AMI

AMI Hi-Flex BIOS

PEAKTRON

286 and 386SX Chip Sets

User's Guide

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Preface

To the OEM Reader

The AMI Hi-Flex BIOS is a state of the art product which includes major engineering innovations. The AMI Hi-Flex BIOS can be easily configured by the OEM, system integrator, or VAR building systems that include the AMI BIOS through the AMI BIOS Configuration Program (AMI BCP). See the *AMI BCP User's Guide* for detailed information about the BCP.

This manual was written for the OEM. It is the purpose of this manual to assist in the proper installation, use, and operation of the AMI Hi-Flex BIOS and its utilities. This manual describes the many features of the AMI Hi-Flex BIOS and explains how to use the AMI Hi-Flex BIOS.

This manual is not meant to be read by the computer owner who purchases a computer with the AMI Hi-Flex BIOS. It is assumed that the computer manufacturer will use this manual as a sourcebook of information, and that parts of this manual will be included in the computer owner's manual. It is also assumed that the OEM, VAR, or system integrator that is reading this manual has also licensed the right to use the AMI BIOS technical documentation.

AMI Technical Support

If an AMI Hi-Flex BIOS board fails to operate as described or you need more information, call the AMI technical support staff at 404-263-8181. Make sure you have the following information before calling AMI technical support:

- Serial number and revision number of the BIOS
- System BIOS reference number
- A clear description of the problem.

Acknowledgments

This manual was written and edited by Paul Narushoff and Robert Cheng. The writers gratefully acknowledge the assistance of the AMI BIOS engineers.

BIOS Files

This document is based on AMI BIOS files PT286PRD and PT3SXPRD.

Chapter 1

Introduction

Overview

This manual documents the AMI BIOSes for the 80286 and 80386SX PEAKTRON chip sets.

The BIOS is the basic input output system used in all IBM® PC-, XT™-, AT®-, and PS/2®- compatible computers. The AMI Hi-Flex BIOS is a high-quality example of a system BIOS.

Configuration Data

AT-Compatible systems, also called ISA (Industry Standard Architecture) systems, and EISA (Extended Industry Standard Architecture) systems must have a place to store system information when the computer is turned off. The original IBM AT had 64 bytes of non-volatile memory storage in CMOS RAM. All AT-Compatible systems have at least 64 bytes of CMOS RAM, which is usually part of the Real Time Clock. Many systems have 128 bytes of CMOS RAM.

EISA systems have at least 4 KB of additional CMOS RAM to store EISA configuration information.

How Data Is Configured

The AMI Hi-Flex BIOS provides a BIOS Setup utility in ROM that is accessed by pressing <Del> at the appropriate time during system boot. Setup is used to set configuration data in CMOS RAM.

Overview, Continued

Types of Setup

There are three types of Setup in the AMI Hi-Flex BIOS:

Types of Setup	Description
Standard CMOS Setup	Set time, date, hard disk type, types of floppy drives, monitor type, and if keyboard is installed. See the *AMI Hi-Flex BIOS User's Guide*.
Advanced CMOS Setup	Set Typematic Rate and Delay, Above 1 MB Memory Test, Memory Test Tick Sound, Hit <Del> Message Display, System Boot Up Sequence, and many others. See the *AMI Hi-Flex BIOS User's Guide*.
Advanced Chip Set Setup	Set chip set-specific options and features. There is no Advanced Chip Set Setup in the AMI BIOS for the PEAKTRON 80286 and 80386SX Chip Sets.

Reference

Standard CMOS Setup and the standard Advanced CMOS Setup options are described in the *AMI Hi-Flex BIOS User's Guide*.

Chapter 2

Advanced CMOS Setup Options

Overview

Default Settings

Every option in the AMI BIOS Setup utility contains two default values: a power-on default and the BIOS Setup default value.

The Power-on Defaults

The power-on default settings consist of the safest set of parameters. Use them if the system is behaving erratically. They should always work but do not provide optimal system performance characteristics.

Setup Defaults

The BIOS Setup default values provide optimum performance settings for all devices and system features.

PEAKTRON Advanced CMOS Options

See the following screen for a display of the PEAKTRON Advanced CMOS
Setup screen. All Advanced CMOS Setup options for the AMI PEAKTRON BIOS
are documented in the *AMI Hi-Flex BIOS User's Guide*.

Chapter 3

Advanced Chip Set Setup Options

Overview

This chapter describes the Advanced Chip Set Setup options for the AMI Hi-Flex BIOS for the PEAKTRON chip set.

Refer to the documentation provided by the chip set manufacturer for additional assistance in understanding specific chip set options.

The PEAKTRON chip set does not contain any Advanced Chip Set Setup options.

Chapter 4

CMOS Map

A map of CMOS RAM as configured by the AMI PEAKTRON BIOS is shown in the following table.

CMOS Location	Description
00h - 0Fh	Standard IBM AT compatible RTC and Status Register data definitions.
10h	Floppy Drive Type Bits 7-4 Drive A: Type 0 No Drive 1 360 KB Drive 2 1.2 MB Drive 3 720 KB Drive 4 1.44 MB Drive 5-16 Reserved Bits 3-0 Drive B: Type (bit settings same as A)
11h	Keyboard Typematic Data Bit 7 Enable Typematic (1 = On) Bits 6-5 Typematic Delay 00b 250 ms 01b 500 ms 10b 750 ms 11b 100 ms Bits 4-0 Typematic Rate 0 - 300 8 - 159 16 - 75 24 - 37 1 - 267 9 - 133 17 - 67 25 - 33 2 - 240 10 - 120 18 - 60 26 - 30 3 - 218 11 - 109 19 - 55 27 - 27 4 - 200 12 - 100 20 - 50 28 - 25 5 - 185 13 - 92 21 - 46 29 - 23 6 - 171 14 - 86 22 - 43 30 - 21 7 - 160 15 - 80 23 - 40 31 - 20
12h	Hard Disk Data Bits 7-4 Hard Disk Drive C: Type 0 No drive 1-14 Hard drive Type 1-14 16 Hard Disk Type 16-255 (actual Hard Drive Type is in CMOS RAM 1Ah) Bits 3-0 Hard Disk Drive D: Type (Same as C:)
13h	Advanced Setup Options Bit 7 Mouse Enabled (1 = On) Bit 6 Test Memory above 1 MB (1 = On) Bit 5 Memory Test Tick Sound (1 = On) Bit 4 Memory Parity Error Check (1 = On) Bit 3 Press <Esc> to Disable Memory Test (1 = On) Bit 2 User-Defined Hard Disk (1 = On) Bit 1 Wait for <F1> Message if Error (1 = On) Bit 0 Turn Num Lock Off at boot (1 = On)
14h	Equipment Byte Bits 7-6 Number of Floppy Drives 00b 1 Drive 01b 2 Drives 10b-11b Reserved Bits 5-4 Monitor Type 00b Not CGA or MDA 01b 40x25 CGA 10b 80x25 CGA 11b MDA (Monochrome) Bit 3 Display Enabled (1 = On)

	Bit 2 Keyboard Enabled (1 = On) Bit 1 Math coprocessor Installed (1 = On) Bit 0 Floppy Drive Installed (0 = On)
15h	Base Memory (in 1 K increments), Low Byte
16h	Base Memory (in 1 K increments), High Byte
17h	Extended Memory (in 1 K increments), Low Byte
18h	Extended Memory (in 1 K increments), High Byte (Max 15 MB)
19h	Hard Disk C: Drive Type 0-15 Reserved 16-255 Hard Drive Type 16-255
1Ah	Hard Disk D: Drive Type (Same as Drive C: above)
1Bh	User-Defined Drive C: - # of Cylinders, Low Byte
1Ch	User-Defined Drive C: - # of Cylinders, High Byte
1Dh	User-Defined Drive C: - Number of Heads
1Eh	User-Defined Drive C: - Write Precompensation Cylinder, Low Byte
1Fh	User-Defined Drive C: - Write Precompensation Cylinder, High Byte
20h	User-Defined Drive C: - Control Byte (80h if # of heads is equal or greater than 8)
21h	User-Defined Drive C: - Landing Zone, Low Byte
22h	User-Defined Drive C: - Landing Zone, High Byte
23h	User-Defined Drive C: - # of Sectors
24h	User-Defined Drive D: - # of Cylinders, Low Byte
25h	User-Defined Drive D: - # of Cylinders, High Byte
26h	User-Defined Drive D: - Number of Heads
27h	User-Defined Drive D: - Write Precompensation Cylinder, Low Byte
28h	User-Defined Drive D: - Write Precompensation Cylinder, High Byte
29h	User-Defined Drive D: - Control Byte (80h if # of heads is equal or greater than 8)
2Ah	User-Defined Drive D: - Landing Zone, Low Byte
2Bh	User-Defined Drive D: - Landing Zone, High Byte
2Ch	User-Defined Drive D: - # of Sectors
2Dh	Configuration Options Bit 7 Weitek Installed (1 = On) Bit 6 Floppy Drive Seek - turn off for fast boot Bit 5 Boot Order 0 - Drive C:, then A: 1 - Drive A:, then C: Bit 4 Boot Speed (0 - Low; 1 - High) Bit 3 External Cache Enable (1 = On) Bit 2 Internal Cache Enable (1 = On) Bit 1 Use Fast Gate A20 after boot (1 = On) Bit 0 Turbo Switch (1 = On)
2Eh	Standard CMOS Checksum, High Byte
2Fh	Standard CMOS Checksum, Low Byte
30h	Extended Memory, Low Byte
31h	Extended Memory, High Byte (Maximum 15 MB)
32h	Century Byte (BCD value for the century)
33h	Information Flag Bit 7 128K Bits 6-0 Reserved
34h	Shadowing

	Bits 7-6 Password 00b Disable 10b Reserved 01b Set 11b Boot Bit 5 C8000h Shadow Adaptor ROM (Bit 1 = On) Bit 4 CC000h Shadow Adaptor ROM (Bit 1 = On) Bit 3 D0000h Shadow Adaptor ROM (Bit 1 = On) Bit 2 D4000h Shadow Adaptor ROM (Bit 1 = On) Bit 1 D8000h Shadow Adaptor ROM (Bit 1 = On) Bit 0 DC000h Shadow Adaptor ROM (Bit 1 = On)
35h	Shadowing Bit 7 E0000h Shadow Adaptor ROM (Bit 1 = On) Bit 6 E4000h Shadow Adaptor ROM (Bit 1 = On) Bit 5 E8000h Shadow Adaptor ROM (Bit 1 = On) Bit 4 EC000h Shadow Adaptor ROM (Bit 1 = On) Bit 3 F0000h Shadow System ROM (Bit 1 = On) Bit 2 C0000h Shadow Video ROM (Bit 1 = On) Bit 1 C4000h Shadow Video ROM (Bit 1 = On) Bit 0 Reserved
36h-37h	Reserved
38h - 3Dh	Encrypted Password
3Eh	Extended CMOS Checksum, High Byte (includes 34h - 3Dh)
3Fh	Extended CMOS Checksum, Low Byte (includes 34h - 3Dh)

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