

## Caution

Many of the tweaks in this cheat sheet involve trial and error, which may result in instability or the inability to boot up your PC. If this occurs, check your motherboard's manual for the "Clear CMOS" jumper which resets all settings back to default.

# BIOS settings cheat sheet

The BIOS has long been taboo for all but the most daring tinkers.

Asher Moses reveals the optimal settings and where to find them.

Option	Description	Recommended setting	Additional notes
<b>Advanced BIOS Features</b>			
BIOS Flash Protection	Prevents the BIOS from being flashed by unauthorised users.	Auto	N/A
First/Second/Third Boot Device	Sequence the BIOS uses in order to find an operating system to boot with.	CD-ROM/floppy/HDD-0	Options combined to conserve space.
BootUp Floppy Seek	BIOS will look for a bootable floppy disk every time the PC is started, displaying an error message if it fails to find one.	Disable	N/A
BootUp NumLock	NumLock key activated on boot up.	Personal preference	N/A
Password Check	Password required to boot PC/enter BIOS.	Personal preference	N/A
Anti-Virus Protection	Protects the boot sector and partition table by halting the system upon write request.	Enable	N/A
HDD S.M.A.R.T Capability	Self Monitoring Alert and Retrieval Technology monitors the HDD's RPM, temperatures and IDE transfer data to prevent against corruption.	Enable	Check for drive compatibility.
System BIOS Cacheable	Allows the BIOS ROM to be stored in the CPU's L2 cache, speeding up accesses.	Enable	N/A
<b>Advanced chipset features</b>			
CAS Latency Time	The time delay before the memory carries out a command.	2 (3 if stability issues occur)	N/A
Active to Precharge Delay	The amount of CPU cycles that active data can accumulate before RAM is purged.	Auto	N/A
DRAM RAS# to CAS# Delay	Time delay between the RAS and CAS signals.	2 (3 if stability issues occur)	N/A
DRAM RAS# Precharge	CPU clocks allocated for the RAS signal to accumulate its charge before the DRAM is refreshed.	2 (3 if stability issues occur)	N/A
AGP Aperture Size	Main memory allocated to AGP device for use when onboard memory is running low.	Half of system memory	N/A
AGP Transfer Rate	The rate at which data is able to pass down the AGP bus.	Depends on video card	Most modern cards support 8x.
APIC Function	Advanced Programmable Interrupt Controller provides more IRQs, faster interrupt handling and multiprocessor support.	Enable	N/A
Refresh Mode Select	Speed at which each of the rows in the DIMM are refreshed.	64 microseconds	Some modules can run at a higher refresh mode to increase performance.
DRAM Read Thermal Management	Monitors DRAM temperatures and reduces DRAM timings accordingly.	Disable	N/A
Delayed Transaction	Frees the PCI bus from slow ISA accesses.	Enable	N/A
Delay Prior to Thermal	Pentium 4 only — time elapsed during CPU overheat before the system will allow the CPU to throttle back up to full power.	16 minutes	N/A
Init Display First	Primary graphics card for boot up.	AGP	Unless using a PCI graphics card.
<b>Frequency/Voltage control</b>			
CPU Host Frequency (MHz)	Enables Frontside Bus (FSB) tuning.	1MHz increments until instability is reached	N/A

Option	Description	Recommended setting	Additional notes
PCI/AGP Divider	Locks PCI/AGP bus at certain speeds independent of the FSB.	33/66MHz	Removes overclocking bottleneck.
Host/DRAM Clock Ratio	Controls the DRAM frequency.	Actual DRAM speed (e.g., DDR400) unless overclocking	N/A
DIMM OverVoltage Control	The voltage supplied to your memory modules.	Default (unless overclocking)	Take care: higher voltages increase heat output and could lead to component damage.
AGP OverVoltage Control	The voltage supplied to the AGP card.	Default (unless overclocking)	N/A
CPU OverVoltage Control	The voltage supplied to the CPU.	Default (unless overclocking)	N/A
HyperThreading	Allows a single processor to handle multiple threads simultaneously.	Enable	Pentium 4 only.
<b>Integrated peripherals</b>			
On-Chip Primary/Secondary IDE	IDE channel status.	Depends on usage (disable if unused)	Options combined to conserve space.
IDE Primary/Secondary Master/Slave PIO	Programmed Input/Output Mode.	Auto	Options combined to conserve space.
IDE Primary/Secondary Master/Slave UDMA	Ultra Direct Memory Access protocol interface to hard drive. Double the speed of traditional ATAPI/EIDE.	Auto	Options combined to conserve space.
IDE Conductor Cable	Transfer speed of IDE devices.	Auto	N/A
USB Controller	USB controller status.	Depends on usage (disable if unused)	N/A
Onboard USB 2.0 Device	USB 2.0 controller status.	Depends on usage (disable if unused)	N/A
USB Keyboard/Mouse Support	Enables USB keyboard/mouse support within the operating system.	OS	USB keyboard/mouse refused to respond in Windows? Here's why.
Onboard Sound	Onboard audio controller status.	Depends on usage (disable if unused)	N/A
Onboard ATA/RAID Device	Onboard RAID controller status.	Depends on usage (disable if unused)	N/A
POWER ON Function	Alternative methods to boot the PC.	Personal preference	N/A
Onboard FDC Controller	Floppy disk controller status.	Depends on usage (disable if unused)	N/A
Onboard Serial Port	Onboard serial port status.	Disable	N/A
AC Back Function	PC behaviour when power returns after an outage.	Soft-Off	N/A
CIR Port Address	The IRQ of the CIR port.	Default	N/A
<b>Power management setup</b>			
ACPI Suspend Type	The suspend type to be used when the system is in hibernation.	S1	Power is kept to HDD and RAM but processor is halted.
Video Off Method	The way in which the monitor will be turned off in power saving mode.	DPMS	Shuts down part of the monitor's circuitry after periods of inactivity.
Video Off In Suspend	Whether or not the video card turns off in power saving mode.	Yes	N/A
Modem Use IRQ	The modem's IRQ.	Default	N/A
Suspend Mode	The length of inactivity before hibernation begins.	Disabled	N/A
HDD Power Down	The length of inactivity before hard drives shut down.	Disabled	N/A
Soft-Off by PWR-BTTN	The delay between pressing the power button and shut down.	Instant-Off	N/A
Resume by Alarm	Select the exact time and date for when the system will power on.	Personal preference	N/A