

## VSBC-8 CMOS SETUP PARAMETERS

This article provides reference information and tips for setting CMOS Setup parameters on the VSBC-8. Start CMOS Setup by pressing Delete during the early boot cycle. Setup parameters are accessed on three screens:

- [Basic CMOS Configuration](#)
- [Custom CMOS Configuration](#)
- [Shadow Configuration](#)

**Note:** The configurations and factory defaults described here are for BIOS version 5.1.111.

### Basic CMOS Configuration

The Basic CMOS Configuration screen is where you configure VSBC-8 drive types, boot activities, and Power On Self Test (POST) optimizations. To use disk drives with the VSBC-8:

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:>Jan 01, 1980 | Typematic Delay : 250 ms | |
| Drive A: Floppy 0      | Time: 00 : 00 : 00 | Typematic Rate : 30 cps |
| Drive B: (None)       | NumLock: Disabled | Seek at Boot : Floppy |
| Drive C: (None)       | +-----+ Show "Hit Del" : Enabled |
| Drive D: (None)       | | BOOT ORDER:      | Config Box : Enabled |
| Drive E: (None)       | | Boot 1st: Drive A: | F1 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: Not installed   | Base: | |
| FLOPPY DRIVE TYPES:   | Ide 1: Not installed | 633KB |
| Floppy 0: 1.44 MB, 3.5" | Ide 2: Not installed | Ext: |
| Floppy 1: Not installed | Ide 3: Not installed | 127MB |
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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, IDE 0/Pri Master, IDE 1/Pri Slave, IDE 2/Sec Master, IDE 3/Sec Slave

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 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 Assignmnet

**Values:** Not Installed; 1 = User Type 01 1 0; 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 use the standard Logical Block Addressing (LBA) method of addressing sectors; therefore, AUTOCONFIG, LBA is the typical setting for hard disks. 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.

## 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.

## 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.

## Memory Test

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

This option configures the test that will be performed on the Low memory (below 1 MB) and the High Memory (above 1MB). The settings are Full (exhaustive testing), Standard, and Fast.

Full memory tests perform an analysis of every word in the tested range of RAM; and for each word, every bit is tested. Thus, the exhaustive memory test takes much longer to execute than the standard memory test, but it finds problems that the standard memory test can't find, such as data lines wired together or address aliasing. Standard



memory tests perform basic storage/retrieval testing of every word in the tested range of RAM, but every bit is not individually tested. Thus, the standard memory test runs much more quickly than the exhaustive one does. Fast memory tests perform a general high level detection and verification of overall size memory size. This is the fastest boot method.

## Base Memory and Ext

These parameters are read-only and reflect the memory configuration of the VSBC-8.

[BACK TO BASIC](#)

## Custom Configuration

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

```
+-----+
| System BIOS Setup - Custom Configuration |
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+-----+
| BIOS Extension      : Disabled | COM1 (03F8)Enable/IRQ  : IRQ4 |
| DiskOnChip/BBSRAM  : Disabled | COM2 (02F8)Enable/IRQ  : IRQ3 |
| CPU Temperature Threshold : 70C | COM3 (03E8)Enable/IRQ  : No IRQ |
| Display Type       : CRT | COM4 (02E8)Enable/IRQ  : No IRQ |
| Splash Screen      : Disabled | LPT1 (0378) Enable/IRQ  : IRQ7 |
| Parallel Port Mode  : SPP | PS/2 Mouse Enable/IRQ  : IRQ12 |
| I/O Register Base Address : 0E0h | PCI Int A              : IRQ11 |
| Processor Throttling : Disabled | PCI Int B              : IRQ11 |
| Throttling Percentage : 0% | PCI Int C              : IRQ11 |
| Reserved           : (Unused) | PCI Int D              : IRQ11 |
+-----+
```

[BACK TO TOP](#)

## BIOS Extension

**Values:** Enabled, Disabled

Enables or disables BIOS extension support. BIOS extensions are programmed using the Flash BIOS Update (FBU) utility. (KnowledgeBase article [VT1371 How to Boot from the Ethernet Controller](#) describes how to use FBU to program a BIOS extension, in this case, a remote boot agent.)

## DiskOnChip / BBSRAM

**Values:** Disabled, DOC@D800h, DOC@E000h, BBSRAM

Disables both the DiskOnChip (DOC) and battery-backed static RAM (BBSRAM) interfaces, or enables BBSRAM, or enables the DOC and sets its address. When enabled, the DOC appears in the upper memory region as either a 32K block at D800h

or a 64K page block from E0000h to EFFFFh. When disabled, this memory range is freed for other devices to use.

For information on DOC devices, see the following articles:

- [VT1045 DiskOnChip, CMOS Setup to Boot from the DOC](#)
- [VT1336 How to Reduce Boot Time and Memory Usage of Large Capacity DOC Chips](#)
- [VT1415 DiskOnChip Limitations](#)

[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 [VSBC-8 Reference Manual](#).)

## Display Type

**Values:** CRT, FPD, Both

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

[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 [How to Create a Splash Screen](#).

## Parallel Port Mode

**Values:** SPP, SPP Ext., EPP1.7, EPP 1.9, ECP, ECP & EPP

Determines the mode of the parallel port.

## I/O Register Base Address



**Values:** 0E0h, 1E0h

Sets the base address of the Special Control Register. (See "Special Control Register" in the [VSBC-8 Reference Manual](#).)

[BACK TO CUSTOM](#)

## Processor Throttling

**Values:** Enabled, Disabled

Enables or disables processor throttling. (See "Processor Power Management" in the [VSBC-8 Reference Manual](#).)

## Throttling Percentage

**Values:** 0%, 12.5%, 25%, 27.5%, 50%, 62.5%, 75%

Sets the processor throttling percentage. (See "Processor Power Management" in the [VSBC-8 Reference Manual](#).)

**COM1 (03F8) Enabled/IRQ**  
**COM2 (02F8) Enabled/IRQ**  
**COM3 (03E8) Enabled/IRQ**  
**COM4 (02E8) Enabled/IRQ**

**Values:** Disabled, No IRQ, IRQ3, IRQ4, IRQ5, IRQ7, IRQ10

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 (0378) Enabled/IRQ

**Values:** Disabled, No IRQ, IRQ3, IRQ4, IRQ5, IRQ7, IRQ10

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

## PS/2 Mouse Enabled/IRQ

**Values:** Disabled, IRQ12

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



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.

[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 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 VSBC-8 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 : Disabled |
| Shadow 16KB ROM at CC00 : Disabled | 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 : Disabled |
| Shadow 16KB ROM at E400 : Disabled | Shadow 16KB ROM at E800 : Disabled |
| Shadow 16KB ROM at EC00 : Disabled | Shadow 64KB ROM at F000 : Enabled |
+-----+
  
```

### 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.

[BACK TO TOP](#)

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