_13_P     63   RX_13_P   64   GND     65   GND   66   TX_12_N     67   RX_12_N   68   TX_12_P     69   RX_112_P   70   GND     71   GND   72   TX_11_N     73   RX_11_N   74   TX_11_P     75   RX_11_P   76   GND     77   GND   78   TX_10_N     69   RX_10_N   80   TX_10_P     81   RX_10_P   82   GND     83   GND   84   TX_9_N     85   RX_9_N   86   TX_9_P     87   RX_9_P   88   GND     89   GND   90   TX_8_N     91   RX_8_P   94   GND     95   GND   96   TX_7_N     97   RX_7_P   100   GND     101   GND   102   TX_6_N     103   RX_6_N   104   TX_6_P     105   RX_6_P   106	59	GND	60	TX_13_N
63   RX_13_P   64   GND     65   GND   66   TX_12_N     67   RX_12_N   68   TX_12_P     69   RX_112_P   70   GND     71   GND   72   TX_11_N     73   RX_11_N   74   TX_11_P     75   RX_11_P   76   GND     77   GND   78   TX_10_N     69   RX_10_N   80   TX_10_P     81   RX_10_P   82   GND     83   GND   84   TX_9_N     85   RX_9_N   86   TX_9_P     87   RX_8_N   92   TX_8_N     91   RX_8_N   92   TX_8_N     91   RX_8_N   92   TX_7_N     97   RX_7_N   98   TX_7_P     99   RX_7_P   100   GND     101   GND   102   TX_6_N     103   RX_6_N   104   TX_6_P     105   RX_6_P   106   GND     107   GND   108	61	RX_13_N	62	TX_13_P
65   GND   66   TX_12_N     67   RX_12_P   70   GND     69   RX_12_P   70   GND     71   GND   72   TX_11_N     73   RX_11_N   74   TX_11_P     75   RX_11_P   76   GND     77   GND   78   TX_10_N     69   RX_10_N   80   TX_10_P     81   RX_10_P   82   GND     83   GND   84   TX_9_N     85   RX_9_N   86   TX_9_P     87   RX_9_P   88   GND     89   GND   90   TX_8_N     91   RX_8_N   92   TX_8_P     93   RX_8_P   94   GND     95   GND   96   TX_7_N     97   RX_7_N   98   TX_7_P     99   RX_7_P   100   GND     101   GND   102   TX_6_P     103   RX_6_N   104   TX_6_P     105   RX_6_P   106   G	63	RX_13_P	64	GND
67   RX_12_N   68   TX_12_P     69   RX_12_P   70   GND     71   GND   72   TX_11_N     73   RX_11_N   74   TX_11_P     75   RX_11_P   76   GND     77   GND   78   TX_10_N     69   RX_10_N   80   TX_10_P     81   RX_10_P   82   GND     83   GND   84   TX_9_N     85   RX_9_N   86   TX_9_P     87   RX_9_P   88   GND     89   GND   90   TX_8_N     91   RX_8_N   92   TX_8_P     93   RX_8_P   94   GND     95   GND   96   TX_7_N     97   RX_7_N   98   TX_7_P     99   RX_7_P   100   GND     101   GND   102   TX_6_P     103   RX_6_N   104   TX_6_P     105   RX_6_P   106   GND     107   GND   108 <td< td=""><td>65</td><td>GND</td><td>66</td><td>TX_12_N</td></td<>	65	GND	66	TX_12_N
69   RX_12_P   70   GND     71   GND   72   TX_11_N     73   RX_11_N   74   TX_11_P     75   RX_11_P   76   GND     77   GND   78   TX_10_N     69   RX_10_N   80   TX_10_P     81   RX_10_P   82   GND     83   GND   84   TX_9_N     85   RX_9_N   86   TX_9_P     87   RX_9_P   88   GND     89   GND   90   TX_8_N     91   RX_8_N   92   TX_8_P     93   RX_8_P   94   GND     95   GND   96   TX_7_N     97   RX_7_N   98   TX_7_P     99   RX_7_P   100   GND     101   GND   102   TX_6_N     103   RX_6_P   106   GND     107   GND   108   TX 5 N	67	RX_12_N	68	TX_12_P
71   GND   72   TX_11_N     73   RX_11_N   74   TX_11_P     75   RX_11_P   76   GND     77   GND   78   TX_10_N     69   RX_10_N   80   TX_10_P     81   RX_10_P   82   GND     83   GND   84   TX_9_N     85   RX_9_N   86   TX_9_P     87   RX_9_P   88   GND     89   GND   90   TX_8_N     91   RX_8_N   92   TX_8_P     93   RX_8_P   94   GND     95   GND   96   TX_7_N     97   RX_7_P   100   GND     101   GND   102   TX_6_N     103   RX_6_N   104   TX_6_P     105   RX_6_P   106   GND     107   GND   108   TX 5	69	RX_12_P	70	GND
73   RX_11_N   74   TX_11_P     75   RX_11_P   76   GND     77   GND   78   TX_10_N     69   RX_10_N   80   TX_10_P     81   RX_10_P   82   GND     83   GND   84   TX_9_N     85   RX_9_N   86   TX_9_P     87   RX_9_P   88   GND     89   GND   90   TX_8_N     91   RX_8_N   92   TX_8_P     93   RX_8_P   94   GND     95   GND   96   TX_7_N     97   RX_7_N   98   TX_7_P     99   RX_7_P   100   GND     101   GND   102   TX_6_N     103   RX_6_N   104   TX_6_P     105   RX_6_P   106   GND     107   GND   108   TX 5	71	GND	72	TX_11_N
75   RX_11_P   76   GND     77   GND   78   TX_10_N     69   RX_10_N   80   TX_10_P     81   RX_10_P   82   GND     83   GND   84   TX_9_N     85   RX_9_N   86   TX_9_P     87   RX_9_P   88   GND     89   GND   90   TX_8_N     91   RX_8_N   92   TX_8_P     93   RX_8_P   94   GND     95   GND   96   TX_7_N     97   RX_7_P   100   GND     101   GND   102   TX_6_N     103   RX_6_N   104   TX_6_P     105   RX_6_P   106   GND     107   GND   108   TX 5	73	RX_11_N	74	TX_11_P
77   GND   78   TX_10_N     69   RX_10_N   80   TX_10_P     81   RX_10_P   82   GND     83   GND   84   TX_9_N     85   RX_9_N   86   TX_9_P     87   RX_9_P   88   GND     89   GND   90   TX_8_N     91   RX_8_N   92   TX_8_P     93   RX_8_P   94   GND     95   GND   96   TX_7_N     97   RX_7_N   98   TX_7_P     99   RX_7_P   100   GND     101   GND   102   TX_6_N     103   RX_6_N   104   TX_6_P     105   RX_6_P   106   GND     107   GND   108   TX 5	75	RX_11_P	76	GND
69   RX_10_N   80   TX_10_P     81   RX_10_P   82   GND     83   GND   84   TX_9_N     85   RX_9_N   86   TX_9_P     87   RX_9_P   88   GND     89   GND   90   TX_8_N     91   RX_8_N   92   TX_8_P     93   RX_8_P   94   GND     95   GND   96   TX_7_N     97   RX_7_P   100   GND     101   GND   102   TX_6_N     103   RX_6_N   104   TX_6_P     105   RX_6_P   106   GND     107   GND   108   TX 5	77	GND	78	TX_10_N
81   RX_10_P   82   GND     83   GND   84   TX_9_N     85   RX_9_N   86   TX_9_P     87   RX_9_P   88   GND     89   GND   90   TX_8_N     91   RX_8_N   92   TX_8_P     93   RX_8_P   94   GND     95   GND   96   TX_7_N     97   RX_7_N   98   TX_7_P     99   RX_7_P   100   GND     101   GND   102   TX_6_N     103   RX_6_N   104   TX_6_P     105   RX_6_P   106   GND     107   GND   108   TX 5	69	RX_10_N	80	TX_10_P
83   GND   84   TX_9_N     85   RX_9_N   86   TX_9_P     87   RX_9_P   88   GND     89   GND   90   TX_8_N     91   RX_8_N   92   TX_8_P     93   RX_8_P   94   GND     95   GND   96   TX_7_N     97   RX_7_N   98   TX_7_P     99   RX_7_P   100   GND     101   GND   102   TX_6_N     103   RX_6_N   104   TX_6_P     105   RX_6_P   106   GND     107   GND   108   TX 5	81	RX 10 P	82	GND
85   RX_9_N   86   TX_9_P     87   RX_9_P   88   GND     89   GND   90   TX_8_N     91   RX_8_N   92   TX_8_P     93   RX_8_P   94   GND     95   GND   96   TX_7_N     97   RX_7_N   98   TX_7_P     99   RX_7_P   100   GND     101   GND   102   TX_6_N     103   RX_6_N   104   TX_6_P     105   RX_6_P   106   GND     107   GND   108   TX 5	83	GND	84	TX_9_N
87   RX_9_P   88   GND     89   GND   90   TX_8_N     91   RX_8_N   92   TX_8_P     93   RX_8_P   94   GND     95   GND   96   TX_7_N     97   RX_7_N   98   TX_7_P     99   RX_7_P   100   GND     101   GND   102   TX_6_N     103   RX_6_N   104   TX_6_P     105   RX_6_P   106   GND     107   GND   108   TX 5	85	RX 9 N	86	TX 9 P
89   GND   90   TX_8_N     91   RX_8_N   92   TX_8_P     93   RX_8_P   94   GND     95   GND   96   TX_7_N     97   RX_7_N   98   TX_7_P     99   RX_7_P   100   GND     101   GND   102   TX_6_N     103   RX_6_N   104   TX_6_P     105   RX_6_P   106   GND     107   GND   108   TX 5	87	RX 9 P	88	GND
91   RX_8_N   92   TX_8_P     93   RX_8_P   94   GND     95   GND   96   TX_7_N     97   RX_7_N   98   TX_7_P     99   RX_7_P   100   GND     101   GND   102   TX_6_N     103   RX_6_N   104   TX_6_P     105   RX_6_P   106   GND     107   GND   108   TX 5	89	GND	90	TX 8 N
93   RX_8_P   94   GND     95   GND   96   TX_7_N     97   RX_7_N   98   TX_7_P     99   RX_7_P   100   GND     101   GND   102   TX_6_N     103   RX_6_N   104   TX_6_P     105   RX_6_P   106   GND     107   GND   108   TX 5	91	RX 8 N	92	TX 8 P
95     GND     96     TX_7_N       97     RX_7_N     98     TX_7_P       99     RX_7_P     100     GND       101     GND     102     TX_6_N       103     RX_6_N     104     TX_6_P       105     RX_6_P     106     GND       107     GND     108     TX 5	93	RX 8 P	94	GND
97 RX_7_N 98 TX_7_P   99 RX_7_P 100 GND   101 GND 102 TX_6_N   103 RX_6_N 104 TX_6_P   105 RX_6_P 106 GND   107 GND 108 TX 5 N	95	GND	96	TX 7 N
99     RX_7_P     100     GND       101     GND     102     TX_6_N       103     RX_6_N     104     TX_6_P       105     RX_6_P     106     GND       107     GND     108     TX_5 N	97	RX 7 N	98	TX 7 P
101     GND     102     TX_6_N       103     RX_6_N     104     TX_6_P       105     RX_6_P     106     GND       107     GND     108     TX 5     N	99	RX 7 P	100	GND
103     RX_6_N     104     TX_6_P       105     RX_6_P     106     GND       107     GND     108     TX 5 N	101	GND	102	TX 6 N
105     RX_6_P     106     GND       107     GND     108     TX 5     N	103	RX 6 N	104	TX 6 P
107 GND 108 TX 5 N	105	RX 6 P	106	GND
	107	GND	108	TX 5 N
109 RX 5 N 110 TX 5 P	109	RX 5 N	110	 TX 5 P
111 RX 5 P 112 GND	111	RX 5 P	112	GND
113 GND 114 TX 4 N	113	GND	114	TX 4 N

115	RX_4_N	116	TX_4_P
117	RX_4_P	118	GND
119	GND	120	TX_3_N
121	RX_3_N	122	TX_3_P
123	RX_3_P	124	GND
125	GND	126	KEY
127	KEY	128	KEY
129	KEY	130	KEY
131	KEY	132	KEY
133	GND	134	GND
135	RX_2_N	136	TX_2_N
137	RX_2_P	138	TX_2_P
139	GND	140	GND
141	RX_1_N	142	TX_1_N
143	RX_1_P	144	TX_1_P
145	GND	146	GND
147	RX_0_N	148	TX_0_N
149	RX_0_P	150	TX_0_P
151	GND	152	GND
153	CLK100M_N	154	CLK_REQ#
155	CLK100M_P	156	PEG_RST#
157	GND	158	NC
159	NC	160	NC
161	NC	162	NC
163	NC	164	NC
165	NC	166	GND
167	NC	168	NC
169	NC	170	NC
171	NC	172	NC
173	GND	174	GND
175	NC	176	NC
177	NC	178	NC
179	GND	180	GND
181	NC	182	NC
183	NC	184	NC
185	GND	186	GND
187	NC	188	NC
189	NC	190	NC
191	GND	192	GND
193	NC	194	NC
195	NC	196	NC
197	GND	198	GND

199	NC	200	NC
201	NC	202	NC
203	GND	204	GND
205	NC	206	NC
207	NC	208	NC
209	GND	210	GND
211	NC	212	NC
213	NC	214	NC
215	GND	216	GND
217	NC	218	NC
219	NC	220	NC
221	GND	222	GND
223	NC	224	NC
225	NC	226	NC
227	NC	228	GND
229	NC	230	NC
231	NC	232	NC
233	NC	234	NC
235	NC	236	NC
237	NC	238	GND
239	NC	240	+3.3V
241	NC	242	+3.3V
243	NC	244	GND
245	NC	246	HDDMI_B_D0_N
247	NC	248	HDDMI_B_D0_P
249	NC	250	GND
251	GND	252	HDDMI_B_D1_N
253	HDDMI_A_D0_N	254	HDDMI_B_D1_P
255	HDDMI_A_D0_P	256	GND
257	GND	258	HDDMI_B_D2_N
259	HDDMI_A_D1_N	260	HDDMI_B_D2_P
261	HDDMI_A_D1_P	262	GND
263	GND	264	HDDMI_B_D3_N
265	HDDMI_A_D2_N	266	HDDMI_B_D3_P
267	HDDMI_A_D2_P	268	GND
269	GND	270	HDDMI_B_DATE
271	HDDMI_A_D3_N	272	HDDMI_B_CLK
273	HDDMI_A_D3_P	274	HDDMI_B_HPD
275	GND	276	HDDMI_A_HPD
277	HDDMI_A_DATE	278	+3.3V
269	HDDMI_A_CLK	280	NC
281	PRSET#		

# Chapter 3

# System Setup

# 3.0 SYSTEM SETUP

# 3.1 Opening the Chassis

Step 1. Unscrew the six screws on the back cover as shown in the picture.



Step 2. Unscrew the three screws on the front panel as shown in the picture.





**Step 3.** Unscrew the one screw on the rear panel as shown in the picture.

Step 4. Untighten the storage bracket screws on the front panel as shown in the picture.



Step 5. Remove bottom cover as shown in the picture.



# 3.2 Installing Memory

Step 1. Insert the memory module into the slot as shown in the picture.



**Step 2.** Stick the poron (P/N: 417290362120) on the memory slot as shown in the picture.



**Step 3.** Hold the memory module with its notch aligned with the memory slot on the motherboard and insert the memory module into the slot at a 30-degree angle as shown in the picture.



**Step 4.** Tilt the memory module so that it can be fixed with both memory lock stoppers as shown in the picture.

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Step 5. Complete as shown in the picture.



**Step 6.** Stick the pad (P/N: 265024060010) on the heatsink (P/N: 263097072190) as shown in the picture.



**Step 7.** Stick the pad (P/N: 265018070010) on the memory heatsink as shown in the picture.



**Step 8.** Put the heatsink on the memory module and screw the one screw to the holder (P/N: 351103060810) as shown in the picture.



# 3.3 Installing MINI PCIe Expansion Card (Minicard 1, 3G/LTE)

Step 1. Insert MINI PCIe Expansion Card into the Slot as shown in the picture.



**Step 2.** Hold the Module with its notch aligned with the Slot on the motherboard and insert the Module into the Slot at a 30-degree angle as shown in the picture.



Step 3. Screw the two screws (P/N:351103040250) to the holder as shown in the picture.



Step 4. Complete as shown in the picture.



# 3.4 Installing MINI PCIe Expansion Card (MiniCard 2)



**Step 1.** Insert MINI PCIe Expansion Card into this Slot as shown in the picture.

**Step 2.** Hold the Module with its notch aligned with the Slot on the motherboard and insert the Module into the Slot at a 30-degree angle as shown in the picture.



**Step 3.** Screw the one screw to the holder as shown in the picture.



Step 4. Complete as shown in the picture.



# 3.5 Installing MINI PCIe Expansion Card (MiniCard 3)

**Step 1.** Insert MINI PCIe Expansion Card into this Slot as shown in the picture.



**Step 2.** Hold the Module with its notch aligned with the Slot on the motherboard and insert the Module into the Slot at a 30-degree angle as shown in the picture.





Step 3. Screw the two screws to the holder as shown in the picture.

Step 4. Complete as shown in the picture.



# 3.6 Installing M.2 Module

**Step 1.** Insert M.2 module into this Slot as shown in the picture.



**Step 2.** Hold the Module with its notch aligned with the Slot on the motherboard and insert the Module into the Slot at a 30-degree angle as shown in the picture.





**Step 3.** Screw one screw (P/N:351103060810) to the holder as shown in the picture.

Step 4. Complete as shown in the picture.





**Step 5.** Take the Ipex Connector and press on the M.2 module as shown in the picture.

# 3.7 Installing M.2 Module (3G/LTE)

Step 1. Insert MINI PCIe Expansion Card into the Slot as shown in the picture.



**Step 2.** Hold the Module with its notch aligned with the Slot on the motherboard and insert the Module into the Slot at a 30-degree angle as shown in the picture.



Step 3. Screw the one screw to the holder as shown in the picture.



Step 4. Complete as shown in the picture.



# 3.8 Installing M.2 NVMe SSD

**Step 1.** Insert NVMe SSD into this Slot as shown in the picture.



**Step 2.** Stick the two Silicone Rubbers (P/N: 417290310101) on the mainboard as shown in the picture.



**Step 3.** Stick the Thermal Pad to the heatsink (P/N: 268104022240) as shown in the picture.



**Step 4.** Hold the SSD with its notch aligned with the Slot on the motherboard and insert the Module into the Slot at a 30-degree angle as shown in the picture.



**Step 5.** Put the heatsink on the module and screw the one screw to the holder (P/N: 351125100110) as shown in the picture.





Step 6. Screw the one screw (P/N: 35110306810) to the holder as shown in the picture.

# 3.9 Installing M.2 SATA SSD

**Step 1.** Insert NVMe SSD into this Slot as shown in the picture.


**Step 2.** Stick the two Silicone Rubbers (P/N: 417290310102) on the mainboard as shown in the picture.



**Step 3.** Stick the Thermal Pad to the heatsink (P/N: 268104022240) as shown in the picture.



**Step 4.** Hold the SSD with its notch aligned with the Slot on the motherboard and insert the Module into the Slot at a 30-degree angle as shown in the picture.



**Step 5.** Put the heatsink on the module and screw the one screw to the holder (P/N: 351125100110) as shown in the picture.



Step 6. Screw the one screw (P/N: 35110306810) to the holder as shown in the picture.



#### 3.10 Installing Internal Antenna Cable

Step 1. Take the SMA Connector and Plug into IO Panel as shown in the picture.



Step 2. Put the Washer into the SMA Connector as shown in the picture.





Step 3. Put the O-ring to the SMA Connector and tighten it as shown in the picture.

Step 4. Complete as shown in the picture.



**Step 5.** Take the Ipex Connector and press on the 3G module as shown in the picture. (3G/LTE)



**Step 6.** Take the Ipex Connector and press on the WiFi module as shown in the picture.(WiFi)



**Step 7.** Take the Ipex Connector and press on the GPS module as shown in the picture. (GPS)



# 3.11 Installing SIM Card

**Step 1.** Loosen the SIM Card bracket screws as shown in the picture.



Step 2. Take the SIM Card bracket away from front panel as shown in the picture.



Step 3. Put your SIM Card into the bracket as shown in the picture.



Step 4. Push the SIM Card bracket into the socket as shown in the picture.



**Step 5.** Fully insert the SIM Card bracket into the socket until you hear a "click" as shown in the picture.





Step 6. Tighten the SIM Card bracket screws as shown in the picture.

Step 7. Complete as shown in the picture.





Attention: When insert a SIM card to the SIM card holder, please remove the main power at input to avoid undetectable SIM card.

### 3.12 Installing HDD

**Step 1.** Put the HDD bracket on the bottom cover as shown in the picture.



Step 2. Turn over the bottom cover and screw the four screws as shown in the picture.



**Step 3.** Take SATA cable into the SATA bracket as shown in the picture.



Step 4. Screw two screws (one HDD) or four screws (two HDD) as shown in the picture.



**Step 5.** Put SATA bracket on the bottom cover and screw the two screws as shown in the picture.

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Step 6. Turn over the bottom cover and screw the two screws as shown in the picture.



**Step 7.** Connect SATA cable to motherboard (SATA1 to SPWR1, SATA2 to SPWR2) as shown in the picture.

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Step 8. Put the HDD into HDD Holder as shown in the picture.



**Step 9.** This rubber (P/N:417290370250) is used only for a thickness of 7mm SSD/HDD. Please stick this rubber at the side without golden fingers as the indicated position as shown in the picture.



**Step 10.** Screw the two screws (P/N:351103040250) on both sides as shown in the picture.



**Step 11.** Push the HDD Holder into the socket as shown in the picture.



**Step 12.** Fully insert the HDD Holder into the socket until you hear a "click" as shown in the picture.



**Step 13.** Tighten the Storage Bracket screws as shown in the picture.



Step 14. Complete as shown in the picture.



# 3.13 Installing POE Module

**Step 1.** Insert POE Module into this Slot as shown in the picture.





Step 2. Insert the POE-8P module into the motherboard as shown in the picture

Step 3. Put the Heatsink on the POE module as shown in the picture



Step 4. Screw the four screws (P/N:351103151810) as shown in the picture



Step 5. Complete as shown in the picture



# 3.14 Installing Battery Module (only for optional BAT-5200 Kit)

Step 1. VIB-5000 board t as shown in the picture.



**Step 2.** Take 6pin cable into UPS3 socket & 4pin cable into UPS4 socket on VIB-5000 Board as shown in the picture.



**Step 3.** Connect the battery with VIB-5000 on BAT-1 Socket as shown in the picture.



Step 4. BAT-5100 battery bracket as shown in the picture.



**Step 5.** Put the battery and VIB-5000 board into the bracket and screw four screws as shown in the picture.



**Step 6.** Take the battery kit and screw four screws into the back cover as shown in the picture.



**Step 7.** Connect the battery kit with motherboard on UPS1(6pin) & UPS2(4pin) location as shown in the picture.



# Chapter 4

# System Resource

# 4.0 SYSTEM RESOURCE

#### 4.1 GPIO Control Register

#### Hardware Specification

Model	GPI voltage	GPO voltage	DO max current
FLEETPC-11	5-48V	5V	100mA

#### **Digital Output and External Relay Recommend Circuit**



#### **Register Definitions**

DO Data Register – 0x31

Bit	Name	R/W	DESCRIPTION
3	GPIO4_OUT	R/W	GPIO4 output data.
2	GPIO3_OUT	R/W	GPIO3 output data.
1	GPIO2_OUT	R/W	GPIO2 output data.
0	GPIO1_OUT	R/W	GPIO1 output data.

DI Status Register – 0x30

Bit	Name	R/W	DESCRIPTION
7	GPIO8_IN	R	GPIO8 pin status.
6	GPIO7_IN	R	GPIO7 pin status.
5	GPIO6_IN	R	GPIO6 pin status.
4	GPIO5_IN	R	GPIO5 pin status.
3	GPIO4_IN	R	GPIO4 pin status.
2	GPIO3_IN	R	GPIO3 pin status.
1	GPIO2_IN	R	GPIO2 pin status.
0	GPIO1_IN	R	GPIO1 pin status.

#### 4.2 Ignition Power Management Quick Guide

#### Startup conditions from the IGNITION signal:

■ IGNITION startup signal must be valid during 3 sec. (anti noise protection).

Typically the system can start only from IGNITION signal, because startup PIC controller is disconnected from the power source.

# Startup Procedure by Ignition



### **Technical Support**

Please do not hesitate contact with CARTFT.COM E.K. for API and utility when you still cannot fix the problems.

- Tel : +49 7121 3878264
- Fax : +49 7121 3878265
- E-mail : <u>sales@cartft.com</u>
- Website : <u>www.CarTFT.com</u>

# Chapter 5

# **BIOS Setting**

# 5.0 BIOS SETTING

#### 5.1 Enter The BIOS

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press (DEL) key to enter Setup.

#### Press DEL to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

#### Important

- The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.
- Upon boot-up, the 1st line appearing after the memory count is the BIOS version. It is usually in the format.

#### **Control Keys**

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press (DEL) key to enter Setup.

<^>	Move to the previous item
<↓>	Move to the next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<enter></enter>	Select the item
<esc></esc>	Jumps to the Exit menu or returns to the main menu from a submenu
<+/PU>	Increase the numeric value or make changes
<-/PD>	Decrease the numeric value or make changes
<f1></f1>	General Help
<f3></f3>	Load Optimized Defaults
<f4></f4>	Save all the CMOS changes and exit

# **Getting Help**

After entering the Setup menu, the first menu you will see is the Main Menu.

# Main Menu

The main menu lists the setup functions you can make changes to. You can use the arrow keys  $(\uparrow \downarrow)$  to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

# Sub-Menu

If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys (  $\uparrow \downarrow$  ) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc >.

# General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

#### 5.2 Main

Aptio Setup – A Main Advanced Chipset Security	<mark>merican Megatrends Internati</mark> Boot Save & Exit	onal, LLC.
BIOS Information BIOS Vendor Module Name BIOS Version Firmware Version Motherboard Serial Number Build Date and Time Processor Information Name Type Speed ID Stepping Package Number of Processors Microcode Revision Total Memory Memory Frequency PCH Information Name PCH SKU Stepping	American Megatrends AMB-5210G R1.00-07 V.0.3.1-0.9-16 N/A 07/10/2020 17:29:06 CometLake DT Intel(R) Core(TM) i9-10900TE CPU @ 1.80GHz 1800 MHz 0xA0654 P1 LGA1200 10Core(s) / 20Thread(s) C6 32768 MB 2667 MHz CML PCH-H Q470 A0	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

#### System Date

This setting allows you to set the system Date. The time format is <Day> <Month> <Date> <Year>.

#### System Time

This setting allows you to set the system time. The time format is <Hour> <Minute> <Second>.

#### 5.3 Advanced

#### 5.3.1 CPU Configuration

#### Turbo Mode



#### Hyper-Threading

Allows you to enable or disable Intel<sup>®</sup> Hyper-Threading function of processor.
ID	0xA0654	▲ Enable or Disable
Speed	1800 MHz	Huper-Threading Technology.
L1 Data Cache	32 KB × 10	
L1 Instruction Cache	32 KB × 10	
L2 Cache	256 KB × 10	
L3 Cache	20 MB	
L4 Cache	N/A	
VMX	Supported	
SMX/TXT	Supported	
C6DRAM	[Enabled]	
Software Guard Extensions (SGX)	[Software Controlled]	
Select Owner EPOCH input type	[No Change in Owner	
n a serie de la companya de la comp	EPOCHs]	→+: Select Screen
CPU Flex Ratio Override	[Disabled]	<b>1↓:</b> Select Item
CPU Flex Ratio Settings	18	Enter: Select
Hardware Prefetcher	[Enabled]	+/-: Change Opt.
Adjacent Cache Line Prefetch	[Enabled]	F1: General Help
Intel (VMX) Virtualization	[Enabled]	F2: Previous Values
Technology		F3: Optimized Defaults
PECI	[Enabled]	F4: Save & Exit
Active Processor Cores	[A11]	ESC: Exit
Hyper-Threading	[Enabled]	
BIST	[Disabled]	
AP threads Idle Manner	[MWAIT Loop]	

### Intel (VMX) Virtualization Technology

Enables or disables Intel<sup>®</sup> Virtualization Technology. Virtualization enhanced by Intel<sup>®</sup> Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple virtual systems.

Aptio Setup - Advanced	American Megatrends Internati	ional, LLC.
CPU Configuration		When enabled, a VMM can
Туре	Intel(R) Core(TM) i9–10900TE CPU @ 1.806Hz	hardware capabilities provided
ID Speed	0×A0654 1800 MHz	
L1 Data Cache	32 KB × 10	
L1 Instruction Cache L2 Cache	32 KB × 10 256 KB × 10	
L3 Cache	20 MB	
VMX	N/A Supported	
SMX/TXT	Supported	the Colort Concer
C6DRAM	[Enabled]	f↓: Select Item
Software Guard Extensions (SGX)	[Software Controlled]	Enter: Select
Select Owner EPOCH input type	[NO Change in Owner EPOCHs]	+/-: Change Upt. F1: General Help
CPU Flex Ratio Override	[Disabled]	F2: Previous Values
CPU Flex Ratio Settings Hardware Prefetcher	18 [Enabled]	F3: Optimized Defaults F4: Save & Exit
Adjacent Cache Line Prefetch	[Enabled]	ESC: Exit
Intel (VMX) Virtualization Technology	[Enabled]	
PECI	[Enabled]	n -
Ver. 2.21.1277 Copyrigh	it (C) 2020 American Megatrends	s International, LLC.

# 5.3.2 ACPI Settings

This item allows users to configure ACPI settings.

### • Enable ACPI Auto Configuration

Enables or disables BIOS Advanced Configuration Power Interface<sup>®</sup> (ACPI) auto configuration.



#### ACPI Sleep State

Allows users to select the highest Advanced Configuration Power Interface<sup>®</sup> (ACPI) sleep state that system will enter when suspend button is pressed.

ACPI Settings		Enables or Disables System
Enable ACPI Auto Configuration	[Disabled]	Sleep State). This option ma
Enable Hibernation	[Enabled]	operating systems.
ACPI Sleep State	[S3 (Suspend to RAM)]	
S3 Video Repost	[Disabled]	
		tl. Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F4: Save & Exit
		ESC: Exit

S3 Video Repost



### 5.3.3 Super I/O

The screen allows users to select options for the Super IO configuration, and change the value of the selected option.

#### Serial Port Configuration

Aptio Setup -	– American Megatrends Int	ernational, LLC.
F81866 Super IO Configuration		Set Parameters of Serial Port
Super IO Chip Serial Port 1 Configuration Serial Port 2 Configuration Serial Port 3 Configuration Serial Port 4 Configuration	F81866	
Watch Dog Function	[Disabled]	
		++: Select Screen ++: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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# Serial Port 1/2/3/4 Enable or Disable

Select an Enable or Disable for the specified serial ports.

Serial Port 1 Configuration       Enable or Disable Serial Port (COM)         Serial Port Settings       IO=3F8h; IRQ=4;         Serial Port RS232/422/485 Control       [RS232]         ++: Select Screen       14: Select Item         Enter: Select       +/-: Change Opt.         F1: General Help       F2: Previous Values         F3: Optimized Defaults       F3: Sort Set Set Set Set Set Set Set Set Set Se	Aptio Setup – American Megatrends Internat Advanced	ional, LLC.
Serial Port RS232/422/485 Control [RS232] ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Serial Port 1 Configuration Serial Port [Enabled] Device Settings IO=3F8h; IRQ=4;	Enable or Disable Serial Port (COM)
+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Serial Port RS232/422/485 Control [RS232]	++: Select Screen fl: Select Item Enter: Select
		H/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

## COM1 RS232/422/485 Select

Aptio Setup – American Megatrends International, LLC. Advanced			
Serial Port 1 Configuration		Change the Serial Port mode.	
Serial Port Device Settings	[Enabled] IO=3F8h; IRQ=4;	<pre><rs485> mode</rs485></pre>	
Serial Port RS232/422/485 Control			
Seric RS232 RS485 RS422	1 Port RS232/422/485 Control	ect Screen ect Item Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
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#### Watch Dog Function



## 5.3.4 CMS Configuration

This item allows users to enable or disable UEFI Compatibility Support Module (CSM) to support a legacy PC boot process.

Aptio Setup – American Megatrends International, LLC. Advanced			
Compatibility Support Module C	configuration	Enable/Disable CSM Support.	
CSM Support	[Enabled]		
CSM16 Module Version	07.84		
GateA20 Active INT19 Trap Response HDD Connection Order	[Upon Request] [Immediate] [Adjust]		
Boot option filter	[UEFI and Legacy]		
Option ROM execution		→+: Select Screen	
Network Storage Other PCI devices	[Do not launch] [UEFI] [UEFI]	<pre>fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>	
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#### Network

Aptio Setup – American Megatrends International, LLC. Advanced				
Compatibility Support Module C	Configuration	Controls the execution of UEFI		
CSM Support	[Enabled]	and Legacy Network opkom		
CSM16 Module Version	07.84			
GateA20 Active INT19 Trap Response HDD Connection Order Boot option filter	[Upon Request] [Immediate] [Adjust] [UEFI and Legacy]			
Option ROM execution		++: Select Screen		
Network Storage Other PCI devices	[Do not launch] [UEFI] [UEFI]	<pre>f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>		
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# 5.4 Chipset

# 5.4.1 PCH-IO Express Configuration

PCH-IO Configuration       PCI Express Configuration         > SATA And RST Configuration       settings         > USB Configuration       security Configuration         > HD Audio Configuration       [Enabled]         Serial IRQ Mode       [Enabled]         Restore AC/Power Loss       [Always Off]         Enable TCO Timer       [Disabled]         Pcie P11 SSC       [Auto]         Flash Protection Range Registers       [Disabled]         SPD Write Disable       [TRUE]         LGMR       [Disabled]         Teton Glacier Mode       [Disabled]         F2: Previous Values       F3: Optimized Defaults         F3: Optimized Defaults       F4: Save & Exit         ESC: Exit       ESC: Exit	Aptio Setup - A Chipset	merican Megatrends Internati	onal, LLC.
PCH LAN Controller[Enabled]Wake on LAN Enable[Enabled]Serial IRQ Mode[Continuous]Restore AC/Power Loss[Always Off]Enable TCO Timer[Disabled]Pcie Pl1 SSC[Auto]Flash Protection Range Registers[Disabled](FPRR)[TRUE]SPD Write Disable[TRUE]LGMR[Disabled]Teton Glacier Mode[Disabled]F3: Optimized DefaultsF4: Source & ExitESC: Exit	PCH-IO Configuration > PCI Express Configuration > SATA And RST Configuration > USB Configuration > Security Configuration > HD Audio Configuration		PCI Express Configuration settings
	PCH LAN Controller Wake on LAN Enable Serial IRQ Mode Restore AC/Power Loss Enable TCO Timer Pcie Pl1 SSC Flash Protection Range Registers (FPRR) SPD Write Disable LGMR Teton Glacier Mode	[Enabled] [Enabled] [Continuous] [Always Off] [Disabled] [Auto] [Disabled] [TRUE] [Disabled] [Disabled]	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

# Restore AC/Power Loss

This item allows users to choose [Always off] or [Always on] mode.

Aptio Setup – A Chipset	merican Megatrends Internati	ional, LLC.
PCH-IO Configuration <ul> <li>PCI Express Configuration</li> <li>SATA And RST Configuration</li> <li>USB Configuration</li> </ul>		Specify what state to go to when power is re-applied after a power failure (G3 state).
<ul> <li>Security Configuration</li> <li>HD Audio Configuration</li> </ul>		
PCH LAN CONTROLLER Wake on LAN Enable Serial IRQ Mode Restore AC/Power Loss	[Enabled] [Enabled] [Continuous] [Always Off]	
Enable TCO Timer Pcie Pll SSC Flash Protection Range Registers	[Disabled] [Auto] [Disabled]	→++: Select Screen ↑↓: Select Item
(FPRR) SPD Write Disable LGMR Teton Glacier Mode	[TRUE] [Disabled] [Disabled]	Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit ESC: Exit
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# Wake on LAN

This item allows users to choose [Enabled] or [Disabled] mode.

Aptio Setup – American Megatrends International, LLC. <mark>Chipset</mark>		
<ul> <li>PCH-IO Configuration</li> <li>PCI Express Configuration</li> <li>SATA And RST Configuration</li> <li>USB Configuration</li> <li>Security Configuration</li> <li>HD Audio Configuration</li> </ul>		Enable/Disable integrated LAN to wake the system.
PCH LAN Controller Make on LAN Enable Serial IRQ Mode Restore AC/Power Loss Enable TCO Timer Pcie Pl1 SSC Flash Protection Range Registers (FPRR) SPD Write Disable LGMR Teton Glacier Mode	[Enabled] [Continuous] [Always Off] [Disabled] [Auto] [Disabled] [TRUE] [Disabled] [Disabled]	<pre> ++: Select Screen  14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
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#### 5.4.2 SATA

#### SATA Mode Selection

This item allows users to choose [AHCI] or [Intel RST with Intel Optane System Acceleration] mode.



#### AHCI Setting

	Aptio Setup - Ame Chipset	erican Megatrends Internati	onal, LLC.
s	ATA And RST Configuration	-	Determines how SATA
S S S S A S	ATA Controller(s) ATA Mode Selection ATA Test Mode offware Feature Mask Configuration ggressive LPM Support erial ATA Port 0	[Enabled] [AHCI] [Disabled] [Enabled] Empty	controller(s) operate.
s	Software Preserve Port 0 Hot Plug Configured as eSATA External Spin Up Device SATA Port 0 DevSlp DITO Configuration DITO Value DM Value erial ATA Port 1 Software Preserve Port 1 Hot Plug Configured as eSATA	Unknown [Enabled] [Disabled] Hot Plug supported [Disabled] [Hard Disk Drive] [Disabled] [Disabled] 625 15 2.5" SATA SSD (62.0GB) SUPPORTED [Enabled] [Disabled] Hot Plug supported	<pre> ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
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# ■ RAID Setting (if select Intel RST with Intel Optane System Acceleration)

Aptio Setup – An Chipset	merican Megatrends Internati	ional, LLC.
SATA And RST Configuration		Determines how SATA controller(s) operate.
SATA Controller(s) SATA Mode Selection	[Enabled] [Intel RST With Intel Optane System Acceleration]	
Sata Interrupt Selection SATA Test Mode RAID Device ID ▶ Software Feature Mask Configuration	[Msix] [Disabled] [Alternate]	
Aggressive LPM Support	[Enabled]	
Serial ATA Port 0 Software Preserve Port 0 Hot Plug Configured as eSATA External Spin Up Device SATA Device Type SATA Port 0 DevSlp DITO Configuration DITO Value DM Value Serial ATA Port 1	Empty Unknown [Enabled] [Disabled] Hot Plug supported [Disabled] [Hard Disk Drive] [Disabled] [Disabled] [Disabled] [525 15 2.5" SATA SSD (62.06B)	<pre> ++: Select Screen  f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Ver 2 21 1277 Popuriabt (	(C) 2020 American Medatronds	International LLC
Aptio_Setup – Am	merican Megatrends Internati	onal, LLC.
Chipset		
Software Feature Mask Configuration HDD Unlock LED Locate Use RST Legacy OROM RAIDO RAID1 RAID5 Intel Rapid Recovery Technology OROM UI and BANNER IRRT Only on eSATA Smart Response Technology OROM UI Normal Delay RST Force Form System Acceleration with Intel(R) Optane(TM) Memory CPU Attached Storage	[Enabled] [Enabled] [Disabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [2 secs] [Disabled] [Enabled] [Enabled]	<pre>if enabled, indicates that the HDD password unlock in the OS is enabled.  **: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

#### Hog Plug



# 5.4.3 Graphics Configuration

Aptio Setup – ( Chipset	American Megatrends Ir	nternational, LLC.
Graphics Configuration Graphics Turbo IMON Current Primary Display Internal Graphics GIT Size	<mark>31</mark> [Auto] [Auto]	Graphics turbo IMON current values supported (14–31)
Aperture Size PSMI SUPPORT DVMT Pre-Allocated DVMT Total Gf× Mem Intel Graphics Pei Display Peim VDD Enable PM Support	[256MB] [Disabled] [32M] [256M] [Disabled] [Enabled] [Enabled]	++: Select Screen
PAVP Enable Cdynmax Clamping Enable Cd Clock Frequency Skip CD Clock Init in S3 resume IUER Button Enable	[Enabled] [Enabled] [675 Mhz] [Disabled] [Disabled]	<pre>f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
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#### Primary Display

Allows users to select which graphics device should be primary display or select SG for switchable graphics.

## Internal Graphics

This item allows users to enable or disable Internal Graphics. When set to [Auto], it will detect by BIOS.

#### GTT Size

Graphics Configuration	21	Graphics turbo IMON current values supported (14–31)
Primary Display Internal Graphics BTT Size Aperture Size PSMI SUPPORT DVMT Pre-Allocated DVMT Total Gfx Mem Intel Graphics Pei Display Peim VDD Enable PM Support PAVP Enable Cdynmax Clamping Enable Cd Clock Frequency Skip CD Clock Init in S3 resume IUER Button Enable	[Auto] [Auto] [Auto] [256MB] [Disabled] [32M] [256M] [Disabled] [Enabled] [Enabled] [Enabled] [Enabled] [675 Mhz] [Disabled] [Disabled]	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

## Aperture Size

Graphics Configuration		Graphics turbo IMON curren
Graphics Turbo IMON Current	31	Values supported (14-31)
Primary Display	[Auto]	
Internal Graphics	[Auto]	
GTT Size	[8MB]	
Aperture Size	[256MB]	
PSMI SUPPORT	[Disabled]	
DVMT Pre-Allocated	[32M]	
DVMT Total Gfx Mem	[256M]	
Intel Graphics Pei Display Peim	[Disabled]	
VDD Enable	[Enabled]	
PM Support	[Enabled]	++: Select Screen
PAVP Enable	[Enabled]	î↓: Select Item
Cdynmax Clamping Enable	[Enabled]	Enter: Select
Cd Clock Frequency	[675 Mhz]	+/-: Change Opt.
Skip CD Clock Init in S3 resume	[Disabled]	F1: General Help
IUER Button Enable	[Disabled]	F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

#### DVMT Pre-Allocated

Aptio Setup - Chipset	American Megatrends I	nternational, LLC.
Graphics Configuration Graphics Turbo IMON Current Primary Display Internal Graphics GTT Size Aperture Size PSMI SUPPORT DVMT Pre-Allocated DVMT Total Gfx Mem Intel Graphics Pei Display Peim VOD Enable PM Support PAVP Enable	Americal Megalrends I all [Auto] [Auto] [Auto] [BMB] [256MB] [Disabled] [256M] [Disabled] [Enabled] [Enabled] [Enabled]	Graphics turbo IMON current values supported (14–31) ++: Select Screen f4: Select Item
Cdynmax Clamping Enable Cd Clock Frequency Skip CD Clock Init in S3 resume IUER Button Enable	[Enabled] [675 Mhz] [Disabled] [Disabled]	Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

#### DVMT Total Gfx Mem

Graphics Configuration		Graphics turbo IMON currer
Graphics Turbo IMON Current	31	Values supported (14-31)
Primary Display Internal Graphics GTT Size Aperture Size PSMI SUPPORT DVMT Pre-Allocated DVMT Total Gfx Mem	[Auto] [Auto] [8MB] [256MB] [Disabled] [32M] [256M]	
Intel Graphics Pei Display Peim VDD Enable	[Disabled] [Enabled]	
PM Support	[Enabled]	++: Select Screen
Cdynmax Clamping Enable	[Enabled]	Enter: Select
Cd Clock Frequency	[675 Mhz]	+/-: Change Opt.
Skip CD Clock Init in S3 resume IUER Button Enable	[Disabled] [Disabled]	F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
		F4: Save & Exit ESC: Exit

### 5.4.4 System Agent(SA) Configuration

#### VT-d

This item allows users to enable or disable  $Intel^{(m)}$  Virtualization Technology for Directed I/O (VT d) function.



#### 5.5 Boot



#### Boot Option Priorities

The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system.

#### 5.6 Save&Exit

Aptio Setup – American Megatrends Internatic Main Advanced Chipset Security Boot <mark>Save &amp; Exit</mark>	onal, LLC.
Save Options Save Changes and Exit Discard Changes and Exit	Exit system setup after saving the changes.
Save Changes and Reset Discard Changes and Reset	
Save Changes Discard Changes	
Default Options Restore Defaults Save as User Defaults	
Restore User Defaults Boot Override	↔: Select Screen ↑↓: Select Item Enter: Select
Windows Boot Manager (P1: 2.5" SATA SSD 3MG2-P) P1: 2.5" SATA SSD 3MG2-P P4: ADATA IM2S3338-0646P	+/-: Change Opt. F1: General Help F2: Previous Values
Launch EFI Shell from filesystem device	F3: Optimized Defaults F4: Save & Exit ESC: Exit
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