BX 133

Overclocking Guide

ABIT Computer Corporation

MN-193-2A0-13

Notice: All suggestions are only for reference, ABIT doesn't guarantee any hardware configuration beyond its specification.

Again, ABIT makes it possible!

ABIT is a company at the forefront of innovation. In the past, ABIT has developed SoftMenu™, which brought jumperless technology to motherboards. ABIT was also the first company which brought the Ultra DMA/66 technology to BX motherboards. ABIT is now bringing forth the latest technological advancement for motherboards: "133 MHz for All." In order to meet the trend of higher frequencies on PC's, ABIT is now equipping its' products with 133 MHz capabilities. With special hardware designs and SoftMenu™III technology, ABIT's BE6-II & BF6 can provide users with a stable PC133 system.

Testing was completed by the NSTL, the leading independent microcomputer testing laboratory. Due to some limitations of *other* peripheral devices, we suggest that the user set up their system according to our instructions in the following sections. We trust you will enjoy the enhanced performance of our products.

What is PC133

PC133 is the latest memory standard, increasing bus speeds 33% when compared to the PC100. In the past, 133MHz speed was only available when users overclocked their system. But users have previously found that they could not overclock their system to 133MHz successfully due to set CPU, chipset and memory restrictions. The highest CPU FSB clock was 100MHz. Chipsets and memory also only supported up to a 100MHz system bus clock. The 133MHz CPU front side bus is now available and the memory standard has been advanced to the higher 133MHz speed. The 133 MHz system is now ready for market.

What is SoftMenu™ III technology?

SoftMenu™III is ABIT's newest BIOS offering. The ABIT SoftMenu™III technology not only lets users configure CPU settings easily, but also allows the user greater freedom in the setting of the CPU FSB (Front Side Bus) clock settings.

How does SoftMenu™ III help to provide a more stable PC133 system

ABIT SoftMenu™III provides the user with more CPU setting items, including settings for I/O voltage, PCI/CPU FSB Clock, AGP/CPU FSB Clock, AGP Transfer Mode and 120 settings for the FSB clock. All of these setting items are adjustable, thereby giving the user the power to adjust, according to system demands. This gives the user more choice and flexibility while running the 133MHz system bus clock on BX motherboards. We will detail these setting items in the following.

- **Unlimited Front Side Bus (FSB)**

  In addition to the default settings for each processor speed, SoftMenu™III provides 120 user-defined settings on the FSB clock. Settings are at 66, 75 and from 83 to 200 MHz.

The settings from 83MHz to 200MHz can be altered in increments of 1, giving the user the power to find the best FSB setting, resulting in the best system performance. This technology equips ABIT's products with the most flexibility and greatest compatibility to current and future specifications.

- **CPU Multiplier Factor**
  From 2 to 8 (Increment 0.5). A total of 13 sets of multiplier factors support all current CPUs and allows for support of future CPUs. The CPU operating frequency equals FSB clock times the multiplier factor.

- **PCI/CPU FSB Clock**
  ½, 1/3, and now 1/4 is also a selection option. It correlates with the CPU FSB clock you set. For example, if you set the CPU FSB clock to 100MHz and choose 1/3 here, the PCI clock will be 33.3 MHz. We suggest you choose the ratio, which brings the PCI clock as close to 33MHz as possible.

- **AGP/CPU FSB Clock**
  1/1 and 2/3 options let the user adjust the AGP clock. We suggest you choose the ratio which brings the AGP clock as close to 66MHz as possible.

- **CPU Core Voltage**
  1.3 – 3.5 V manually adjustable but protected by SoftMenu™III from damaging the CPU. If the "CPU Operating Frequency" is not set to "User define", BIOS will automatically set the voltage required by the CPU.

- **I/O Voltage Adjustable (8 sets, 3.2-3.9 V)**
  This function allows the user to adjust the voltage supplied to DRAM, AGP, and the Chipset, thus greatly increasing the possibility of higher performance. If the "CPU Operating Frequency" is not set to "User define", BIOS will automatically set the voltage required by CPU.

- **AGP Transfer Mode:**
  This function allows the user to determine the capability of the AGP device. Selecting "Default" gives optimized performance. The video driver will decide the data transfer mode automatically. If the CPU FSB clock exceeds 125MHz, setting AGP Transfer Mode to "Normal" will result in a more stable system.

- **In-Order Queue Depth**
  This item determines the command queue depth between processor and chipset. Selecting "8" gives optimized performance. Selecting "1" results in a more stable system.

- **Level 2 Cache Latency**
  This item allows the user to set CPU L2 cache speed. Selecting "Default" gives the most stable performance. Smaller latency gives faster performance, but may cause system instability.

☞ Our Suggestion

We strongly suggest that you use our default settings for each processor speed when you want to configure your CPU settings. We meticulously and repeatedly test these default settings. Adopting these settings will give you the optimum system for stability. The following table lists all of the CPU default settings.

CPU Speed	FSB Clock	PCI Clock / CPU FSB Clock	AGP Clock / CPU FSB Clock
233	66	1/2(33)	1/1 (66)
266	66	1/2 (33)	1/1 (66)
300	66	1/2 (33)	1/1 (66)
333	66	1/2 (33)	1/1 (66)
300	100	1/3 (33.3)	2/3 (66.67)
350	100	1/3 (33.3)	2/3 (66.67)
400	100	1/3 (33.3)	2/3 (66.67)
450	100	1/3 (33.3)	2/3 (66.67)
366	66	1/2 (33)	1/1 (66)
400	66	1/2 (33)	1/1 (66)
433	66	1/2 (33)	1/1 (66)
466	66	1/2 (33)	1/1 (66)
500	66	1/2 (33)	1/1 (66)
533	66	1/2 (33)	1/1 (66)
533	133	1/4 (33.25)	2/3 (88.67)
500	100	1/3 (33.33)	2/3 (66.67)
550	100	1/3 (33.33)	2/3 (66.67)
600	100	1/3 (33.33)	2/3 (66.67)
600	133	1/4 (33.25)	2/3 (88.67)
650	100	1/3 (33.33)	2/3 (66.67)
667	133	1/4 (33.25)	2/3 (88.67)
700	100	1/3 (33.33)	2/3 (66.67)
750	100	1/3 (33.33)	2/3 (66.67)
800	100	1/3 (33.33)	2/3 (66.67)
733	133	1/4 (33.25)	2/3 (88.67)
800	133	1/4 (33.25)	2/3 (88.67)

If you want to choose “user define” and configure every setting manually, please pay attention to the following:

First, when you are selecting the “PCI/CPU FSB Clock”, please refer to the CPU FSB clock you set and choose the ratio which brings the PCI clock as close to 33MHz as possible.

Second, when you are selecting the “AGP/CPU FSB clock”, please refer to the CPU FSB you set and choose the ratio which brings the AGP clock as close to 66MHz as possible.

Finally for the PC133 system, we recommend the setting of the “PCI/CPU FSB Clock” to “1/4”; the “AGP/CPU FSB Clock” to 2/3; the “AGP Transfer Mode” to “Normal”; and the “In-Order Queue Depth” to “1.”

Supporting List

■ AGP Cards

Testing Equipment:

CPU: Intel Coppermine 733 MHz **(133 MHz FSB)**
Memory: TWINMOS Winbond 128M*3 PC-133
CD-ROM: Mitsumi 40X
Sound Card: FIC Hi-Five
BIOS: beh_qj.bin

OS: Win98 SE
HDD: IBM DMVS-950
SCSI Card: Adaptec AHA-2940UW Pro
Power Supply: High Power HPC-250G2

Vender/Model Name	Chipset	Result
Leadtek / S310	3Dfx Voodoo Banshee	Pass
3Dfx / Voodoo3 2000	3Dfx Voodoo3 2000	Pass
3Dlabs / Oxygen VX1	3Dlabs	Pass
ATI / 3D Range Pro	ATI 3D Rage Pro	Pass
ATI / Xpert 98	ATI 3D Rage Pro	Pass
ASUS / V264GT3	ATI 3D Rate Pro	Pass
ATI / XPERT 128	ATI Rage 128GL	Pass
ABIT / GF 256	GeForce 256	Pass
ASUS / V6600	GeForce 256	Pass
Creative / CT6940	GeForce 256	Pass
ASUS/2740	Intel I740	Pass
Cardex / I740	Intel I740	Pass
Leadtek / S900	Intel I740	Pass
Matrox / G100	MGA G100	Pass
Matrox / Mystique	MGA G200	Pass
Matrox / Millennium	MGA G400	Pass
4Matrox / Millennium II	Millennium	Pass
Leadtek / L2300	Permedia II	Pass
Leadtek / 3D S3500ZX	RIVA 128ZX	Pass
ASUS / V3400	RIVA TNT	Pass
Creative / TNT	RIVA TNT	Pass
DIAMOND / Viper V550	RIVA TNT	Pass
ELSA / ErazorII	RIVA TNT	Pass
Leadtek/ S320	RIVA TNT	Pass
STB/Velocity4400	RIVA TNT	Pass
TOP Solution	RIVA TNT	Pass
ABIT / GT2	RIVA TNT2	Pass
ASUS ? V3800	RIVA TNT2	Pass
Creative/TNT2	RIVA TNT2	Pass
Diamond / V770	RIVA TNT2	Pass
FLSA / ERAZOR III	RIVA TNT2	Pass
Leadtek / S325	RIVA TNT2	Pass
Leadtek / S320 II	RIVA TNT2	Pass
Leadtek / S325	RIVA TNT2 M64	Pass
ASUS / V3800	RIVA TNT2 Ultra	Pass
Creative / 3D Blaster	RIVA TNT2 Ultra	Pass
Diamond / V770	RIVA TNT2 Ultra	Pass
ASUS / V3000	RIVA128	Pass
Diamond / Riva128	RIVA128	Pass
Creative/ Savage4	S3 Savage 4	Pass
Diamond / Virge/GX2	S3 Virge/GX2	Pass
Cardex / 6326	SiS 6326	Pass
ENN YAH	SIS 6326	Pass
ENN YAH / Trident Blade 3D	Trident 9880	Pass

■ Memory Modules

Configuration:

CPU	Coppermine 667MHz (**FSB:133MHz**)
OS	Windows NT4.0 Warkstation
BIOS	beh_qj.bin
VGA	DIAMOND RIVA TNT2 Ultra
HDD	Quantum fireball CX6400AT
Power Supply	Seventeam ST-301HR

PC-133	OK				Fail			
	1	2	3	4	1	2	3	4
Capacity : 128MB								
CRUCIAL / MICRON / MT48LC8M8A2-75 B / ECC / SPD	√	√	√					
CRUCIAL/MICRON/MT48LC16M4A2-75 B/ECC/SPD ®	√	√	√					
CRUCIAL/MICRON/MT48LC16M4A2-75 B/SPD	√	√	√					
BUFFALO/MICRON/MT48LC8M8A2/SPD	√	√	√					
KINGMAX/KSV884T4A1A-07/SPD	√	√	√					
TWINMOS / MOSEL / V54C365804VBT75 / SPD	√	√	√					
Capacity : 64MB								
CRUCIAL / MICRON / MT48LC8M8A2-75 B / ECC / SPD	√	√	√					
CRUCIAL/MICRON/MT48LC8M8A2-75 B/ECC/SPD ®	√	√	√					
CRUCIAL / MICRON / MT48LC8M8A2-75 B / SPD	√	√	√					
APACER / SIEMEMS / HYB39S64800AT-7.5 / SPD	√	√	√					
APACER / LGS / GM72V66841ET75 / SPD	√	√	√					
Capacity : 32MB								
CRUCIAL / MT48LC4M16A2-75 B / SPD	√	√	√					

PC-100	OK				Fail			
	1	2	3	4	1	2	3	4
Capacity : 256MB								
TWINMOS / SEC / KM44S16030BT-GL / SPD	√	√	√					
Capacity : 128MB								
CRUCIAL / MICRON / MT48LC8M8A2-8E / ECC / SPD	√	√	√					
TWINMOS / TOSHIBA / TC59S6408BFT-80 / ECC / SPD	√	√	√					
CORSAIR / SEC / KM48S8030BT-GL / ECC /SPD	√	√	√					
Capacity : 64MB								
APM / APM / F886488CT-8 / SPD	√	√	√					
CRUCIAL / MICRON / MT48LC8M8A2-8C / SPD	√	√	√					
TOSHIBA / TOSHIBA / TC59S6416BFT-80 / SPD	√	√	√					
BUFFALO / SEC / KM48S8030BT-GH / SPD	√	√	√					
CORSAIR / SEC / KM48S8030BT-GL / ECC / SPD	√	√	√					
GENUINE / NEC / D4564841G5-A80-9JF / SPD	√	√	√					
GENERIC / SIEMENS / HYB39S64800AT-8 / SPD	√	√	√					
TWINMOS / M.TEC / TBS6408B4E-8 / SPD	√	√	√					
Capacity : 32MB								
ARMAS / NEC / D4564163G5-A80-9JF / SPD	√	√	√					