Lanner

NCA-1011

User Manual

Rev 1.2   March 22nd, 2019

Revision History

Rev	Date	Descriptions
0.1	2016/07/25	Preliminary
1.0	2016/07/28	Official release
1.1	2016/09/30	Modified mSATA to mSATA mini
1.2	2019/03/22	Updated BIOS Settings

Online Resources

The listed websites are links to the on-line product information and technical support.

Resource	Website
Lanner	www.lannerinc.com
Product Resources	www.lannerinc.com/support/download-center
RMA	http://eRMA.lannerinc.com

Acknowledgement

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Microsoft Windows and MS-DOS are registered trademarks of Microsoft Corp.

All other product names or trademarks are properties of their respective owners.

Compliances and Certification

CE Certification

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class A Certification

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

EMC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to correct the interference at their own expense.

Safety Guidelines

- Follow these guidelines to ensure general safety:
- Keep the chassis area clear and dust-free before, during and after installation.
- Do not wear loose clothing or jewelry that could get caught in the chassis. Fasten your tie or scarf and roll up your sleeves.
- Wear safety glasses/goggles if you are working under any conditions that might be hazardous to your eyes.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Disconnect all power by turning off the power and unplugging the power cord before installing or removing a chassis or working near power supplies
- Do not work alone if potentially hazardous conditions exist.
- Never assume that power is disconnected from a circuit; always check the circuit.

LITHIUM BATTERY CAUTION:

Risk of explosion could occur if battery is replaced by an incorrect type. Please dispose of used batteries according to the recycling instructions of your country.

- Installation only by a trained electrician or only by an electrically trained person who knows all the applied or related installation and device specifications..
- Do not carry the handle of power supplies when moving to other place.
- The machine can only be used in a fixed location such as labs or computer facilities.

Operating Safety

- Electrical equipment generates heat. Ambient air temperature may not be adequate to cool equipment to acceptable operating temperatures without adequate circulation. Be sure that the room in which you choose to operate your system has adequate air circulation.
- Ensure that the chassis cover is secure. The chassis design allows cooling air to circulate effectively. An open chassis permits air leaks, which may interrupt and redirect the flow of cooling air from internal components.

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD damage occurs when electronic components are improperly handled and can result in complete or intermittent failures. Be sure to follow ESD-prevention procedures when removing and replacing components to avoid these problems.

- Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. If no wrist strap is available, ground yourself by touching the metal part of the chassis.
- Periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms (Mohms).

Mounting Installation Environment Precaution

1. Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.
2. Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
3. Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
4. Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
5. Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips)."

Consignes de sécurité

Suivez ces consignes pour assurer la securite generale :

- Laissez la zone du chassis propre et sans poussiere pendant et apres l'installation.
- Ne portez pas de vetements amples ou de bijoux qui pourraient etre pris dans le chassis. Attachez votre cravate ou echarpe et remontez vos manches.
- Portez des lunettes de securite pour proteger vosmyeux.
- N'effectuez aucune action qui pourrait creer un dangermpour d'autres ou rendre l'equipement dangereux.
- Coupez completement l'alimentation en eteignant l'alimentation et en debranchant le cordon d'alimentation avant d'installer ou de retirer un chassis ou de travailler a proximite de sources d'alimentation.
- Ne travaillez pas seul si des conditions dangereuses sont presentes.
- Ne considerez jamais que l'alimentation est coupee d'un circuit, verifiez toujours le circuit. Cet appareil genere, utilise et emet une energie radiofrequence et, s'il n'est pas installe et utilise conformement aux instructions des fournisseurs de composants sans fil, il risque de provoquer des interferences dans les communications radio.

Avertissement concernant la pile au lithium

- Risque d'explosion si la pile est remplacee par une autre d'un mauvais type.
- Jetez les piles usagees conformement aux instructions.
- L'installation doit etre effectuee par un electricien forme ou une personne formee a l'electricite connaissant toutes les specifications d'installation et d'appareil du produit.
- Ne transportez pas l'unite en la tenant par le cable d'alimentation lorsque vous deplacez l'appareil.
- La machine ne peut etre utilisee qu'a un lieu fixe comme en laboratoire, salle d'ordinateurs ou salle de classe.

Sécurité de fonctionnement

- L'equipement electrique genere de la chaleur. La temperature ambiante peut ne pas etre adequate pour refroidir l'equipement a une temperature de fonctionnement acceptable sans circulation adaptee. Verifiez que votre site propose une circulation d'air adequate.
- Verifiez que le couvercle du chassis est bien fixe. La conception du chassis permet a l'air de refroidissement de bien circuler. Un chassis ouvert laisse l'air s'echapper, ce qui peut interrompre et rediriger le flux d'air frais destine aux composants internes.

● Les decharges electrostatiques (ESD) peuvent endommager l'equipement et gener les circuits electriques. Des degats d'ESD surviennent lorsque des composants electroniques sont mal manipules et peuvent causer des pannes totales ou intermittentes. Suivez les procedures de prevention d'ESD lors du retrait et du remplacement de composants.

- Portez un bracelet anti-ESD et veillez a ce qu'il soit bien au contact de la peau. Si aucun bracelet n'est disponible, reliez votre corps a la terre en touchant la partie metallique du chassis. Verifiez regulierement la valeur de resistance du bracelet antistatique, qui doit etre comprise entre 1 et 10 megohms (Mohms).

Consignes de sécurité électrique

● Avant d'allumer l'appareil, reliez le cable de mise a la terre de l'equipement a la terre.
● Une bonne mise a la terre (connexion a la terre) est tres importante pour proteger l equipement contre les effets nefastes du bruit externe et reduire les risques d'electrocution en cas de foudre.
● Pour desinstaller l'equipement, debranchez le cable de mise a la terre apres avoir eteint l'appareil.
● Un cable de mise a la terre est requis et la zone reliant les sections du conducteur doit faire plus de 4 mm2 ou 10 AWG.

Procédure de mise à la terre pour source

d'alimentation CC

• Desserrez la vis du terminal de mise a la terre.
• Branchez le cable de mise a la terre a la terre.
• L'appareil de protection pour la source d'alimentation
CC doit fournir 30 A de courant. Cet appareil de protection doit etre branche a la source d'alimentation avant l'alimentation CC.
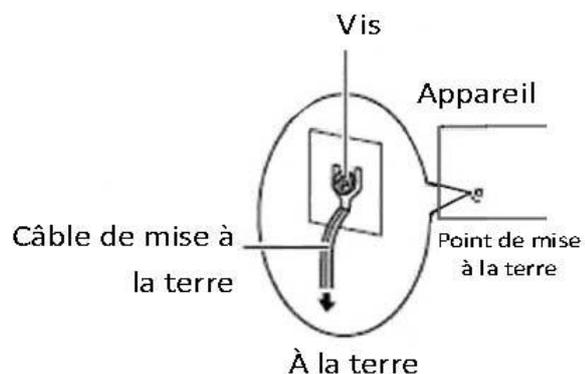
Table of Contents

Chapter 1: Introduction

Thank you for choosing NCA-1011. The desktop appliance is ideal for branch office and retail environment. As a vCPE for such environment, NCA-1011 is built in an x86 open architecture for flexibility to run various software. The platform is empowered by Intel Quad-core Celeron J1900 SoC CPU (codenamed Bay Trail) to deliver the required performance and power efficiency in an edge security deployment. Memory wise, the platform supports DDR3L 1333MHz non-ECC SO-DIMM up to 8GB.

At the networking aspect, NCA-1011 comes with five RJ-45 Gigabit Ethernet ports to connect with other networking devices. In fact, the RJ-45 I/O set of NCA-1011 is programmed with one pair of Lanner's Gen 3 LAN Bypass. The platform also provides a RJ-45 console port to establish a console terminal for control and management.

Other functionalities of NCA-1011 include one mini-PCIe slot for wireless network module, two USB 2.0 ports, and a power input of AC 100~240V@50~60 Hz.

Here is the summary of the key features:

- Intel quad-core Celeron J1900 SoC CPU (codenamed Bay Trail)
- Fanless design
- 5 x RJ45 GbE LAN ports, 2 x USB 2.0 ports, 1 x RJ45 console port
- 1 pair Gen.3 LAN Bypass
- 1 x DDR3L SODIMM max. up to 8GB memory
- 1 x full-length mini-PCIe slot for wireless connectivity
- 1 x mSATA mini slot
- DC power jack with lock

Please refer to the following chart for a detailed description of the system's specifications.

System Specification

Processor Options	Intel® Celeron J1900 SoC CPU
Frequency	2.42GHz
Core Number	4
Chipset	SoC
BIOS	AMI SPI BIOS
System Memory	1 x DDR3L 1333Mhz (Non-ECC) SODIMM

		Single channel up to 4GB
USB		2 x USB 2.0 Type-A ports
Console		1 x RJ-45 Console port
Storage		1 x 2.5" SATA SSD tray (the drive is not included) 1 x mSATA mini socket
Networking	LAN	5 x RJ-45 10/100/1000 Mbps LAN ports
	Controller	1 x Intel i211
	Bypass	1 pair of LAN bypass
Expansion		1 x mini-PCIe socket
Display		1 x VGA pin header (1 x optional VGA port enabled by cable connection)
Antenna (optional)		2 x optional SMA antenna holes
Thermal		Fanless design
Physical Characteristics	Form Factor	Desktop
	Weight	1.2kg
	Dimensions	230mm x 170mm x 43mm (W x D x H)
	Mounting Options	Rackmount
Environment	Operating Temperature	0 ~ 40℃
	Non-operating Temperature	-40 ~ 70℃
	Ambient Humidity	5~90%, non-condensing
Power	Adapter	36W power adapter
	Power supply	
Reliability	Watchdog	Yes
	Internal RTC with Li-battery	Yes
Certifications	EMC	CE/FCC Class A, RoHS

Ordering Information

NCA-1011A	NCB-1011A (motherboard) + NCC-1011A (daughter board)
	5 x LAN ports with 1 pair bypass

Package Contents

Please unpack your package carefully and inspect all the following items

    1 – NCA-1011A Network Appliance

    1 – 36W Power adaptor

    1 – Console cable

    1 – Power cord

Note：If you should find any components missing or damaged, please contact your dealer immediately for assistance

Chapter 2: System Overview

Mechanical Drawing

Unit: mm

Block Diagram

SPI

mSATA

SATA 2.0

1x SATA connectors

Thermal Monitor
Fan Monitor
GPIO
Watchdog

SuperIO

LPC

Intel Bay Trail
Quad Core Celeron J1900

USB 2.0

PCI-E x1 *3

PCI-E x1

1x Console
PIN header

1x USB
PIN header

Reset
Bottom

RJ45 console

2x USB
connectors

Intel
I211

Intel
I211

Intel
I211

By-pass

PCI-E x1

ASM1184e

PCI-E x1

PCI-E x1

Intel
I211

Intel
I211

Mini
PCIE

RJ-45 / Connectors w/ LED
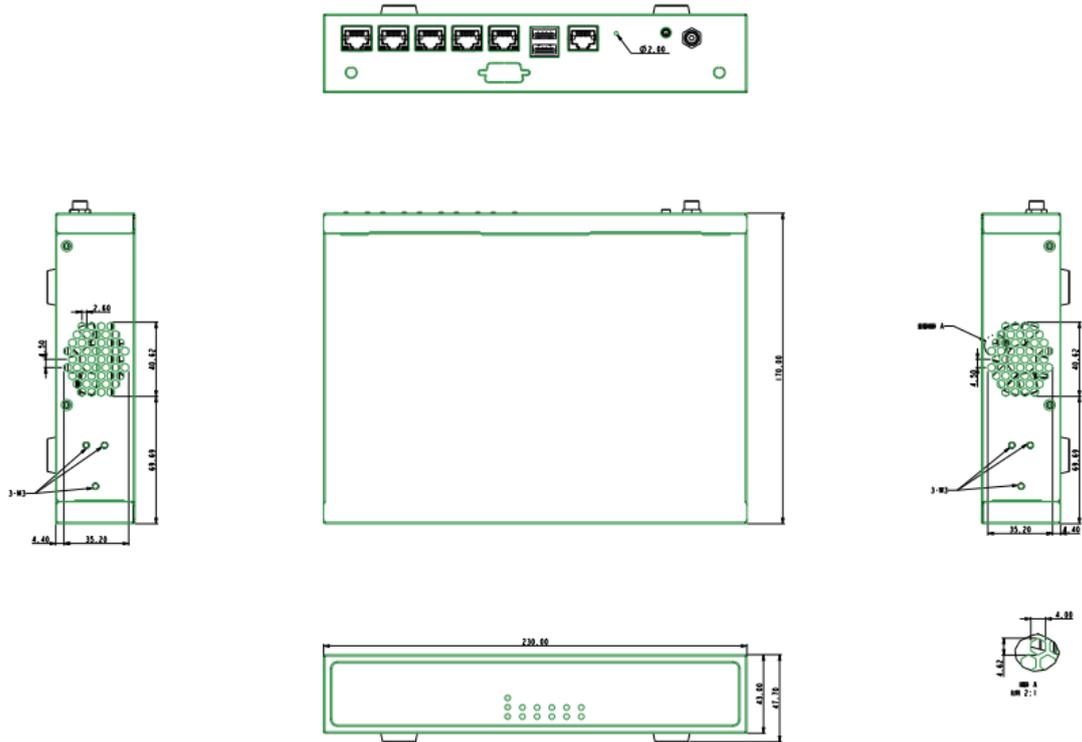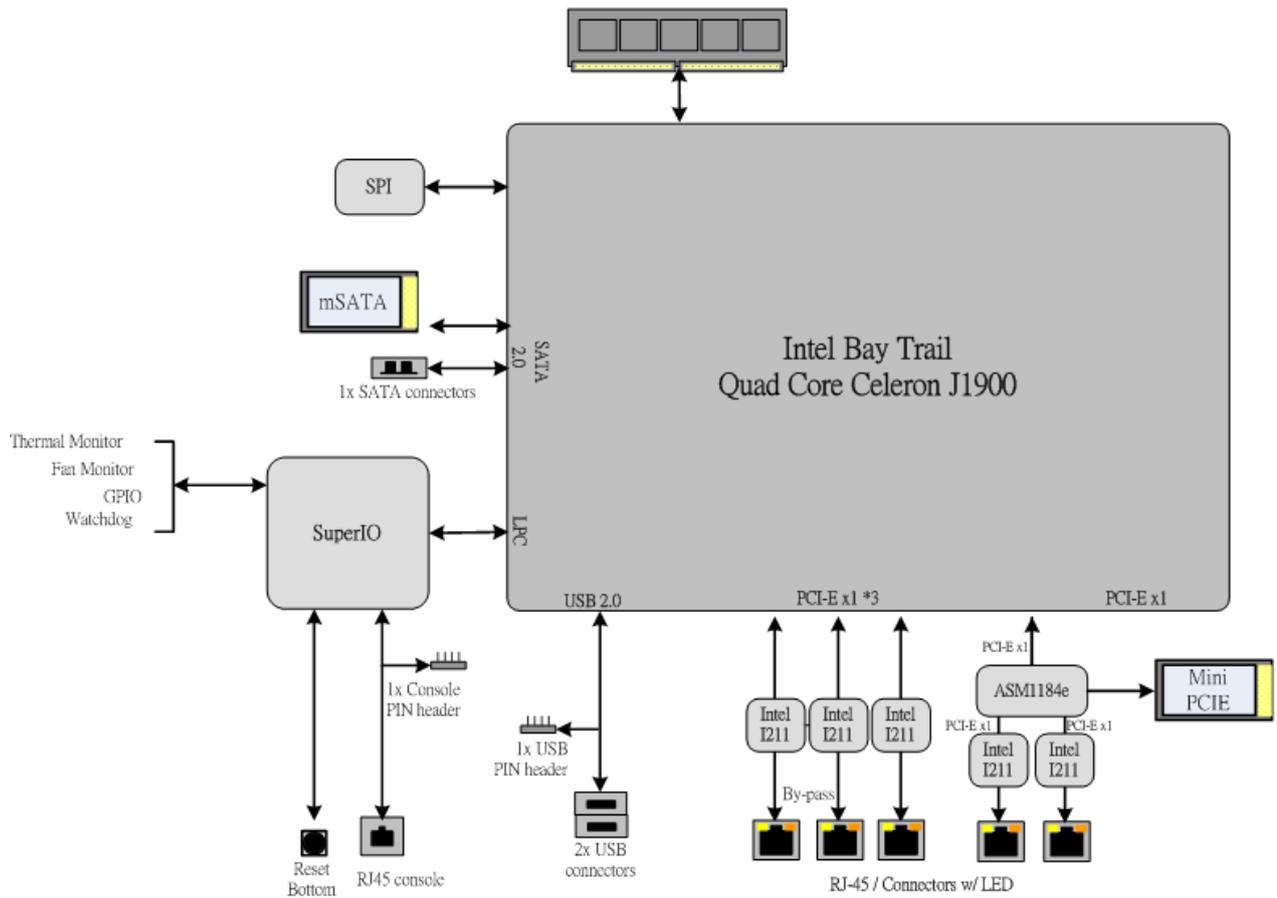
Front I/Os

F1 DC Jack	1 x DC input jack
F2 Power	1 x Power on/off switch
F3 Reset	1 x reset pin
F4 Console	1 x RJ-45 console port
F5 USB	2 x USB 2.0 Type-A ports
F6 LAN	5 x RJ-45 GbE LAN ports

With VGA and Two SMA Antennas (Optional)
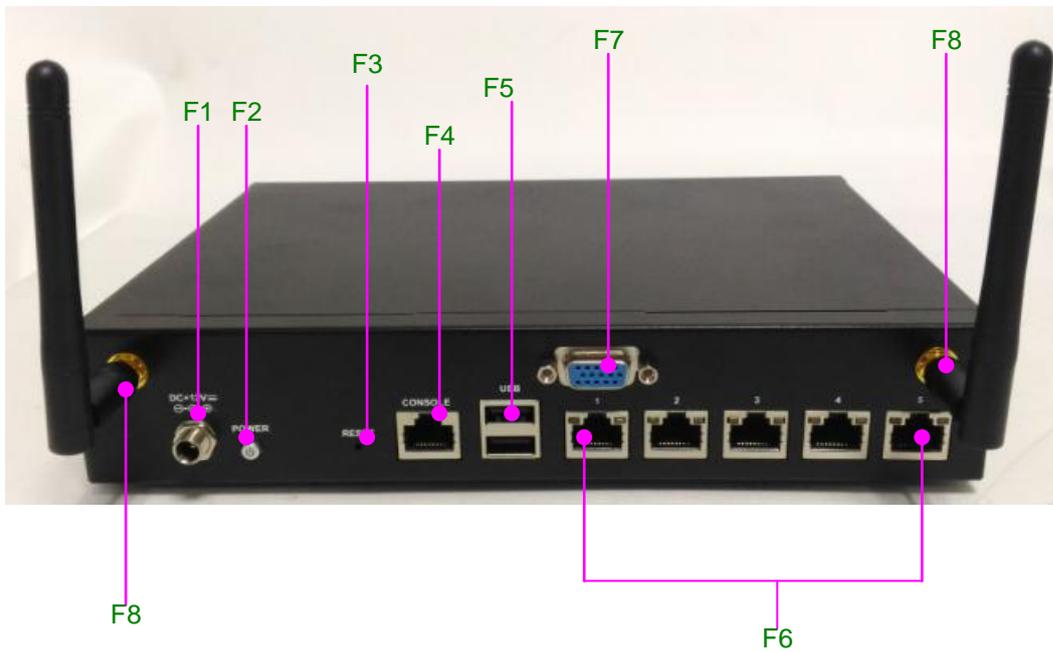
F1 DC Jack	1 x DC input jack
F2 Power	1 x Power on/off switch
F3 Reset	1 x reset pin
F4 Console	1 x RJ-45 console port
F5 USB	2 x USB 2.0 Type-A ports
F6 LAN	5 x RJ-45 GbE LAN ports
F7 VGA (optional)	1 x VGA port enabled by cable connection
F8 SMA antenna (optional)	2 x SMA antenna holes

Rear I/Os
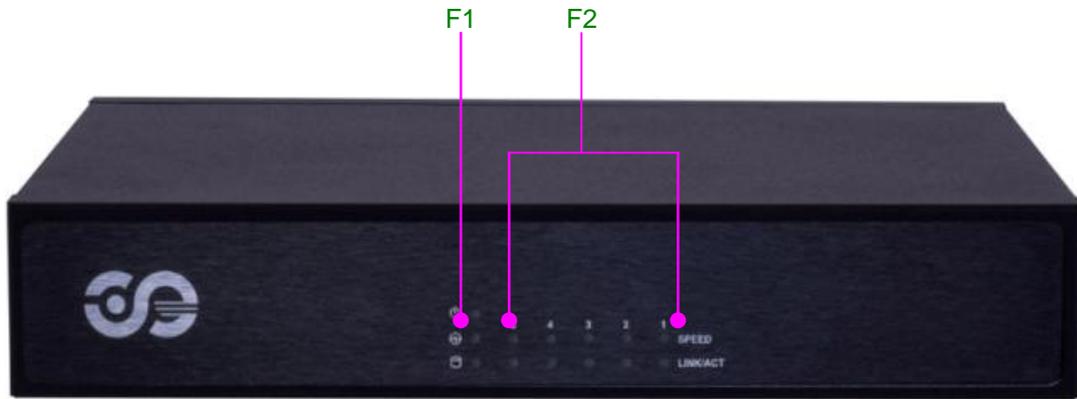
F1 System LED	1 x POWER/BYPASS/SSD status LED set
F2 LAN LED	10 x LAN LED for speed and Link/ACT, 2 per RJ-45 port

Chapter 3: Board Layout

Jumpers and Connectors on the Motherboard

LAN3-6 USB1 COM1 DCIN1

J10

PS4P1

J3

J8

MINIPCI1 DIMM1

MSATA1

LPC

COMB2 J7 J5 VGAA1 FAN1

SPIROM1 J11
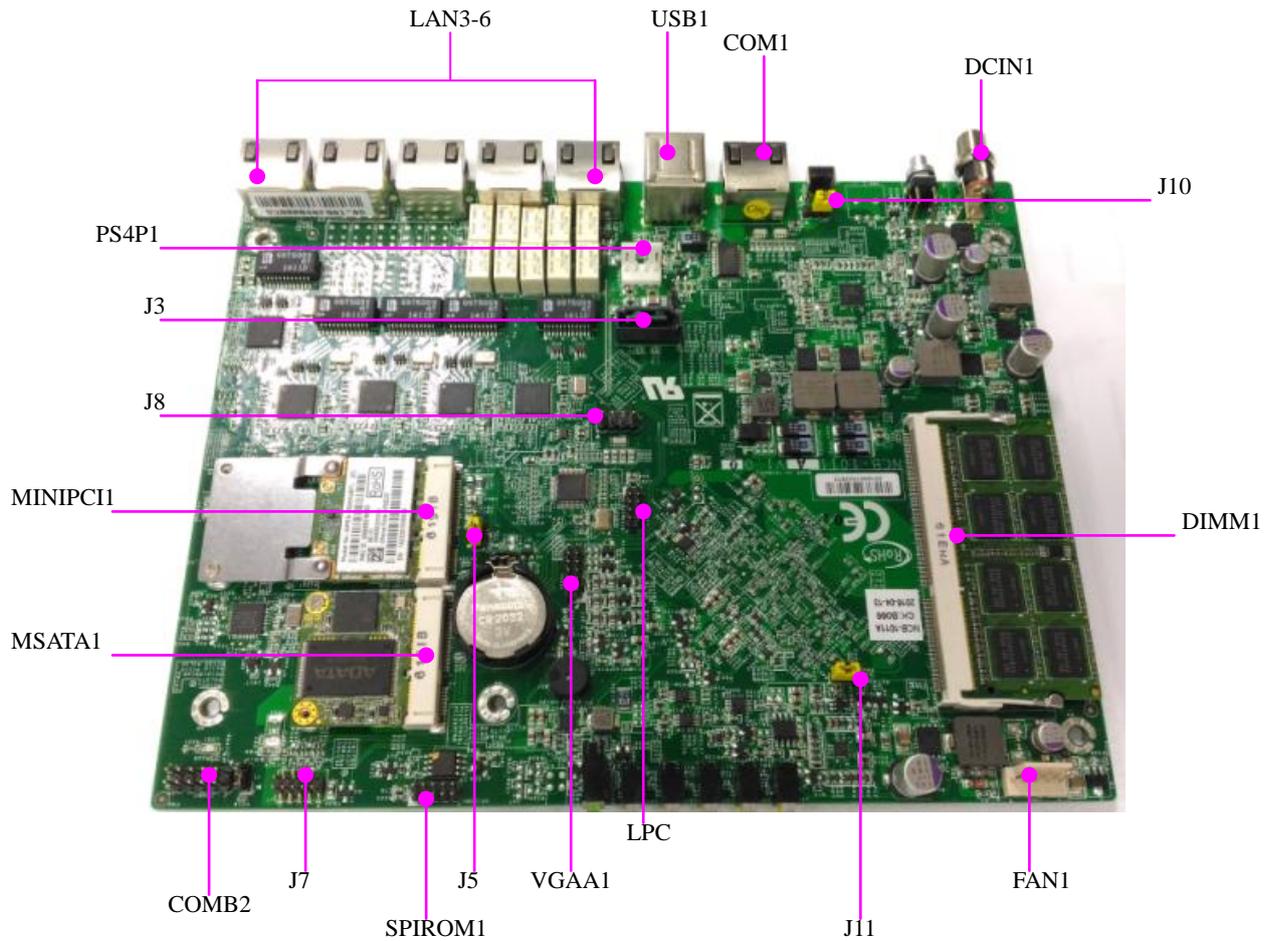
Notes: the DIMM and mini-PCIe modules shown as installed in the picture are for reference ONLY and NOT included by default.

Jumper Setting and Connector Pin-out

Jumper Settings

J11: RTC reset. Once Pin 2 & 3 are short, it will start to clear CMOS setting.

```
   1
   2
   3
```
J11

Short Pin(s)	Description
1-2 short	Normal
2-3	Clear CMOS

J10: jumper setting for hardware or software reset

```
   1
   2
   3
```
J10

Short Pin(s)	Description
1-2	Hardware reset
2-3 (default)	Software reset
3	GND

J1: GEN3 LAN bypass programming select

```
   1
   2
   3
```
J1

Short Pin(s)	Description
1-2 (default)	Normal
2-3	Programming

J2: SATA DOM support (reserved)

J2

Short Pin(s)	Description
1-2	SATA DOM
2-3 (default)	Normal

J5: SRTCRST_N reset

J11

Short Pin(s)	Description
1-2 (default)	Normal
2-3	Clear

Connector Pin Assignments

USB1: Dual USB 2.0 Type-A ports in double-stacked form factor
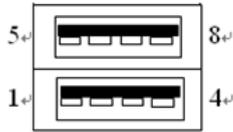
Pin	Description	Pin	Description
1	VCC5	5	VCC5
2	USBx_N	6	USBx_N
3	USBx_P	7	USBx_P
4	GND	8	GND

J7: USB pin header in 2x10-pin 2.54mm
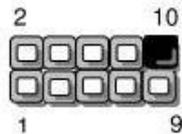
Pin	Description	Pin	Description
1	VCC5	2	VCC5
3	USBx_N	4	USBx_N
5	USBx_P	6	USBx_P
7	GND	8	GND
9	GND	10	NC

COM1: RJ-45 console port for serial console
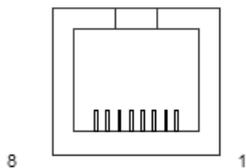
Pin	Description	Pin	Description
1	Request To Send (RTS)	5	Signal Ground
2	Data Terminal Ready (DTR)	6	Received Data (RxD)
3	Transmitted Data (TxD)	7	Data Set Ready (DSR)
4	Signal Ground	8	Clear To Send (CTS)

J8: KB/MS keyboard and mouse connector in 2x4-pin 2.54mm DIP

Pin	Description	Pin	Description
1	VCC	2	MSCLK
3	MSDAT	4	Key
5	KBDAT	6	Key
7	GND	8	KBCLK

PS4P1: 4-pin SATA power connector at 2.54mm for SATA storage device
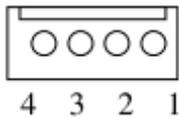
Pin	Description
1	12V
2	GND
3	GND
4	5V

J3: 7-pin SATA signal connector for SATA storage device

Pin	Description	Pin	Description
1	GND	5	RX-
2	TX+	6	RX+
3	TX-	7	GND
4	GND		

CON1: a 5-pin fan connector in WAFER 2.54mm 5P DIP form factor. Since the

system is designed in fanless form, this connector is reserved for OEM or ODM
purpose.

Pin	Description
1	Fan_out
2	
3	Fan status
4	+12V
5	GND

LAN2~6 : 5 x RJ45 10/100/1000 LAN Connectors
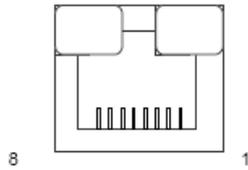
Pin	Description
1	MD0+
2	MD0-
3	MD1+
4	MD2+
5	MD2-
6	MD1-
7	MD3+
8	MD3-

VGA1: 12-pin header for VGA display function
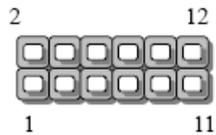
Pin	Description	Pin	Description
1	RED	2	Ground
3	GREEN	4	Ground
5	BLUE	6	Ground

7	HSYNC	8	Ground
9	VSYNC	10	Ground
11	DDCDATA	12	DDCCLK

CN1: mSATA mini socket
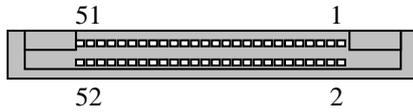
Pin	Description	Pin	Description
1	NC	27	GND
2	VCC3	28	NC
3	NC_RSV1	29	GND
4	GND	30	NC
5	NC_RSV2	31	TXN
6	NC	32	NC
7	NC	33	TXP
8	NC_UIM_PWR	34	GND
9	GND	35	GND
10	NC_UIM_DATA	36	NC
11	NC	37	GND
12	NC_UIM_CLK	38	NC
13	NC	39	VCC3SB
14	NC_UIM_RST	40	GND
15	GND	41	VCC3SB
16	NC_UIM_VPP	42	NC_LED_WWAN#
17	NC_RSV3	43	GND
18	GND	44	NC_LED_WLAN#
19	NC_RSV4	45	NC_RSV9
20	NC	46	NC_LED_WPAN#
21	GND	47	NC_RSV10
22	NC	48	NC
23	RXP	49	NC_RSV11
24	VCC3	50	GND
25	RXN	51	NC_RSV12
26	GND	52	VCC3

MPCIE1: mini-PCIe socket
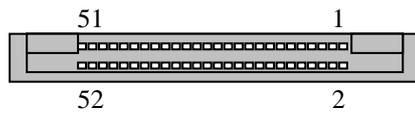
Pin	Description	Pin	Description
1	PME_PE_N	27	GND
2	VCC3	28	1.5V
3	NC_RSV1	29	GND
4	GND	30	SMB_CLK
5	NC_RSV2	31	Mini_PCIe_TXN0
6	1.5V	32	SMB_DATA
7	Mini_CLKREQ_N1	33	Mini_PCIe_TXP0
8	NC_UIM_PWR	34	GND
9	GND	35	GND
10	NC_UIM_DATA	36	NC
11	MINIPCIE_REFCLKN	37	GND
12	NC_UIM_CLK	38	NC
13	MINIPCIE_REFCLKP	39	VCC3
14	NC_UIM_RST	40	GND
15	GND	41	VCC3
16	NC_UIM_VPP	42	NC_LED_WWAN#
17	NC_RSV3	43	GND
18	GND	44	NC_LED_WLAN#
19	NC_RSV4	45	NC_RSV9
20	RF_KILL_N2_R	46	NC_LED_WPAN#
21	GND	47	NC_RSV10
22	PLTRST_MINIPCIE_N	48	1.5V
23	Mini_PCIe_RXN0	49	NC_RSV11
24	P3VSB	50	GND
25	Mini_PCIe_RXP0	51	NC_RSV12
26	GND	52	VCC3

Chapter 4: Hardware Setup

Preparing the Hardware Installation

To access some components and perform certain service procedures, you must perform the following procedures first.

WARNING:

- To reduce the risk of personal injury, electric shock, or damage to the equipment, please remove all power sources.
- Please wear ESD protected gloves before conducting the following steps.
- Do NOT pile any object onto the system.

1. Power off NCA-1011 completely and remove all power connections.
2. Remove the screws from the bottom and two sides, as circled in the figures below.
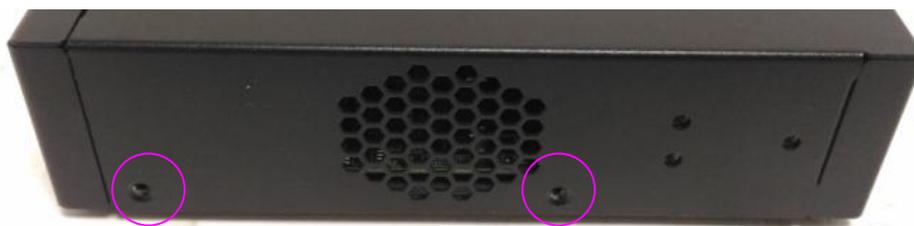
3. Slide the compartment as the arrows of directions below to access the inside of the system.

Installing the System Memory

The motherboard supports DDR3L 1,333MHz non-ECC SO-DIMM socket up to 4GB. Please follow the steps below to install the DIMM memory modules.

1. Power off the system and locate the DDR DIMM slot.

2. Align the DIMM module and make sure the notches of the module aligned with the socket keys in the slot.

3. Insert the module into the slot in a diagonal angle and press it down until it's firmly seated by the clips at both sides.

Installing mSATA Mini and Mini-PCIe Modules

The motherboard provides a mSATA mini socket and a mini-PCIe socket. Please follow the procedures below for installation.

1. Locate the mSATA mini and mini-PCIe sockets.

2. Insert modules as shown in the image below.

3. Press the module down and apply screws to secure it.

Installing Disk Drives

The system supports 1 x 2.5" SATA SSD as data storage (SSD is recommended due to heat and vibration concerns). Please follow the steps below for installation.

1. Remove the three screws of the disk tray.
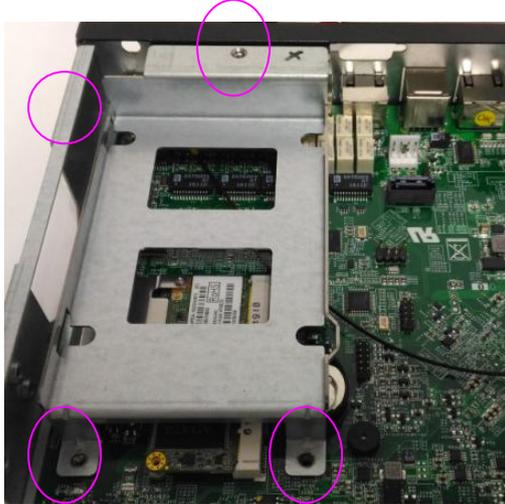
2. Take the tray out.

3. Place the SSD onto the tray. Please make sure the SATA connectors face the arrow of direction below.

SATA connector facing this way

4. Turn the tray with SSD upside down and apply four screws.

5. Place the SSD-installed tray back onto the system. Apply three screws back.
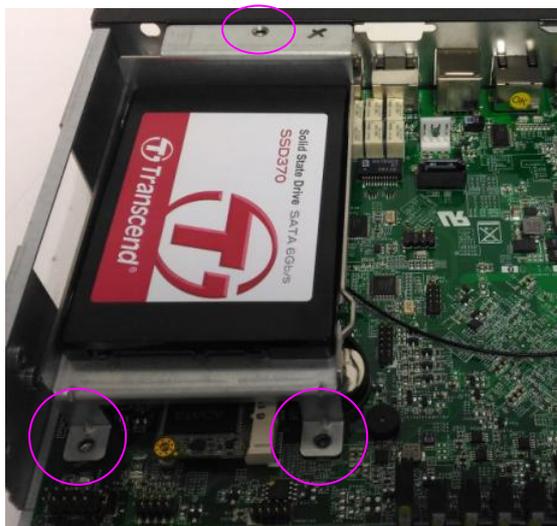
6. Connect the SATA 7-pin signal cable and the SATA 4-pin power cable to their corresponding connectors on the motherboard.
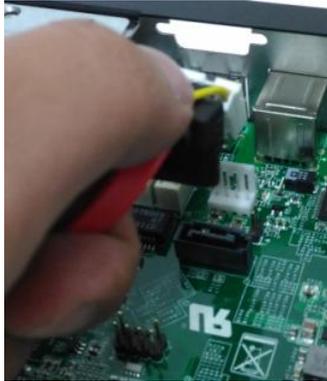
7. Plug the standard 7+15 SATA connector to the SSD.

Installing SMA Antenna (optional)

The system can be customized to enable SMA antenna connectivity. Please follow the steps below to install the antenna.

1. Plug the female connector of the SMA antenna cable to the "MAIN" and "ALT" connectors (antenna connector of a wireless network module), as shown in the image below.

2. Plug the male connector of the SMA antenna onto the designated port as shown in the image below.

3. Use the supplied rings to secure the male connector from the front panel.

4. Tighten the rings and install the antenna. When installing the antenna, rotate it until it is tightened.

Installing VGA Port (Optional)

The system can be configured to enable VGA display. Please follow the steps below if you wish to enable a VGA port for display purpose.

1. Use the supplied VGA cable to connect the "VGAA1" pin header on the motherboard.

2. Place the DB15 VGA connector at its approximate location on the front panel.

3. Align the DB15 connector as shown in the image below. Then apply its two original bolt screws to fix it.

Chapter 5: BIOS Setup

The system has AMI BIOS built-in, with a SETUP utility that allows users to configure required settings or to activate certain system features. Pressing the <Tab> or <Del> key immediately allows you to enter the Setup utility.

Control Keys

→←	Select Screen
↑↓	Select Item
<Enter>	Select
+/-	Change Option
F1	General help
F2	Previous Values
F3	Optimized Defaults
F4	Save & Exit
<Esc>	Exit

Main

The [Main] is the first setup screen when you enter BIOS. The [Main] displays general system and BIOS information.

```
Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
  Main  Advanced  Chipset  Security  Boot  Save & Exit

  BIOS Information                                    Set the Date. Use Tab
  Project Version         NCA-1011 Ver.AC0           to switch between Date
  Build Date and Time     02/23/2018 17:17:23        elements.

  System Date             [Thu 03/21/2019]
  System Time             [15:20:56]

  Access Level            Administrator


                                                     ++: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Opt.
                                                     F1: General Help
                                                     F2: Previous Values
                                                     F3: Optimized Defaults
                                                     F4: Save & Exit
                                                     ESC: Exit

        Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```

Feature	Description
BIOS Information	BIOS Version: BIOS release version Build Date and Time: MM/DD/YYYY
System Date	To set the Date, use **<Tab>** to switch between Date elements. Default Range of Year: 2005-2099 Default Range of Month: 1-12 Days: dependent on Month.
System Time	To set the Date, use **<Tab>** to switch between Date elements.

Advanced

Use [<--] / [-->] to select [Advanced] setup screen. Under this screen, you may use [↑] [↓] to select an item you wish to configure.

```
            Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
      Main  Advanced  Chipset  Security  Boot  Save & Exit

   ▶ F81801 Super IO Configuration                      System Super IO Chip
   ▶ Hardware Monitor                                   Parameters.
   ▶ Serial Port Console Redirection
   ▶ CPU Configuration
   ▶ IDE Configuration
   ▶ USB Configuration

                                                        ↔: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit

            Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```

F81801 Super IO Configuration

This option allows users to configure system Super I/O chip parameters. Press <Enter> to access the sub-menu.

```
         Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
        Advanced

      F81801 Super IO Configuration                        Set Parameters of
                                                           Serial Port 1 (COMA)
      Super IO Chip            F81801
    ▶ Serial Port 1 Configuration




                                                           →←: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit


         Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```
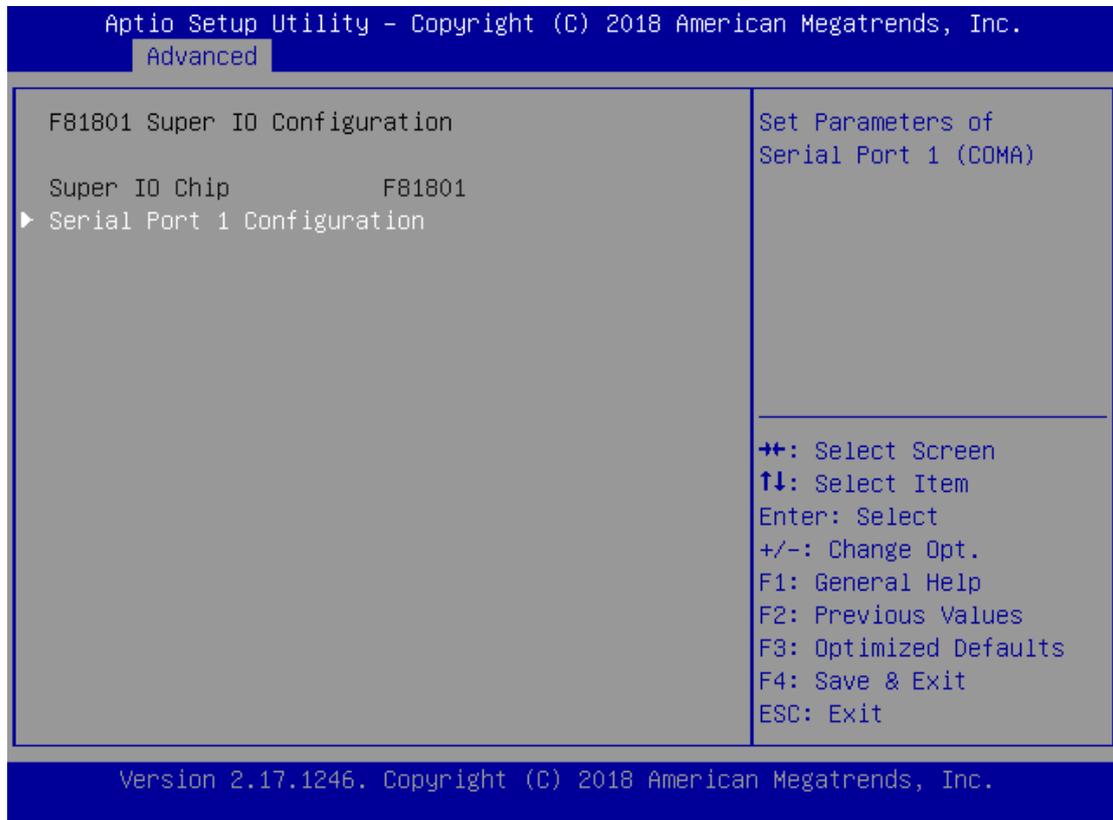
Serial port 1 Configuration

Press <Enter> to access the sub-menu in order to set parameters of Serial Port 1 (COM).

```
Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
 Advanced

 Serial Port 1 Configuration                              Enable or Disable
                                                          Serial Port (COM)
 Serial Port              [Enabled]
 Device Settings          IO=3F8h; IRQ=4;

 Change Settings          [Auto]


                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit

      Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```
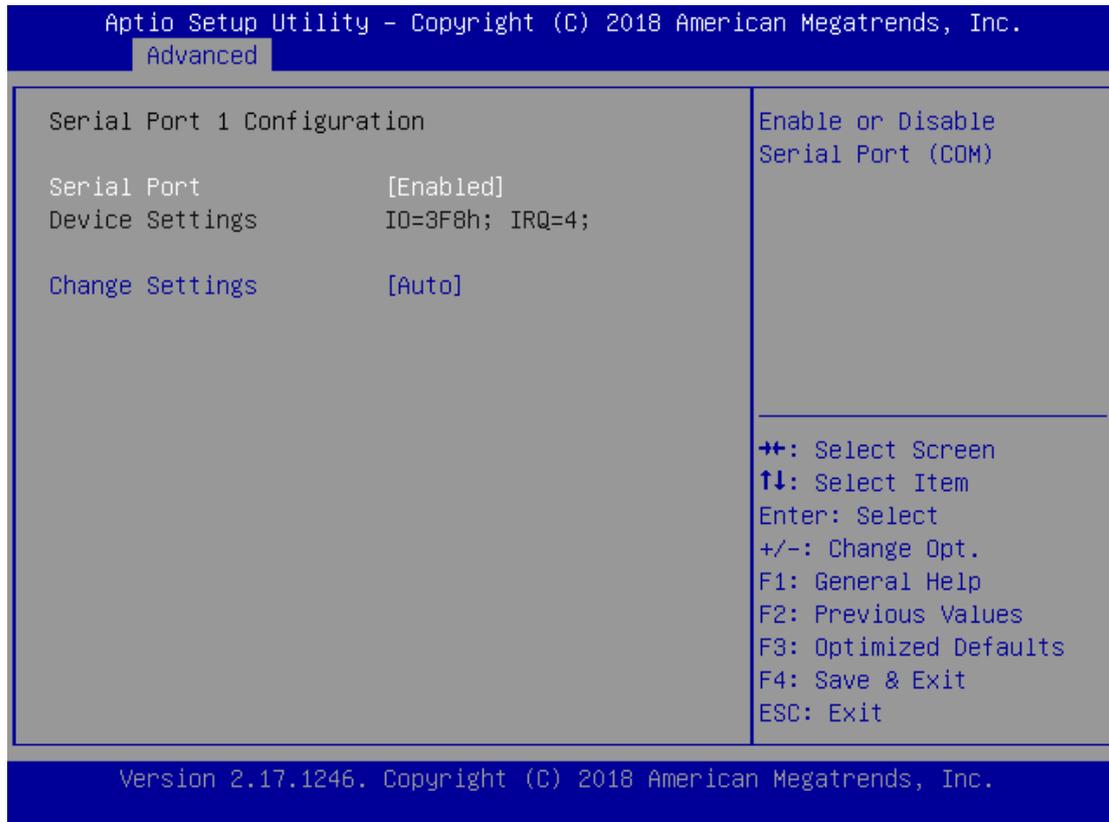
Feature	Options	Description
Serial Port	Enabled Disabled	Enable or Disable Serial Port (COM)
Device Settings	NA	IO=3F8h; IRQ = 4
Change Setting	Auto IO=3F8h; IRQ=4; IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;	Select an optimal settings for Super IO Device

Hardware Monitor

This option allows users to view hardware health status.

```
         Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
           Advanced

      Pc Health Status

      System temperature        : +29 C
      CPU temperature           : +44 C
      Vcore                     : +0.864 V
      PVDDR                     : +1.352 V
      VCC3V                     : +3.280 V
      VSB3V                     : +3.312 V
      VBAT                      : +3.184 V

                                                    →←: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit

         Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```

Serial Port Console Redirection

```
Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
  Advanced

                                                       Console Redirection
                                                       Enable or Disable.
 COM0
 Console Redirection      [Enabled]
▶ Console Redirection Settings


                                                       ⇄: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/-: Change Opt.
                                                       F1: General Help
                                                       F2: Previous Values
                                                       F3: Optimized Defaults
                                                       F4: Save & Exit
                                                       ESC: Exit

        Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```

Feature	Options	Description
COM0 Console Redirection	Enabled Disabled	Enables or disables Console Redirection

Console Redirection Settings

```
       Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
         Advanced

 COM0                                           Emulation: ANSI:
 Console Redirection Settings                   Extended ASCII char
                                                set. VT100: ASCII char
 Terminal Type          [VT100+]                set. VT100+: Extends
 Bits per second        [115200]                VT100 to support color,
 Data Bits              [8]                      function keys, etc.
 Parity                 [None]                   VT-UTF8: Uses UTF8
 Stop Bits              [1]                       encoding to map Unicode
 Flow Control           [None]                   chars onto 1 or more
 VT-UTF8 Combo Key Sup  [Enabled]
 Recorder Mode          [Disabled]             ➔◄: Select Screen
 Resolution 100x31      [Disabled]             ↑↓: Select Item
 Legacy OS Redirection  [80x24]                 Enter: Select
 Putty KeyPad           [VT100]                 +/-: Change Opt.
 Redirection After BIO  [Always Enable]         F1: General Help
                                                F2: Previous Values
                                                F3: Optimized Defaults
                                                F4: Save & Exit
                                                ESC: Exit


       Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```
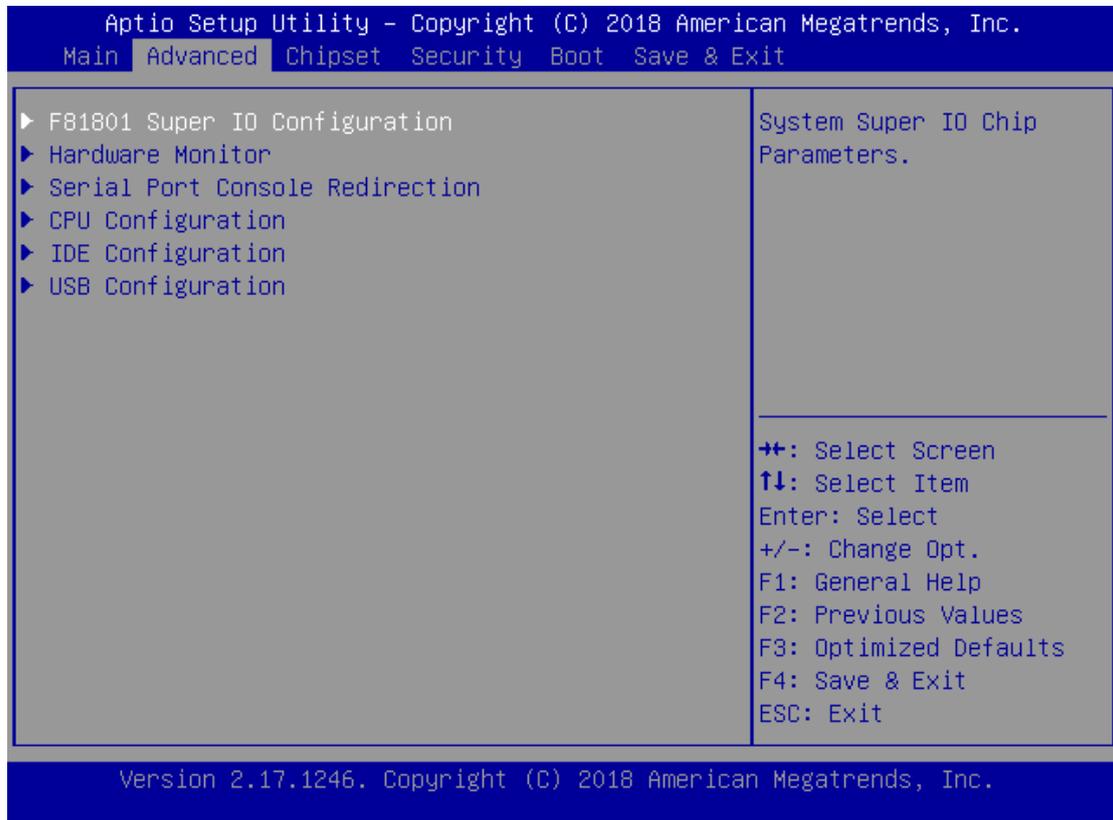
Feature	Options	Description
Terminal Type	VT100 VT100+ VT-UTF8 ANSI	**VT100**: ASCII char set **VT100+**:Extends VT100 to support color, function keys, etc. **VT-UTF8**:Uses UTF8 encoding to map Unicode chars onto 1 or more bytes **ANSI**: Extended ASCII char set
Bits per second	9600 19200 38400 57600 115200	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
Data Bits	7 8	Data Bits
Parity	None Even Odd Mark Space	A parity bit can be sent with the data bits to detect some transmission errors.
Stop Bits	1	Indicates the end of a serial data packet.

	2	
Flow Control	None Hardware RTS/CTS	Flow Control can prevent data loss from buffer overflow.
VT-UTF8 Combo Key Support	Disabled Enabled	Enables VT-UTF8 Combination Key Support for ANSI/VT100 terminals
Recorder Mode	Disabled Enabled	With this mode enabled, only text will be sent. This is to capture Terminal data.
Resolution 100x31	Disabled Enabled	Enables or disables extended terminal resolution
Legacy OS Redirection	80x24 80x25	On Legacy OS, the Number of Rows and Columns supported redirection.
Putty KeyPad	VT100 LINUX XTERM86 SCO ESCN VT400	Selects FunctionKey and KeyPad on Putty.
Redirection After BIOS POST	Always Enable BootLoader	When **Bootloader** is selected, Legacy Console Redirection is disabled before booting to legacy OS. When **Always Enable** is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to **Always Enable**.

CPU Configuration

This option allows users to configure CPU Configuration parameters. Press <Enter> to access the sub-menu.

```
          Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
          Advanced

 CPU Configuration                                     Disabled for Windows XP


 CPU Speed                 2001 MHz
 64-bit                    Supported

 Limit CPUID Maximum       [Disabled]
 Execute Disable Bit       [Enabled]
 Intel Virtualization      [Enabled]

                                                       ↔: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/-: Change Opt.
                                                       F1: General Help
                                                       F2: Previous Values
                                                       F3: Optimized Defaults
                                                       F4: Save & Exit
                                                       ESC: Exit


          Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```

Feature	Options	Description
Limit CPUID Maximum	Disabled Enabled	Disabled for Windows XP
Execute Disable Bit	Enabled Disabled	XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3.)
Intel Virtualization Technology	Enabled Disabled	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology

IDE Configuration

This option allows users to configure IDE devices. Press <Enter> to access the sub-menu.

```
              Aptio Setup Utility – Copyright (C) 2016 American Megatrends, Inc.
       Advanced

    IDE Configuration                                      Enable / Disable Serial ATA

    Serial-ATA (SATA)              [Enabled]

    SATA Speed Support             [Gen2]
    SATA Mode                      [AHCI Mode]

    Serial-ATA Port 0             [Enabled]

    Serial-ATA Port 1             [Enabled]

    SATA Port0
    Not Present
                                                       ──────────────────────────────
    SATA Port1
    Not Present                                           ↔: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit



              Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
```
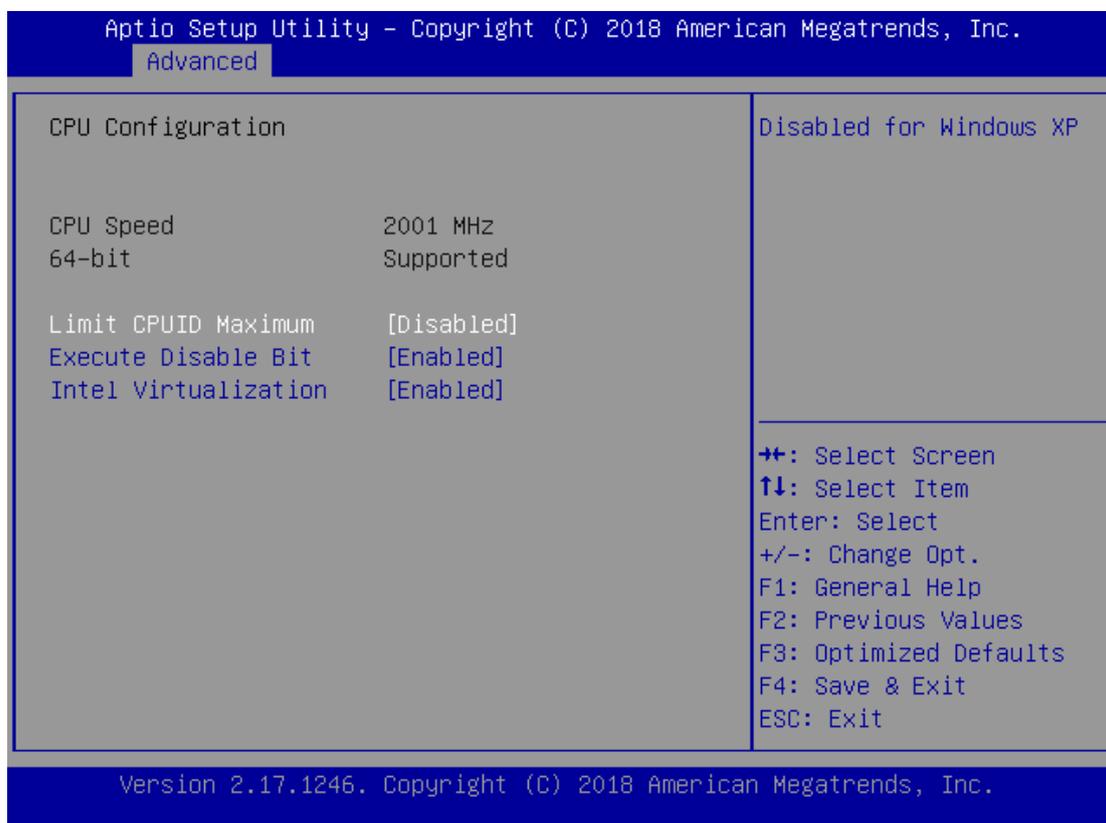
Feature	Options	Description
Serial-ATA (SATA)	Disabled Enabled	Enable / Disable Serial ATA
SATA Speed Support	Gen1 Gen2	SATA Speed Support Gen1 or Gen2
SATA Mode	IDE Mode AHCI Mode	Select IDE / AHCI
Serial-ATA Port 0	Disabled Enabled	Enable / Disable Serial ATA Port 0
Serial-ATA Port 1	Disabled Enabled	Enable / Disable Serial ATA Port 1

USB Configuration
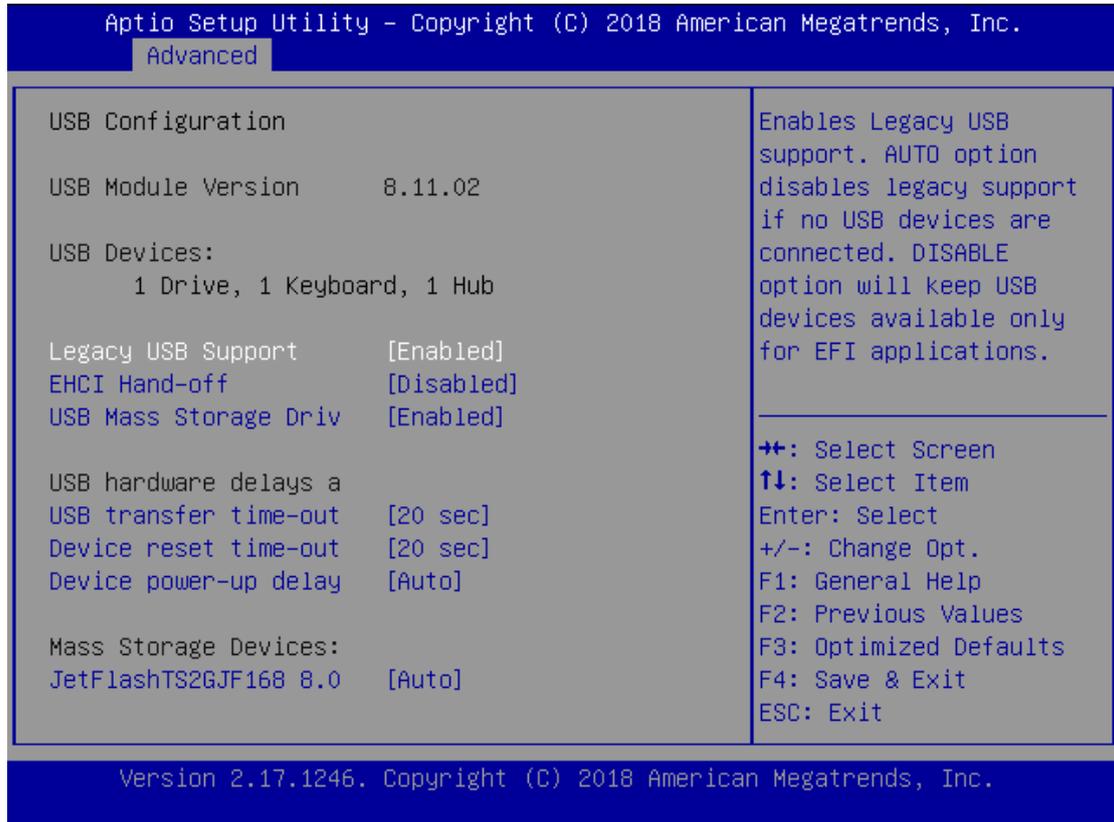
This option allows users to configure USB Configuration parameters. Press <Enter> to access the sub-menu.

USB Module Version: displays USB module version information

USB Devices: displays USB device information

```
Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
 Advanced

 USB Configuration                              Enables Legacy USB
                                                support. AUTO option
 USB Module Version      8.11.02                disables legacy support
                                                if no USB devices are
 USB Devices:                                   connected. DISABLE
      1 Drive, 1 Keyboard, 1 Hub                option will keep USB
                                                devices available only
 Legacy USB Support      [Enabled]              for EFI applications.
 EHCI Hand-off           [Disabled]
 USB Mass Storage Driv   [Enabled]
                                                ━━━━━━━━━━━━━━━━━━━━━
 USB hardware delays a
 USB transfer time-out   [20 sec]              ↔: Select Screen
 Device reset time-out   [20 sec]              ↑↓: Select Item
 Device power-up delay   [Auto]                Enter: Select
                                               +/-: Change Opt.
 Mass Storage Devices:                         F1: General Help
 JetFlashTS2GJF168 8.0   [Auto]                F2: Previous Values
                                               F3: Optimized Defaults
                                               F4: Save & Exit
                                               ESC: Exit

      Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```

Feature	Options	Description
Legacy USB Support	Enabled Disabled Auto	Enables Legacy USB support. **Auto** option disables legacy support if no USB devices are connected; **Disabled** option will keep USB devices available only for EFI applications.
EHCI Hand-off	Enabled Disabled	This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.
USB Mass Storage Driver Support	Enabled Disabled	Enables or disables USB Mass Storage Driver Support.
USB transfer	1 sec	The time-out value for Control, Bulk,

time-out	5 sec 10 sec 20 sec	and Interrupt transfers
Device reset time-out	1 sec 5 sec 10 sec 20 sec	USB mass storage device Start Unit command time-out
Device power-up delay	Auto Manual	Maximum time the device will take before it properly reports itself to the Host Controller. **Auto** uses default value: for a Root port, it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

Chipset

Use [<--] / [-->] to select [Chipset] setup screen. Under this screen, you may use [↑] [↓] to select "North Bridge" or "South Bridge" to configure.

```
    Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
     Main   Advanced   Chipset   Security   Boot   Save & Exit

 ▶ North Bridge                                    North Bridge Parameters
 ▶ South Bridge




                                                 ↦↤: Select Screen
                                                 ↑↓: Select Item
                                                 Enter: Select
                                                 +/-: Change Opt.
                                                 F1: General Help
                                                 F2: Previous Values
                                                 F3: Optimized Defaults
                                                 F4: Save & Exit
                                                 ESC: Exit

     Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```

North Bridge

Press <Enter> to access configuration items of North Bridge parameters.

Memory Information

Total Memory: displays total memory capacity

```
          Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc.
                       Chipset

  Memory Information                                     Maximum Value of TOLUD.

  Total Memory           4096 MB (DDR3L)

  Memory Slot0           4096 MB (DDR3L)

  Max TOLUD              [Dynamic]


                                                         →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/−: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit

          Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```
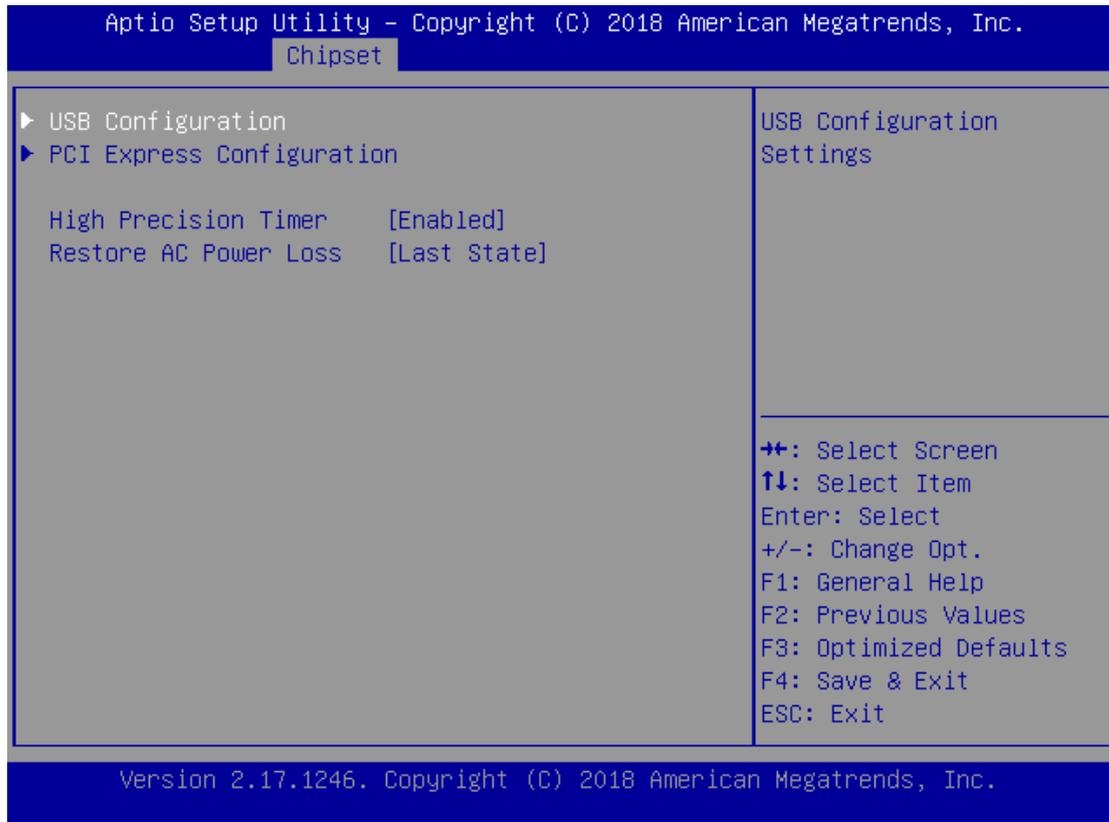
Feature	Options	Description
Max TOLUD	Dynamic 2 GB 2.25 GB 2.5 GB 2.75 GB 3 GB	Maximum Value of TOLUD.

South Bridge

Press <Enter> to access sub-menu of South Bridge parameters.

```
Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
                    Chipset

▶ USB Configuration                           USB Configuration
▶ PCI Express Configuration                   Settings

  High Precision Timer    [Enabled]
  Restore AC Power Loss   [Last State]



                                              →←: Select Screen
                                              ↑↓: Select Item
                                              Enter: Select
                                              +/-: Change Opt.
                                              F1: General Help
                                              F2: Previous Values
                                              F3: Optimized Defaults
                                              F4: Save & Exit
                                              ESC: Exit

           Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```

Feature	Options	Description
High Precision Timer	Enabled Disabled	Enable or Disable the High Precision Event Timer.
Restore AC Power Loss	Power Off Power On Last State	Select AC power state when power is re-applied after a power failure.

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USB Configuration

Press <Enter> to access USB configuration settings.

```
        Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
                  Chipset

    USB Configuration                              Control the USB EHCI
                                                   (USB 2.0) functions.
    USB 2.0(EHCI) Support    [Enabled]             One EHCI controller
                                                   must always be enabled



                                                   _____

                                                   ↔: Select Screen
                                                   ↑↓: Select Item
                                                   Enter: Select
                                                   +/-: Change Opt.
                                                   F1: General Help
                                                   F2: Previous Values
                                                   F3: Optimized Defaults
                                                   F4: Save & Exit
                                                   ESC: Exit


        Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```

Feature	Options	Description
USB 2.0(EHCI) Support	Enabled Disabled	Control the USB EHCI (USB 2.0) functions. One EHCI controller must always be enabled

PCIE Express Configuration

```
            Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
                         Chipset

    PCI Express Configuration                      ▲  Enable or Disable the
    PCI Express Port 0        [Enabled]               PCI Express Port 0 in
      Hot Plug               [Enabled]                the Chipset.
      Speed                  [Auto]
    Extra Bus Reserved        1
    Reseved Memory            10
    Reseved Memory Alignm     1
    Prefetchable Memory       10
    Prefetchable Memory A     1
    Reserved I/O              4
                                                     ━━━━━━━━━━━━━━━━━━━━━━━━
                                                     ↔: Select Screen
    PCI Express Port 1        [Enabled]               ↑↓: Select Item
      Hot Plug               [Enabled]               Enter: Select
      Speed                  [Auto]                  +/-: Change Opt.
    Extra Bus Reserved        0                      F1: General Help
    Reseved Memory            10                     F2: Previous Values
    Reseved Memory Alignm     1                      F3: Optimized Defaults
    Prefetchable Memory       10                     F4: Save & Exit
    Prefetchable Memory A     1                    ▼ ESC: Exit

            Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```

Feature	Options	Description
PCI Express Port 0	Enabled Disabled	Enable or Disable the PCI Express Port 0 in the Chipset.
Hot Plug	Enabled Disabled	Enable or disable PCI Express Hot Plug.
Speed	Auto Gen 2 Gen 1	Configure PCIe Port Speed
Extra Bus Reserved	1	Extra Bus Reserved (0-3) for bridges behind this Root Bridge.
Reseved Memory	10	Reserved Memory Range for this Root Bridge.
Reseved Memory Alignment	1	Reseved Memory Alignment (0 - 31 bits)
Prefetchable Memory	10	Prefetchable Memory Range for this Root Bridge.
Prefetchable Memory Alignment	1	Prefetchable Memory Alignment (0 - 31 bits)

Reserved I/O	4	Reserved I/O (4K/8K/12K/16K/.../48K) Range for this Root
PCI Express Port 1	Enabled Disabled	Enable or Disable the PCI Express Port 1 in the Chipset.
Hot Plug	Enabled Disabled	Enable or disable PCI Express Hot Plug.
Speed	Auto Gen 2 Gen 1	Configure PCIe Port Speed
Extra Bus Reserved	0	Extra Bus Reserved (0-3) for bridges behind this Root Bridge.
Reseved Memory	10	Reserved Memory Range for this Root Bridge.
Reseved Memory Alignment	1	Reseved Memory Alignment (0 - 31 bits)
Prefetchable Memory	10	Prefetchable Memory Range for this Root Bridge.
Prefetchable Memory Alignment	1	Prefetchable Memory Alignment (0 - 31 bits)
Reserved I/O	4	Reserved I/O (4K/8K/12K/16K/.../48K) Range for this Root

Security

Use [<--] / [-->] to select [Security] setup screen. Under this screen, you may use [↑] [↓] to select an item you want to configure.

```
Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
 Main  Advanced  Chipset  Security  Boot  Save & Exit

 Password Description                          Set Administrator
                                               Password
 If ONLY the Administrator's password is set,
 then this only limits access to Setup and is
 only asked for when entering Setup.
 If ONLY the User's password is set, then this
 is a power on password and must be entered to
 boot or enter Setup. In Setup the User will
 have Administrator rights.
 The password length must be
 in the following range:                     ↔: Select Screen
 Minimum length         3                    ↑↓: Select Item
 Maximum length         20                   Enter: Select
                                             +/-: Change Opt.
                                             F1: General Help
                                             F2: Previous Values
 Administrator Password                      F3: Optimized Defaults
 User Password                               F4: Save & Exit
                                             ESC: Exit

        Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```
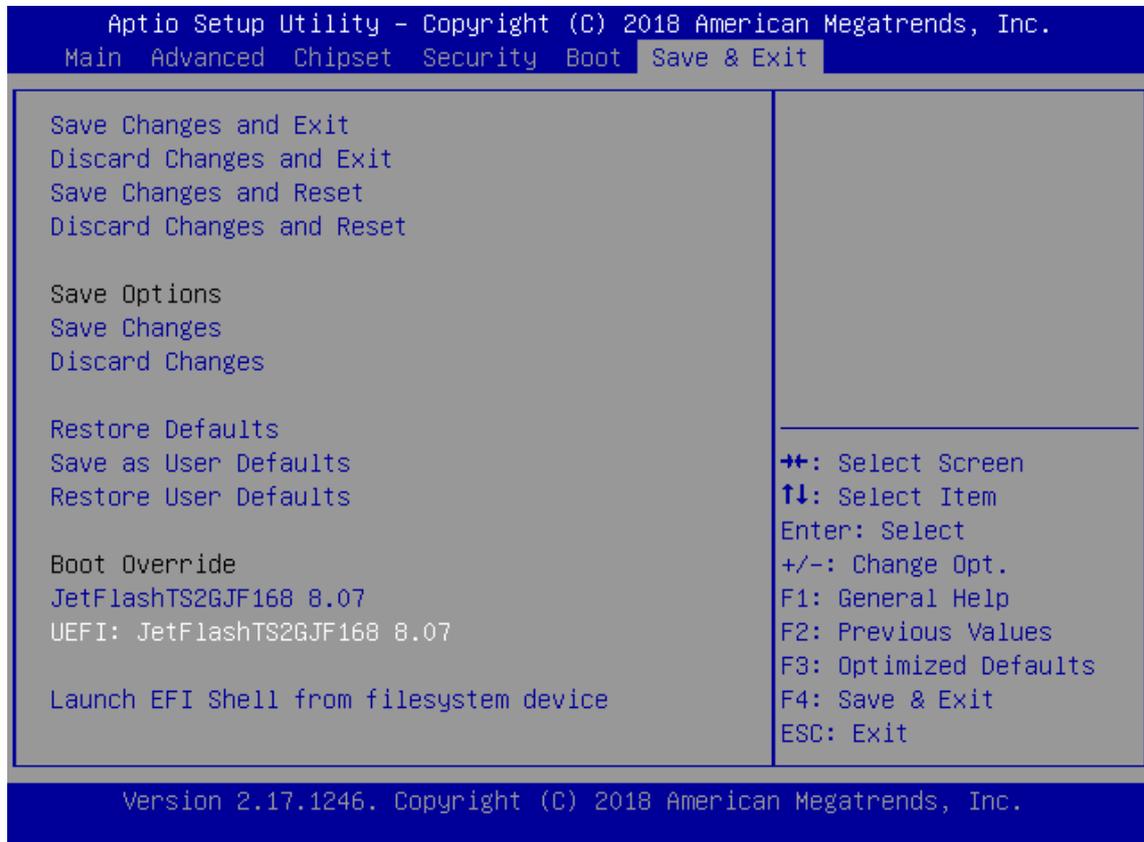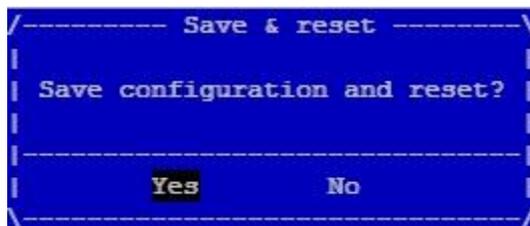
Feature	Description
Administrator Password	If ONLY the Administrator's password is set, it only limits access to Setup and is only asked for when entering Setup.
User Password	If ONLY the User's password is set, it serves as a power-on password and must be entered to boot or enter Setup. In Setup, the User will have Administrator rights.

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Boot

Use [<--] / [-->] to select [Boot] setup screen. Under this screen, you may use [↑] [↓] to select an item you want to configure.

```
Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
 Main  Advanced  Chipset  Security  Boot  Save & Exit

 Boot Configuration                              Number of seconds to
 Setup Prompt Timeout      1                     wait for setup
 Bootup NumLock State      [On]                  activation key.
                                                 65535(0xFFFF) means
 Quiet Boot                [Disabled]            indefinite waiting.


 Boot Option Priorities
 Boot Option #1            [JetFlashTS2GJF168 8.07]
 Boot Option #2            [UEFI: JetFlashTS2GJ...]
                                                 ─────────────────────
 Hard Drive BBS Priorities                       →←: Select Screen
                                                 ↑↓: Select Item
                                                 Enter: Select
                                                 +/-: Change Opt.
                                                 F1: General Help
                                                 F2: Previous Values
                                                 F3: Optimized Defaults
                                                 F4: Save & Exit
                                                 ESC: Exit

       Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```

Feature	Options	Description
Setup Prompt Timeout	1	The number of seconds to wait for setup activation key. 65535 means indefinite waiting.
Bootup NumLock State	On Off	Select the keyboard NumLock state
Quiet Boot	Disabled Enabled	Enables or disables Quiet Boot option.

● Choose boot priority from boot option group.

Save & Exit

Use [<--] / [-->] to select [Save & Exit] setup screen. Under this screen, you may use [↑] [↓] to select an item you want to configure.

```
       Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
        Main  Advanced  Chipset  Security  Boot  Save & Exit

        Save Changes and Exit
        Discard Changes and Exit
        Save Changes and Reset
        Discard Changes and Reset

        Save Options
        Save Changes
        Discard Changes

        Restore Defaults                              →←: Select Screen
        Save as User Defaults                         ↑↓: Select Item
        Restore User Defaults                         Enter: Select
                                                      +/-: Change Opt.
        Boot Override                                 F1: General Help
        JetFlashTS2GJF168 8.07                        F2: Previous Values
        UEFI: JetFlashTS2GJF168 8.07                  F3: Optimized Defaults
                                                      F4: Save & Exit
        Launch EFI Shell from filesystem device       ESC: Exit

        Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```

Save Changes and Reset

When Users have completed the system configuration changes, select this option to save the changes and exit from BIOS Setup in order for the new system configuration parameters to take effect. The following window will appear after selecting the "**Save Changes and Exit**" option is selected. Select "**Yes**" to Save Changes and Exit Setup.

```
/---------- Save & reset ----------\
|                                  |
| Save configuration and reset?    |
|                                  |
|----------------------------------|
|        Yes          No           |
\----------------------------------/
```

■ **Discard Changes and Exit**

Select this option to quit Setup without saving any modifications to the system

configuration. The following window will appear after the "**Discard Changes and Exit**" option is selected. Select "**Yes"** to Discard changes and Exit Setup.

```
┌─ Exit Without Saving ─┐
│                       │
│  Quit without saving? │
│                       │
├───────────────────────┤
│    Yes     No         │
│                       │
└───────────────────────┘
```
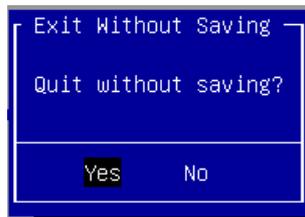
■ **Restore Defaults**

Restore default values for all setup options. Select "**Yes"** to load Optimized defaults.

```
┌─ Load Optimized Defaults ─┐
│                           │
│  Load Optimized Defaults? │
│                           │
├───────────────────────────┤
│     Yes      No           │
│                           │
└───────────────────────────┘
```
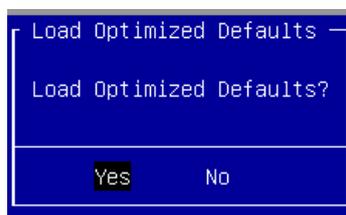
PS: The items under Boot Override were not same with image. It should depend on devices connected to this system

Appendix A: Programming Watchdog Timer

A watchdog timer is a piece of hardware that can be used to automatically detect system anomalies and reset the processor in case there are any problems. Generally speaking, a watchdog timer is based on a counter that counts down from an initial value to zero. The software selects the counter's initial value and periodically restarts it. Should the counter reach zero before the software restarts it, the software is presumed to be malfunctioning and the processor's reset signal is asserted. Thus, the processor will be restarted as if a human operator had cycled the power.

For sample watchdog code, see *WD* folder under Driver and Utility on the *Driver and Manual CD*.
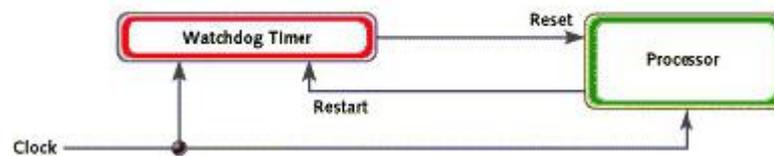
Appendix B: Setting up Console Redirection

Console redirection lets you monitor and configure a system from a remote terminal computer by re-directing keyboard input and text output through the serial port. These following steps illustrate how to use this feature. The BIOS of the system allows the redirection of console I/O to a serial port. With this configured, you can remotely access the entire boot sequence through a console port.

1. Connect one end of the console cable to console port of the system and the other end to serial port of the Remote Client System.

2. Configure the following settings in the BIOS Setup menu:

BIOS > Advanced > Remote Access Configuration > Serial Port Mode > [115200, 8 , n ,1]

3. Configure Console Redirection on the client system. The following is an example on Windows platform:

a. A. Click the start button, point to Programs > Accessories > Communications and select Hyper Terminal.

b. B. Enter any name for the new connection and select any icon.

c. Click OK.

d. From the "Connect to". Pull-down menu, select the appropriate Com port on the client system and click OK.

e. Select 115200 for the Baud Rate, None. for Flow control, 8 for the Data Bit, None for Parity Check, and 1 for the Stop Bit.

For items on the setup, please refer to the console redirection of the BIOS menu.

Appendix C: Programming Generation 3

LAN Bypass

The bypass function is used to link two independent Ethernet ports when the system crashes or powers off. This means if your system is equipped with a LAN Bypass function, a condition in your system will not interrupt your network traffic. Different from the previous two generations (Gen1 and Gen2), the Lanner Bypass Gen 3 employs a programming method to control the bypass function by software. There are typically two communication status for the bypass function, one is "Normal" and another is "Bypass" status. Furthermore, the Lanner Bypass software is capable to control the bypass status in the following 3 instances.

1. When the system powers off, it can be forced to enable the LAN Bypass function.
2. When the system is in the just-on state which is a brief moment when it powers up.
3. When the system is running

Please refer to the LAN_Bypass_Watchdog folder on the Driver and Manual CD.
Lanner bypass possess the following features:
1. Communication through SMBUS (I2C)
2. Independent bypass status control for each pair up to a total of 4 pairs
3. Lanner Bypass Modules can bypass systems Ethernet ports on a host system during three instances: Just-on (Just-on is the brief moment when the internal power supply turns on and booting process starts), System off, or upon software request (during run-time).
4. Software programmable bypass or normal mode
5. Software programmable timer interval:
- JUST-ON watchdog timer, used during JUST-ON, has timer setting of 5~1275 seconds of timer interval.
- Run-Time watchdog timer, used during run-time, has setting of 1~255 seconds of timer interval.
6. Multiple Watchdog Timers:
-Two for run-time: It is designed to give you a more variety of controls of the bypass on port basis. By using dedicated watchdogs for different pairs of bypass, you have the flexibility to manage the bypass status for them differently.
-One for just-on: It is designed to give you the precise control of the bypass during this phase. You can use this timer to delay enabling the bypass in just-on state.

For sample LAN bypass code and the Bypass Manual, see the *LAN_Bypass* folder on the *Driver and Manual CD or the Lanner Support Website at* *http://www.lannerinc.com/download-center/* and browse the *download center* and look for *Lanner LAN Bypass Watchdog User Manua*l under the *Accessories folder*.

Fro a description of the physical LAN ports equipped with this function, refer to *Front Panel Features* in *Chapter1 Introduction.*

Appendix D: Programming the LCM

The LCD panel module (LCM) is designed to provide real-time operating status and

configuration information for the system. For sample LCM code, see *LCM* folder in the *Driver and Manual CD*. The driver and the program library can also be found in the folder.

The system supports the following 2 kinds of LCM:

• Parallel Text-based LCM: The LCM connects to the motherboard's parallel port. The LCD screen can display 2 lines, 16 (or 20) characters per line.

• USB and Serial Text or Graphic-based LCM: Our next generation LCM. Lanner engineers design a common source code to be deployed on these two differently interfaced LCM modules. Jumpers are used to select between text and graphic types. See next section.

For Parallel Text-based LCM

Build

To build program source code on Linux platform, please use the following steps as a guideline:

1. Extract the source file:

tar -xzvf plcm_drv_v0XX.tgz

(0XX is the version of the program.)

2. Change directory to the extracted folder:

cd plcm_drv_v0XX

(0XX is the version of the program.)

Note: Apply our Parallel Text-based LCM to the environment of virtualization, please use the version 013 or above of the program.

3. Type "make" to build source code:

make

After compiling, the executable programs (plcm_test, plcm_cursor_char, ppdev_test, Test) and the driver (plcm_drv.ko) will appear in the program's folder.

Note: The OS supported by Parallel Text-based LCM function includes platforms based on Linux Kernel series 2.4.x, Linux Kernel series 2.6.x and Linux Kernel series 3.0.x or above.

Install

Install the driver and create a node in the /dev directory by:

#insmod plcm_drv.ko

#mknod /dev/plcm_drv c 248 0

Note:

If you cannot install the driver, check whether you have enabled the parallel port in the

BIOS setting . Once the message of "insmod": error inserting 'plcm_drv.ko': -1 Input/output

error" appears, please check that whether the major number is repeated or not. The major number needed with the "mknod" command varies with different software versions; please look up the Readme file for this value.

Execute

This section contains sample executable programs that you could test on your platform. It demonstrates some useful functionality that the LCM provides. Note that the installation needs to be completed before proceeding with these executions.

To execute, run the command:

#./plcm_test

Backlight Off/On turning off/on the backlight of the LCM display

Display Off turning off the LCM display

Cursor Off/On NOT showing/showing the cursor on the LCM display

Blinking off/On turning off/on the cursor blinking

Writing "Lanner@Taiwan" displaying the specific sentences

Reading "Lanner@Taiwan" reading the specific sentence

CGram Test displaying the user-stored characters

Keypad Testing Get the keypad input: the 1st button is read in as Left, the 2nd button is read in as Up, the 3rd button is read in as Right, and the 4th button is read in as Down)

Corresponding Commands for "plcm_test"

You can directly input the specific command to have its corresponding function worked on your LCM. This will be much more convenient once you would like to merely execute the keypad testing.

-**On**

— Turn on the backlight of the LCM display.

— To execute, please type:

#./plcm_test -On

-**Off**

— Turn off the backlight of the LCM display.

— To execute, please type:

#./plcm_test –Off

-**LCM1**

— Writing "Lanner@Taiwan" in line1.

— To execute, please type:

#./plcm_test -LCM1

-LCM2

— Writing "2013-11-05" in line 2.

— To execute, please type:

#./plcm_test -LCM2

Keypad

— Get the keypad input: the 1st button is read in as Left, the 2nd button is read in as Up, the

3rd button is read in as Right, and the 4th button is read in as Down.

— To execute, please type:

#./plcm_test –Keypad

Commands for plcm_cursor_char

This Run this command for cursor shift & single text update

 # ./plcm_cursor_char

Please read the options below

Insert line select Item 1 to set the starting line as either line 1 or line 2

Move cursor right select Item 2 to move the cursor to the right

Move cursor left select Item 3 to move the cursor to the left

Add a char select Item 4 to display a character on the

LCM screen

Clean display select Item 5 to clear up the LCM display

Leave select Item 6 to exit the program

Test

This program is a testing script and runs through the following procedures in sequence:

—**rmmod plcm_drv** (remove the kernel mode driver module)

— **insmod plcm_drv.ko** (install the kernel mode driver module)

— **./plcm_test** (execute the driver testing program)

— **./plcm_test -stop** (stop executing the driver testing program)

— **rmmod plcm_drv** (remove the kernel mode driver module)

To execute, please type:

#./Test

Virtualization Implemented by Parallel

Port Pass Through

By the utilization of the parallel port pass through, the Parallel Text-based LCM implements the

following three kinds of virtualization in the Guest OS.

- QEMU/KVM

- Xen

- VMWare Player

Here, we take the Fedora 20 x86_64 operation system for instance to explain 3 virtualization respectively for parallel port pass through. Use the procedures listed below for step-by-step instructions separately based on your case.

In case of QEMU/KVM or Xen, please use the following steps as a guideline to implement the virtualization :

(1) Make sure that the Guest OS has been installed.

(2) Add the following 4 lines into the xml file (for example, add to /etc/libvirt/qemu/<yourvirtualmachine>.xml in linux KVM):

<parallel type='dev'>

<source path='/dev/parport0'/>

<target port='0'/>

</parallel>

(3) Open a terminal in the Guest OS and then issue the following commands to install Linux Kernel drivers.

modprobe parport

modprobe parport_pc

modprobe ppdev

(4) Check that whether the /dev/parport0 exists or not. You may not find proper /dev/parport0 in the device list, please reconfirm the setup of xml file in the Guest OS.

(5) Reboot the Guest OS.

Note: It is necessary for you to install "insmod parport.ko", "parport_pc.ko" and "ppdev.ko" Linux Kernel drivers in virtualization environment before executing the "ppdev_test" testing program.

In case of VMWare Player, please use the following steps as a guideline to implement the virtualization:

(1) Make sure that the Guest OS has been installed.

(2) To set up the parallel port pass through, please enter VMWare Player's --> Virtual Machine Setting --> VMWare Player's setting page to select /dev/parport0 as parallel port device.

(3) Open a terminal in the Guest OS and then issue the following commands to install Linux Kernel drivers.

modprobe parport

modprobe parport_pc

modprobe ppdev

4) Check that whether the /dev/parport0 exists or not. You may not find proper "/dev/parport0" in the device list, please reconfirm the setup of VMWare Player's setting page described in Step 2.

(5) Reboot the Guest OS.

Note: It is still necessary for you to install "insmod parport.ko", "parport_pc.ko" and "ppdev.ko" Linux Kernel drivers in virtualization environment before executing the "ppdev_test" testing program.

Appendix E: Terms and Conditions

Warranty Policy

1. All products are under warranty against defects in materials and workmanship for a period of one year from the date of purchase.

2. The buyer will bear the return freight charges for goods returned for repair within the warranty period; whereas the manufacturer will bear the after service freight charges for goods returned to the user.

3. The buyer will pay for repair (for replaced components plus service time) and transportation charges (both ways) for items after the expiration of the warranty period.

4. If the RMA Service Request Form does not meet the stated requirement as listed on "RMA Service," RMA goods will be returned at customer's expense.

5. The following conditions are excluded from this warranty:

● Improper or inadequate maintenance by the • customer

● Unauthorized modification, misuse, or reversed • engineering of the product Operation outside of the environmental specifications for the product.

Requesting a RMA#

1. To obtain a RMA number, simply fill out and fax the "RMA Request Form" to your supplier.

2. The customer is required to fill out the problem code as listed. If your problem is not among the codes listed, please write the symptom description in the remarks box.

3. Ship the defective unit(s) on freight prepaid terms. Use the original packing materials when possible.

4. Mark the RMA# clearly on the box. 4.

Note: Customer is responsible for shipping damage(s) resulting from inadequate/loose packing of the defective unit(s). All RMA# are valid for 30 days only; RMA goods received after the effective RMA# period will be rejected.

RMA Service Request Form

When requesting RMA service, please fill out the following form.   Without this form enclosed, your RMA cannot be processed.

RMA No:			Reasons to Return: ▫ Repair(Please include failure details) ▫ Testing Purpose	
Company:			Contact Person:	
Phone No.			Purchased Date:	
Fax No.:			Applied Date:	
Return Shipping Address: _____ Shipping by: ▫ Air Freight ▫ Sea ▫ Express_____ ▫ Others:_____				

Item	Model Name	Serial Number	Configuration

Item	Problem Code	Failure Status

*Problem Code:

01:D.O.A.	07: BIOS Problem	13: SCSI	19: DIO
02: Second Time R.M.A.	08: Keyboard Controller Fail	14: LPT Port	20: Buzzer
03: CMOS Data Lost	09: Cache RMA Problem	15: PS2	21: Shut Down
04: FDC Fail	10: Memory Socket Bad	16: LAN	22: Panel Fail
05: HDC Fail	11: Hang Up Software	17: COM Port	23: CRT Fail
06: Bad Slot	12: Out Look Damage	18: Watchdog Timer	24: Others (Pls specify)

Request Party   **Confirmed By Supplier**

_____   _____
Authorized Signature / Date   Authorized Signature / Date