User Manual

EC-15i5

All-in-one Touch POS Terminal

Overview

Thank you for purchasing the EC-15i5 all-in-one touch POS terminal, EC-Line is committed to continuously improve product quality and provide better after-sales service. In order to take full advantage of our devices, we strongly recommend that you take the time to read this manual before going into software installation.

Note: Information in this manual may change without prior notice.

1. Safety Information

1.1 Before plug in the product, please make sure the power you provide meets the power requirements (such as voltage, frequency); Make sure the ground terminal of the power outlet is working properly

1.2 Lightning may damage this product. During lightning storms, unplug the network cable, power cable and any other connections

1.3 Turn off power before connecting any devices (except USB devices) to the terminal

1.4 Do not attempt to open the chassis. You may be hurt by electric shock. For service, call your place of purchase

1.5 Do not spill liquid on the terminal. Do not place any objects into the ventilation holes of this product. It may cause short-circuit of the internal components and cause a fire or electric shock

1.6 After the computer is stored below temperature of 10 °C, please place the machine in room temperature (10 - 35 °C) in the original packing for at least two hours to allow the terminal to restore to room temperature before operation. This is to avoid condensation that might bring electrical damage

1.7 Keep the terminal clean, dry, and away from dust, moisture and direct sunlight

1.8 Do not use harsh chemicals or strong cleaning solvents to clean the monitor screen. Wipe it clean with a soft terry cloth applied with a mild solution

1.9 Do not share the same power outlet with high power electrical appliances keep distance from high level magnetic interference

1.10 Do not the use sharp pointed objects to work with the touch screen to avoid damage to the screen.

When the following occurs:

1. Liquid gets inside the POS terminal;
2. Accidental physical damage;
3. POS terminal produces a burning smell; immediately disconnect the power supply, unplug the power cord, and contact a qualified service technician.

2. Electromagnetic Compatibility Statement

CE MARK

This device compiles with the requirements of the EEC directive 89/336/EEC with regard to “Electromagnetic compatibility” and 73/23/EEC “Low Voltage Directive”

This device complies with part 15 of the FCC rules. Operation is subject to conditions:

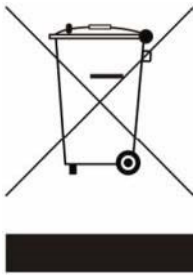
(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that undesired operation.

CAUTION ON LITHIUM BATTERIES

There is adapter of explosion if the battery is replaced incorrectly. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer’s instructions.

LEGISLATION AND WEEE SYMBOL



2002/96/EC Waste Electrical and Electronic Equipment Directive on the treatment, collection, recycling and disposal of electric and electronic devices and their components.

The crossed dustbin symbol on the device means that it should not be disposed of with other household wastes at the end of its working life. Instead, the device should be taken to the waste collection centers for activation of the treatment, collection, recycling and disposal procedure.

To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract.

This product should not be mixed with other commercial wastes for disposal.

TRADEMARK

Intel®, Pentium® and MMX are registered trademarks of Intel® Corporation.

Microsoft® and Windows® are registered trademarks of Microsoft Corporation.

3. Specifications

Main Board

CPU	Support IVY & Sandy Bridge Intel® Core i5 Dual Cores CPU
Chipset	Intel® HM76 Express Chipset
System Memory	2x SO-DIMM (204pin) Slot, DDR3 1333 MHz, Max 8GB
Graphic Memory	Intel® HD 4000 Series Graphics

LCD Panel

Panel Size	15”
Maximum Resolution	1024 x 768
Brightness	250 cd/m4
Contrast Ratio	700 : 1
Response Time	16 ms
View Angles (H/V)	150 / 120
Touch Panel	Five Wires Resistive Touch or Projected Capacitive Touch

Storage

HDD	2.5” SATAIII /SATAIII interface x 2

Expansion

Socket	Mini-PCIE or One Msata II X 2

Power

Power Adaptor	Input AC 100-240V 2.5A 50/60Hz, Output DC 12V 6.66A

I / O

USB	USB 2.0 X 4, USB 3.0 X 2
Serial	COM ports with DB-9 Connector X 4
	COM1, COM2 with 0V / 5V / 12V power selectable
	COM3, COM4 with 0V / 5V / 12V power selectable
Network	Realtek 8111F Gigabit Fast Ethernet controllers X 1
Video	15 Pin VGA Port X 1
PS/2	1
Audio	Earphone X 1; Microphone X 1
Cash Drawer (DK Port)	RJ-11 X 1

Control / Indicator

Power Button	1
LED Indicators	Power (Red)

Optional Peripherals

Magnetic Card Reader	ISO Track 1/2/3, USB interface
VFD customer display	2 x 20 characters, RS-232 interface

Dimensions

Gross Dimension	358(W) X 223.9(L) X 309.6(H) mm

Environment

Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)
Storage Temperature	- 20°C ~ 60°C (- 4°F ~ 140°F)
Operating Humidity	10% - 80% RH non condensing
Storage Humidity	10% - 80% RH non condensing

Product Safety

Certificates	FCC Class A / CE / RoHS

4. Items Checklist

If any item is missing, contact your sale agent immediately.

Take the system unit out from the carton. Remove the unit by carefully holding the foam inserts and remove slowly to protect the system. The following items should be found in the carton:

CD that including all driver and manual

2. The System

3. Power Adaptor

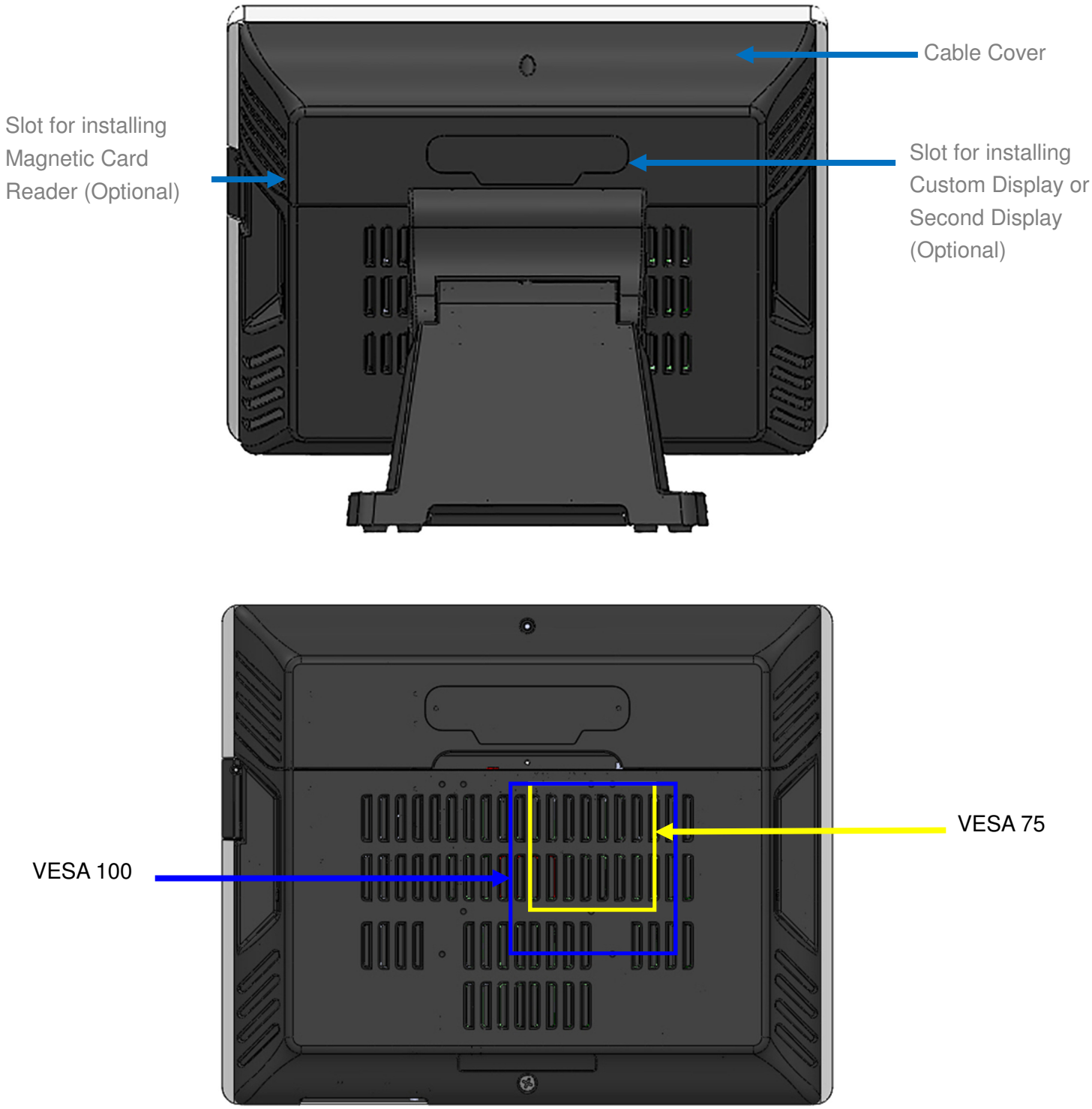
4. AC Power Cord

5. About your system

Unplug the AC power of the adapter before opening any part of the system since the standby power is always on whenever the adapter is plugged in. It may cause permanent damage to your system when you open any part of it.

Front View

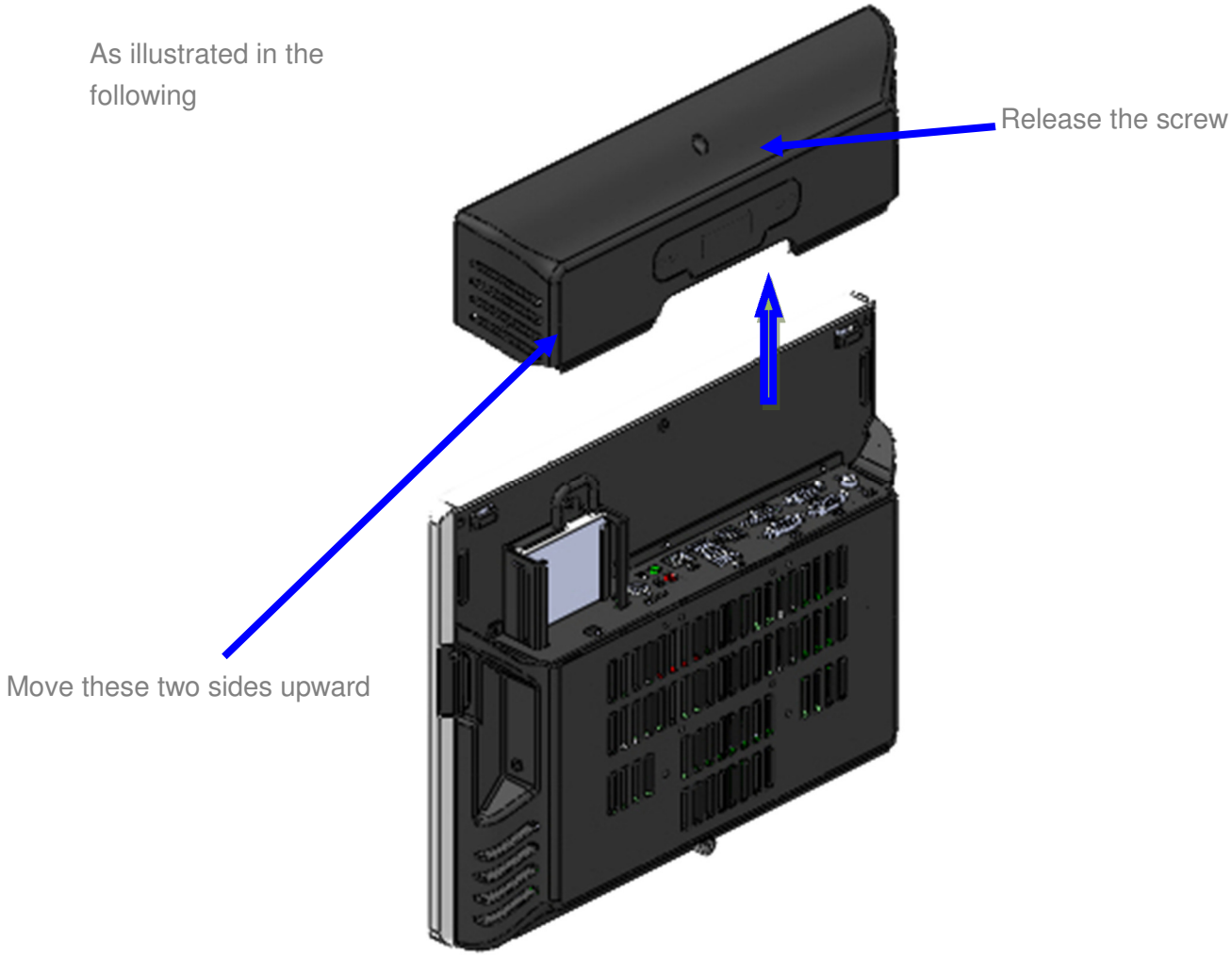
Rear View


Cable Cover
Slot for installing Magnetic Card Reader (Optional)
Slot for installing Custom Display or Second Display (Optional)
VESA 100
VESA 75

How to open the connector bezel

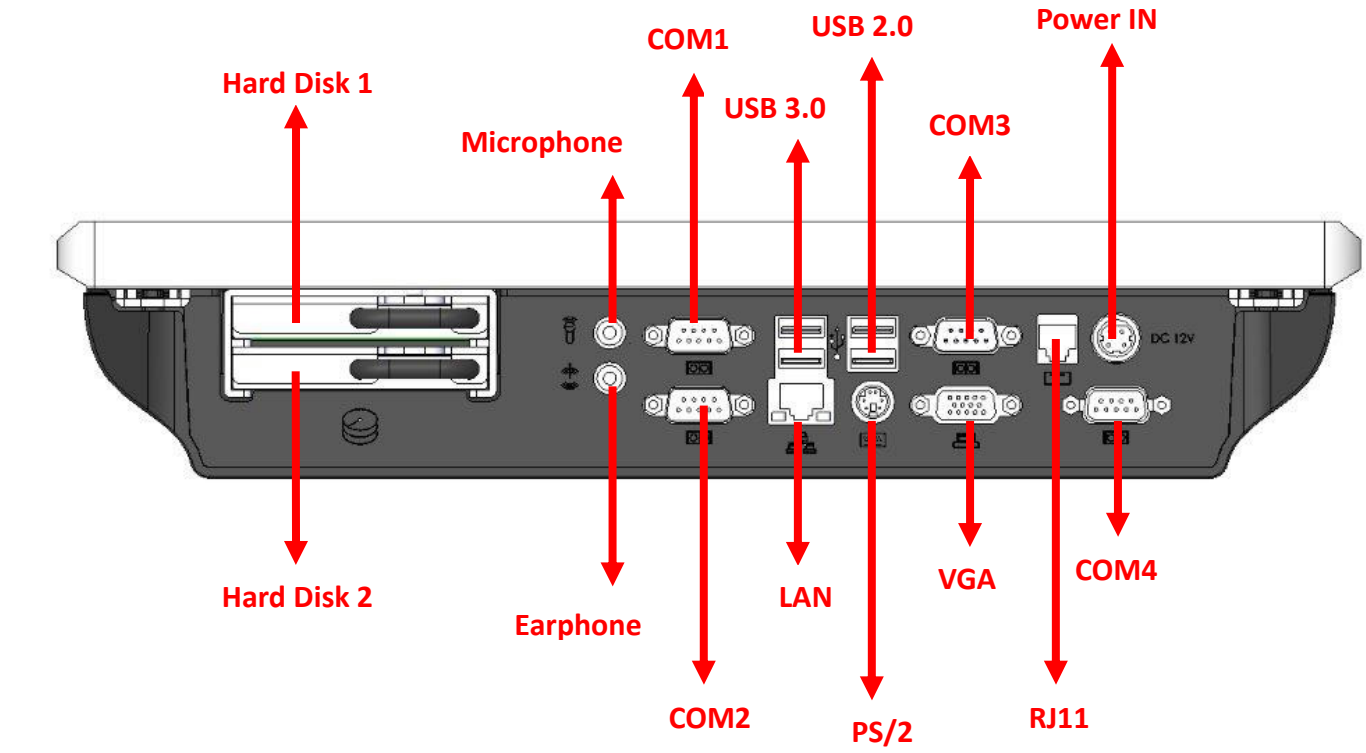
Unplug the AC power of the adapter before opening any part of the system since the standby power is always on whenever the adapter is plugged in. It may cause permanent damage to your system when you open any part of it.

As illustrated in the following

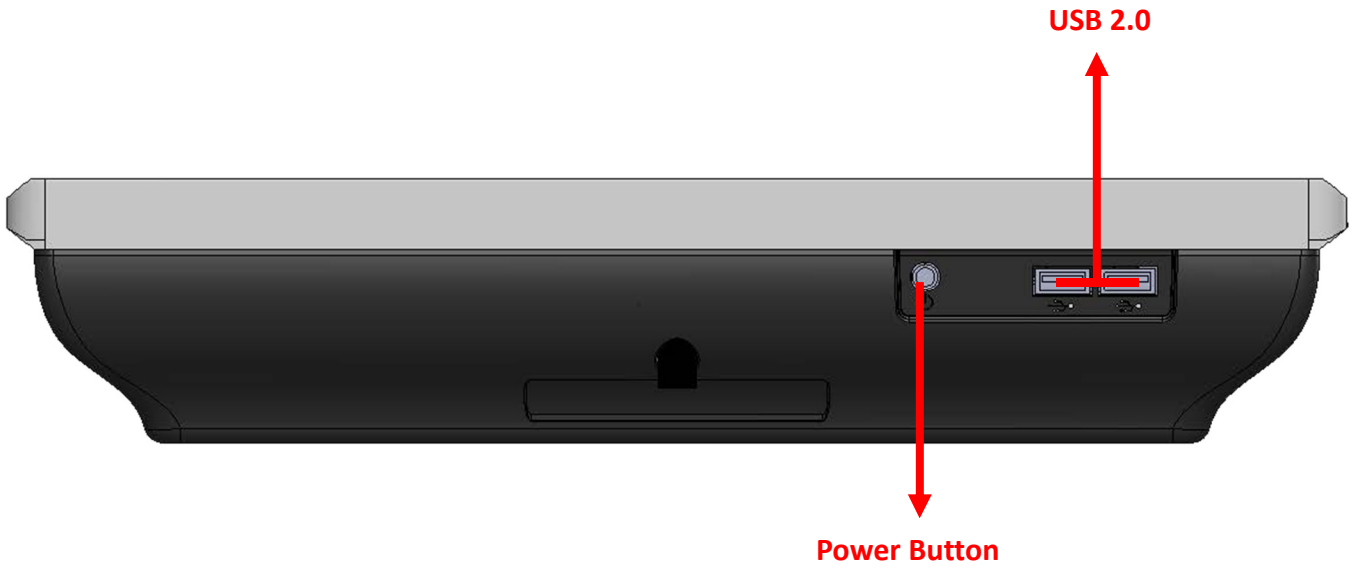


The connector panel

1. TOP of machine



2. Bottom of machine

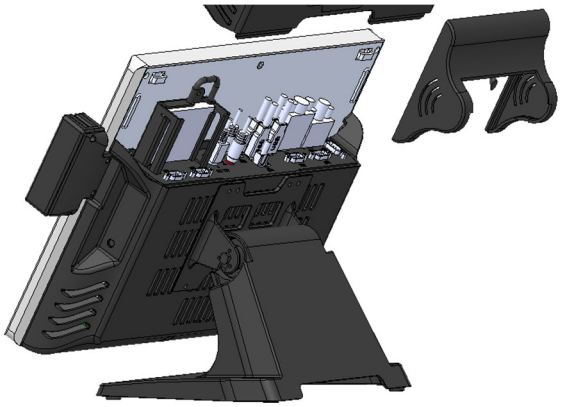


6. Setting up your System

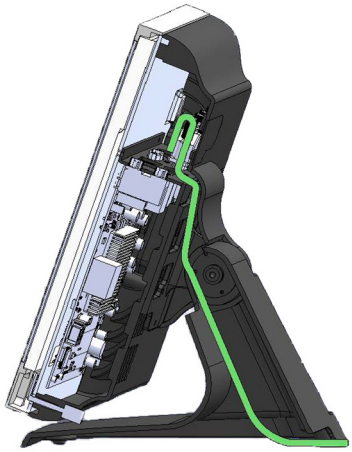
Unplug the AC power of the adapter before opening any part of the system since the standby power is always on whenever the adapter is plugged in. It may cause permanent damage to your system when you open any part of it.

Installing Peripherals

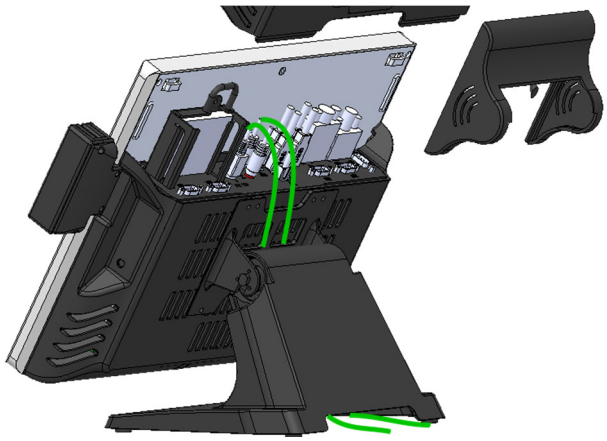
To install the peripheral's cables, please follow the below.



2. Open the cable cover and hinge cover



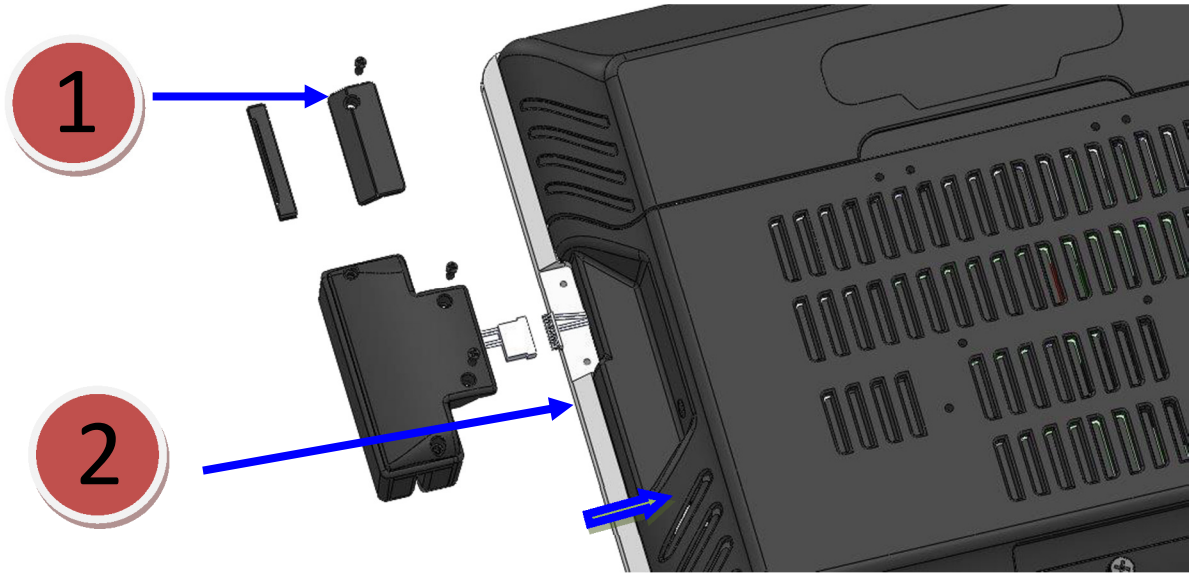
1. Follow the way of drawing to wiring



3. Plug in all the cable on the ports

4. Through the cable between hinge and foot

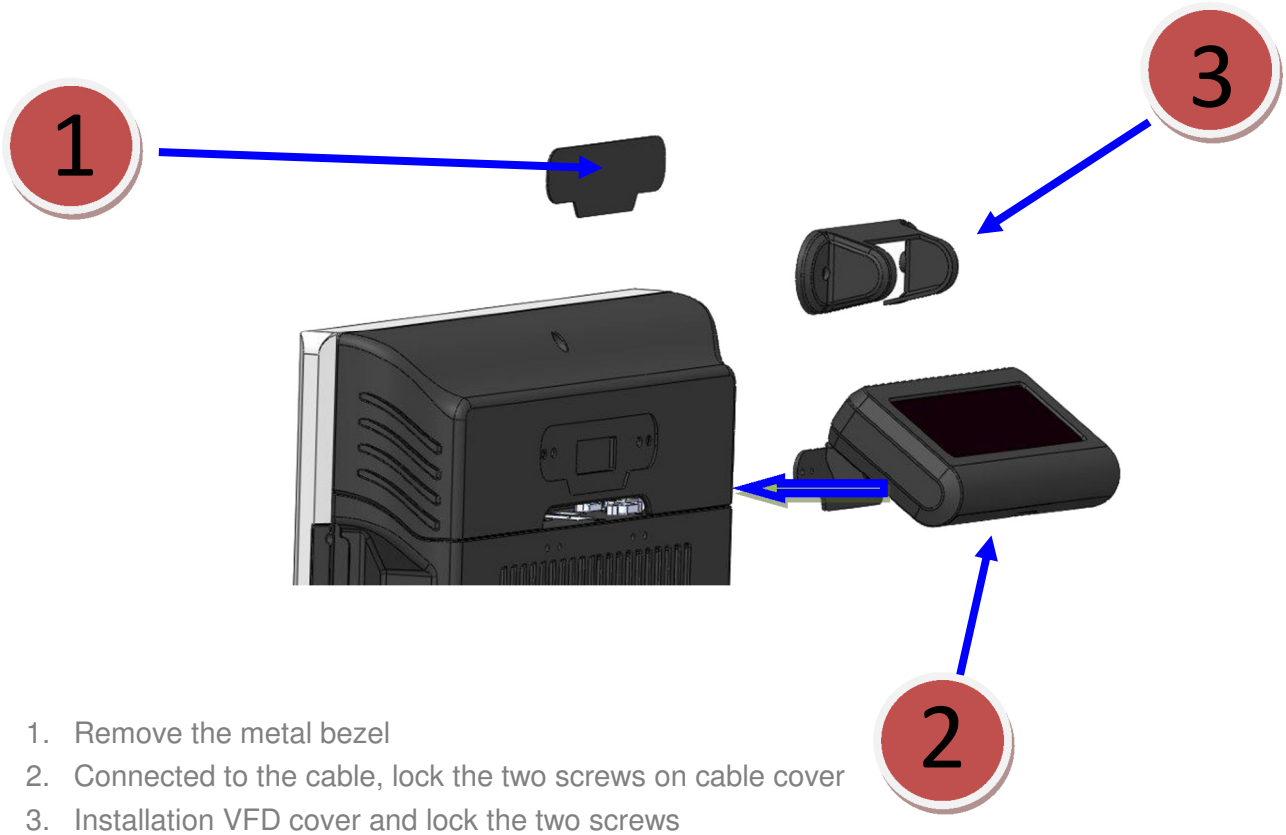
Installing Magnetic Card Reader (MSR)



1. Remove the rubber mat. Loosen the screw and remove the MSR cover

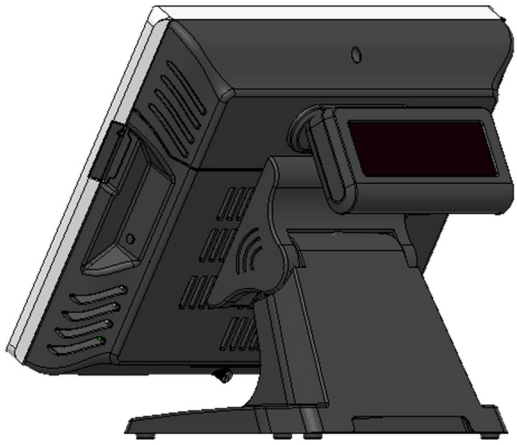
2. Connected to the cable on the MSR and host, then lock two screws

Installing Customer Display

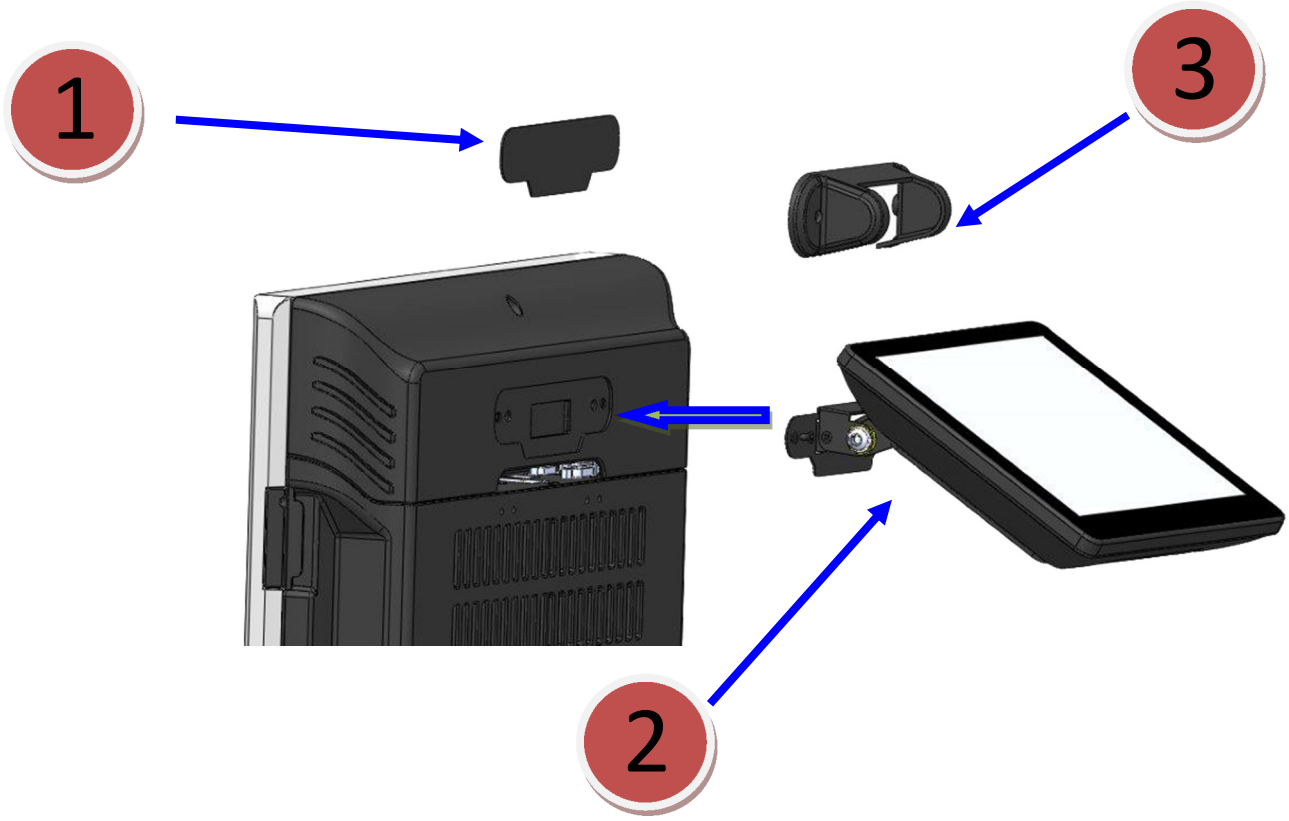


1. Remove the metal bezel
2. Connected to the cable, lock the two screws on cable cover
3. Installation VFD cover and lock the two screws

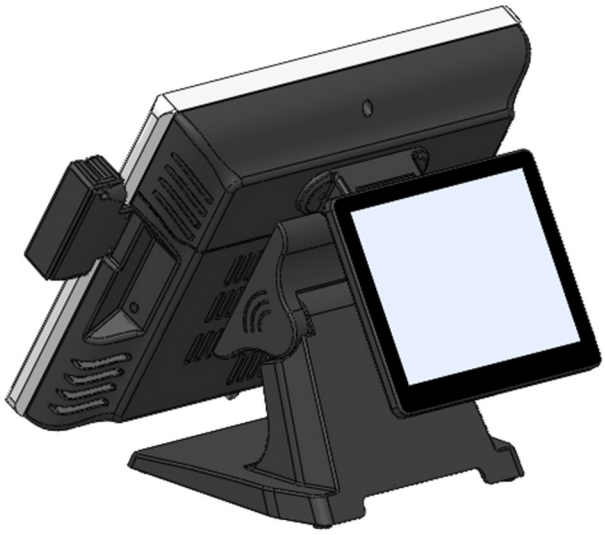
Note: Provides VFD DC + 5V .
If use COM3, see Page 72, COM4, see Page 71
If use COM1, COM2, change UART1 and UART2 RI Function , see Page 32



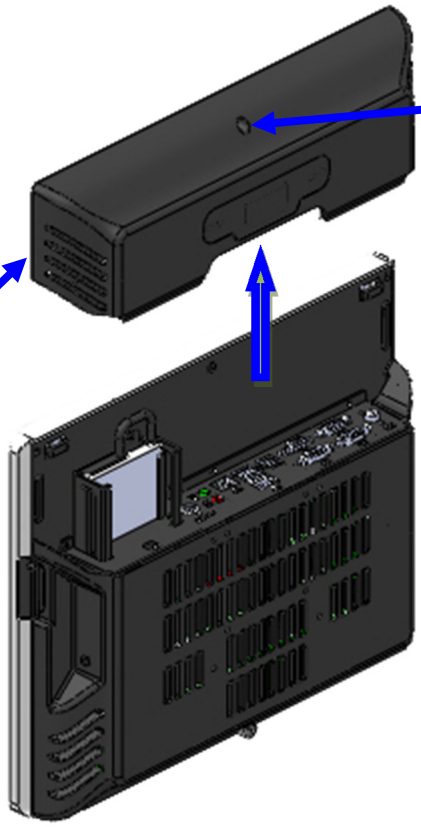
Installing Second Display



1. Remove the metal bezel
2. Connected the cable, lock the two screws on cable cover
3. Installation VFD cover and lock the two screws

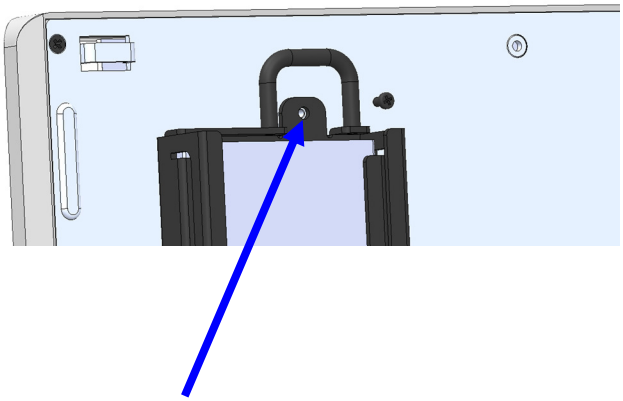


Replace and Installing Hard Disk

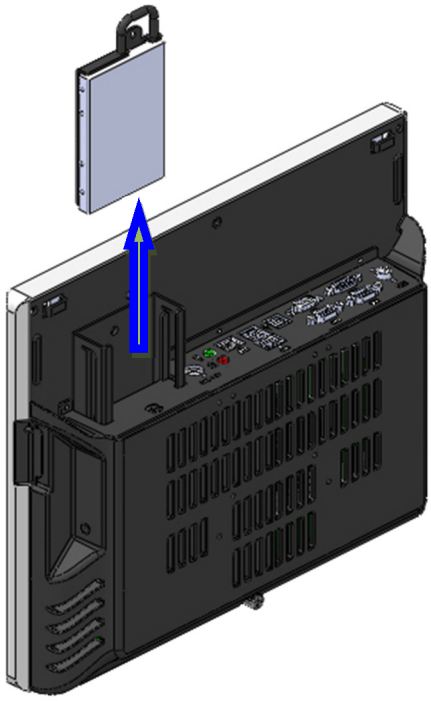


1. Release the screw

2. Move these two sides upward

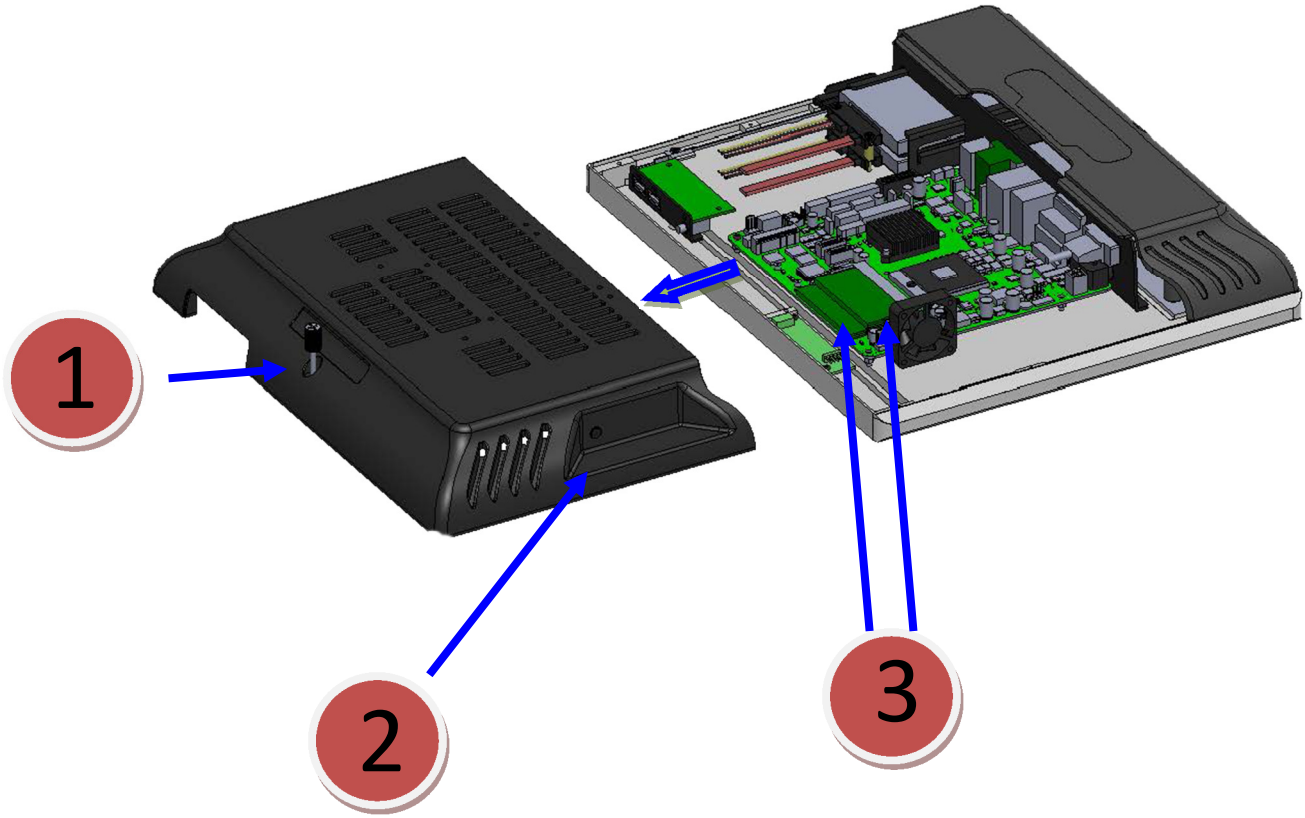


3. Release the screw



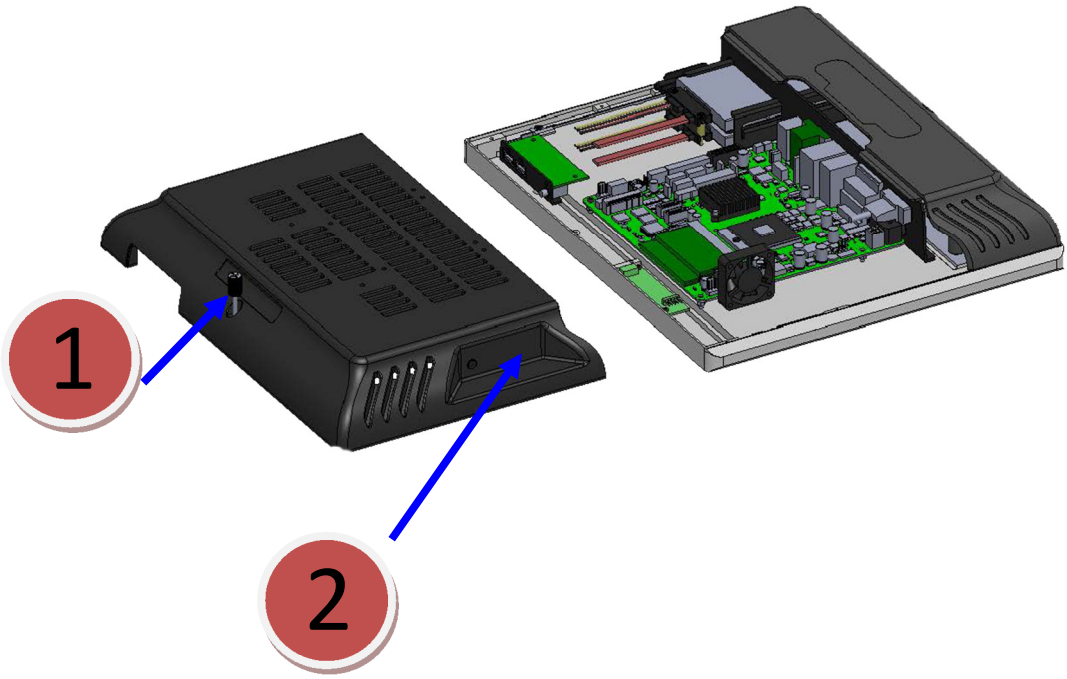
4. Grab the handle and pull up or down Remove or Installation hard disk

Replace and Installing Memory

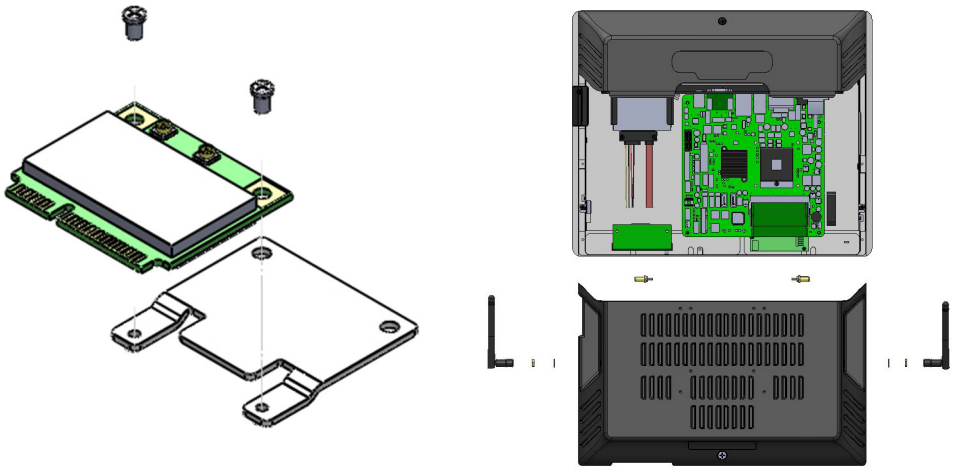


1. Release the screw
2. Grasp the both sides, and pulled down the back cover
3. Replace or Install the memory

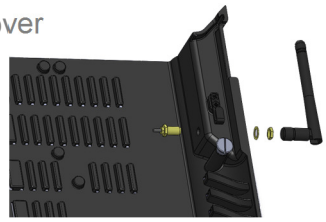
Installing WIFI Card and Antenna



1. Release the screw
2. Grasp the both sides, and pulled down the back cover



5. Install WIFI Card
   Lock 2 screws
3. Remove the plastic pad on the both sides of the Main cover
4. Install Antenna



7. BIOS Setting

Introduction

The following is to describe the settings in the AMI UEFI BIOS Setup program on this motherboard. The Setup program allows users to modify the basic system configuration and save these settings to NVRAM.

UEFI BIOS determines what a computer can do without accessing programs from a disk. This system controls most of the input and output devices such as keyboard, mouse, serial ports and disk drives. BIOS activates at the first stage of the booting process, loading and executing the operating system. Some additional features, such as virus and password protection or chipset fine-tuning options are also included in UEFI BIOS.

The rest of this manual will to guide you through the options and settings in UEFI BIOS Setup.

Plug and Play Support

This AMI UEFI BIOS supports the Plug and Play Version 1.0A specification

EPA Green PC Support

This AMI UEFI BIOS supports Version 1.03 of the EPA Green PC specification

ACPI Support

AMI ACPI UEFI BIOS support Version 1.0/2.0 of Advanced Configuration and Power interface specification (ACPI). It provides ASL code for power management and device configuration capabilities as defined in the ACPI specification, developed by Microsoft, Intel and Toshiba

PCI Bus Support

This AMI UEFI BIOS also supports Version 2.3 of the Intel PCI (Peripheral Component Interconnect) local bus specification

DRAM Support

DDR3 SDRAM (Double Data Rate III Synchronous DRAM) is supported

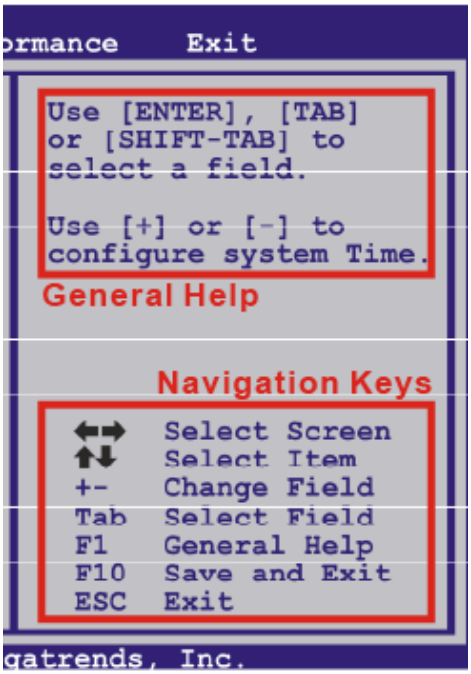
Supported CPUs

This AMI UEFI BIOS supports the latest CPU

Using Setup

When starting up the computer, press <Del> during the Power-On Self-Test (POST) to enter the UEFI BIOS setup utility. In the UEFI BIOS setup utility, it can find the General Help description at the top right corner, and this is providing a brief description of the selected item. Navigation Keys for

that particular menu are at the bottom right corner, and you can use these keys to select item and change the settings



▸ **Note**

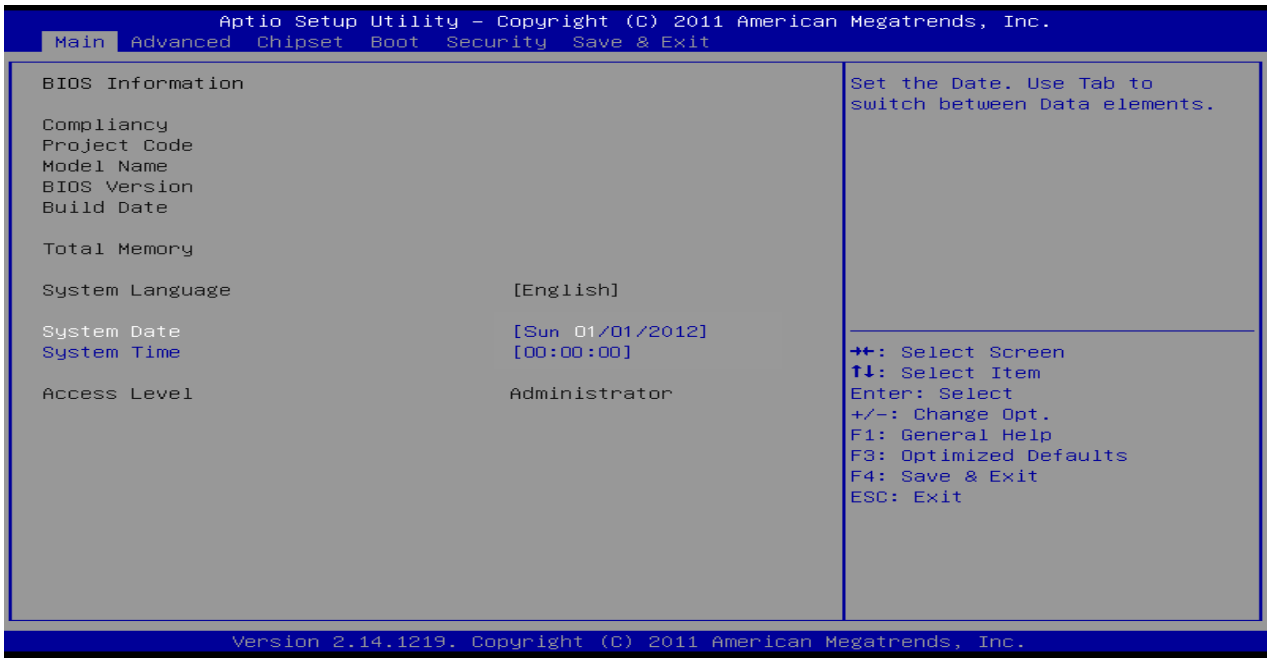
- The default UEFI BIOS settings apply for most conditions to ensure optimum performance of the motherboard. If the system becomes unstable after changing any settings, please load the default settings to ensure system's compatibility and stability. Use Load Setup Default under the Exit Menu

- For better system performance, the UEFI BIOS firmware is being continuously updated. The UEFI BIOS information described in this manual is for your reference only. The actual UEFI BIOS information and settings on board may be slightly different from this manual

- The content of this manual is subject to be changed without notice. We will not be responsible for any mistakes found in this user's manual and any system damage that may be caused by wrong-settings

➢ Main Menu

Once enter AMI UEFI BIOS Setup Utility, the Main Menu will appear on the screen as below to provide an overview of the basic system information.



BIOS Information

Shows system information including UEFI BIOS version, model name, marketing name, built date, etc.

Memory Frequency

Shows the system memory frequency

Total Memory

Shows system memory size, VGA shard memory will be excluded

System Date

Set the system date. Note that the ‘Day’ automatically changes when you set the date

System Time

Set the system internal clock

Access Level

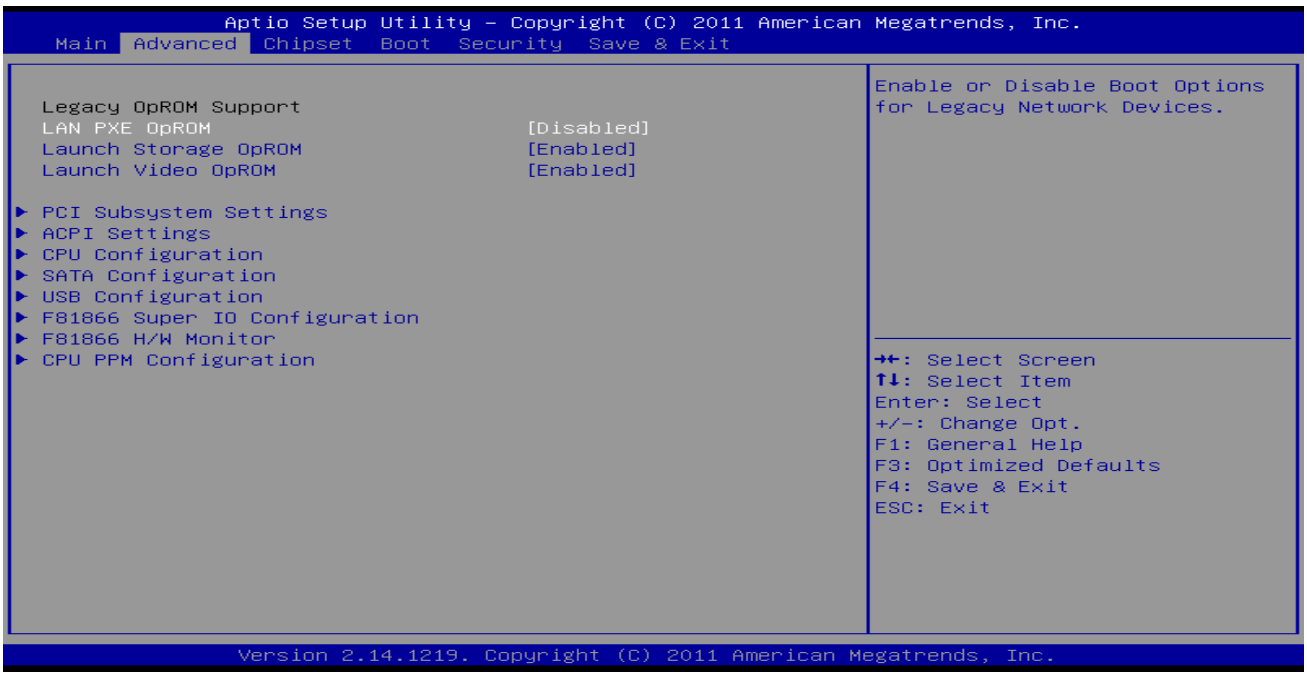
Shows the access level of current user

Advanced Menu

The Advanced Menu allows you to configure the settings of CPU, Super I/O, Power Management, and other system devices

▸ **Note**

- Beware of that setting inappropriate values in items of this menu may cause system to malfunction
- The options and default settings might be different by RAM or CPU models



Launch PXE OpROM

Enables or disables boot options for legacy network devices with option ROM.

Options: Disabled (Default) / Enabled

Launch Storage OpROM

Enables or disables boot options for legacy mass storage devices with option ROM.

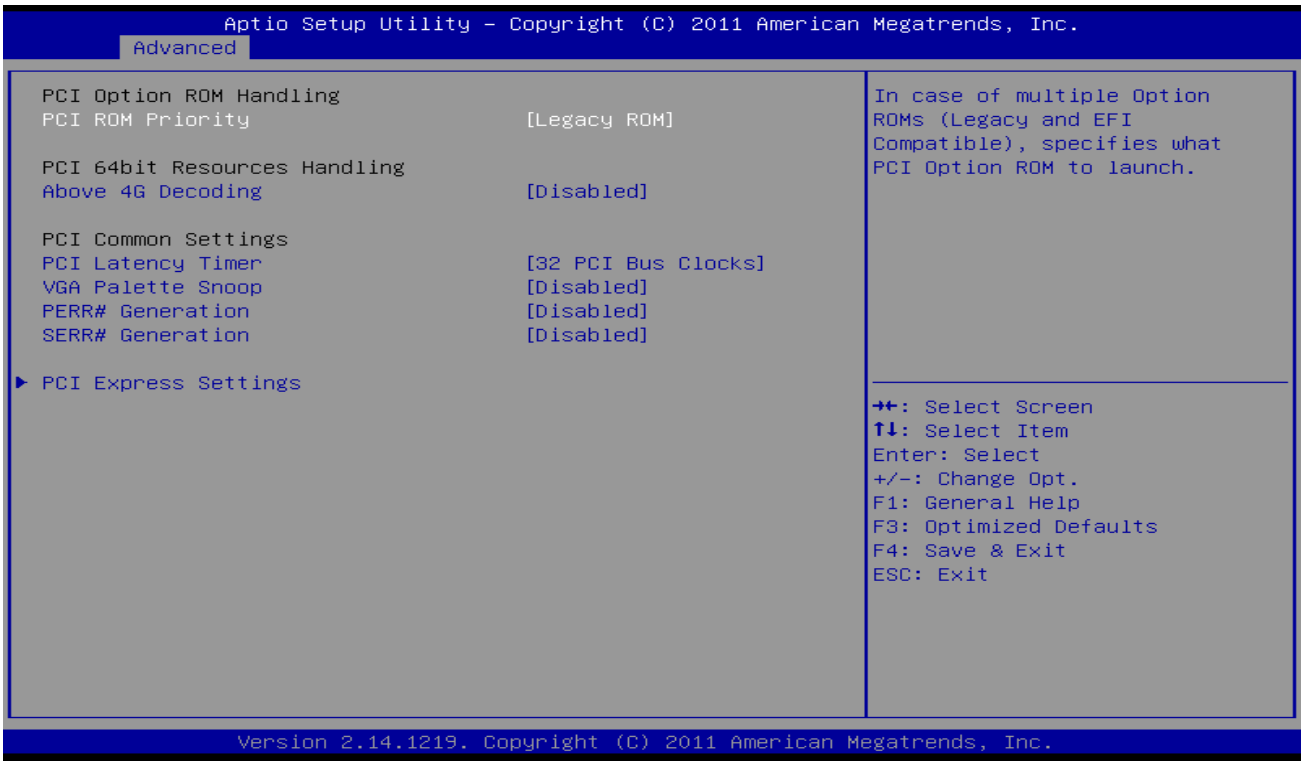
Options: Enabled (Default) / Disabled

Launch Video OpROM

Enables or disables execution of the legacy option ROM for video devices.

Options: Enabled (Default) / Disabled / Enabled when no UEFI Driver

PCI Subsystem Settings



PCI ROM Priority

In case of multiple option ROMs (Legacy and EFI Compatible), it specifies what PCI Option ROM to launch

Options: Legacy ROM (Default) / EFI Compatible ROM

Above 4G Decoding

Enables or disables 64bit capable device to be decoded in above 4G address space (only if system support 64 bit PCI decoding)

Options: Disabled (Default) / Enabled

PCI Latency Timer

Set the value to be programmed into PCI Latency Timer Register

Options: 32 PCI Bus Clocks (Default) / 64 PCI Bus Clocks / 96 PCI Bus Clocks / 128 PCI Bus Clocks / 160 PCI Bus Clocks / 192 PCI Bus Clocks / 224 PCI Bus Clocks / 248 PCI Bus Clocks

VGA Palette Snoop

Enables or disables VGA palette registers snooping

Options: Disabled (Default) / Enabled

PERR# Generation

Enables or disables PCI device to generate SERR#

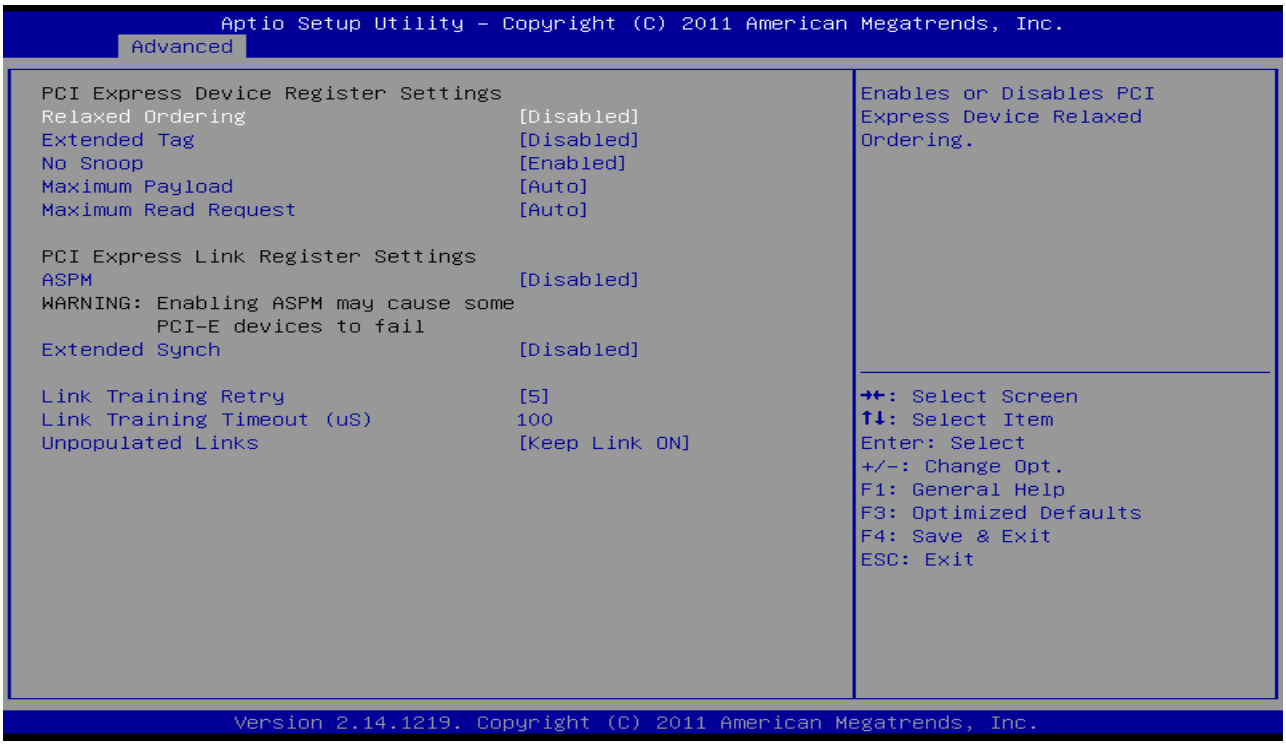
Options: Disabled (Default) / Enabled

SERR# Generation

Enables or disables PCI device to generate SERR#

Options: Disabled (Default) / Enabled

PCI Express Settings



Relaxed Ordering

Enables or disables PCI express device no snoop option

Options: Disabled (Default) / Enabled

Extended Tag

Enabled allows device to use 8-bit tab field as a requester

Options: Disabled (Default) / Enabled

No Snoop

Enables or disables PCI Express Device no snoop option

Options: Enabled (Default) / Disabled

Maximum Payload

Set maximum payload of PCI Express Device or allows System BIOS to select the value
Options: Auto (Default) / 128 Bytes / 256 Bytes / 512 Bytes / 1024 Bytes / 2048 Bytes / 4096 Bytes

Maximum Read Request

Set maximum read request size of PCI express device or allows System BIOS to select the value
Options: Auto (Default) / 128 Bytes / 256 Bytes / 512 Bytes / 1024 Bytes / 2048 Bytes / 4096 Bytes

ASPM

Set the ASPM (Active State Power Management Settings) Level: Force L0 – Force all links to LO State; Auto – BIOS auto configures; Disabled – Disables ASPM
Options: Disabled (Default) / Auto / Force L0s

Extend Synch

Enabled allows generation of extended synchronization patterns
Options: Disabled (Default) / Enabled

Link Training Retry

Defines number of retry attempts software will take to retrain the link if previous training attempt was unsuccessful
Options: 5 (Default) / Disabled / 2 / 3

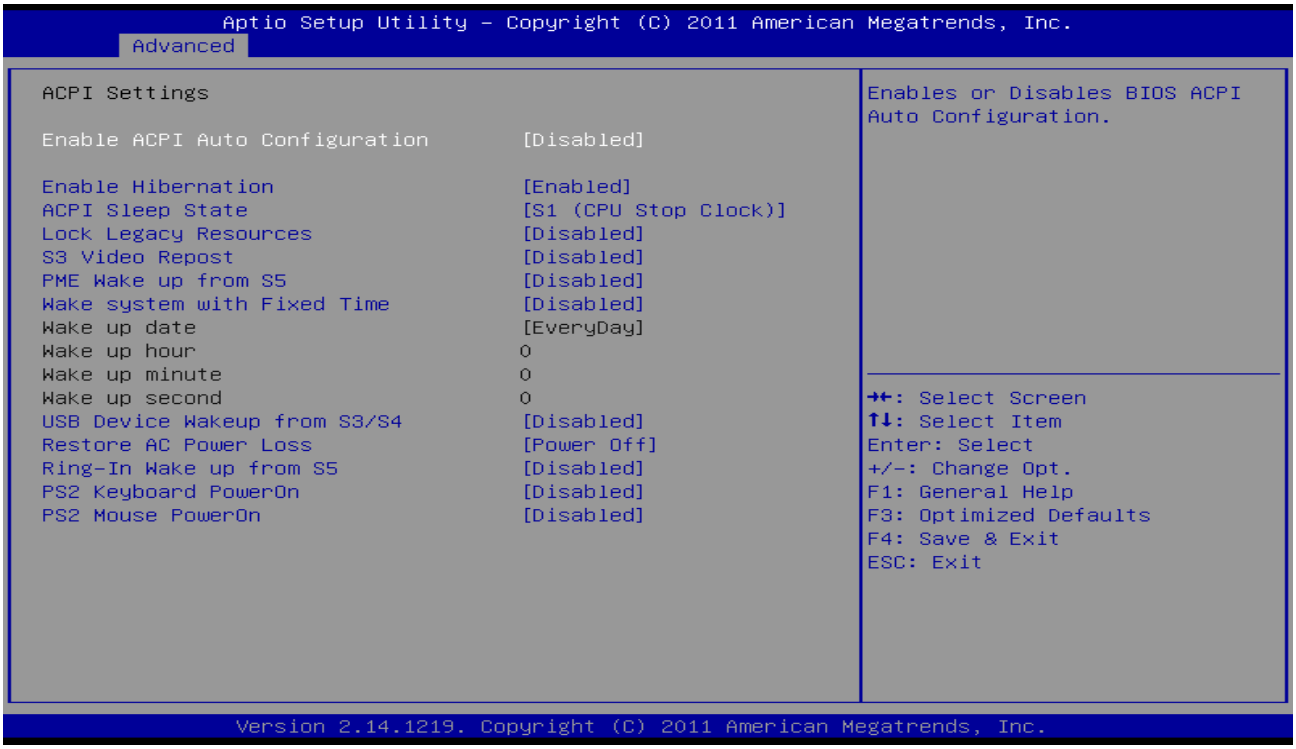
Link Training Timeout (uS)

Defines number of microseconds software will wait before polling 'Link Training' bit in link status register. Value range is from 10 to 1000
Options: 100 (Default)

Unpopulated Links

In order to save power, software will disable unpopulated PCI Express links, if this option set to 'Disable Link'
Options: Keep Link ON (Default) / Disable Link

ACPI Settings



Enable ACPI Auto Configuration

Enables or disables BIOS ACPI auto configuration

Options: Disabled (Default) / Enabled

Enable Hibernation

Enables or disables system ability to hibernate (OS/S4 sleep state) / this option may be not effective with some OS

Options: Enabled (Default) / Disabled

ACPI Sleep State

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

Options: S1 (CPU Stop Clock) (Default) / Suspend Disabled / S3 (Suspend to RAM)

Lock Legacy Resources

Enables or disables lock of legacy resources

Options: Disabled (Default) / Enabled

S3 Video Repost

Enables or disables S3 Video Repost

Options: Disabled (Default) / Enabled

PME Wake up from S5

Enables the system to wake from S5 using PEM event

Options: Disabled (Default) / Enabled

Wake system with Fixed Time

Enables or disables the system to wake on by alarm event. When this item is enabled, the system will wake on the hr::min::sec specified

Options: Disabled (Default) / Enabled

Wake up date

Choose which date the system will boot up

Wake up hour / **Wake up minute** / **Wake up second**

Choose the system boot up time, input hour, minute and second to specify

USB Device Wakeup from S3 / **S4**

Enable or disabled the USB resume from S3 / S4 function

Options: Disabled (Default) / Enabled

Restore AC Power Loss

Enables the system to wake from S5 using Ring-In event

Options: Power Off (Default) / Power On / Last State

Ring-In Wake up from S5

Enables the system to wake from S5 using Ring-In event

Options: Disabled (Default) / Enabled

PS2 Keyboard PowerOn

Control the keyboard power on function

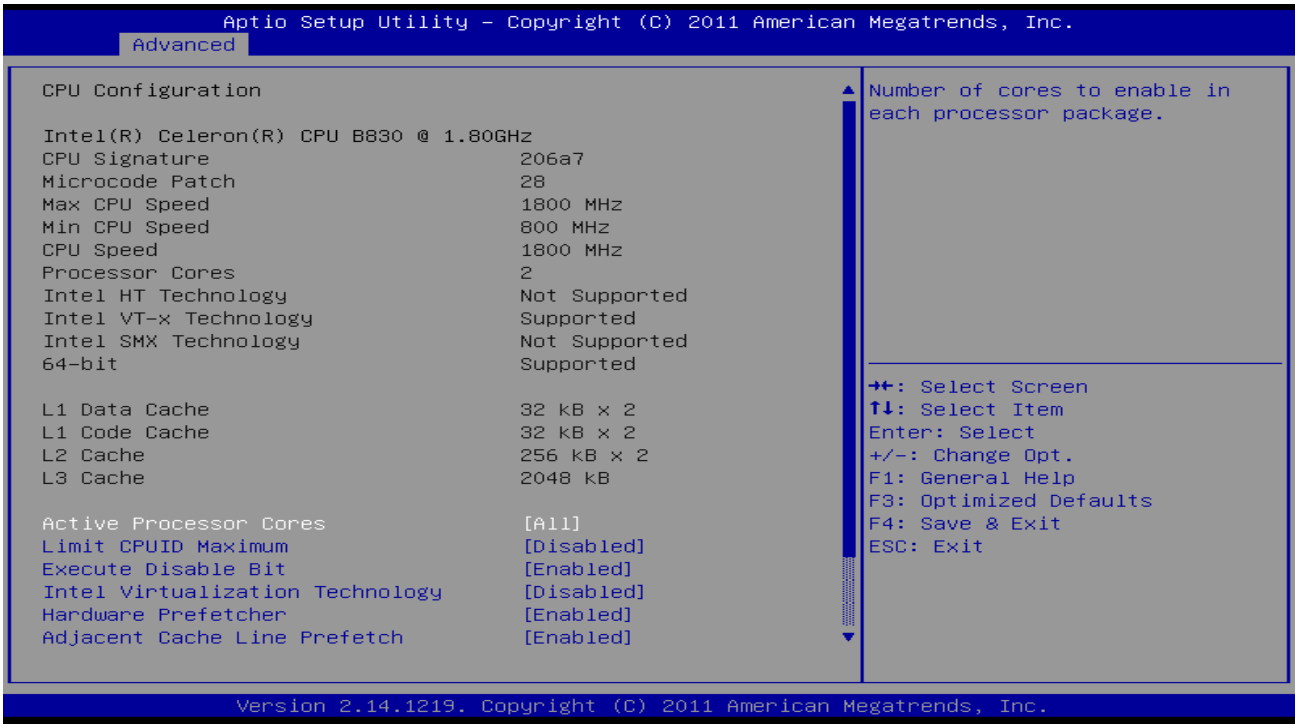
Options: Disabled (Default) / Ctrl + Esc / Ctrl + F1 / Ctrl + Space / Any Key / Wake Key / Power Key / Ctrl + Alt + Space / Space

PS2 Mouse PowerOn

Control the mouse power on function

Options: Disabled (Default) / Enabled

CPU Configuration



Active Processor Cores

Set number of cores to enable in each processor package

Options: All (Default) / 1 / 2 / 3

Limit CPUID Maximum

When the computer is booted up, the operating system executes the CPUID instruction to identify the processor and its capabilities. Before it can do so, it must first query the processor to find out the highest input value CPUID recognizes. This determines the kind of basic information CPUID can provide the operating system

Options: Disabled (Default) / Enabled

Execute-Disable Bit

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.)

Options: Enabled (Default) / Disabled

Intel Virtualization Technology

Virtualization Technology can virtually separate your system resource into several parts, thus enhance the performance when running virtual machines or multi interface systems.

Options: Disabled (Default) / Enabled

Hardware Prefetcher

The processor has a hardware prefetcher that automatically analyzes its requirements and prefetches data and instructions from the memory into the Level 2 cache that are likely to be required in the near future. This reduces the latency associated with memory reads

Options: Enabled (Default) / Disabled

Adjacent Cache Line Prefetch

The processor has a hardware adjacent cache line prefetch mechanism that automatically fetches an extra 64-byte cache line whenever the processor requests for a 64-byte cache line. This reduces cache latency by making the next cache line immediately available if the processor requires it as well

Options: Enabled (Default) / Disabled

TCC Activation offset

Offset from the factory TCC activation temperature

Options: 0 (Default)

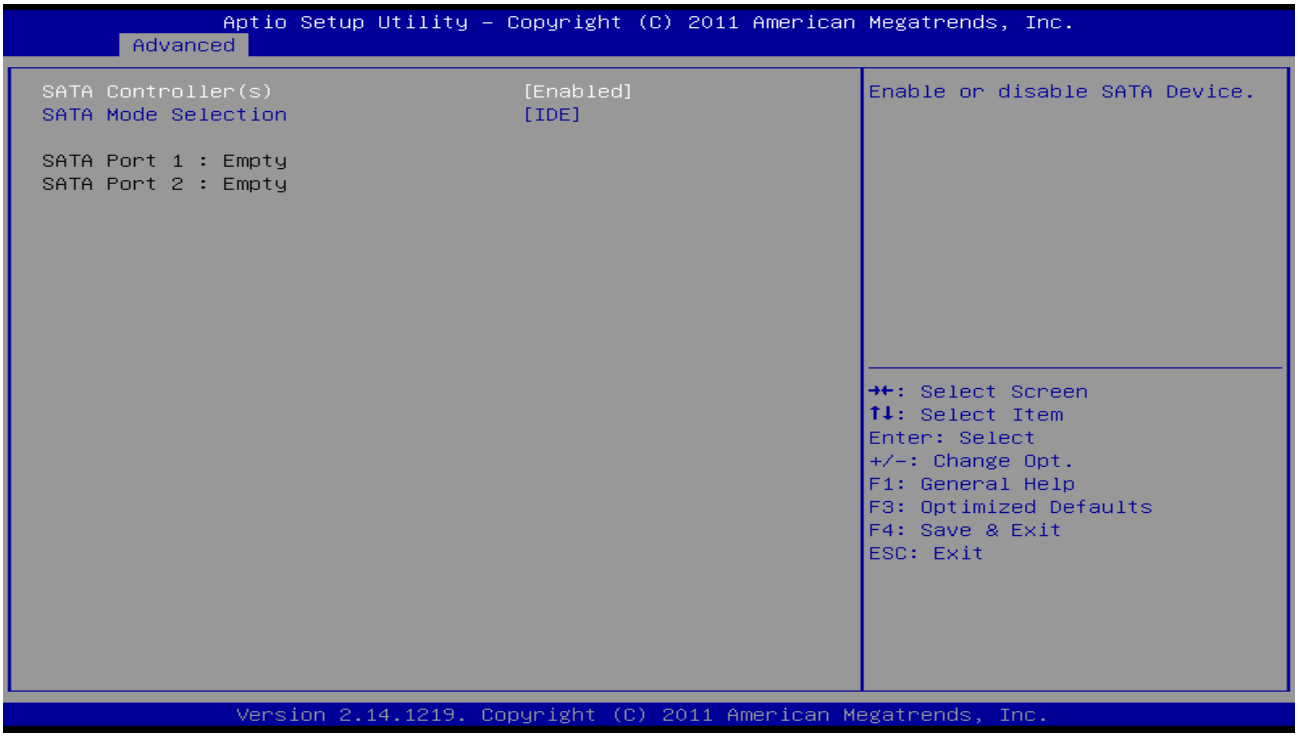
CPU Max Current limit value (Amp)

The Maximum instantaneous current allow for Primary Plane

IGFX Max Current limit value (Amp)

The Maximum instantaneous current allow for Secondary Plane

SATA Configuration



SATA Controller(s)

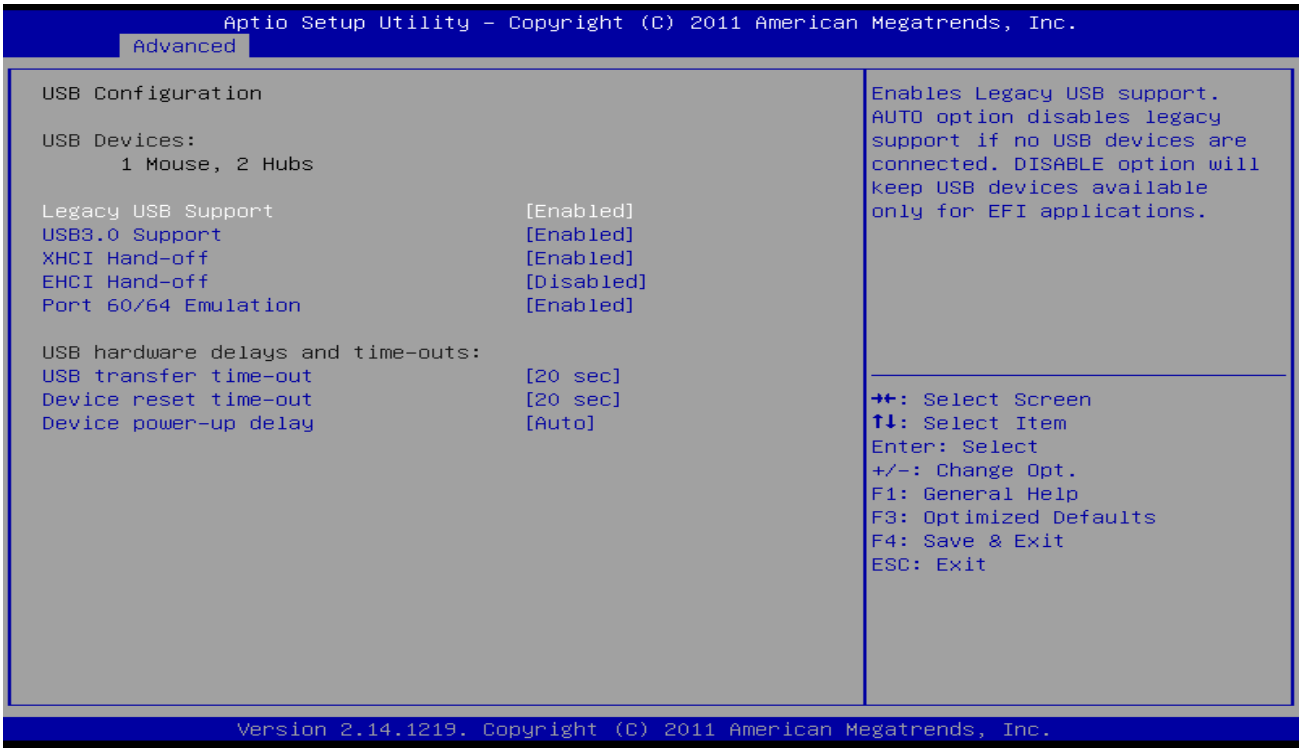
Enables / disables Serial ATA Device. Options: Enabled (Default) / Disabled

SATA Mode Selection

Determines how SATA controller(s) operate. Options: IDE (Default) / AHCI

✧ Note: mSATA function is optional

USB Configuration



Legacy USB Support

Determines if the BIOS should provide legacy support for USB devices like the keyboard, mouse, and USB drive. This is a useful feature when using such USB devices with operating systems that do not natively support USB (e.g. Microsoft DOS or Windows NT)

Options: Enabled (Default) / Disabled / Auto

USB3.0 Support

Enables or disables USB3.0 (XHCI) controller support

Options: Enabled (Default) / Disabled

XHCI Hand-Off

This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver

Options: Enabled (Default) / Disabled

EHCI Hand-Off

This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver

Options: Disabled (Default) / Enabled

Port 60/64 Emulation

Enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes
Options: Enabled (Default) / Disabled

USB transfer time-out

The time-out value for Control, Bulk, and Interrupt transfers
Options: 20 sec (Default) / 1 sec / 5 sec / 10 sec

Device reset time-out

Set USB mass storage device Start Unit command time-out
Options: 20 sec (Default) / 10 sec / 30 sec / 40 sec

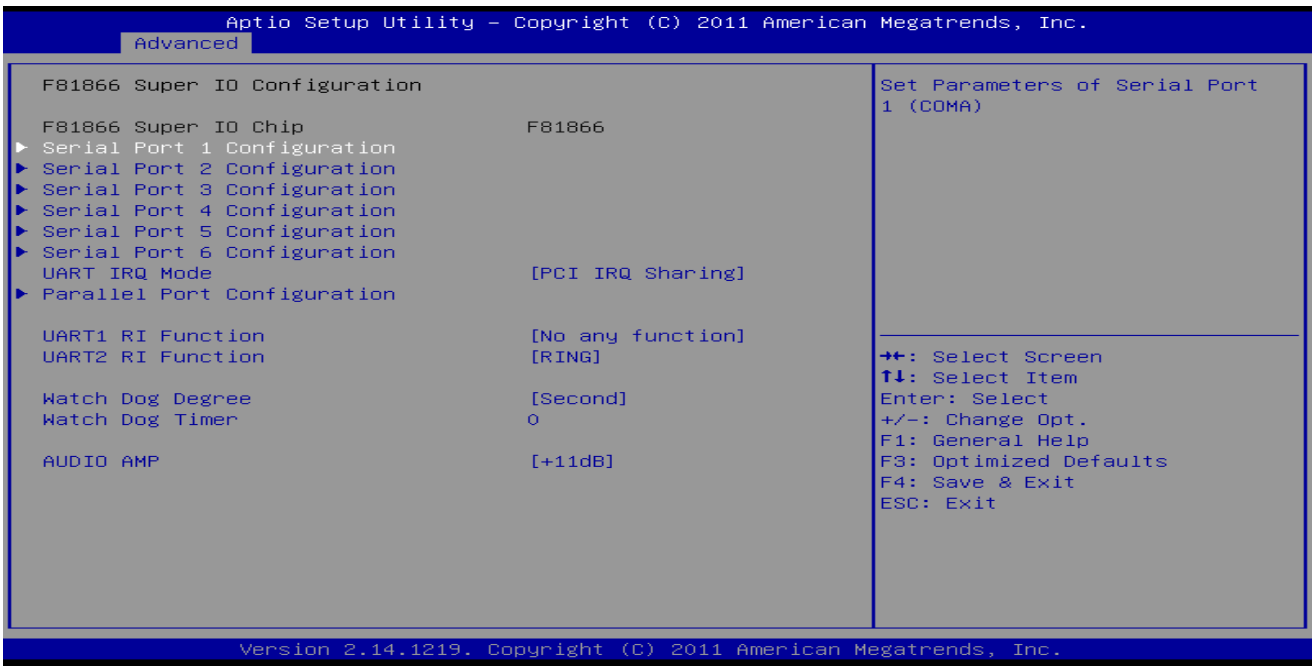
Device power-up delay

"Auto" uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor
Options: Auto (Default) / Manual

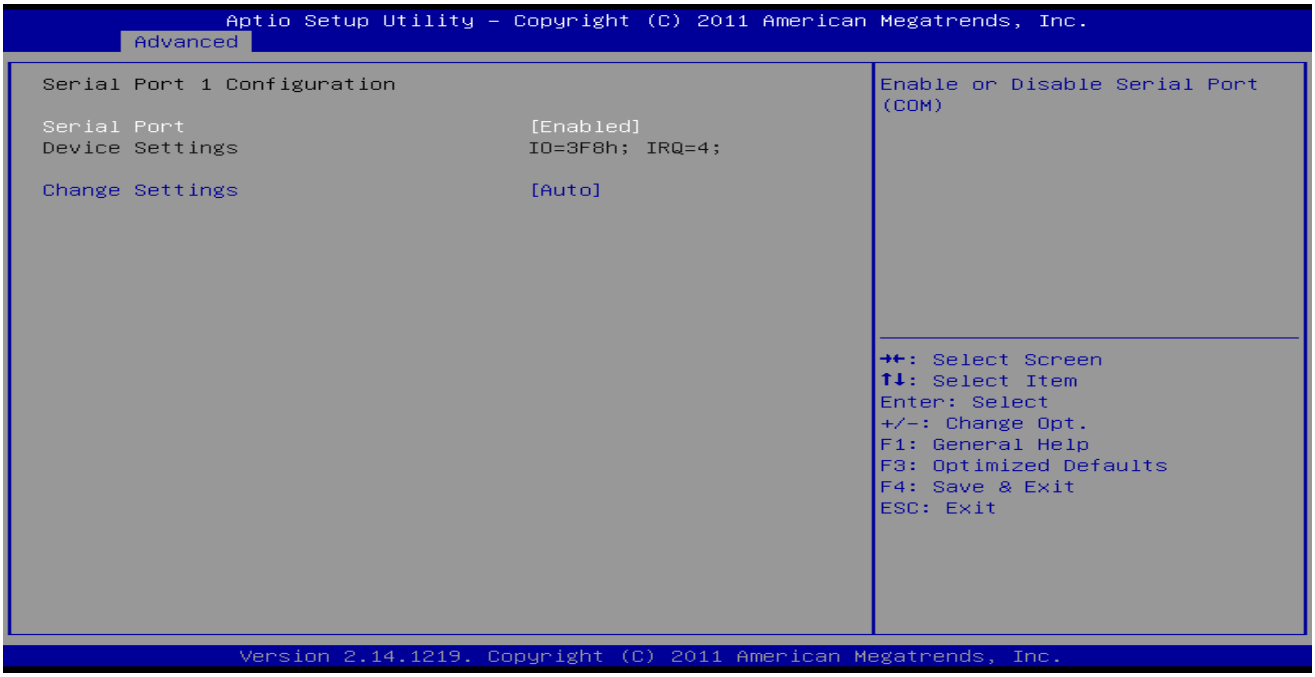
Device power-up delay in seconds

Delay range is 1 ~ 40 seconds, in one second increments. Options: 5 (Default)

F81866 Super IO Configuration



Serial Port 1 Configuration



Serial Port

Enables or disables Serial Port (COM)

Options: Enabled (Default) / Disabled

Change Settings

Selects an optimal setting for Super IO device
Options: Auto (Default) / IO=3F8h; IRQ=4 / IO=3F8h; IRQ= 3, 4, 5, 6, 7,10, 11, 12 / IO=2F8h; IRQ= 3, 4, 5, 6, 7,10, 11, 12 / IO=3E8h; IRQ= 3, 4, 5, 6, 7,10, 11, 12 / IO=2E8h; IRQ= 3, 4, 5, 6, 7,10, 11, 12

Serial Port 2 Configuration

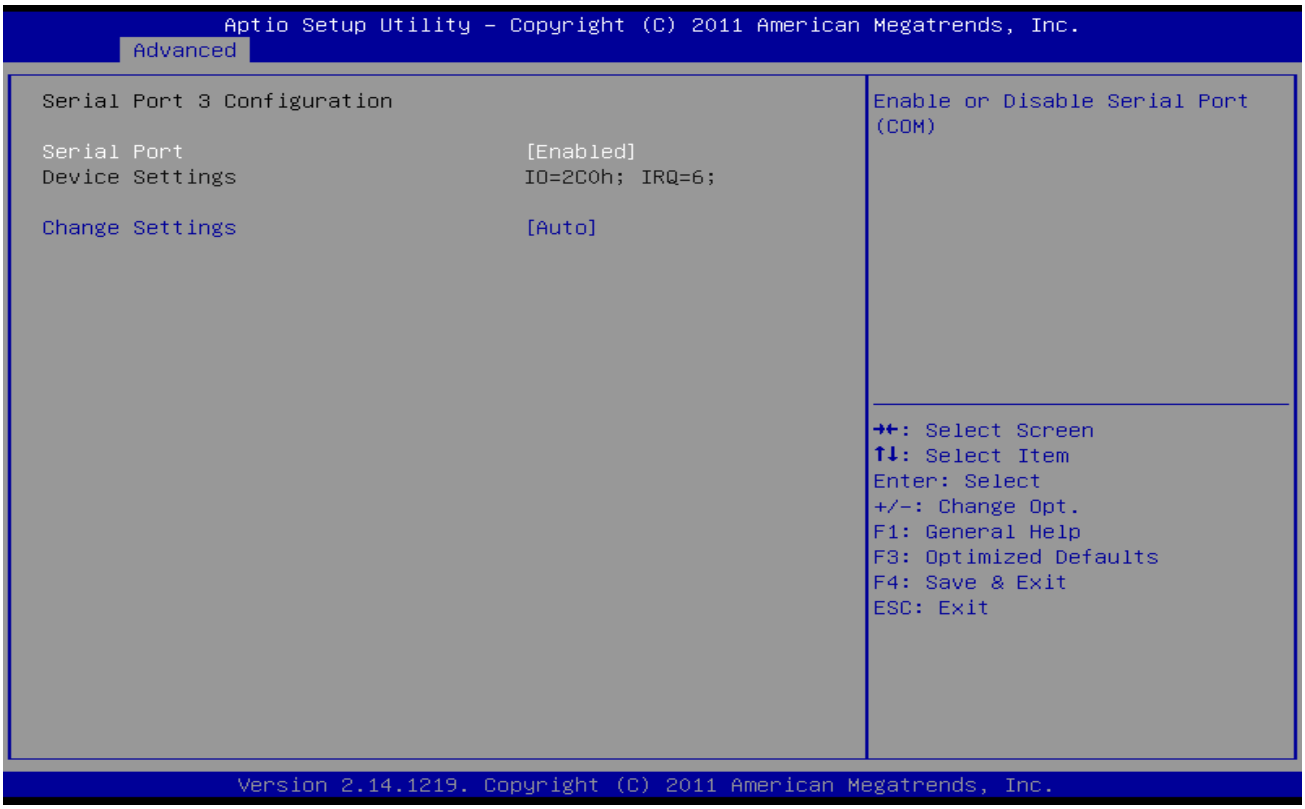
Serial Port

Enables or disables Serial Port (COM)
Options: Enabled (Default) / Disabled

Change Settings

Selects an optimal setting for Super IO device
Options: Auto (Default) / IO=2F8h; IRQ=3 / IO=3F8h; IRQ= 3, 4, 5, 6, 7,10, 11, 12 / IO=2F8h; IRQ= 3, 4, 5, 6, 7,10, 11, 12 / IO=3E8h; IRQ= 3, 4, 5, 6, 7,10, 11, 12 / IO=2E8h; IRQ= 3, 4, 5, 6, 7,10, 11, 12

Serial Port 3 Configuration



Serial Port

Enables or disables Serial Port (COM)

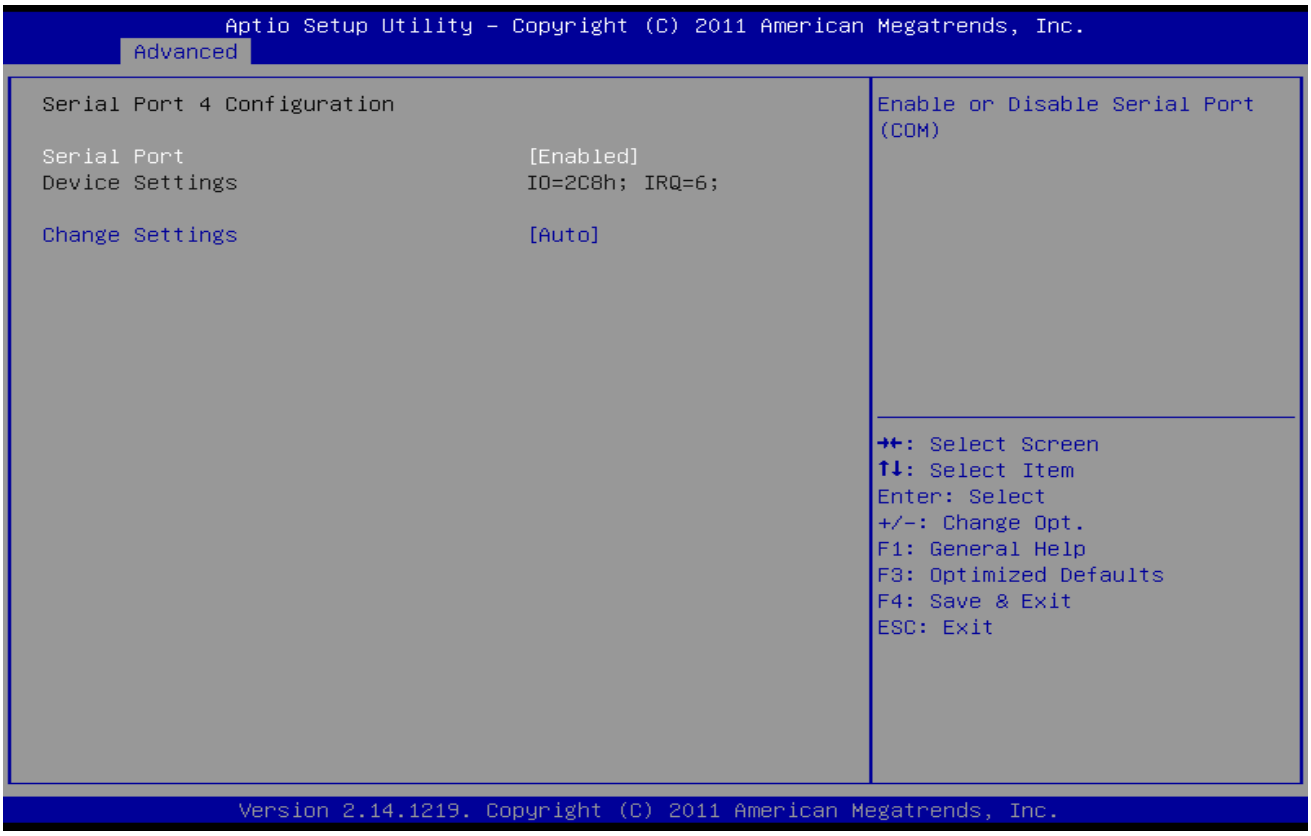
Options: Enabled (Default) / Disabled

Change Settings

Selects an optimal setting for Super IO device

Options: Auto (Default) / IO=2C0h; IRQ=6 / IO=3F8h; IRQ=6 / IO=2F8h; IRQ=6 / IO=2C0h; IRQ=6 / IO=2C8h; IRQ=6 / IO=2D0h; IRQ=6 / IO=2D8h; IRQ=6

Serial Port 4 Configuration



Serial Port

Enables or disables Serial Port (COM)

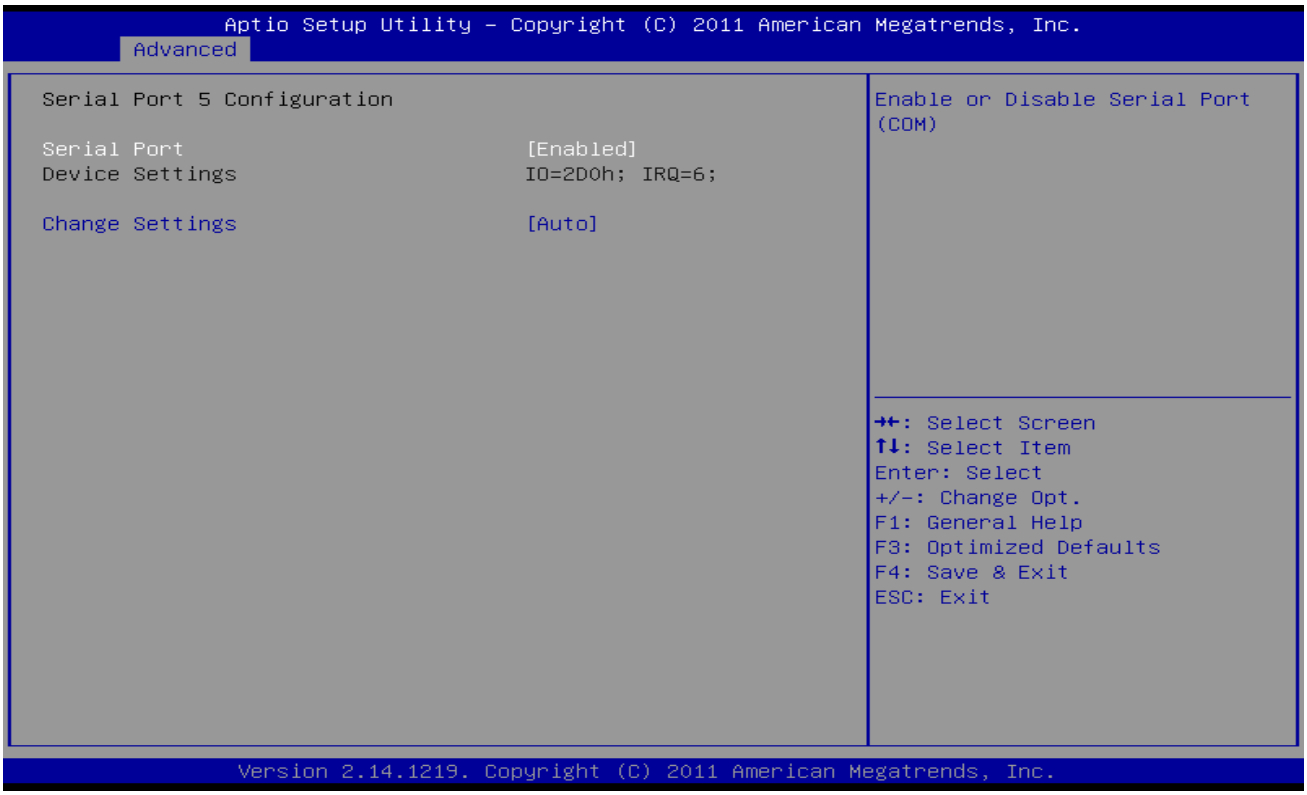
Options: Enabled (Default) / Disabled

Change Settings

Selects an optimal setting for Super IO device

Options: Auto (Default) / IO=2C8h; IRQ=6 / IO=3F8h; IRQ=6 / IO=2F8h; IRQ=6 / IO=2C0h; IRQ=6 / IO=2C8h; IRQ=6 / IO=2D0h; IRQ=6 / IO=2D8h; IRQ=6

Serial Port 5 Configuration



Serial Port

Enables or disables Serial Port (COM)

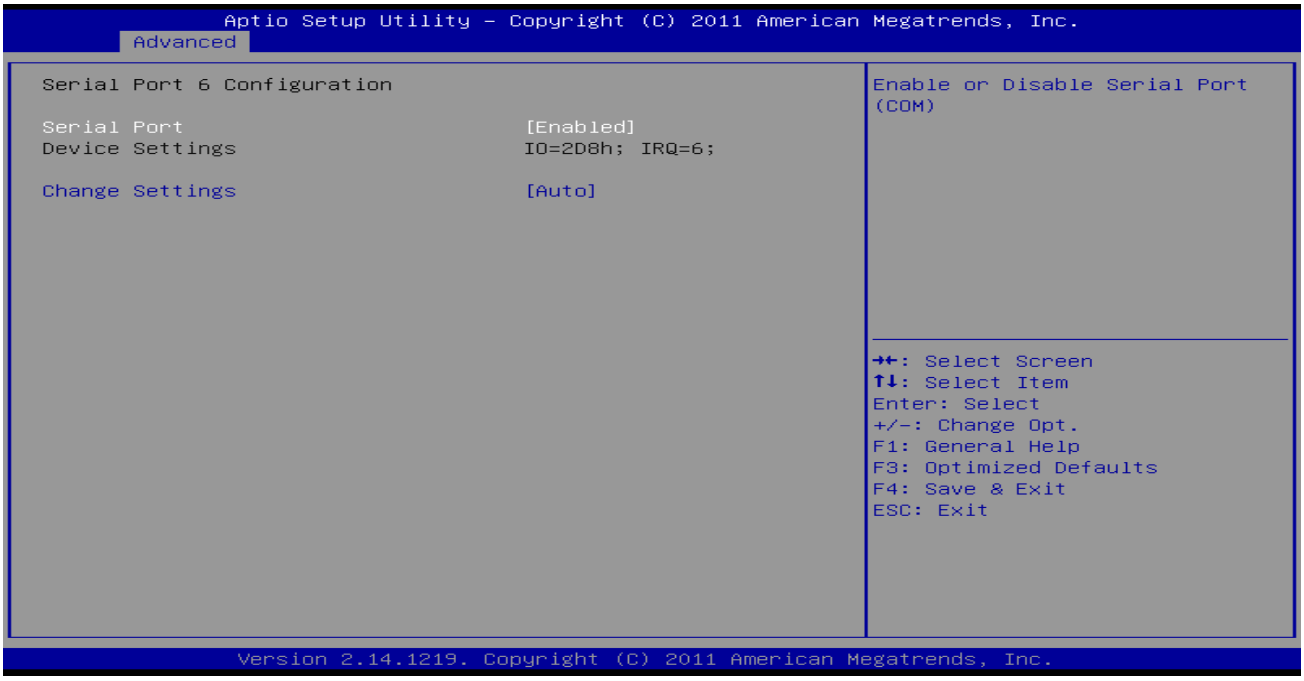
Options: Enabled (Default) / Disabled

Change Settings

Selects an optimal setting for Super IO device

Options: Auto (Default) / IO=2D0h; IRQ=6 / IO=3F8h; IRQ=6 / IO=2F8h; IRQ=6 / IO=2C0h; IRQ=6 / IO=2C8h; IRQ=6 / IO=2D0h; IRQ=6 / IO=2D8h; IRQ=6

Serial Port 6 Configuration



Serial Port

Enables or disables Serial Port (COM)

Options: Enabled (Default) / Disabled

Change Settings

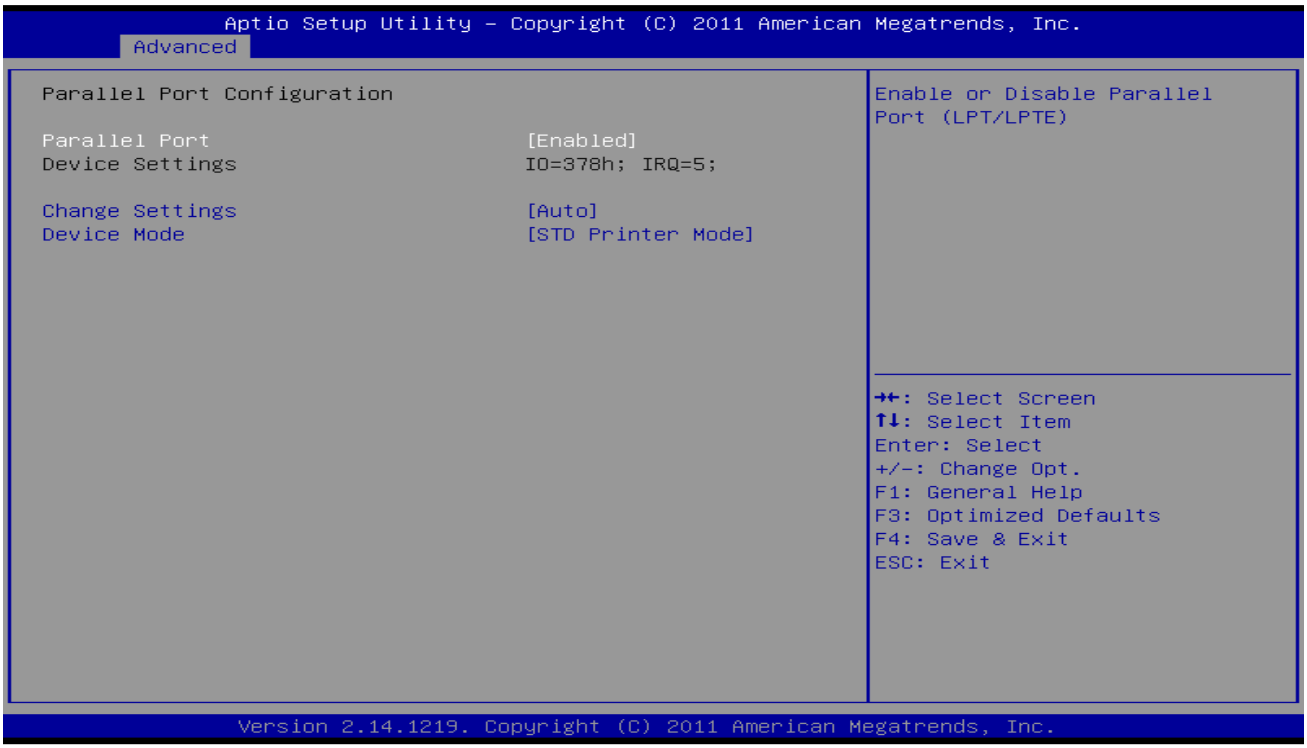
Selects an optimal setting for Super IO device

Options: Auto (Default) / IO=2D8h; IRQ=6 / IO=3F8h; IRQ=6 / IO=2F8h; IRQ=6 / IO=2C0h; IRQ=6 / IO=2C8h; IRQ=6 / IO=2D0h; IRQ=6 / IO=2D8h; IRQ=6

UART IRQ Mode

Allows you to determine PCI IRQ sharing for OS (EX. Windows) ISA IRQ for DOS. Options: PCI IRQ Sharing (Default) / ISA IRQ

Parallel Port Configuration



Parallel Port

Enables or disables Parallel Port (LPT/LPTE)

Options: Enabled (Default) / Disabled

Change Settings

Allows you to select an optimal setting for Super IO device

Options: Auto (Default) / IO=378h; IRQ=5 / IO=378h; IRQ=5, 6, 7, 10, 11, 12 / IO=278h; IRQ=5, 6, 7, 10, 11, 12 / IO=3BCh; IRQ=5, 6, 7, 10, 11, 12

Device Mode

Allows you to determine how the parallel port should function

Options: STD Printer Mode (Default) / SPP Mode / EPP-1.9 and SPP Mode / EPP-1.7 and SPP Mode / ECP Mode / ECP and EPP 1.9 Mode / ECP and EPP 1.7 Mode /

UART1 RI Function

Selects COM1 port pin 9 function

Options: RING (Default) / +5V / +12V

UART2 RI Function

Selects COM2 port pin 9 function

Options: No any function (Default) / +5V / +12V

Watch Dog Degree

Allows you to determine the functional degree of Watch Dog
Options: Second (Default) / Minute

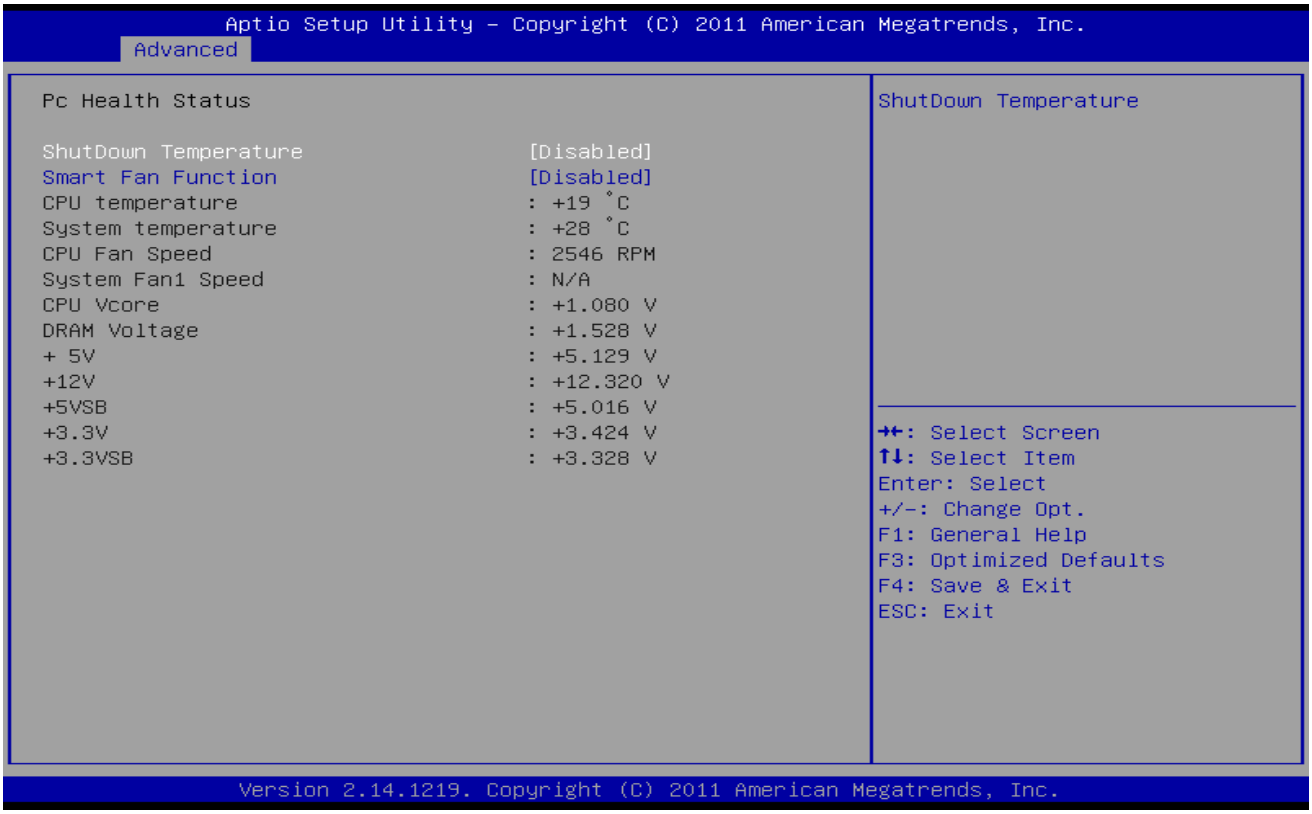
Watch Dog Timer

Options: 0 for disabled (Default) / Min=1, Max=65536

Audio AMP

Adjusts external audio amplifier
Options: +11dB (Default) / +14dB / +19dB / +25dB

F81866 H/W Monitor



Shutdown Temperature

Allows you to set up the CPU shutdown Temperature

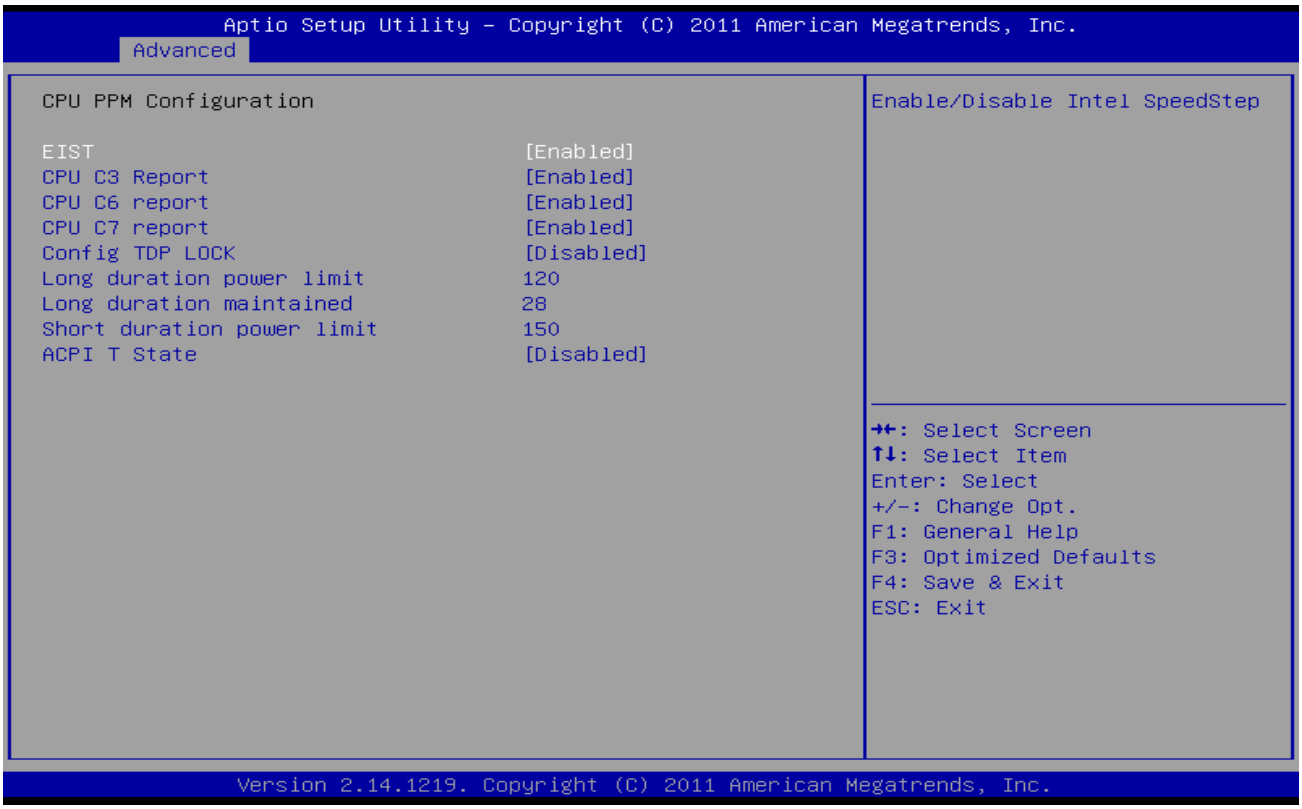
Options: Disabled (Default) / 70°C/158°F / 75°C/167°F / 80°C/176°F / 85°C/185°F / 90°C/194°F Smart

Fan Function

Allows you to control the CPU Smart Fan function

Options: Disabled (Default) / Enabled

CPU PPM Configuration



EIST

Enables / disables Intel SpeedStep function

Options: Enabled (Default) / Disabled

CPU C3/ C6/ C7 report

Enables / disables C3 (ACPI C2)/ C6 (ACPI C3)/ C7 (ACPI C3) report to OS

Options: Enabled (Default) / Disabled

Config TDP LOCK

Allows you lock the config TDP control register

Options: Disabled (Default) / Enabled

Long duration power limit

Long duration power limit in watts, 0 means factory default

Options: 120 (Default)

Long duration maintained

Time window which the long duration power is maintained

Options: 28 (Default)

Short duration power limit

Short duration power limit in watts, 0 means factory default
Options: 150 (Default)

ACPI T State

Enables / disables ACPI T state support
Options: Disabled (Default) / Enabled

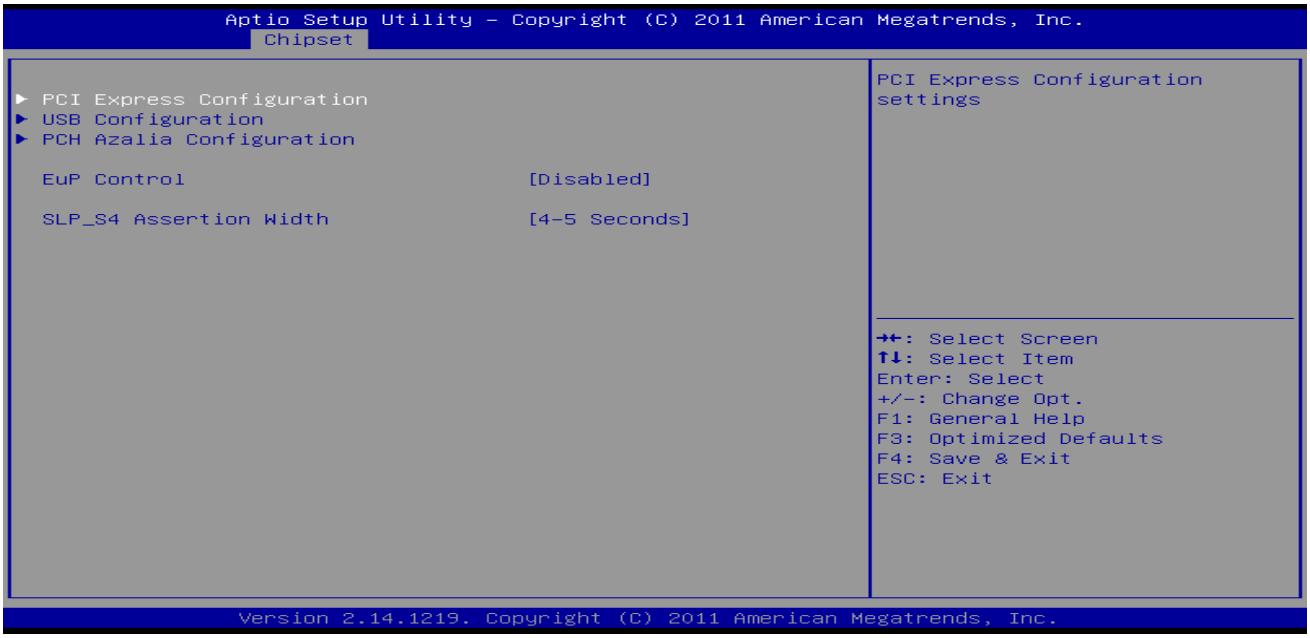
Chipset Menu

The following describes configuring the PCI bus system, PCI, or Personal Computer Interconnect; it is a system which allows I/O devices to operate at speeds nearing the speed of the CPU itself uses when communicating with its own special components

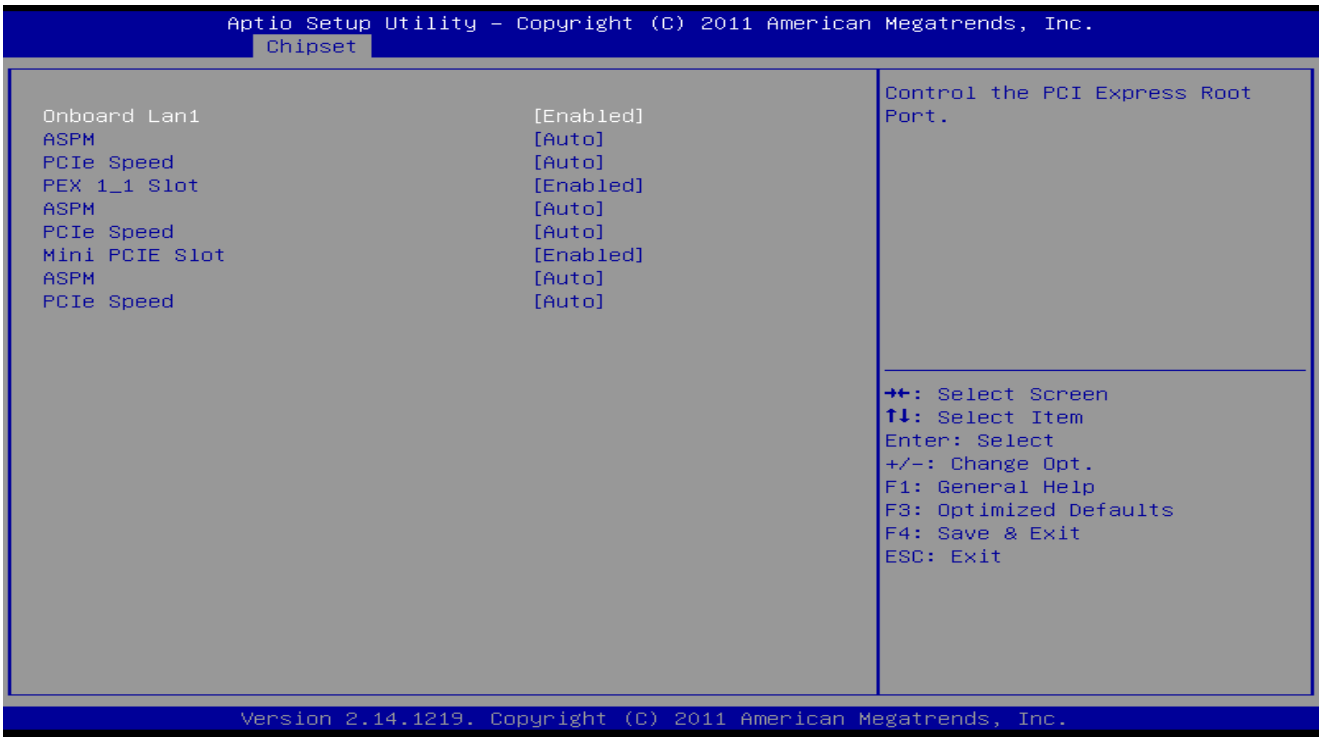
▸ **Note**

» Beware of that setting inappropriate values in items of this menu may cause system problem

PCH-IO Configuration



PCI Express Configuration



Onboard Lan1 / PEX 1_1/ Mini PCIE Slot

Controls the PCI Express Root Port

Options: Enabled (Default) / Disabled

ASPM

Set PCI Express Active State Power Management settings

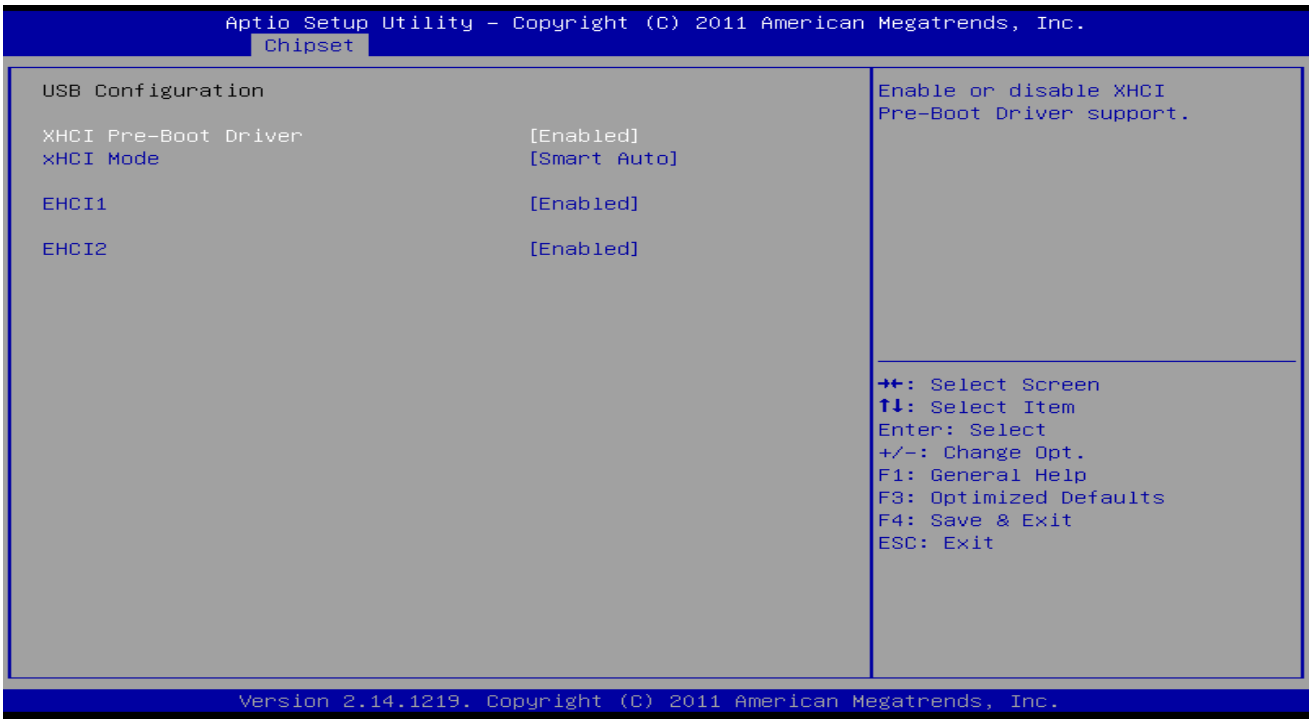
Options: Auto(Default) / Disabled / L0s / L1 / L0sL1

PCIe Speed

Selects PCI Express port speed

Options: Auto (Default) / Gen1 / Gen2

USB Configuration



XHCI Pre-Boot Driver

Enables or disables XHCI Pre-Boot Driver support

Options: Enabled (Default) / Disabled

XHCI Mode

Set the mode of operation of XHCI controller

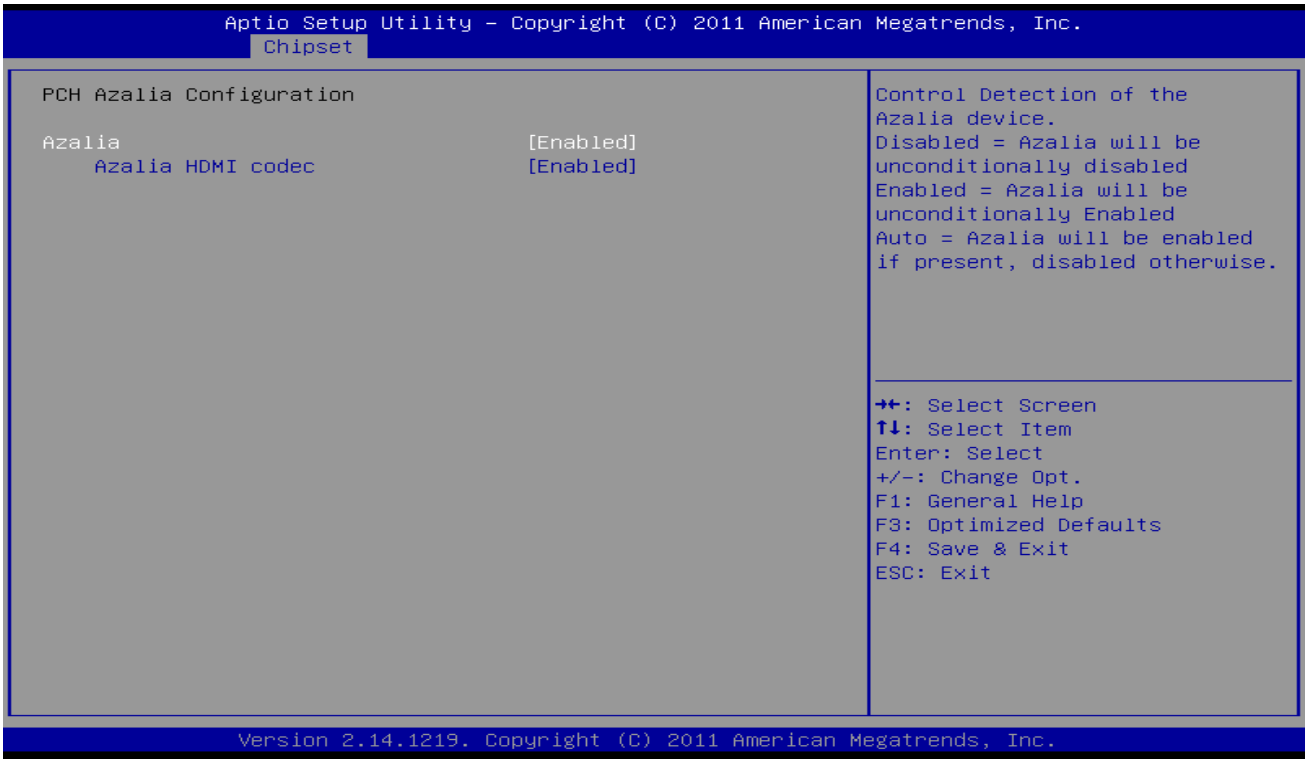
Options: Smart Auto (Default) / Auto / Enabled / Disabled

EHCI1/2

Controls the USB EHCI (USB2.0) functions. One EHCI controller must always be enabled

Options: Enabled (Default) / Disabled

PCI Azalia Configuration



Azalia

Controls detection of the Azalia device

Disabled = Azalia will be unconditionally disabled

Enabled = Azalia will be unconditionally Enabled

Auto = Azalia will be enabled if present, disabled otherwise

Options: Enabled (Default) / Disabled

Azalia HDMI codec

Enables or disables internal HDMI codec Port for Azalia

Options: Enabled (Default) / Disabled

EuP Control

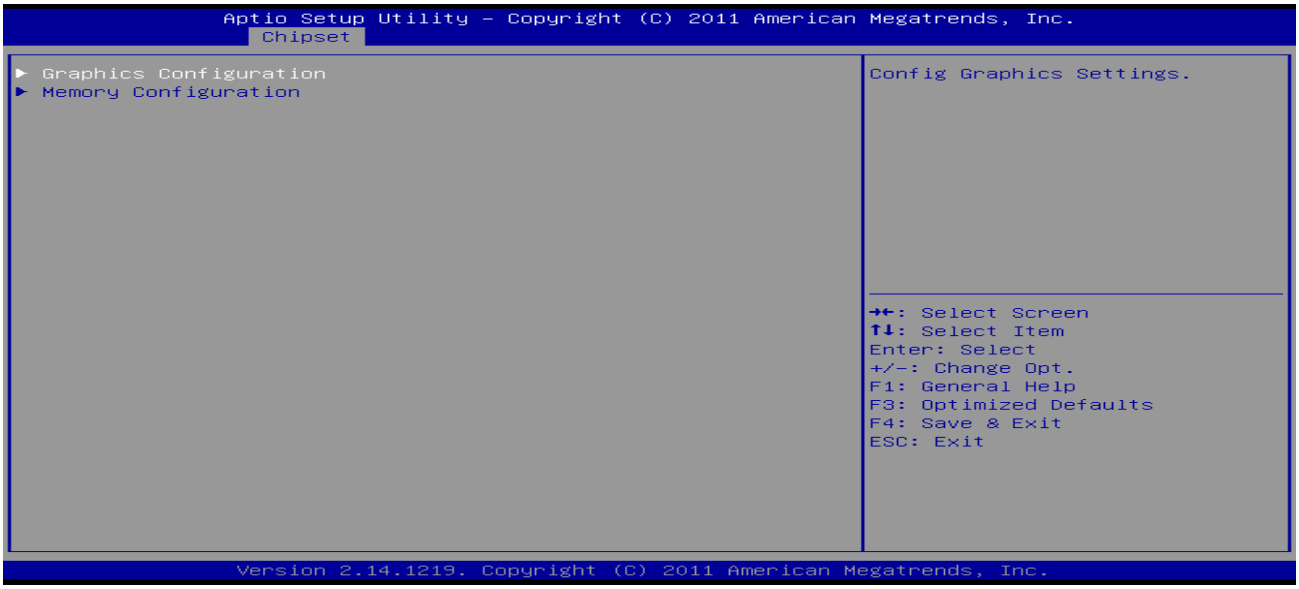
When EuP Enabled, System meets EuP requirement

Options: Disabled (Default) / Enabled

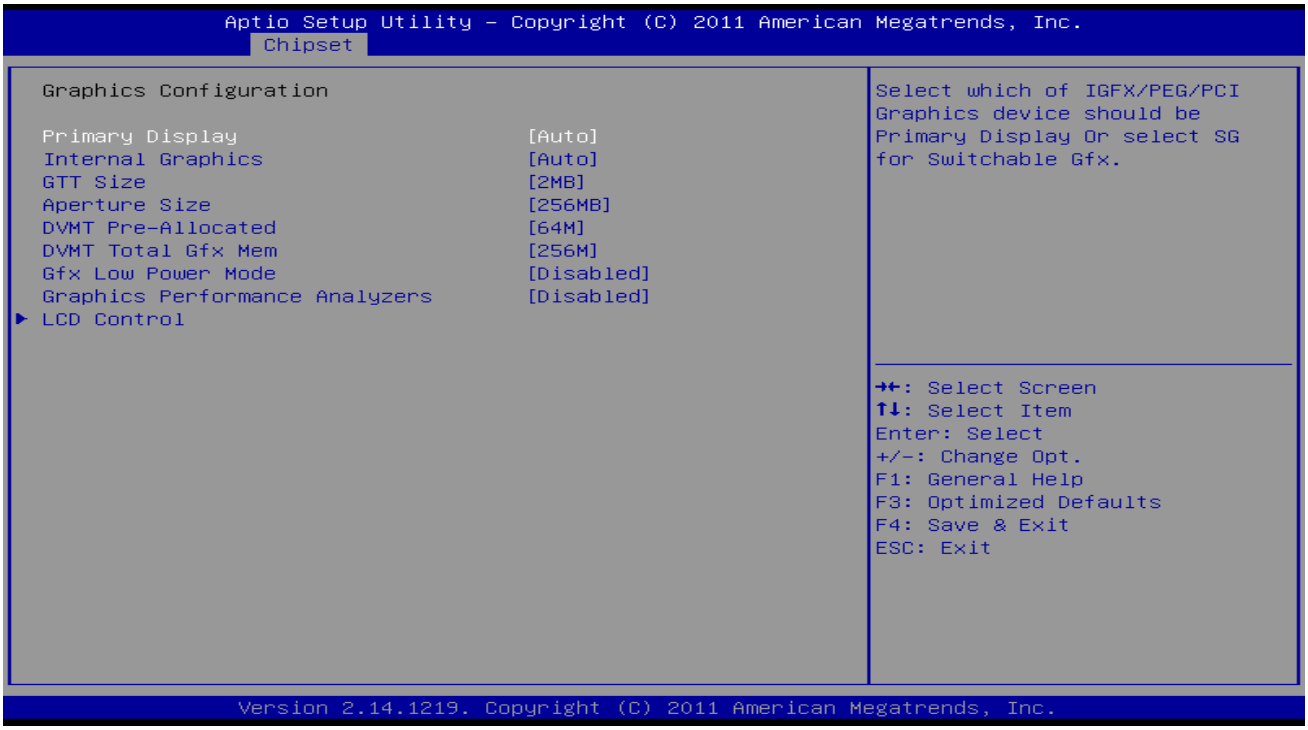
SLP_S4# Min. Assertion Width

Options: 4 to 5 seconds (Default) / 1 to 2 seconds / 3 to 4 seconds / 2 to 3 seconds / Disabled

System Agent (SA) Configuration



Graphics Configuration



Primary Display

Selects which of IGFX / PEG / PCI Graphics device should be Primary Display or select SG for Switchable Gfx

Options: Auto (Default) / IGFX / PEG

Internal Graphics

Keeps IGD enabled based on the setup options
Options: Auto (Default) / Disabled / Enabled

GTT Size
Selects GTT Size
Options: 2MB (Default) / 1MB

Aperture Size
Selects Aperature Size
Options: 256MB (Default) / 128MB / 512MB

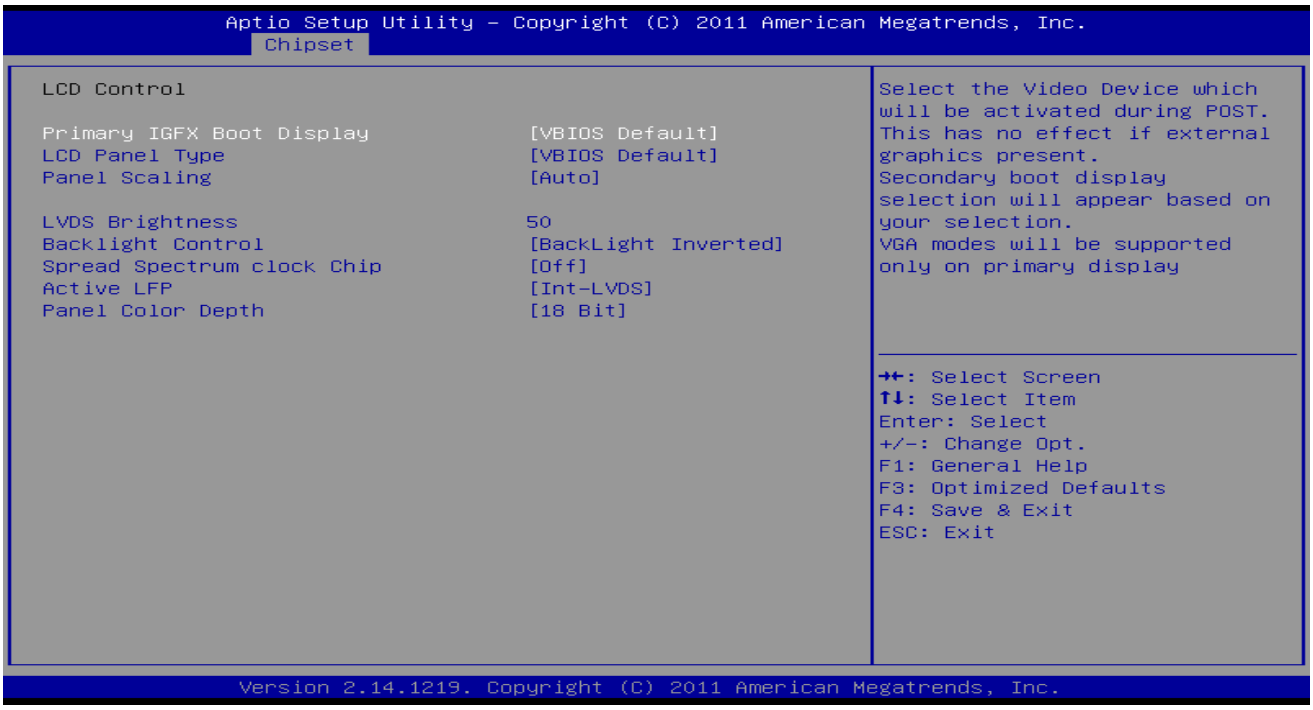
DVMT Pre-Allocated
Selects DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device
Options: 64M (Default) / 32M / 96M / 128M / 160M / 192M / 224M / 256M / 288M / 320M / 352M / 384M / 416M / 448M / 480M / 512M / 1024M

DVMT Total Gfx Mem
Selects DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device
Options: 256MB (Default) / 128MB / MAX

Gfx Low Power Mode
Applicable for SFF only
Options: Disabled (Default) / Enabled

Graphics Performance Analyzers
Enables/ disables Intel graphics performance analyzers counters
Options: Disabled (Default) / Enabled

LCD Control



Primary IGFX Boot Display

Selects the video device which will be activated during POST. This has no effect if external graphics present

Options: VBIOS Default (Default) / CRT / LVDS / HDMI (optional)

LCD Panel Type

Selects the LCD panel used by Internal Graphics Device by selecting the appropriate setup item

Options: VBIOS Default (Default) / 640 x 480 / 800 x 600 / 1024 x 768 / 1280 x 1024 / 1400 x 1050(RB) / 1400 x 1050 / 1600 x 1200 / 1366 x 768 / 1680 x 1050 / 1920 x 1200 / 1440 x 900 / 1600x 900 / 1024 x 768 / 1280 x 800 / 1920 x 1080 / 2048 x 1536

Panel Scaling

Selects the LCD panel scaling option used by the Internal Graphics Device

Options: Auto (Default) / Force Scaling / Off

LVDS Brightness

Selects the LCD panel brightness percentage

Backlight Control

Selects Back Light Control Setting

Options: Backlight Inverted (Default) / Backlight Normal

Spread Spectrum clock Chip

>>Hardware: Spread is controlled by chip; >>Software: Spread is controlled by BIOS Options: Off (Default) / Hardware / Software

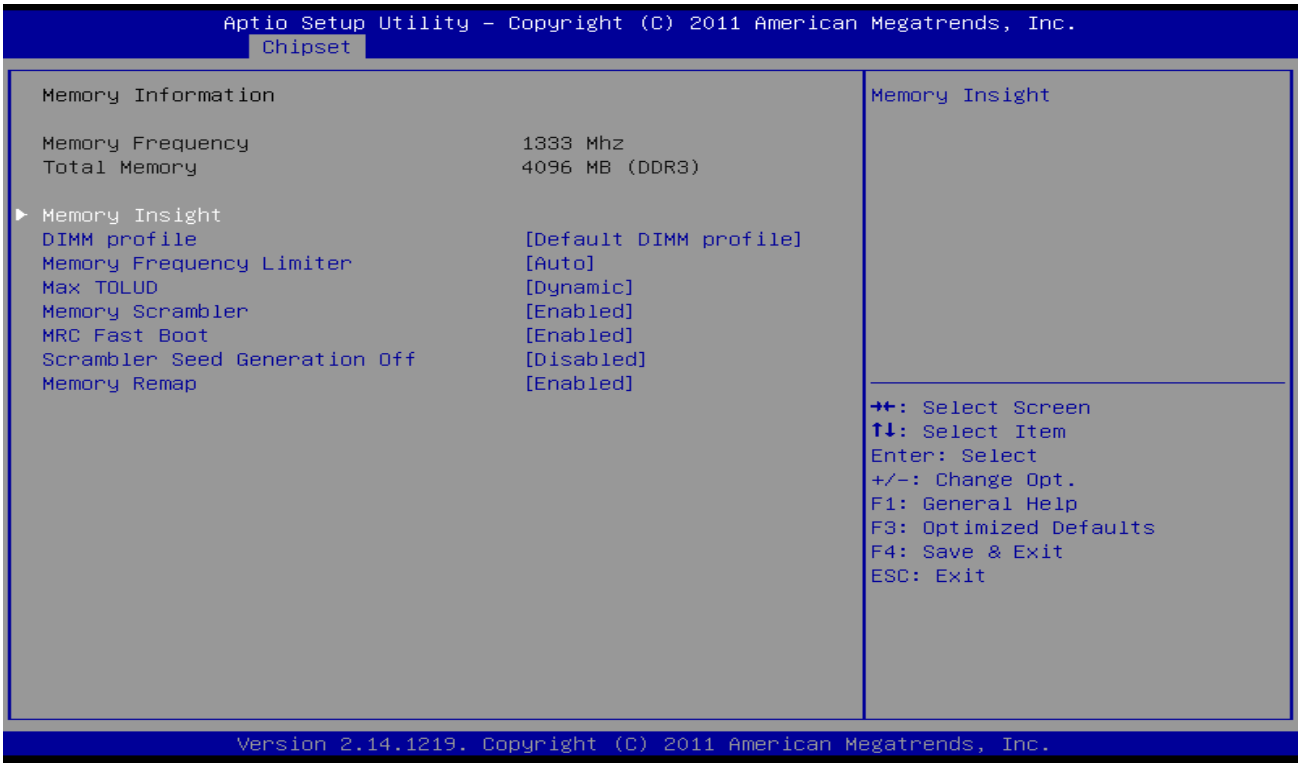
Active LFP

Selects the Active LVDS Configuration. No LVDS: VBIOS does not enable LVDS; Int-LVDS: VBIOS enables LVDS driver by integrated encoder
Options: Int-LVDS (Default) / No LVDS

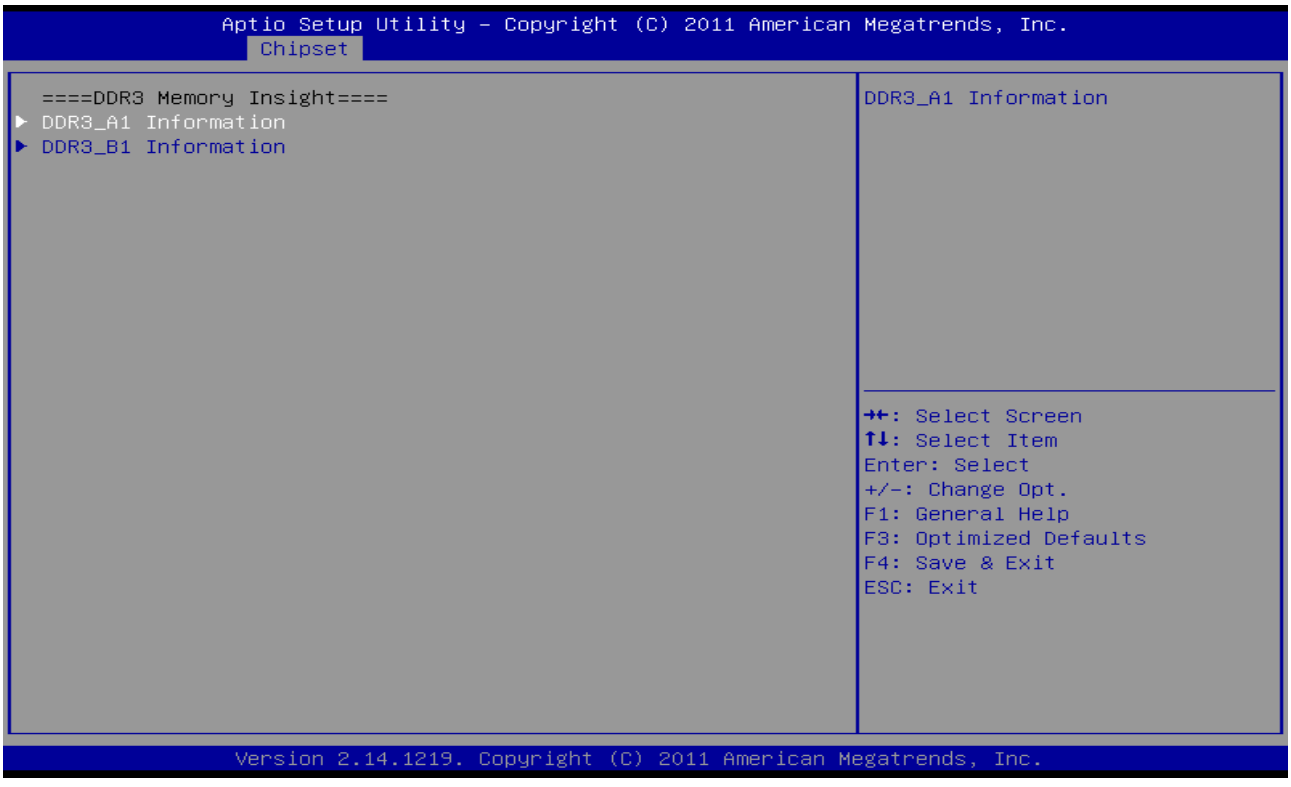
Panel Color Depth

Selects the LFP Panel Color Depth
Options: 18Bit (Default) / 24Bit

Memory Configuration



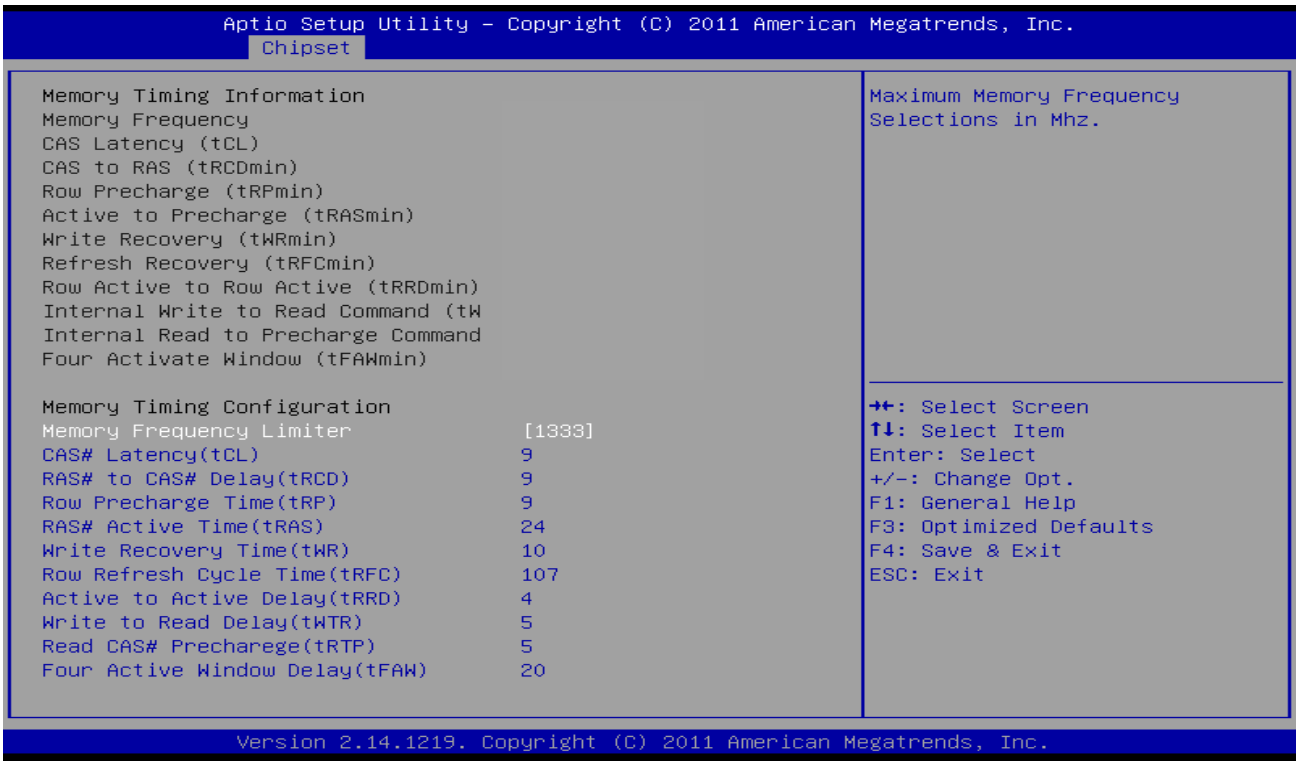
Memory Insight



DDR3_A1 / B1 Information

Display SPD information of DDR3 memory DIMM Profile
Select DIMM timing profile that should be used
Options: Default DIMM profile (Default) / Custom Profile

Custom Profile Control



CAS# Latency (tCL)
Selects CAS Latency of DDR3
Options: 9 (Default) / 3 ~ 15

RAS# to CAS# Delay (tRCD)
Selects Row Address to Column Address Delay of DDR3
Options: 9 (Default) / 3 ~ 15

Row Precharge Time (tRP)
Selects Row Precharge Time of DDR3
Options: 9 (Default) / 3 ~ 15

RAS# Active Time (tRAS)
Selects Row Active Time of DDR3
Options: 24 (Default) / 9 ~ 63

Write Recovery Time (tWR)
Selects Internal Write to Read Command Delay of DDR3
Options: 10 (Default) / 3 ~ 31

Row Refresh Cycle Time (tRFC)
Selects Minimum Refresh Recovery Time of DDR3
Options: 107 (Default) / 15 ~ 255

Active to Active Delay (tRRD)
Selects Row Active to Row Active Delay of DDR3
Options: 4 (Default) / 4 ~ 15

Write to Read Delay (tWTR)
Selects Internal Write to Read Command Delay of DDR3
Options: 5 (Default) / 3 ~ 31

Read CAS# Precharge (tRTP)
Selects Read to Precharge Delay of DDR3
Options: 5 (Default) / 4 ~ 15

Four Active Window Delay (tFAW)
Selects Four Active Window Delay of DDR3
Options: 20 (Default) / 4 ~ 63

Memory Frequency Limiter
Maximum Memory Frequency Selections in MHz
Options: Auto (Default) / 1067 / 1333

Max TOLUD
Set maximum value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller
Options: Dynamic (Default) / 1 GB / 1.25 GB / 1.5 GB / 1.75 GB / 2 GB / 2.25 GB / 2.5 GB / 2.75 GB / 3 GB / 3.25 GB

Memory Scrambler
Enables or disables memory scrambler support
Options: Enabled (Default) / Disabled

MRC Fast Boot
Enables or disables MRC Fast Boot
Options: Enabled (Default) / Disabled

Scrambler Seed Generation Off

Set control memory scrambler seed generation

Enable – do not generation scrambler seed. Disable – generation scrambler seed always

Options: Disabled (Default) / Enabled

Memory Remap

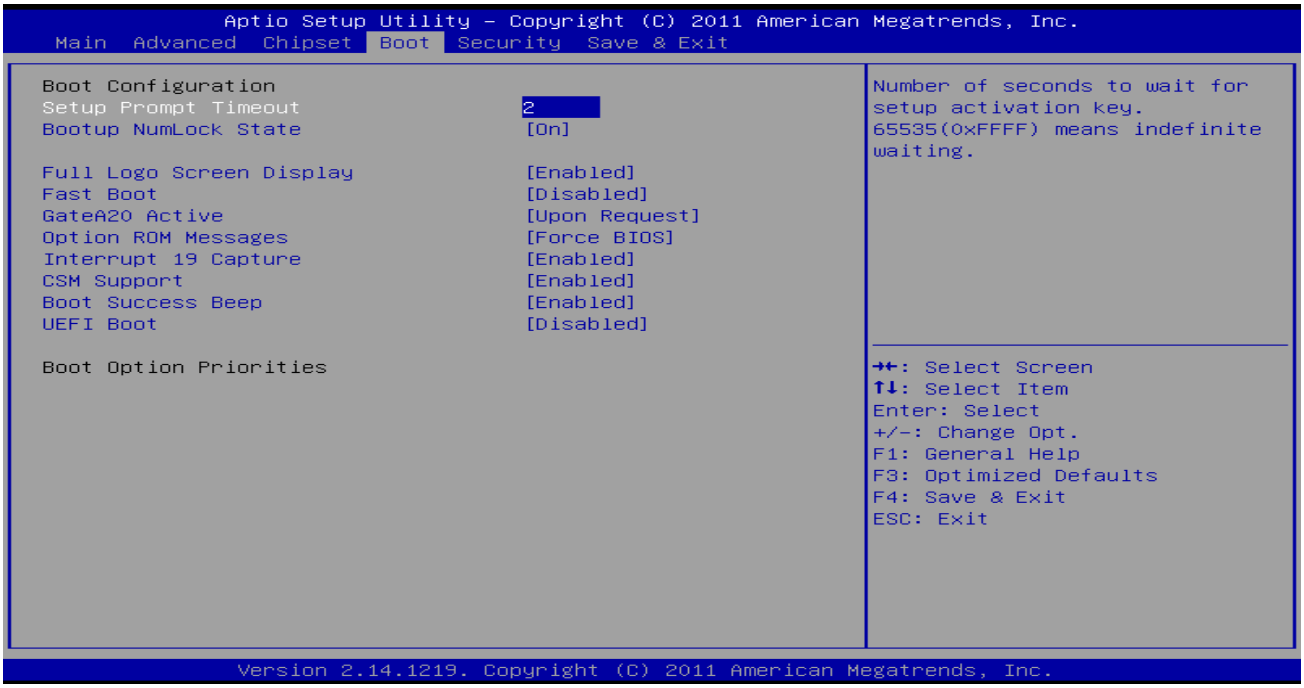
Enables or disables memory remap above 4G

Options: Enabled (Default) / Disabled

Boot Menu

This menu allows you to setup the system boot options

.



Setup Prompt Timeout

Set number of seconds to wait for setup activation key

Options: 2 (Default)

Bootup NumLock State

Selects the keyboard NumLock state

Options: On (Default) / Off

Full Screen LOGO Display

Enables / disable Full Screen LOGO Show function

Options: Enabled (Default) / Disabled

Fast Boot

Enables / disable Full Screen LOGO Show function

Options: Disabled (Default) / Enabled

Skip VGA

If enabled, BIOS will skip EFI VGA driver

Options: Disabled (Default) / Enabled

Skip USB

If enabled, USB devices will not be available until after OD boot. If disabled, USB device will be available before OS boot

Options: Disabled (Default) / Enabled

Skip PS2

If enabled, PS2 devices will be skipped

Options: Disabled (Default) / Enabled

GateA20 Active

Upon Request – GA20 can be disabled using BIOS services. Always – do not allow disabling GA20; this option is useful when any RT code is executed above 1MB

Options: Upon Request (Default) / Always

Option ROM Messages

Set the display mode for Option ROM

Options: Force BIOS (Default) / Keep Current

Interrupt 19 Capture

Interrupt 19 is the software interrupt that handles the boot disk function

When set to Enabled, this item allows the option ROMs to trap interrupt 19

Options: Enabled (Default) / Disabled

CSM Support

Enables / disables CSM Support. If Auto is selected, based on OS, CSM will be enabled / disabled automatically

Options: Enabled (Default) / Disabled / Auto

Boot Success Beep

When this item is set to Enabled, BIOS will let user know boot success with beep

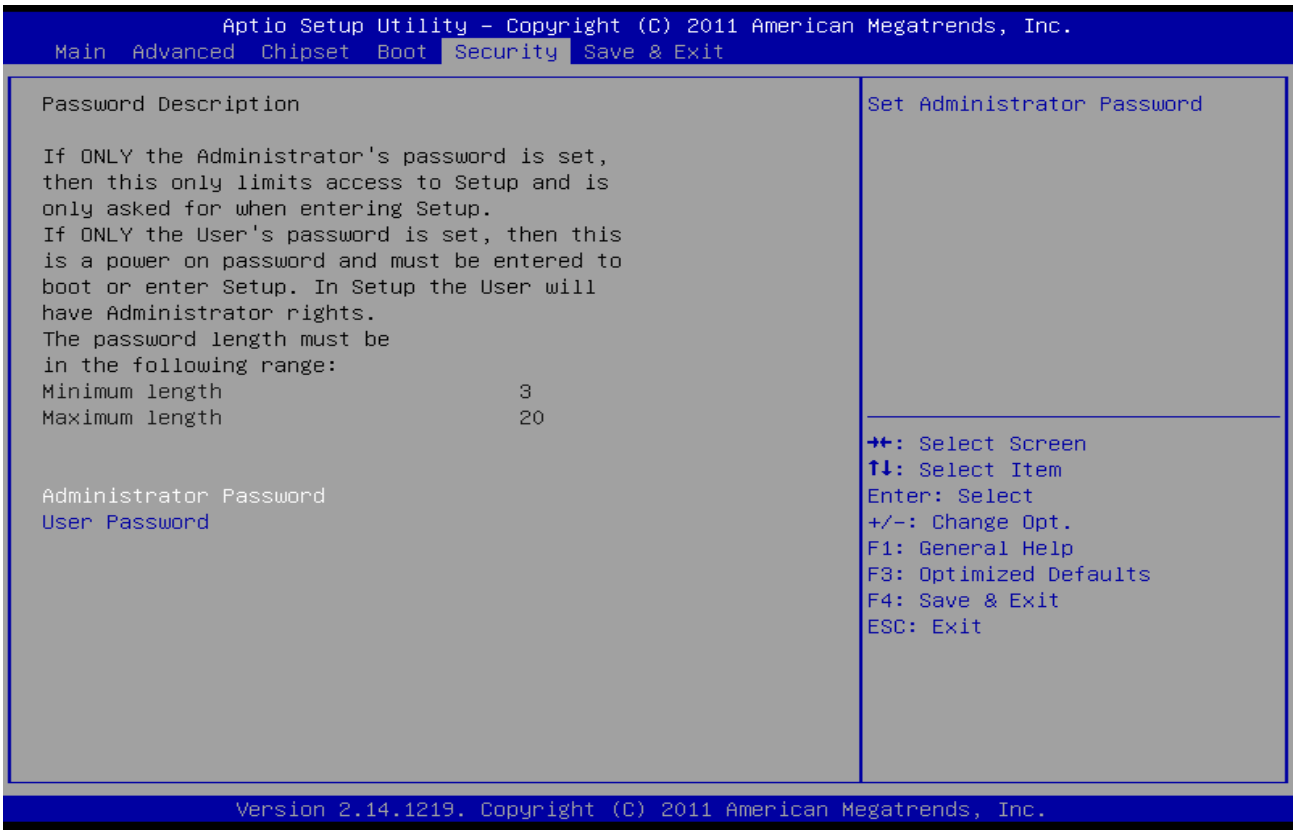
Options: Enabled (Default) / Disabled

UEFI Boot

Enables / disables boot from the UEFI Devices

Options: Disabled (Default) / Enabled

Security Menu



Administrator Password

Set Administrator Password

User Password

Set User Password

Exit Menu

To load the optimal default settings, and save or discard the changes to the BIOS items

Discard Changes and Exit

Abandon all changes made during the current session and exit setup

Save Changes and Reset

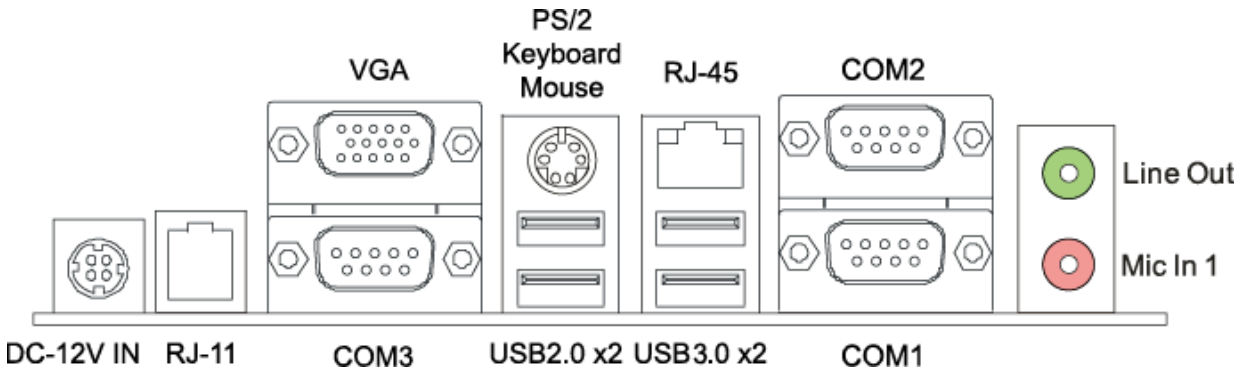
Reset the system after saving the changes

Restore Defaults

Reload the BIOS when problem occurs during system booting sequence. These configurations are factory settings optimized for this system

8. Mainboard Setting

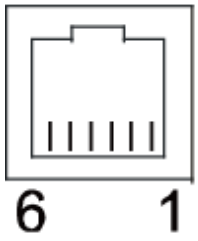
Rear Panel Connectors



DC-12V Input Connector

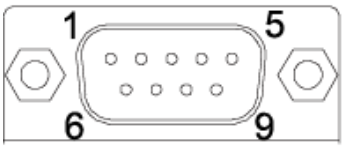
Pin	Assignment
1	+12V DC_IN
2	GND
3	GND
4	+12V DC_IN

RJ-11 pin assignment



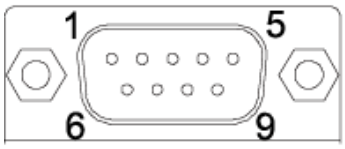
Pin	Define	Status Pin	Control Pin	GPIO	ADD.
1	CASE OPEN#2	CASE OPEN#2	---	50	IO:538(BIT18)
2	CASH1 _P	---	CASH1 _P	19	IO:50C(BIT19)
3	CASE OPEN#	CASE OPEN#	---	52	IO:538(BIT20)
4	CASH_PWR	---	---	---	---
5	CASH2_P	---	CASH2_P	21	IO:50C(BIT21)
6	GND	---	---	---	---

COM1 Connector



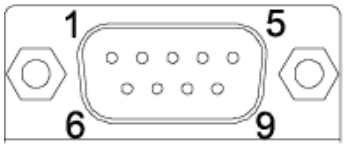
Pin	Assignment
1	Carrier detect (DCD)
2	Received data (RXD)
3	Transmitted data (TXD)
4	Data terminal ready (DTR)
5	Signal ground (GND)
6	Data set ready (DSR)
7	Request to send (RTS)
8	Clear to send (CTS)
9	Ring or 5V or 12V (selected by BIOS setting)

COM2 Connector



Pin	Assignment
1	Carrier detect (DCD)
2	Received data (RXD)
3	Transmitted data (TXD)
4	Data terminal ready (DTR)
5	Signal ground (GND)
6	Data set ready (DSR)
7	Request to send (RTS)
8	Clear to send (CTS)
9	0V or 5V or 12V (selected by BIOS setting)

COM3 Connector

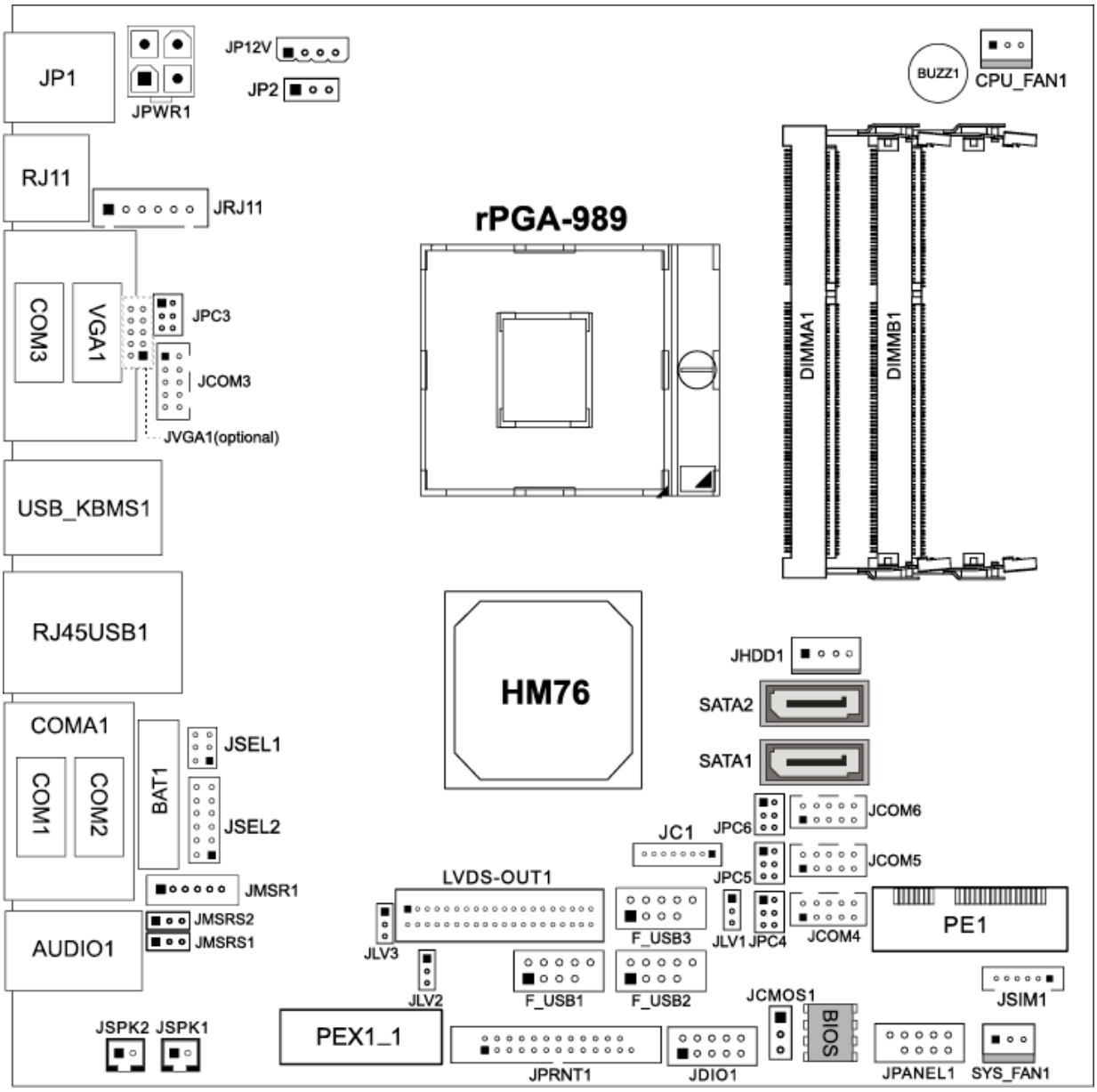


Pin	Assignment
1	Carrier detect (DCD)
2	Received data (RXD)
3	Transmitted data (TXD)
4	Data terminal ready (DTR)
5	Signal ground (GND)
6	Data set ready (DSR)
7	Request to send (RTS)
8	Clear to send (CTS)
9	0V or 5V or 12V (selected by jumper setting)

▸ Note

»» Note1: COM1/2 voltage selection is controlled by BIOS setup. Please see page-34 for detail setting
»» Note2: COM1 RS-232/422/485 selection is controlled by JSEL1/JSEL2. Please see page-14 for detail setting
»» Note3: COM3 voltage selection is controlled by JPC3. Please see page-15 for detail setting

Motherboard Layout

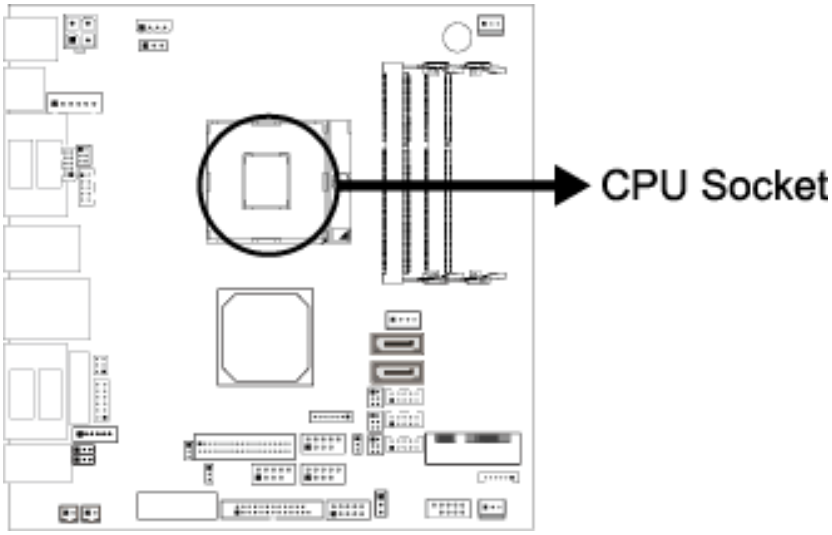


▸ **Note**

»» ■ **represents the 1st pin**

Installing Central Processing Unit (CPU)

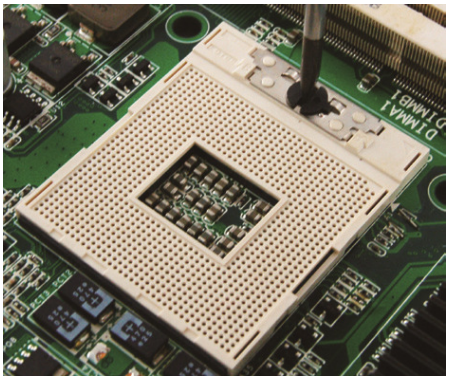
Step 1: Locate the CPU socket on the motherboard



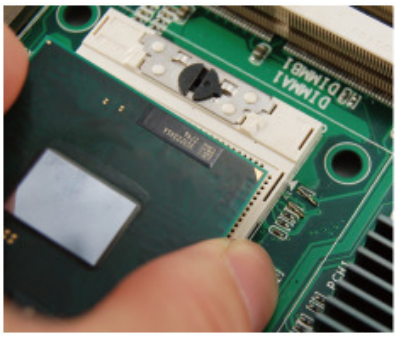
▶ **Note**

- **Do not touch processor contacts to prevent damaging the CPU**

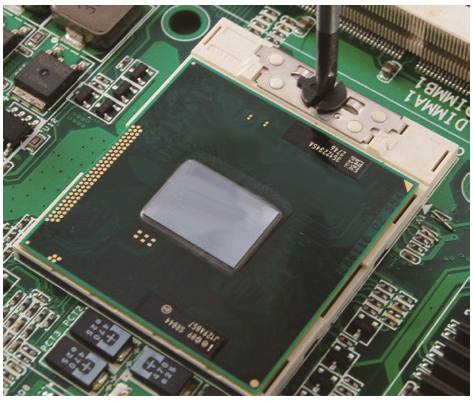
Step 2: Use a screwdriver, disengage (Unlock) the socket actuator, as shown in figure below



Step 3: Align the gold triangle on the CPU with the similar marking on the socket. If the processor does not drop completely into the socket, turn the socket actuator to the open position until the processor drops completely plugged in



Step 4: While gently holding the processor down with your finger, secure the processor in the socket with a screwdriver by turning the socket actuator to the “Lock” position



▸ **Note**

- The CPU fits only in one correct orientation. Do not force the CPU into the socket to prevent damaging the CPU

Install a Cooler

The system must not be operated without a cooler (heat sink and fan) to provide the necessarily cooling, install the cooling unit supplied as follows:

1. Install the correct CPU as described above

2. Align the screw holes of the cooler rear retention bracket with the mounting holes on the underside of the motherboard, located at the four corners of the CPU location. Insert into the holes and turn the motherboard over

3. Place the cooler assembly on top of the CPU with the cooling fins aligned with the memory slots. This will allow the fan to provide cooling the chipset heatsink. Align the screws with the screw holes of the rear retention bracket

4. Tighten each screw halfway to secure the cooler assembly to the motherboard. Then gradually tighten all four screws. Do not fully tighten the first screw before partially tightening the other screws

as this may apply uneven pressure to the CPU, causing damage

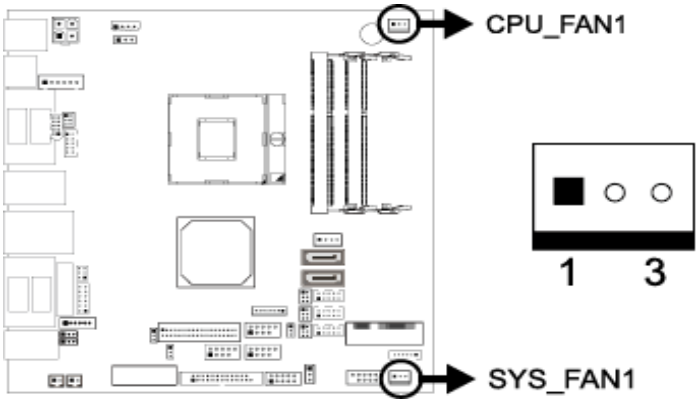
▸ **Note**

- Be careful not to touch the thermal pad on the underside of the heatsink. This pad is made of thermal compound and is deformable. It is designed to make optimal thermal contact with the CPU. No additional thermal compound is required
- Make sure that good thermal contact is made between the processor and heat sink. Insufficient contact or incorrect use of heat sink, fan, or thermal compound can cause the processor to overheat, which may crash the system or cause permanent damage to the CPU
- Do not forget to connect the CPU fan connector
- For proper installation, please kindly refer to the installation manual of your CPU cooler

Connect Cooling Fans

These fan headers support cooling-fans built in the computer. The fan cable and connector may be different according to the fan manufacturer. Connect the fan cable to the connector while matching the black wire to pin#1

CPU_FAN1: CPU fan header
SYS_FAN1: System fan header



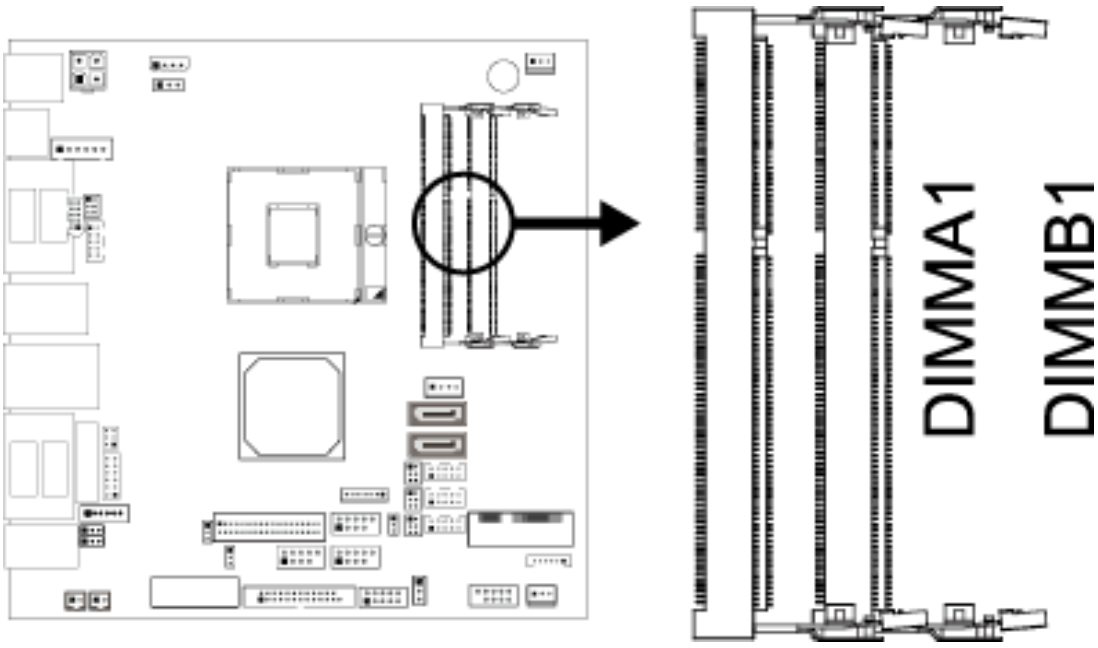
CPU_FAN1	
Pin	Assignment
1	Ground
2	Smart Fan Control
3	FAN RPM rate sense
SYS_FAN1	
Pin	Assignment
1	Ground
2	+12V
3	FAN RPM rate sense

▸ **Note**

- System Fan Headers support 3-pin head connectors. When connecting with wires onto connectors, please note that the red wire is the positive nd should be connected to pin#2, and the black wire is Ground and should be connected to GND

Installing System Memory

DIMMA1/B1: Memory Module (204pin SO-DIMM)



▸ **Note**

1. Align a DIMM on the slot such that the notch on the DIMM matches the break on the Slot
2. Insert the DIMM firmly into the slot until the retaining chip snap back in place and the DIMM is properly seated

DIMM Socket Location	DDR3 Module	Total Memory Size
DIMMA1	512MB/1GB/2GB/4GB	Max is 8GB
DIMMB1	512MB/1GB/2GB/4GB	

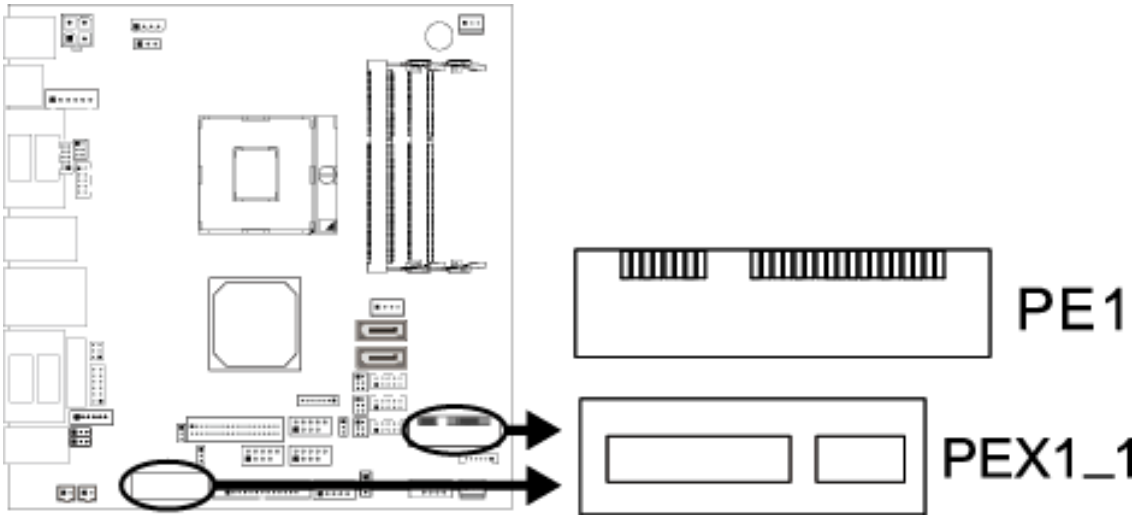
Expansion Slots

PEX1_1: PCI-Express x1 Slot

- ✧ PCI-Express 2.0 compliant
- ✧ Data transfer bandwidth up to 500MB/s per direction; 1GB/s in total
- ✧ PCI-Express supports a raw bit-rate of 2.5Gb/s on the data pins

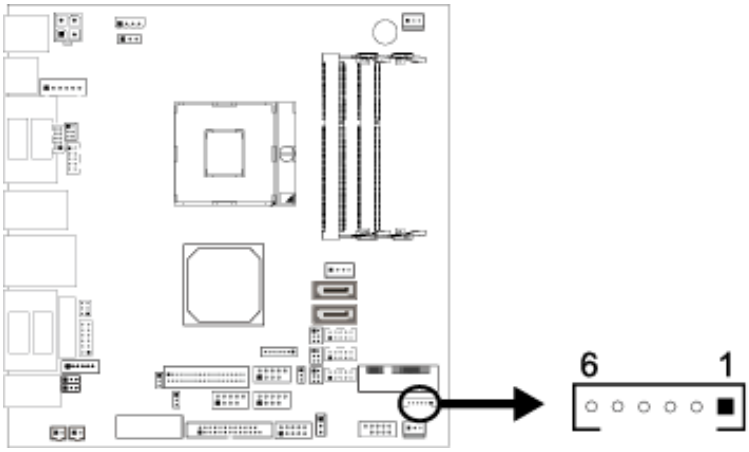
PE1: Mini PCI-E Slot (mSATA function is optional)

EC-15i5 mainboard is equipped with 1 Mini PCI-E Slot



JSIM1: SIM card header

EC-15i5 mainboard is equipped with one SIM card header for Mini PCI-E Slot

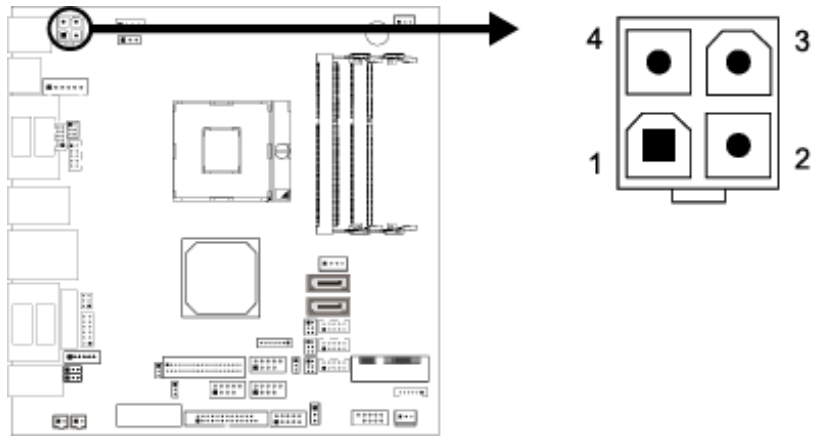


Pin	Assignment
1	GND
2	UIM_RESET
3	UIM_CLK
4	UIM_DATA
5	UIM_VPP
6	UIM_PWR

Power Supply

JPWR1: ATX Power Source Connector (4-pin)

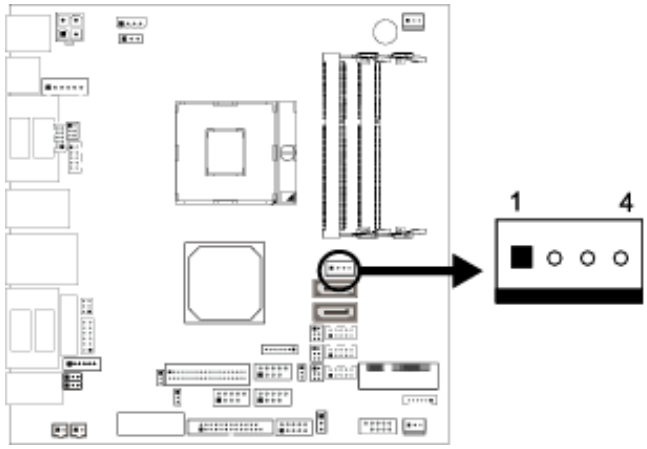
Provides or +12V input to system power circuit



Pin	Assignment
1	+12V in
2	+12V in
3	Ground
4	Ground

JHDD1: HDD Power Connector

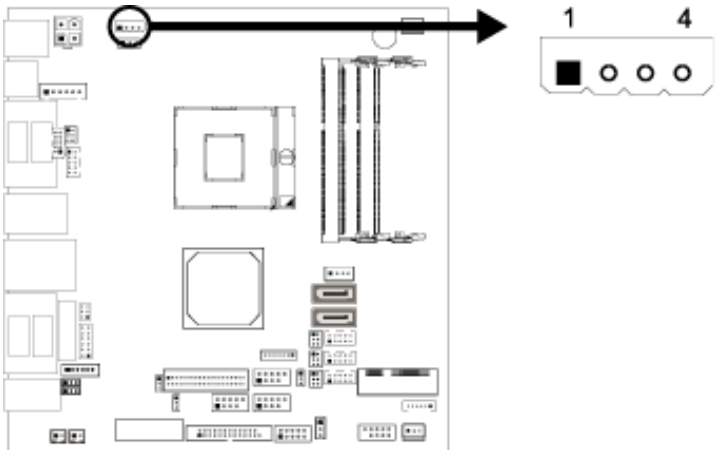
Provides power connection of SATA devices



Pin	Assignment
1	+12V output
2	GND
3	GND
4	+5V output

JP12V: 12V Output Power Connector

Provides power connection of 12V output



Pin	Assignment
1	+12V output
2	GND
3	GND
4	NA

Jumpers / Headers / Connectors

Jumper Setting

The illustration shows how to set up jumpers. When the jumper cap is placed on pins, the jumper is “close”, if not, that means the jumper is “open”

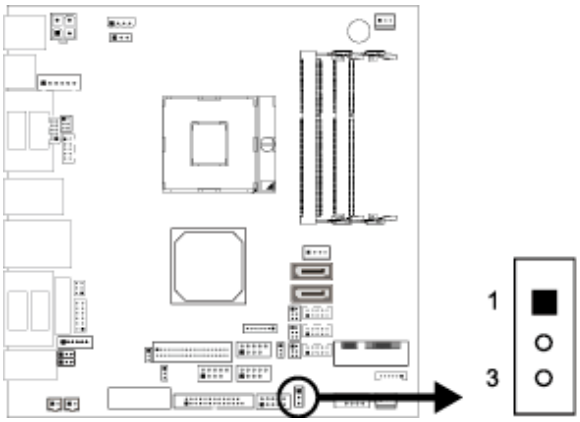
Pin opened

Pin closed

Pin 1-2 closed

JCMOS1: Clear CMOS Jumper

Placing the jumper on pin2-3 allows user to restore the BIOS safe setting and the CMOS data. Carefully follow the procedures to avoid damaging the motherboard



Pin 1-2 Close: Normal Operation (Default)

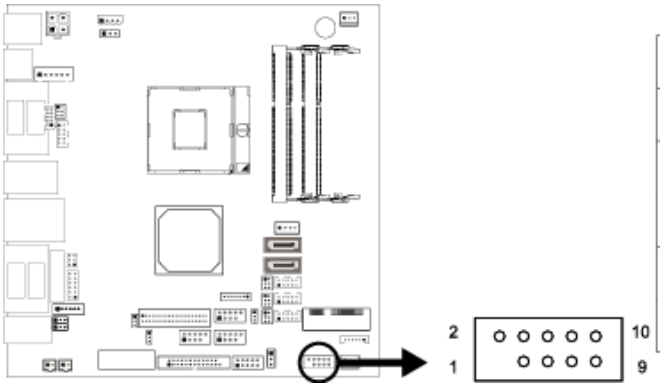
Pin 2-3 Close: Clear CMOS data

Clear CMOS Procedures:

1. Remove AC power line
2. Set the jumper to “Pin 2-3 close”
3. Wait for five seconds
4. Set the jumper to “Pin 1-2 close”
5. Power on the AC
6. Reset your desired password or clear the CMOS data

JPANEL1: Front Panel Header

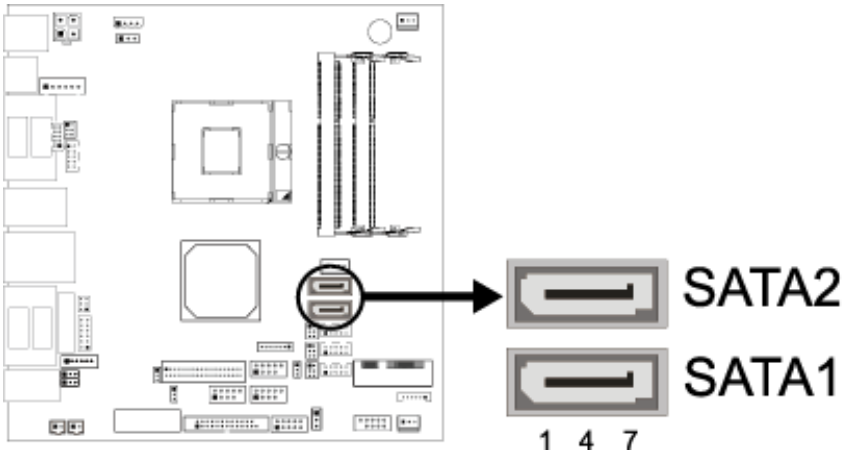
This 10-pin header includes Power-on, Reset, HDD LED, and Power LED connection. It allows user to connect the system case’s front panel switch functions



Function	Pin	Assignment	Function	Pin	Assignment
N/A	1	Key	Power LED	2	Power LED
HDD LED	3	HD LED+		4	Power LED+
	5	HD LED-		6	Power LED-
Reset Button	7	Reset	Power Button	8	Power
	9	Reset GND		10	Power GND

SATA1/SATA2: Serial ATA 6.0 Gb/s Connectors

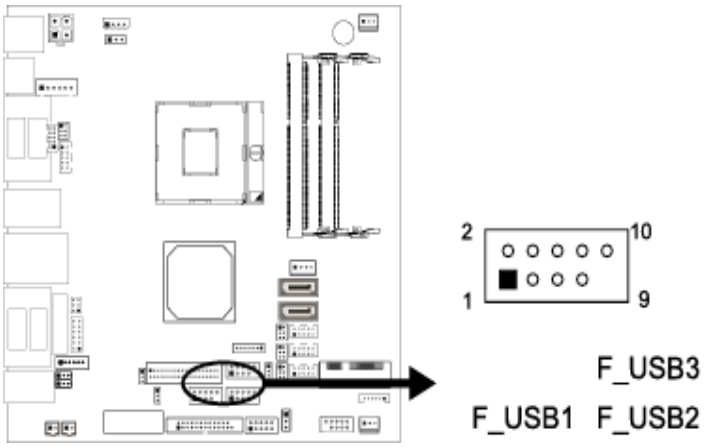
Supports the thin Serial ATA cable for primary internal storage devices



Pin	Assignment
1	Ground
2	TX+
3	TX-
4	Ground
5	RX-
6	RX+
7	Ground

F_USB1/2/3: USB 2.0 Header

EC-15i5 mainboard provides USB 2.0 pin header. Each header allows you to connect 2 additional USB 2.0 ports

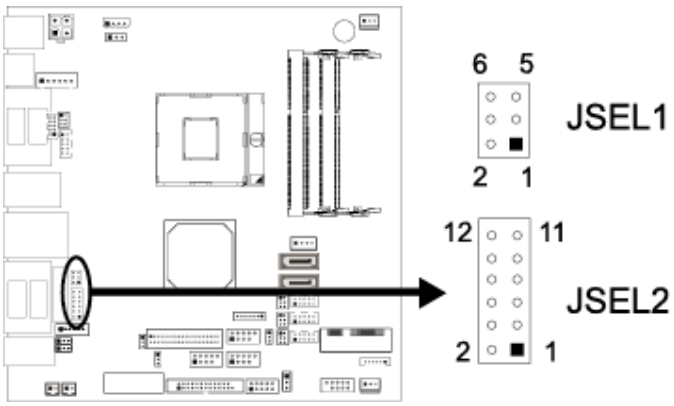


Pin	Assignment	Pin	Assignment
1	+5V (fused)	2	+5V (fused)
3	USB -	4	USB -
5	USB +	6	USB +
7	Ground	8	Ground
9	Key	10	NC

Serial Port Connectors & Headers

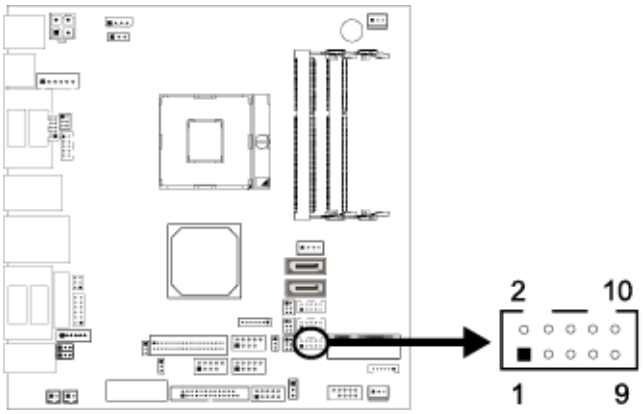
JSEL1/JSEL2: RS-232/422/485 Switch Headers for COM1

Determine the COM1 belongs to RS-232 (Default), 422, or 485



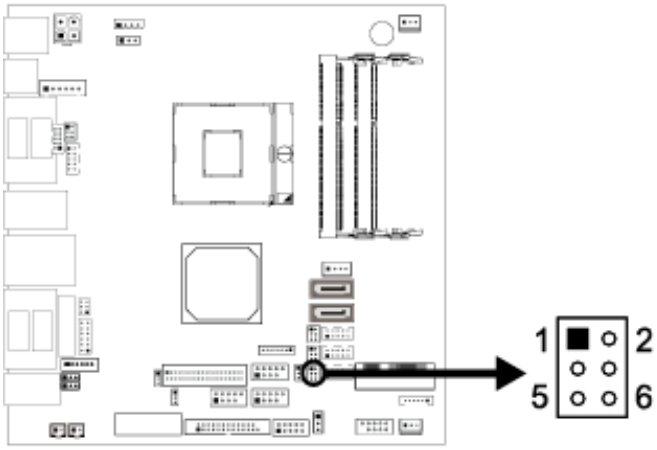
JSEL1		
1-2	RS-232	
3-4	RS-422	
5-6	RS-485	
JSEL2		
RS-232	RS-422	RS-485
1-3	3-5	3-5
2-4	4-6	4-6
7-9	9-11	9-11
8-10	10-12	10-12

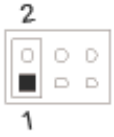
JCOM4: Serial Port Header



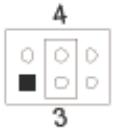
Pin	Assignment	Pin	Assignment
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	Ring / 5V / 12V	10	NA

JPC4: Serial Port Voltage Switch Jumper for JCOM4

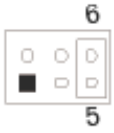




Pin 1-2 Close: Pin9=Ring (Default)

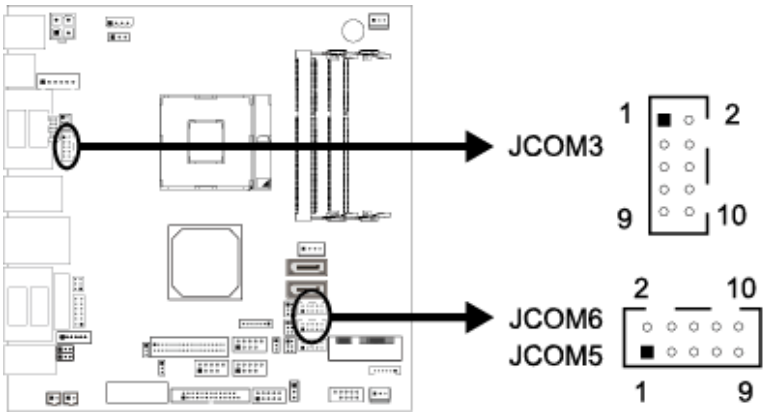


Pin 3-4 Close: Pin9= 5V



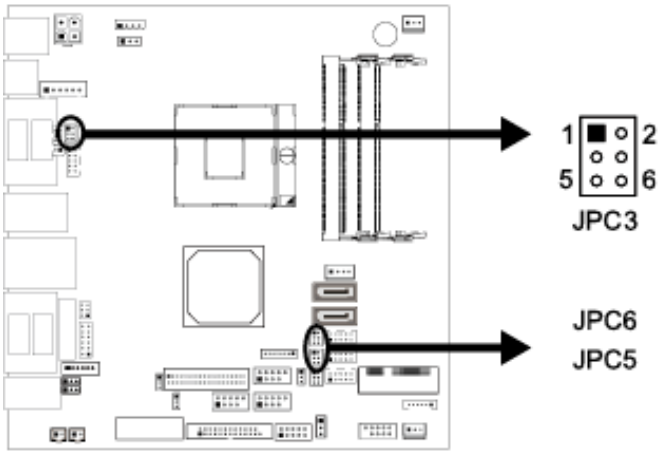
Pin 5-6 Close: Pin9=12V

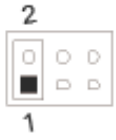
JCOM3/JCOM5/JCOM6: Serial Port Headers
(The board has built-in COM3 , no JCOM3 Connector)



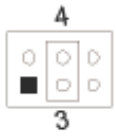
Pin	Assignment	Pin	Assignment
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	0V / 5V / 12V	10	NA

JPC3/JPC5/JPC6: Serial Port Voltage Switch Jumpers for JCOM3/JCOM5/JCOM6

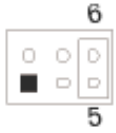




Pin 1-2 Close: Pin9=0V (Default)



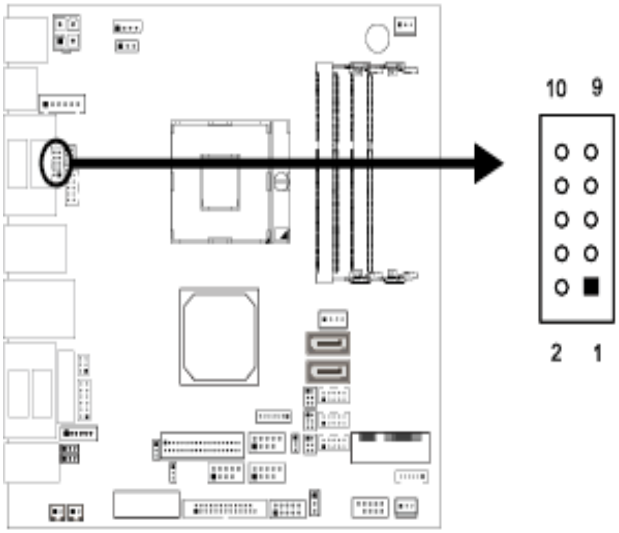
Pin 3-4 Close: Pin9= 5V



Pin 5-6 Close: Pin9=12V

JVGA1: VGA Connector (Optional)

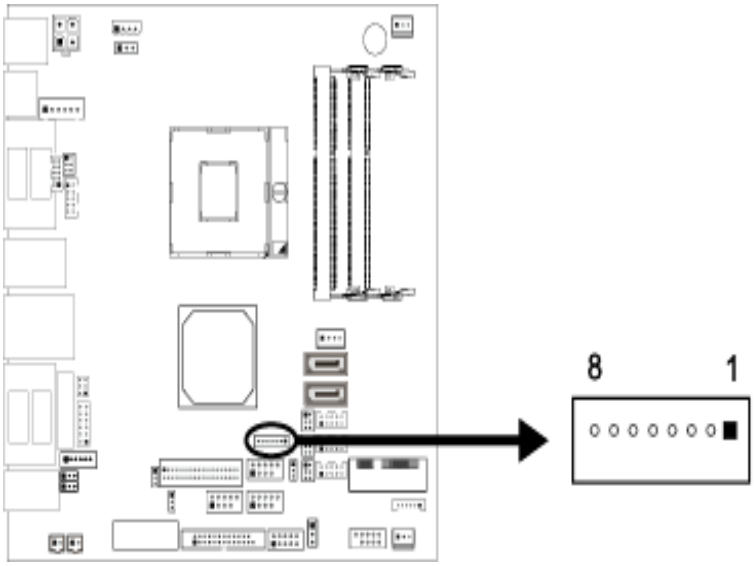
This header allows you to connect VGA



Pin	Assignment
1	VGA_P5V
2	C_VGA_RED
3	VGA_5VDDCLK
4	C_VGA_GREEN
5	VGA_5VDDA
6	C_VGA_BLUE
7	VSYNC_C
8	GND
9	HSYNC_C
10	GND

JC1: LCD Backlight Inverter Connector

For connecting to LCD for providing backlight control function. It is strongly recommended to use the matching JOY DAY INDUSTRIAL - A1250WV-S-8P connector

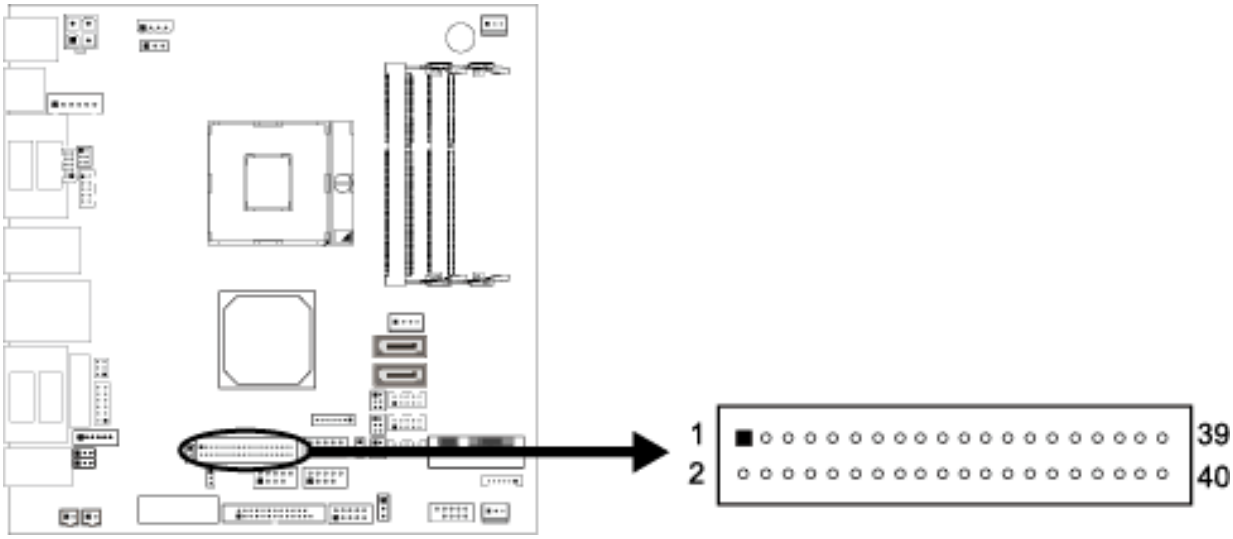


Pin	Assignment
1	DC 5V/12V (selected by JLV1)
2	DC 5V/12V (selected by JLV1)
3	NC
4	NC
5	Backlight On
6	Brightness Adjust
7	GND
8	GND

LVDS-OUT1: LVDS Connector

Supports 18/24 bit single-channel panels

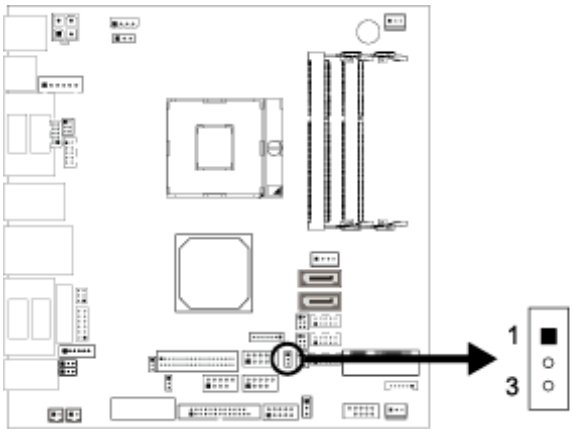
- It is strongly recommended to use the matching JOY DAY INDUSTRIAL - A1252WV-SF-2X20PD01 connector



Pin	Assignment	Pin	Assignment
1	LVDSB_DATA0_N	2	PVDD2, 3.3V/5V (selected by JLV2)
3	LVDSB_DATA0_P	4	PVDD2, 3.3V/5V (selected by JLV2)
5	GND	6	GND
7	LVDSB_DATA1_N	8	GND
9	LVDSB_DATA1_P	10	LVDSA_DATA0_N
11	GND	12	LVDSA_DATA0_P
13	LVDSB_DATA2_N	14	GND
15	LVDSB_DATA2_P	16	LVDSA_DATA1_N
17	GND	18	LVDSA_DATA1_P
19	LVDSB_CLK_N	20	GND
21	LVDSB_CLK_P	22	LVDSA_DATA2_N
23	GND	24	LVDSA_DATA2_P
25	LVDSB_DATA3_N	26	GND
27	LVDSB_DATA3_P	28	LVDSA_CLK_N
29	+5V	30	LVDSA_CLK_P
31	LVDSA_DDC-CLK	32	GND
33	+3.3V	34	LVDSA_DATA3_N
35	NC	36	LVDSA_DATA3_P
37	PVDD2, 3.3V/5V (selected by JLV2)	38	NC
39	PVDD2, 3.3V/5V (selected by JLV2)	40	LVDSA_DDC_DATA

JLV1: LCD Backlight Inverter Power Select Jumper

For selecting LCD Backlight Inverter Power

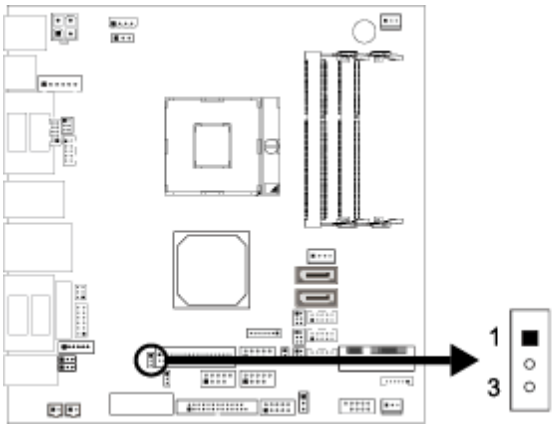


Pin 1-2 Close: Inverter Power=5V

Pin 2-3 Close: Inverter Power=12V (Default)

JLV2: LCD Panel Power Select Jumper

For selecting LCD Power(PVDD2)

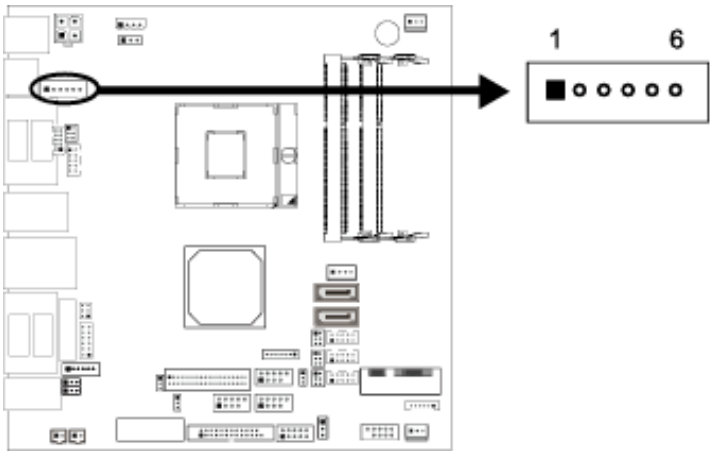


Pin 1-2 Closed: Voltage Level Mode (Default)

Pin 2-3 Closed: PWM Mode

JRJ11: Cash Draw Header

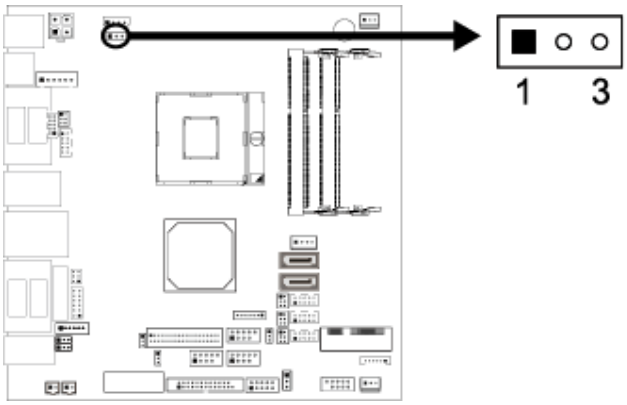
This onboard header is for cash drawer function, but when it is in use, you cannot use the I/O RJ11 connector



Pin	Assignment
1	CASEOPEN#2
2	CASH1_P
3	CASEOPEN#
4	CASH_PWR
5	CASH2_P
6	GND

JP2: Voltage Switch Header for Cash Draw Connector

For controlling the Pin4 of RJ11 (JRJ11) to switch 12V or 24V

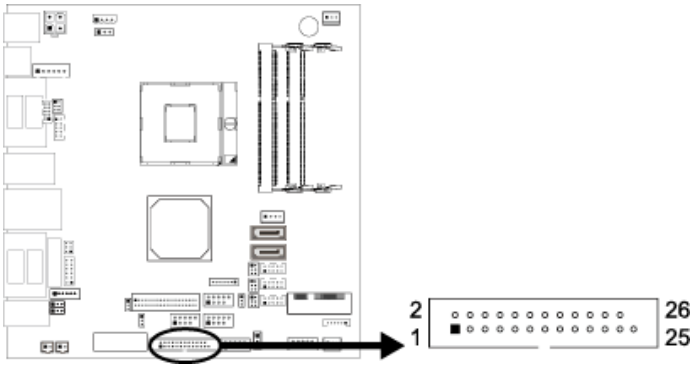


Pin 1-2 Close: Pin4 of RJ11(JRJ11)=24V (Default)

Pin 2-3 Close: Pin4 of RJ11(JRJ11)=12V

JPRNT1: Printer Port Connector

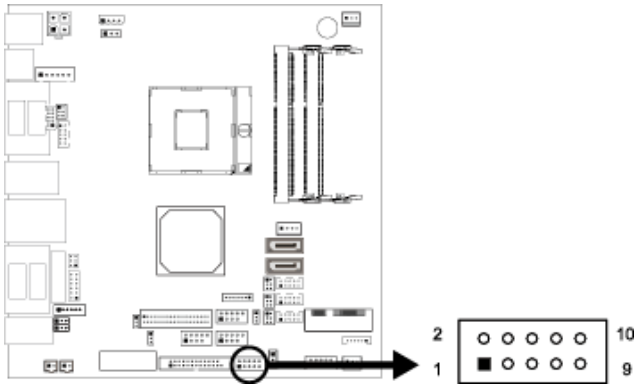
This header allows you to connect printer port on the PC



Pin	Assignment	Pin	Assignment
1	Strobe	2	ALF
3	Data 0	4	-Error
5	Data 1	6	-Init
7	Data 2	8	-Scltin
9	Data 3	10	Ground
11	Data 4	12	Ground
13	Data 5	14	Ground
15	Data 6	16	Ground
17	Data 7	18	Ground
19	-ACK	20	Ground
21	Busy	22	Ground
23	PE	24	Ground
25	SCLT	26	Key

JDIO1: Digital I/O Connector

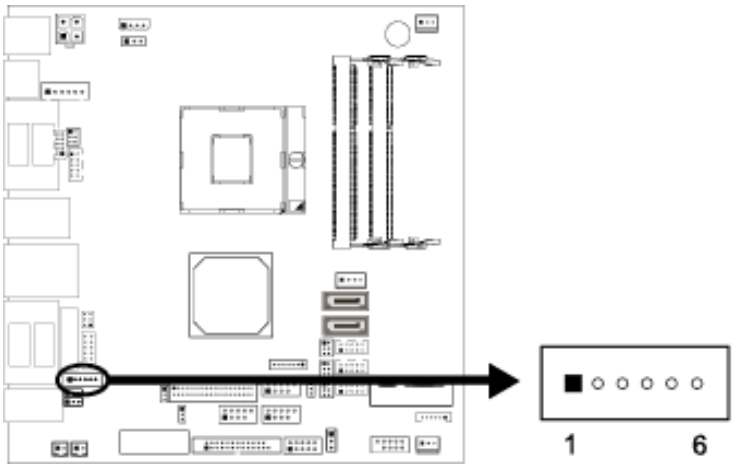
Offers 4-pair of digital I/O functions and address is set in BIOS



Pin	Assignment	Address	GPIO
1	5V		
2	DI-01	548H BIT7	GPIO71
3	DO-01	50CH BIT7	GPIO7
4	DI-02	548H BIT6	GPIO70
5	DO-02	50CH BIT6	GPIO6
6	DI-03	548H	GPIO69

JMSR1: MSR Connector

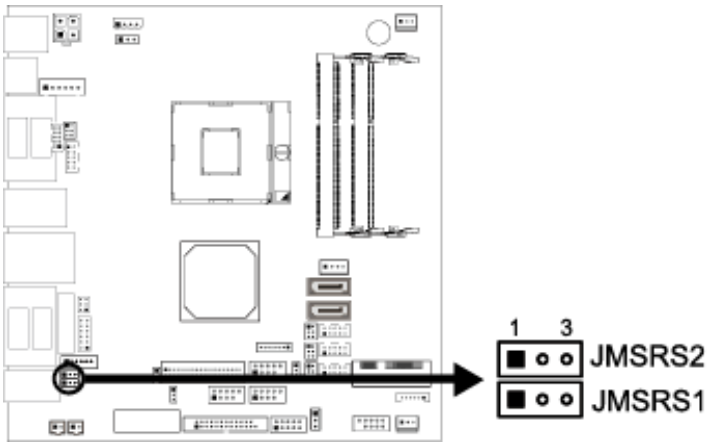
The mainboard provides MSR connector



Pin	Assignment
1	PS2CLK
2	PS2DAT
3	KCLK
4	KDAT
5	GND
6	+5V

JMSRS1/JMSRS2: MSR Jumper

Enables or disable MSR connector function.



Pin 1-2 Close:JMSR1 Disabled (Default)

Pin 2-3 Close: JMSR1 Enabled

9. Customer Display Setting

The system parameters of Customer Display Series can be set by using VFD Utility software tool. Find the tool in the companion disk. In addition to setting system parameters, it can configure welcome message and user font with the software tool. The system parameters include the following items

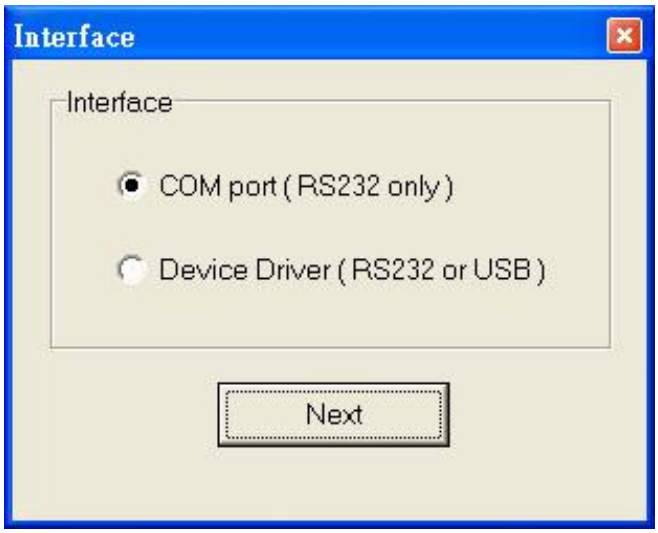
- Language Character Set
- Command Type
- Baud rate
- Parity Check

9.1 Before starting

Before starting the software, make sure the Customer Display Series is connected to your PC and works. If use USB interface or device driver, please install device driver before starting the software. If the connection is OK, execute the software

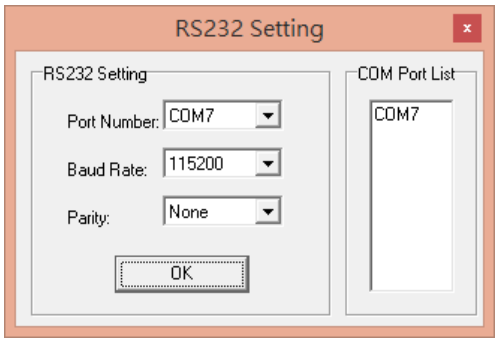
7.1.1 Select a proper interface

After starting the software, the following dialog will pop up. Select a proper interface



7.1.2 RS-232 Interface

If select the item COM port (RS232 only), the dialog of RS-232 setting will show up to configure the RS-232 interface, make sure the parameters that type here are the same as the settings of the host PC. If the parameters aren't the same, the communication between host PC and your machine will fail



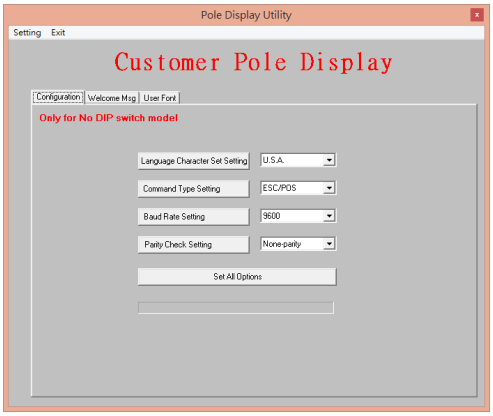
Select the device from the pull-down list on following dialog. If the device driver is installed, it shall be shown on the list

7.1.3 Select Model Name

Before continue, select a proper model name that matches with your device's model. The model name can be selected on the upper-right corner of the window. If the model name does not match with your device, the configuration may not take effect

7.2 Configure System Parameters

There are three pages on the main dialog. The first one is the Configuration Page. Select desired character type, command set and baud rate of RS-232 interface. After all items are set to desired condition, press SET button to send all the settings to your device. These settings will be stored on the non-volatile memory. Every time when start the device, these settings will be retrieved from non-volatile memory



7.2.1 Command Type

The Customer Display Series supports up to 8 command sets. They are listed on the following table. Please select one from the pull-down list

Command Type	Default
EPSON ESC/POS	*
DSP-800 (option)	
ADM787/788 (option)	
EMAX(AEDEX)	
UTC/S	
UTC/P	
CD5220	
Reserved	

7.2.2 Language Character Set Selection

The Customer Display Series supports the following language character set. Please refer to following table for character code page

Character Set(20h-7Fh)	Code Table (80H-FFH)	Default
U.S.A	**PC-437 (USA, Standard Europe)**	*
France	**PC-858**	
Germany		
U.K.		
Denmark I		
Sweden		
Italy		
Spain		
Reserved		
Norway	**PC-858**	
Denmark II		
U.S.A	**Slavonic**	
U.S.A	**Russia**	
U.S.A	**PC-860 (Portuguese)**	
U.K.	**Greek**	
User Font		

7.2.3 Baud Rate Selection

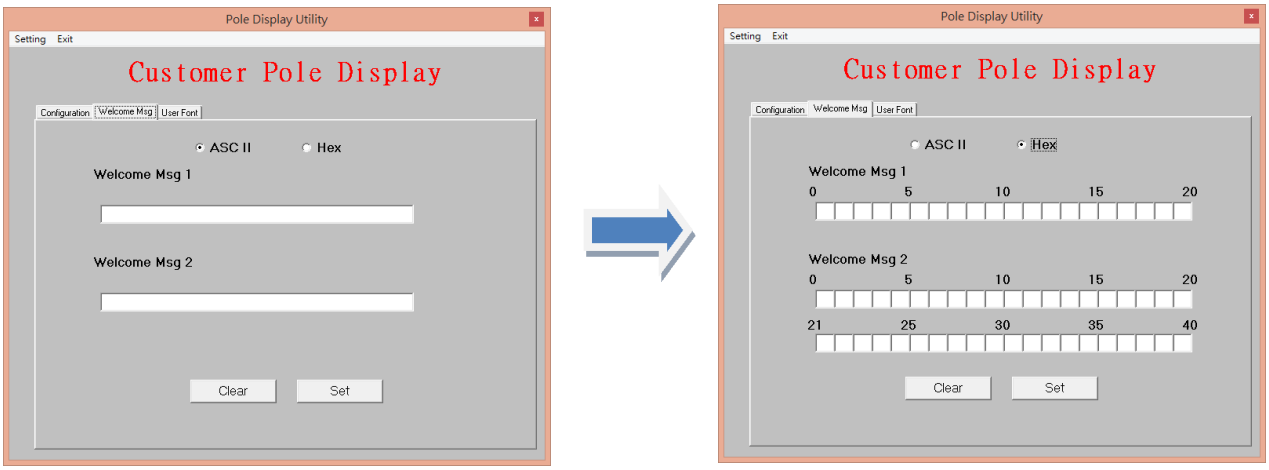
Baud Rate (bps)	Default
9600	*
19200	
38400	
115200	

7.2.4 Parity Check Selection

Parity Check	Default
None-parity	*
Even-parity	

7.3 Define Welcome Message

It can define the own message in the display. The Msg1 will blink on upper line while the Msg2 is displayed on lower line in marquee status
It can type the character on keyboard in ASCII mode or type others in Hex mode. Press Set button to send the messages to the machine

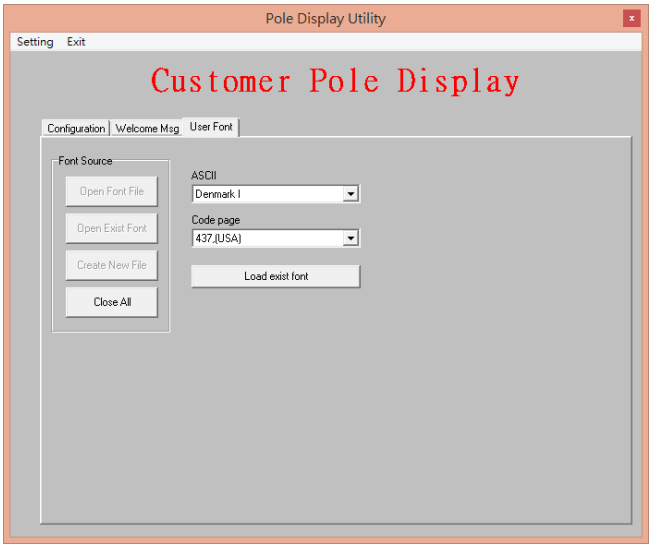


7.4 Define Your Own Font

It can create your own font and download it with the software tool
There are three ways to create the font

7.4.1 From an Existing Font

See the following dialog by pressing “Open Exist Font” button
Select a font to be your font base and modify it to fit your requirement



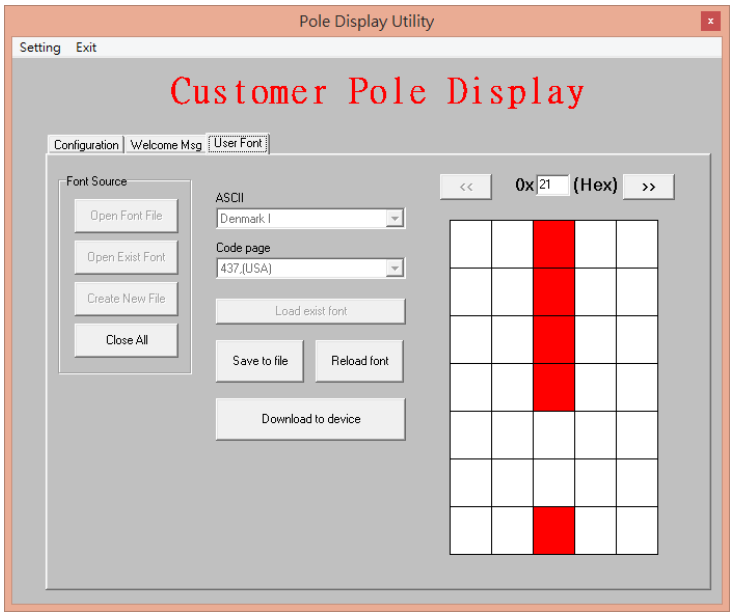
1. The first part is ASCII code which contains the characters coded as 0x20~0x7f. Within the ASCII, some of characters own different definition in different country. Refer to the user's manual for the details of the code table

2. The second part is 0x80~0xff which is the range that code page refer to. It can select a desired code page from the list as a base of your font.

3. After selecting these existing font, press "Load Existing Font" and the font will be loaded into system memory. Once finishes editing font, choose either to save your font to a file by pressing "Save to file" or download the font to device by pressing "Download to device". If wants to quit current modification, it can press "Reload font" button to load the font again. All the modification will be lost after reloading font. Press "Reset" button also let you abandon current modification and restart the whole operation.

7.4.2 From Your Font File

It can modify previously edited and saved font file. Press “Open Font File” button the following dialog will be shown. After select a file, the font contained in that file will be loaded into memory. Then, it can edit font, save font to a file or download the font to device.



7.4.3 From your scratch

If needs to build the font from scratch, press “Create New File” button to create an empty font. After finishing your edit, it can save font to a file or download the font to device. It is a difficult job to build font from zero and highly recommended to build your font from existing font.

8. Software Setting Command

User can re-set the default configuration by using the following software commands:

1. Baud Rate Setting Command

STX 05 B n ETX Change the baud rate
ASCII Format STX 05 B n ETX STX 05 E N ETX
Dec. Format [02][05][66] n [03] [02] [05] [49] [78] [03] 49≦n≦51
Hex. Format [02h][05h][42h] n [03h][02h][05h][45h][4eh][03h] 31h≦n≦33h
Description Change the display communication baud rate.
The baud rate setting can be selected from 9600~115200 bps.

N	Baud rate
30h	115200
31h	38400
32h	19200
33h	9600

2. Parity Check Setting Command

STX 05 P n ETX Change the parity check
ASCII Format STX 05 P n ETX STX 05 E N ETX
Dec. Format [02][05][80] n [03] [02] [05] [69] [78] [03] n=48,49
Hex. Format [02h][05h][50h] n [03h][02h][05h][45h][4eh][03h]
n=30h,31h
Description

N	Parity check
30h	None parity
31h	Even parity

3. Command Type Setting Command

STX 05 C n ETX Change the command type
ASCII Format STX 05 C n ETX STX 05 E N ETX
Dec. Format [02][05][67] n [03] [02] [05] [69] [78] [03] n=49,51,55
Hex. Format [02h][05h][43h] n [03h][02h][05h][45h][4eh][03h] n=31h,33h,37h
Description Change the command type and initialize the display

n	Command type	n	Command type
31h	ESC/POS	35h	UTC/P
32h	ADM787/788 (option)	36h	UTC/S
33h	DSP-800 (option)	37h	CD5220
34h	EMAX (AEDEX)		

4. International Character Set Setting Command

STX 05 S n ETX Change the International character set
ASCII Format STX 05 S n ETX STX 05 E N ETX
Dec. Format [02][05][83] n [03] [02] [05] [69] [78] [03] 48≦n≦63
Hex. Format [02h][05h][53h] n [03h] [02h][05h][45h][4eh][03h] 30h≦n≦3Fh
Description Change the display International character set

n	**Character Set (20h–7Fh)**	**Code Table (80H-FFH)**
30h	U.S.A.	PC-437 (USA, Standard Europe)
31h	France	PC-858
32h	Germany	
33h	U.K.	
34h	Denmark I	
35h	Sweden	
36h	Italy	
37h	Spain	
38h	Reserved	
39h	Norway	PC-858
3Ah	Denmark II	
3Bh	U.S.A.	Slavonic
3Ch	U.S.A.	Russia
3Dh	U.S.A.	PC-860 (Portuguese)
3Eh	U.K.	Greek
3Fh	User Font	

Command Set

1. ESC/POS Mode Command Set

Command	Code (hex)	Function description
HT	09	Move cursor right.
BS	08	Move cursor left.
US LF	1F 0A	Move cursor up.
LF	0A	Move cursor down.
US CR	1F 0D	Move cursor to right-most position.
CR	0D	Move cursor to left-most position.
HOM	0B	Move cursor to home position.
US B	1F 42	Move cursor to bottom position.
US $ x y	1F 24 x y 01h≦x≦14h, y=01h, 02h	Move cursor to specified position.
CAN	18	Clear cursor line.
CLR	0C	Clear display screen.
US X n	1F 58 n 01h≦n≦04h (=brightest)	Brightness adjustment.
US E n	1F 45 n 00h≦n≦FFh	Blink display screen.
ESC @	1B 40	Initialize display.
ESC # n	1B 23 n 30h≦n≦38h	Command type select
ESC R n	1B 52 n 00h≦n≦0Ch	Select international character set. (see Table 5-A)
ESC t n	1B 74 n n=00h, 01h..07h, 10h, 13h	Select character code table. (see Table 5-B)
US r n	1F 72 n n=00h, 01h	Select/Cancel reverse character. n=01 select, n=00 cancel
US # n m	1F 23 n m n=00h, 01h, 01h<m≦14h	Turn annunciator on/off n=01 on, n=00 off
US C n	1F 43 n n=00h, 01h	Set cursor on/off n=01 on, n=00 off
US MD1	1F 01	Specify overwrite mode.
US MD2	1F 02	Specify vertical scroll mode.
US MD3	1F 03	Specify horizontal scroll mode.
US @	1F 40	Execute self-test.
US . n	1F 2E n n=a displayable character code	Specify period
US , n	1F 2E n n=a displayable character code	Specify period
US ; n	1F 2C n n=a displayable character code	Specify comma
US ; n	1F 3B n n=a displayable character code	Specify semicolon (period + comma)
ESC & s n m [a(p1..pa)]x	1B 26 1 n m [a(p1..pa)]x m-n+1 21h≦n≦m≦FFh; 1≦a≦5	Define download characters.

m-n+1	p1..p5=row1...row5	
ESC ? n	1B 3F n 21h≦n≦FFh	Delete download characters.
ESC % n	1B 25 n n=00h, 01h	Select/cancel download character set. n=01 select, n=00 cancel
ESC W n s x1 y1 x2 y2	1B 57 n s x1 y1 x2 y2 1≦n≦4, s=00h,01h 01h≦x1≦x2≦14h 01h≦y1≦y2≦02h	Specify/cancel the window range. s=01 specify, 00 cancel n=select the window x= column position y= row position
ESC = n	1B 3D n n=01h, 02h, 03h	Select peripheral device. n=01h, select printer n=02h, select display n=03h, select printer + display
US :	1F 3A	Set starting/ending position of macro definition.
US ^ n m	1F 5E n m 00h≦n≦FFh 00h≦m≦FFh	Execute and quit macro. n=word time m=show string time
US T h m	1F 54 h m 00h≦h≦17h 00h≦m≦3bh	Display time
US U	1F 55	Display time continuously
US V n	1F 56 n 00h≦n≦01h	Status confirmation by DTR signal

n	International Font
00	U.S.A.
01	France
02	Germany
03	U.K.
04	Denmark I
05	Sweden
06	Italy
07	Spain
08	Japan
09	Norway
0A	Denmark II
0B	Slavonic
0C	Russia

Table 5-A Select International font

n	Code Table (80H-FFH)
00	Page 0, (PC437, USA standard Euro)
02	Page 2, (PC850, Multilingual)
03	Page 3, (PC860, Portuguese)
04	Page 4, (PC863, Canadian-French)
05	Page 5, (PC865, Nordic)
06	Page 6, (Slavonic)
07	Page 7, (Russian)
13	Page 8, (PC858, +Euro symbol)
10	Page 9, (WPC1252)

Table 5-B Select code table

2. ADM787/788 Mode Command Set (Option)

Command	Code (hex)	Function Description
CLR	0C	Clear display
CR	0D	Carriage return
SLE1	0E	Clear filed 1 (upper-left line) and move cursor to the first position
SLE2	0F	Clear filed 2 (bottom-left line) and move cursor to the first position
DC0	10 n 31H≦n≦37H	Set the period to the upper line last n position
DC1	11 n n=31h, 32h	Set line blinking, n=31h upper line; n=32h bottom line
DC2	12 n n=31h, 32h	Clear line blinking, n=31h upper line; n=32h bottom line
SF1	1E	Clear field 3 (upper-right line) and move cursor to the first position
SF2	1F	Clear field 4 (bottom-right line) and move cursor to the first position

3. EMAX (AEDEX) Mode Command Set

Command	Code (hex)	Function Description
! # 1 … CR	21 23 31 [d1, d2...dn] 0D 1≦n≦20	Upper line display
! # 2 … CR	21 23 32 [d1, d2...dn] 0D 1≦n≦20	Bottom line display
! # 4 … CR	21 23 34 [d1, d2...dn] 0D 1≦n≦40	Upper line message scroll continuously
! # 5 … CR	21 23 35 h1h2 ":" m1m2 0D ":"=3A 30h ≦h1≦32h; 30h≦m1≦35h 30h≦h2, m2≦39h	Display time h=hour m=minute
! # 6 … CR	21 23 36 [d1, d2...dn] 0D 1≦n≦64	Upper line message scroll once pass
! # 8 … CR	21 23 38 n m 0D 20h≦n, m	Change attention code
! # 9 … CR	21 23 39 [d1, d2...dn] 0D 1≦n≦40	Two line display

4. UTC Mode Command Set

UTC/S (STANDARD)

Command	Code (hex)	Function Description
BS	08	Back space
HT	09	Horizontal tab
LF	0A	Line feed
CR	0D	Carriage return
DLE	10 n 00h≦n≦27h	Display cursor position
DC1	11	Over write display mode
DC2	12	Vertical scroll mode
DC3	13	Cursor on
DC4	14	Cursor off

US	1F	Clear display
ESC d	1B 64	Change to UTC enhanced mode

UTC/P (ENHANCED)

Command	Code (hex)	Function Description
ESC u A ....CR	1B 75 41 [d1, d2...dn] 0D 1≦n≦20	Upper line display
ESC u B ….CR	1B 75 42 [d1, d2...dn] 0D 1≦n≦20	Bottom line display
ESC u D ….CR	1B 75 44 [d1, d2...dn] 0D 1≦n≦40	Upper line message scroll continuously
ESC u E ….CR	1B 75 45 h1h2 ":" m1m2 0D ":"=3A 30h≦h1≦32h; 30h≦m1≦35h 30h≦h2, m2≦39h	Display time hh= hour mm= minute
ESC u F ….CR	1B 75 46 [d1, d2...dn] 0D 1≦n≦40	Upper line message scroll once pass
ESC u H ….CR	1B 75 48 n m 0D 20h≦n, m	Change attention code
ESC u I ….CR	1B 75 49 [d1, d2...dn] 0D 1≦n≦40	Two line display
ESC RS ….CR	1B 0F 0D	Change to UTC standard mode

5. CD5220 Mode Command Set

Command	Code (hex)	Function description
ESC DC1	1B 11	Overwrite mode
US SOH	1F 01	Overwrite mode
ESC DC2	1B 12	Vertical scroll mode
US STX	1F 02	Vertical scroll mode
ESC DC3	1B 13	Horizontal scroll mode
US ETX	1B 51 41 [d1, d2...dn] 0D 1≦n≦20	Set the string display mode, write string to upper line **(see Note 1)**
ESC QB ....CR	1B 51 42 [d1, d2…dn] 0D 1≦n≦20	Set the string display mode, write string to bottom line **(see Note 1)**
ESC QD ....CR	1B 51 44 [d1, d2…dn]xm 0D m≦40	Upper line message scroll continuously **(see Note 2)**
ESC [D	1B 5B 44	Move cursor left
BS	08	Move cursor left
ESC [C	1B 5B 43	Move cursor right
HT	09	Move cursor right
ESC [A	1B 5B 41	Move cursor up
US LF	1F 0A	Move cursor up
ESC [B	1B 5B 42	Move cursor down
LF	0A	Move cursor down
ESC [H	1B 5B 48	Move cursor to home position
HOM	0B	Move cursor to home position
ESC [L	1B 5B 4C	Move cursor to top-left position

CR	0D	Move cursor to top-left position
ESC [R	1B 5B 52	Move cursor to top-right position
US CR	1F 0D	Move cursor to top-right position
ESC [K	1B 5B 4B	Move cursor to bottom position
US B	1F 42	Move cursor to bottom position
ESC # n	1B 23 n n=31h~37h	Command type select
US @	1F 40	Execute self test
US E n	1F 45 n n=00h~FFh	Blink display screen n=00h for no blink
ESC l x y	1B 6C x y 1≦x≦14h y=01h, 02h	Move cursor to specified position x= column position y= row position
US $ x y	1F 24 x y 01h≦x≦14h; y=01h, 02h	Move cursor to specified position
ESC @	1B 40	Initialize display
ESC W s x1 x2 y	1B 57 s x1 x2 y 01h≦x1≦x2≦13h y=01h, 02h, s=00h, 01h	Set/Cancel the window range at horizontal scroll mode x= column position y= row position
CLR	0C	Clear display screen and clear string mode
CAN	18	Clear cursor line and clear string mode
ESC * n	1B 2A n 01h≦n≦04h (=brightest)	Brightness adjustment
US X n	1F 58 n 01h≦n≦04h (=brightest)	Brightness adjustment
ESC & s n m [a(p1..pa)]x (m-n+1)	1B 26 1 n m [a (p1..pa)] x (m-n+1) 20h≦n≦m≦ FFh 1≦a≦5 p1...p5=row1...row5	Define download characters
ESC ? n	1B 3F	Delete download characters
ESC % n	1B 25 n n=00h, 01h	Select/Cancel download character set n=01 select, n=00 cancel
ESC _ n	1B 5F n n=00h, 01h	Set cursor on/off n=01 cursor on, n=00 cursor off
ESC f n	1B 66 n	Select international font set **(see Note 3)**
ESC c n	1B 63 n	Select code **(see Note 4)**
ESC = n	1B 3D n n=01, 02h, 03h	Select peripheral device n=01h, select printer n=02h, select display n=03h, select printer + display
ESC s 1	1B 73 01	Store the user defined character into EEPROM.

ESC d 1	1B 64 01	Download the user defined character from EEPROM.

NOTE:

1. While using the command “ESC Q A” or “ESC Q B”, other commands cannot be used except for “CLR” or “CAN” to change the operating mode

2. When using the command “ESC Q D”, the upper line message will scroll continuously until a new command is received. It will then clear the upper line and move the cursor to the upper left end position

3. The parameters of the international font set control command “ESC f n”

Parameter “n”		International Font Set
‘A’	41h	U.S.A.
‘G’	47h	Germany
‘I’	49h	Italy
‘J’	4Ah	Japan
‘U’	55h	U.K.
‘F’	46h	France
‘S’	53h	Spain
‘N’	4Eh	Norway
‘W’	57h	Sweden
‘D’	44h	Denmark I
‘E’	45h	Denmark II
‘L’	4Ch	Slavonic
‘R’	52h	Russia

4. The parameters of the code table control command “ESC c n”.

Parameter “n”		International Font Set
‘A’	41h	Compliance with ASCII code
‘L’	4Ch	Compliance with SLOVONIC code
‘R’	52h	Compliance with RUSSIA code

5. DSP-800 Mode Command Set (option)

Command	Code (hex)	Function Description
EOT SOH I n ETB	04 01 49 n 17 n=00~0Fh or 30~3Fh	Select International character set **(see Table 5-C)**
EOT SOH P n ETB	04 01 50 n 17 31h≦n≦58h	Move cursor to specified position
EOT SOH C n m ETB	04 01 43 n m 17 31h≦n≦m≦58h	Clear display range from n to m position and move cursor to n position
EOT SOH S n ETB	04 01 53 n 17 31h≦n≦35h	Save the current view data to n layer for demo display
EOT SOH D n m ETB	04 01 44 n m 17 31h≦n≦4Fh 31h≦m≦33h	Display the saved demo message **(see Table 5-D)**
EOT SOH A n ETB	04 01 41 n 17 31h≦n≦34h	Brightness adjustment
EOT SOH F n ETB	04 01 46 n 17 00h≦n≦FFh	Blink display screen n=00h for no blink
EOT SOH & n [px5] ETB	04 01 26 n p1⋯p5 17 20h≦n≦FFh	Define download characters
EOT SOH ? n ETB	04 01 1 F n 17 1 20h≦n≦FFh	Delete download characters
EOT SOH = n ETB	04 01 3D n 17 n=31h, 32h, 33h	Select peripheral device. n=31h, select printer n=32h, select display n=33h, select printer + display
EOT SOH % ETB	04 01 25 17	Initialize display
EOT SOH @ ETB	04 01 40 17	Execute self-test
EOT SOH # n ETB	04 01 23 n 17	Command type select

n	International Font
30h	USA
31h	France
32h	Germany
33h	UK
34h	Denmark I
35h	Sweden
36h	Italy
37h	Spain
38h	Japan
39h	Norway
3Ah	Denmark II

Table 5-C International Font Set

n	Layer select
bit 0=1	
bit 1=1	
bit 2=1	
bit 3=1	
bit 4=0	
m	**Show mode**
bit 0=1	Show mode 1
bit 1=1	Show mode 2

Table 5-D Layer table for saving data

Character Set

1. Character Code (20h-7Eh)

1.1 USA Standard Character Set

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20h		!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
30h	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40h	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50h	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60h	`	a	b	c	d	e	F	g	h	i	j	k	l	m	n	o
70h	p	q	r	s	t	u	V	w	x	y	z	{	|	}	~	

1.2 International Character Set

Character Code Number													
Country	Hex	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
	Dec	35	36	64	91	92	93	94	96	123	124	125	126
U.S.A		#	$	@	[	\	]	^	`	{	|	}	~
France		#	$	à	°	ç	§	^	`	é	ù	è	¨
Germany		#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	β
U.K		£	$	@	[	\	]	^	`	{	|	}	~
Denmark I		#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
Sweden		#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Italy		#	$	@	°	\	é	^	ù	à	ò	è	ì
Spain		Pt	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
Japan		#	$	@	[	¥	]	^	`	{	|	}	~
Norway		#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Denmark II		#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Slavonic		#	$	@	[	\	]	^	`	{	|	}	~
Russia		#	$	@	[	\	]	^	`	{	|	}	~
Portuguese		#	$	@	[	\	]	^	`	{	|	}	~

2. Character Code Page (80h-FFh)

2.1 Page 0 PC437: USA, Standard Europe

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
80H	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
90H	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	¢	£	¥	Pt	ƒ
A0H	á	í	ó	ú	ñ	Ñ	ª	º	¿	⌐	¬	½	¼	¡	«	»
B0H	▒	▒	▒	┃	┤	╡	╢	╖	╕	╣	┃	╗	╝	╜	┐	
C0H	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D0H	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	▉	▄	▌	▐	▀
E0H	α	ß	Γ	π	Σ	σ	µ	τ	Φ	θ	Ω	δ	∞	ø	ϵ	∩
F0H	≡	±	≥	≤	⌠	⌡	÷	≈	°	•	·	√	ⁿ	²	■	SP

2.2 Greek

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
80H	A	B	Γ	Δ	E	Z	H	Θ	I	K	Λ	M	N	Ξ	O	Π
90H	P	Σ	T	Y	Φ	X	Ψ	Ω	α	β	γ	δ	ε	ζ	η	θ
A0H	ι	κ	λ	μ	ν	ξ	ο	π	ρ	σ	s	τ	υ	φ	χ	ψ
B0H																
C0H																
D0H																
E0H	ω															
F0H										£				-		

2.3 Page 2 PC850: Multilingual

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
80H	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
90H	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	×	ƒ
A0H	á	í	ó	ú	ñ	Ñ	ª	º	¿	®	¬	½	¼	¡	«	»
B0H	▒	▒	▓	│	┤	Á	Â	À	©	╣	║	╗	╝	¢	¥	┐
C0H	└	┴	┬	├	─	┼	ã	Ã	╚	╔	╩	╦	╠	═	╬	¤
D0H	ð	Ð	Ê	Ë	È	ı	Í	Î	Ï	┘	┌	▒	▒	▒	▒	▒
E0H	Ó	ß	Ô	Ò	õ	Õ	µ	þ	Þ	Ú	Û	Ù	ý	Ý	¯	´
F0H	¯	±	=	¾	¶	§	÷	¸	°	¨	·	¹	³	²	▒	SP

2.4 Page 3 PC860: Portuguese

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
80H	Ç	ü	é	â	ä	à	Á	ç	ê	Ê	è	ï	Ô	ì	Ä	Å
90H	É	À	È	ô	ö	ò	ú	ù	ì	Õ	Ü	ø	£	ù	Pt	Ó
A0H	á	í	ó	ú	ñ	Ñ	ª	º	¿	⌐	¬	½	¼	¡	«	»
B0H	▒	▒	▓	│	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
C0H	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D0H	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	▒	▒	▒	▒	▒
E0H	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ	∞	ø	ε	∩
F0H	≡	±	≥	≤	⌠	⌡	÷	≈	°	•	·	√	ⁿ	²	▒	

2.5 Page 4 PC863: Canadian-French

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
80H	Ç	ü	é	â	Â	à	¶	ç	ê	ë	è	ï	î	=	À	§
90H	É	È	Ê	ô	Ë	Ï	û	ù	¤	Ô	Ü	¢	£	Ù	Û	ƒ
A0H	¦	í	´	ó	ú	¨	³	¯	Î	⌐	¬	½	¼	¾	«	»
B0H	▒	▒	▓	▏	┤	╡	╢	╖	╕	╣	╗	╝	╜	╛	┐	
C0H	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D0H	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	▉	▄	▌	▐	▀
E0H	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ	∞	ø	ε	∩
F0H	≡	±	≥	≤	⌠	⌡	÷	≈	°	•	·	√	ⁿ	²	■	

2.6 Page 5 PC865: Nordic

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
80H	Ç	ü	é	â	ä	à	å	ç	ê	Ë	è	ï	î	ì	Ä	Å
90H	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	Pt	ƒ
A0H	á	í	ó	ú	ñ	Ñ	ª	º	¿	⌐	¬	½	¼	¡	«	¤
B0H	▒	▒	▓	▏	┤	╡	╢	╖	╕	╣	╗	╝	╜	╛	┐	
C0H	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D0H	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	▉	▄	▌	▐	▀
E0H	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ	∞	ø	ε	∩
F0H	≡	±	≥	≤	⌠	⌡	÷	≈	°	•	·	√	ⁿ	²	■	

2.7 Page 6 Slavonic

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
80H	Ç	ü	é	â	ä	ů	ć	ç	ł	ë	Õ	õ	î	Ź	ä	Ć
90H	é	Ĺ	í	ô	ö	Ľ	ľ	ś	ś	Ö	Ü	ť	ť	Ł	x	č
A0H	á	í	ó	ú	ą	ą	ž	ž	ę	ę		ź	č	ş	«	»
B0H	▒	▒	▓	▏	┤	á	â	ě	Ş					ż	ż	
C0H					─	┼	ă	ă						═		¤
D0H	đ	Đ	Ď	Ë	ď	Ň	í	î	ě			▉	▄	ţ	Ů	▀
E0H	Ó	ß	Ô	ń	ń	ň	š	š	ŕ	Ú	ŕ	Ű	ý	Ý	ţ	´
F0H	˝	˛	ˇ	˘	˘	§	÷	¸	°	¨	˙	ű	Ŕ	ř	■	

2.8 Page 7 Russia

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
80H	А	Б	В	Г	Д	Е	Ж	З	и	Й	К	Л	М	Н	О	П
90H	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
A0H	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
B0H																
C0H																
D0H																
E0H	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	я
F0H	∂	╡	K	H	θ	¥	Y	h	∂	╒	k	H	θ	¥	Y	

2.9 Page 19 PC858: Multilingual + Euro Symbol

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
80H	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
90H	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	×	ƒ
A0H	á	í	ó	ú	ñ	Ñ	a	o	¿	R	¬	½	¼	¡	«	»
B0H	▒	▒	▒	|	┤	Á	Â	À	c	┤	|	┐	┘	¢	¥	┐
C0H	└	┴	┬	├	—	┼	ã	Ã	└	┌	┴	┬	├	—	┼	¤
D0H	ð	Ð	Ê	Ë	È	€	Í	Î	Ï	┘	┌	▉	▄			■
E0H	Ó	ß	Ô	Ò	õ	Õ	µ	þ	Þ	Ú	Û	Ù	ý	Ý	¯	´
F0H	¯	´	–	±	=	¾	¶	÷	¸	°	¨	•	1	3	■	

2.10 Page 16 WPC1252: West European Latin

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
80H	€	¨	¸	ƒ	„	…	†	‡	ˆ	‰	Š	‹	Œ		Ž	
90H		‘	’	“	”	•	–	—	˜	™	š	›	œ		ž	Ÿ
A0H		¡	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	-	®	¯
B0H	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
C0H	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
D0H	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
E0H	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
F0H	ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

Manufacturer: EC LINE

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