

PRINCO DDR3-1600 user guide and testing for GA-P55-UD3L Motherboard

CPU i5-760 2.80G

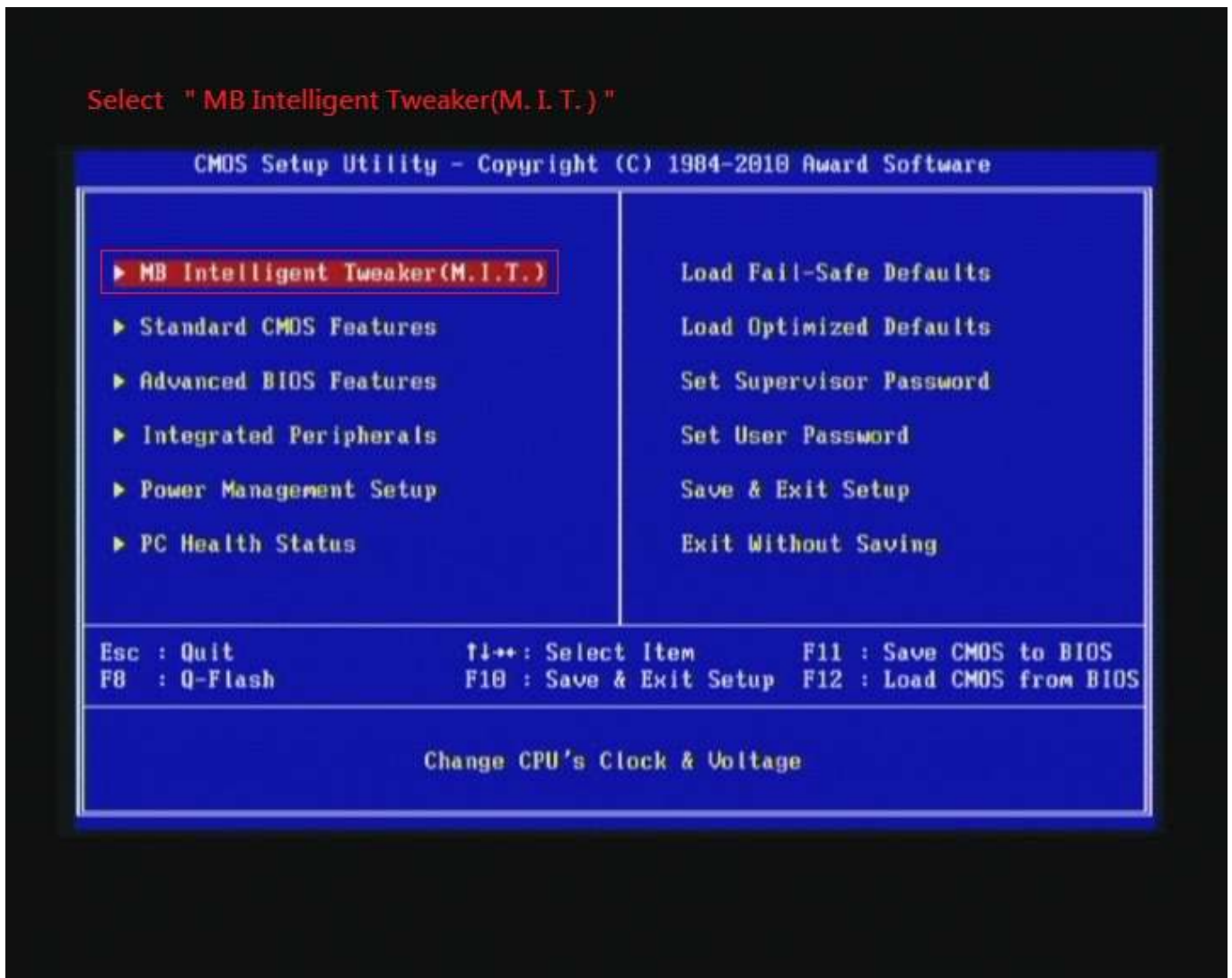


Part I : Standard test

*It's the easiest way to enjoy overclock benefit by
using PRINCO DDR3-1600 DIMM board*

How to use?

0. Clear BIOS to mainboard initial setting
1. Enter BIOS setup and [MB Intelligent Tweaker(M.I.T.)] menu



2. Enter [Advance Memory Setting] item

Select "Advanced Memory Settings"

The screenshot displays the CMOS Setup Utility interface. At the top, it reads "CMOS Setup Utility - Copyright (C) 1984-2010 Award Software" and "MB Intelligent Tweaker (M.I.T.)". The main menu lists several options, with "Advanced Memory Settings" highlighted by a red box. To the right of the menu is an "Item Help" section. Below the menu, system status information is displayed, including BIOS Version, BCLK, CPU Frequency, Memory Frequency, Total Memory Size, CPU Temperature, PCH Temperature, Vcore, and DRAM Voltage. At the bottom, a legend explains the navigation keys: F1 for Move, Enter for Select, +/- for PU/PD, Value for F10, Save for ESC, Exit for F1, General Help for F5, Previous Values for F6, Fail-Safe Defaults for F7, and Optimized Defaults for F7.

CMOS Setup Utility - Copyright (C) 1984-2010 Award Software MB Intelligent Tweaker (M.I.T.)		
▶ M.I.T Current Status	[Press Enter]	Item Help Menu Level ▶ Configure DRAM Features
▶ Advanced Frequency Settings	[Press Enter]	
▶ Advanced Memory Settings	[Press Enter]	
▶ Advanced Voltage Settings	[Press Enter]	
▶ Miscellaneous Settings	[Press Enter]	
BIOS Version FH		
BCLK	133.27 MHz	
CPU Frequency	2932.03 MHz	
Memory Frequency	1332.75 MHz	
Total Memory Size	4096 MB	
CPU Temperature 36.0 °C		
PCH Temperature 39.0 °C		
Vcore 1.152 V		
DRAM Voltage 1.584 V		
F1: Move Enter: Select +/-: PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

3. Enter [Extreme Memory Profile(X.M.P.)] item and choose [Profile 1] option , BIOS will load X.M.P parameter in SPD on DIMM board , which are performance optimized for PRINCO DDR3-1600 DIMM board

Step 1 : Select " Extreke Memory Profile(X.M.P.) "

Step 2 : In the pop menu, select " Profile1 "



4. Save BIOS changes [F10] and exit

Press the Keyboard "F10"

Save to CMOS and EXIT (Y/N)? Y

CMOS Setup Utility - Copyright (C) 1984-2010 Award Software
Advanced Memory Settings

	Item Help
Extreme Memory Profile(X.M.P.) [Profile1]	
System Memory Multiplier (SPD) [Auto]	
Memory Frequency(Mhz) 1600 1600	Menu Level >>
Performance Enhance [Turbo]	
DRAM Timing Selectable (SPD) [Auto]	
Profile DDR Voltage 1.6V	
Profile QPI Voltage 1.1V	
x Channel Interleaving 6 Auto	
x Rank Interleaving	
>>>> Channel A	
▶ Channel A Timing	
>>>> Channel B	
▶ Channel B Timing	

SAVE to CMOS and EXIT (Y/N)?

F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Test result?

In order to demonstrate the performance and stability of PRINCO DDR3-1600 DIMM board, We use the strictest stress testing, that is, multi-core MemTest in window 7.

(Data rate : $800.0 \times 2 = 1600$, timing : 7, 9, 7, 24, multi-core test => pass!)

The image displays a Windows 7 desktop environment with several application windows open, demonstrating system performance and stability testing.

MemTest Windows: Four instances of MemTest are running, each showing 0 errors and 100% coverage. The first two windows show 175.8% and 171.9% coverage, while the last two show 169.5% and 100.8% coverage. Each window includes a text input for RAM size (set to 800 MB) and buttons for 'Start Testing', 'Stop Testing', and 'About MemTest'.

CPU-Z Windows: Two instances of CPU-Z are open. The top instance shows the 'CPU' tab with the following details:

- Processor: Intel Core i5 760
- Code Name: Lynnfield
- Package: Socket 1156 LGA
- Technology: 45 nm, Core Voltage: 1.248 V
- Specification: Intel(R) Core(TM) i5 CPU 760 @ 2.80GHz
- Clocks (Core #0): Core Speed 2880.0 MHz, Multiplier x 18.0, Bus Speed 160.0 MHz, QPI Link 2880.0 MHz
- Cache: L1 Data 4 x 32 KBytes 8-way, L1 Inst. 4 x 32 KBytes 4-way, Level 2 4 x 256 KBytes 8-way, Level 3 8 MBytes 16-way
- Selection: Processor #1, Cores 4, Threads 4

The bottom instance shows the 'Memory' tab with the following details:

- General: Type DDR3, Channels # Dual, Size 4096 MBytes, NB Frequency 2559.9 MHz
- Timings: DRAM Frequency 800.0 MHz, FSB-DRAM 2:10, CAS# Latency (CL) 7.0 clocks, RAS# to CAS# Delay (tRCD) 9 clocks, RAS# Precharge (tRP) 7 clocks, Cycle Time (tRAS) 24 clocks, Row Refresh Cycle Time (tRFC) 88 clocks, Command Rate (CR) 1T

Windows Task Manager: The 'Performance' tab is active, showing system resource usage:

- CPU Usage: 100%
- Memory Usage: 3.77 GB
- Physical Memory (MB): Total 4087, Free 229, Available 221, Unused 0
- System: Control Code 8620, Execution 380, Processes 36, Uptime 0:00:25:21, Logged On (MB) 4025 / 8173

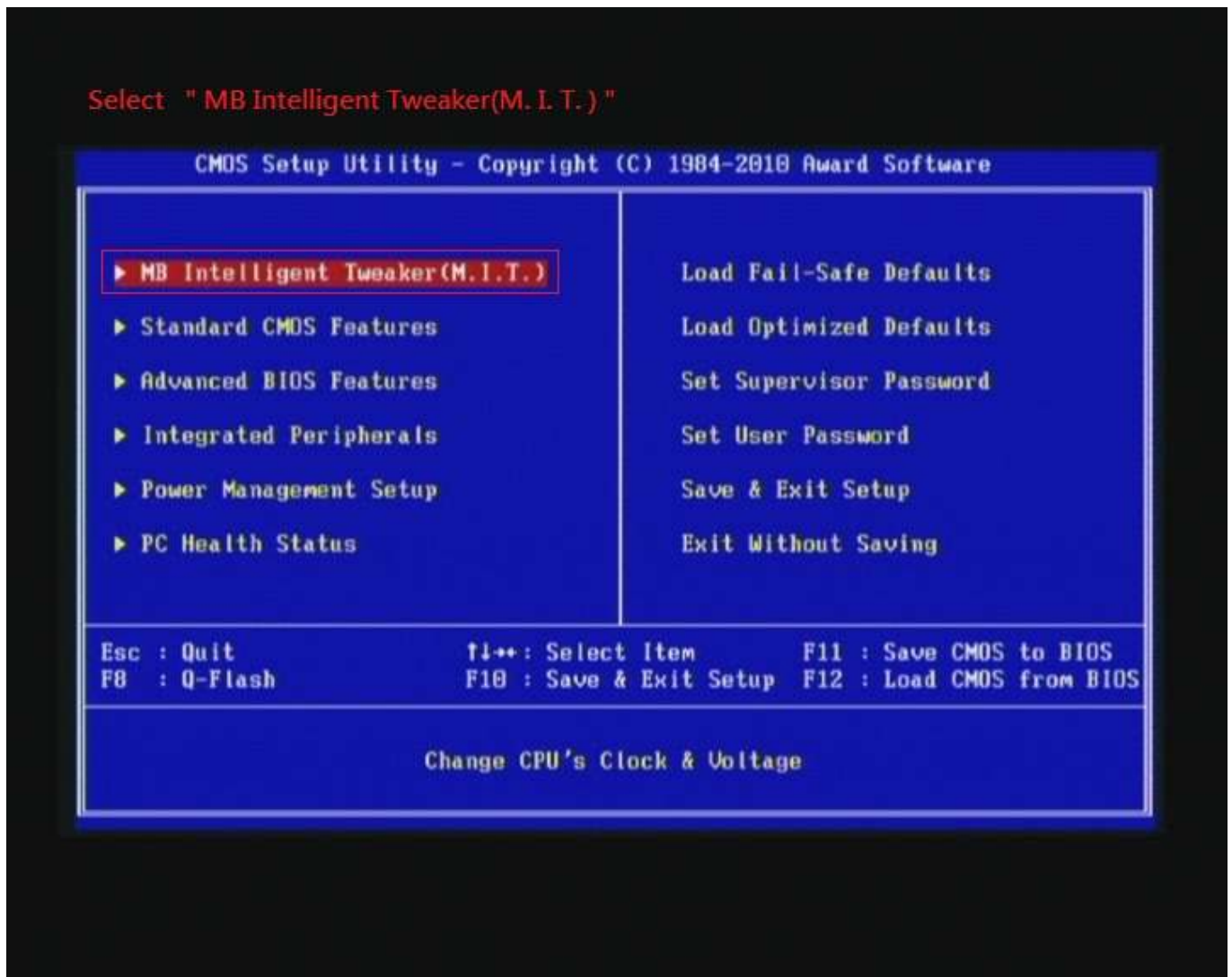
Advanced Overclocking and Testing

Part II : Heavy test

If you want to know the potential of PRINCO DDR3-1600? Following are step-by-step howto.

How to use?

0. Clear BIOS to mainboard initial setting
1. Enter BIOS setup and [MB Intelligent Tweaker(M.I.T.)] menu



2. Enter [Advance Frequency Setting] item

Select "Advanced Frequency Settings"



3. Set [Base Clock(BCLK) Control] item to [Enabled] , Select [BCLK Frequency(Mhz)] item , and increase to higher Base clock rate (ex:185). Then set [System Memory Multiplier (SPD)] item to [10.0]. Don't forget setting [CPU Ratio Setting] item to suitable ratio [ex:15]

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

Step 1 : Base Clock(BCLK) Control	Set [Enabled]
BCLK Frequency(Mhz)	Set [185]
Step 2 : System Memory Multiplier (SPD)	Set [10.0]
Step 3 : CPU Clock Ratio	Set [15 X]



then return to previous to

[MB Intelligent Tweaker(M.I.T.)] menu

4. Enter [Advance Memory Setting] item

Select " Advanced Memory Settings "



5. Set [DRAM Timing Selectable (SPD)] item to [Quick]

6. Enter [Channel A Timing Settings] item

Step 1: DRAM Timing Selectable (SPD)

Set [Quick]

Step 2: Select " Channel A Timing Settings "



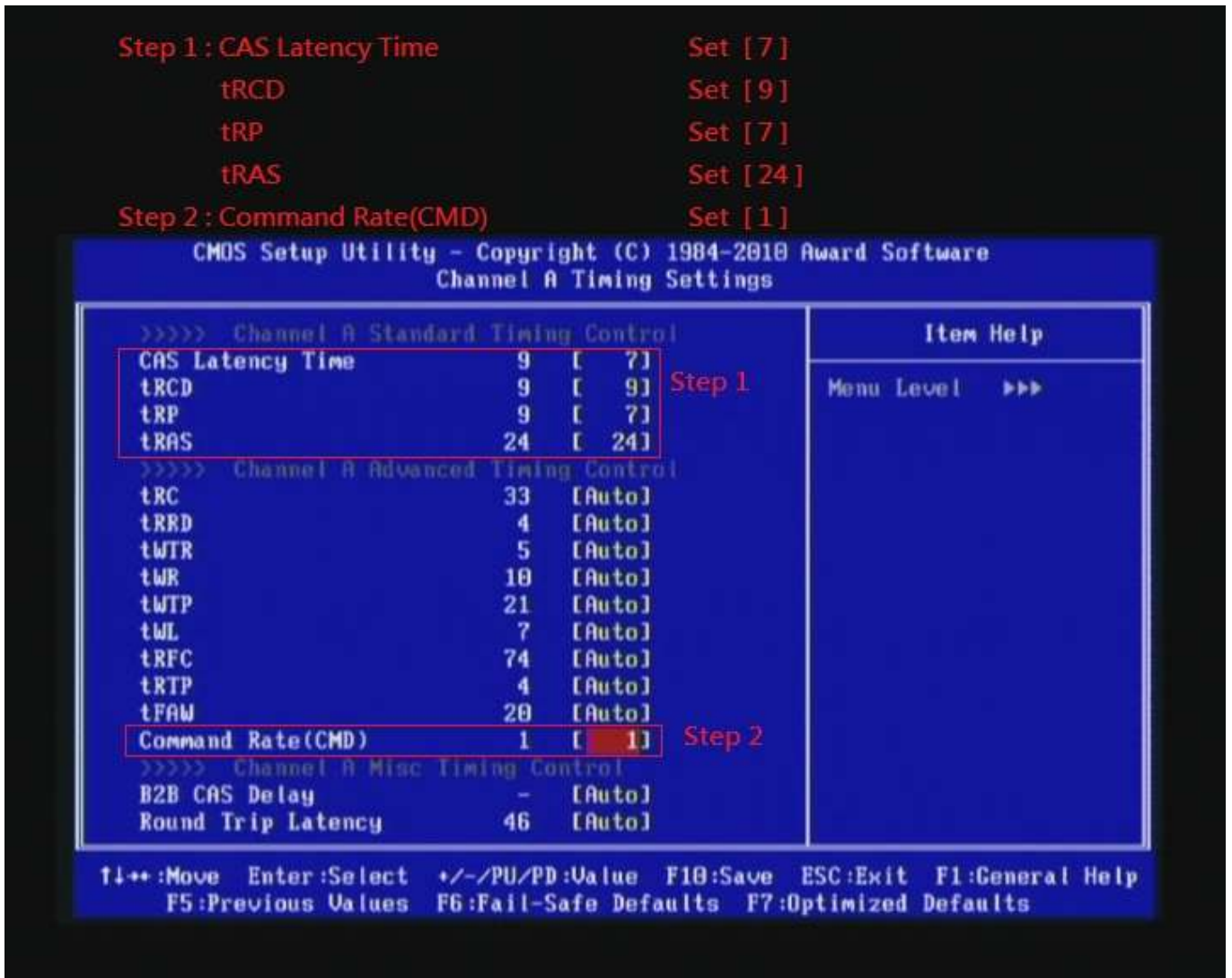
7. set [CAS Latency Time] item to [7]

set [tRCD] item to [9]

set [tRP] item to [7]

set [tRAS] item to [24]

set [DRAM Timing Mode] item to [1]



then return to previous to

[MB Intelligent Tweaker(M.I.T.)] menu

8. Enter [Advance Voltage Setting] item

Select "Advanced Voltage Settings"

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MB Intelligent Tweaker (M.I.T.)

	Item Help
▶ M.I.T Current Status [Press Enter]	
▶ Advanced Frequency Settings [Press Enter]	
▶ Advanced Memory Settings [Press Enter]	
▶ Advanced Voltage Settings [Press Enter]	Menu Level ▶
▶ Miscellaneous Settings [Press Enter]	

BIOS Version	FH
BCLK	133.27 MHz
CPU Frequency	2932.13 MHz
Memory Frequency	1332.84 MHz
Total Memory Size	4096 MB
CPU Temperature	35.9 °C
PCH Temperature	39.0 °C
Ucore	1.152 V
DRAM Voltage	1.584 V

F1: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

9. Select [CPU Vcore] item to [1.20000V]

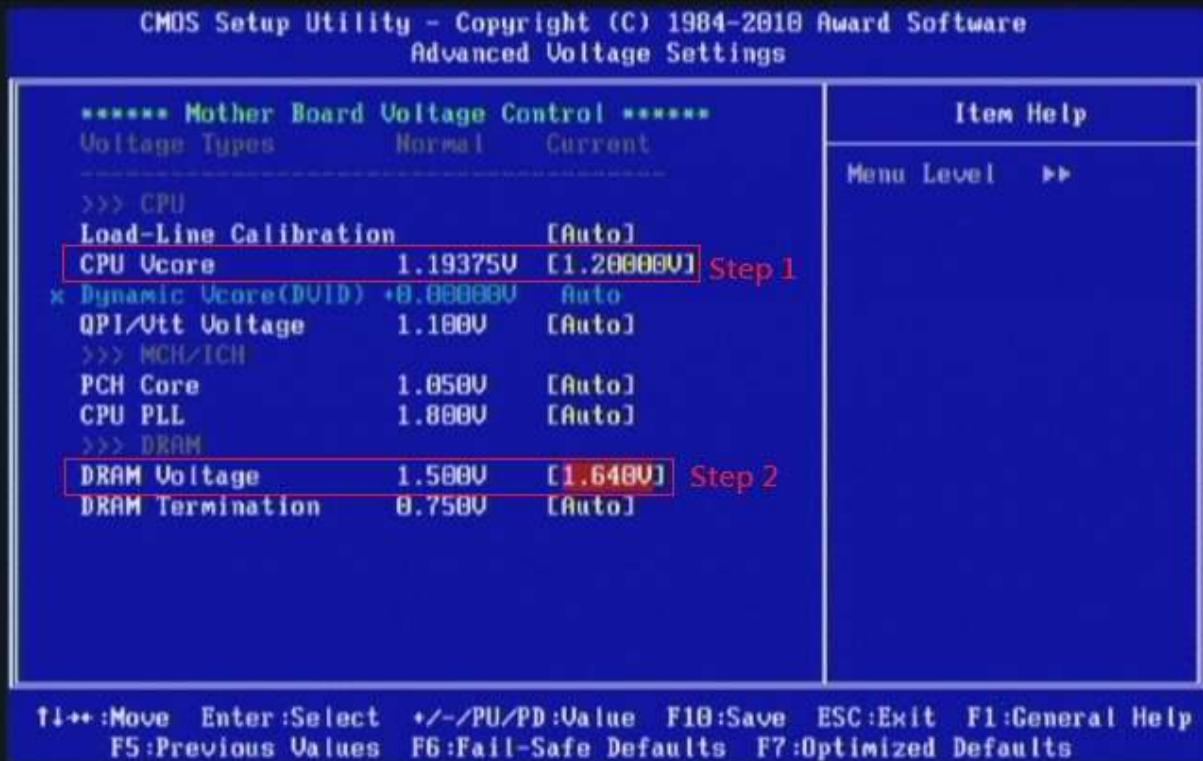
Select[DRAM Voltage] item , and set the value to [1.640V]

Step 1: CPU Vcore

Set [1.20000V]

Step 2: DRAM Voltage

Set [1.640V]



10. Save BIOS changes [F10] and exit

Press the Keyboard "F10"

Save to CMOS and EXIT (Y/N)? Y

CMOS Setup Utility - Copyright (C) 1984-2010 Award Software
Advanced Voltage Settings

***** Mother Board Voltage Control *****			Item Help
Voltage	Types	Normal	Current

>>> CPU			
Load-Line Calibration			[Auto]
CPU Vcore		1.19375V	[1.20000V]
x Dynamic Vcore(BVID)		+0.00000V	Auto
QPI/Vtt Voltage		1.100V	[Auto]
>>> MCH/ICH			
PCH Core			
CPU PLL			
>>> DRAM			
DRAM Voltage			
DRAM Termination		0.750V	[Auto]

SAVE to CMOS and EXIT (Y/N)?

F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Test result?

We use the strictest stress testing, multi-core MemTest in window 7, to show you PRINCO DDR3-1600 potential.

(Data rate : $925.0 \times 2 = 1850$, timing : 7, 9, 7, 24, multi-core test => pass!)

The image displays a collage of screenshots from a Windows 7 system, illustrating the results of a multi-core stress test using MemTest86 and the system's hardware specifications.

MemTest86 Results: Four screenshots show the MemTest86 interface with 800 MB of RAM selected. The results indicate 100% coverage and 0 errors across multiple passes:

- Pass 1: 198.1% Coverage, 0 Errors
- Pass 2: 198.9% Coverage, 0 Errors
- Pass 3: 196.1% Coverage, 0 Errors
- Pass 4: 110.9% Coverage, 0 Errors

The text in the MemTest86 windows suggests purchasing the PRO or Deluxe versions for additional features.

CPU-Z System Information: The CPU-Z screenshots provide detailed hardware specifications:

- Processor:** Intel Core i5 760, Lynnfield, Socket 1156 LGA, 45 nm technology, 1.184 V core voltage.
- Specification:** Intel(R) Core(TM) i5 CPU 760 @ 2.80GHz, Family 6, Model E, Stepping 5, Ext. Family 6, Ext. Model 1E, Revision B1.
- Clocks (Core #0):** Core Speed 2774.9 MHz, Multiplier x 15.0, Bus Speed 185.0 MHz, QPI Link 3329.9 MHz.
- Cache:** L1 Data 4 x 32 KBytes (8-way), L1 Inst. 4 x 32 KBytes (4-way), Level 2 4 x 256 KBytes (8-way), Level 3 8 MBytes (16-way).
- Memory (DDR3):** Type DDR3, Channels # Dual, Size 4096 MBytes, NB Frequency 2959.9 MHz.
- Timings:** DRAM Frequency 925.0 MHz, FSB:DRAM 2:10, CAS# Latency (CL) 7.0 clocks, RAS# to CAS# Delay (trCD) 9 clocks, RAS# Precharge (trRP) 7 clocks, Cycle Time (trAS) 24 clocks, Row Refresh Cycle Time (trRFC) 102 clocks, Command Rate (CR) 1T.

Windows Task Manager: The Task Manager screenshot shows system resource usage:

- CPU 使用率:** 100%
- 記憶體:** 3.78 GB
- 實體記憶體 (MB):** 總共 4087, 快取的 210, 可用 210, 未使用 2.
- 核心記憶體 (MB):** 已分頁 81, 非分頁 16.
- 系統:** 控制代碼 8691, 執行緒 388, 處理程序 36, 存留時間 0:00:25:48, 認可 (MB) 4044 / 8173.

The Task Manager status bar at the bottom shows: 處理程序: 36, CPU 使用率: 100%, 實體記憶體: 94%.