

Part I : Standard test

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

How to use?

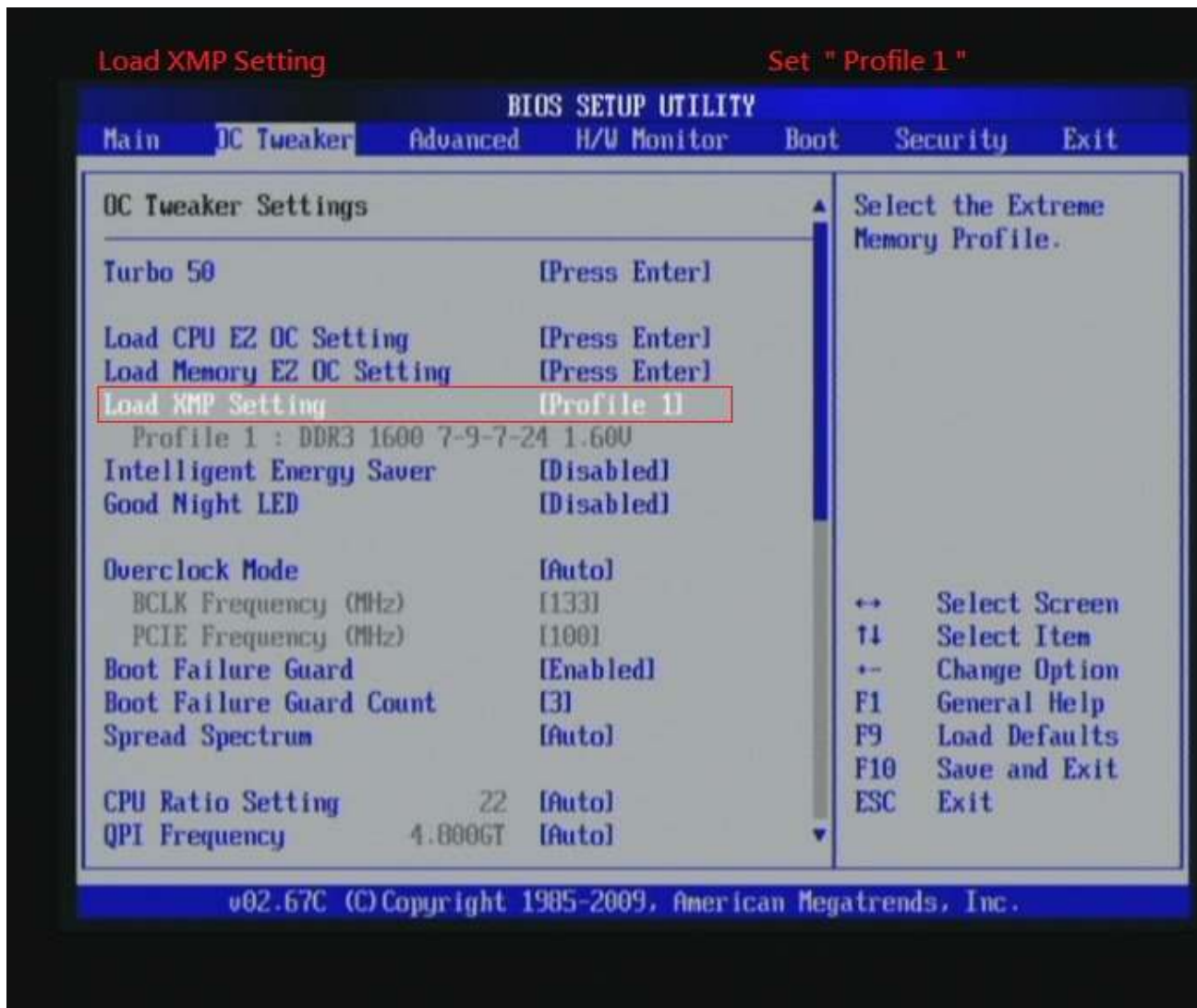
0. Clear BIOS to mainboard initial setting
1. Enter BIOS setup and [OC Tweaker] menu



2. Enter [Load XMP Setting] 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 DDR3-1600
DIMM board*

3. Enter [Load XMP Setting] item and select [Profile 1]



4. Save BIOS changes [F10] and exit



Ps: after reboot , check if the new setup have been updated.

Currently running 1600 7-9-7-24 1N

BIOS SETUP UTILITY

Main OC Tweaker Advanced H/W Monitor Boot Security Exit

System Overview

System Time	[22:43:39]	Use [ENTER], [TAB] or [SHIFT-TAB] to select a field.
System Date	[Sat 09/18/2010]	
Use [+] or [-] to configure system Time.		

BIOS Version	: P55 Pro/USB3 P1.20	↔ Select Screen ↑↓ Select Item ←→ Change Field Tab Select Field F1 General Help F9 Load Defaults F10 Save and Exit ESC Exit
Processor Type	: Intel(R) Core(TM) i7 CPU K 875 @ 2.93GHz (64bit)	
Processor Speed	: 2933MHz	
Microcode Update	: 106E5/3	
Cache Size	: 8192KB	
Total Memory	: 4096MB Dual-Channel Memory Mode	
DDR3_A2	: None	
DDR3_A1	: 2048MB/800MHz DDR3_1600	
DDR3_B2	: None	
DDR3_B1	: 2048MB/800MHz DDR3_1600	

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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 : 803.3Mhz*2, timing : 7, 9, 7, 24, multi-core test => pass!)

The image shows 12 instances of the MemTest86 application. Each instance has a title bar that says "[0 Errors] MemTest". The main window contains a text input field for "Enter megabytes of RAM to test" with the value "430". Below the input field are "Start Testing" and "Stop Testing" buttons, and an "About MemTest" button. At the bottom of each window, it says "[X] [Coverage] Coverage, 0 Errors". The coverage percentages for the 12 windows are: 107.5%, 107.4%, 106.7%, 107.1%, 104.1%, 104.3%, 105.3%, and 101.1%.

The CPU-Z window displays the following information:

- Processor:** Intel Core i7 875K, Lynnfield, Socket 1156 LGA, 45 nm, Core Voltage 1.144 V.
- Specification:** Intel(R) Core(TM) i7 CPU K 875 @ 2.93GHz, Family 6, Model E, Stepping 5, Ext. Family 6, Ext. Model 1E, Revision B1.
- Instructions:** MMX, SSE (1, 2, 3, 3S, 4.1, 4.2), EM64T, VT-x.
- Clocks (Core #0):** Core Speed 3213.2 MHz, Multiplier x 24.0, Bus Speed 133.9 MHz, QPI Link 2409.9 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.
- Selection:** Processor #1, Cores 4, Threads 8.

The CPU-Z window displays the following motherboard information:

- Motherboard:** ASRock P55 Pro/USB3.
- Chipset:** Intel.
- Southbridge:** Intel.
- LPCIO:** Nuvoton.
- BIOS:** Brand American Megatren, Version P1.20, Date 08/12/2010.
- Graphic Interface:** Version, Link Width x16, Side Band.

The CPU-Z window displays the following memory information:

- General:** Type DDR3, Channels # Dual, DC Mode, NB Frequency 2409.9 MHz.
- Timings:** DRAM Frequency 803.3 MHz, FSB-DRAM 2:12, 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.

The CPU-Z window displays the following memory slot and timing information:

- Memory Slot Selection:** Slot #1, DDR3, Module Size 2048 MB, Max Bandwidth PC3-10700 (6), Manufacturer, Part Number PRINCO-DR3-, Serial Number.
- Timings Table (JEDEC #2):** Frequency 533 MHz, CAS# Latency 7.0, RAS# to CAS# 7, RAS# Precharge 7, tRAS 20, tRC 27, Command Rate, Voltage 1.50 V.

The Windows Task Manager window shows the following performance metrics:

- CPU 使用率:** 100% (indicated by a green bar chart).
- 記憶體:** 3.74 GB (indicated by a green bar chart).
- CPU 使用率記錄:** A grid of 10 small bar charts showing CPU usage over time.
- 實體記憶體使用記錄:** A grid of 10 small bar charts showing memory usage over time.

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 [OC Tweaker] menu



2. Enter [Overclock Mode] item and select [Manual]
3. Select [BLCK Frequency] item , and increase to higher Base clock rate (ex:163). Then select [DRAM Frequency] item , and set the DDR3 memory to higher clock rate (ex:DDR3-1956). Don't forget setting [CPU Ratio Setting] item to suitable ratio [ex:18]
(In this case we only focus on memory over clocking, not CPU)
4. Select [DRAM Voltage] item , and set the value to [1.643V].

Step 1 : Overclock Mode	Set [Manual]
Step 2 : BCLK Frequency (MHz)	Set [163]
Step 3 : CPU Ratio Setting	Set [18]
Step 4 : DRAM Frequency	Set [978MHz DDR3_1956]
Step 5 : DRAM Voltage	Set [1.643V]

BIOS SETUP UTILITY

Main **OC Tweaker** Advanced H/W Monitor Boot Security Exit

Good Night LED	[Disabled]			Standard = 1.615V
				Max = 2.000V
Overclock Mode	[Manual]	Step 1		
BCLK Frequency (MHz)	[163]	Step 2		
PCIE Frequency (MHz)	[100]			
Boot Failure Guard	[Enabled]			
Boot Failure Guard Count	[3]			
Spread Spectrum	[Auto]			
				System may be damaged or reduce its life cycle when overvoltage.
CPU Ratio Setting	22 [18]	Step 3		
QPI Frequency	4.800GT [Auto]			
DRAM Frequency	DDR3_1600 [978MHz DDR3_1956]	Step 4		
▶ DRAM Timing Control				
ASRock Udroop Control	[With Udroop]			
CPU Voltage	[Auto]			
DRAM Voltage	1.601V [1.643V]	Step 5		
UTT Voltage	1.264V [Auto]			
PCH Voltage	1.079V [Auto]			

↔ Select Screen
 ↑ Select Item
 ← Change Option
 F1 General Help
 F9 Load Defaults
 F10 Save and Exit
 ESC Exit

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5. Enter [DRAM Timing Control] item

Select " DRAM Timing Control "

The screenshot shows the BIOS Setup Utility interface. At the top, the title is "BIOS SETUP UTILITY". Below the title are several menu tabs: "Main", "OC Tweaker", "Advanced", "H/W Monitor", "Boot", "Security", and "Exit". The "OC Tweaker" tab is currently selected. The main area displays various system settings. A red box highlights the "▶ DRAM Timing Control" option. To the right of the settings is a vertical scrollbar and a legend for navigation keys.

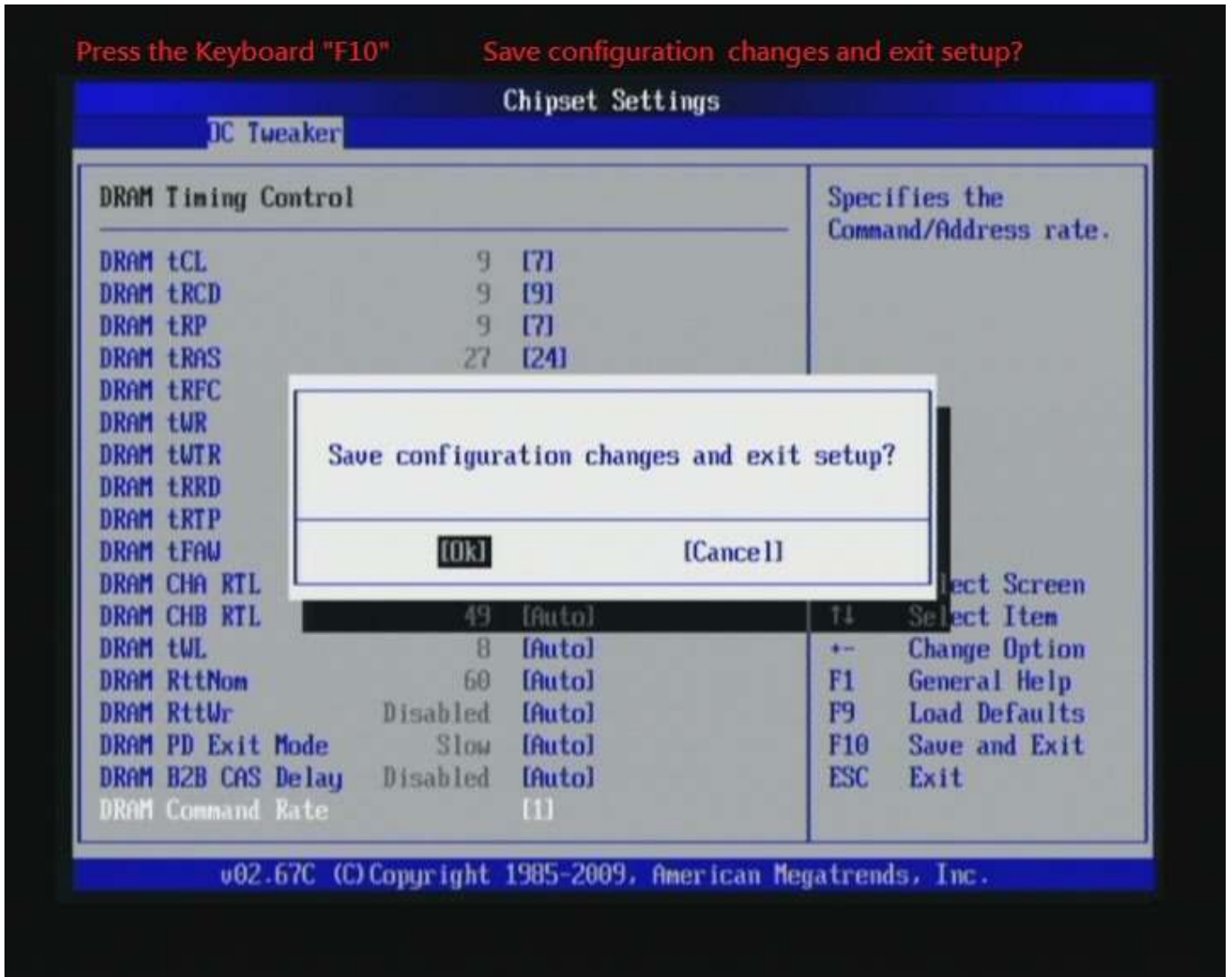
Setting	Value	Default
Good Night LED	[Disabled]	[Disabled]
Overclock Mode	[Manual]	[Manual]
BCLK Frequency (MHz)	[163]	[163]
PCIE Frequency (MHz)	[100]	[100]
Boot Failure Guard	[Enabled]	[Enabled]
Boot Failure Guard Count	[3]	[3]
Spread Spectrum	[Auto]	[Auto]
CPU Ratio Setting	22	[18]
QPI Frequency	4.800GT	[Auto]
DRAM Frequency	DDR3_1600	[978MHz DDR3_1956]
ASRock UDroop Control	[With UDroop]	[With UDroop]
CPU Voltage	[Auto]	[Auto]
DRAM Voltage	1.601V	[1.643V]
UTT Voltage	1.264V	[Auto]
PCH Voltage	1.079V	[Auto]

Legend:

- ↔ Select Screen
- ↑↓ Select Item
- Enter Go to Sub Screen
- F1 General Help
- F9 Load Defaults
- F10 Save and Exit
- ESC Exit

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7. Save BIOS changes [F10] and exit



Ps: after reboot , check if the new setup have been updated.

Currently running 1956 7-9-7-24 1N

BIOS SETUP UTILITY

Main OC Tweaker Advanced H/V Monitor Boot Security Exit

System Overview

System Time [00:36:22]
System Date [Thu 08/12/2010]

BIOS Version : P55 Pro/USB3 P1.20
Processor Type : Intel(R) Core(TM) i7 CPU
K 875 @ 2.93GHz (64bit)
Processor Speed : 2938MHz
Microcode Update: 106E5/3
Cache Size : 8192KB

Total Memory : 4096MB
Dual-Channel Memory Mode

DDR3_A2 : None
DDR3_A1 : 2048MB/978MHz DDR3_1956
DDR3_B2 : None
DDR3_B1 : 2048MB/978MHz DDR3_1956

Use [ENTER], [TAB] or [SHIFT-TAB] to select a field.
Use [+] or [-] to configure system Time.

↔ Select Screen
↑↓ Select Item
+- Change Field
Tab Select Field
F1 General Help
F9 Load Defaults
F10 Save and Exit
ESC Exit

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Test result?

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

(Data rate : $979.9 \times 2 = 1597.8$, timing : 7, 9, 7, 24 , multi-core test => pass!)

12 MemTest86 windows showing test progress. Each window displays '0 Errors', 'Enter megabytes of RAM to test' (430), and 'Coverage' percentages ranging from 186.0% to 208.0%.

CPU-Z Version 1.56

Processor				
Name	Intel Core i7 875K			
Code Name	Lynnfield	Brand ID		
Package	Socket 1156 LGA			
Technology	45 nm	Core Voltage	1.000 V	
Specification				
Intel(R) Core(TM) i7 CPU K 875 @ 2.93GHz				
Family	6	Model	E	
Ext. Family	6	Ext. Model	1E	
Stepping	5			
Revision	B1			
Instructions				
MMX, SSE (1, 2, 3, 3S, 4.1, 4.2), EM64T, VT-x				
Clocks (Core #0)				
Core Speed	2939.9 MHz			
Multiplier	x 18.0			
Bus Speed	163.3 MHz			
QPI Link	2939.9 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		
Selection Processor #1				
Cores		4	Threads	8

CPU-Z Version 1.56

Motherboard	
Manufacturer	ASRock
Model	P55 Pro/USB3
Chipset	Intel
Southbridge	Intel
LPCIO	Nuvoton
BIOS	
Brand	American Megatrends
Version	P1.20
Date	08/12/2010
Graphic Interface	
Version	
Link Width	x16
Side Band	

CPU-Z Version 1.56

General	
Type	DDR3
Size	4096 MBytes
Channels #	Dual
DC Mode	
NB Frequency	2939.8 MHz
Timings	
DRAM Frequency	979.9 MHz
FSB-DRAM	2:12
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)	98 clocks
Command Rate (CR)	1T
DRAM Idle Timer	
Total CAS# (tRDRAM)	
Row To Column (tRCD)	

CPU-Z Version 1.56

Memory Slot Selection	
Slot #1	DDR3
Module Size	2048 MB
Max Bandwidth	PC3-10700 (6)
Manufacturer	
Part Number	PRINCO-DR3-
Serial Number	
Timings Table	
	JEDEC #2
Frequency	533 MHz
CAS# Latency	7.0
RAS# to CAS#	7
RAS# Precharge	7
tRAS	20
tRC	27
Command Rate	
Voltage	1.50 V

Windows 工作管理員

檔案(F) 選項(O) 檢視(V) 說明(H)

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: 3.72 GB