Mungo545

TM 3120/5400/5600 Transmeta
All-In-One Little Board

Version 1.0

User's Manual



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This section provides the FCC compliance statement for Class A devices and describes how to keep the system CE compliant.

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The product(s) described in this user's guide has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the user's guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

Changes or modifications not expressly approved by Kontron could void the user's authority to operate the equipment.

Note: The assembler of a personal computer system may be required to test the system and/or make necessary modifications if a system is found to cause harmful interference or to be noncompliant with the appropriate standards for its intended use.

CE Certification

The product(s) described in this user's guide complies with all applicable European Union (CE) directives if it has a CE marking. The CE declaration of conformity is provided on the last page of this user's guide. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques. Although Kontron offers accessories, the customer must ensure that these products are installed with proper shielding to maintain CE compliance. Kontron does not offer engineering services for designing cabling systems. In addition, Kontron will not retest or recertify systems or components that have been reconfigured by customers.

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Guarantee

A thirty day money-back guarantee is provided on all standard products sold. Special order products are covered by our Limited Warranty, *however they may not be returned for refund or credit. EPROMs, RAM, Flash EPROMs or other forms of solid electronic media are not returnable for credit - but for replacement* only. An extended warranty is available. Consult the factory.

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In order to receive a refund on a product for the purchase price, the product must not have been damaged by the customer or by the common carrier chosen by the customer to return the goods and the product must be returned complete (meaning all user's guides, software, cables, etc.) within 30 days of receipt and in an as-new and resalable condition. The " **Error! Reference source not found.**" must be followed to assure a prompt refund.

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Effective April 1, 1998, all products carry a 2-year limited warranty. Within 2 years of purchase, Kontron will repair or replace, at our option, any defective product. Kontron will service the warranty for all standard catalog products for the first two years from the date of shipment. Please note: The 2-year warranty may not apply to special promotion items. Please consult the factory for warranty verification.

The limited warranty is void if the product has been subjected to alteration, neglect, misuse, or abuse; if any repairs have been attempted by anyone other than Kontron or its authorized agent; or if the failure is caused by accident, acts of God, or other causes beyond the control of Kontron or the manufacturer. Neglect, misuse, and abuse shall include any installation, operation, or maintenance of the product other than in accordance with the user's guide.

No agent, dealer, distributor, service company, or other party is authorized to change, modify, or extend the terms of this Limited Warranty in any manner whatsoever. Kontron reserves the right to make changes or improvements in any product without incurring any obligation to similarly alter products previously purchased.

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To reduce risk of damage, returns of product must be in an Kontron shipping container. If the original container has been lost or damaged, new shipping containers may be obtained from Kontron Customer Service at a nominal cost.

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1

Introduction

This manual is designed to give you information on the Mungo545 single board computer. It is divided into the following sections:

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Description.....6
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The topics covered in this chapter are as follows:

- Checklist
- Description
- Features
- Specifications

Checklist

Please check that your package is complete and contains the items below. If you discover damaged or missing items, please contact your dealer.

- Mungo545 single board computer and this user' s manual
- 1 Disc containing IPC serial driver
- Ribbon cables for Mungo545 only

Noted: You can easily find PC-104 connector out on your motherboard if yours has a **T64** mark.

Description

The Transmeta Crusoe Processor Model TM 3120/5400/5600 is a high performance, low power microprocessor based on a VLIW (Very Large Instruction Words) core architecture, targeted at a wide range of Internet appliances. This motherboard, Mungo545, is a TM 3120/5400/5600 Transmeta Crusoe processor embedded little board and fully designed for harsh industrial environment as well. The model name of TM 3120 supports processor with frequencies from 366MHz to 400MHz at 1.5V using 66MHz bus speeds with PC 66/ 100 /133 modules and features one 168-pin DIMM socket supporting a maximum memory capacity 512MB SDRAM. Meanwhile, the model name of TM5400 Transmeta supports processor with frequencies from 500MHz to 667MHz at 1.2~1.6V using LongRun function. LongRun advanced power management with ultra-low operation extends battery life. This Transmeta Crusoe Processor typically operates power consumption drops to a very low 5W. Besides, the serial of TM 3120 Transmeta' s voltage will not be changed after the system is running.
As a multimedia embedded board, the Mungo545 incorporates the Lynx3DM VGA controller that supports CRT, flat panel displays, TV-Out and 4~16MB SDRAM VGA memory. VT82686A/B audio chip supports high sound quality.

The Mungo545 comes with an Intel 82559B chipset that is compatible with both traditional 10Mbps and advanced 100Mbps LAN facilities. With hardware monitoring andone PCI slot on board, it packs all the functions of a versatile system into a form factor that of a 5.25 floppy disk drive.

Features

- TM 3120/5400/5600 VLIW Transmeta Crusoe processor
- Up to 512MB system memory
- Lynx3DM CRT/LCD/ TV-Out controller
- Onboard 82686A/B audio chip
- Onboard Intel 82559B 10/100Mbps Ethernet controller
- Four serial ports (three RS-232, one RS-232/422/485)
- Hardware Monitoring
- 2MB~288MB DiskOnChip support
- PCMCIA 02Micro 0Z6912T Controller
- Compact flash disk (IDE2 interface)

Specifications

- **Processor**: TM 3120/TM5400/5600 VLIW Transmeta Crusoe
- **Chipset**: VT82686A/B
- **Secondary Cache**: Integrated in the CPU
- **Memory**: Up to 567MB SDRAM
- **Caches Memory**:
  - TM3120: Intergrated 64 kByte L1 instruction cache.
  - TM 5400/5600: Intergrated 64 kByte L1 instruction and data cache, and 256 Kbyte (TM 5400) or 512 kByte (TM 5600) L2 write-back cache.
- **Memory Sockets**: One 168-pin DIMM socket
- **BIOS**: Award BIOS, PnP support
  - FLASH EEPROM (256KB) for BIOS update
  - Power management
- **Multi I/O**: VT82686A/B chipsets
- **Parallel Port**: One high-speed parallel port, SPP/EPP/ECP mode
- **Serial Port**: Four 16550 UART compatible RS232/422/485 ports

- **Enhanced IDE**: Two Bus Mastering EIDE mode, up to 4 devices; two EIDE interfaces for up to 4 devices; supports PIO Mode 3/4 or Ultra DMA/33/66/100 IDE Hard Disk, ATAPI CD-ROM and supports LS-120.
- **FDD Interface**: Two floppy drives in 360KB, 720KB, 1.2MB, 1.44MB and 2.88MB formats.
- **USB Interface**: Two USB pin-header connectors, compliant with USB Specification Rev. 1.0
- **Watchdog Timer**: 16-level, programmable
  - I/O port 0443H to enable watchdog
  - I/O port 0441H to disable watchdog
  - Time-out timing select 0/2/4/6/8/10/12/14/16/18/20/22/ 24/26/28/30 seconds (+/-20%)
- **Green Function**: Power management via BIOS, activated through mouse/keyboard movement
- **Keyboard/Mouse Connector**: 9-pin keyboard/mouse pin-header connector
- **IrDA Interface**: Pin-header connector for the optional IrDA external connector
- **VGA Display**:
  - Lynx3DM VGA chip on board
  - SVGA for CRT & Dual Panel and Dual View
  - VGA BIOS with system BIOS
  - 15-pin connector
  - 1280x1024(True Color) resolution on SVGA
  - 44-pin connector for LCD panel, 1,280 x1024 resolution
  - LCD panel supports monochrome, color DSN, TFT
  - Simultaneous VGA and panel display
  - Support Dual Panel and Dual View
  - Provides universal digital input port to accept a pixel data stream from a compatible VGA controller (or equivalent) and converts this directly into NTSC or PAL TV format.
- **Audio Support**
  - VT82686A/B audio chipset

- **SDR SDRAM Interface**

The SDR SDRAM controller supports up to DIMMS (up to four rows) of signals data rate (SDR) SDRAM that can be configured as 64-bit or 72-bit DIMMs. These DIMMs can be populated with 64-Mbit, 128-Mbit or 256-Mbit devices. All DIMMs must use the same frequency SDRAMs but there no restrictions on mixing different DIMM configurations into each DIMMs slot. The maximum memory size in this table assumes two doubled-sided DIMMs of identical configuration and maximum of 16 total devices per DIMM.

SDR Device Size (Mbits)	SDR Devices Configuration	Memory Size per Row (Mbytes)
64	4Mx16	32
	8Mx8	64
	16Mx4	128
128	4Mx32	32
	8Mx16	64
	16Mx8	128
	32Mx4	256
256	8Mx32	64
	16Mx16	128
	32Mx8	256
	64Mx4	512

- **Environmental and Mechanical**:
  - **Power Supply**: Max. 10A @+5V
  - **Temperature**: 0°C to 60°C
  - **Humidity**: 5% to 95%
  - **Dimensions**: 203mm x 146mm (7.99" x 5.75")

Intelligence

- **CPU Slow Down**: When the system overheats is detected, CPU slows down to prevent CPU damage. The CPU speed is restored when temperature falls to a safe level. System overheat is usually caused by malfunctioning of the CPU or system fan.
- **Temperature Monitoring and Alert**: A sensor for the CPU temperature on the Mungo545 monitors the CPU temperature and alerts the user through the speaker when temperature exceeds the safe heat level.
- **Voltage Monitoring and Alert**: Stable current is critical to system components. The Mungo545 monitors system voltage levels to ensure stable system performance.
- **Fan Status Monitoring**: The CPU fan speeds are monitored to prevent system overheat.
- **Year 2000 Compliant BIOS**: The onboard Award BIOS is Y2K compliant and will pass software applications that have the tendency to invoke INT1AH function 04H such as year2000.exe utility released by NSTL.

2

Installations

This chapter provides information on how to use the jumpers and connectors on the Mungo545 in order to set up a workable system. The topics covered are:

CPU Installation.....12
Memory Installation.....13
Jumpers on the Mungo545.....14
Connectors on the Mungo545.....20
Watchdog Timer Configuration.....42

CPU Installation

The Mungo545 single board computer supports TM 3120/ 5400/ 5600 Transmeta processor.

***NOTE**: Ensure that the CPU heat sink and the CPU top surface are in total contact to avoid CPU overheating problem that would cause your system to hang or be unstable.*

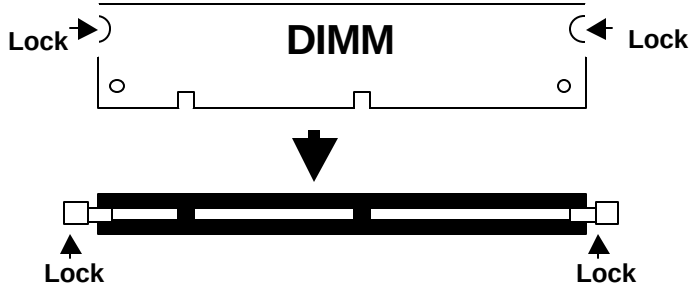
Memory Installation

The Mungo545 single board computer supports one 168-pin DIMM socket for a maximum total memory of 512MB in SDRAM type. The memory capacities supported are 64MB, 128MB and 256MB and 512 MB. All DIMMs must use the same frequency SDRAMs but there are no restrictions on mixing different DIMM configurations into each DIMM slot. The system of TM3120-based table shows the possible SDR SDRAM configuration below.

Installing and Removing DIMMs

To install the DIMM, locate the memory slot on the little board and perform the following steps:

1. Hold the DIMM so that the two keys of the DIMM align with those on the memory slot.
2. Gently push the DIMM in an upright position until the clips of the slot close to hold the DIMM in place when the DIMM touches the bottom of the slot.
3. To remove the DIMM, press the clips with both hands.



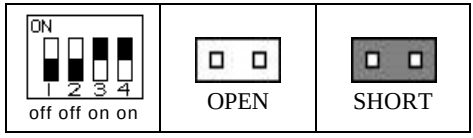
Top View of DIMM Socket

Jumpers on the Mungo545

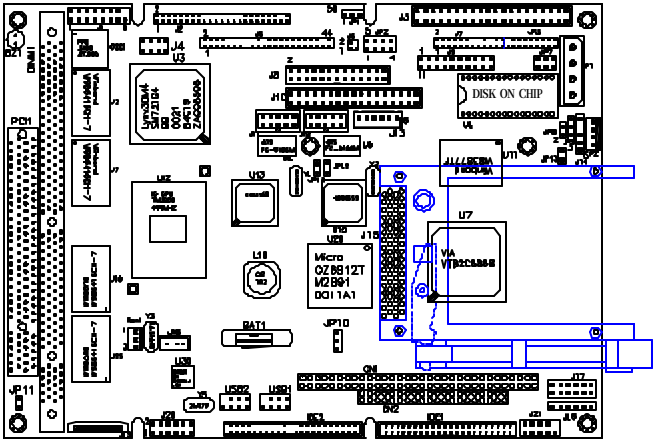
The jumpers on the Mungo545 allow you to configure your board according to the needs of your applications. If you have doubts about the best jumper configuration for your needs, contact your dealer or sales representative. The following table lists the connectors on SI7BM and their respective functions.

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JP8: Select Comp act Flash Disc.....17
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J7: RS-232/422/485 (COM2) Select 18

***Remarks**: The following conventions are used in this section:*



Jumper Locations on the Mungo545

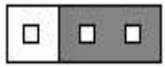


Note: The JP11 2-pin jumper is for testing use only.

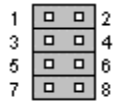
Jumpers:

JP1: Select Panel VDD
JP2: Select Panel Type Setting
JP8: Select Compact Flash Disc
JP9: DiscOnChip BIOS Expansion Address Select
JP10: Clear CMOS Content
JP11: Closed J11 LAN Function
JP12: Closed J12 LAN Function
JP13: ATX/AT Power Select Connector
J7: RS-232/422/485 (COM2) Select

JP1: Select Panel VDD

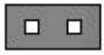
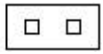
JP1	Setting	Function
	Pin 1-2 Short/Closed	3.3V
	Pin 2-3 Short/Closed	5V

JP2: Select Panel Type Setting

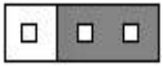


Jumper 1-5 Setting	Jumper 2-6 Setting	Jumper 3-7 Setting	Jumper 4-8 Setting	Resolution
Short	Short	Short	Short	640x480 TFT
Open	Short	Short	Short	640X480,16bit DSTN
Short	Open	Short	Short	800X600 TFT
Open	Open	Short	Short	800X600,16bit DSTN
Short	Short	Open	Short	1024X768 TFT
Open	Short	Open	Short	1024X768,24bit DSTN
Open	Open	Short	Short	1280X1024,TFT 18bit/ 24bit X2

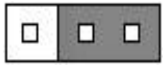
JP8 (IDE2): Select Compact flash Disc

JP8	Setting	Function
	Short/Closed	Master
	Open	Slave

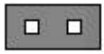
JP9: DiskOnChip BIOS Expansion Address Select

JP9	Setting	Address
 1 2 3	Pin 1-2 Short/Closed	D0000-D7FFF
 1 2 3	Pin 2-3 Short/Closed	D8000-DFFF

JP10: Clear CMOS Content

JP10	Setting	Function
 1 2 3	Pin 1-2 Short/Closed	Normal Operation
 1 2 3	Pin 2-3 Short/Closed	Clear CMOS Content

JP11: Closed J11 LAN function

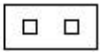
JP11	Setting	Function
 1 2	Pin 1-2 Short/Closed	Disable

JP12: Closed J12 LAN function

JP12	Setting	Function
 1 2	Pin 1-2 Short/Closed	Disable

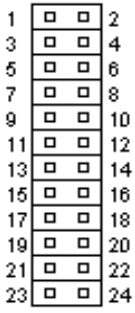
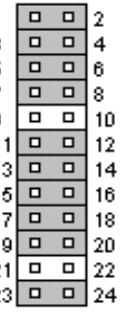
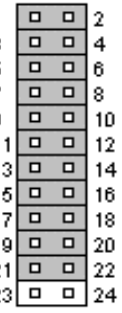
JP13: ATX/AT Power Select Connector

This ATX/AT Power Select Connector has two choices. You can choose one of them either.

JP13	Setting	Function Selected
	Short/Closed	AT Power Connector
	Open	ATX Power Connector

J7: RS-232/422/485 (COM2) Select

COM1 is fixed for RS-232 use only.
COM2 is selectable for RS-232, RS-422 and RS-485.
The following table describes the jumper settings of this connector.

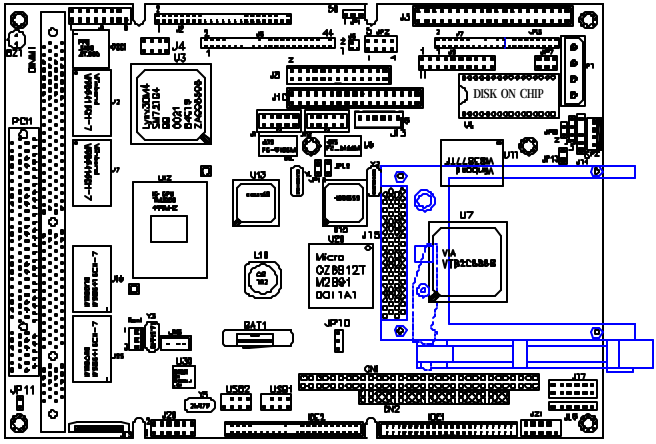
COM2 Function	RS-232	RS-422	RS-485
Jumper Setting (pin closed)	all jumpers open	1-2 3-4 5-6 7-8 11-12 15-16 17-18 19-20 23-24	1-2 3-4 5-6 7-8 9-10 11-12 13-14 15-16 17-18 19-20 21-22
Jumper Illustration			

Connectors on the Mungo545

The connectors on the Mungo545 allows you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors on Mungo545 and their respective functions.

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P2: Peripheral Power Connector 22
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Connector Locations on the Mungo545



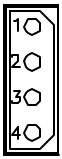
Note: The JP11 2-pin jumper is for testing use only.

Connectors:

P1: Main Power Connector
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J2,5,6: LCD Panel Connector
J3: Serial Ports
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J9: Front Bezel Connector
J10: Floppy Drive Connector
J11,J12: RJ45 Connector
J13: ATX Power Connector
J14: IrDA Connector
J15: PCMCIA Slot
J16: CD-ROM Audio In Connector
J17: Digital I/O Connector
J18: External Keyboard Connector
J20: Audio Connectors
J21: PS/2 Keyboard/Mouse Connector
USB1, USB2 Connectors
CN1,CN2: PC104 Connectors
JB1: Compact Flash Disk Connector
IDE1, IDE2 Connectors
Fan1: CPU fan Power Connector

P1: Main Power Connector

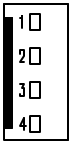
The P1 main power connector has the following pin assignments.



Pin #	Signal Name
1	+12V
2	Ground
3	Ground
4	+5V

P2: Peripheral Power Connector

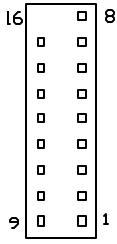
The P2 peripheral power connector has the following pin assignments.



Pin #	Signal Name
1	Ground
2	-5V
3	Ground
4	-12V

J1: VGA CRT Connector

J1 is a 15-pin header for an external VGA CRT female connector.

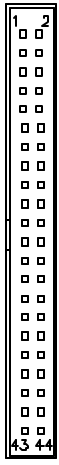


Signal Name	Pin	Pin	Signal Name
Red	1	9	Vcc
Green	2	10	GND
Blue	3	11	N.C.
N.C.	4	12	SDA.
GND	5	13	H-Sync
GND	6	14	V-Sync
GND	7	15	SCL.
GND	8	16	N.C.

J2: LCD Panel Connector
J5: support Dual panel
J6 Panel Link Control Connector

J2, J5 and J6 are the pin headers for flat panel LCD displays. These three following tables below show the pin assignments of these connectors.

J2

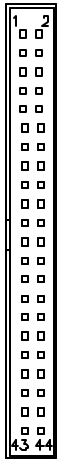


First LCD Panel

Signal Name	Pin #	Pin #	Signal Name
+12V	1	2	+12V
GND	3	4	GND
VDD	5	6	VDD
VEEP	7	8	GND
PD6	9	10	PD7
PD0	11	12	PD1
PD2	13	14	PD3
PD4	15	16	PD5
PD14	17	18	PD15
PD8	19	20	PD9
PD10	21	22	PD11
PD12	23	24	PD13
PD22	25	26	PD23
PD16	27	28	PD17
PD18	29	30	PD19
PD20	31	32	PD21
GND	33	34	GND
SHFCLK	35	36	FLM
MDE	37	38	LP
GND	39	40	ENABKL
GND	41	42	
VDDP	43	44	VDD

Noted: The function of this connector is supporting Dual Panel.

J5



Second LCD Panel

Signal Name	Pin #	Pin #	Signal Name
+12V	1	2	+12V
GND	3	4	GND
VDD	5	6	VDD
VEEP	7	8	GND
PD24	9	10	PD25
PD26	11	12	PD27
PD28	13	14	PD29
PD30	15	16	PD31
PD32	17	18	PD33
PD34	19	20	PD35
PD36	21	22	PD37
PD38	23	24	PD39
PD40	25	26	PD41
PD42	27	28	PD43
PD44	29	30	PD45
PD46	31	32	PD47
GND	33	34	GND
SHFCLK	35	36	FLM
MDE	37	38	LP
GND	39	40	ENABKL
GND	41	42	
VDDP	43	44	VDD

J6: Panel Link control Connector



J6

Signal Name	Pin #	Pin #	Signal Name
SCLK	1	2	SDATA
VCC	3	4	NC

Flat Panel Display Interface Pin Descriptions

@ Figure 1

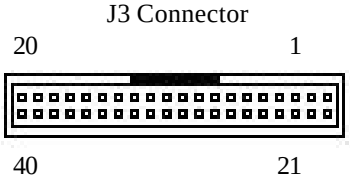
	DSTN		TFT				
Pin Name	**16-bit**	**24-bit**	**9-bit**	**12- bit**	**18-bit**	**24-bit**	**12- bitx2**
LP/FHSYNC	LP	LP	HSYNC	HSYNC	HSYNC	HSYNC	HSYNC
FP/FVSYNC	FP	FP	VSYNC	VSYNC	VSYNC	VSYNC	VSYNC
FPSCLK	XCK	XCK	CK	CK	CK	CK	CK
DE			ENAB	ENAB	ENAB	ENAB	ENAB
FPEN	FPEN	FPEN	FPEN	FPEN	FPEN	FPEN	FPEN
FPVDDEN	VDD	VDD	VDD	VDD	VDD	VDD	VDD
VBIASEN	VEE	VEE	VEE	VEE	VEE	VEE	VEE
FPDATA35							
FPDATA34							
FPDATA33							
FPDATA32							
.							
FPDATA31							
FPDATA30							
FPDATA29							
FPDATA28							
FPDATA27							
FPDATA26							
FPDATA25							
FPDATA24							
.							
FPDATA23		UD11				R7	RB3
FPDATA22		UD10				R6	RB2
FPDATA21		UD9			R5	R5	RB1
FPDATA20		UD8			R4	R4	RB0
FPDATA19	UD7	UD7		R3	R3	R3	RA3
FPDATA18	UD6	UD6	R2	R2	R2	R2	RA2
FPDATA17	UD5	UD5	R1	R1	R1	R1	RA1
FPDATA16	UD4	UD4	R0	R0	R0	R0	RA0
.							
FPDATA15	UD3	UD3				G7	GB3
FPDATA14	UD2	UD2				G6	GB2
FPDATA13	UD1	UD1			G5	G5	GB1
FPDATA12	UD0	UD0			G4	G4	GB0
FPDATA11		UD11		G3	G3	G3	GA3
FPDATA10		UD10	G2	G2	G2	G2	GA2
FPDATA9		LD9	G1	G1	G1	G1	GA1
FPDATA8		LD8	G0	G0	G0	G0	GA0
FPDATA7	LD7	LD7				B7	BB3
FPDATA6	LD6	LD6				B6	BB2
FPDATA5	LD5	LD5			B5	B5	BB1
FPDATA4	LD4	LD4			B4	B4	BB0
FPDATA3	LD3	LD3		B3	B3	B3	BA3
FPDATA2	LD2	LD2	B2	B2	B2	B2	BA2
FPDATA1	LD1	LD1	B1	B1	B1	B1	BA1
FPDATA0	LD0	LD0	B0	B0	B0	B0	BA0

@ Figure 2

Pin Name	18-bitx2	24-bitx2 ; TFT/18bitx2	TFTs: FP1+FP2
DE	DE	DE	FP1 DISP
FP FVSYNC	FP FVSYNC	FP FVSYNC	FP1 FVSYNC
LP FHSYNC	LP FHSYNC	LP FHSYNC	LP1 FHSYNC
FPSCLK	FPSCLK	FPSCLK	FP1 SCLK
FPEN	FPEN	FPEN	FPEN
FPVDDEN	FPVDDEN	FPVDDEN	FPVDDEN
VBIASEN	VBIASEN	VBIASEN	VBIASEN
FPDATA47	RB5	RB7	FB2 R7
FPDATA46	RB4	RB6	FB2 R6
FPDATA45	RA5	RA7	FB2 R5
FPDATA44	RA4	RA6	FB2 R4
FPDATA43	GB5	GB7	FB2 R3
FPDATA42	GB4	GB6	FB2 R2
FPDATA41	GA5	GA7	FB2 R1
FPDATA40	GA4	GA6	FB2 R0
.			
FPDATA39	BB5	BB7	FB2 G7
FPDATA38	BB4	BB6	FB2 G6
FPDATA37	BA5	BA7	FB2 G5
FPDATA36	BA4	BA6	FB2 G4
FPDATA35	RB3	RB5	FB2 G3
FPDATA34	RB2	RB4	FB2 G2
FPDATA33	RA3	RA5	FB2 G1
FPDATA32	RA2	RA4	FB2 G0
FPDATA31	GB3	GB5	FB2 B7
FPDATA30	GB2	GB4	FB2 B6
FPDATA29	GA3	GA5	FB2 B5
FPDATA28	GA2	GA4	FB2 B4
FPDATA27	BB3	BB5	FB2 B3
FPDATA26	BB2	BB4	FB2 B2
FPDATA25	BA3	BA5	FB2 B1
FPDATA24	BA2	BA4	FB2 B0
FPDATA23	RB1	RB3	FB2 VSYNC
FPDATA22	RB0	RB2	FB2 HSYNC
FPDATA21		RB1	FB1 R5
FPDATA20		RB0	FB1 R4
FPDATA19	RA1	RA3	FB1 R3
FPDATA18	RA0	RA2	FB1 R2
FPDATA17		RA1	FB1 R1
FPDATA16		RA0	FB1 R0
FPDATA15	GB1	GB3	FP2 DE
FPDATA14	GB0	GB2	
FPDATA13		GB1	FP1 G5
FPDATA12		GB0	FP1 G4
FPDATA11	GA1	GA3	FP1 G3
FPDATA10	GA0	GA2	FP1 G2
FPDATA9		GA1	
FPDATA8		GA0	
FPDATA7	BB1	BB3	
FPDATA6	BB0	BB2	
FPDATA5		BB1	FP1 B5
FPDATA4		BB0	FP1 B4
FPDATA3	BA1	BA3	FP1 B3
FPDATA2	BA0	BA2	FP1 B2
FPDATA1		BA1	FP1 B1
FPDATA0		BA0	FP1 B0
LVDSCLK			FP2 SCLK

J3: Serial Ports

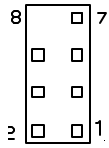
J3A (COM1), J3B (COM2), J3C (COM3) and J3D (COM4 level) are the onboard serial ports on the Mungo545.



Pin #	Signal Name (RS-232)	Pin #	Signal Name (RS-232)
1	DCD, Data carrier detect	21	DCD, Data carrier detect
2	RXD, Receive data	22	RXD, Receive data
3	TXD, Transmit data	23	TXD, Transmit data
4	DTR, Data terminal ready	24	DTR, Data terminal ready
5	GND/ground	25	GND/ground
6	DSR, Data set ready	26	DSR, Data set ready
7	RTS, Request to send	27	RTS, Request to send
8	CTS, Clear to send	28	CTS, Clear to send
9	RI, Ring indicator	29	RI, Ring indicator
10	No Connect.	30	No Connect.
11	DCD, Data carrier detect	31	DCD, Data carrier detect
12	RXD, Receive data	32	RXD, Receive data
13	TXD, Transmit data	33	TXD, Transmit data
14	DTR, Data terminal ready	34	DTR, Data terminal ready
15	GND/ground	35	GND/ground
16	DSR, Data set ready	36	DSR, Data set ready
17	RTS, Request to send	37	RTS, Request to send
18	CTS, Clear to send	38	CTS, Clear to send
19	RI, Ring indicator	39	RI, Ring indicator
20	No Connect.	40	No Connect.

J4: TV-Out: PAL/ NTSC

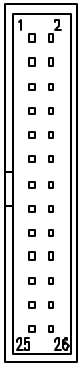
Sim721's digital PC to TV encoder is a stand-alone integrated circuit which provides a PC 99 compliant solution for TV output. It provides a universal digital input port to accept a pixel data stream from a compatible VGA controller (or equivalent) and converts this directly into NTSC or PAL TV format. Below are their pin assignments.



Signal Name	Pin #	Pin #	Signal Name
Y	1	2	COMP
C	3	4	GND
GND	5	6	GND
GND	7	8	NC

J8: Parallel Port Connector

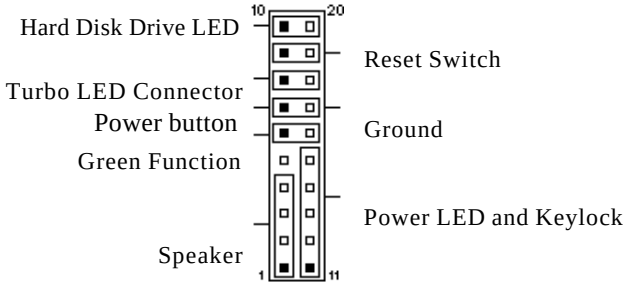
The following table describes the pin out assignments of this connector.



Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13	N/A	N/A

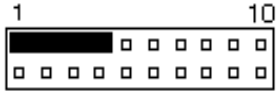
J9: Front Bezel Connector

The front bezel of the case has a control panel that provides light indication of the computer activities and switches to change the computer status. J9 is a 20-pin header that provides interfaces for the following functions.



Speaker: Pins 1 - 4

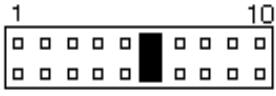
This connector provides an interface to a speaker for audio tone generation. An 8-ohm speaker is recommended.



Pin #	Signal Name
1	Speaker out
2	No connect
3	Ground
4	+5V

Green Function: Pins 6 and 16

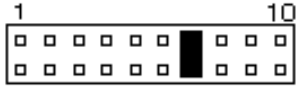
This connector is for the "Green Switch" on the control panel, which, when pressed, will force the motherboard immediately into the power saving (sleep) mode.



Pin #	Signal Name
6	Sleep
16	Ground

ATX Power ON Switch: Pins 7 and 17

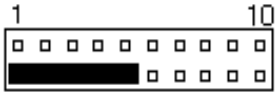
This 2-pin connector is an "ATX Power Supply On/Off Switch" on the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed again, it will force the system to power off.



Pin #	Signal Name
7	Power button
17	Ground

Power LED and Keylock: Pins 11 - 15

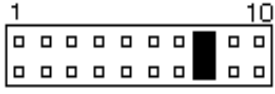
The power LED indicates the status of the main power switch. The keylock switch, when closed, will disable the keyboard function.



Pin #	Signal Name
11	Power LED
12	No connect
13	Ground
14	
15	Ground

Turbo LED Connector: Pins 8 and 18

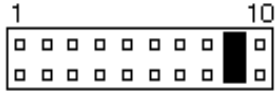
There is the no turbo/deturbo function on the embedded board. The Turbo LED on the control panel will always be on when attached to this connector.



Pin #	Signal Name
8	5V
18	Ground

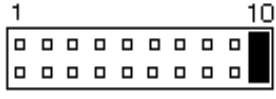
Reset Switch: Pins 9 and 19

The reset switch allows the user to reset the system without turning the main power switch off and then on. Orientation is not required when making a connection to this header.



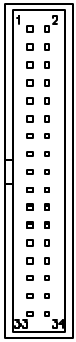
Hard Disk Drive LED Connector: Pins 10 and 20

This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.



J10: Floppy Drive Connector

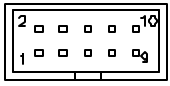
J10 is a 34-pin header and will support up to 2.88MB floppy drives.



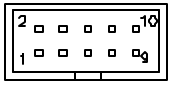
Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	RM/LC
Ground	3	4	No connect
Ground	5	6	No connect
Ground	7	8	Index
Ground	9	10	Motor enable 0
Ground	11	12	Drive select 1
Ground	13	14	Drive select 0
Ground	15	16	Motor enable 1
Ground	17	18	Direction
Ground	19	20	Step
Ground	21	22	Write data
Ground	23	24	Write gate
Ground	25	26	Track 00
Ground	27	28	Write protect
Ground	29	30	Read data
Ground	31	32	Side 1 select
Ground	33	34	Diskette change

J11, J12: RJ45 Connector

Both J11 and J12 are RJ45 connectors which are for the external LAN connector. Mungo545 supports both 10Mbps and 100Mbps LAN facilities.



J11

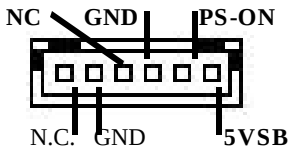


J12

Signal Name	Pin #	Pin #	Signal Name
3VSB	1	6	ACT LED
RX+	2	7	RX-
Link LED	3	8	GND
3VSB	4	9	GND
TX+	5	10	TX-

Signal Name	Pin #	Pin #	Signal Name
3VSB	1	6	ACT LED
RX+	2	7	RX-
Link LED	3	8	GND
3VSB	4	9	GND
TX+	5	10	TX-

J13 ATX Power Connector

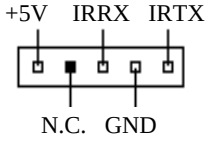


Pin #	Signal Name
1	NC
2	GND
3	NC
4	GND
5	PS-ON
6	5VSB

J13 is a 6-pin connector for ATX Power Connector should be used together with cable which name is ATX/6P. The function of this Jumper supports ATX Power, Win 98 shutdown, and Power button. But it dose not support Wake-On-Ring, Wake-On-Lan function.

J14: IrDA Connector

This connector is used for an IrDA connector for wireless communication.

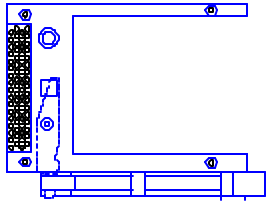


Pin #	Signal Name
1	+5V
2	No Connect
3	Ir RX
4	Ground
5	Ir TX

J15: PCMCIA Slot

PCMCIA Slot is a 68-circuit receptacles and headers which offers industry standard compatibility and unique performance features for memory cards used in PC, consumer, telecom and other electronic industries.

Mungo545 PCMCIA Connector



This table is the pin assignments of the PCMCIA Connector. Below are their pin assignments.

1	GND	37	CAD2
2	CAD0	38	CAD4
3	CAD1	39	CAD6
4	CAD3	40	CCD1#
5	CAD5	41	CAD8
6	CAD7	42	CAD10
7	CC/BE#0	43	CVS1
8	CAD9	44	CAD13
9	CAD11	45	CAD15
10	CAD12	46	CAD16
11	CAD14	47	RFU
12	CC/BE#1	48	CBLOCK#
13	CPAR#	49	CSTOP#
14	CPERR#	50	CDEVSEL#
15	CGNT#	51	VCC
16	CINT#	52	VPP
17	VCC	53	CTRDY#
18	VPP	54	CFRAME#
19	CCLK	55	CAD17
20	CIRDY#	56	CAD19
21	CC/BE#2	57	CVS2
22	CAD18	58	CRESET#
23	CAD20	59	CSERR#
24	CAD21	60	CREQ#
25	CAD22	61	CC/BE#3
26	CAD23	62	CAUDIO
27	CAD24	63	CTSCHG
28	CAD25	64	CAD28
29	CAD26	65	CAD30
30	CAD27	66	CAD31
31	CAD29	67	CCD2#
32	RFU	68	GND
33	CCLKRUN#		
34	GND		
35	GND		
36	CCD1#		

When PCMCIA worked within Windows 2000 system, select “use any IRQ assigned to the LPT1 port” and then take effect. Besides, as PCMCIA using Compact Flash worked within Windows 98 O/S, the time will stay more than 1~2 minutes during the IRQ was setting.

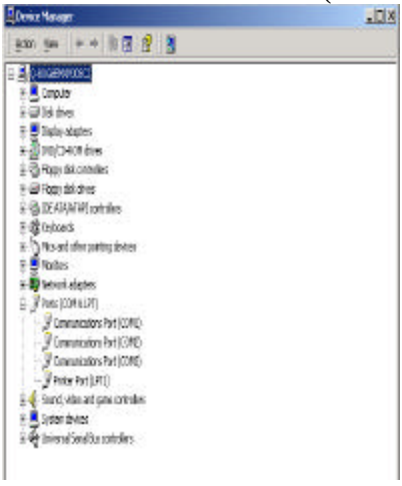
Use the following procedures when setup the IRQ for Windows 2000.

1. Click My Computer⇒ Control Panel ⇒ System

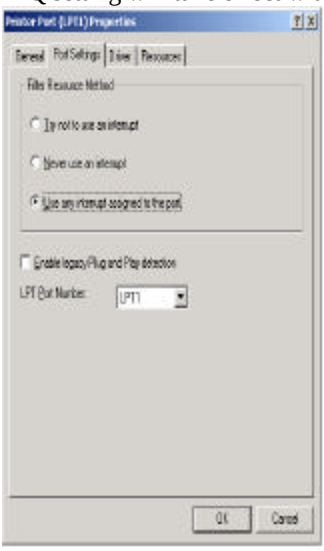
2. Click Hardware⇒Device Manager



3. Extended the folder of Ports (COM&LPT1)⇒ Printer Port (LPT1)

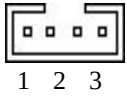


4. Select “using any interrupt assigned to the LPT1 port” ⇒ Ok and then IRQ setting will take effect with Print Port (LPT1) Properties.



J16: CD-ROM Audio In Connectors

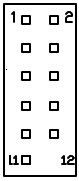
J16 is the onboard CD-ROM audio in connectors. Below are their pin assignments.



Pin #	Signal Name
1	Ground
2	Left
3	Ground
4	Right

J17: Digital I/O Connector

This 12-pin Digital I/O connector supports TTL levels and is used to control external devices requiring ON/OFF circuitry. **Noted:** *In the condition of output it operates the signal of latch.*



Signal Name	Pin #	Pin #	Signal Name
OUT0	1	2	Vcc
OUT1	3	4	IN0
OUT2	5	6	IN1
Latch	7	8	IN2
Ground	9	10	IN3
Ground	11	12	+12V

SPECIFICATIONS:

Digital Input

Input channels: 2 bits
Input Voltage: High: 2.0V (min)
Low: 0.8V (max)
Input Load: High: 0.05mA max at 2.7V
Low: 0.4mA max at 0.5V
Register Address: 240H
Register Format: BIT: D1 D0
Value: DI1 DI0

Digital Output

Output channels: 4 bits
Output voltage: High: Source -0.4mA at 2.4V min
Low: Sink 8mA at 0.5V max
Register Address: 240H (Write)
Register Format: BIT: D1 D0
Value: DO1 DO0

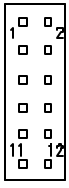
J18: External Keyboard Connector



Pin #	Signal Name
1	VCC
2	External KB Clock
3	Internal KB Clock
4	External KB Clock
5	Internal KB Clock
6	GND

J20: Audio Connector

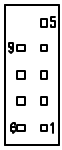
J20, a 12-pin header connector, supports an optional external connector supporting 3 sockets for Line Out, Line In and Mic functions. The following table shows the pin assignments of this connector.



Signal Name	Pin #	Pin #	Signal Name
Line Out R	1	2	Line Out L
GND	3	4	GND
Line In R	5	6	Line In L
GND	7	8	GND
Mic	9	10	BIAS
GND	11	12	GNC

J21: PS/2 Keyboard/Mouse Connector

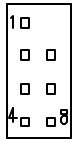
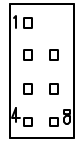
J21, a 10-pin header connector, has functions for both keyboard and mouse. The following table shows the pin assignments of this connector.



Signal Name	Pin #	Pin #	Signal Name
N.C.	10	5	N.C.
KB clock	9	4	Mouse clock
KB data	8	3	Mouse data
Vcc	7	2	Vcc
Ground	6	1	Ground

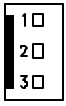
USB1,USB2 Connectors

USB1, USB2 are the standard USB external connectors consisting of two ports. USB support allows connections of up to 64 plug and play external peripherals per channel. The following table shows the pin outs of these ports.

Signal Name& **Pin #**			**Signal Name& Pin #**		
PORT2  **PORT1 USB1**	**Pin #**	**Signal Name**	**PORT2**  **PORT1 USB2**	**Pin #**	**Signal Name**
	1	Vcc		1	Vcc
	2	USB-		2	USB-
	3	USB+		3	USB+
	4	Ground		4	Ground

FAN1: CPU Fan Power Connector

FAN1 is a 3-pin header for a CPU fan. The fan must be a 12V fan.

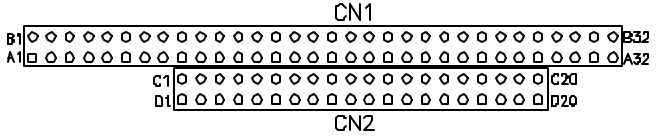


Pin #	Signal Name
1	Rotation
2	+12V
3	Ground

CN1, CN2: PC-104 Connectors

CN1 and CN2 are dual-in-line pin headers that support PC-104 modules. CN1 consists of 64 pins and CN2 has 40 pins. The following table shows the their pin assignments.

CON1				CON2			
Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
A1	IOCHK	B1	GND	C1	GND	D1	GND
A2	D7	B2	REST	C2	SBHE	D2	MEMCS16
A3	D6	B3	VCC	C3	LA23	D3	IOCS16
A4	D5	B4	IRQ9	C4	LA22	D4	IRQ10
A5	D4	B5	-5V	C5	LA21	D5	IRQ11
A6	D3	B6	DRQ2	C6	LA20	D6	IRQ12
A7	D2	B7	-12V	C7	LA19	D7	IRQ15
A8	D1	B8	OWS	C8	LA18	D8	IRQ14
A9	D0	B9	+12V	C9	LA17	D9	DACK0
A10	IOCHRDY	B10	GND	C10	MEMR	D10	DRQ0
A11	AEN	B11	SMEMW	C11	MEMW	D11	DACK5
A12	A19	B12	SMEMR	C12	D8	D12	DRQ5
A13	A18	B13	IOW	C13	D9	D13	DACK6
A14	A17	B14	IOR	C14	D10	D14	DRQ6
ZA15	A16	B15	DACK3	C15	D11	D15	DACK7
A16	A15	B16	DRQ3	C16	D12	D16	DRQ7
A17	A14	B17	DACK1	C17	D13	D17	VCC
A18	A13	B18	DRQ1	C18	D14	D18	MASTER
A19	A12	B19	REFRESH	C19	D15	D19	GND
A20	A11	B20	CLK	C20	KEY PIN	D20	GND
A21	A10	B21	IRQ7				
A22	A9	B22	IRQ6				
A23	A8	B23	IRQ5				
A24	A7	B24	IRQ4				
A25	A6	B25	IRQ3				
A26	A5	B26	DACK2				
A27	A4	B27	TC				
A28	A3	B28	BALE				
A29	A2	B29	VCC				
A30	A1	B30	OSC				
A31	A0	B31	GND				
A32	GND	B32	GND				

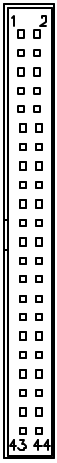


JB1: Compact Flash Disk Connector

Signal Name	Pin #	Pin #	Signal Name
GND	1	26	CD1
DO3	2	27	D11
DO4	3	28	D12
DO5	4	29	D13
DO6	5	30	D14
DO7	6	31	D15
CSO	7	32	CS1
NC	8	33	NC
ATASEL	9	34	IORD
NC	10	35	IOWR
NC	11	36	WE
NC	12	37	INTR
VCC	13	38	VCC
NC	14	39	CSEL
NC	15	40	NC
NC	16	41	RESET
NC	17	42	IORDY
AO2	18	43	NC
A01	19	44	NC
AO0	20	45	DASP
DO0	21	46	NC
DO1	22	47	D8
DO2	23	48	D9
NC	24	49	D10
CO2	25	50	GND

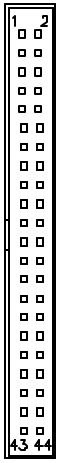
IDE1, IDE2 Connectors

IDE1 is the *primary* IDE connector. IDE2 is the *secondary* IDE connector.



IDE1

Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground
Vcc	41	42	Vcc
Ground	43	44	N.C.



IDE2

Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK1	29	30	Ground
MIRQ0	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground
Vcc	41	42	Vcc
Ground	43	44	N.C.

Watchdog Timer Configuration

The function of the watchdog timer is to reset the system automatically and is defined at I/O port 0443H. To enable the watchdog timer and allow the system to reset, write I/O port 0443H. To disable the timer, write I/O port 0441H for the system to stop the watchdog function. The timer has a tolerance of 20% for its intervals.

The following describes how the timer should be programmed.

Enabling Watchdog:

```
MOV    AX, 000FH (Choose the values from 0)
MOV    DX, 0443H
OUT    DX, AX
```

Disabling Watchdog

```
MOV    AX, 00FH (Any value is fine.)
MOV    DX, 0441H
OUT    DX, AX
```

WATCHDOG TIMER CONTROL TABLE

Level	Value	Time/sec	Level	Value	Time/sec
1	F	0	9	7	16
2	E	2	10	6	18
3	D	4	11	5	20
4	C	6	12	4	22
5	B	8	13	3	24
6	A	10	14	2	26
7	9	12	15	1	28
8	8	14	16	0	30

3

BIOS Configuration

This chapter describes the different settings available in the Award BIOS that comes with the Mungo545. The topics covered in this chapter are as follows:

BIOS Introduction.....44
BIOS Setup.....44
Standard CMOS Features.....46
Advanced BIOS Features.....49
Integrated Pheripherials.....52
Power Management Setup.....54
PnP/PCI Configurations.....57
PC Health Status.....58
Load Fail-Safe Defaults.....59
Load Optimized Password.....59
Set Supervisor Password.....60
Set User Pasword.....60
Save & Exit Setup.....61
Exit Without Saving.....61

BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your computer system' s ROM supports TM 3120/5400/5600 Transmeta processors. The BIOS provides critical low-level support for a standard device such as disk drives, serial and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

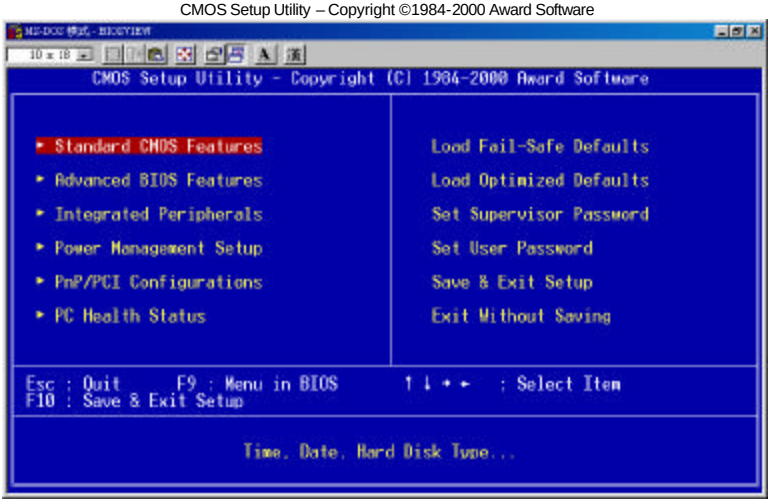
BIOS Setup

The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the Award BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

```
Press  <DEL>  to  Enter  Setup
```

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.



The section below the setup items of the Main Menu displays the control keys for this menu. At the bottom of the Main Menu just below the control keys section, there is another section that displays information about the currently highlighted item in the list.

***NOTE**: If your computer cannot boot after making and saving system changes with Setup, the Award BIOS supports an override to the CMOS settings that resets your system to its default.*

We strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability.

Standard CMOS Features

"Standard CMOS Setup" choice allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the Mungo545 is already installed in a working system, you will not need to select this option. You will need to run the Standard CMOS option, however, if you change your system hardware configurations, the onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

CMOS Setup Utility – Copyright ©1984-2001 Award Software



At the bottom of the menu are the control keys for use on this menu. If you need any help in each item field, you can press the <F1> key. It will display the relevant information to help you. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following describes each item of this menu.

Date

The date format is:

Day : Sun to Sat
Month : 1 to 12
Date : 1 to 31
Year : 1994 to 2079

To set the date, highlight the "Date" field and use the PageUp/ PageDown or +/- keys to set the current time.

Time

The time format is: **Hour : 00 to 23**
Minute : 00 to 59
Second : 00 to 59

To set the time, highlight the "Time" field and use the <PgUp>/ <PgDn> or +/- keys to set the current time.

Primary HDDs / Secondary HDDs

The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks; the first is the "Master" and the second is the "Slave".

To enter the specifications for a hard disk drive, you must select first a "Type". There are 45 predefined types and 4 user definable types are for Enhanced IDE BIOS. Type 1 to 45 are predefined. Type "User" is user-definable. For the Primary Master/Slave as well as Secondary Master/Slave, you can select "Auto" under the TYPE and MODE fields. This will enable auto detection of your IDE drives and CD-ROM drive during POST.

Press <PgUp>/<PgDn> to select a numbered hard disk type or type the number and press the <Enter> key. The hard disk will not work properly if you enter incorrect information for this field. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually. If you select Type User, related information is asked to be entered to the following items.

CYLS : Number of cylinders
HEAD : Number of read/write heads
PRECOMP : Write precompensation
LANDZ : Landing zone
SECTOR : Number of sectors
SIZE : Automatically adjust according to the configuration
MODE (for IDE HDD only) : Auto
Normal (HD < 528MB)
Large (for MS-DOS only)
LBA (HD > 528MB and supports Logical Block Addressing)

***NOTE**: The specifications of your drive must match with the drive table. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.*

Drive A / Drive B

These fields identify the types of floppy disk drive A or drive B that has been installed in the computer. The available specifications are:

360KB	1.2MB	720KB	1.44MB	2.88MB
5.25 in.	5.25 in.	3.5 in.	3.5 in.	3.5 in.

Video

This field selects the type of video display board installed in your system. You can choose the following video display boards:

EGA/VGA	For EGA, VGA, SEGA, SVGA or PGA monitor adapters.(default)
CGA 40	Power up in 40 column mode.
CGA 80	Power up in 80 column mode.
MONO	For Hercules or MDA, includes high resolution monochrome adapters.

Halt On

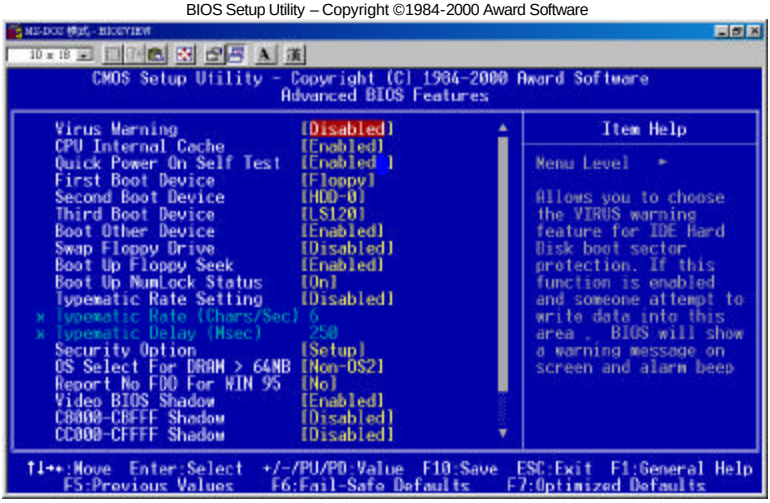
This field determines whether or not the system will halt if an error is detected during power up.

No errors	The system boot will not be halted for any error that may be detected.
All errors	Whenever the BIOS detects a non-fatal error, the system will be halted and you will be prompted.
All, But Keyboard	The system boot will not be halted for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not be halted for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not be halted for a keyboard or disk error; it will stop for all other errors.

Advanced BIOS Features

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.
*(Figure 1)

BIOS Setup Utility – Copyright ©1984-2000 Award Software



Virus Warning
This item protects the boot sector and partition table of your hard disk against accidental modifications. If an attempt is made, the BIOS will halt the system and display a warning message. If this occurs, you can either allow the operation to continue or run an anti-virus program to locate and remove the problem.

***NOTE**: Many disk diagnostic programs, which attempt to access the boot sector table, can cause the virus warning. If you will run such a program, disable the Virus Warning feature.*

CPU Internal Cache / External Cache
These items allow you to enable (speed up memory access) or disable the cache function. By default, these items are ***Enabled***.

Quick Power On Self Test
This choice speeds up the Power On Self Test (POST) after you power up the system. If it is set to *Enabled*, BIOS will skip some items. By default, this choice is ***Enabled***.

First/Second/Third Boot Device

These fields determine the drive that the system searches first for an operating system. This field determines the drive that the system searches first for an operating system. These options of First/ Second/ Third Boot Devices are: Floppy, LS120, HDD-0, SCSI, CD-ROM, HDD-1, HDD-2, HDD-3, ZIP100, LAN and Disabled.

The First Boot device default setting value is ***Floppy***.

The Second Boot device default setting value is ***HDD-0***.

The Third Boot device default setting value is ***LS120***.

Boot Other Device

These fields allow the system to search for an operating system from other devices other than the ones selected in the First/Second/Third Boot Device.

Swap Floppy Drive

This item allows you to determine whether or not to enable the swap Floppy Drive. When enabled, the BIOS swaps floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A. By default, this field is set to ***Disabled.***

Boot Up Floppy Seek

When enabled, the BIOS will seek whether or not the floppy drive installed has 40 or 80 tracks. 360K type has 40 tracks while 760K, 1.2M and 1.44M all have 80 tracks. By default, this field is set to ***Enabled.***

Boot Up NumLock Status

This allows you to activate the NumLock function after you power up the system. By default, the system boots up with ***NumLock*** On.

Typematic Rate Setting

When disabled, continually holding down a key on your keyboard will generate only one instance. When enabled, you can set the two typematic controls listed next. By default, this field is set to ***Disabled.***

Typematic Rate (Chars/Sec)

When the typematic rate is enabled, the system registers repeated keystrokes speeds. You can select speed range from 6 to 30 characters per second. By default, this item is set to ***6.***

Typematic Delay (Msec)

When the typematic rate is enabled, this item allows you to set the time interval for displaying the first and second characters. By default, this item is set to ***250msec.***

Security Option

This field allows you to limit access to the System and Setup. The default value is ***Setup***. When you select *System*, the system prompts for the User Password every time you boot up. When you select *Setup*, the system always boots up and prompts for the Supervisor Password only when the Setup utility is called up.

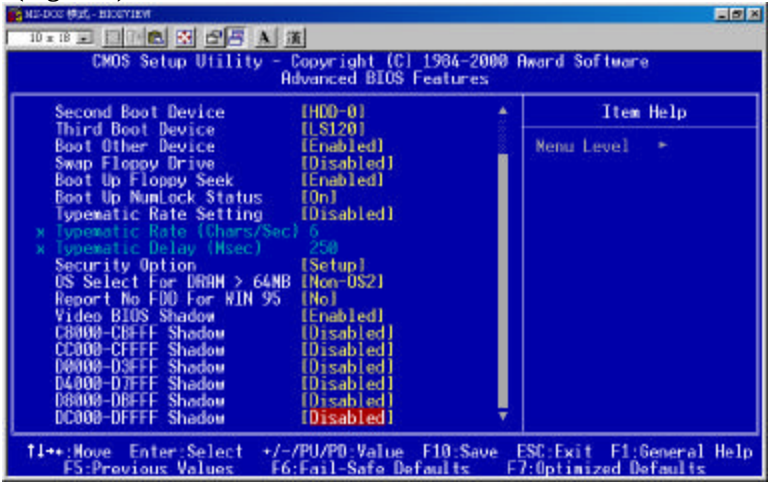
OS Select for DRAM > 64MB

This option allows the system to access greater than 64MB of DRAM memory when used with OS/2 that depends on certain BIOS calls to access memory. The default setting is **NON-OS/2**.

Report No FDD for WIN 95

This option allows Windows 95 to share with other peripherals IRQ6 that is assigned to a floppy disk drive if the drive is not existing. The default setting is ***No***.

***(Figure 2)**



Video BIOS Shadow

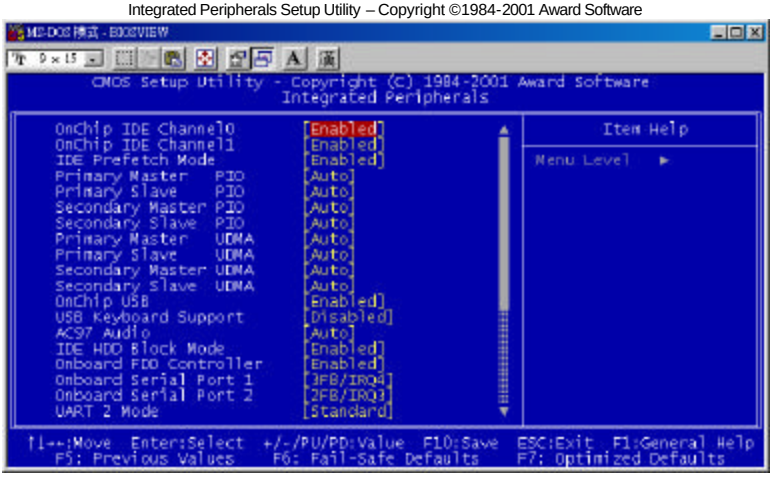
This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed.

C8000 - CBFFF Shadow/DC000 - DFFFF Shadow
Shadowing a ROM reduces the memory available between 640KB to 1024KB. These fields determine whether or not optional ROM will be copied to RAM.

Integrated Peripherals

This option allows you to determine your hard disk configuration, mode and port.

Integrated Peripherals Setup Utility – Copyright ©1984-2001 Award Software



OnChip IDE Channel 0/ Channel 1
The integrated peripheral controller contains an IDE interface with support for one IDE channels. Select *Enabled* to activate the channels.

IDE Prefetch Mode
This field allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.

IDE Primary Master/Slave PIO And Secondary Master/Slave PIO
These fields allow your system hard disk controller to work faster. Rather than have the BIOS issue a series of commands that transfer to or from the disk drive, PIO (Programmed Input/Output) allows the BIOS to communicate with controller and CPU directly.
The system supports five modes, numbered from 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode.

Primary Master/Slave UDMA And Secondary Master/Slave UDMA
This field allows your system to improve disk I/O throughput to 33Mb/sec with the Ultra DMA/33 feature. The options are *Auto* and *Disabled*.

USB Keyboard Support
This field allows your system to support a USB keyboard in DOS mode.

AC97 Audio
By default, the AC97 Audio is set to ***Auto***.

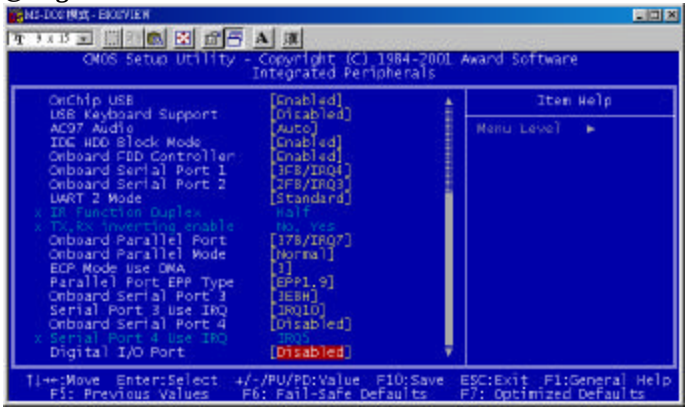
IDE HDD Block Mode
This field allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.

Onboard FDD Controller
Select *Enabled* if your system has a floppy disk controller (FDC) installed on the motherboard and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select Disabled in this field. This option allows you to select the onboard FDD port.

Onboard Serial Port 1/ Onboard Serial Port 2
These fields allow you to select the onboard serial port 1 and onboard serial port 2 and their addresses. The default values for these ports are:

Serial Port 1	3F8/IRQ4
Serial Port 2	2F8/IRQ3

@ Figure 2



UR2 Mode
This field determines the UART 2 mode in your computer. The options are *Standard*, *HPSIR*, and *ASKIR*.

Onboard Serial/Parallel Port
These fields allow you to select the onboard serial/parallel port and its address. The default values for these ports are:

Serial Port 1	3F8/IRQ4
Serial Port 2	2F8/IRQ3
Serial Port 3	3E8/IRQ10
Serial Port 4	Disable
Parallel Port	378H/IRQ7

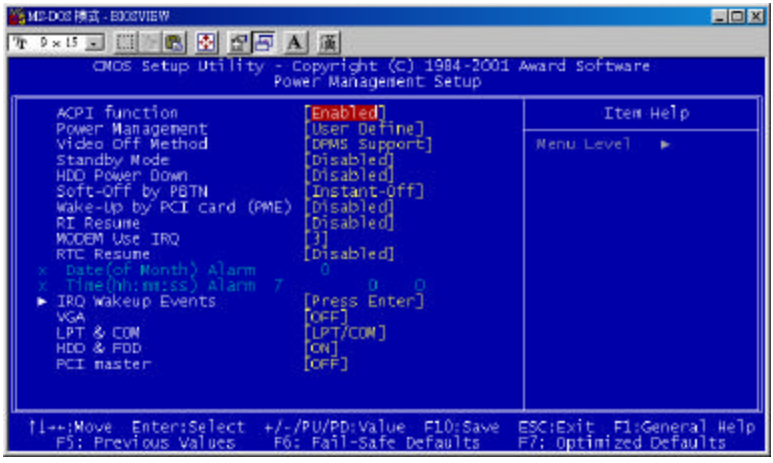
Noted: If both PC 104 and PCMCIA are taken effect, the item of IRQ5 will be used with manual selected. If you do not use them, please select IRQ5 with COM4.

Digital I/O Port
This function is support TTL levels and is used to control external devices. The options are Disable, 220h, 240h and 260h.

Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn off video display after a period of inactivity.

Power Management Setup Utility – Copyright ©1984-2001 Award Software



ACPI Function
This field allows you to enable or disable the ACPI (Advanced Configuration Power Interface) function on the motherboard. By default, this field is set to ***Enable.***

Power Management
This field allows you to select the type of power saving management modes. There are four selections for Power Management.

Min. Power Saving	Minimum power management
Max. Power Saving	Maximum power management.
User Define	Each of the ranges is from 1 min. to 1hr. Except for HDD Power Down which ranges from 1 min. to 15 min. (Default)

Video Off Method
This field defines the Video Off features. There are three options.
V/H SYNC + Blank: blank the screen and turn off vertical and horizontal scanning.

DPMS: Allows the BIOS to control the video display board if it supports the DPMS feature.
Blank Screen (Default setting): This option only writes blanks to the video buffer.

Standby Mode
After the selected period of system inactivity, the fixed disk drive and the video shut off while all other devices still operate at full speed.

HDD Power Down
When enabled, and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

Soft-Off by PBTN
This field defines the power-off mode when using an ATX power supply. The *Instant Off* mode allows powering off immediately upon pressing the power button. In the *Delay 4 Sec* mode, the system powers off when the power button is pressed for more than four seconds or enters the suspend mode when pressed for less than 4 seconds. The default value is ***Instant Off***.

Wake-Up by PCI Board (PEM)
The settings for this field are *Enabled* and *Disabled* (default).

RI Resume
This field enables or disables the power on of the system through the modem connected to the serial port or LAN.

Modem Use IRQ
This field sets the IRQ used by the Modem. By default, the IRQ used is ***3***.

RTC Resume
This function is for setting date and time for your system to boot up. If the system is disabled, you cannot use this function. During enabled, choose the Date and Time these two items:

Date (of month) Alarm You can choose which month the system will boot up. Set up to 0, to boot every month.

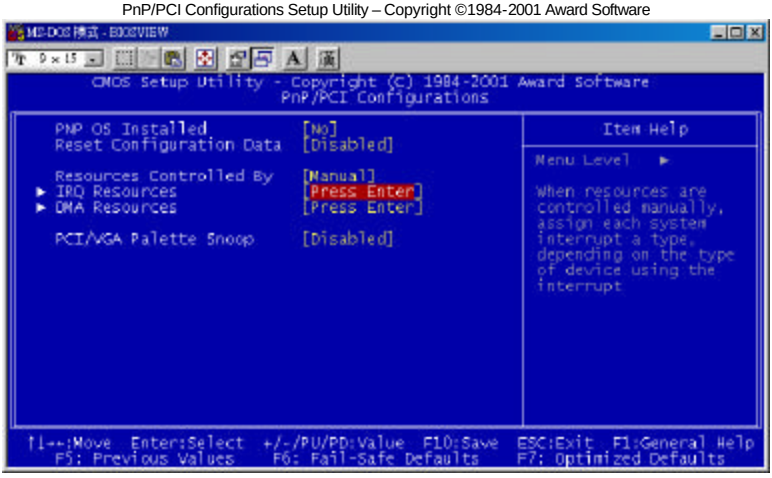
Time (hh:mm:ss) Alarm You can choose what hour, minute and second the system will boot up.

IRQ Wake Events, VGA, LPT & COM, HDD & FDD, PCI master
The VGA, LPT & COM, HDD & FDD, PCI Master, Modem Ring Resume, RTC Alarm Resume and Primary INTR section are I/O events which can prevent the system from entering a power saving mode or can awaken the system from such a mode. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service. The default value is Off. When set On, activity will neither prevent the system from going into a power management mode nor awaken it. The IRQ section sets the wake-up call of the system. If activity is detected from any enabled IRQ channels in the left-hand group, the system wakes up from suspended mode.

PnP/PCI Configuration

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI boards must be set to this value.

PnP/PCI Configurations Setup Utility – Copyright ©1984-2001 Award Software



PNP OS Installed

This field allows you to specify if the operating system installed in your system is plug and play aware.

***NOTE**: Operating systems such as DOS, OS/2, and Windows 3.x do not use PnP.*

Reset Configuration Data

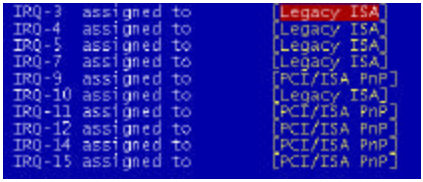
This field allows you to determine whether or not to reset the configuration data. The default value is ***Disabled.***

Resources Controlled by

This PnP BIOS can configure all of the boot and compatible devices automatically. However, this capability needs you to use a PnP operating system such as Windows 95 and Windows 98. The default value is ***Manual.***

IRQ Resources/DMA Resources

To configure the IRQ Resources and DMA Resources, these *Resources Controlled By* field should be set to *Manual*. **Noted:** IRQ-3, 4, 5, 7, 10 are assigned to ISA by manual.



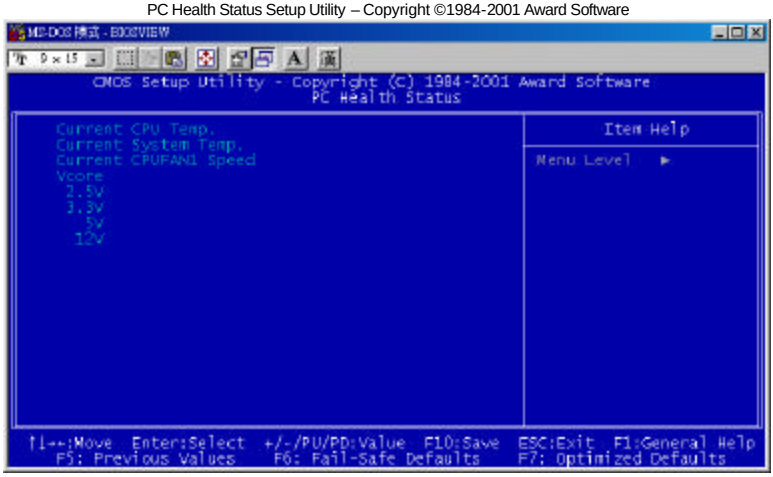
PCI/VGA Palette Snoop

Some non-standard VGA display boards may not show colors properly. This field allows you to set whether or not MPEG ISA/VESA VGA boards can work with PCI/VGA. When this field is enabled, a PCI/VGA can work with an MPEG ISA/VESA VGA board. When this field is disabled, a PCI/VGA cannot work with an MPEG ISA/VESA board.

PC Health Status

In this PC Health Status, we can see these functions as follows: Current CPU Temp, Current system Temp, Current CPUFan 1 speed . After you examing these settings from this BIOS View, press <ESC> to go back to the main manual.

PC Health Status Setup Utility – Copyright ©1984-2001 Award Software



Load Fail-Safe Defaults

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.

Load Fail-Safe Defaults Setup Utility – Copyright ©1984-2001 Award Software

STANDARD CMOS Feature	Load Fail-Safe Defaults
Advanced BIOS Feature	Load Optimized Defaults
Integrated Peripherals	Set Supervisor Password
Power Management Setup	Set User Password
PnP/PCI Configuration	Save & Exit Setup
PC Health Status	Exit Without Saving
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Abandon all Data & Exit Setup	

Load Optimized Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.

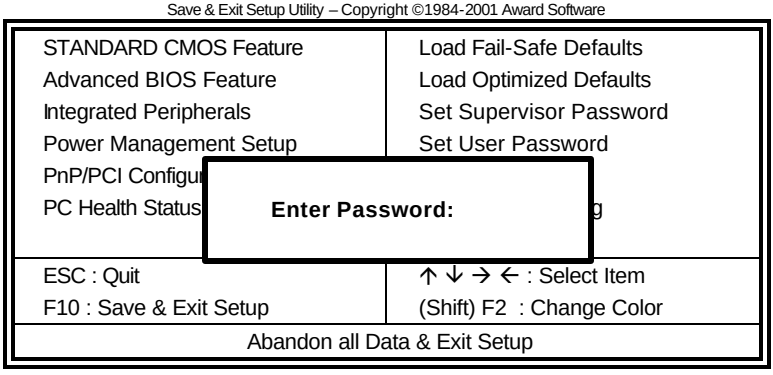
Load Optimized Defaults Setup Utility – Copyright ©1984-2001 Award Software

STANDARD CMOS Feature	Load Fail-Safe Defaults
Advanced BIOS Feature	Load Optimized Defaults
Integrated Peripherals	Set Supervisor Password
Power Management Setup	Set User Password
PnP/PCI Configuration	Save & Exit Setup
PC Health Status	Exit Without Saving
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Abandon all Data & Exit Setup	

Set Supervisor / User Password

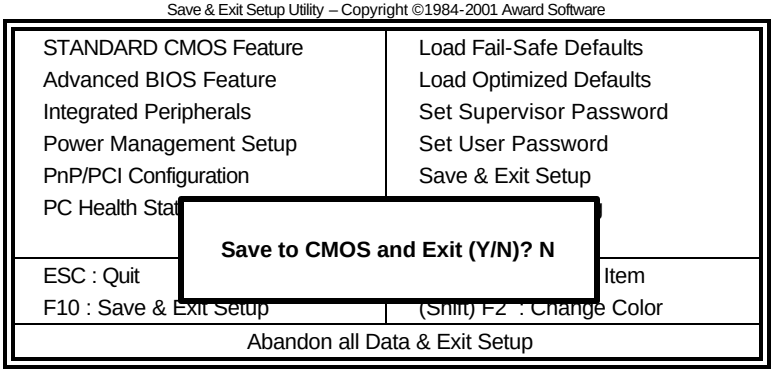
These two options set the system password. *Supervisor Password* sets a password that will be used to protect the system and Setup utility. *User Password* sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The **Enter Password:** message prompts on the screen. Type the password, up to eight characters in length, and press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

To disable a password, just press the <Enter> key when you are prompted to enter the password. A message will confirm the password to be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.



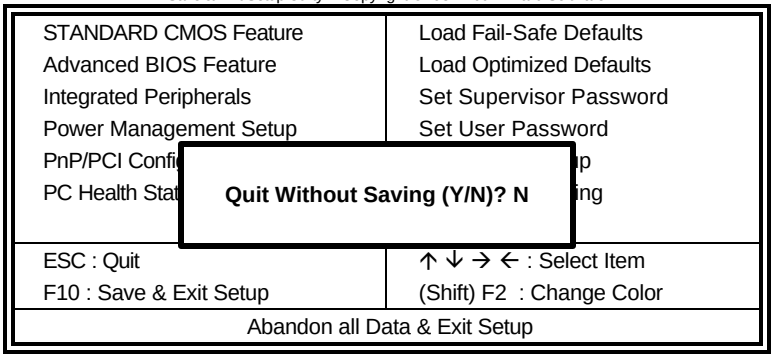
Save & Exit Setup

This option allows you to determine whether or not to accept the modifications. If you type "Y", you will quit the setup utility and save all changes into the CMOS memory. If you type "N", you will return to Setup utility.



Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing "Y" will quit the Setup utility without saving the modifications. Typing "N" will return you to Setup utility.



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4

4 In 1 Drivers Installation Guide

This chapter describes the installation procedure for the drivers from VIA including 4 in 1 driver. Inthis chapter, you can follow the direction of this CD driver, which has been offered the function of autoruns. Meanwhile, it also provides information on how to install the 4 in 1 drivers that come in the disc with your Mungo545 motherboard. Please follow the instructions set forth in this chapter carefully. Please note that there must be relevant software installed in your system before you could proceed to install the 4 in 1 drivers. It is recommended that you make a copy of the 4 in 1 driver disc and put the backup copy in a safe place.

The following items are covered in this chapter:

Installing the Drivers for Windows 98 SE driver installation 64

NOTE: The driver CD also supports any Windows serials O/S. This installation is just for reference. If you are using Windows 95, please install USB supplement to OSR2 from the original Windows 95 CD or download it from Microsoft' s web site after you have installed Windows 95 (even before you have started to install the drivers mentioned in this chapter.)

Windows 98SE 4 in 1 Driver Installation

1. Insert the driver CD disc to the CD-ROM drive. The CD-ROM autoruns and displays the selection for VIA drivers. To begin with, you have to Click Little Board and then choose Mungo545. After clicking the process of mentioning above, you will see the screen of VIA 4 in1 appears. Then click it to continue next step.



2. Following the direction of installation. Finally, click ***Finish*** *to restart your computer and for changes to take effect.*

Noted: When Windows 2000 O/S was installed with the driver version of 4.28 in 4 in 1 item, the only thing have to noticed is that do not select VIA Bus Master Ultra ATA Driver after the Select Computer window appears. If selecting it, you will see "Digital signature not found" and your selections are fail.

5

DirectX Drivers Installation Guide

This chapter describes the installation procedure for DirectX drivers. Meanwhile, this chapter also provides information on how to install the DirectX drivers that come in the disc with your Mungo545 motherboard. Please follow the instructions set forth in this chapter carefully. Please note that there must be relevant software installed in your system before you could proceed to install the DirectX drivers. It is recommended that you make a copy of the DirectX driver disc and put the backup copy in a safe place.

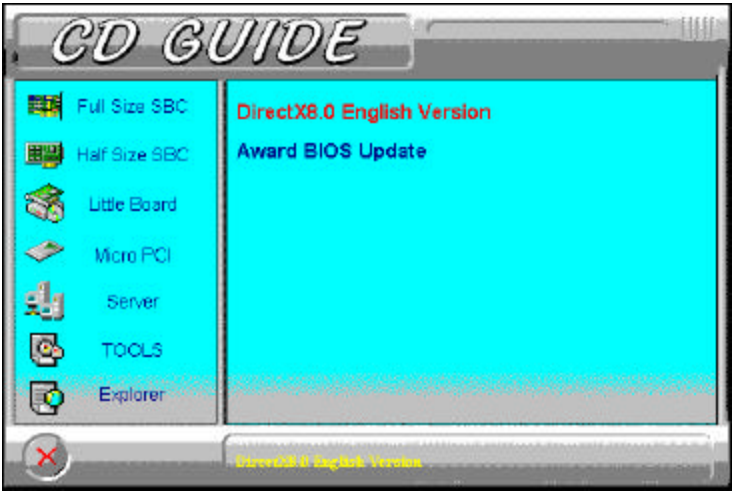
The following items are covered in this chapter:

Installing the Drivers for Windows 98 SE Direct X installation 66

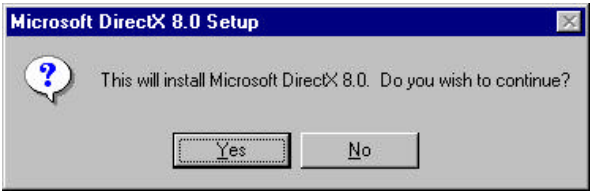
Noted: This driver CD also supports any Windows serials O/S. This installation is just for reference.

Windows 98 SE DirectX Installation

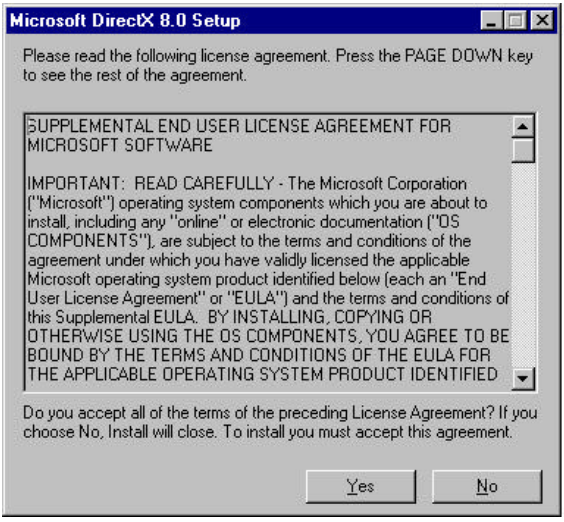
1. *Insert the driver CD disc to the CD-ROM drive. The CD-ROM autoruns and displays the selections available. Click on* ***Tools*** *and the following window will appear. Click* ***DirectX 8.0 English Version****.*



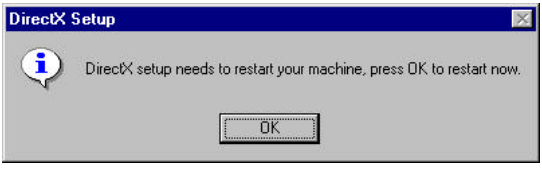
2. *Click* ***Yes*** *to install Microsoft DirectX 8.0 Runtime.*



*3. Click **Yes** to continue.*



*4. When the necessary files have been copied, press **OK** to restart the computer and save changes to take affect.*



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6

Audio Drivers Installation Guide

This chapter describes the installation procedure for audio drivers. Meanwhile, this chapter also provides information on how to install the Audio drivers that come in the disc with your Mungo545 motherboard. Please follow the instructions set forth in this chapter carefully. Please note that there must be relevant software installed in your system before you could proceed to install the Audio drivers. It is recommended that you make a copy of the Audio driver disc and put the backup copy in a safe place.

The following items are covered in this chapter:

Installing the Drivers for Windows 98 SE Audio driver installation 70

Noted: This driver CD also supports any Windows serials O/S. This installation is just for reference.

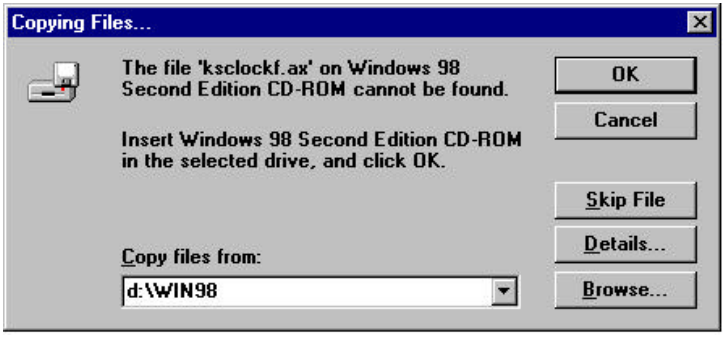
Windows 98 SE Audio Driver Installation

1. Insert the driver CD disc to the CD-ROM drive. The CD-ROM autoruns and displays the selections available. If you want to install the Audio Driver, Click Little Board and then following the same approach, Click on Mungo545 and the following window appears. Click ***VIA AC97 Audio Driver****.*



2. Insert Windows 98 SE disc into CD-ROM and type "d:\WIN98". Click OK.

.



3. Following the direction of installation. Finally, click ***Finish.***
At this time, ***START*** *Þ* ***Shut down*** *Þ* ***Restart*** *your computer and for changes to take effect.*

7

VGA Drivers Installation Guide

This chapter provides information on how to install the VGA drivers that come in the floppy diskette with your Mungo545 board. Please follow the instructions set forth in this chapter carefully. Please note that there must be relevant software installed in your system before you could proceed to install the VGA drivers. It is recommended that you make a copy of the VGA driver diskette and put the backup copy in a safe place.

The following items are covered in this chapter:

Installing the Drivers for 98 SE.....72
The function of Dual-panel.....73

Noted: This driver CD supports most Windows serials O/S. This installation is just for reference.

Installing the VGA Drivers for Windows 98 SE Driver Installation

The following section describes the normal display driver installation procedures for Windows 98SE. Use the following procedures when installing the display drivers for Windows Millennium Edition.

Windows 98 SE VGA Installation

1. Insert the driver CD disc to the CD-ROM drive. The CD-ROM autoruns and displays the selections available. Click on ***Little Board*** *and Mungo545 window appears. Then, click* ***SMI 721 VGA Driver****.*

2. Following the direction of installation. Finally, click ***Finish*** *to restart your computer and for changes to take effect.*

Noted: If you would like to install Windows Millennium Edition, please follow these procedures to install this software.

1. Click ***My Computer*** *Þ* ***IPC-V1 00(D)*** *Þclick mouse right button Þ the folder of* ***VGA*** *Þ the folder of* ***SMI 721*** *Þ the folder of* ***WINME*** *Þ Setup file to install Windows Millennium Edition driver. After the driver has been installed, the installation procedure can be continued.*

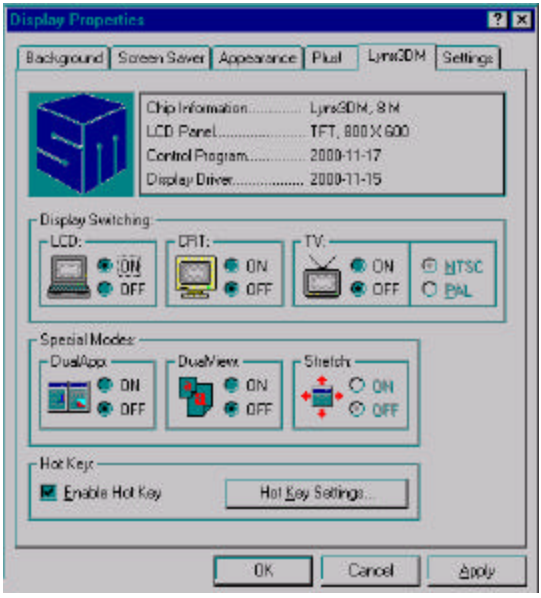
The function of Dual-Panel

The function of Mungo545 this high performance motherboard supports Dual-Panel. There are two things important before you use this function: the first one is do not select dual Mode when the single panel and CRT are used or you will not watch another windows at the same time; the other is you cannot select LCD, CRT and TV at the same time.
Follow these procedures to select the function you want.

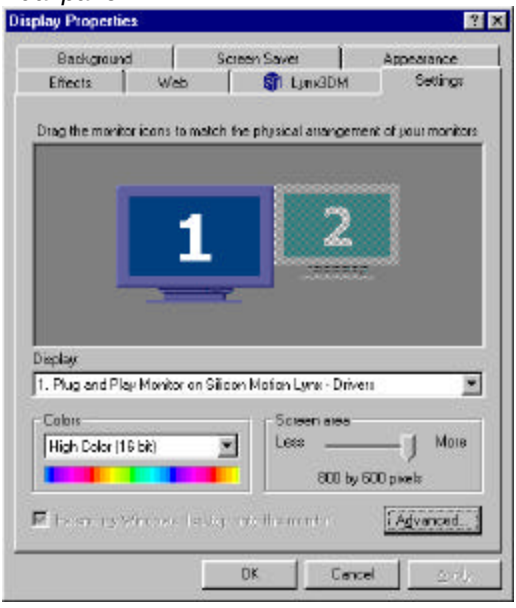
*1. Click **3DM** this icon.*



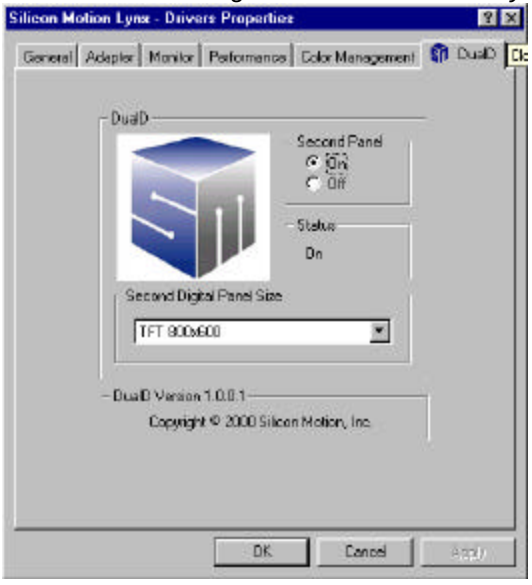
2. Select which one you have to use. For example: TV or CRT or LCD.



*3. Click **Setting** and then click **Advanced** to select the function of Dual-panel.*



*4. When the following window appears, select **DualD** to adjust your function. This setting is the most effective system solution.*



8

LAN Driver Installation Guide

This chapter gives a brief introduction to the Intel 82559B Fast Ethernet PCI controller.

The following items are covered in this chapter:

Introduction.....76
Features.....76
Installing LAN Driver for Win 98.....77
Installing LAN Driver for Windows NT.....80

Introduction

Intel 82559B is a 32-bit 10/100MBps Ethernet controller for PCI local bus-compliant PCs. It supports the bus mastering architecture, and Auto-negotiation feature which make it possible to combine one common type of Ethernet cabling– an RJ-45 connector for twisted-pair cabling that can be used for both 10Mbps and 100Mbps connection. Extensive driver support for commonly used network operating systems is also provided.

Features

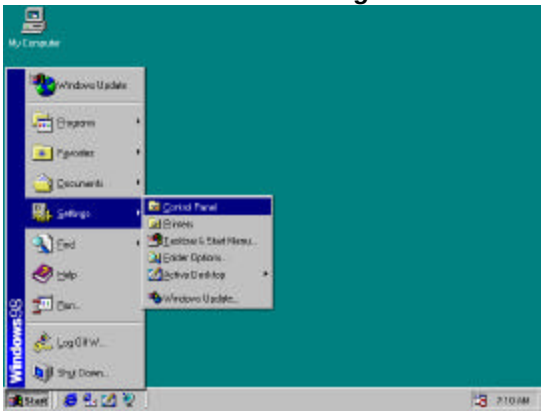
- Conforms to the Ethernet IEEE 802.3u standard
- Compatible with PCI Local Bus Revision 2.1 specification
- IEEE 802.3u Auto-Negotiation for automatic speed selection
- Supports Full-Duplex/Half-Duplex Operation
- Provides 32-bit bus mastering data transfer
- Supports 10Mbps and 100Mbps operation in a single port
- Supports remote wake-up (Magic Packet*) in APM and ACPI mode

* *Requires ATX power supply with 5VSB, 720mA*

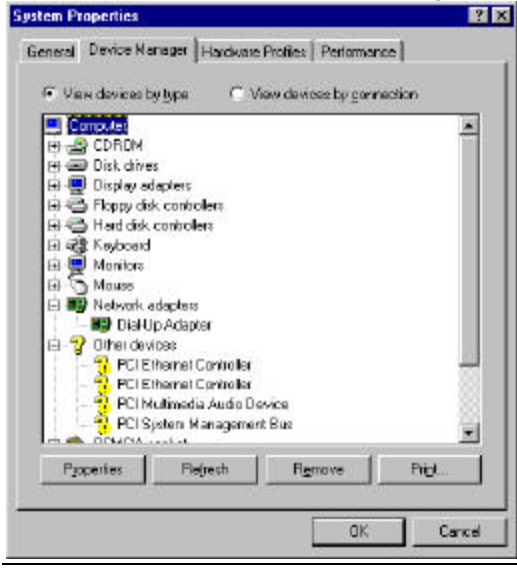
LAN Driver Installation for Windows 98

The Mungo545 comes with a disc labeled Intel 82559B LAN Driver containing Windows 95/98 Drivers that is to be used in conjunction with the LAN driver installation. You must use the correct drivers in order for LAN to function properly. Follow the steps below to install the drivers for Windows 95/98.

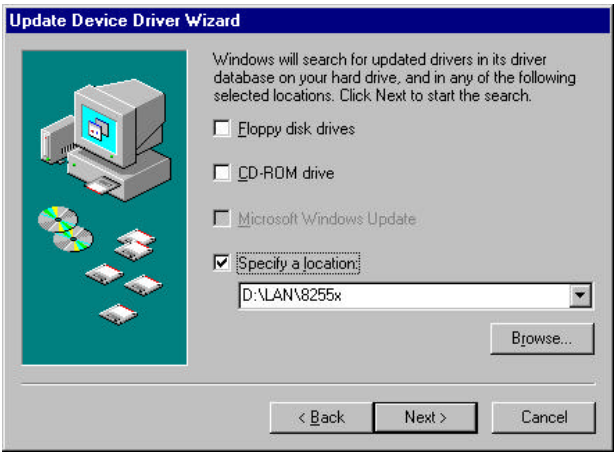
***1.** Click **Start** Þ Select **Settings** Þ Select **Control Panel**.*



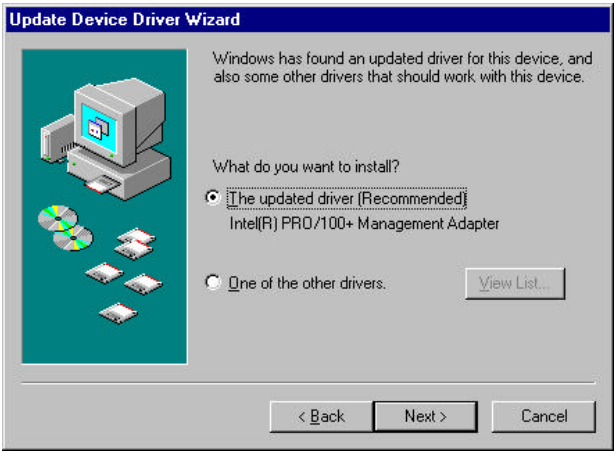
*2. Click **System** Þ Select **Device Manager** Þ Select **PCI Ethernet Controller** Þ Select **Properties.***



3. *Select **Driver** Þ Select **Update Driver** Þ **Next** Þ **Next** Þ Before Click this Next, please type **D:\LAN\8255x** to continue the installation*



4. *Click **Next***



*5. Before Click **OK,** please type **D:\Lan\8255x.***



6. Insert Windows 98 CD into your CD drive.

7. Type D:\win98 Þ OK.



8. Þ FINISH Þ Restart Þ Yes; then your system is about to take effect.

LAN Driver Installation for Windows NT 4.0

Mungo545 comes with a driver CD Windows NT 4.0 Drivers that is to be used in conjunction of the LAN driver installation. Follow the steps below to install the drivers for Windows NT 4.0. You can choose two approaches below and install your system.

***Driver installation Approach**: When you are in Windows NT:*

1. *Insert the driver CD into the CD-ROM drive. The CD-ROM autoruns and displays the selections available. Click **Little Board** in this manual and choose Mungo545. Next, Click on **Intel 82559 LAN Driver** and the following window appears.*
2. *In license agreement comes out, select "I accept the terms in the license agreement" and click next.*
3. *On seeing the drive and path "**C:\Intel**", **next** Þ **Finish**.*
4. *At this time, **START** Þ **Setting** Þ Control Panel.*
5. *Choose the **Network** icon, and in the Network Setting dialog box Þ Wired to network Þ **Next**. When Network Adaptor comes out Þ **Select from List**. Þ **Have Disk** to match your hardware.*
6. *Type "**C:\Intel**" Þ **OK**. Next, you will see the Intel ®Pro Adapter appears Þ **OK**.*
7. *As the Intel ® Pro Adapter has been searched for by the system, Þ **next.***
8. *When the following Network Protocol comes out, you can select and setup one of them. Þ Next.*
9. *Insert your Windows NT4.0 CD into your CD-ROM Drive, then type "d:\i386" Þ **Continue.** .*
10. *Þ No Þ refer to network environment and setup your system.*
11. *Þ **Finish** Þ **restart** your computer and then take effect.*

***Make driver Disk Approach**: When you are in Windows NT:*

1. *Insert Driver CD into CD-ROM drive, besides, preparing for a 1.44 Mbit diskette into Floppy Disk Drive A.*
2. *Click **START** Þ **Run**. Type: "A: \ lan\ 8255X\ makedisk\ makent.bat, Þ OK.*
3. *At this time, Windows NT driver will be created by your system.*
4. *Then, you can use this diskette to install your LAN driver. Remember: if you would like to use diskette to install your system, please follow step 6 and type "A:\" to continue your installation.*

Appendix

A. I/O Port Address Map
B. Interrupt Request Lines (IRQ)

A

A. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device. There is a total of 1K port address space available. The following table lists the I/O port addresses used on the Mungo545.

Address	Device Description
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real Time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
278 - 27F	Parallel Port #2(LPT2)
2F8h - 2FFh	Serial Port #2(COM2)
2B0 - 2DF	Graphics adapter Controller
378h - 3FFh	Parallel Port #1(LPT1)
360 - 36F	Network Ports
3B0 - 3BF	Monochrome & Printer adapter
3C0 - 3CF	EGA adapter
3D0 - 3DF	CGA adapter
3F0h - 3F7h	Floppy Disk Controller
3F8h - 3FFh	Serial Port #1(COM1)

B. Interrupt Request Lines (IRQ)

There are total of 15 IRQ lines available on the Mungo545. Peripheral devices using interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on the Mungo545.

Level	Function
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Parallel Port #2
IRQ6	Floppy Disk Controller
IRQ7	Parallel Port #1
IRQ8	Real Time Clock
IRQ9	Serial Port #3
IRQ10	Serial Port #4
IRQ11	Reserved
IRQ12	Reserved
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE