ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *Canon CSC-300* at our website: ***Click HERE***

NEAT-470/471

All-in-One 486
w/VGA
w/Flash Disk, Half-Size

User's Guide

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

@ Copyright 1998

All Right Reserved

The information in this document is subject to change without prior notice in order to improve reliability, design and function and does not represent commitment on the part of the manufacturer.

In no event will the manufacturer be liable for direct, indirect, special, incidental, or consequential damages arising out of the use or the possibility of such damages.

This document contains proprietary information protected by copyright. All rights are reserved. No part of this manual may be reproduced by any mechanical, electronic, or other means in any form without prior written permission of the manufacturer.

Acknowledgments

All trademarks and registered trademarks mentioned herein are the property of their respective owners.

Nov., 1998
Printed in Taiwan
Version A

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Check List

Before getting started, please check if the 486 All-in-One Single Board Computer package includes the following items:

- 486 All-in-One board x 1pc
- VGA Driver & Utility diskette x 4 pcs
- Updating BIOS Utility diskette x 1 pcs
- Keyboard adapter x 1pc
- FDD cable x 1 pc
- HDD cable x 1 pc
- COM2 and Printer extension cables with bracket x 1pc
- User’s manual x 1pc

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Table of Contents

Chapter 1. Introduction

1.1 Specifications..... 1-1

Chapter 2. Jumpers and Connectors

2.1 Jumpers setting..... 2-2

2.2 Connectors..... 2-4

Chapter 3. Installations

3.1 Installing the SIMMs..... 3-1

3.2 Completing the Installation..... 3-1

Chapter 4. Award BIOS Setup

4.1 Entering Setup..... 4-1

4.2 The Main Menu..... 4-4

4.3 Standard CMOS Setup..... 4-7

4.4 BIOS Features Setup..... 4-11

4.5 Chipset Features Setup..... 4-16

4.6 Power Management Setup..... 4-17

4.7 PCI Configuration Setup..... 4-22

4.8 Password Setting..... 4-25

4.9 IDE Auto Detection..... 4-26

4.10 Hard Disk Low Level Format Utility..... 4-29

4.11 Power on Boot..... 4-31

4.12 BIOS Reference - POST Codes..... 4-31

Chapter 5. Display

5.1 Drivers and Utilities

5.1.1 Microsoft Windows 3.1..... 5-1

5.1.2 MS Windows 95/NT Mode Driver Install 5-2

5.1.3 MS Windows 95 Refresh Rate Utility 5-2

5.2 Panel Support

5.2.1 For 40K BIOS..... 5-3

5.2.2 For 44K BIOS..... 5-4

5.3 Video Modes..... 5-6

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Appendix A. Watchdog Timer
Appendix B. Connectors' Pin Assignment
Appendix C. Installing Disk On Chip
Appendix D. Updating BIOS
Appendix E. I/O address map
Appendix F. memory address map
Appendix G. Mechanical drawing

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Chapter 1
Introduction

The 486 all-in-One Single Board Computer comes equipped with either Intel / AMD / Cyrix / SGS Thomson 80486 CPU series. Also included on-board are CHIPS 65550 **VGA GUI Accelerator** controller, one **socket for Flash Disk,** two serial RS-232 ports (one for RS232/RS422/RS485), enhanced bi-directional parallel port, PCI enhanced IDE hard disk drive interface, floppy disk controller and watchdog timer. The 486 All-in-One board industrial-grade construction ensures continuous, reliable operation in harsh industrial environments.

Its video section features the ability to control most EL, mono/color STN and TFT flat panel display as well as standard VGA. Equipped with 1MB of EDO DRAM, up to 2MB EDO DRAM (optional). The CHIPS 65550 can display in 640x480 resolution on commonly used flat panels and true color displays on CRT's.

You can also use this reliable 486 All-in-One to transform any system into a 32-bit 486 compatible computer. Its highly compact form and numerous features make it an ideal cost/performance solution for high-end commercial and industrial applications when fast CPU speed and low mean-time-to-repair are critical.

1.1 Specifications

. Bus Type:
ISA bus - 98 pin for 16 bit ISA bus
. CPU:
On board equipped with SQFP CPU, speed up to AMD 5x86-133.
. Cache:
256KB/512KB 2nd level cache memory

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

. Memory:

Supports FPM/EDO DRAM module.

Supports on board 4 MB DRAM and one 72-pin SIMM sockets,

Or two 72-pin SIMM sockets accept 1,2,4,8,16 or 32 MB SIMM module.

. Chipset:

System Chipset: ALI M1487/M1489

I/O Chipset: SMC 37C669

. Real Time Clock:

SGS M48T86 PCI (or compatible) with lithium battery backup for 10 years

of data retention

. Display:

-Chipset: C&T 65550 PCI local bus flat-panel with Windows accelerator

and Video play back

- Display memory: on board EDO DRAM 1MB up to 2MB

- Display resolution:

Supports Flat-panel resolutions up to 640x480, 800x600, 1024x768, 1280x1024

Supports non-interlace CRT monitors, 1024x768 64K colors

- Display connector: DB-15 VGA connector for CRT monitor and 2x22 pin

header for Flat-panel

- Support 3.3V and 5V Flat-panel

. S.S.D.:

Socket for M-system Disk on Chip

. IDE:

Supports up to two, PCI mode 4 enhance IDE hard disk interface

. Floppy:

Supports up to two floppy disk drivers, 3.5” and/or 5.25”

. Parallel Port:

Enhanced Bi-directional EPP/ECP parallel port

. Serial port:

One RS232 port with 16C550 UART

One RS232/422/485 port with 16C550 UART

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

. Watchdog Timer:

Can generate a system RESET, The timer interval is 0 ~ 63 sec (14 level)

. Keyboard Connector:

One 6 pin Mini_Din connector is located on the mounting bracket

One pin header connector for external keyboard adapter

. Expansion Bus:

A 16 Bit PC104 connector for expansion modules

. Power Supply Voltage:

Single power +5V/2.5A, 8_pin external power connector

. Operating Temperature:

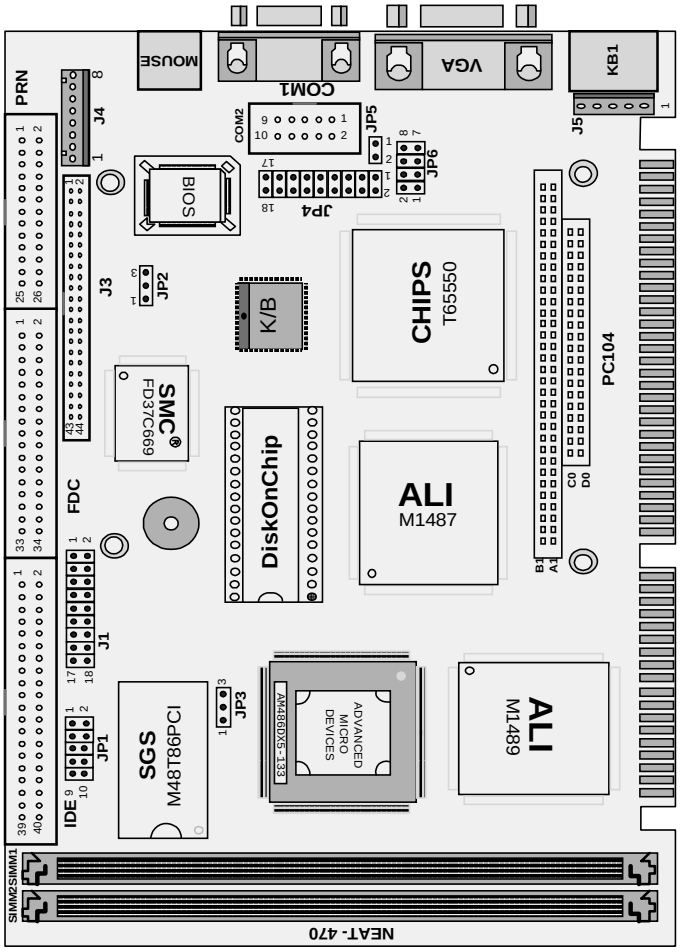
32° to 140° F (0° to 60° C)

. Board Size:

185mm X 122mm

Chapter 2
Jumpers and Connectors

Figure below shows the jumpers' and connectors' location on the 486 All-in-One board.



NEAT-470 Jumper location

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

2.1 Jumpers Setting

Speaker/Keylock/Reset/Turbo/LED (J1)

	J1
Internal buzzer	1-3
External speaker (remove 1-3)	1-7
Power LED, Pin 2+, Pin6-	2-6
Keylock	8-10
System reset switch	11-12
Turbo Switch	13-14
Turbo LED, Pin16+, Pin15-	15-16
HDD LED, Pin18+, Pin17-	17-18

External keyboard (J5)

	J5
Keyboard clock	1
Keyboard data	2
No Connect	3
Keyboard ground	4
Keyboard power	5

M-System Address Select (JP1, 1-6)

	JP1		
	1-2	3-4	5-6
CC00-CDFF	open	close	close
D000-D1FF	open	open	close
D800-D9FF	open	close	open
E000-E1FF	open	open	open

Watchdog Timer (JP1, 7-8)

	JP1
Watchdog time out gen. system reset	7-8

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

CMOS clear (JP1, 9-10)

Closed this jumper, power on system 1minute then power off, Remove this jumper

LCD Panel Voltage Select (JP3, JP5)

	JP3	JP5
3.3V Panel Interface	1-2	close
5.0V Panel Interface	2-3	open

LCD Panel Type Select (JP6)

1-2, 3-4, 5-6, 7-8 four jumpers to select up to 16-type panel

Flat Panel Clock Select (JP2)

	JP2
Invert Clock	1-2
Normal Clock	2-3

External Power Connector (J4)

	J4
+5V	1,8
Ground	4,5
+12V	2,7
-12V	3
-5V	6

COM2 Select (JP4)

	JP4
RS232	3-5, 4-6, 9-11, 10-12, 17-18
RS422	1-3, 2-4, 7-9, 8-10, 15-16
RS485	1-3, 2-4, 7-9, 8-10, 13-14

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

2.2 Connectors

The connectors allow the CPU card to connect with other parts of the system. Some problems encountered with your system may be caused by loose or improper connections. Ensure that all connectors are in place and firmly attached.

Component	Label
HDD (IDE) connector	IDE
FDD connector	FDC
VGA connector	VGA
Flat panel connector	J3
Parallel port	PRN
PC/104 connector	PC104
Keyboard connectors	KB
PS/2 Mouse connectors	mouse
Reset switch connector	J1 (11-12)
External speaker connector	J1 (1-7)
HDD LED connector	J1 (17-18)
Turbo switch connector	J1 (13-14)
Turbo LED connector	J1 (15-16)
SBC power connector	J4
RS-232 serial port	COM1, COM2
RS422,485 serial port	COM2
CMOS RAM clear	JP1(9-10)

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Chapter 3
Installation

This chapter describes the procedures for installing the 486 All-in-One board into your system.

The following is a list of typical peripherals required to build a minimum system:

- Passive backplane (optional)
- Power supply
- IBM PC/AT keyboard
- Display monitor
- Floppy or hard disk with MS-DOS or Flash Disk emulator

3.1 Installing the SIMMs

1. Insert the first SIMM edge connector at a slight angle into the socket of SIMM 1 close to the center of the board. Note that the SIMM is keyed and will only go in one way.
2. Push the SIMM back into the connector carefully until it snaps into place.
3. Check to make sure the SIMM is inserted securely.
4. Repeat Steps 1-3 for remaining SIMM in SIMM 2.

3.2 Completing the Installation

To complete the installation, the following steps should be followed:

1. Set the configuration jumpers in accordance with Chapter 2.
2. Make sure the power is off.
3. If use PC/104 peripherals, install the PC/104 card into PC/104 socket of the 486 All-in-One board.
4. Install the 486 All-in-One board into an ISA passive backplane or just stand it alone as a Single Board Computer.

5. Connect the applicable I/O cables and peripherals, i.e. floppy disk, hard disk, monitor, keyboard, power supply and etc.

NOTE: the color of pin one is usually red or blue, while others are gray

6. Turn on the power.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Chapter 4

AWARD BIOS Setup

Award's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed RAM (CMOS RAM) so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press <Del> immediately will allow you to enter Setup. The other way to enter Setup is to power on the computer, when the below message appears briefly at the bottom of the screen during the POST (Power On Self Test), press <Del> key or simultaneously press <Ctrl>, <Alt>, and <Esc> keys.

TO ENTER SETUP BEFORE BOOT PRESS <CTRL-ALT-ESC> OR <DEL> KEY

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will display and you will again be asked to,

PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Control Keys

Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item in the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp/ "+" key	Increase the numeric value or make changes
PgDn/ "–" key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift)F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Reserved
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the Setup default, only for Option Page Setup Menu
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Getting Help

Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu/Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <F1> or <Esc>.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

The Main Menu

Once you enter Award BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

ROM PCI/ISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERIALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PCI CONFIGURATION SETUP	HDD LOW LEVEL FORMAT
LOAD BIOS DEFAULTS	SAVE & EXIT SETUP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING
Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Time, Date, Hard Disk Type...	

Standard CMOS setup

This setup page includes all the items in standard compatible BIOS. See Page 4-7 to Page 4-10 for details.

BIOS features setup

This setup page includes all the items of Award special enhanced features. See Page 4-11 to Page 4-15 for details.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Chipset features setup

This setup page includes all the items of chipset special features. See Page 4-16 for details.

Power Management setup

This category determines how much power consumption for the system after selecting the items below. Default value is Disable. See Page 4-19 to Page 4-23 for details.

PCI Configuration

This category specifies the setup of PCI related devices and On Board I/O's. See Page 4-24 for details.

Load BIOS defaults

The BIOS defaults have been set by the manufacturer and represent setting which provide the minimum requirements for your system to operate.

Load setup defaults

Chipset defaults function indicates the values required by the system for the maximum performance.

Supervisor / User Password setting

Changes, sets, or disables password. It allows you to limit access to the system and Setup, or just to Setup. See Page 4-27 for details.

IDE HDD auto detection

Automatically detect and configure hard disk parameters. See Page 4-28 to Page 4-30 for details.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

HDD low level format

This stands for hard disk low level format utility. See Page 4-31 to Page 4-32 for details.

Save & exit setup

Saves the CMOS value changes to CMOS and exits setup.

Exit without save

Abandons all the CMOS value changes and exits setup.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Standard CMOS Setup Menu

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want for each item.

Standard CMOS Setup Menu (Support Enhanced IDE)

ROM PCI/ISA BIOS
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Tue, Jan 13 1998
Time(hh:mm:ss) : 13:52:00

	CYLS.	HEADS	PRECOMP	LANDZONE	SECTORS	MODE
Drive C :	0	0	0	0	0	Auto
Drive D :	0	0	0	0	0	Auto

Drive A : 1.44M , 3.5 in
Drive B : None
Video : EGA / VGA

Halt On : All Errors

Base Memory : 640K
Extended Memory : 31744K
Other Memory : 384K
Total Memory : 32768K

ESC : Quit ↑↓→← : Select Item PU / PD / + / - : Modify
F1 : Help (Shift) F2 : Change Color

Date

The date format is <day>, <date>, <month>, and <year>. Press <F3> to show the calendar.

day	The day of week, from Sun to Sat, determined by the BIOS, is read only
date	The date, from 1 to 31 (or the maximum allowed in the month), can be keyed in by the numerical / function key
month	The month, Jan through Dec.
year	The year, from 1900 through 2099

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Time

The time format is <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

Primary Master/Primary Slave

This category identifies the types of the channel that has been installed in the computer. There are 45 predefined types and 4 user definable types for Enhanced IDE BIOS. Type 1 to Type 45 are predefined. Type User is user-definable.

Press PgUp/<+> or PgDn/<–> to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If the type of your hard disk drive is not matched or listed, you can use Type User to define your own drive type manually.

If you select Type User, you will be asked to enter related information for the following items. Enter the information directly from the keyboard and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is ESDI, the selection shall be “Type 1”.

If the controller of HDD interface is SCSI, the selection shall be “None”.

If you select TYPE “Auto” , BIOS will auto detect the HDD & CD-ROM

Drive at POST stage and showing the IDE for HDD & CD-ROM.

TYPE	Drive type
CYLS.	number of cylinders
HEADS	number of heads
PRECOMP	write precom
LANDZONE	landing zone
SECTORS	number of sectors
MODE	Mode type

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

If a hard disk has not been installed, select NONE and press <Enter>.

Drive A type/Drive B type

This category identifies the types of floppy disk drive A or drive B that has been installed in the computer.

None	No floppy drive installed
360K,5.25 in	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
1.2M, 5.25 in	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity
720K, 3.5 in	3-1/2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5 in	3-1/2 inch double-sided drive; 1.44 megabyte capacity
2.88M, 3.5 in	3-1/2 inch double-sided drive; 2.88 megabyte capacity

Video

This category selects the type of adapter used for the primary system monitor that must match your video display card and monitor. Although secondary monitor is supported, you do not have to select the type in Setup.

You have two ways to boot up the system:

1. When you have VGA as primary and monochrome as secondary, the selection of the video type is “VGA Mode”.
2. When you have monochrome as primary and VGA as secondary, the selection of the video type is ”Monochrome mode”.

EGA/VGA	Enhanced Graphics Adapter/video Graphics Array. For EGA, VGA, SEGA, or PGA monitors adapters.
Absent	Without VGA controller on system
CGA 80	Color Graphics Adapter, power up in 80 column mode
MONO	Monochrome adapter, includes high resolution monochrome adapters

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Error halt

This category determines whether the computer will stop if an error is detected during power up.

All errors	The system boot will not be stopped for any error that may be detected.
No errors	Whenever the BIOS detects a non-fatal error the system will be stopped and you will be prompted.
All, But Keyboard	The system boot will not be stopped for a keyboard error; it will be stopped for all other errors.
All, But Diskette	The system boot will not be stopped for a disk error; it will be stopped for all other errors.
All, But Disk/Key	The system boot will not be stopped for a keyboard or disk error; it will be stopped for all other errors.

Memory

The category is display-only which is determined by POST (Power On Self-Test) of the BIOS.

Base Memory

The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the motherboard, or 640K for systems with 640K or more memory installed on the motherboard.

Extended Memory

The BIOS determines how much extended memory is present during the POST. This is the amount of memory located beyond 1MB in the CPU's memory address map.

Other Memory

This refers to the memory located in the 640K to 1024K address space. This is the memory that can be used for different applications. DOS uses this area to load device drivers to keep as much base memory free for application programs. Most use for this area is Shadow RAM.

Total Memory

System total memory is the sum of basic memory, extended memory, and other memory.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

BIOS Features Setup Menu

ROM PCI/ISA BIOS
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

Virus Warning	:	Disabled	Video BIOS Shadow	:	Enabled
CPU Internal Cache	:	Enabled	C8000-CFFFF Shadow	:	Disabled
External Cache	:	Enabled	D0000-D7FFF Shadow	:	Disabled
Quick Power On Self Test	:	Disabled	D8000-DFFFF Shadow	:	Disabled
Boot Sequence	:	C,CDROM,A			
Swap Floppy Drive	:	Disabled			
Boot Up Floppy Seek	:	Enabled			
Boot Up NumLock Status	:	On			
Boot Up System Speed	:	High			
Gate A20 Option	:	Fast			
Typematic Rate Setting	:	Disabled			
TypematicRate(Chars/Sec)	:	6	ESC : Quit	↑↓→←: Select Item	
Typematic Delay (Msec)	:	250	F1 : Help	PU/PD/+/- : Modify	
Security Option	:	Setup	F5 : Old Values	(Shift) F2 : Color	
PCI/VGA Palette Snoop	:	Disable	F6 : Load BIOS Defaults		
OS Select for DRAM <64MB	:	Non-OS2	F7 : Load Setup Defaults		

Virus Warning

This category flashes on the screen. During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and the following error message will appear, in the mean time, you can run an anti-virus program to locate the problem.

```
! WARNING !
Disk boot sector is to be modified
Type "Y" to accept write or "N" to abort write
Award Software, Inc.
```

Enabled	Activates automatically so that the warning message will appear after the system boots up if there is any attempt to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when there is any attempt to access the boot sector or hard disk partition table.

Note: Many disk diagnostic programs, which attempt to access the boot sector table can cause the above warning message. If you will be running such a program, we recommend disable Virus Protection first.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

CPU Internal Cache/External Cache

These two categories speed up memory access. The default value is Enable. If your CPU does not have Internal Cache then this item “CPU Internal Cache” will not be shown.

Enabled	Enable cache
Disabled	Disable cache

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power on the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

Enabled	Enable quick POST
Disabled	Normal POST

Boot Sequence

This category determines which drive computer searches first for the disk operating system (i.e., DOS). Option items are: (1) C,CDROM,A (2) CDROM,C,A (3) D,A,SCSI (4) SCSI,A,C (5) SCSI,C,A (6) C only (7) A,C,SCSI (8) C,A,SCSI. Default value is ‘C,CDROM,A’.

C,CDROM,A	System will first search for hard disk drive then CDROM, floppy disk drive.
A,C,SCSI	System will first search for floppy disk drive then hard disk drive, SCSI

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 720K, 1.2M and 1.44M are all 80 tracks.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360K.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Boot Up NumLock Status

This allows you to determine the default state of numeric keypad. By default, the system boots up with NumLock on.

On	Keypad is number keys
Off	Keypad is arrow keys

Boot Up System Speed

It selects the default system speed - the speed that the system will run immediately after power up.

High	Set the speed to high
Low	Set the speed to low

Gate A20 Option

This entry allows you to select how the Gate A20 is handled. The Gate A20 is a device used to address memory above 1 MB. Initially, the Gate A20 was handled via a pin on the keyboard. Today, while keyboards still provide this support, it is more common, and much faster, for system chipset to provide support for Gate A20.

Normal	keyboard
Fast	chipset

Typematic Rate Setting

This determines if the typematic rate is to be used. When disabled, continually holding down a key on you keyboard will generate only one instance. In other words, the BIOS will only report that the key is down. When the typematic rate is enabled, the BIOS will report as before, but it will then wait a moment, and, if the key is still down, it will begin the report that the key has been depressed repeatedly. For example, you would use such a feature to accelerate cursor movements with arrow keys.

Enabled	Enable typematic rate
Disabled	Disable typematic rate

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Typematic Rate (Chars/Sec)

When the typematic rate is enabled, this selection allows you select the rate at which the keys are accelerated.

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

Typematic Delay (Msec)

When the typematic rate is enabled, this selection allows you to select the delay between when the key was first depressed and when the acceleration begins.

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

Security Option

This category allows you to limit access to the system and Setup, or just to Setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

Note: To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

OS Select for DRAM > 64 MB

This item allows you to access the memory that over 64MB in OS/2.
The choice: Non-OS2, OS2

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

PCI / VGA Palette Snoop

It determines whether the MPEG ISA / VESA VGA cards can work with PCI / VGA or not.

Enabled	Wen PCI/VGA working with MPEG ISA/VESA VGA card.
Disabled	Wen PCI/VGA not working with MPEG ISA/VESA VGA card.

Video BIOS Shadow

It determines whether video BIOS will be copied to RAM, however, it is optional from chipset design. Video Shadow will increase the video speed.

Enabled	Video shadow is enabled
Disabled	Video shadow is disabled

C8000 - CFFFF Shadow/D0000 - DFFFF Shadow

These categories determine whether optional ROMs will be copied to RAM. An example of such option ROM would be support of on board M_system disk_on_chip and SCSI.

Enabled	Optional shadow is enabled
Disabled	Optional shadow is disabled

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Chipset Features Setup Menu

ROM PCI/ISA BIOS
CHIPSET FEATURES SETUP
AWARD SOFTWARE INC.

Auto Configuration	: Enabled
AT-BUS Clock	: CLK/4
DRAM Read Timing	: Normal
DRAM Write Timing	: Normal
SRAM Read Timing	: 3-2-2-2
SRAM Write Timing	: 0 Wait
Hidden Refresh	: Disabled
Memory Hole(15M-16M)	: Disabled
ISA I/O Recovery	: Enabled
Fast-Back-to-Back	: Enabled

ESC	: Quit	↑ ↓ → ←	: Select Item
F1	: Help	PU/PD/+/-	: Modify
F5	: Old Values (Shift)		F2 : Color
F6	: Load BIOS Defaults		
F7	: Load Setup Defaults		

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speed and access to system memory resources, such as DRAM and external cache. It also coordinates communications between the conventional ISA bus and PCI bus. It must be stated that these items should never need to 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. Such a scenario might 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.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Auto Configuration

Pre-defined values for DRAM, cache .. timing according to CPU type & system clock.

Memory Hole(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 16MB.

Enabled	Memory hole supported.
Disabled	Memory hole not supported.

ISA I/O recovery time

The recovery time is the length of time 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 then the input / output bus that the CPU must be delayed to allow for the completion of the I/O.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Integrated Peripherals Menu

ROM PCI/ISA BIOS
INTEGRATED PERIPHERIALS
AWARD SOFTWARE INC.

On-Chip Local Bus IDE : Enabled IDE Buffer for DOS & Win : Enabled IDE HDD Block Mode : Enabled IDE Primary Master PIO : Auto IDE Primary Slave PIO : Auto Onboard FDC Controller : Enabled Onboard UART1 : Auto Onboard UART2 : Auto Onboard UART 2 Mode : Standard Onboard Parallel Port : 378/IRQ7 Parallel Port Mode : Normal	
	ESC : Quit ↑↓→← :Select Item F1 : Help PU/PD/+/- :Modify F5 : Old Values (Shift) F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Power Management Setup

The Power management setup will appear on your screen like this:

ROM PCI/ISA BIOS
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management	: Disable	IRQ5 (LPT 2)	: ON
PM Control by APM	: Yes	IRQ6 (Floppy Disk)	: ON
Video Off Option	: Susp, Stby -> Off	IRQ7 (LPT 1)	: ON
Video Off Method	: DPMS Support	IRQ8 (RTC Alarm)	: OFF
MODEM Use IRQ	: 3	IRQ9 (IRQ2 Redir)	: ON
		IRQ10 (Reserved)	: OFF
** PM Timers **		IRQ11 (Reserved)	: OFF
HDD Off After	: Disable	IRQ12 (PS/2 Mouse)	: ON
Doze Mode	: Disable	IRQ13 (Coprocessor)	: OFF
Standby Mode	: Disable	IRQ14 (Hard Disk)	: ON
Suspend Mode	: Disable	IRQ15 (Reserved)	: OFF
** PM Events **			
VGA	: OFF		
FDD(3FXh)	: ON		
LPT & COM	: LPT/COM	ESC: Quit	↑↓→← : Select Item
HDD (1FXh)	: ON	F1 : Help	PU / PD / + / - : Modify
NMI	: OFF	F5 : Old Values	(Shift)F2 : Color
IRQ3 (COM 2)	: ON	F6 : Load BIOS Defaults	
IRQ4 (COM 1)	: ON	F7 : Load Setup Defaults	

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.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

item	Options	Descriptions
A. Power Management	1. Disable	Global Power Management will be disabled.
	2.User Define	Users can configure their own power management.
	3. Min Saving	Pre-defined timer values are used so that all timers are in their MAX value.
	4. Max Saving	Pre-defined timer values are used so that all timers are in MIN value.
B. PM Control by APM	1. No	System BIOS will ignore APM when power management is running the system.
	2. Yes	System BIOS will wait for APM prompt before it enters any PM mode e.g. DOZE, STANDBY or SUSPEND. Note: If APM is installed, and if there is a task running, even the timer is time out, the APM will not prompt the BIOS to put the system into any power saving mode!
		Note: – if APM is not installed, this option has no effect.
C. Video Off Option	1. Always On	System BIOS will never turn off the screen.
	2.Suspend–> Off	Screen off when system is in SUSPEN mode.
	3.Susp,Stby-> Off	Screen off when system is in STANDBY or SUSPEND mode.
	4.All Modes–> Off	Screen off when system is in DOZE, STANDBY or SUSPEND mode.
		Note: The M/B markers are recommended to fix this item to (2) or (3) and hide it by using MODBIN Utility.
D. Video Off Method	1. Blank Screen	The system BIOS will only blank off the screen when it disables the video.
	2. V/H SYNC +Blank	In addition to (1), BIOS will also turn off the V-SYNC & H-SYNC signals form VGA cards to monitor.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

	3. DPMS	This function is enabled only for the VGA card supporting DPMS.
		Note: Green monitors detect the V/H SYNC signals to turn off its electron gun.

Item	Options	Descriptions
E. MODEM Use IRQ	3	This set the IRQ number that modem use
		You can choose the IRQ no. by yourself.
F.HDD Power Down (#)Remark 2	1. Disable	HDD's motor will not be off.
	2. 1 Min 2 Min 3 Min 4 Min 5 Min 6 Min 7 Min 8 Min 9 Min 10 Min 11 Min 12 Min 13 Min 14 Min 15 Min	Defines the continuous HDD idle time before the HDD enters the power saving mode (motor off).
	3 When Suspend	BIOS will turn the HDD motor off when system is in SUSPEND mode.
		Note: – (2) & (3) can be selected at the same time. – When HDD is in power saving mode, any access to the HDD will wake the HDD up.
G. Doze mode (*) Remark 1	1. Disable	System will never enter the DOZE mode.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

	2. 10 Sec 20 Sec 30 Sec 40 Sec 1 Min 3 Min 5 Min 10 Min 15 Min 20 Min 30 Min 40 Min 1 Hr 2 Hr 3 Hr	Defines the continuous idle time before the system enters the DOZE mode. If any item defined in (J) is enabled and active, the DOZE timer will be reloaded.
		Note: Normally, STANDBY mode puts the system into low speed or 8 MHz. The screen may be off depending on (E).

Item	Options	Descriptions
H. Standby Mode (*)Remark 1	1. Disable	System will never enter STANDBY mode.
	2. 10 Sec 20 Sec 30 Sec 40 Sec 1 Min 3 Min 5 Min 10 Min 15 Min 20 Min 30 Min 40 Min 1 Hr 2 Hr 3 Hr	Defines the continuous idle time before the system enters the STANDBY mode. If any item defined in (J) is enabled and active, The STANDBY timer will be reloaded.
		Note: Normally, STANDBY mode puts the system into low speed or 8 MHz. The screen may be off depending on (E).
I. Suspend Mode (*) Remark 1	1. Disable	System will never enter the SUSPEND mode.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

	2. 10 Sec 20 Sec 30 Sec 40 Sec 1 Min 3 Min 5 Min 10 Min 15 Min 20 Min 30 Min 40 Min 1 Hr 2 Hr 3 Hr	Defines the continuous idle time before the system enters the SUSPEND mode. If any item defined in (J) is enabled and active, The SUSPEND timer will be reloaded.
		Note: Normally, When the SUSPEND mode puts the system into low speed or 8 MHz, the clock is stopped, and the screen may be off depending on (E).

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Item	Options	Descriptions
J. VGA FDD(3FXh) LPT & COM HDD (1FXh) NMI 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(PS/2 mouse) IRQ13(Coprocessor) IRQ14 (Hard Disk) IRQ15 (Reserved)	1. OFF	The specified event activity will not affect the PM timers.
	2. ON	The specified event activity causes the PM Timers to be reloaded. For example, the Power Management Unit(PMU) monitors the specified activities as PM events.

Remark 1: All items mark with (*) in this menu, will be loaded with predefined values as long as the item 'Power Management' is not configured to 'User Defined'
These items are: Item 'System Doze', 'System Standby' & 'System Suspend'

Remark 2: Although the item 'HDD Power Down' is not controlled by the item 'Power Management' in terms of timer value, the HDD (s) will not power down if the global power management is disabled!

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

PCI Configuration Setup

----- This Item for PISA bus 486 All-in-One board only -----

You can manually configure the PCI Device's IRQ. The following pages tell you the options of each item and describe the meaning of each option.

ROM PCI/ISA BIOS
PCI CONFIGURATION SETUP
AWARD SOFTWARE, INC.

PnP BIOS auto-config : Disabled Slot 1 Using INT# : AUTO Slot 2 Using INT# : AUTO Slot 3 Using INT# : AUTO Slot 4 Using INT# : AUTO 1st Available IRQ : 10 2nd Available IRQ : 11 3rd Available IRQ : 12 4th Available IRQ : 9 PCI IRQ Actived By : Level PCI IDE 2nd Channel : Enable PCI IDE IRQ Map To : PCI-AUTO Primary IDE INT# : A	CPU to PCI Write buffer : Enabled CPU to PCI Byte Merge : Enabled PCI to DRAM Buffer : Enabled ESC: Quit ↑↓→← : Select Item F1 : Help PU / PD / + / - : Modify F5 : Old Values (Shift)F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults

The following pages tell you the options of each item and describe the meaning of each option.

Item	Options	Descriptions
A . Slot 1 Using INT# Slot 2 Using INT# Slot 3 Using INT# Slot 4 Using INT#	AUTO A B C D	AUTO : BIOS will – Ask the PCI device which INT (A-D) does it want to use for interrupt. – Check out which IRQ is available from the above. – Tell the device which IRQ has been assigned to it.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Item	Options	Descriptions
A . Slot 1 Using INT# Slot 2 Using INT# Slot 3 Using INT# Slot 4 Using INT#	AUTO A B C D	A,B,C,D : These options are reserved for "Dirty" cards from which the system BIOS cannot tell which INT does it use.
		Note: – Choose "AUTO" for all devices unless you know exactly which card is a dirty device and which INTs that card uses. – Choose only "AUTO" for Multi-Function PCI devices because options A, B, C, D will force the BIOS to assign IRQs for function only.
B.1st Available IRQ 2nd Available IRQ 3rd Available IRQ 4th Available IRQ	3 4 5 7 9 10 11 12 14 15 NA	The system BIOS will assign these 4 available IRQs to the found PCI devices.
C. PCI IRQ Activated by	Edge Level	To tell the chipset the IRQ signals input is level or edge trigger.
D. PCI IDE 2nd Channel	Enable Disable	Enable/disable 2nd channel of PCI/IDE card. It includes I/O port (170H~177H) and IRQ 15 assignment
E. PCI IDE IRQ Map To	PCI-AUTO PCI-SLOT1 PCI-	PCI-AUTO The BIOS will: – scan for PCI IDE devices and determine the location of the

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

	SLOT2 PCI- SLOT3 PCI- SLOT4 ISA	PCI IDE device (See item below)

Item	Options	Description
E. PCI IDE IRQ Map To	PCI- AUTO PCI- SLOT1 PCI- SLOT2 PCI- SLOT3 PCI- SLOT4 ISA	PCI-SLOT1 PCI-SLOT2 PCI-SLOT3 PCI-SLOT4 – assign IRQ 14 for primary IDE INT# IRQ 15 for secondary IDE INT# for the specified slot ISA – The BIOS will not assign any IRQs even if PCI IDE card is found. Because some IDE cards connect the IRQ 14 & 15 directly from ISA slot through a cord. (This cord is called Legacy Header)
F. Primary IDE INT# Secondary IDE INT#	A B	To assign the interrupt number that is using by the PCI IDE card.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Supervisor/User Password Setting

You can set either supervisor or user password, or both of them. The differences between are:
Supervisor password: can ether and change the options of the setup menus.
User password : just can only enter but do not have the right to change
the options of the setup menus.
When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED.

When a password has been enabled, you will be prompted to enter it every time you try to enter setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

IDE HDD Auto Detection

The Enhance IDE features was included in all Award BIOS. The following is a brief description of this feature.

1. Setup Changes

<I> Auto-detection

BIOS setup will display all possible modes that are supported by the HDD including NORMAL, LBA & LARGE.

If HDD does not support LBA modes, no 'LBA' option will be shown.

If the number of cylinders is less than or equal to 1024, no 'LARGE' option will be shown.

Users can select a mode which is appropriate for them.

ROM/PCI/ISA BOPS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

	CYLS.	HEADS	PRECOMP	LANDZONE	SECTORS	MODE
Drive C:						

Select Drive C Option (N = Skip) : N

OPTION	SIZE	CYLS	HEADS	PRECOMP	LANDZONE	SECTORS	MODE
2 (Y)	133	648	64	0	2594	63	LBA
1	1339	2595	16	65535	2594	63	NORMAL
3	1338	1297	32	65535	2594	63	LARGE

Note: Some Oses (SCO-UNIX before V5.0) must use "NORMAL" for installation

<II> Standard CMOS Setup

		CYLS	HEADS	PRECOMP	LANDZONE	SECTOR	MODE
Drive C :	User (516MB)	1120	16	65535	1119	59	NORMAL
Drive D :	None (203MB)	684	16	65535	685	38	----------

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

When HDD type is in ‘user’ type, the ”MODE” option will be opened for user to select their own HDD mode.

(2) HDD Modes

The Award BIOS supports 3 HDD modes : NORMAL, LBA & LARGE

NORMAL mode

This is the generic access mode in which neither the BIOS nor the IDE controller will make any transformation during accessing.

The maximum number of cylinders, head & sectors for NORMAL mode are 1024, 16 & 63.

	no. Cyclinder	(1024)
x	no. Head	(16)
x	no. Sector	(63)
x	no. per sector	(512)
		528 Megabytes

If a user set his HDD to NORMAL mode, the maximum accessible HDD size will be 528 Megabytes even though its physical size may be greater than that.

LBA (Logical Block Addressing) mode

This is a new HDD accessing method to overcome the 528 Megabyte bottleneck. The number of cylinders, heads & sectors shown in setup may not be the number physically contained in the HDD.

During HDD accessing, the IDE controller will transform the logical address described by sector, head & cylinder number into its own physical address inside the HDD.
The maximum HDD size supported by LBA mode is 8.4 Gigabytes which is obtained by the following formula:

	no. Cyclinder	(1024)
x	no. Head	(255)
x	no. Sector	(63)
x	bytes per sector	(512)
		8.4 Gigabytes

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

LARGE mode

This is an extended HDD access mode supported by the Award Software.

Some IDE HDDs contain more than 1024 cylinder without the LBA support (in some cases, user do not want LBA). The Award BIOS provides another alternative to support these kinds of HDD.

Example of LARGE mode:

CYLS.	HEADS	SECTOR	MODE
1120	16	59	NORMAL
560	32	59	LARGE

BIOS tricks DOS (or other OS) that the number of cylinders is less than
1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside INT13h in order to access the right HDD address.

Maximum HDD size:

	no. Cyclinder	(1024)
x	no. Head	(32)
x	no. Sector	(63)
x	bytes per sector	(512)
		1 Gigabytes

(3) Remarks

To support LBA or LARGE mode of HDDs, there must be some software
involved. All these software are located in the Award HDD Service Routine (INT 13h). You may not be able to access a HDD with LBA
(LARGE) mode selected if you are running under an Operating System which replaces the whole INT 13h.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Hard Disk Low Level Format Utility

This Award Low-Level-Format Utility is designed as a tool to save your time when you format your hard disk. This Utility automatically looks for the necessary information of the drive you selected. It also searches for bad tracks and lists them for your reference.

Shown below is the Main Menu after you enter into the Award Low-Level-Format Utility.

Hard disk Low-level-format Utility SELECT DRIVE BAD TRACKE LIST PREFORMAT	NO. CYLS HEAD
Current select drive is : C DRIVE: C CYLINDER : 0 HEAD: 0	

		CYLINDERS	HEADS	PRECOMP	LANDZONE	SECTORS	MODE
Drive C:	1282 Mb	621	64	0	2483	63	LBA
Drive D:	0 Mb	0	0	65535	65535	0	AUTO

Up/Down - Select item Enter - Accept ESC-Exit/Abort

Copyright © Award Software, Inc. 1992-98 All Rights Reserved

Control Keys

Use the Up and Down arrow keys to move around the selections displayed on the upper screen. Press [Enter] to accept the selection. Press Esc to abort the selection or exit the Utility.

SELECT DRIVE

Select from installed hard disk drive C or D. Listed at the bottom of the screen is the drive automatically detected by the utility.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

BAD TRACK LIST

Auto scan bad track

The utility will automatically scan bad tracks and list the bad tracks in the window at the right side of the screen.

Add bad track

Directly type in the information of the known bad tracks in the window at the right side of the screen.

Modify bad track

Modify the information of the added bad tracks in the window at the right side of the screen.

Delete bad track

Delete the added bad tracks in the window at the right side of the screen.

Clear bad track table

Clear the whole bad track list in the window at the right side of the screen.

PREFORMAT

Interleave

Select the interleave number of the hard disk drive on which you wish to perform low level format. You may

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

select from 1 to 8. Check the documentation that came with the drive for the correct interleave number, or select 0 for utility automatic detection.

Auto scan bad track

This allows the utility to scan first then format by each track.

Start

Press <Y> to start low level format.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Power-On Boot

After you have made all the changes to CMOS values and the system cannot boot with the CMOS values selected in Setup, restart the system by turning it OFF then ON or Pressing the "RESET" button on the system case. You may also restart by simultaneously press <Ctrl>, <Alt>, and <Delete> keys. Upon restart the system, immediately press <Insert> to load BIOS default CMOS value for boot up.

BIOS Reference - POST Codes

NOTE: ISA POST codes are typically output to port address 80h.

POST (hex)	Description
C0	1.Turn off OEM specific cache, shadow... 2. Initialize all the standard devices with default values Standard devices includes: -DMA controller (8237) -Programmable Interrupt Controller (8259) -Programmable Interval Timer (8254) -RTC chip
C1	Auto-detection of onboard DRAM & Cache
C3	1. Test system BIOS checksum 2. Test the first 256K DRAM 3. Expand the compresses codes into temporary DRAM area including the compresses System BIOS & Option ROMs
C5	Copy the BIOS from ROM into E0000-FFFFF shadow RAM so that POST will go faster
01-02	Reserved
03	Initialize EISA registers (EISA BIOS only)
04	Reserved
05	1. Keyboard Controller Self-Test 2. Enable Keyboard Interface
06	Reserved
07	Verifies CMOS basic R/W functionality
BE	Program defaults values into chipset according to the MODBINable Chipset Default Table
09	1. Program the configuration register of Cyrix CPU according to the MODBINable Cyrix Register Table 2. OEM specific cache initialization (if needed)

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

POST(hex)	Description
0A	1. Initialize the first 32 interrupt vectors with corresponding Interrupt handlers Initialize INT no from 33-120 with Dummy(Suprious) Interrupt Handler 2. Issue CPUID instruction to identify CPU type 3. Early Power Management initialization (OEM specific)
0B	1. Verify the RTC time is valid or not 2. Detect bad battery 3. Read CMOS data into BIOS stack area 4. PnP initializations including (PnP BIOS only) -Assign CSN to PnP ISA card -Create resource map from ESCD 5. Assign IO & Memory for PCI devices (PCI BIOS only)
0C	Initialization of the BIOS Data Area (40 : 0N – 40:FF)
0D	1. Program some of the Chipset value according to Setup. (Early Setup Value Program) 2. Measure CPU speed for display & decide the system clock Speed 3. Video initialization including Monochrome, CGA, EGA/VGA. If no display device is found, the speaker will beep
0E	1. Initialize the APIC (Multi-Processor BIOS only) 2. Test video RAM (If Monochrome display device found) 3. Show messages including: -Award Logo, Copyright string, BIOS Date code & Part No. -OEM specific sign on messages -Energy Star Logo (Green BIOS ONLY) -CPU brand, type & speed -Test system BIOS checksum (Non-Compress Version)
0F	DMA channel 0 test
10	DMA channel 1 test
11	DMA page registers test
12-13	Reserved
14	Test 8254 Timer 0 Counter 2.
15	Test 8259 interrupt mask bits for channel 1
16	Test 8259 interrupt mask bits for channel 2
17	Reserved
19	Test 8259 functionality
1A-1D	Reserved
1E	If EISA NVM checksum is good, execute EISA initialization (EISA BIOS only)
1F-29	Reserved
30	Detect Base Memory & Extended Memory Size
31	1. Test Base Memory from 256K to 640K 2. Test Extended Memory from 1M to the top of memory

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

POST(hex)	Description
32	1. Display the Award Plug & Play BIOS Extension message (PnP BIOS only) 2. Program all onboard super I/O chips (if any) including COM ports, LPT ports, FDD port... according to setup value
33-3B	Reserved
3C	Set flag to allow users to enter CMOS Setup Utility
3D	1. Initialize Keyboard 2. Install PS2 mouse
3E	Try to turn on Level 2 cache Note: Some chipset may need the L2 cache to be turned on in this stage. But usually, the cache is turned on later in POST 61h
3F-40	Reserved
BF	1. Program the rest of the Chipset value according to Setup. (Later Setup Value Program) 2. If auto-configuration is enabled, programmed the chipset with predefined values in the MODBINable Auto-Table
41	Initialize floppy disk drive controller
42	Initialize Hard drive controller
43	If it is a PnP BIOS, initialize serial & parallel ports
44	Reserved
45	Initialize math coprocessor.
46-4D	Reserved
4E	If there is any error detected (such as video, kb...), show all the error messages on the screen & wait for user to press <F1> key
4F	1. If password is needed, ask for password 2. Clear the Energy Star Logo (Green BIOS only)
50	Write all CMOS values currently in the BIOS stack area back into the CMOS
51	Reserved
52	1. Initialize all ISA ROMs 2. Later PCI initializations (PCI BIOS only) -assign IRQ to PCI devices -initialize all PCI ROMs 3. PnP Initializations (PnP BIOS only) -assign IO, Memory, IRQ & DMA to PnP ISA devices -initialize all PnP ISA ROMs 4. Program shadows RAM according to Setup settings 5. Program parity according to Setup setting 6. Power Management Initialization -Enable/Disable global PM -APM interface initialization
53	1. If it is NOT a PnP BIOS, initialize serial & parallel ports 2. Initialize time value in BIOS data area by translate the RTC time value into a timer tick value
60	Setup Virus Protection (Boot Sector Protection) f unctionality according to Setup setting

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

POST(hex)	Description
61	1. Try to turn on Level 2 cache Note: if L2 cache has already turned on in POST 3D, this part would be skipped 2. Set the boot up speed according to Setup setting 3. Last chance for Chipset initialization 4. Last chance for Power Management initialization (Green BIOS only) 5. Show the system configuration table
62	1. Setup daylight saving according to Setup value 2. Program the NUM Lock, typematic rate & typematic speed according to Setup setting
63	1. If there is any change in the hardware configuration, update the ESCD information (PnP BIOS only) 2. Clear memory that has been used 3. Boot system via INT 19H
FF	System Booting. This means that the BIOS has already passed the control right to the operating system

Unexpected Errors:

POST(hex)	Description
B0	If interrupt occurs in protected mode.
B1	Unclaimed NMI occurs

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Chapter 5
Display

The on-board VGA interface of the NEAT-470 supports traditional analog CRT monitors and a wide range of popular LCD, EL, gas plasma flat panel displays. It can drive CRT displays with resolutions up to 1024x768 in 256 colors. It is also capable of driving color panel displays with resolutions of 640x480 in 256K colors.

5.1 Drivers and Utilities

5.1.1 Microsoft Windows 3.1

The graphic installation program,SETUP.EXE, supports a simple installation procedure of the display driver program. You may install these drivers either through Windows or in DOS. To use Setup, follow the steps as below:

1. Ensure that MS Windows 3.1 is up and running properly, using the standard VGA driver. Exit from Windows.
2. Place the *Windows 3.1x display Driver Diskette* in drive A. Type **A:<ENTER>** to make it be the default drive. Type **SETUP <ENTER>** to run the drive SETUP program. Press any key to get to the application list. Using the arrow keys, select ***Windows Version 3.1*** and press **<ENTER>** key. Press <**ENTER>** key to select ***All Resolutions***, then press <**END>** to begin the installation. At this point, you will be asked for the path to your Windows system directory (default C:\ WINDOWS). When the installation is complete, press any key to continue. Press **<ESC>** key followed by **Y** to exit to **DOS**.
3. Change to the directory where you installed Windows (default C:\WINDOWS)
4. Type **SETUP<ENTER>** to run the Windows Setup program. It will show the current Windows configuration. Use the “up” arrow key to move to the Display line and press <**ENTER>**. A list of display drivers will be shown. Use the arrow keys to select one of the drivers starting with an asterisk (*) and press **<ENTER>**.
5. Follow the directions on the screen to complete the setup. In most cases, you may press **<ENTER>** to accept the suggested option. When Setup is done, it will return to **DOS**. Type **<WIN>** to start Windows with the new display driver.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

5.1.2 MS Windows 95 / NT Mode Driver Install

1. ENSURE that the MS Windows 95 or NT is up and running properly using the VGA driver that has been detected.
2. OPEN the "*My computer*" program group and SELECT the "*Control Panel*" icon.
3. SELECT the "*Display*" icon and then SELECT the "*Settings*" page.
4. SELECT the "*Change Display Type*" selection bar, and then SELECT the "*Change*" button next to the Adapter Type.
5. On the "*Select Device*" page, SELECT the "*Have Disk*" button to install the display driver from the diskette.
6. After the "*Have Disk*" button selected a "*Install From Disk*" window will appear. SELECT the "*Browse*" button to browse the directory "X:\WIN95" of your diskette drive. (X=A or B)
7. The files ***.INF** will appear under the file name list. SELECT "*OK*" to return to the "*Install From Disk*" window. Under the statement "*Copy manufacturer's files from*" SELECT "*OK*" to start installing the driver files from the FLOPPY drive.
8. "*Select device*" window will appear. Under Models, the driver file name will be listed, SELECT "*OK*" to close "*Select Device*" window and select "*Color Palette*" and "*Desktop Area*" of your choice.
9. Once the desired color palette (the number of colors) and desktop area (resolution) has been chosen, the Windows 95 or NT system will be restarted to load this accelerated driver.

5.1.3 MS Windows 95 Refresh Rate Utility Regulation

1. Open the "*My computer*" program group and SELECT the "*Control panel*" icon.
2. Double click on *DISPLAY* and SELECT "*CHIPS*". There will now be a refresh tab for changing the refresh rate. You may click the tab to change the refresh rate.

5.2 Panel Support

The NEAT-470 SBC board provides a very convenient way to setup panels that are up to 16 types.

I. For 40K BIOS

If you install a standard 40K BIOS on the board, the NEAT-470 board supports 8 panels as follows:

Panel #	Panel Type
1	1024x768 Dual Scan STN Color Panel
2	1280x1024 TFT Color Panel
3	640x480 Dual Scan Color Panel
4	800x600 Dual Scan Color Panel
5	640x480 Sharp TFT Color Panel
6	640x480 18-bit TFT Color Panel
7	1024x768 TFT Color Panel
8	800x600 TFT Color Panel

Meanwhile, please also set the jumpers on **JP6** as the following:

Panel #	7-8	5-6	3-4	1-2
1	Open	Close	Close	Close
2	Open	Close	Close	Open
3	Open	Close	Open	Close
4	Open	Close	Open	Open
5	Open	Open	Close	Close
6	Open	Open	Close	Open
7	Open	Open	Open	Close
8	Open	Open	Open	Open

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

II. For 44K BIOS

If you install a standard 44K BIOS on the board, the NEAT-470 board supports 14 panels as the following:

Panel #	Panel Type
1	1024x768 Dual Scan STN Color Panel
2	1280x1024 TFT Color Panel
3	640x480 Dual Scan Color Panel
4	800x600 Dual Scan Color Panel
5	640x480 Sharp TFT Color Panel
6	640x480 18-bit TFT Color Panel
7	1024x768 TFT Color Panel
8	800x600 TFT Color Panel
9	800x600 TFT Color Panel (44K BIOS only)
10	800x600 TFT Color Panel (44K BIOS only)
11	800x600 Dual Scan Color Panel (44K BIOS only)
12	800x600 Dual Scan Color Panel (44K BIOS only)
13	1024x768 TFT Color Panel (44K BIOS only)
14	1024x 768 TFT Color Panel (44K BIOS only)
15	Reserved
16	Reserved

Meanwhile, please also set the jumpers on **JP6** as the following:

Panel #	7-8	5-6	3-4	1-2
1	Close	Close	Close	Close
2	Close	Close	Close	Open
3	Close	Close	Open	Close
4	Close	Close	Open	Open
5	Close	Open	Close	Close
6	Close	Open	Close	Open
7	Close	Open	Open	Close
8	Close	Open	Open	Open
9	Open	Close	Close	Close
10	Open	Close	Close	Open

(to be continued…)

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

(continued)

Panel #	7-8	5-6	3-4	1-2
11	Open	Close	Open	Close
12	Open	Close	Open	Open
13	Open	Open	Close	Close
14	Open	Open	Close	Open
15	Open	Open	Open	Close
16	Open	Open	Open	Open

5.3 Video Modes

The display chipset C&T 65550 supports all standard VGA modes as well as a wide selection of extended modes. The following table list the modes and vertical refresh rates that this BIOS can support.

Table 1: Standard Video Display Modes

Video Mode	VESA VBE Mode	Pixel Reso-lution	Color Res.	Mode Type	Display Adapter	Font Size	Char. Disp.	Dot Clock (MHz)	Horiz. Freq. (MHz)	Vert Freq (Hz)	Video Mem. (KB)
00h	--	320x200	16(gray)	Text	CGA	8x8	40x25	25	31.5	70	256
		320x350	16(gray)		EGA	8x14	40x25	25	31.5	70	256
		360x400	16		VGA	9x16	40x25	28	31.5	70	256
01h	--	320x200	16	Text	CGA	8x8	40x25	25	31.5	70	256
		320x350	16		EGA	8x14	40x25	25	31.5	70	256
		360x400	16		VGA	9x16	40x25	28	31.5	70	256
02h	--	640x200	16(gray)	Text	CGA	8x8	80x25	25	31.5	70	256
		640x350	16(gray)		EGA	8x14	80x25	25	31.5	70	256
		720x400	16		VGA	9x16	80x25	28	31.5	70	256
03h	--	640x200	16	Text	CGA	8x8	80x25	25	31.5	70	256
		640x350	16		EGA	8x14	80x25	25	31.5	70	256
		720x400	16		VGA	9x16	80x25	28	31.5	70	256
04h	--	320x200	4	Graph	All	8x8	40x25	25	31.5	70	256
05h	--	320x200	4(gray)	Graph	CGA	8x8	40x25	25	31.5	70	256
		320X200	4(gray)		EGA	8x8	40x25	25	31.5	70	256
		320X200	4		VGA	8x8	40x25	25	31.5	70	256
06h	--	640x200	2	Graph	All	8x8	80x25	25	31.5	70	256
07h	--	720x350	Mono	Text	MDA	9x14	80x25	28	31.5	70	256
		720x350	Mono		EGA	9x14	80x25	28	31.5	70	256
		720x400	Mono		VGA	9x16	80x25	28	31.5	70	256
08h-0Ch	--	Reserved			-		-				
0Dh	--	320x200	16	Graph	E/VGA	8x8	40x25	25	31.5	70	256
0Eh	--	640x200	16	Graph	E/VGA	8x8	80x25	25	31.5	70	256
0Fh	--	640x350	Mono	Graph	E/VGA	8x14	80x25	25	31.5	70	256
10h	--	640x350	16	Graph	E/VGA	8x14	80x25	25	31.5	70	256
11h	--	640x480	2	Graph	VGA	8x16	80x30	25	31.5	60	256
12h	--	640x480	16	Graph	VGA	8x16	80x30	25	31.5	60	256
13h	--	320x200	256	Graph	VGA	8x8	40x25	25	31.5	70	256

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Table 2: Extended Video Modes

Video Mode	VESA VBE Mode	Pixel Reso-lution	Color Res.	Mode Type	Mem. Org	Font Size	Char. Disp.	Dot Clock (MHz)	Horiz. Freq. (MHz)	Vert Freq (Hz)	Video Mem. (KB)
20h	120	640x480	16	Graph(L)	Pack Pix	8x16	80x30	25.175	31.5	60	256
								31.5	37.5	75	256
								36	43.3	85	256
22h	122	800x600	16	Graph(L)	Pack Pix	8x16	100x37	36	35.1	56	256
								40	37.9	60	256
								49.5	46.9	75	256
								56.25	53.7	85	256
24h	124	1024x768	16	Graph(L)	Pack Pix	8x16	128x48	44.9	35.5	43(I)	384
								65	48.4	60	384
								78.75	60	75	384
								94.5	68.7	85	384
28h	128	1280x1024	16	Graph(L)	Pack Pix	8x16	160x64	8.75	47	43(I)	640
								108	64	60	640
2Ah*	--	1600x1200	16	Graph(L)	Pack Pix	8x16	200x75	--	--	--	938
30h	101h	640x480	256	Graph(L)	pack Pix	8x16	80x30	25.175	31.5	60	300
								31.5	37.5	75	300
								36	43.3	85	300
31h	100h	640x400	256	Graph(L)	Pack Pix	8x16	80x25	25.175	31.5	70	256
32h	103h	800x600	256	Graph(L)	Pack Pix	8x16	100x37	36	35.1	56	469
								40	37.9	60	469
								49.5	46.9	75	469
								56.25	53.7	85	469
34h	105h	1024x768	256	Graph(L)	Pack Pix	8x16	128x48	44.9	35.5	43(I)	768
								65	48.4	60	768
								78.75	60	75	768
								94.5	68.7	85	768
38h	107h	1280x1024	256	Graph(L)	Pack Pix	8x16	160x64	78.75	47	43(I)	1280
								108	64	60	1280

Notes: I = Interlaced L = Linear * =Modes 3Ah is for flat panel only

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Table 2: Extended Video Modes (continued)

Video Mode	VESA VBE Mode	Pixel Reso-lution	Color Res.	Mode Type	Mem. Org	Font Size	Char. Disp.	Dot Clock (MHz)	Horiz. Freq. (MHz)	Vert Freq (Hz)	Video Mem. (KB)
3Ah*	--	1600x1200	256	Graph(L)	Pack Pix	8x16	200x75	-	--	--	1875
40h	110h	640x480	32K	Graph(L)	Pack Pix	8x16	80x30	25.175	31.5	60	600
								31.5	37.5	75	600
								36	43.3	85	600
41h	111h	640x480	64K	Graph(L)	Pack Pix	8x16	80x30	25.175	31.5	60	600
								31.5	37.5	75	600
								36	43.3	85	600
42h	113h	800x600	32K	Graph(L)	Pack Pix	8x16	100x37	36	35.1	56	938
								40	37.9	60	938
								49.5	46.9	75	938
								56.25	53.7	85	938
43h	114h	800x600	64K	Graph(L)	Pack Pix	8x16	100x37	36	35.1	56	938
								40	37.9	60	938
								49.5	46.9	75	938
								56.25	53.7	85	938
44h	116h	1024x768	32K	Graph(L)	Pack Pix	8x16	128x48	44.9	35.5	43(I)	1536
								65	48.4	60	1536
45h	117h	1024x768	64K	Graph(L)	Pack Pix	8x16	128x48	44.9	35.5	43(I)	1536
								65	48.4	60	1536
50h	112h	640x480	16M	Graph(L)	Pack Pix	8x16	80x30	25.175	31.5	60	900
								31.5	37.5	75	900
								36	43.3	85	900
52h	115h	800x600	16M	Graph(L)	Pack Pix	8x16	100x37	36	35.1	56	1407
								40	37.9	60	1407
6Ah	102h	800x600	16	Graph	Planar	8x16	100x37	36	35.1	56	256
								40	37.8	60	256
								49.5	46.9	75	256
								56.25	53.7	85	256

Notes: I = Interlaced L = Linear * =Modes 3Ah is for flat panel only

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Table 2: Extended Video Modes (continued)

Video Mode	VESA VBE Mode	Pixel Reso-lution	Color Res.	Mode Type	Mem. Org	Font Size	Char. Disp.	Dot Clock (MHz)	Horiz. Freq. (MHz)	Vert Freq (Hz)	Video Mem. (KB)
64h	104h	1024x768	16	Graph	Planar	8x16	128x48	44.9	35.5	43(I)	384
								65	48.4	60	384
								78.75	60	75	384
								94.5	68.7	85	384
68h	106h	1280x1024	16	Graph	Planar	8x16	160x64	78.75	47	43(I)	640
								108	64	60	640
70h	101h	640x480	256	Graph	Pack Pix	8x16	80x30	25.175	31.5	60	300
								31.5	37.5	75	300
								36	43.3	85	300
71h	100h	640x400	256	Graph	Pack Pix	8x16	80x25	25.175	31.5	70	256
72h	103h	800x600	256	Graph	Pack Pix	8x16	100x37	36	35.1	56	469
								40	37.9	60	469
								49.5	46.9	75	469
								56.25	53.7	85	469
74h	105h	1024x768	256	Graph	Pack Pix	8x16	128x48	44.9	35.5	43(I)	768
								65	48.4	60	768
								78.75	60	75	768
								94.5	68.7	85	768
78h	107h	1280x1024	256	Graph	Pack Pix	8x16	160x64	78.75	47	43(I)	1280
								108	64	60	1280

Notes: I = Interlaced L = Linear

Appendix A

Watchdog Timer

Watchdog Timer Configuration

The watchdog timer will reset the system automatically if the system program does not refresh the watchdog timer during the watchdog time out interval. It is defined at I/O port **0443H** and **043H** to enable/disable the watchdog time out function.

Regarding to the watchdog function, user must have a program to set the watchdog time out value, and refresh the watchdog timer cycle. If the system program goes into a dead loop or goes into an abnormal cycle, the watchdog timer cannot be refreshed immediately. Meanwhile, the system will be reset by watchdog timer automatically. The watchdog timer will be refreshed by “disable watchdog output” then “enable watchdog output”.

The following flowchart shows the normal structure of system program.

Watchdog timer examples:

(1) **Setup watchdog timer time out value**:

```
        mov al,0ah
        mov dx,70h
        out dx,al
        jmp short $+2
        mov dx,71h
        in al,dx
        jmp short $+2
        and al,0f0h
        add ax,TimeValue        ; TimeValue= 00h..0fh, reference as
                                  following watchdog time out table
        out dx,al
        jmp short $+2
        mov al, 0bh
       mov dx, 70h
    out dx, al
    jmp short $+2
    mov dx, 71h
    in al, dx
    jmp short $+2
    or al, 08h
```

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

```
out dx, al
jmp short $+2
```

Watchdog Time Out Table:

Time Value	Time Out	Time Value	Time Out
0	None	8	0.5 sec.
1	0.5 sec.	9	1 sec.
2	1 sec.	A	2 sec.
3	0.015 sec.	B	4 sec.
4	0.03 sec.	C	8 sec.
5	0.06 sec.	D	16 sec.
6	0.125 sec.	E	32 sec.
7	0.25 sec.	F	64 sec.

(2) **Enable watchdog output**:

```
mov dx, 443h                    ; SET WATCH DOG ENABLE
in al, dx
jmp short $+2
```

(3) **Disable watchdog output:**

```
mov dx,043h                     ; SET WATCH DOG
DISABLE
in al,dx
jmp short $+2
```

Appendix B

Connectors' Pin Assignment

Parallel/Printer connector (PRN)

Pin no.	Signal
1	Strobe
2	Data 0
3	Data 1
4	Data 2
5	Data 3
6	Data 4
7	Data 5
8	Data 6
9	Data 7
10	-Acknowledge
11	Busy
12	Paper Empty
13	+ Select
14	- Auto Feed
15	- Error
16	- INIT Printer
17	- Select Input
18-25	Ground

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

HDD Connector (IDE)

Pin no.	Signal	Pin no.	Signal
1	- RST	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	N.C.
21	N.C.	22	GND
23	IOW	24	GND
25	IOR	26	GND
27	IORDY	28	N.C.
29	N.C.	30	GND
31	IRQ	32	-IO CS16
33	A1	34	N.C.
35	A0	36	A2
37	CS0	38	CS1
39	-ACT	40	GND

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

FDD Connector (FDC)

Pin no.	Signal
1-33(odd)	GND
2	High Density
4, 6	Unused
8	Index
10	Motor Enable A
12	Driver Select B
14	Driver Select A
16	Motor Enable B
18	Direction
20	Step Pulse
22	Write Data
24	Write Enable
26	Track 0
28	Write Protect
30	Read Data
32	Select Head
34	Disk Change

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

CRT Display Connector (VGA)

Pin no.	Signal
1	RED
2	GREEN
3	BLUE
4	N/C
5	GND
6	GND
7	GND
8	GND
9	N/C
10	GND
11	N/C
12	N/C
13	H-SYNC
14	V-SYNC
15	N/C

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Flat Panel Display Connector mini pin header (J3)

Pin no.	Signal	Pin no.	Signal
1	+12V	2	+12V
3	GND	4	GND
5	VDD	6	VDD
7	ENVEE	8	GND
9	P0	10	P1
11	P2	12	P3
13	P4	14	P5
15	P6	16	P7
17	P8	18	P9
19	P10	20	P11
21	P12	22	P13
23	P14	24	P15
25	P16	26	P17
27	P18	28	P19
29	P20	30	P21
31	P22	32	P23
33	GND	34	GND
35	CLOCK	36	FLM
37	M	38	LP
39	GND	40	EN_BKL
41	GND	42	ENVDD
43	VDD	44	VDD

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

RS-232 Connector (COM1)

Pin no.	Signal
1	DCD
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI
10	N.C.

RS-232/422/485 Connector (COM2)

Pin no.	RS232	RS422	RS485
1	DCD	TX-	DATA-
2	DSR	RTS +	
3	RX	TX+	DATA+
4	RTS	RTS -	
5	TX	RX+	
6	CTS	CTS +	
7	DTR	RX-	
8	RI	CTS -	
9	GND	GND	
10	N.C.	N.C.	

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

PC/104 Connector

Pin no.	A	B	C	D
0	--	--	GND	GND
1	IOCHCHK*	GND	SBHE	MEMCS16*
2	SD7	RESETDRV	LA23	IOSC16*
3	SD6	+5V	LA22	IRQ10
4	SD5	IRQ9	LA21	IRQ11
5	SD4	-5V	LA20	IRQ12
6	SD3	DRQ2	LA19	IRQ15
7	SD2	-12V	LA18	IRQ14
8	SD1	OWS*	LA17*	DACK0*
9	SD0	+12V	MEMR*	DRQ0*
10	IOCHRDY*	GND	MEMW*	DACK5*
11	AEN	SMEMW*	SD8	DRQ5
12	SA19	SMEMR*	SD9	DACK6*
13	SA18	IOW*	SD10	DRQ6
14	SA17	IOR*	SD11	DACK7*
15	SA16	DACK3*	SD12	DRQ7
16	SA15	DRQ3	SD13	+5V
17	SA14	DACK1*	SD14	MASTER*
18	SA13	DRQ1	SD15	GND
19	SA12	REFRESH*	NC	GND
20	SA11	SYSCLK	--	--
21	SA10	IRQ7	--	--
22	SA9	IRQ6	--	--
23	SA8	IRQ5	--	--

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

PC/104 Connector (continued)

Pin no.	A	B	C	D
24	SA7	IRQ4	--	--
25	SA6	IRQ3	--	--
26	SA5	DACK2*	--	--
27	SA4	TC	--	--
28	SA3	BALE	--	--
29	SA2	+5V	--	--
30	SA1	OSC	--	--
31	SA0	GND	--	--
32	GND	GND	--	--

Remark:

‘ ***** ’ means ‘Low active single’

‘**--**' means ‘None’

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Appendix C

41.Installing DiskOnChip of M-systems

. Installing the DiskOnChip 2000 :

When installing or removing the DiskOnChip be sure to first touch a grounded surface to discharge any static electricity from your body.

Use the following procedure to install the DiskOnChip:

1. Align pin 1 on the DiskOnChip with the pin1 of socket.
2. Push the DiskOnChip into the socket carefully until it is fully seated.
3. Check to make sure the DiskOnChip is installed securely, and there are no bent pins.

   Caution: The DiskOnChip may be permanent damaged if installed incorrectly.
4. To install the DiskOnChip as drive C on a system without a hard disk, set the CMOS

   setup of drive C to NOT INSTALLED (indicating that no physical magnetic disk is installed), and reboot the computer. The DiskOnChip 2000 will installed as drive C. The DiskOnChip needs to formatted with the system files in order for it to be a bootable drive.

. Configuring the DiskOnChip 2000 as the boot device:

In order to configure the DiskOnChip as the boot device, the operating system files need to be copied into it. Copying the operating system files into DiskOnChip should be done like in any other hard disk. The following is an example of a typical initialization process:

1. Set the DiskOnChip as a regular drive in your system (not a boot drive).
2. Install a bootable floppy diskette in drive A, and boot the system from drive A.
3. At the **DOS** prompt, type **SYS C:** to transfer the **DOS** system files to the DiskOnChip. (assuming the DiskOnChip is installed as drive C)
4. Copy any files needed into DiskOnChip.
5. Remove floppy diskette and reboot the system. The system will boot from

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

the DiskOnChip and will allow you to run and access any files that have been copied into the DiskOnChip.

. Configuring the DiskOnChip 2000 as the first drive:

The DiskOnChip can be configured as the last drive (default), or as the first drive in the system. When configured as the last drive, the DiskOnChip is installed as drive D if there is another hard drive installed, and as drive C if no other hard drive is installed. When configured as the first drive, the DiskOnChip is always installed as drive C. To configure the DiskOnChip as first drive, proceed as follows:

1. Boot the system and make sure the DiskOnChip is installed correctly as drive D.
2. At the **DOS** prompt type **DUPDATE D: /FIRST / S:DOC2000.EXB**
3. After re_booting the system, the DiskOnChip will appear as drive C:

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Appendix D

Updating BIOS

You should find one diskette for updated BIOS program in the package. The updating procedures are as the following:

1. Insert the diskette(There is a file " AWDFLASH.EXE') in drive A or B.
2. Type AWDFLASH under the prompt A or B.
3. The screen will ask you to enter the file name for programming. Please enter the 'filename' for the updating BIOS that is from your agent. Meanwhile, please type 'N' to answer the question 'Do you want to save BIOS (y/n)?' at the bottom of the screen.
4. After that, please type 'Y' to answer the question 'Are you sure to program (y/n)?' at the bottom line of the current screen.
5. Turn off the power after the system updates the BIOS.
6. Turn on the power again.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Appendix E

I/O Port Address Map

Address (HEX)	Device
000-01F	DMA controller 1
020-021	Interrupt controller 1
022-023	M1487/M1489 chipset address
040-05F	Timer 1 & 2
043	Disable Watch-dog timer operation (read)
060-06F	Keyboard controller
070-071	Real Time Clock, Non_Maskable interrupt
080-09F	DMA page register
0A0-0A1	Interrupt controller 2
0C0-0DF	DMA controller 2
0F0	Clear math. Coprocessor busy signal
0F1	Reset math. Coprocessor
0F8-0FF	Math. Coprocessor
1F0-1F8	Fixed disk controller
200-207	Game port
278-27F	Parallel port #2
2E8-2EF	Serial port #4 (COM 4)
2F8-2FF	Serial port #2 (COM 2)
300-31F	Prototype card / Streaming Tape Adapter
378-37F	Parallel port #1
380-38F	SDLC, Bisynchronous 2
3A0-3AF	SDLC, Bisynchronous 1
3B0-3BF	Monochrome Display , Parallel port 0
3C0-3CF	EGA card
3D0-3DF	CGA card
3E8-3EF	Serial port #3 (COM3)
3F0-3F7	Floppy Disk controller
3F8-3FF	Serial port #1 (COM1)
443	Enable Watch-dog timer operation (read)

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Appendix F

Memory Address Map

Address (HEX)	Device
0000000-009FFFF	System memory
00A0000-00BFFFF	Display memory
00C0000-00EFFFF	I/O device BIOS ROM or RAM buffer
00F0000-00FFFFF	System BIOS ROM
0100000-BFFFFFF	System extension memory

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Appendix G

Mechanical Drawing

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP