



***FW8888***

***ALLNET Low Power Utility Server***

**Quick Installation Guide**

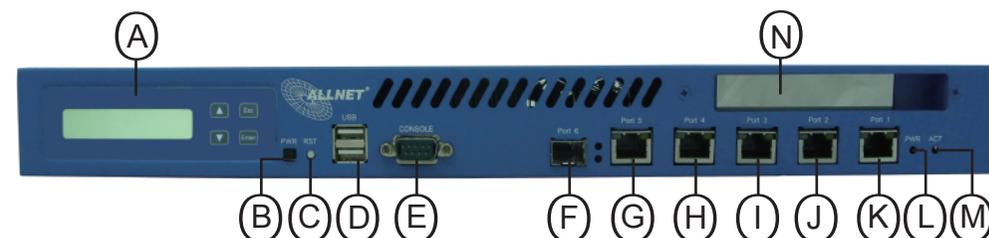
**CE FC**



# 1 System Specification

|                   |  |
|-------------------|--|
| Processor         | Intel Atom N270, 1.6GHz  |
| Memory Support    | 2 DDRII 400/533, 2GB Max.  |
| Storage           | CF<br>IDE<br>2 2.5" SATA HDD (option, support RAID0/RAID1)   |
| Expansion slots   | 1 PCI slot   |
| Onboard LAN       | 1 1000Mbps Fiber Channel LAN<br>5 10/100/1000Mbps LAN  |
| Front Panel I/O   | Power Button<br>Reset Button<br>Power LED<br>Storage Activity LED<br>Dual port USB 2.0 A Type connector<br>DB9 Serial Port Connector<br>1 SFP Fiber Channel Module Connector<br>5 GbE LAN RJ45 connector |
| Back Panel I/O    | 2 USB 2.0 A Type Connector<br>VGA Connector  |
| System FAN        | 2x 40x40x20mm, 6200rpm system FAN  |
| Power Supply      | 250W, 1U Form factor, 100V~240V AC, 50Hz~60Hz, Auto Switch   |
| Chassis Dimension | 426.5(W)x306.0(D)x44.5(H)mm  |

# 2 Front Panel I/O



| Item | Description                     | Item | Description   |
|------|---------------------------------|------|---|
| (A)  | LCM Module                      | (H)  | Port4, 10/100/1000Mbps Ethernet                                 |
| (B)  | Power Button                    | (I)  | Port3, 10/100/1000Mbps Ethernet                                 |
| (C)  | Reset Button                    | (J)  | Port2, 10/100/1000Mbps Ethernet                                 |
| (D)  | USB 2.0 Ports                   | (K)  | Port1, 10/100/1000Mbps Ethernet                                 |
| (E)  | Serial Port Console             | (L)  | Power LED   |
| (F)  | Port6, 1000Mbps Fiber Channel   | (M)  | Storage Activity LED  |
| (G)  | Port5, 10/100/1000Mbps Ethernet | (N)  | PCI Bracket Fixture (reserved for customer PCI extension cards) |

## 2.1 RJ45 (Port1~Port5) LED Indicator Definition:



| LED                | Color  | LED Status | Condition            |
|--------------------|--------|------------|----------------------|
| Link Indicator     | Orange | On         | 1000Mbps Link        |
|                    |        | On         | 100Mbps Link         |
|                    | Green  | Off        | 10Mbps Link          |
| Activity Indicator | Green  | On         | Link established     |
|                    |        | Off        | No Link              |
|                    |        | Blink      | LAN Activity present |

## 2.2 Fiber Channel (Port 6) Indicator Definition:



| LED             | Color  | LED Status | Condition                |
|-----------------|--------|------------|--------------------------|
| Fault Indicator | Green  | On         | Fiber Channel Error      |
|                 |        | Off        | Fiber Channel Functional |
| Link Indicator  | Orange | On         | SFP Module Present       |
|                 |        | Blink      | SFP Module not present   |

## 2.3 Power and HDD Storage LED Definition

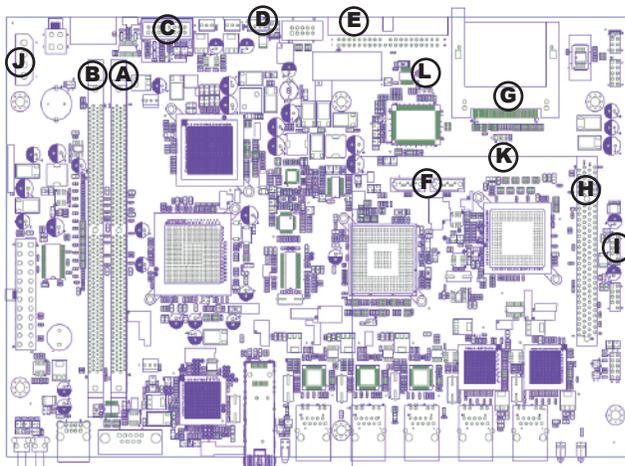
| LED              | Color | LED Status | Condition           |
|------------------|-------|------------|---------------------|
| Power            | Blue  | On         | System power on     |
|                  |       | Off        | System power off    |
| Storage Activity | Green | On         | Storage acting      |
|                  |       | Blink      | Storage no activity |

### 3 Back Panel



| Item     | Description       |
|----------|-------------------|
| <b>A</b> | USB 2.0 Ports     |
| <b>B</b> | VGA Connector     |
| <b>C</b> | System Fans       |
| <b>D</b> | Power Supply Unit |

### 4 Onboard Connectors, Pin Headers and Jumper Setting:



| Item     | Description           | Item     | Description                                  |
|----------|-----------------------|----------|--|
| <b>A</b> | DDR2 DIMM1            | <b>G</b> | Compact Flash Card Socket                    |
| <b>B</b> | DDR2 DIMM2            | <b>H</b> | 32-bit/33MHz PCI slot                        |
| <b>C</b> | VAG1,2x8 boxed header | <b>I</b> | USB3, 2x5 pin header, for rear panel USB 2.0 |
| <b>D</b> | PWRCON4PS             | <b>J</b> | PWRCON4P                                     |
| <b>E</b> | 40-pin IDE connector  | <b>K</b> | CF Master/Slave Setting                      |
| <b>F</b> | SATA1 and SATA2       | <b>L</b> | Clear CMOS Jumper                            |

#### 4.1 System Memory:

##### 4.1.1 Overview:

Intel 945GSE supports DDRII 400/533 memory modules, total 2GB system memory Max.

##### 4.1.2 Configuration:

By Intel 945GSE chipset default, users have to populate DIMM1 to make system work properly. Please refer to the following table for correct memory module population

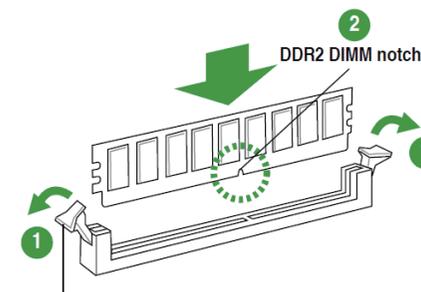
|                  | DIMM1 | DIMM2 |
|------------------|-------|-------|
| 1 memory module  | V     |       |
| 2 memory modules | V     | V     |

##### 4.1.3 Installing Memory Module:

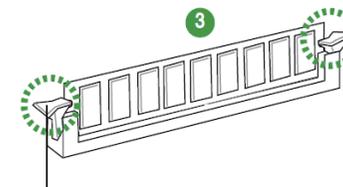
4.1.3.1 Unlock a DDR2 DIMM socket by pressing the retaining clips outward.

4.1.3.2 Align a DDR2 memory module so that the notch on the module matches the break-on key on the DIMM socket.

4.1.3.3 Firmly insert the memory module into the socket until the retaining clip snap back in place.



Unlocked retaining clip



Locked Retaining Clip

### 4.2 IDE connector and Compact Flash card socket :

#### 4.2.1 IDE connector:

IDE connector supports standard ATA 33/66/100 devices. The pin 20 is removed intentionally for the purpose of dummy-proof.

IDE connector also supports 40 pin IDE DOM (disk on module).

IDE connector is designed to use primary channel and default is set to Slave.

#### 4.2.2. Compact Flash card socket:

Type II CF card connector supports type II CF (compact flash) memory cards.

Please be noted that it is designed as Primary IDE Master, so CF card does not support hot plug feature as normal CF card readers.

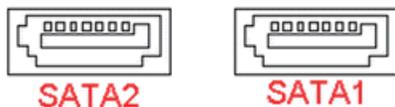
#### 4.2.3. CF card Master/Slave Setting:

CF card can be configured as Primary IDE Master / Slave by CF\_SET\_J1.

| CF_SET_J1   | Jumper Position  | Description                            |
|---|--|--|
|  |   | CF Card is set to IDE Master (Default) |
|   |  | CF Card is set to IDE Slave            |

### 4.3 SATA1 and SATA2:

SATA1 and SATA2 are designed to connect SATA devices via 7-pin SATA cable. Please refer to the following figure for SATA pin definition.



### 4.4 Default Jumper Settings:

#### 4.4.1 Clear CMOS:

Disable: 1-2 pin short (default)

Clear CMOS: 2-3 pin short

| CCMOS1  | Jumper Position   | Description       |
|---|---|-------------------|
|  |  | Disable (Default) |
|   |  | Clear CMOS        |

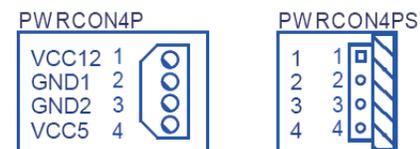
### 4.5 Other Onboard Connectors:

#### 4.5.1 PWRON4P and PWRCON4PS:

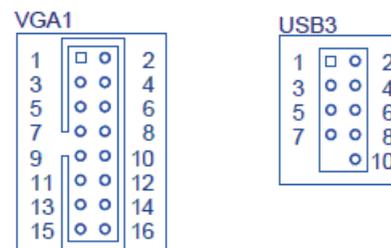
PWRCON4P: provides 12V and 5V DC. PWRCON4P is reserved for supplying 5V and 12V for SATA hard drive or IDE devices.

PWRCON4PS: provides 12V and 5V DC. PWRCON4PS is reserved for supplying 5V and 12V for IDE DOM (Disk On Module)

Please check the following pin-out definition for using PWRCON4P and PWRCON4PS as power source of your device.



4.5.2 VGA1 and USB3 pin 1 : alignment:back panel VGA and USB ports are default connected via cables to main board VGA1 and USB3 respectively.



## 5 Installation Guide

5.1 Remove the top cover: There are 5 screws fixing the top cover please remove the top cover for the following installation proce.



5.2 Populate DDRII DRAM module: Please refer to section 4.1 when installing DDRII DRAM module.

5.3 Attach storage device.

5.3.1 Compact Flash card:



5.3.2 IDE or SATA devices:

If you take IDE or SATA devices as your storage device, please attach IDE or SATA cable to corresponded connectors on the main board. The PWRCON4P and PWRCON4PS are designed to provide 5V/12V for IDE/SATA devices.

5.4 Close the top cover and secure the top cover with screw.

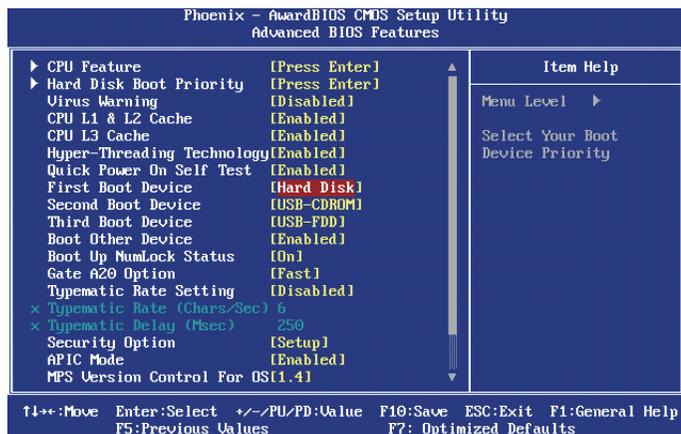
5.5 Attach AC Power Cord and turn the AC switch on then press PWR BTN to turn on the system.



## 6 BIOS Setting

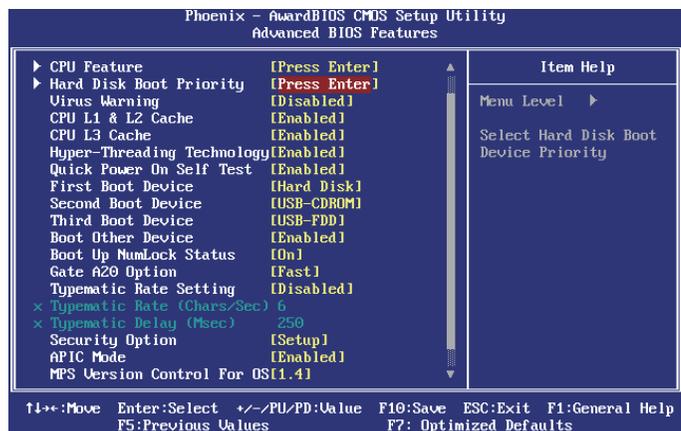
### 6.1 Boot Sequence:

#### 6.1.1 Default boot sequence: Hard Disk->USB-CDROM->USB FDD->Boot Other Device

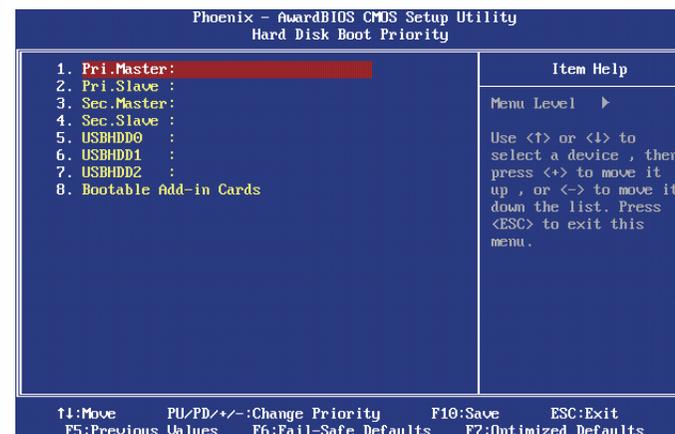


#### 6.1.2 Move Changing Hard Disk Boot Priority:

Navigate to “Hard Disk Boot Priority” then press enter



Follow on-screen instruction to change Hard Disk Boot Priority



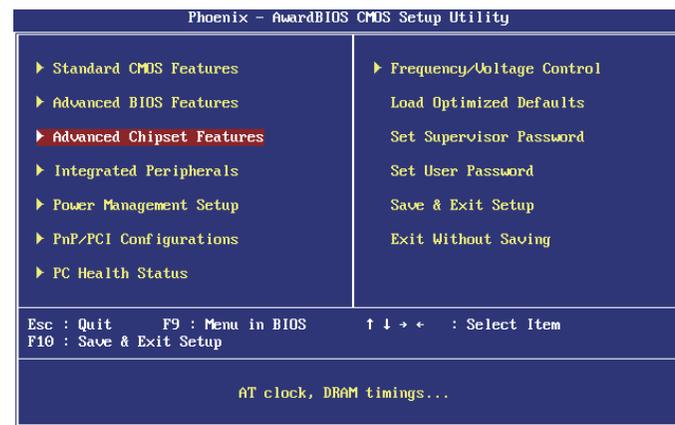
#### 6.2 Setting Port1 as First LAN in OS:

By Default, Linux initiates PCI Express device driver prior to PCI devices. Therefore, Port1 will not be assigned as eth0 in Linux if you enable Por3~Port6 during Linux install.

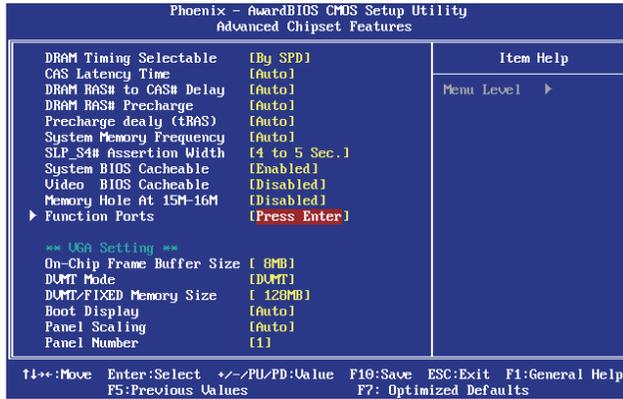
Please follow the instruction to disable Port3~6 before installing Linux and get Port1 as eth0.

#### 6.2.1 Press “Del” when booting system to enter BIOS CMOS Setup Utility.

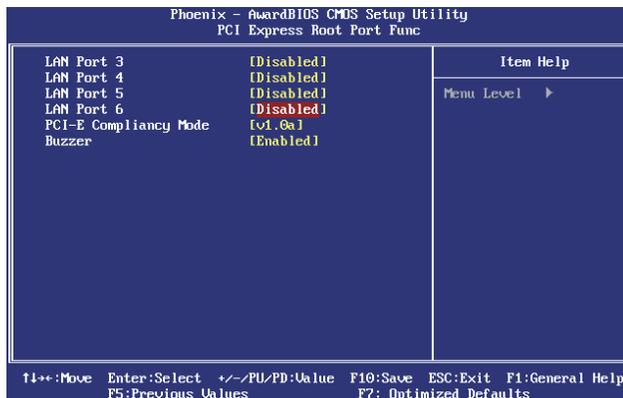
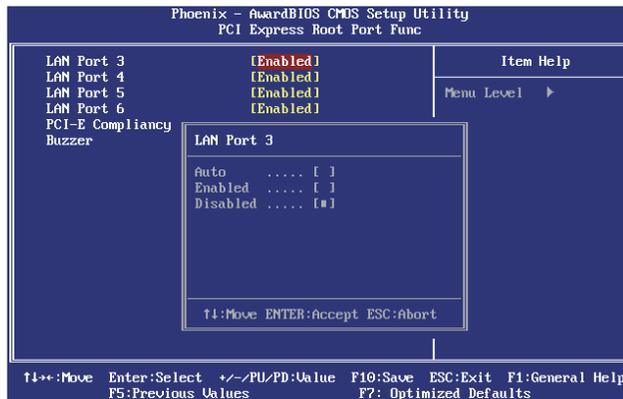
#### 6.2.2 Navigate to “Advanced Chipset Features” then press enter.



### 6.2.3 Navigate to “Function Ports” then press enter



### 6.2.4 Select “Disabled” on LAN Port 3~6.



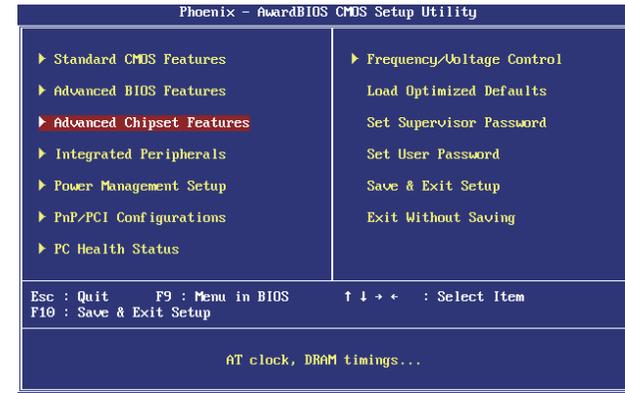
### 6.2.5 Save and Exit, after system reboots, Port3~6 are disabled during Linux Installation.

### 6.3 Disabling Boot Beep in BIOS:

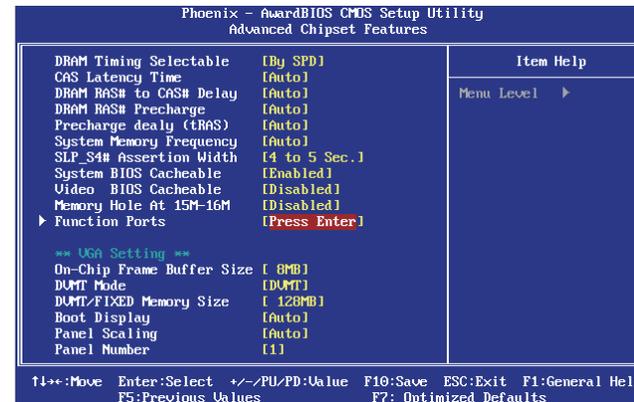
By default, there is a beep sound when system finishes early stage BIOS boot sequence. To disable the beep during boot sequence, please follow the following procedure:

6.3.1 Press “Del” when booting system to enter BIOS CMOS Setup Utility.

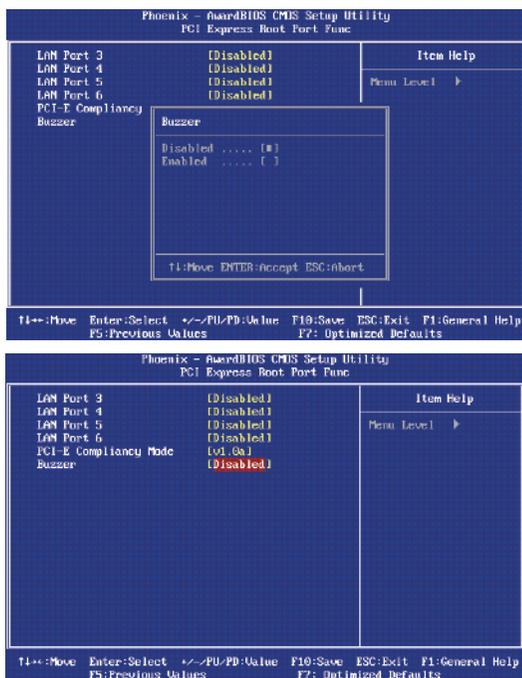
6.3.2 Navigate to “Advanced Chipset Features” then press enter.



### 6.3.3 Navigate to “Function Ports” then press enter



### 6.3.4 Set “Buzzer” to “Disabled” to disable the boot beep.



### 6.3.5 Save and Exit, system will not beep during boot.

### 6.4 Disabling WOL (Wake on LAN) of Port1:

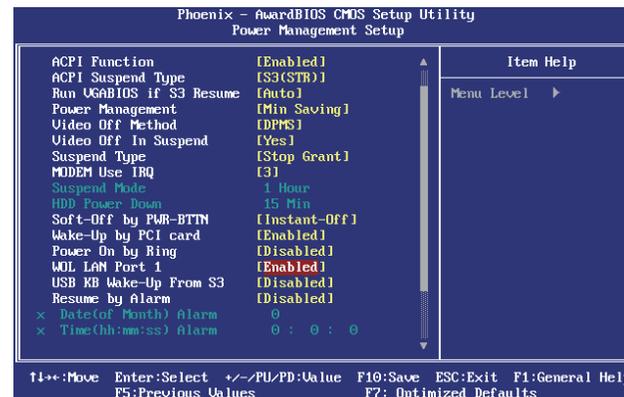
By default, Port1 supports WOL (Wake on LAN) feature and is “Enabled”. Please follow the following procedure to disable WOL of Port1.

6.4.1 Press “Del” when booting system to enter BIOS CMOS Setup Utility.

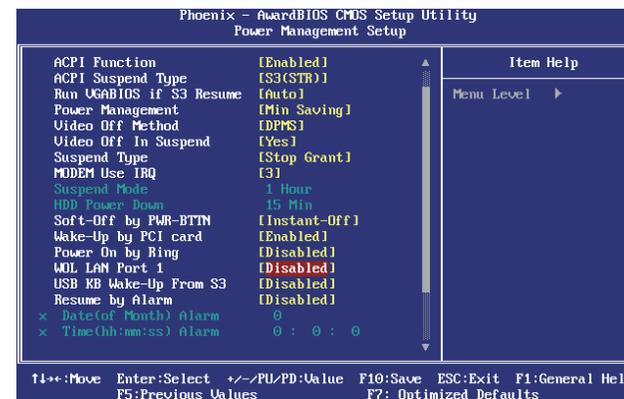
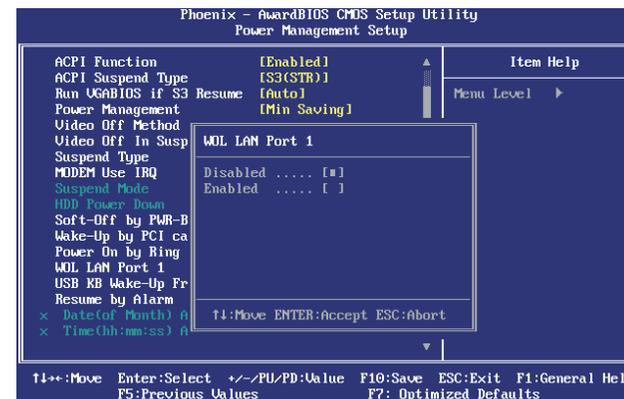
6.4.2 Navigate to “Power Management Setup” and press enter



### 6.4.3 Navigate to “WOL LAN Port 1” and press enter.



### 6.4.4 Select “Disabled” to disable WOL of Port1



### 6.4.5 Save and Exit to finish the procedure.

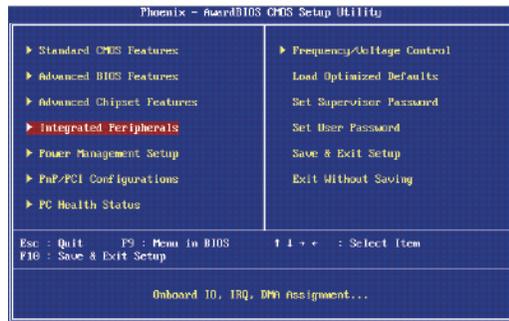
### 6.5 Optional SATA RAID

SATA from Intel ICH7M supports Intel RAID 0 and RAID 1 feature. By default, SATA are set to “Enhanced Mode” and “AHCI enabled”. Please follow the procedure to change BIOS setting to support Intel IAA RAID.

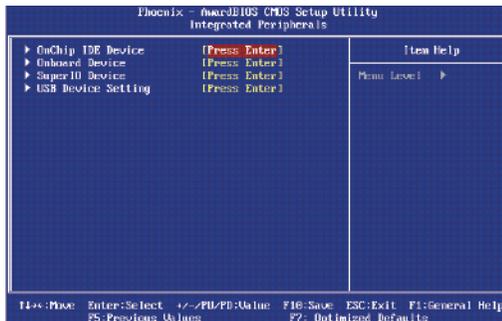
#### 6.5.1 Press “Del” key during system boot to enter BIOS CMOS Setup Utility.



#### 6.5.2 Navigate to “Integrated Peripherals” and press “Enter”

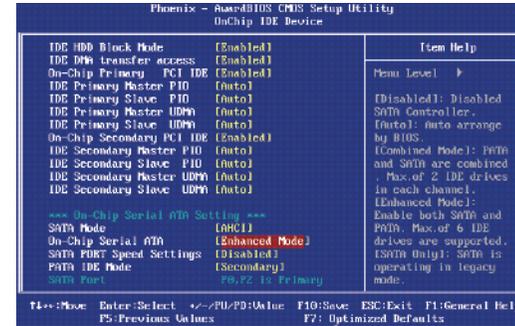


#### 6.5.3 Navigate to “OnChip IDE Devices” and press “Enter”

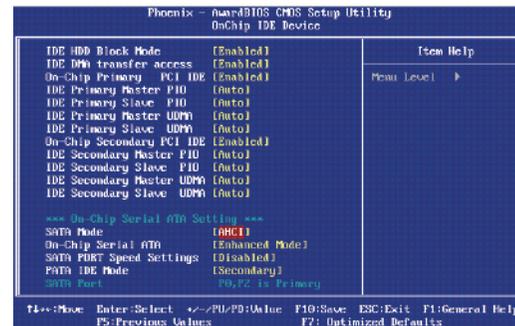


#### 6.5.4 Navigate to “OnChip IDE Devices” and press “Enter”.

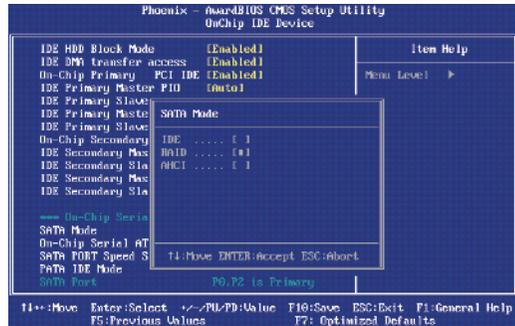
The following setting are default setting:  
SATA Mode: AHCI  
On-Chip Serial ATA: Enhanced Mode.



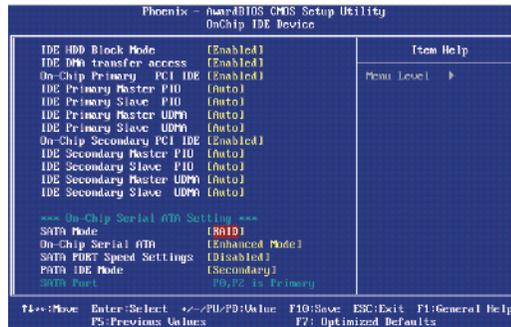
#### 6.5.5 Navigate to “SATA Mode” and press “Enter” key



#### 6.5.6 Navigate to “RAID” and press “Enter” key



## 6.5.7 SATA1 and SATA2 now are set to support Intel IAA RAID

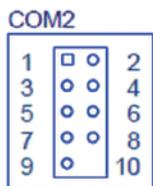


6.5.5 Save and Exit to finish the procedure.

## 7 LCM Programming Instruction Set

FW8888 has a LCM display that communicates with FW8888 main board via Serial (RS232) interface. In the front panel, there are 4 buttons (up, down, enter and escape) that can control the uP of LCM module to display or configured customer desired information of FW8888.

### 7.1 Connector (COM2) Pin-Out Definition



| Pin # | Definition                          |
|-------|-------------------------------------|
| 1     | DCD#                                |
| 2     | DSR#                                |
| 3     | RXD (Serial input from host system) |
| 4     | RTS#                                |
| 5     | TXD (Serial output to host system)  |
| 6     | CTS#                                |
| 7     | DTR#                                |
| 8     | +5V                                 |
| 9     | Ground                              |
| 10    | No Pin                              |

### 7.2 Serial Interface Protocol:

Universal Asynchronous Receiver Transmitter

Baud Rate: 9600 bps

Data: 8 bit

Parity Check: No

Stop Bit: 1

### 7.3 LCM Initial Setting

7.3.1 16 character, 2 lines. Character format is: 5x7+cursor

7.3.2 Cursor display means shift right 1 character

7.3.3 When character reads in to LCM display, position address adds 1bit and cursor shifts to right 1 character automatically.

### 7.4 Instruction Set:

#### Clear Display

| Direction | Host to LCM   |
|-----------|---|
| Command   | 0x10, 0x01  |
| Explain   | Clears all currently displayed characters                             |
| Response  | LCM to Host   |
| Command   | 0x11(Acknowledge OK)<br>0x14(Acknowledge Fail and no action executed) |

#### Return Home

| Direction | Host to LCM   |
|-----------|---|
| Command   | 0x10, 0x02  |
| Explain   | Returns cursor display to character 1 of line 1                       |
| Response  | LCM to Host   |
| Command   | 0x11(Acknowledge OK)<br>0x14(Acknowledge Fail and no action executed) |

#### Display On/Off

| Direction | Host to LCM  |
|-----------|--|
| Command   | 0x10, 0x08(entire display off)<br>0x10, 0x0C(entire display on & cursor off)<br>0x10, 0x0E(entire display & cursor on) |
| Explain   | Setting LCM to show cursor or not<br>Setting LCM display area all On or all Off  |
| Response  | LCM to Host  |
| Command   | 0x11(Acknowledge OK)<br>0x14(Acknowledge Fail and no action executed)  |

## Turn On/Off Backlight

|           |   |
|-----------|---|
| Direction | Host to LCM   |
| Command   | 0x10, 0x38 (turn off backlight)<br>0x10, 0x39 (turn on backlight)     |
| Explain   | Turn on or turn off backlight   |
| Response  | LCM to Host   |
| Command   | 0x11(Acknowledge OK)<br>0x14(Acknowledge Fail and no action executed) |

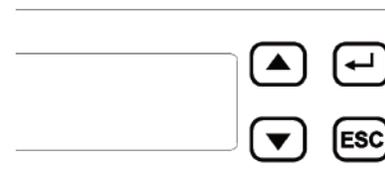
## SeDisplay Character Position Address

|           |  |
|-----------|--|
| Direction | Host to LCM  |
| Command   | 0x10, 0x80~0x8F (Line 1, character 1~16)<br>0x10, 0xC0~0xCF (Line 2, character 1~16) |
| Explain   | Set character display position   |
| Response  | LCM to Host  |
| Command   | 0x11(Acknowledge OK)<br>0x14(Acknowledge Fail and no action executed)                |

## Write Display Data into Position Address

|           |   |
|-----------|---|
| Direction | Host to LCM   |
| Command   | 0x12, 0x00~0xFF (ASCII code and extension ROM code)   |
| Explain   | Display character on the position address.<br>Position address will automatically add 1 bit after data written in<br>Position address available: 0x80~0x8F, 0xC0~0xCF |
| Response  | LCM to Host   |
| Command   | 0x11(Acknowledge OK)<br>0x14(Acknowledge Fail and no action executed)   |

## Button Return Values



|           |   |
|-----------|---|
| Direction | LCM to Host   |
| Command   | 0x15, Up<br>0x16, Down<br>0x17, Enter<br>0x18, Escape           |
| Explain   | LCM will return the corresponded value to Host when key pressed |

## Appendix:

### A. ASCII Code

| Char  | Hex  | Char | Hex  | Char | Hex  | Char  | Hex  |
|-------|------|------|------|------|------|-------|------|
| (nul) | 0x00 | (sp) | 0x20 | @    | 0x40 | `     | 0x60 |
| (soh) | 0x01 | !    | 0x21 | A    | 0x41 | a     | 0x61 |
| (stx) | 0x02 | "    | 0x22 | B    | 0x42 | b     | 0x62 |
| (etx) | 0x03 | #    | 0x23 | C    | 0x43 | c     | 0x63 |
| (eot) | 0x04 | \$   | 0x24 | D    | 0x44 | d     | 0x64 |
| (enq) | 0x05 | %    | 0x25 | E    | 0x45 | e     | 0x65 |
| (ack) | 0x06 | &    | 0x26 | F    | 0x46 | f     | 0x66 |
| (bel) | 0x07 | '    | 0x27 | G    | 0x47 | g     | 0x67 |
| (bs)  | 0x08 | (    | 0x28 | H    | 0x48 | h     | 0x68 |
| (ht)  | 0x09 | )    | 0x29 | I    | 0x49 | i     | 0x69 |
| (nl)  | 0x0a | *    | 0x2a | J    | 0x4a | j     | 0x6a |
| (vt)  | 0x0b | +    | 0x2b | K    | 0x4b | k     | 0x6b |
| (np)  | 0x0c | ,    | 0x2c | L    | 0x4c | l     | 0x6c |
| (cr)  | 0x0d | -    | 0x2d | M    | 0x4d | m     | 0x6d |
| (so)  | 0x0e | .    | 0x2e | N    | 0x4e | n     | 0x6e |
| (si)  | 0x0f | /    | 0x2f | O    | 0x4f | o     | 0x6f |
| (dle) | 0x10 | 0    | 0x30 | P    | 0x50 | p     | 0x70 |
| (dc1) | 0x11 | 1    | 0x31 | Q    | 0x51 | q     | 0x71 |
| (dc2) | 0x12 | 2    | 0x32 | R    | 0x52 | r     | 0x72 |
| (dc3) | 0x13 | 3    | 0x33 | S    | 0x53 | s     | 0x73 |
| (dc4) | 0x14 | 4    | 0x34 | T    | 0x54 | t     | 0x74 |
| (nak) | 0x15 | 5    | 0x35 | U    | 0x55 | u     | 0x75 |
| (syn) | 0x16 | 6    | 0x36 | V    | 0x56 | v     | 0x76 |
| (etb) | 0x17 | 7    | 0x37 | W    | 0x57 | w     | 0x77 |
| (can) | 0x18 | 8    | 0x38 | X    | 0x58 | x     | 0x78 |
| (em)  | 0x19 | 9    | 0x39 | Y    | 0x59 | y     | 0x79 |
| (sub) | 0x1a | :    | 0x3a | Z    | 0x5a | z     | 0x7a |
| (esc) | 0x1b | ;    | 0x3b | [    | 0x5b | {     | 0x7b |
| (fs)  | 0x1c | <    | 0x3c | \    | 0x5c |       | 0x7c |
| (gs)  | 0x1d | =    | 0x3d | ]    | 0x5d | }     | 0x7d |
| (rs)  | 0x1e | >    | 0x3e | ^    | 0x5e | ~     | 0x7e |
| (us)  | 0x1f | ?    | 0x3f | _    | 0x5f | (del) | 0x7f |

Weitere Einstellungen und Managementfunktionen entnehmen Sie bitte dem Handbuch auf der beiliegenden CD. Für weitere Informationen oder Online-Ressourcen besuchen Sie bitte unsere Website: <http://www.allnet.de>

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