

Setup of System Boards for the IBM 6x86 Microprocessor



Application Note

Revision Summary: This is the initial release version of this application note.



Introduction

The IBM 6x86 Microprocessor is a superscalar, superpipelined x86-compatible microprocessor that outperforms higher megahertz Pentium** processors. The IBM 6x86 processor is specified by "P-Rating." The P-rating is an industry performance measurement used to compare processors with a single number. More details can be found in applications note #40213, *MDR Labs: Performance Analysis of the 6x86 Microprocessor*. The IBM 6x86 processor P-Ratings are listed below:

IBM 6x86 Processor P-Rating	IBM 6x86 processor core frequency	Core frequency of similar-performing Intel Pentium processor
P120+	100MHz	120MHz
P133+	110MHz	133MHz
P150+	120MHz	150MHz
P166+	133MHz	166MHz
P200+	150MHz	200MHz

P200 Considerations

It should be noted that the IBM 6x86 P200+ processor operates at a bus frequency of 75MHz, and as such will not operate in the majority of boards available on the market. This is due to the higher bus frequency of 75MHz, compared to the maximum frequency of 66MHz that is the limit for most current board designs.

The Diamond Flower, Inc. (DFI)** G586VPS Pro** system board supports the 6x86 P200+ operating with a bus frequency of 75MHz and a processor core frequency of 150MHz (2x clock). Many other motherboards and chipsets are in the process of being designed and qualified for 75MHz bus frequency operation. We will attempt to update you on the availability of these designs through the normal media channels of IBM Microelectronics Division, including our website at <http://www.chips.ibm.com/products/x86/index.html>.

New motherboard designs intended to run at 75MHz must incorporate components (especially chipsets) designed and specified to run at the 75MHz speed. Most currently available chipsets are specified to run no faster than 66MHz. IBM Microelectronics does recommend the use of these slower chipsets.

Motherboards

The next section contains information on two example boards, the DFI G586VPS Pro and Tyan** S1486 (Titan III)** , that support the IBM 6x86 microprocessor. The information shows how easy it is to set up a board for the IBM 6x86 microprocessor by moving jumper switches. It also shows benchmark scores and information on how to purchase these particular boards.

Tyan S1468 (TitanIII)

Chipset: Intel** Triton**
BIOS: Award** or AMI**
IBM 6x86 processor support: P120+, P150+, P166+

Jumper Settings

J24=1-2, 3-4	J32=ON	J33=OFF	(for P120+)
J24=3-4	J32=ON	J33=OFF	(for P150+)
J24=1-2	J32=ON	J33=OFF	(for P166+)

IBM 6x86 Microprocessor Thermal Solution

Please see the application note #40214, *Heatsink and Fan/Heatsink for IBM 6x86 Microprocessor*. This application note and others can be found either on the World Wide Web at <http://www.chips.ibm.com/products/x86/doclist.html> or on the IBM Microelectronics Division Fax Service at **415-855-4121**.

Benchmarks results (as tested by running Winstone96** under Windows 95**):

These results were measured by MDR Labs for the 6x86 and Pentium processors in the Tyan motherboard with 512K synchronous burst cache, 32M EDO DRAM, Matrox** Millenium** graphics card, and Quantum** Fireball** 1G disk drive. Please refer to apps note #40213, *MDR Labs: Performance Analysis of the 6x86 Microprocessor* for a more complete report.

6x86 P120+	Pentium 120
71.7	70.9
6x86 P150+	Pentium 150
81.9	77.6
6x86 P166+	Pentium P166
86.7	82.7

How to order the Titan III system board

Tyan Computer Corporation
1753 South Main Street
Milpitas, CA 95035
Phone: 408-956-8000/Fax: 408-956-8044
WWW: <http://www.tyan.com> (list of US and international distributors)

DFI G586VPS Pro

Chipset: VLSI Lynx**
BIOS: Award
IBM 6x86 processor support: P120+, P133+, P150+, P166+, P200+

Jumper Settings

JP1	2-4, 3-5			
JP2	1-2			
JP3	OFF			
JP4	OFF			
JP10A	1-2 (for the 3.5v CPU) 2-3 (for the 3.3v CPU)			
JP11	OFF			
JP13	1-2=OFF	3-4=ON	5-6=OFF	(for P120+)
	1-2=ON	3-4=ON	5-6=ON	(for P133+)
	1-2=ON	3-4=OFF	5-6=OFF	(for P150+)
	1-2=OFF	3-4=OFF	5-6=OFF	(for P166+)
	1-2=OFF	3-4=ON	5-6=ON	(for P200+)

IBM 6x86 Microprocessor Thermal Solution

Please refer to application note #40214, *Heatsink and Fan/Heatsink for IBM 6x86 Microprocessor*.

Benchmarks results (as tested by running Winstone96 under Windows 95):

These benchmark results were measured by MDR Labs for the 6x86 150 MHz and Pentium 200 MHz processors in the DFI motherboard with 256K synchronous burst cache, 32M EDO DRAM, Matrox Millennium graphics card, and Seagate** ST32550N** 2G disk drive. Please refer to application note #40213, *MDR Labs: Performance Analysis of the 6x86 Microprocessor* for a more complete report.

6x86 P200+	Pentium 200
91.6	89.0

Note: The results above were found using a SCSI hard drive. However, if an IDE drive is used, it is **critical** to install the correct device drivers. The CMD0646 device drivers are provided on a diskette with the G586VPS Pro system board. Refer to the appropriate README file on the diskette for additional information.

How to order the DFI G586VPS Pro system board

<u>Part number:</u>	<u>Description:</u>
➤ G586VPS PRO	System board with AT keyboard interface
➤ G586VPS PRO/P	System board with PS/2 keyboard interface

Distributors:

- ◆ Scott Courte : 4916 N. Royal Atlanta Drive, Tucker, Georgia 30084.
Phone: 770-491-8962/Fax: 770-493-9481
- ◆ Peter J. Bases: Director of Sales and Marketing, Firstop Computer Distributors, 29001 Solon Road, Solon, Ohio 44129. Phone: 216-349-9310/Fax: 216-498-5238
- ◆ DFI UK: Unite 1, Kangley Business Center, Kangley Bridge Road, London, SE 26 5AQ.
Phone: 44-181-776-5555/Fax: 44-181-778-8777
- ◆ DFI Taiwan: 100 Huan-Ho Street, Hsi-Chih Town, Taipei Hsien, Taiwan.
Phone: 886-2-694-5234/Fax: 886-2-694-3221.

Reference

- ◆ *S1468 Triton PCI-ISA System Board User's Manual*, Tyan Computer Corporation.
- ◆ *G586VPS Pro System Board Quick Reference Manual*, Diamond Flower. Inc.

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