

PRINCO DDR3-1800 user guide and testing for ASUS P7H55-M Motherboard

CPU i3-540 3.07G



Part I : Standard test

*It's the easiest way to enjoy overclock benefit by
using PRINCO DDR3-1800 DIMM board*

How to use?

0. Clear BIOS to mainboard initial setting
1. Enter BIOS setup and [Ai Tweaker] menu
2. Enter [Ai Overclock Tuner] item and choose X.M.P option
*BIOS will load X.M.P parameter in SPD on DIMM board ,
which are performance optimized for PRINCO DDR3-1800
DIMM board*
3. Enter [eXtreme Memory Profile] item and select
[High Frequency]

Ps :[High Frequency] for 1800Mhz

[High Performancel] for 1600Mhz

Step 1 : Select " Ai Tweaker "

Step 2 : Ai Overclock Tuner

eXtreme Memory Profile

Set [X.M.P.]

Set [High Frequency]

BIOS SETUP UTILITY

Main **Ai Tweaker** Advanced Power Boot Tools Exit

Configure System Performance Settings

| | |
|-------------------------------|------------------|
| Ai Overclock Tuner | [X.M.P.] |
| eXtreme Memory Profile | [High Frequency] |

Profile Info : 1800MHz-8-9-8-27-1N-1.60V-1.30V

| | |
|------------------------------|----------------|
| CPU Ratio Setting | [17.0] |
| Xtreme Phase Full Power Mode | [Auto] |
| BCLK Frequency | [180] |
| DRAM Frequency | [DDR3-1800MHz] |
| QPI Frequency | [Auto] |

▶ DRAM Timing Control

| | |
|----------------------------|--------|
| CPU Differential Amplitude | [Auto] |
| CPU Clock Skew | [Auto] |

***** Please key in numbers directly! *****

| | |
|------------------|----------|
| CPU Voltage Mode | [Manual] |
| Fixed Voltage | [Auto] |

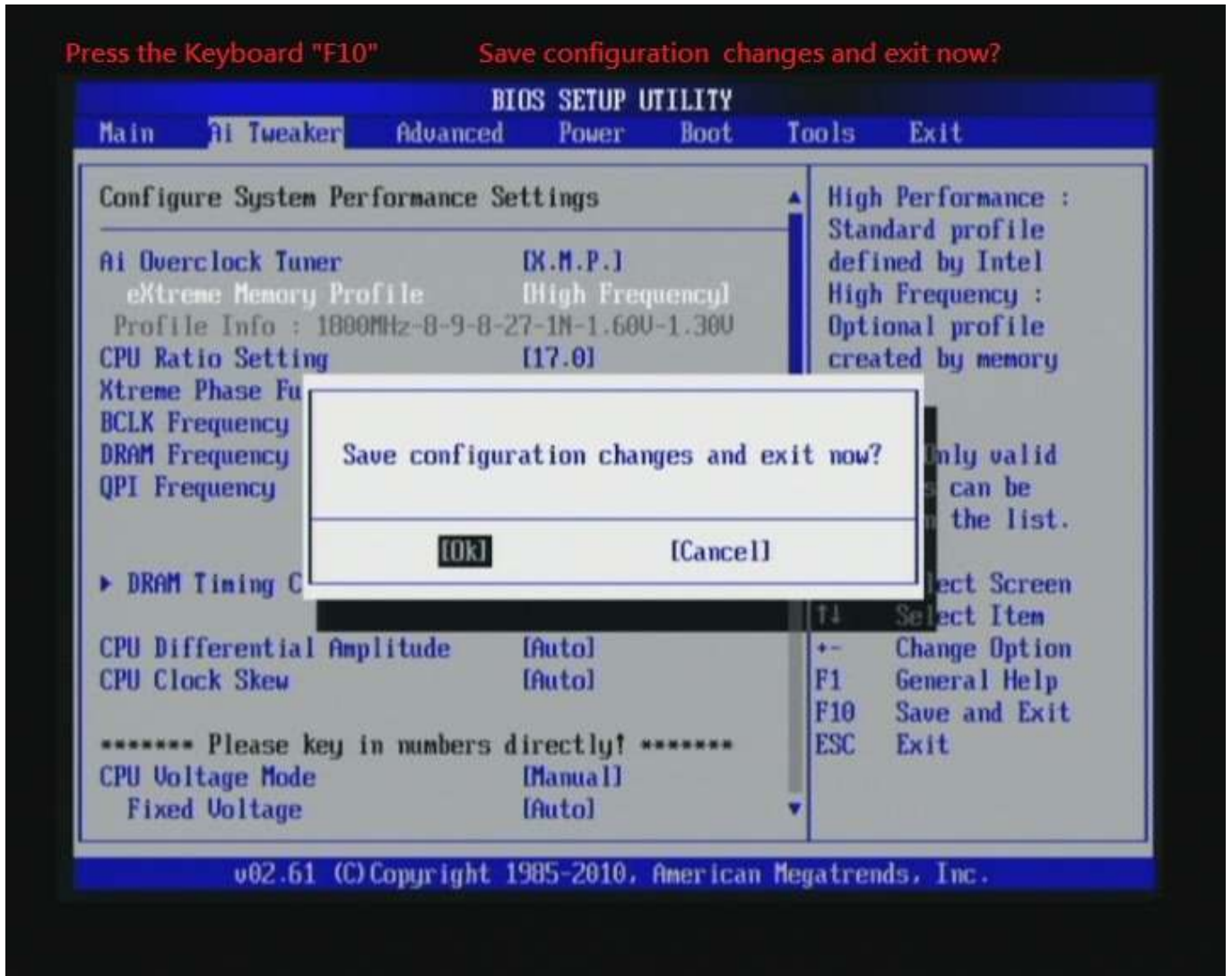
▲ High Performance :
Standard profile defined by Intel
High Frequency :
Optional profile created by memory vendor

Note : Only valid profiles can be shown on the list.

↔ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit

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4. Save BIOS changes [F10] and exit



Test result?

In order to demonstrate the performance and stability of PRINCO DDR3-1800 DIMM board, We use the strictest stress testing, that is, multi-core MemTest in window 7.

(Data rate : $900.1 \times 2 = 1800$, timing : 8, 9, 8, 27, multi-core test => pass!)

Four MemTest86 windows are shown, each reporting 0 errors and a coverage percentage: 104.5%, 103.9%, 105.6%, and 111.5%. The RAM size tested is 840 MB. The interface includes 'Start Testing', 'Stop Testing', and 'About MemTest' buttons.

CPU-Z Processor Tab

| | | | |
|---------------|---|--------------|---------|
| Name | Intel Core i3 540 | | |
| Code Name | Clarkdale | Brand ID | |
| Package | Socket 1156 LGA | | |
| Technology | 32 nm | Core Voltage | 1.216 V |
| Specification | Intel(R) Core(TM) i3 CPU 540 @ 3.07GHz | | |
| Family | 6 | Model | 5 |
| Ext. Family | 6 | Ext. Model | 25 |
| Stepping | | | 2 |
| Revision | | | C2 |
| Instructions | MMX, SSE (1, 2, 3, 3S, 4.1, 4.2), EM64T, VT-x | | |

Clocks (Core #0)

| | |
|------------|------------|
| Core Speed | 3060.4 MHz |
| Multiplier | x 17.0 |
| Bus Speed | 180.0 MHz |
| QPI Link | 3960.5 MHz |

Cache

| | | |
|----------|----------------|--------|
| L1 Data | 2 x 32 KBytes | 8-way |
| L1 Inst. | 2 x 32 KBytes | 4-way |
| Level 2 | 2 x 256 KBytes | 8-way |
| Level 3 | 4 MBytes | 16-way |

Selection: Processor #1 | Cores: 2 | Threads: 4

CPU-Z Mainboard Tab

| | | |
|--------------|-----------------------|-----------|
| Manufacturer | ASUSTeK Computer INC. | |
| Model | P7H55-M | |
| Chipset | Intel | Havendale |
| Southbridge | Intel | |
| LPCIO | Winbond | |

BIOS

| | |
|---------|-------------------------|
| Brand | American Megatrends Inc |
| Version | 1101 |
| Date | 08/18/2010 |

Graphic Interface

| | |
|------------|-----|
| Version | |
| Link Width | x16 |
| Side Band | |

CPU-Z Memory Tab

| | | | |
|------|-------------|--------------|------------|
| Type | DDR3 | Channels # | Dual |
| Size | 4096 MBytes | DC Mode | Symmetric |
| | | NB Frequency | 2880.4 MHz |

Timings

| | |
|-------------------------------|------------|
| DRAM Frequency | 900.1 MHz |
| FSB-DRAM | 4:20 |
| CAS# Latency (CL) | 8.0 clocks |
| RAS# to CAS# Delay (TRCD) | 9 clocks |
| RAS# Precharge (TRP) | 8 clocks |
| Cycle Time (tRAS) | 27 clocks |
| Row Refresh Cycle Time (tRFC) | 88 clocks |
| Command Rate (CR) | 1T |
| DRAM Idle Timer | |
| Total CAS# (tRDRAM) | |
| Row To Column (tRCD) | |

CPU-Z Memory Slot Selection Tab

| | |
|---------------|---------------------|
| Slot #1 | DDR3 |
| Module Size | 2048 MBytes |
| Max Bandwidth | PC3-10700 (667 MHz) |
| Manufacturer | |
| Part Number | PRINCO-DR3-1800 |
| Serial Number | |

Timings Table

| | JEDEC #3 | JEDEC #4 |
|----------------|----------|----------|
| Frequency | 609 MHz | 685 MHz |
| CAS# Latency | 8.0 | 9.0 |
| RAS# to CAS# | 8 | 9 |
| RAS# Precharge | 8 | 9 |
| tRAS | 22 | 25 |
| tRFC | 30 | 34 |
| Command Rate | | |
| Voltage | 1.50 V | 1.50 V |

Windows 工作管理員

應用程式 | 處理程序 | 服務 | 效能 | 網路功能 | 使用者

CPU 使用率: 100%

記憶體: 3.62 GB

| | | | |
|------------|------|---------|-------------|
| 實體記憶體 (MB) | 3965 | 系統 | 7931 |
| 總共 | 259 | 控制代碼 | 365 |
| 快取的 | 255 | 執行緒 | 33 |
| 可用 | 6 | 處理程序 | 0:00:23:21 |
| 未使用 | | 存留時間 | 3885 / 7930 |
| 核心記憶體 (MB) | 102 | 認可 (MB) | |
| 已分頁 | 15 | | |
| 非分頁 | | | |

處理程序: 33 | CPU 使用率: 100% | 實體記憶體: 93%

Advanced Overclocking and Testing

Part II : Heavy test

If you want to know the potential of PRINCO DDR3-1800? Following are step-by-step howto.

How to use?

0. Clear BIOS to mainboard initial setting
1. Enter BIOS setup and [Ai Tweaker] menu
2. Enter [Ai Overclock Tuner] item and select [Manual]
3. Select [BLCK Frequency] item , and increase to higher Base clock rate (ex:193). Then select [DRAM Frequency] item , and set the DDR3 memory to higher clock rate (ex:DDR3-1930). Don't forget setting [CPU Ratio Setting] item to suitable ratio (ex:14.0)

(In this case we only focus on memory over clocking, not CPU)

4. Select[DRAM Voltage] item , and set the value to [1.650V]

Step 1: Select " Ai Tweaker "

Step 2: Ai Overclock Tuner

Set [Manual]

Step 3: BCLK Frequency

Set [193]

Step 4: DRAM Frequency

Set [DDR3_1930]

Step 5: CPU Ratio Setting

Set [14]

Step 6: DRAM Bus Voltage

Set [1.650V]

BIOS SETUP UTILITY

Main **Ai Tweaker** Advanced Power Boot Tools Exit

Step 1

Configure System Performance Settings

| | | |
|------------------------------|----------------|--------|
| Ai Overclock Tuner | [Manual] | Step 2 |
| CPU Ratio Setting | [14.0] | Step 5 |
| Xtreme Phase Full Power Mode | [Auto] | |
| BCLK Frequency | [193] | Step 3 |
| DRAM Frequency | [DDR3-1930MHz] | Step 4 |
| QPI Frequency | [Auto] | |

▶ DRAM Timing Control

| | | |
|----------------------------|--------|-----------------|
| CPU Differential Amplitude | [Auto] | ↔ Select Screen |
| CPU Clock Skew | [Auto] | T4 Select Item |

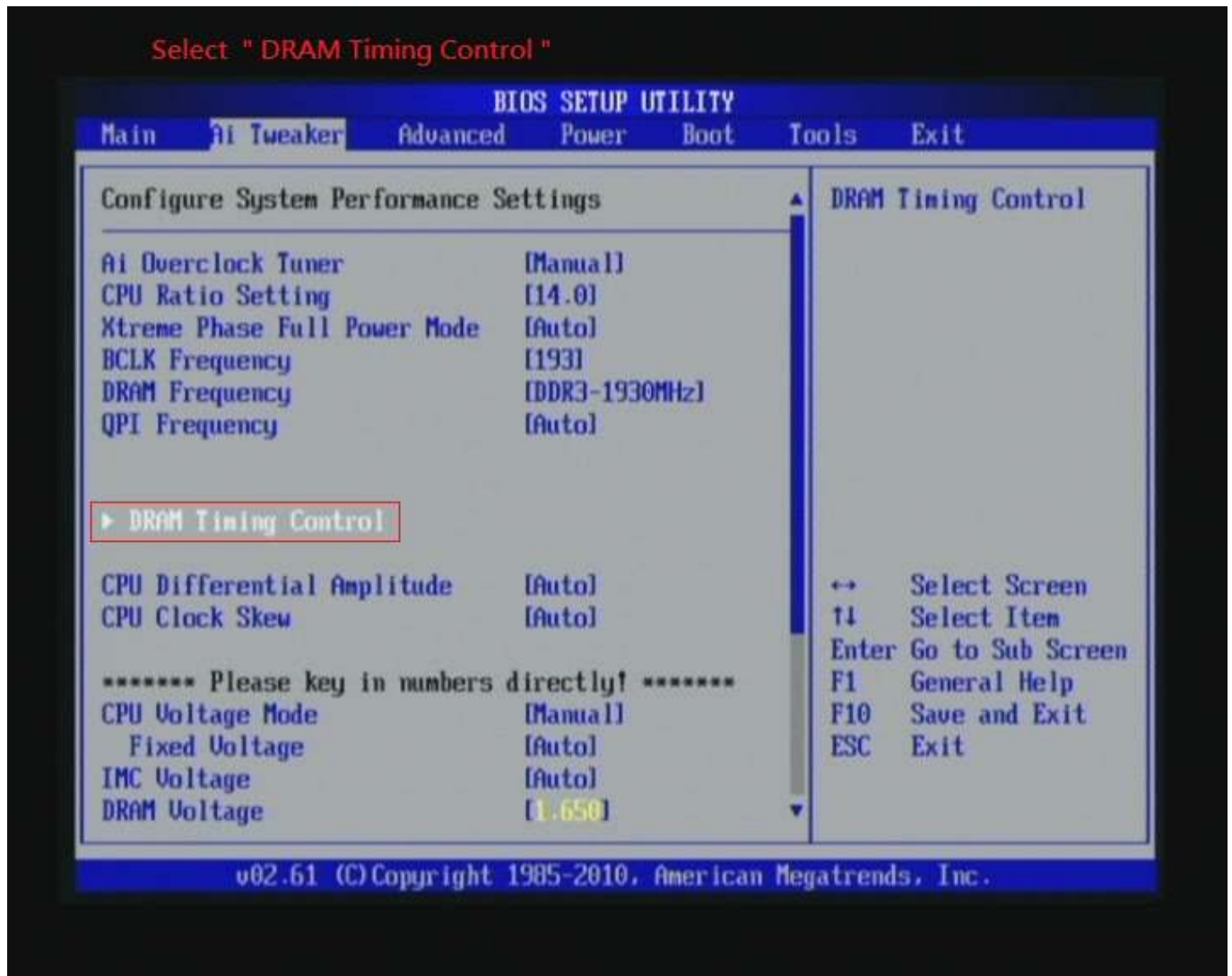
***** Please key in numbers directly! *****

| | | |
|------------------|----------|-------------------|
| CPU Voltage Mode | [Manual] | F1 General Help |
| Fixed Voltage | [Auto] | F10 Save and Exit |
| IMC Voltage | [Auto] | ESC Exit |
| DRAM Voltage | [1.650] | Step 6 |

Min = 1.200V
Max = 2.445V
Standard = 1.500V

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5. Enter [DRAM Timing Control] item



6. set [DRAM CAS# Latency] item to [8 DRAM Clock]

set [DRAM RAS# to CAS# Delay] item to [9 DRAM Clock]

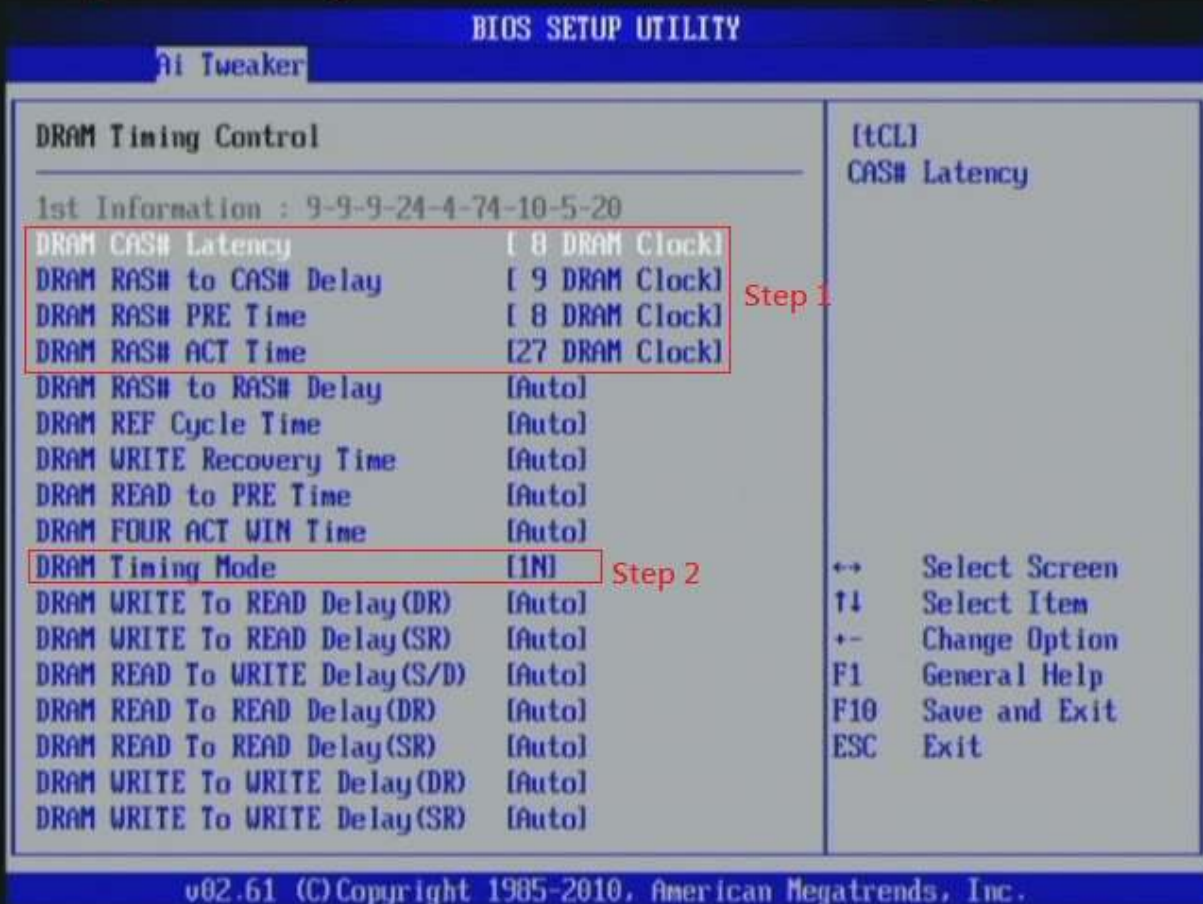
set [DRAM RAS# PRE Time] item to [8 DRAM Clock]

set [DRAM RAS# ACT Time] item to [27 DRAM Clock]

set [DRAM Timing Mode] item to [1N]

then return to previous to [Ai Overclock Tuner] menu

| | |
|----------------------------|----------------|
| Step 1 : DRAM CAS# Latency | Set [8 CLK] |
| DRAM RAS# to CAS# Delay | Set [9 CLK] |
| DRAM RAS# PRE Time | Set [8 CLK] |
| DRAM RAS# ACT Time | Set [27 CLK] |
| Step 2 : DRAM Timing Mode | Set [1T] |



7. Save BIOS changes [F10] and exit



Test result?

We use the strictest stress testing, multi-core MemTest in window 7, to show you PRINCO DDR3-1800 potential.

(Data rate : $966.1 * 2 = 1932$, timing : 8, 9, 8, 27, multi-core test => pass!)

