The AWARD BIOS SETUP

Version 4.5

for the Triton Chipset Manual

(Addendum to the General Manual)

vers 1.0

[Image] [Image]

Forward written by Vince Hadley (vhadley@ee.utah.edu)

I copied the following from some info AWARD sent to me by mail and it represents as closely as possible the format, style, and information conveyed unto me. I am typing it into an electronic form (you CANNOT get this off of their BBS) to supplement the info given in their manual for their 4.50 version of their BIOS. Note, this is for the Intel Triton chipset! I do not know how a similar version of the BIOS would be on another chipset, and I think that this is why it was not included with the _general_ manual because what follows is chipset specific. Please do not modify the following. I will try to answer any questions you may have...although I do not know everything. Also, the number for their BBS is: (415) 968-0249. In addition, I have noticed in my BIOS some stuff that is not mentioned below. I contacted AWARD about this and they don't have any idea either...(example PCI Streaming, COM ports and MIDI functions, etc.). They told me that they sell the core "Software" for the BIOS to the manufacturer and then he adds to it (or alters it) however he wants to and so you'll oft times find other things in the BIOS setup that AWARD has no knowledge of. As the tech rep told me, there are no two BIOS's out there that are exactly alike.

-Vince Hadley 5/13/95
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Disclaimer ----------

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Again, please do not modify the following:

Award BIOS 4.50 Setup Utility
Chipset Features Setup / Power Management Setup / PCI Configuration Setup

(For the TRITON Chipset!)

Chipset Features Setup...

This section allows you to configure the system based on the specific

features of the installed chipset. This chipset mangages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

```
                          ROM PCI/ISA BIOS (2A59C000)
                           CHIPSET FEATURES SETUP
                             AWARD SOFTWARE, INC.
-------------------------------------------------------------------------------|
| DRAM RAS# Precharge Time : 4        |                                        |
| DRAM R/W Leadoff Timing  : 8/6      |                                        |
| DRAM RAS to Cas Delay    : 3        |                                        |
| DRAM Read Burst Timing   : x2222    |                                        |
| DRAM Write Burst Timing  : x3333    |                                        |
|                                     |                                        |
| System Bios Cacheable    : Disabled |                                        |
| Video  Bios Cacheable    : Disabled |                                        |
| 8 bit I/O Recovery Time  : 1        |                                        |
| 16 Bit I/O Recovery Time : 1        |                                        |
| Memory Hole at 15M-16M   : Disable  |                                        |
| IDE HDD Block Mode       : Enable   |                                        |
| IDE 32-bit Transfer Mode : Enabled  |                                        |
| IDE Primary Master PIO   : Auto     |                                        |
| IDE Primary Slave  PIO   : Auto     ----------------------------------------|
| IDE Secondary Master PIO : Auto     | ESC : Quit        #### : Select Item|
| IDE Secondary Slave  PIO : Auto     | F1  : Help        PU/PD/+/- : Modify|
| On-Chip Primary   PCI IDE: Enabled  | F5  : Old Values  (Shift)F2 : Color |
| On-Chip Secondary PCI IDE: Enabled  | F6  : Load BIOS Defaults            |
| PCI Slot IDE 2nd Channel : Enabled  | F7  : Load Setup Defaults           |
-------------------------------------------------------------------------------|
```

DRAM Settings

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The deafault timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

DRAM RAS# Precharge Time

DRAM must continually be refreshed or it will lose its data. Normally, DRAM is refreshed entirely as the result of a single request. This option allows you to determine the number of CPU clocks allocated for the Row Address Strobe to accumulate its charge before the DRAM is refreshed. If insufficient time is allowed, refresh may be incomplete and data lost.

3	Three Clocks.
4	Four Clocks.

Four Clocks is the default.

DRAM R/W
Leadoff
Timing

This sets the number of CPU clocks allowed before reads and writes to DRAM are performed.

8/7	Eight clocks leadoff for reads and seven clocks leadoff for writes.
7/5	Seven clocks leadoff for reads and five clocks leadoff for writes.

8/7 Leadoff timing is the default

DRAM RAS to
CAS Delay

When the DRAM is refreshed, both rows and columns are addressed separately. This setup allows you to determine the timing of the transition from Row Address Strobe (RAS) to Column Address Strobe (CAS).

3	Three CPU clock delay.
2	Two CPU clock delay.

3 CPU clocks is the default.

DRAM Read
Burst
Timing

This sets the timing for Burst mode reads from DRAM. Burst read and write requests are generated by the CPU in four separate parts. The first part provides the location within the DRAM where the read or write is to take place while the remaining three parts provide the actual data. The lower the timing numbers, the faster the system will address memory.

x2222	Read DRAM timings are 2-2-2-2
x3333	Read DRAM timings are 3-3-3-3
x4444	Read DRAM timings are 4-4-4-4

x2222 timings is the default.

DRAM Write
Burst
Timing

x2222	Write DRAM timings are 2-2-2-2
x3333	Write DRAM timings are 3-3-3-3
x4444	Write DRAM timings are 4-4-4-4

x3333 timings is the default

Cache Features

System BIOS
Cacheable

When enabled, accesses to the system BIOS ROM addressed at F0000H- FFFFFH are cached, provided that the cache contoller is enabled.

Enabled	BIOS access cached.
Disabled	BIOS access not cached.

Disabled is the default.

Video BIOS
Cacheable

As with caching the System BIOS above, enabling the Video BIOS cache will cause access to the video BIOS addressed at C0000H to C7FFFH to be cached, if the cache controller is also enabled.

Enabled	Video BIOS access cached.
Disabled	Video BIOS access not cached.

Disabled is the default.

PCI and IDE Configuration

---

8 bit I/O
Recovery
Time

The recovery time is the length of time measured in CPU clocks, which the system will delay after the completion of an input/output request. This delay takes place because the CPU is operating so much faster than the input/output bus that the CPU must be delayed to allow for the completion of the I/O.

This item allows to you to determine the recovery time allowed for 8-bit I/O. Choices are from 1 to 8 CPU Clocks.

1 clock is the default.

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16 bit I/O Recovery Time

This item allows to you to determine the recovery time allowed for 16-bit I/O. Choices are from 1 to 4 CPU Clocks.

1 clock is the default.

Memory Hole at 15M-16M

In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB.

Enabled	Memory hole supported.
Disabled	Memory hole not supported

Disabled is the default.

IDE HDD Block Mode

This allows your hard disk controller to use fast block mode transfer to and from your hard disk drive.

Enabled	IDE controller uses block mode.
Disabled	IDE controller uses standard mode.

Enabled is the default.

IDE 32-bit Transfer Mode

Enabling 32-bit transfer mode allows for faster access to data on your hard disk drive.

Enabled	32-bit transfer mode enabled.
Disabled	Conventional transfer mode used.

Enabled is the default.

IDE PIO

IDE hard drive controllers can support up to two separate hard drives. These drives have a master/slave relationship which are determined by the cabling configuration used to attach them to the controller. Your system supports two IDE contollers-- a primary and a secondary-- so you have the ability to install up to four separate hard disks.

PIO means Programmed Input/Output. Rather than have the BIOS issue a series of commands to effect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by themselves. This is simpler and more efficient (and faster).

Your system supports five modes, numbered from 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode. This is true for the next four setup items:

1. IDE Primary Master PIO
2. IDE Primary Slave PIO
3. IDE Secondary Master PIO
4. IDE Secondary Slave PIO

On-Chip Primary PCI IDE

As stated above, your system includes two built-in IDE controllers, both of which operate on the PCI bus. This setup item allows you either to enable or disable the primary controller. You might choose to disable the controller if you were to add a higher performance or specialized controller.

Enabled	Primary HDD controller used.
Disabled	Primary HDD controller not used.

Enabled is the default.

On-Chip Secondary PCI IDE As above for the Primary controller, this setup item allows you either to enable or disable the secondary controller. You might choose to disable the controller if you were to add a higher performance or specialized controller.

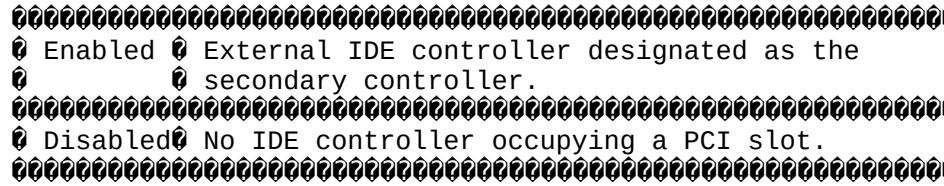
Enabled	Secondary HDD controller used.
Disabled	Secondary HDD controller not used.

Enabled is the default.

PCI Slot

IDE 2nd
Channel

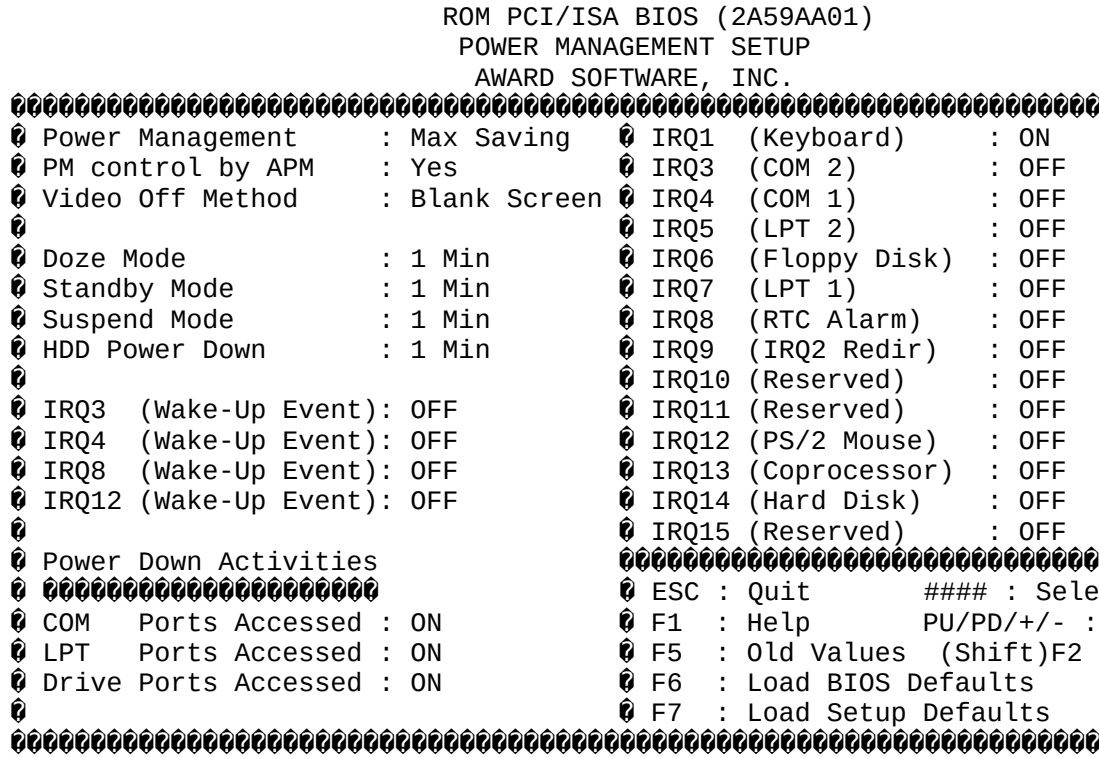
This item allows you to designate an IDE controller board inserted into one of the physical PCI slots as your secondary IDE controller.



Disabled is the default.

Power Management Setup...

The Power Management Setup Allows you to configure your system to most effectively save energy while operating in a manner consistent with your own style of computer use.



Power
Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. Doze Mode
2. Standby Mode
3. Suspend Mode

4. HDD Power Down

There are four selections for Power Management, three of which have fixed mode settings.

Disable (default)	No power management. Disables all four modes.
Min. Power Saving	Minimum power management. Doze Mode = 1 hr., Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management -- ONLY AVAILABLE FOR SL CPU'S. Doze Mode = 1 min,. Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15. and disable.

APM Control
APM

When enabled, an Advanced Power Managment device will be activated to enhance that Max. Power Saving mode and stop the CPU internal clock.

If the Max. Power Saving is not enabled, this will be preset to No.

Video Off
Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the Video buffer.

PM Timers

The following four modes are Green PC power saving functions which are only user configurable when the User Defined Power Management has been selected. See above for available selections.

Doze Mode When enabled and after the set time of system inactivity, the CPU

clock will run at a slower speed while all other devices still operate at full speed.

Standby Mode When enabled and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed.

Suspend Mode When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

HDD Power Down When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

Power Down Activities Power Down Activities events are I/O events whose occurance can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device which is configured as ON, even when the system is in a power down mode. ---------- COM Ports When set to ON (default), any event occuring at a COM (serial) Accessed port will awaken a system which has been powered down.

LPT Ports Accessed

When set to ON (default), any event occuring at a LPT (printer) port will awaken a system which has been powered down.

Drive Prts Accessed

When set to ON (default), any event occuring at a hard or floppy drive port will awaken a system which has been powered down.

IRQ1 (Keyboard)

When set to ON (default), any event occuring at the keyboard will awaken a system which has been powered down.

The following is a list of IRQ's, Interrupt ReQuests, which can be exempted much as COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

As above, the choices are On and Off. Off is the default.

When set On, activity will neither prevent the system from going into a power management mode or awaken it.

* IRQ3 (COM 2)
* IRQ4 (COM 1)
* IRQ5 (LPT 2)
* IRQ6 (Floppy Disk)

* IRQ7 (LPT 1)
* IRQ8 (RTC Alarm)
* IRQ9 (IRQ2 Redir)
* IRQ10 (Reserved)
* IRQ11 (Reserved)
* IRQ12 (Reserved)
* IRQ13 (Coprocessor)
* IRQ14 (Hard Disk)
* IRQ15 (Reserved)

PCI Configuration Setup... This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, 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. This section covers some very technical items and it is recommended that only experienced users should make any changes to the default settings.

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                          ROM PCI/ISA BIOS (2A59AA01)
                           PCI CONFIGURATION SETUP
                            AWARD SOFTWARE, INC.
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Using INT#

Some PCI devices use interrupts to signal that they need to use the PCI bus. Some devices, notably most graphics adapters, may not need an interrupt service at all. Each PCI clot is capable of activating up to four interrupts, INT#A, INT#B, INT#C, INT#D. By default, a PCI slot is allowed INT# A. Assigning INT#B has no meaning unless the device in the slot requires two interrupt services rather than just one. Like wise, using INT#C can only mean the device requires three interrupts and similarly for INT#D.

Selecting the default, AUTO, allows the PCI controller to automatically allocate the interrupts.

1st/2nd/
3rd/4th
Available
IRQ

A INT# is an interrupt request which is signaled to and handled by the PCI bus. However, since the operating system usually has the final responsiblilty for handling I/O, INT#s can be mapped to an IRQ if the device occupying a given slot requires an IRQ service. By default, IRQ's 9 and 10 to PCI are mapped to PCI devices, but any available, unused IRQ can be used.

You can select which INT# is associated with each PCI slot and which conventional IRQ is associated with one of the two available INT#s. The IRQ settings must be the same as the jumper setting on the motherboard.

A setting of NA means the IRQ has been assigned to the ISA bus and is not available to any PCI slot.

PCI IRQ
Activated
by

This sets the method by which the PCI bus recognizes that an IRQ service is being requested by a device. Under all circumstances, you should retain the default configuration unless advised otherwise by your system's manufacturer.

Choices are Level (default) and Edge.

PCI IDE IRQ
Map To

This allows you to configure your system to the type of IDE disk controller in use. By default, Setup assumes that your controller is an ISA (Industry Standard Architecture) device rather then a PCI controller. The more apparent difference is the type of slot being used.

If you have equipped your system with a PCI controller, changing this allows you to specify which slot has the controller and which PCI interrupt (A,B,C or D) is associated with the connected hard drives.

Remember that this setting refers to the hard disk drive itself, rather than individual partitions. Since each IDE controller supports two separate hard drives, you can select the INT# for each. Again, you will note that the primary has a lower interrupt than the secondary as described in "Slot x Using INT#" above.

Selecting "PCI Auto" allows the system to automatically determine how your IDE disk system is configured.

End of Document

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