

# **TR100**

**Intel® 815E Motherboard**

## ***USER'S MANUAL***

**Intel® Celeron®, Pentium III®, Tualatin® Processor Motherboard  
Rev. 1.0**

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# Chapter 1 Introduction

## Motherboard Specifications

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### Form Factor:

- Micro ATX Form Factor
  - Size 9.6" x 8.9", Four Layer Board
- 

### Processor:

- Support Intel Celeron® / Pentium III® / Tualatin®.
  - Intel Socket-370 mechanism for universal motherboard.
  - 66/100/133MHz Front Side Bus frequency.
- 

### Cache Memory:

- L1 and L2 cache are all integrated in the processor.
- 

### System Memory:

- 2 DIMM Sockets support up to 512MB memory capacity.
  - Support PC100/PC133 SDRAM DIMM module.
  - Un-buffered, Non-ECC DIMM only.
- 

### Core Logic Chipset:

- Intel 815E B-step GMCH (Graphics and Memory Controller Hub).
  - ICH2X (I/O Controller Hub).
- 

### PCI bus:

- PCI 2.2 compliant
  - PME# and 3.3Vaux signals to support power management.
- 

### Audio:

- AC'97 interface in ICH2X.
  - AC'97 CODEC ADI AD1885.
  - Compliant with AC'97 revision 2.1 specification.
  - 3 Audio jacks (Line out, Line in, Mic In).
  - 2 Audio headers (CD In, Aux In).
-

**On board EIDE:**

- 2 Bus Master IDE Ports (Up to 4 IDE devices). Support ATA 33/66/100.
- 

**On board I/O:**

- LPC revision 1.0 super I/O controller SMSC LPC47M192.
  - 1 Floppy connector.
  - Stacked PS/2 keyboard & mouse connector.
  - 4 USB ports, Dual stacked ports at back and 2 at front header (Front is Option).
  - 1 Parallel port (ECP/EPP).
  - 2 Serial ports.
  - Hardware monitor capability by SMSC LPC47M192.
  - 3 Fan headers.
  - Front Side Line Out header.
- 

**Integrated Graphics:**

- Integrated full 2D/3D/DirectX acceleration.
  - Integrated 230MHz RAMDAC and hardware motion compensation (30 frame/sec).
  - 1 Analog VGA output port.
  - External (2X/4X) AGP slot (AGP specification 2.0 compatible).
- 

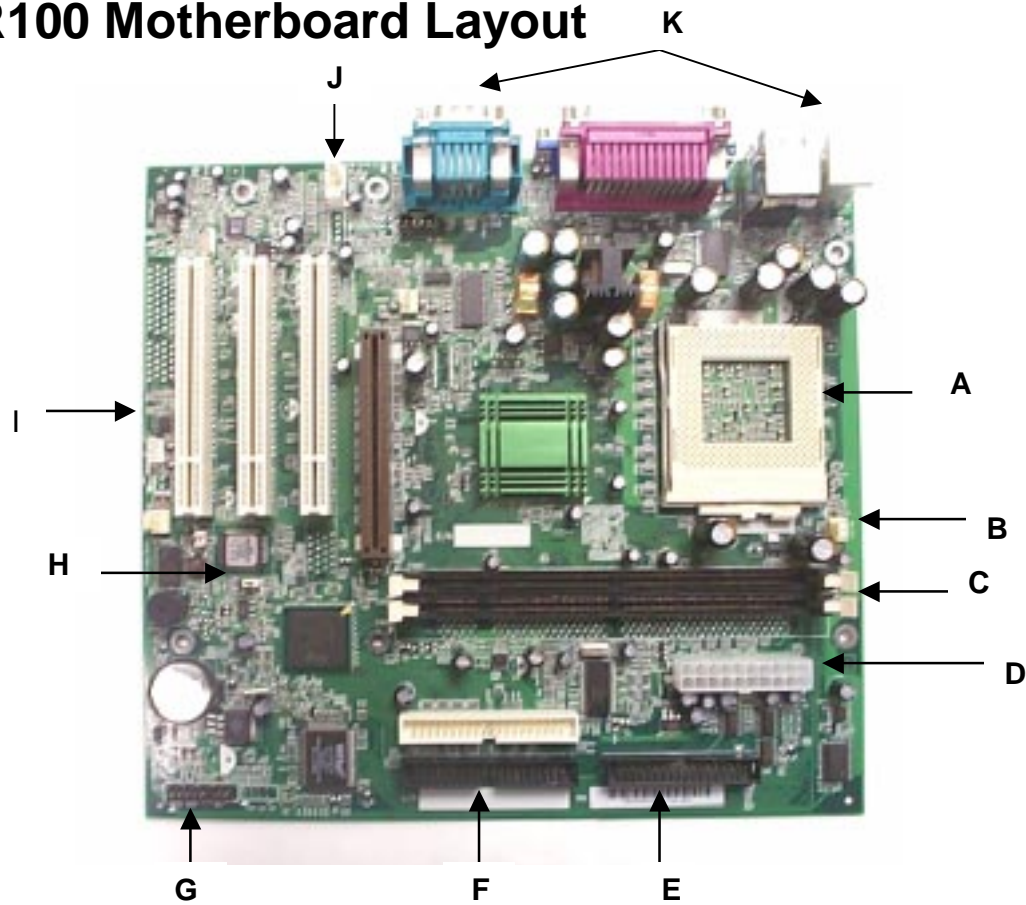
**Additional Features:**

- Wake-on-LAN function.
  - Wake-on-Ring function.
  - Keyboard/Mouse/USB wake up function.
  - Supports S1, S3, S4 and S5 ACPI states.
- 

**Expansion Slots:**

- 1 AGP 2X/4X slot. (shared with AIMM)
  - 3 PCI slots.
-

# TR100 Motherboard Layout



A	CPU Socket	G	Front Panel Connector
B	CPU Fan Socket	H	Jumper Connector
C	Memory Sockets	I	Expansion Slots
D	Power Supply Connector	J	Audio Connector
E	Floppy Connector	K	Back Panel Connectors
F	IDE Connectors		



Front Panel Connector Pin Definition

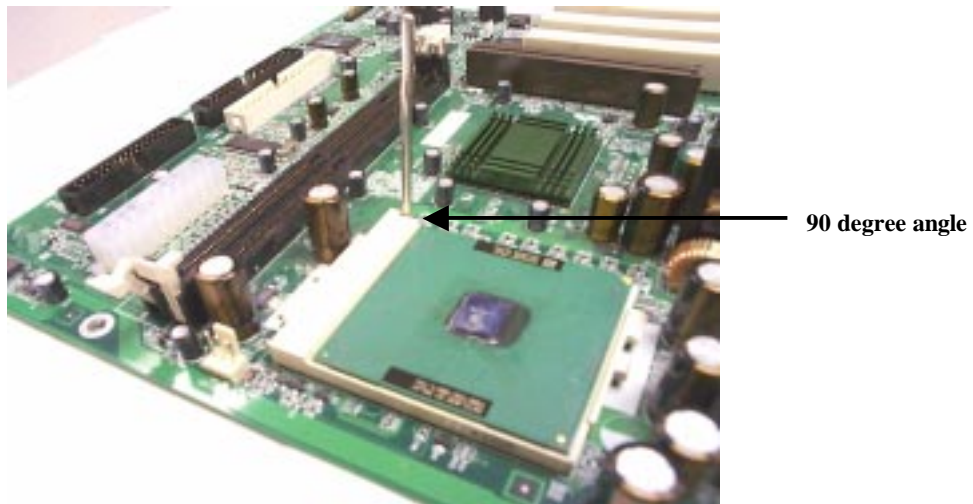
Pin	Signal Name	I/O	Description
1	HD_PWR	O	Hard Disk LED pull-up to VCC
2	HDR_BLNK_GRN	O	Front panel Green LED signal
3	HDA*	O	Hard Disk Active LED signal
4	HDR_BLNK_YEL	O	Front panel Yellow LED signal
5	GND	-	Ground
6	FPBUT_IN	I	Front panel On/Off button signal
7	FP_RESET*	I	Front panel Reset button signal
8	GND	-	Ground
9	VCC	O	
10	FPSLP*	I	Front panel sleep button signal
11	IRRX	I	IRDA serial input
12	GND	-	Ground
13	GND	-	Ground
14	KEY	-	KEY
15	IRTX	O	IRDA serial output
16	VCC	O	
17	NC	-	not connected
18	NC	-	not connected

## Chapter 2 Hardware Installation Process

### Installing the Central Process Unit (CPU)

#### CPU Installation

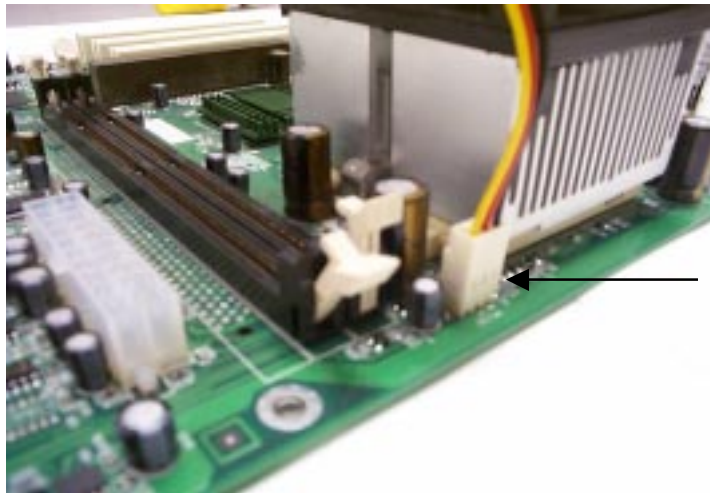
1. Unlock the CPU socket by pulling the lever up to a 90-degree angle.
2. Position the CPU above the socket such that the **marked** corner (pin1) matches the corner near the base of the lever.
3. Place the CPU into the socket. If the CPU is unable to insert properly, check its orientation and attempt to re-install.  
**Warning!** Do not force the CPU into the socket. Doing so will prompt bending of the pins and create damage to the CPU.
4. Close the socket by lowering the lever and locking the lever in place.



## Installing the Central Process Unit (CPU) *cont.*

### CPU Heat Sink Installation

1. Read the related CPU heat sink user's manual for more detailed installation procedures.
2. Connect CPU fan power cable into the CPU fan connector on the motherboard.



CPU Fan Connector

## Installing Memory Modules

1. Push the white retaining clips on each of the memory socket outwards.
2. Match the notches on the contact edge of the memory module to the ridges in the memory socket.
3. Insert the memory module vertically into place. When properly inserted, the white retaining clips will move inward to lock in the module.
4. Repeat installation process when adding additional modules.



### Total Memory Sizes With SDRAM DIMM

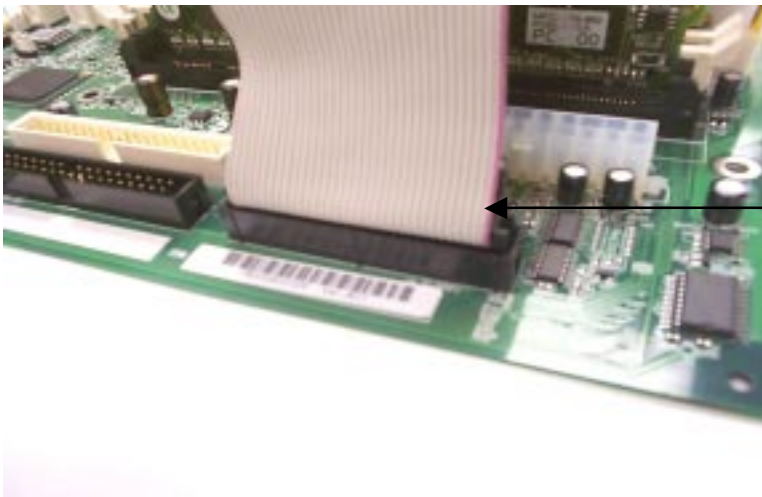
Devices used on DIMM	1 DIMMx64/x72	2 DIMMsx64/x72
64 Mbit (2Mx8x4 banks)	128 MBytes	256 MBytes
64 Mbit (1Mx16x4 banks)	64 MBytes	128 MBytes
128 Mbit (4Mx8x4 banks)	256 MBytes	512 MBytes
128 Mbit (2Mx16x4 banks)	128 MBytes	256 MBytes
256 Mbit (4Mx16x4 banks)	256 MBytes	512 MBytes



## Connecting IDE and Floppy Disk Cables

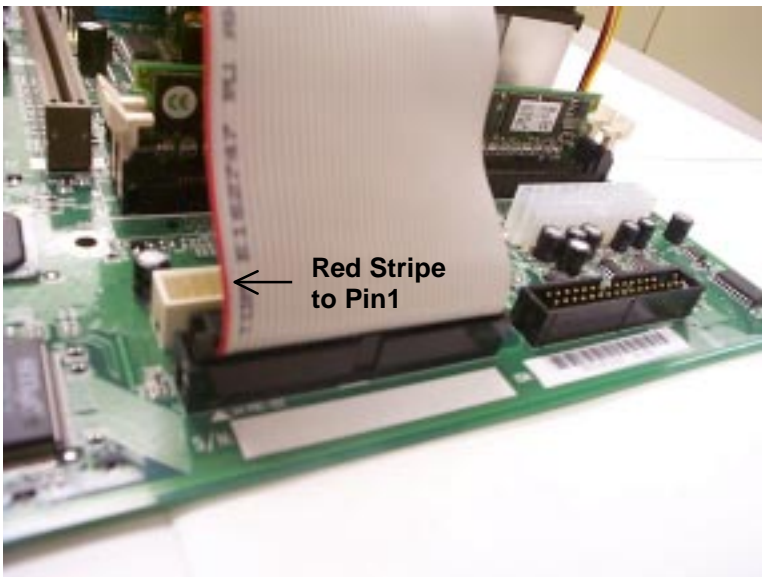
1. **Connecting the floppy disk ribbon cable into the motherboard.** The side of the cable with the red stripe needs to be inserted into the Pin1 side of the floppy disk connector.
2. **Connecting the IDE ribbon cable into the motherboard.** The side of the cable with the red stripe should be inserted into Pin1 side of the IDE connector.

### Floppy Connector



Red Stripe  
to Pin1

### IDE Connectors



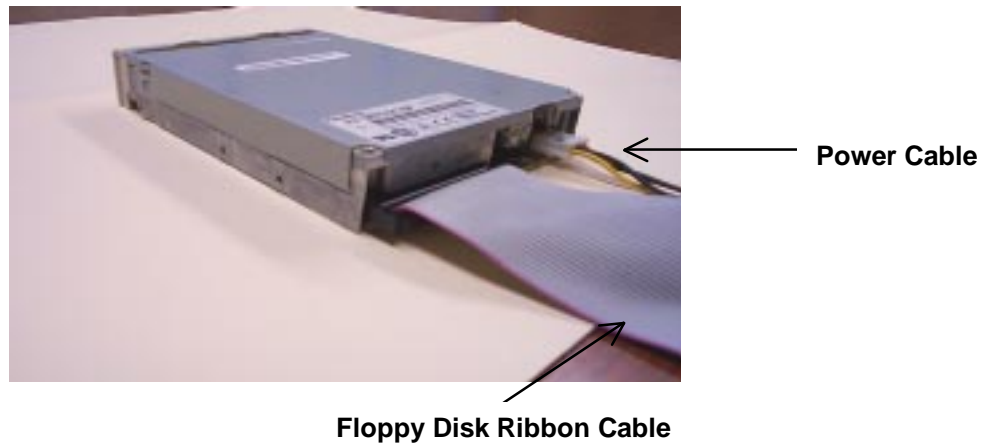
Red Stripe  
to Pin1

## Connect Floppy and IDE Drives

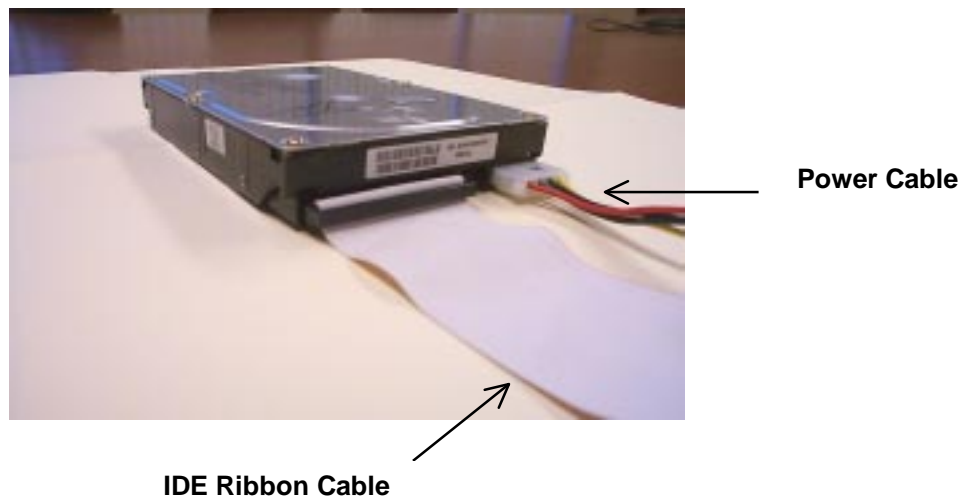
**NOTE:** If installing two IDE devices on the same ribbon cable, one device is to be set as “master” and the second as “slave”. Please refer to IDE device manuals for master and slave settings.

1. Mount the desired drives into the chassis case.
2. Connect the floppy disk ribbon cable and power cable into the device. The side of the cable with the red stripe must be inserted to Pin1 of the floppy disk drive.
3. Connect the IDE ribbon cable and power cable into the device. The side of the cable with the red stripe must be inserted to Pin1 of the hard drive.

### Floppy Disk Drive



### Hard Disk Drive



## Installing Expansion Cards

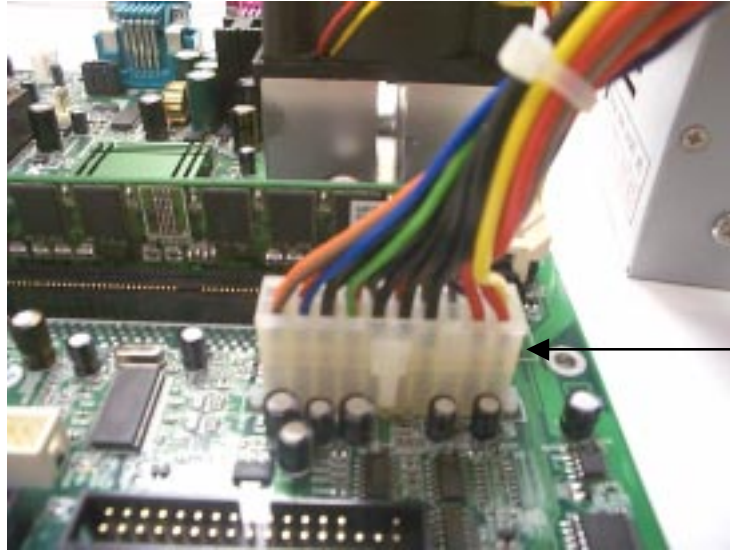
1. Read the related expansion card's installation instructions before inserting the expansion card into the motherboard.
2. Remove the slot covers from the chassis case where the expansion cards will be placed.
3. Press the expansion card firmly into the expansion slot of the motherboard.
4. Secure the card with the screw provided.
5. Repeat same procedure when adding additional expansion cards.



## Connect the Power Supply Cables

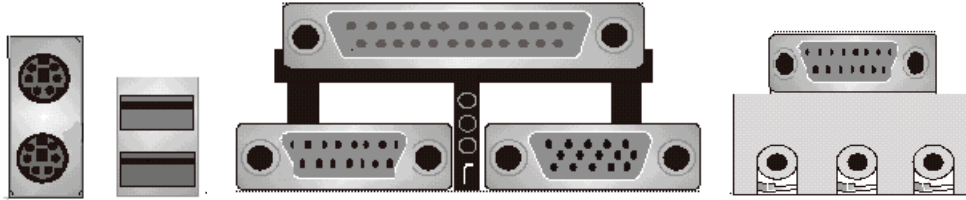
NOTE: The ATX power connector is keyed for proper insertion.

1. Place the plastic clip of the power connector over the plastic tab on the motherboard power connector. The plastic clip should lock into the plastic tab.

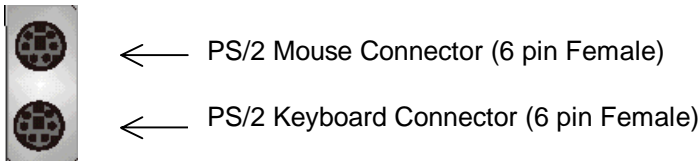


Power Supply Connector

## I/O Back Panel Introduction

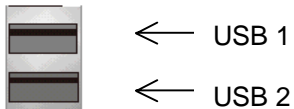


### (1) PS/2 Keyboard and PS/2 Mouse Connector



✚ This connector supports standard PS/2 keyboard and PS/2 mouse.

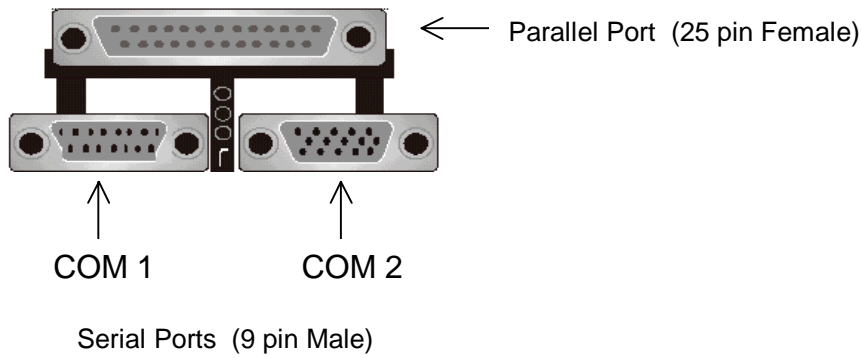
### (2) USB Connector



- ✚ Before connecting device(s) into the USB connections, determine if devices have a standard interface.
- ✚ Make sure your computer Operating System (OS) supports the USB controller. If not, contact your OS or device(s) vendors for more information.

## I/O Back Panel Introduction *cont....*

### (3) Parallel Port and Serial Ports (COM1/COM2)



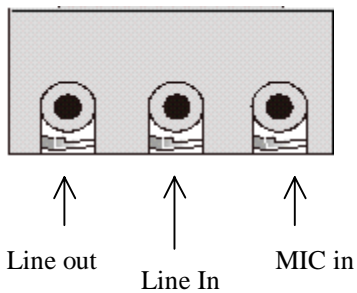
- + This connector supports 2 standard COM ports and 1 Parallel port.
- + Devices (i.e. printer) can be connected into the Parallel port.
- + Devices (i.e. mouse, modem, monitor etc. can be connected into the Serial ports.)

### (4) Game Port



- + This connector supports joystick, MIDI keyboard and other related audio devices.

### (5) Audio Connectors

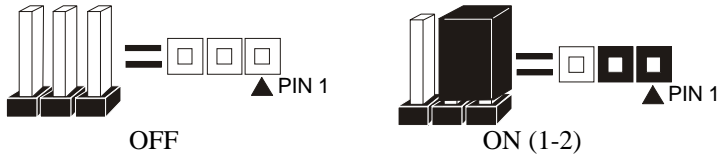


- + Once onboard audio driver has been installed, the speakers may be connected into the Line out jack, audio devices such as CD-ROM etc., and a microphone into the MIC in jack.

## Jumper Introduction

### Jumper Settings



The following graphic shows the meaning of the jumper with cover and without cover.



### FWH Lock

This jumper allows you to set FWH lock.



Reference: JP1  
 Connector Type: 1 x 3

JP1		Description	Jumper Placement
1-2		FWH Lock	Put the jumper cover on pin1 and pin2.
2-3		FWH Unlock (Default)	Put the jumper cover on pin2 and pin3.

### Safe Speed

This jumper allows you to set safe speed.

Reference: JP2  
 Connector Type: 1 x 3 male straight 0.100

JP2		Description	Jumper Placement
2-3		Safe Speed	Put the jumper cover on pin1 and pin2.
1-2		Normal Mode(Default)	Put the jumper cover on pin2 and pin3.

## AMI® BIOS Setup

### Entering Setup

To enter the setup menu, first power up the computer and press <Delete> key to enter the CMOS setup.

### The Main Menu

When you enter the AMI® HIFLEX Setup Utility, the below Main Menu will appear. The Main menu allows you to select and modify your computer system. To navigate through the menu, simply use the arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

```
          AMI HIFLEX SETUP UTILITY - VERSION 1.37
    ©2001 AMERICAN MEGATRENDS, INC.  ALL RIGHTS RESERVED

          TR100 BIOS Rev: 1.00

          Standard CMOS Features
          Advanced CMOS Features
    Advanced Chipset Features
          Power Management Setup
          PCI / Plug and Play Setup
          Peripheral Setup
          Hardware Monitor Setup
          Auto-Detect Hard Disks
          Change User Password
          Change Supervisor Password
          Auto Configuration with Optimal Setting
    Auto Configuration with Fail Safe Settings
          Save Settings and Exit
          Exit without Saving

    Standard CMOS setup for changing time, date, hard disk type, etc.
    ESC: Exit  ↑↓: Sel  F2/F3: Color  F10: Save & Exit
```



## Standard CMOS Setup

The items listed in the Standard CMOS Features Menu may include no or more than one setup items. Use the arrow keys to navigate through the menu and use the <PgUp> or <PgDn> keys to select the desired value for each item.

AMIBIOS SETUP - STANDARD CMOS SETUP											
©2001 AMERICAN MEGATRENDS, INC. ALL RIGHTS RESERVED											
Date (mm/dd/yyyy) : Wed Nov 28, 2001						Base Memory: 639KB					
Time (hh/mm/ss) :						Extd Memory: 126MB					
Floppy Drive A:											
Floppy Drive B:											
	Type	Size	Cyln	Head	Wpcom	LBA SecMode	BLK Mode	PIO Mode	32Bit Mode		
Pri Master:											
Pri Slave:											
Sec Master:											
Sec Slave:											
Boot Sector Virus Protection:						Disabled					
Month: Jan-Dec						ESC: Exit ↑↓: Sel					
Day: 01-31						PgUp/PgDn: Modify					
Year: 1980-2099						F1: Help F2/F3: Color					



## Advanced Chipset Setup

The items listed in the Advanced Chipset Setup Menu may include no or more than one setup items. Use the arrow keys to navigate through the menu and use the <PgUp> or <PgDn> keys to select the desired option for each item.

AMIBIOS SETUP - ADVANCED CHIPSET SETUP ©2001 AMERICAN MEGATRENDS, INC. ALL RIGHTS RESERVED		
CPU Ratio Selection	Locked	
System Memory Frequency	Auto	
DRAM Refresh	15.6uS	
DRAM Cycle time (SCLKs)	6/8	
CAS# Latency (SCLKs)	3	
RAS to CAS delay (SCLKs)	3	
SDRAM RAS# Precharge (SCLKs)	3	
AGP Aperture Size	64MB	
CPU Latency Timer	Enabled	
USB Controller	All USB Port	
USB Device Legacy Support	All Device	
Local Memory Frequency	133Mhz	
Initialize Display Cache Memory	Enabled	
Paging Mode Control	Open	
RAS-to-CAS	Default	
CAS Latency	Slow	
RAS Timing	Slow	ESC: Exit   ↑↓: Sel
RAS Precharge Timing	Slow	PgUp/PgDn: Modify
		F1: Help   F2/F3: Color







## Hardware Monitor Setup

The items listed in the Hardware Monitor Setup may include no or more than one setup items. Use the arrow keys to navigate through the menu and use the <PgUp> or <PgDn> keys to select the desired option for each item.

AMIBIOS SETUP - HARDWARE MONITOR SETUP		©2001 AMERICAN MEGATRENDS, INC. ALL RIGHTS RESERVED	
-- System Hardware Monitor --		Available Options:	
CPU Temperature	40°C/104°F		
System Temperature	30°C/86°F		
CPU Fan Speed	3613 RPM		
Chassis Fan Speed	0 RPM		
Vccp (Processor)	1.717V		
+12.0V	12.422V		
+1.85V	1.872V		
+5.0V	4.911V		
+3.3V	3.233V		
+2.5V	2.492V		
+1.5V	1.509V		
FAN Speed Control	Disabled		
Chassis Intrusion	Disabled		
		ESC: Exit    ↑↓: Sel	
		PgUp/PgDn: Modify	
		F1: Help    F2/F3: Color	

## Auto-Detect Hard Disk

The items listed in the Auto-Detect Hard Disk Menu may include no or more than one setup items. Use the arrow keys to navigate through the menu and use the <PgUp> or <PgDn> keys to select the desired option for each item.

AMIBIOS SETUP - STANDARD CMOS SETUP											
©2001 AMERICAN MEGATRENDS, INC. ALL RIGHTS RESERVED											
Date (mm/dd/yyyy) : Wed Nov 28,2001						Base Memory: 639KB					
Time (hh/mm/ss) :						Extd Memory: 126MB					
Floppy Drive A:											
Floppy Drive B:											
							LBA	BLK	PIO	32Bit	
	Type	Size	Cyln	Head	Wpcom	Sec	Mode	Mode	Mode	Mode	
Pri Master:											
Pri Slave:											
Sec Master:											
Sec Slave:											
Boot Sector Virus Protection: Disabled											
Month: Jan-Dec						ESC: Exit ↑↓: Sel					
Day: 01-31						PgUp/PgDn: Modify					
Year: 1980-2099						F1: Help F2/F3: Color					



## Change User Password

The items listed in the Auto-Detect Hard Disk Menu may include no or more than one setup items. Use the arrow keys to navigate through the menu and use the <PgUp> or <PgDn> keys to select the desired option for each item.

AMI HIFLEX SETUP UTILITY - VERSION 1.37 ©2001 AMERICAN MEGATRENDS, INC. ALL RIGHTS RESERVED
TR100 BIOS Rev: 1.00
Standard CMOS Features
Advanced CMOS Features
Advanced Chipset Features
Power Management Setup
PCI / Plug and Play Setup
Enter new user password: _
Change User Password
Change Supervisor Password
Auto Configuration with Optimal Setting
Auto Configuration with Fail Safe Settings
Save Settings and Exit
Exit without Saving
Change user password
ESC: Exit    ↑↓: Sel    F2/F3: Color    F10: Save and Exit

## Change Supervisor Password

The items listed in the Change Supervisor Password Menu may include no or more than one setup items. Use the arrow keys to navigate through the menu and use the <PgUp> or <PgDn> keys to select the desired option for each item.

AMI HIFLEX SETUP UTILITY - VERSION 1.37 ©2001 AMERICAN MEGATRENDS, INC. ALL RIGHTS RESERVED
TR100 BIOS Rev: 1.00
Standard CMOS Features
Advanced CMOS Features
Advanced Chipset Features
Power Management Setup
PCI / Plug and Play Setup
Enter new supervisor password: _
Change User Password
Change Supervisor Password
Auto Configuration with Optimal Setting
Auto Configuration with Fail Safe Settings
Save Settings and Exit
Exit without Saving
Change the supervisor password
ESC: Exit    ↑↓: Sel    F2/F3: Color    F10: Save and Exit

## Auto Configuration with Optimal Setting

The items listed in the Auto Configuration with Optimal Setting Menu may include no or more than one setup items. Use the arrow keys to navigate through the menu and use the <PgUp> or <PgDn> keys to select the desired option for each item.

AMI HIFLEX SETUP UTILITY - VERSION 1.37 ©2001 AMERICAN MEGATRENDS, INC. ALL RIGHTS RESERVED
TR100 BIOS Rev: 1.00  Standard CMOS Features Advanced CMOS Features Advanced Chipset Features Power Management Setup PCI / Plug and Play Setup
Load high performing setting (Y/N)? <u>N</u>
Change User Password Change Supervisor Password Auto Configuration with Optimal Setting Auto Configuration with Fail Safe Settings Save Settings and Exit Exit without Saving
Load configuration settings giving highest performance ESC: Exit    ↑↓: Sel    F2/F3: Color    F10: Save and Exit

## Auto Configuration with Fail Safe Settings

The items listed in the Auto Configuration with Fail Safe Settings Menu may include no or more than one setup items. Use the arrow keys to navigate through the menu and use the <PgUp> or <PgDn> keys to select the desired option for each item.

```
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TR100 BIOS Rev: 1.00

Standard CMOS Features
Advanced CMOS Features
Advanced Chipset Features
Power Management Setup
PCI / Plug and Play Setup

Load failsafe settings (Y/N)? N

Change Supervisor Password
Change Supervisor Password
Auto Configuration with Optimal Setting
Auto Configuration with Fail Safe Settings
Save Settings and Exit
Exit without Saving

Load failsafe configuration settings
ESC: Exit  ↑↓: Sel  F2/F3: Color  F10: Save and Exit
```

## Save Settings and Exit

The items listed in the Save Settings and Exit Menu may include no or more than one setup items. Use the arrow keys to navigate through the menu and use the <PgUp> or <PgDn> keys to select the desired option for each item.

AMI HIFLEX SETUP UTILITY - VERSION 1.37 ©2001 AMERICAN MEGATRENDS, INC. ALL RIGHTS RESERVED
TR100 BIOS Rev: 1.00  Standard CMOS Features Advanced CMOS Features Advanced Chipset Features Power Management Setup
Save current settings and exit (Y/N)? <u>Y</u>
Change User Password Change Supervisor Password Auto Configuration with Optimal Setting Auto Configuration with Fail Safe Settings Save Settings and Exit Exit without Saving
Write the current settings to CMOS and exit ESC: Exit    ↑↓: Sel    F2/F3: Color    F10: Save and Exit

## Exit without Saving

The items listed in the Exit without Saving Features Menu may include no or more than one setup items. Use the arrow keys to navigate through the menu and use the <PgUp> or <PgDn> keys to select the desired option for each item.

```
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TR100 BIOS Rev: 1.00

Standard CMOS Features
Advanced CMOS Features
Advanced Chipset Features
Power Management Setup
PCI / Plug and Play Setup

Quit without saving (Y/N)? N

Change User Password
Change Supervisor Password
Auto Configuration with Optimal Setting
Auto Configuration with Fail Safe Settings
Save Settings and Exit
Exit without Saving

Exit without saving the current settings
ESC: Exit  ↑↓: Sel  F2/F3: Color  F10: Save and Exit
```