

EPM-32 CMOS SETUP PARAMETERS

This article provides reference information and tips for setting CMOS Setup parameters on the EPM-32 (Cheetah). Start CMOS Setup by pressing Delete during the early boot cycle. The CMOS Setup Main Menu is shown below. The setup parameters are accessed from three screens (the first three menu items). To save changes in CMOS Setup, select **Write to CMOS and Exit**.

```

+-----+
|                                     |
|               System Bios Setup - Utility v5.3.103               |
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|                                     |
|                                     |
|               >Basic CMOS Configuration                          |
|               Custom Configuration                               |
|               Shadow Configuration                              |
|               Reset CMOS to last known values                  |
|               Reset CMOS to factory defaults                  |
|               Write to CMOS and Exit                           |
|               Exit without changing CMOS                       |
|                                     |
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```

Note: The configurations and factory defaults described here are for BIOS version 5.3.103.

Basic CMOS Configuration

The Basic CMOS Configuration screen is where you configure EPM-32 drive types, boot activities, and Power On Self Test (POST) optimizations. To use disk drives with the EPM-32:

1. Select the appropriate drive types in Drive Assignment Order.
2. Configure the drive types in Floppy Drive Types and ATA Drv Assignment.
3. Configure the boot sequence in Boot Order.

The following screen shows the Basic CMOS Configuration factory settings. Click a link for information on a parameter group or individual parameter.

```

+-----+
|               System Bios Setup - Basic CMOS Configuration       |
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|               +-----+ +-----+ +-----+                    |
| DRIVE ASSIGNMENT ORDER: | Date:>Mar 30, 2008 | Typematic Delay : 250 ms |
| Drive A: (None)           | Time: 00 : 00 : 00 | Typematic Rate  : 30 cps |
| Drive B: (None)           | NumLock: Disabled | Seek at Boot   : Floppy |
| Drive C: Ide 0/Pri Master | +-----+ +-----+ | Show "Hit Del" : Enabled |
| Drive D: (None)           | BOOT ORDER:      | Config Box    : Enabled |
| Drive E: (None)           | Boot 1st: Drive C: | Fl Error Wait : Enabled |
| Drive F: (None)           | Boot 2nd: (None)   | Parity Checking: (Unused) |
| Drive G: (None)           | Boot 3rd: (None)   | Memory Test Tick: Enabled |
| Drive H: (None)           | Boot 4th: (None)   | Debug Breakpoints: (Unused) |
| Drive I: (None)           | Boot 5th: (None)   | Debugger Hex Case: Upper |
| Drive J: (None)           | Boot 6th: (None)   | Memory Test :StdLo FastHi |
| Drive K: (None)           | +-----+ +-----+ | +-----+ |
| Boot Method: Boot Sector | ATA DRV ASSIGNMENT: Sect Hds Cyls | Memory |
| +-----+ +-----+ +-----+ | Ide 0: 3 = AUTOCONFIG, LBA | Base: |
| FLOPPY DRIVE TYPES: | Ide 1: Not installed | 603KB |
| Floppy 0: Not installed | Ide 2: Not installed | Ext: |
| Floppy 1: Not installed | Ide 3: Not installed | 503MB |
| +-----+ +-----+ +-----+ |
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[BACK TO TOP](#)

Date and Time

The date is factory set to the date of the BIOS build. The date and time are editable.

NumLock

Values: Enabled, Disabled

Enables or disables NumLock. Set this option to Disabled to turn off the NumLock key when the computer is booted so you can use the arrow keys on both the numeric keypad and the keyboard. Some operating systems, such as DOS, honor this initial setting and use it for run-time operations. Other operating systems, such as Windows, assume complete control of the NumLock state, and do not honor this setting.

Drive Assignment Order

Values: (None), Floppy 0, Floppy 1, USB Floppy, IDE 0/Pri Master, IDE 1/Pri Slave, IDE 2/Sec Master, IDE 3/Sec Slave, USB Hard Drive

Maps a different device to each drive letter. The default configuration maps the first floppy drive (Floppy 0) to A: and the first drive on the primary IDE channel (IDE 0/Pri Master) to drive C:.

Floppy drives can be mapped to drives A:, B:, C:, or D:. IDE and USB hard drives can be mapped to drives C: through K:.

[BACK TO BASIC](#)

Boot Method

Values: Boot Sector, Windows CE

Configures the boot method for different operating systems. Selecting Boot Sector causes the standard boot record to be invoked, allowing proper loading for standard operating systems, such as DOS, Windows 9x, ME, 2000, NT, and XP, and Linux. Selecting Windows CE causes the BIOS to load and execute the Windows CE kernel file, NK.BIN, from the boot directory of each boot device.

Floppy Drive Types

Values: Not Installed; 360 KB, 5.25"; 1.2 MB, 5.25"; 720 KB, 3.5"; 1.44 MB, 3.5"; 2.88 MB, 3.5"

If standard floppy drives are mapped to drive letters, they must be configured here. Floppy 0 is the first FDD on the ribbon cable (typically drive A:), and Floppy 1 is the second FDD on the cable (typically drive B:).

[BACK TO BASIC](#)

Boot Order

Values: (None), Drive A:, Drive B:, Drive C:, Drive D:, Alarm, Browser, RAS, PowerOff, Reboot, High ROM, DOS-ROM, Mfg Mode, Debugger, CDROM, CLI

Defines the steps in the boot sequence. Up to six steps can be defined. When the system has been initialized, POST executes these steps in order until an operating system load attempts. Specify Drive A: through Drive D: to boot from the specified drive. Other values include:

- **Alarm:** Not implemented.
- **Browser:** Not implemented.
- **CDROM:** Boots from the first CD-ROM drive found that contains an EI Torito bootable CD-ROM. If available, USB CD-ROM drives will boot before IDE CD-ROM drives. USB CD-ROM drives are not declared in the Drive Assignment Order.
- **CLI:** Not implemented.

- **Debugger:** Not implemented.
- **DOS-ROM:** Not implemented.
- **High ROM:** Not implemented.
- **Mfg Mode:** Not implemented.
- **PowerOff:** Not implemented.
- **RAS:** Not implemented.
- **Reboot:** Reboots the system.

[BACK TO BASIC](#)

ATA Drv Assignment

Values: Not Installed; 1 = User Type; 2 = AUTOCONFIG, PHYSICAL; 3 = AUTOCONFIG, LBA; 4 = AUTOCONFIG, PHOENIX; 5 = IDE CDROM

If IDE drives are mapped to drive letters or accessible as boot devices, they must be configured here. IDE 0 and IDE 1 are the master and slave devices, respectively, of the primary IDE channel (1F0h). IDE 2 and IDE 3 are the master and slave, respectively, of the secondary IDE channel (170h).

Most hard drives and CompactFlash modules use the standard Logical Block Addressing (LBA) method of addressing sectors; therefore, AUTOCONFIG, LBA is the typical setting for these devices. Use the IDE CDROM setting for all IDE CDROM drives.

Typematic Delay

Values: 250 ms, 500 ms, 750 ms, 1000 ms, Disabled

Sets the amount of time a keyboard key must be held down before it begins automatically repeating. Some operating systems, such as DOS, honor this initial setting and use it for run-time operations. Other operating systems, such as Windows, assume complete control of the NumLock state, and do not honor this setting.

[BACK TO BASIC](#)

Typematic Rate

Values: 30 cps, 24 cps, 20 cps, 15 cps, 12 cps, 10 cps, 8 cps, 6 cps

Sets the rate at which a keyboard key will automatically repeat when held down, expressed in characters per second (cps). Some operating systems, such as DOS, honor this initial setting and use it for run-time operations. Other operating systems, such as Windows, assume complete control of the NumLock state, and do not honor this setting.

Seek at Boot

Values: Floppy, IDE, Both, None

Set this option to the device that will perform a seek operation at system boot. The IDE option is not enabled. If IDE is selected, the parameter reverts to None. If Both is selected, the parameter reverts to Floppy. When the BIOS "seeks" a floppy drive, it turns on the motor, seeks to the last track, and then parks the head over the first track.

This parameter is not essential for booting from or using a floppy disk. It is simply a legacy test that the BIOS can run; however, no error message results if the test fails. This parameter is sometimes used to delay the bootstrap in order to make it easier to view the BIOS startup messages or provide extra time for the initialization of certain hardware.

[BACK TO BASIC](#)

Show "Hit Del"

Values: Enabled, Disabled

Set this option to Disabled to prevent the message "Hit DEL if you want to run Setup" from appearing on the first BIOS screen when the computer boots.

Config Box

Values: Enabled, Disabled

Enables or disables the display of system information during the boot cycle. If Config Box is disabled, and Splash Screen is enabled, the splash screen will be displayed until the operating system changes the video mode.

[BACK TO BASIC](#)

F1 Error Wait

Values: Enabled, Disabled

If this option is set to Enabled, the BIOS waits for the user to press F1 before continuing. If this option is set to Disabled, the BIOS continues the boot process without waiting for F1 to be pressed.

Parity Checking

This parameter is not used.

[BACK TO BASIC](#)

Memory Test Tick

Values: Enabled, Disabled

Enables or disables Memory Test Tick. When enabled, the POST memory test will make a tick sound as it counts up your system memory.

Debug Breakpoints

This parameter is not used.

Debugger Hex Case

This parameter is not used.

[BACK TO BASIC](#)

Memory Test

Values: StdLo FastHi, StdLo StdHi, StdLo Full Hi, FullLo FastHi, FullLo StdHi, FullLo FullHi, FastLo FastHi, FastLo StdHi, FastLo FullHi



Values: RS-232, RS-422, RS-485

Sets the serial port mode.

[BACK TO CUSTOM](#)

Parallel Port Mode

Values: FDD, SPP, SPP/EPP1.9, ECP, ECP/EPP1.9, Printer, SPP/EPP1.7, ECP/EPP1.7

Determines the mode of the parallel port. To operate a floppy drive from the parallel port, this parameter should be set to FDD, and LPT1 (0x378) Enable/IRQ should be set to No IRQ.

Legacy USB and Booting

Values: Enabled, Disabled

Enables or disables BIOS support for USB keyboards and USB Mice. It also enables or disables boot support for a wide range of USB 1.x and 2.x mass storage devices, including floppy, hard drive, CD-ROM, DVD, Flash disk devices, and disk-on-key devices. It accomplishes this by enabling or disabling a feature of the BIOS called "Firmbase," which is a technology used by VersaLogic to extend the functionality of the BIOS.

To learn more about Firmbase, see the [General Software Firmbase Technology page](#).

BCR Base Address

Values: 0x1D0, 0x1E0

Sets the base address of the Board Control Register. (See "COM2 RS-485 Mode Line Driver Control" in the [EPM-32 Reference Manual](#).)

[BACK TO CUSTOM](#)

CPU Temperature Threshold

Values: 60°C, 70°C, 80°C, 90°C, 100°C

Determines the CPU temperature at which a status bit in the Special Control Register is set and an optional non-maskable interrupt (NMI) is generated. (See "CPU Temperature Monitor" in the [EPM-32 Reference Manual](#).)

Processor Speed

Values: 1800 MHz, 1600 MHz, 1400 MHz, 1200 MHz, 1000 MHz, 800 MHz, 600 MHz

Selects the processor speed. (See "CPU Speed" in the [EPM-32 Reference Manual](#).)

[BACK TO CUSTOM](#)

Display Type

Values: CRT, FPD, CRT+LFP

Determines the type of video output. Select CRT for analog SVGA or FPD for digital LVDS flat panel display. Selecting CRT+LFP turns on both video outputs at the same time.

LVDS Flat Panel

Values: 640x480, 800x600, 1024x768, Custom

Sets the resolution of the flat panel display.

[BACK TO CUSTOM](#)

LVDS Flat Panel Fitting

Values: Stretch, Center

Determines the LVDS Flat Panel Fitting value. If Center is selected, black edges may appear around the display image.

Video Memory

Values: 1 MB, 4 MB, 8 MB, 16 MB, 32 MB

Allots memory to video.

[BACK TO CUSTOM](#)

Splash Screen

Values: Enabled, Disabled

Enables or disables the display of the splash screen during the boot cycle. When the splash screen is enabled, it appears on the computer display for approximately one second. To learn how to create a custom splash screen, see [VT1400 How to Create a Splash Screen](#).

Audio

Values: Enabled, Disabled

Enables or disables the Audio interface.

[BACK TO CUSTOM](#)

USB

Values: Enabled, Disabled

Enables or disables the USB interface. USB must be enabled if Legacy USB and Booting is enabled.

Ethernet

Values: Enabled, Disabled

Enables or disables the Ethernet port.

[BACK TO CUSTOM](#)

Write Protect BIOS

Values: Enabled, Disabled

Enables or disables BIOS write protection for the user-programmable sectors of Flash. Some sectors are always protected for the purpose of emergency BIOS restoration.

COM1 (0x3F8) Enable/IRQ

COM2 (0x2F8) Enable/IRQ

Values: Disabled, No IRQ, IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11



Sets COM port interrupt. Because the COM ports are ISA devices, and IRQs cannot be shared on the ISA bus, you must assign independent IRQs to the four ports, or disable them if not needed. Make sure you don't assign an IRQ used by a PCI interrupt.

[BACK TO CUSTOM](#)

LPT1 (0x378) Enable/IRQ

Values: Disabled, No IRQ, IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11

Sets parallel port interrupt. It is not recommended that you set this parameter to Disabled when operating in FDD mode.

PS/2 Mouse Enable/IRQ

Values: Disabled, IRQ12

Sets the mouse interrupt to IRQ12 or disables the mouse interrupt.

[BACK TO CUSTOM](#)

PCI INT A PCI INT B PCI INT C PCI INT D

Values: No IRQ, IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11

Sets PCI interrupts. All four PCI interrupts can be shared without conflict, but in certain high performance hardware configurations, assignment of separate IRQs can reduce IRQ latency.

PC/104-Plus Slot Disable

Values: None, (all combinations of slots 0 through 3)

Allows the disabling of any combination of PC/104-Plus slots. PCI devices using a disabled slot position will be inaccessible.

[BACK TO CUSTOM](#)

Pri/Sec IDE Cable Types

Values: 40/40Wire, 80/40Wire, 40/80Wire, 80/80Wire

Selects the types of IDE cable used on the primary and secondary IDE channels. Selecting 80-Wire for a 40-wire cable may result in problems. Selecting 40-Wire for an 80-wire cable should not cause problems.

PCI Option ROM Disable

Values: None, All, Slot 0, Slot 0,1

Disable execution of some or all of the option ROMs on the PC/104-Plus bus. This can be used if a device is causing problems by hooking the boot vector.

Primary Video Controller

Values: Onboard, Disabled, Detect



Determines the primary video controller. Select Onboard to always use the onboard video controller as primary. Select Detect if you wish to connect and use a different controller.

[BACK TO CUSTOM](#)

Shadow Configuration

The Shadow/Cache Configuration screen allows the selective enabling and disabling of shadowing in 16Kb sections, except for the top 64Kb of the BIOS ROM, which is shadowed as a unit. Normally, shadowing should be enabled at C000/C400 (to enhance VGA ROM BIOS performance), and E000-F000 should be shadowed to maximize system ROM BIOS performance.

The Shadowing parameter is a master setting for memory shadowing. If you select None, it will have the same effect as setting all shadow blocks to Disabled.

The EPM-32 Shadow/Cache Configuration has been factory set for optimal performance.

```
+-----+
|                System BIOS Setup - Shadow/Cache Configuration                |
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+-----+-----+-----+
| Shadowing           : Chipset           | Shadow 16KB ROM at C000   : Enabled |
| Shadow 16KB ROM at C400 : Enabled       | Shadow 16KB ROM at C800   : Enabled |
| Shadow 16KB ROM at CC00 : Enabled       | Shadow 16KB ROM at D000   : Disabled |
| Shadow 16KB ROM at D400 : Disabled      | Shadow 16KB ROM at D800   : Disabled |
| Shadow 16KB ROM at DC00 : Disabled      | Shadow 16KB ROM at E000   : Enabled |
| Shadow 16KB ROM at E400 : Enabled       | Shadow 16KB ROM at E800   : Enabled |
| Shadow 16KB ROM at EC00 : Enabled       | Shadow 64KB ROM at F000   : Enabled |
+-----+-----+-----+
```

[BACK TO TOP](#)

About Shadowing

Shadowing is the process of copying the contents of a ROM directly into extended memory that is given the same address as the ROM, from where it will run much faster. The original ROM is then disabled, and the new location is write protected.

If your applications execute ROM routines often enough, shadowing could increase performance by about 8 or 9%, assuming a program spends about 10% of its time using ROM instructions, but theoretically as high as 300%. The drawback is that the RAM set aside for shadowing cannot be used for anything else, and you will lose a corresponding amount of extended memory; this is why there is a shortfall in the memory count when shadowing is enabled.