

HS-5220/HS-5620

100MHz FSB / VGA / LAN / Sound

100MHz FSB Half Size All-in-one

CRT/Panel LAN Sound WDT 4COM PC/104

DMA33/66 DOC USB IrDA Single +5V

PISA Bus / ISA Bus Industrial Single Board Computer

HS-5220P/HS-5620P

100 MHz FSB

PISA Bus / ISA Bus Industrial Single Board Computer

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Chapter-1

General Information

The HS-5220/HS-5620 is a PISA/ISA Bus Industrial Single Board (I.S.B.) The board design combine together with all necessary input and output effects interfaces which makes it an ideal all-in-one industrial single board computer. The board design with 100 MHz internal bus clock rate architecture.

The advance PISA/ISA Bus add-on connection of HS-5220/HS-5620 allows user could easily obtain both ISA' s 16bit PISA slot for suitable plug into a small size system with 8/16/32 bit operating. One set of PC/104 bus connector for industrial PC/104 board add-in. The board also design with an ESS[®] Solo1 3D sound interface which provides an ideas sound adapter in any sound application. The IDE interface with DMA33/66 accessof mode 4 to IDE drive interface architecture, supports with maximum 66 MB/sec in data transfer rating to 2 pieces IDE drive connection. The board also provides an on-board 10/100-based LAN for easy network connection.

A single Flash chip holds the system BIOS, and you can change the Flash BIOS by the Utility Update. Advanced IR port also provide a faster data transmission. You can also use the DOS version of the "DiskOnChip? " socket by issuing commands from the DOS prompt without the necessity of other software supports up to 144MB.

The board design with 69000 VGA provides internal connections to VGA Monitor and-or Flat Panel. The VGA supports up to 1280x1024 256 colors resolution.

The HS-5220/HS-5620 support SDRAM memory at one DIMM socket. This gives you the flexibility of configuring your system from 8 to 256MB DRAM by using the most economical DIMM memory modules for its on board system SDRAM.

If a non-expect program cause halts, the on board Watch-Dog Timer (WDT) will automatically reset the CPU or generate an interrupt. The WDT is designed with pure hardware and doesn' t need any arithmetical functions of a real-time clock chip. This ensures the reliability in an unmanned or standalone system.

1.1 Major Features

- ✂✂ 75~500MHz CPU for Intel® Pentium® MMX™, Tillamook, AMD K5/K6, Cyrix 6x86
- ✂✂ ALi M1541, M1543 chipsets
- ✂✂ One DIMM socket provides up to 256MB
- ✂✂ Fast PCI DMA33/66 controller support two IDE disk drives
- ✂✂ 100MHz system clock support
- ✂✂ Four RS-232 serial ports include 16C550 UART with 16byte FIFO
- ✂✂ One enhanced bi-directional parallel port supports SPP/ECP/EPP
- ✂✂ On board PS/2 Keyboard and PS/2 Mouse connector
- ✂✂ On board SMC 37C669 super I/O chipset
- ✂✂ On board 69000 CRT/Panel display controller
- ✂✂ On board ESS Solo1 3D Sound
- ✂✂ DiskOnChip memory size up to 144MB
- ✂✂ Single +5V support
- ✂✂ PC/104 Bus support
- ✂✂ ATX Power Function support
- ✂✂ CPU Temperature Alarm support

1.2 Specifications

- ✂ ✂ **CPU** : 75~500MHz CPU for Intel® Pentium® MMX™, Tillmook, AMD K5/K6, Cyrix 6x86
- ✂ ✂ **Bus Interface** : HS-5220 is PISA Bus, HS-5620 is ISA Bus
- ✂ ✂ **Memory** : One DIMM socket provides up to 256MB
- ✂ ✂ **Cache Memory** : 512KB pipeline burst
- ✂ ✂ **Chipset** : ALi M1541/M1543
- ✂ ✂ **I/O Chipset** : SMC 37C669
- ✂ ✂ **VGA** : 69000 with 2MB memory support CRT/Panel display up to 1280x1024, 256 colors
- ✂ ✂ **IDE** : Two IDE disk drives support DMA33/66 transfer rate up to 33/66MB/sec
- ✂ ✂ **Floppy** : Support up to two floppy disk drives
- ✂ ✂ **Parallel Port** : Support SPP/ECP/EPP
- ✂ ✂ **LAN** : Intel® 82559 10/100 Based LAN
- ✂ ✂ **Sound** : ESS Solo1 3D Sound
- ✂ ✂ **Serial Port** : Four RS-232 serial ports include 16C550 UART with 16byte FIFO
- ✂ ✂ **PC/104** : PC/104 connector for 16bit ISA Bus
- ✂ ✂ **IR** : One IrDA TX/RX header
- ✂ ✂ **USB** : Support two USB ports
- ✂ ✂ **Keyboard** : PS/2 6pin Mini Din or 5pin connector
- ✂ ✂ **Mouse** : PS/2 6pin Mini Din
- ✂ ✂ **DiskOnChip** : Socket for DiskOnChip and memory size up to 144MB
- ✂ ✂ **BIOS** : Award Y2K PnP Flash BIOS
- ✂ ✂ **Watch-Dog Timer** : Set 1, 2, 10, 20, 110, 220 seconds activity trigger with Reset or NMI
- ✂ ✂ **CMOS** : DS12C887 or equivalent device
- ✂ ✂ **DMA Channels** : 7
- ✂ ✂ **Interrupt Levels** : 15
- ✂ ✂ **Extra Power** : One 5pin connector

-
- ✂✂ Power Voltage : +5V(4.75V to 5.25V)
 - ✂✂ Maximum Power Consumption : [+5V@3.9A](#)
 - ✂✂ Operating Temperature : 0~60 °C
 - ✂✂ Board Size : 7.3" (L) x 4.8" (W)

1.3 Delivery Package

The delivery package of HS-5220/HS-5620 includes all following items:

- HS-5220/HS-5620 Industrial Single Board
- One Printer
- One IDE port Flat Cable
- One FDD port Flat Cable
- Two RS232 port Flat Cable
- One Sound interface Cable
- Utility CD Disk
- User' s Manual

Please contact with your dealer if any of these items are missing or damaged when purchasing. And please keep all parts of the delivery package with packing materials in case of you want to ship or store the product in feature.

Chapter-2

Hardware Installation

This chapter provides the information on how to install the hardware of HS-5220/HS-5620. At first, please follow up sections 1.3, 2.1 and 2.2 in check the delivery package and carefully unpacking. Following after, the jumpers setting of switch, watchdog timer, and the DiskOnChip? address selection etc.

2.1 Caution of Static Electricity

The HS-5220/HS-5620 has been well package with an anti-static bag in protect its sensitive computer components and circuitry from the damage of static electric discharge.

Note: DO NOT TOUCH THE BOARD OR ANY OTHER SENSITIVE COMPONENTS WITHOUT ALL NECESSARY ANTI-STATIC PROTECTION.

You should follow the steps as following to protect the board in against the static electric discharge whenever you handle the board:

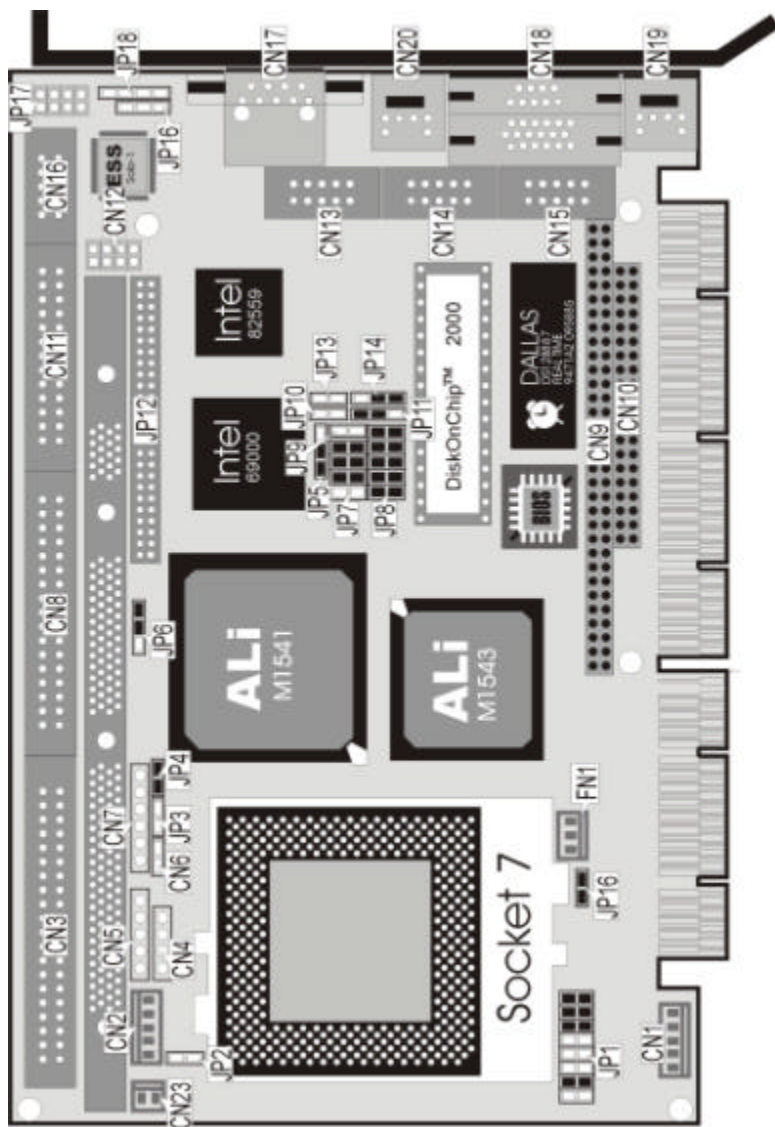
1. Please use a grounding wrist strap on whoever needs to handle the HS-5220/HS-5620. Well clip the ALLIGATOR clip of the strap to the end of the shielded wire lead from a grounded object. Please put on and connect the strap before handle the HS-5220/HS-5620 for harmlessly discharge any static electricity through the strap.
2. Please use anti-static pad for put any components or parts or tools on the pad whenever you work on them outside the computer. You may also in use the anti-static bag instead the pad. Please ask from your local supplier in help up your necessary parts on anti-static requirement.

2.2 Caution on Unpacking and Before Installation

First of all, please follow with all necessary steps of section 2.1 in protection the HS-5220/HS-5620 from electricity discharge. With refer to section 1.3, please check the delivery package again with following steps:

1. Unpacking the HS-5220/HS-5620, keep well storage of all packing material, manual and diskette etc. if has.
2. Is there any components lose or drop from the board? DO NOT INSTALL IF HAPPENED.
3. Is there any visual damaged of the board? DO NOT INSTALL IF HAPPENED.
4. Well check from your optional parts (i.e. CPU, SRAM, DRAM, ROM-Disk etc.) for completed setting all necessary jumpers setting to jumper pin-set and CMOS setup correctly. Please also reference to all information of jumpers setting in this manual.
5. Well check from your external devices (i.e. Add-On-Card, Driver Type etc.) for completed add-in or connection and CMOS setup correctly. Please also reference to all information of connector connection in this manual.
6. Please keep all necessary manual and diskette in a good condition for your necessary re-installation if you change your Operating System or whatever needs.

2.3 HS-5220/HS-5620's Layout



2.4 Quick Listing of Jumpers

JP1 (1-6)	✂	CPU' s Core / Bus Clock-Ratio setting
JP1 (7-16)	✂	CPU' s Vcore Voltage level selection setting
JP2	✂	ATX power switch
JP3	✂	Hard Drive Active LED connector
JP4	✂	CPU Temperature Alarm Enabled/Disabled
JP5	✂	69000 Active Select.
JP6	✂	Panel Voltage Select
JP7	✂	CPU clock in Select
JP8	✂	DiskOnChip™ Address & Time of Watch-Dog
JP9	✂	LAN speed LED
JP10	✂	LAN Link Integrity LED
JP11	✂	LAN Enabled/Disabled Select
JP12	✂	LCD Panel connector
JP13	✂	LAN Activity LED
JP14	✂	Watch-Dog Timer Active Select
JP16	✂	Sound Connector
JP17	✂	Audio out & Mic in connector
JP18	✂	Audio Line In connector
JP19	✂	Dual/Single Voltage Select

2.5 Quick Listing of Connectors

- CN1 : ATX Power Connector
- CN2 : 5pin Keyboard Connector
- CN3 : IDE Connector
- CN4 : Speaker Connector
- CN5 : KEYLOCK Connector
- CN6 : RESET
- CN7 : IR Connector
- CN8 : FDD Connector
- CN9 : PC/104 64pin Connector
- CN10 : PC/104 40pin Connector
- CN11 : Parallel Port
- CN12 : USB
- CN13 : COM3 Connector (HEADER 5X2)
- CN14 : COM4 Connector (HEADER 5X2)
- CN15 : COM2 Connector (HEADER 5X2)
- CN16 : COM1 Connector (HEADER 5X2)
- CN17 : RJ-45 Connector
- CN18 : CRT Connector (DB15)
- CN19 : PS/2 6pin Mini Din Keyboard Connector
- CN20 : PS/2 6pin Mini Din Mouse Connector
- CN21 : COM2 (DB9 For HS-5220P/HS-5620P)
- CN22 : COM1 (DB9 For HS-5220P/HS-5620P)

2.6 Jumper Setting Description

A jumper pin-set is **ON** as a shorted circuit with a plastic cap inserted over two pins. A jumper pin-set is **OFF** as a open circuit with a plastic cap inserted over one or no pin(s) between pins. The below figure 2.2 shows the examples of different jumper pin-set setting as **ON** or **OFF** in this manual.

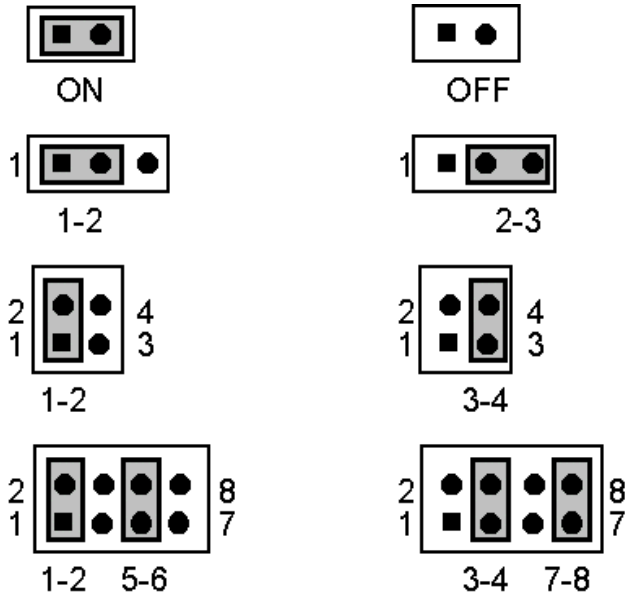


Figure 2.2

All jumper pin-set already has its default setting with the plastic cap inserted as ON, or without the plastic cap inserted as OFF. The default setting may reference in this manual with a " * " symbol in front of the selected item.

2.7 VGA Controller

The on board 69000 chipset provides with up to 1280x1024 256 colors resolution. The board provides the user to auto disable VGA if another PCI-bus display card is plugged in into the PCI-slot.

There is no need to set any jumper to disable the on board VGA if any 2nd PCI-bus VGA card is plugged-in into the PCI-slot.

If you want to disable VGA by Hardware, you can select JP5.

✎ JP5 : VGA Controller

*1-2	ON
2-3	OFF

2.8 DiskOnChip? Address Setting

The HS-5220/HS-5620 provides an U8 socket to install the DiskOnChip? module.

A JP8 may select the starting memory address of the DiskOnChip? (D.O.C.) for avoid the mapping area with any other memory devices. If you have other memory devices in the system, please set both at different memory address mapping.

✎ JP8 : DiskOnChip? Address

PIN NO.	Address
*1-2	D000
3-4	D800

The D.O.C. function allows the system in using without FDD nor HDD. The D.O.C. may be format as driver C: or driver A:. User may also uses the DOS's commands such as FORMAT, SYS, COPY, XCOPY, DISCOPY and DISKCOMP etc. This means that the D.O.C. may be used as driver-A if the system works without FDD-A for ambient application. Please contact with your supplier for different size D.O.C. module.

2.9 Setting the CPU of HS-5220/HS-5620

The HS-5220/HS-5620 provides all possibility in jumper setting for types of CPU with JP1 (7-16) for CPU Vcore Voltage, JP7 (1-8) for internal Host Bus Clock Rate and JP1 (1-6) for CPU Clock-in Multiplex Weighted Value setting as following. For Dual Voltage and Tillamook CPU, JP19 ON.

Please contact with your CPU' s supplier in getting those information for correctly setting. Any wrong setting may cause CPU defect.

☞ CPU Vcore Voltage Selection (* ☞ ON)

CPU Type	System Clock JP7 (1-8)				CPU Click-in JP1 (1-6)			CPU Vcore Voltage JP1 (7-16)				
	1-2	3-4	5-6	7-8	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16
AMD K6-II/300				*		*			*			
AMD K6-II/333		*	*	*		*	*		*			
AMD K6-II/366		*	*	*			*		*			
AMD K6-II/400				*	*		*		*			
AMD K6-II/450				*		*						
AMD K6-II/500				*	*	*	*		*			
AMD K6-II/550				*			*		*			
Intel MMX-200		*	*	*		*					*	
Intel MMX-233		*	*	*			*				*	
Cyrix-266		*	*	*	*		*		*			
Cyrix-300		*	*	*	*	*	*		*			
Cyrix-333		*	*	*		*	*		*			
Tillamook233		*	*	*			*			*	*	*
Tillamook266		*	*	*		*				*	*	*

☞ **JP9 : Dual/Single Voltage Select**

JP19	DESCRIPTION
ON	Dual Voltage
OFF	Single Voltage

2.10 Watch-Dog Timer

There are three access cycles of Watch-Dog Timer as Enable, Refresh and Disable. The Enable cycle should proceed by READ PORT 443H. The Disable cycle should proceed by READ PORT 045H. A continue Enable cycle after a first Enable cycle means Refresh.

Once if the Enable cycle is active, a Refresh cycle is requested before the time-out period for restarting counts the WDT Timer's period. Otherwise, it will assume that the program operation is abnormal when the time counting over the period preset of WDT Timer. A System Reset signal to start again or a NMI cycle to the CPU comes if over.

The JP14 is using to select the active function of watch-dog timer in disable the watch-dog timer, or presetting the watch-dog timer activity at the reset trigger, or presetting the watch-dog timer activity at the NMI trigger.

☞ **JP14 : Watch-Dog Active Type Setting**

JP14	DESCRIPTION
*2-3	System Reset
1-2	Active NMI
OFF	disable Watch-dog timer

JP8(5-10) : WDT Time - Out Period

PERIOD	5-6	7-8	9-10
*1 sec	ON	ON	ON
2 sec	OFF	ON	ON
10 sec	ON	OFF	ON
20 sec	OFF	OFF	ON
110 sec	ON	ON	OFF
220 sec	OFF	ON	OFF

The Watch-dog timer is disabled after the system Power-On. The watch-dog timer can be enabled by an Enable cycle with reading the control port (443H), a Refresh cycle with reading the control port (443H) and a Disable cycle by reading the Watch-dog timer disable control port (045H). After a Enable cycle of WDT, user must constantly proceed a Refresh cycle to WDT before

its period setting comes ending of every 1, 2, 10, 20, 110 or 220 seconds (Please reference to the selection table of JP8 for WDT Time-Out period setting). If the Refresh cycle does not

active before WDT period cycle, the on board WDT architecture will issue a Reset or NMI cycle to the system.

The Watch-Dog Timer is controlled by two I/O ports.

443H	I/O Read	The Enable cycle.
443H	I/O Read	The Refresh cycle.
045H	I/O Read	The Disable cycle.

The following sample programs is showing how to Enable, Disable and Refresh the Watch-dog timer:

```
WDT_EN_RF      EQU    0433H
WDT_DIS        EQU    0045H

WT_Enable      PUSH   AX           ; keep AX DX
                PUSH   DX
                MOV    DX,WDT_EN_RF ; enable the watch-dog timer
                IN     AL,DX
                POP    DX           ; get back AX, DX
                POP    AX
                RET

WT_Refresh     PUSH   AX           ; keep AX, DX
                PUSH   DX
                MOV    DX,WDT_ET_RF ; refresh the watch-dog timer
                IN     AL,DX
                POP    DX           ; get back AX, DX
                POP    AX
                RET

WT_DISABLE     PUSH   AX
                PUSH   DX
                MOV    DX,WDT_DIS   ; disable the watch-dog timer
                IN     AL,DX
                POP    DX           ; get back AX, DX
                POP    AX
                RET
```

2.11 System Memory SDRAM

The HS-5220/HS-5620 provides SDRAM memory on board with one DIMM socket for maximum 256MB capacity,.

Chapter-3

Connection

This chapter gives all necessary information of the peripheral's connections, switches and indicators.

3.1 VGA Connectors

The HS-5220/HS-5620 provides one external connector for the VGA monitor connection.

☞ CN18 : 15pin CRT connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	NC	10	GND
11	NC	12	NC
13	HSYNC	14	VSYNC
15	NC		

3.2 Serial Ports Connectors

The HS-5220/HS-5620 offer four high speed NSIGC550 compatible UARTS with Read/ Receive 16 byte FIFO serial ports with two DB-9 external connector (HS-5220P/HS-5620P only) and four internal 10-pin header connector.

/// CN13,14,15,16: 10Pin Serial Port Header

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	2	DSR
3	RXD	4	RTX
5	TXD	6	CTX
7	DTR	8	RI
9	GND	10	NC

/// CN21,22: For HS-5220P/HS-5620P only

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTX	8	CTX
9	RI		

3.3 Keyboard Connector

The HS-5220/HS-5620 offers two possibilities for Keyboard connections to external PS/2 keyboard at CN19 or an internal 5 pin header at CN2.

☞ **CN19 : PS/2 6pin Mini Din Keyboard Connector**

PIN NO.	DESCRIPTION
1	Keyboard data
2	N/C
3	GND
4	+5V
5	Keyboard clock
6	N/O

☞ **CN2 : 5pin Keyboard Connector**

PIN NO.	DESCRIPTION
1	Keyboard clock
2	Keyboard data
3	N/C
4	GND
5	+5V

3.4 PS/2 Mini DIN 6-pin Mouse Connector

The HS-5220 provides an external PS/2 mouse connector at CN20 with following pin information.

✍ **CN20 : PS/2 6pin Mini Din Mouse Connector**

PIN NO.	DESCRIPTION
1	Data
2	NC
3	GND
4	+5V
5	CLK
6	NC

3.5 PCI E-IDE Drive Connector

One standard 40pin header daisy-chain driver connector provides as CN3 with following pin assignment. Total two IDE (Integrated Device Electronics) drivers may connect.

CN3 : IDE Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RESET	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	N/C
21	N/C	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	N/C	28	BALE - DEFAULT
29	N/C	30	GROUND# -DEFAULT
31	INTERRUPT	32	IOCS16#-DEFAULT
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0	38	HDC CS1#
39	HDD ACTIVE	40	GROUND

3.6 Parallel Port Connector

A standard 26pin flat cable driver connector provides as CN11 with following pin assignment for connection to parallel printer.

☞ **CN11 : Parallel Port Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	STROBE	2	DATA 0
3	DATA 1	4	DATA 2
5	DATA 3	6	DATA 4
7	DATA 5	8	DATA 6
9	DATA 7	10	ACKNOWLEDGE
11	BUSY	12	PAPER EMPTY
13	PRINTER SELECT	14	AUTO FORM FEED
15	ERROR#	16	INITIALIZE
17	PRINTER SELECT LN#	18	GROUND
19	GROUND	20	GROUND
21	GROUND	22	GROUND
23	GROUND	24	GROUND
25	GROUND	26	GROUND

3.7 Keylock Connector and POWER LED

The following provides the pin information for Keylock with Power's LED indicator connection from CN5.

☞ **CN5 : KEYLOCK and POWER LED Connector**

PIN NO.	DESCRIPTION
1	POWER LED ANODE
2	N.C.
3	GROUND
4	KEYLOCK
5	GROUND

3.8 ATX Power Connector

The HS-5220/HS-5620 reserved a CN1 for ATX Power function CN1 can control the 5 pin ATX via the extension cable from the Backplane.

3.9 The Floppy Disk Drive Connector

A standard 34-pin header daisy-chain driver connector provides as CN8 with following pin assignment. Total two FDD drivers may connect.

CN8 : FDD CONNECTOR

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	2	REDUCE WRITE
3	GROUND	4	N/C
5	GROUND	6	N/C
7	GROUND	8	INDEX#
9	GROUND	10	MOTOR ENABLE A#
11	GROUND	12	DRIVE SELECT B#
13	GROUND	14	DRIVE SELECT A#
15	GROUND	16	MOTOR ENABLE B#
17	GROUND	18	DIRECTION#
19	GROUND	20	STEP#
21	GROUND	22	WRITE DATA#
23	GROUND	24	WRITE DATA#
25	GROUND	26	TRACK 0#
27	GROUND	28	WRITE PROTECT#
29	GROUND	30	READ DATA#
31	GROUND	32	SIDE 1 SELECT
33	GROUND	34	DISK CHANGE#

3.10 Connectors of the on board Sound Adapter

The HS-5220/HS-5620 has an on board ESS® Solo1 3D sound interface. The following are the connectors of LINE IN, AUXB and MIC/SPEAKER connectors.

The LINE IN and AUXB connectors are for audio sound input. The LINE IN provides for 4pin connection, and AUXB provides for 3pin connection.

✎ JP18 : LINE IN Connector

PIN NO.	DESCRIPTION
1	LINE L
2	GND
3	LINE R
4	GND

✎ JP16 : AUXB Connector

PIN NO.	DESCRIPTION
1	AUXAL
2	GND
3	AUXAR

✎ JP17 : MIC/SPEAKER Connector

PIN NO.	DESCRIPTION		PIN NO.	DESCRIPTION	
1	AOUTL	Red	2	AOUTR	White
3	GND	Black	4	GND	Key
5	MIC	Red	6	N.C.	White
7	GND	Black	8	GND	Key

With MIC/SPEAKER cable, user may connect R/L Speaker to the AOUTL and AOUTR pins of JP18, and connect Microphone to the MIC pin of JP17.

3.11 Fast Ethernet Connector

The Fast Ethernet controller provides with 32-bit performance, PCI bus master capability, and full compliance with IEEE 802.3 10/100Based-T specifications.

For 10/100Base-T operation, please connect the network connection by plugging one end of the cable into the RJ-45 of the CN17 Connector.

✍ CN17 : RJ-45 Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TX+	2	TX-
3	RX+	4	NC
5	NC	6	RX-
7	NC	8	NC

3.12 PC/104 Bus Connection

The HS-5220/HS-5620' s PC/104 expansion bus provides you to connect all kind of PC/104 modules. The PC/104 bus has been already become the industrial embedded 16bit PC standard bus. You can easily install over thousands type of PC/104 modules from hundreds of venders in the world. The detailed pin assignment of the PC/104 expansion bus connectors CN9 and CN10 are specified as following tables:

Note : *The PC/104 connector allows to directly plug-in Stack-thru PC/104 modules without the PC/104 mounting kit.*

CN9&CN10 : PC/104 Expansion Bus

(CN9 = 64pin female connector; CN10 = 40pin female connector.)

Pin No.	CN9 Row A	Pin No.	CN9 Row B
1	IOCHECK*	33	0V
2	SD7	34	RESETDRV
3	SD6	35	+5V
4	SD5	36	IRQ9
5	SD4	37	-5V
6	SD3	38	DRQ2
7	SD2	39	-12V
8	SD1	40	NOW*
9	SD0	41	+12V
10	IOCHRDY	42	(KEY)
11	AEN	43	SMEMW*
12	SA19	44	SMEMR*
13	SA18	45	IOW*
14	SA17	46	IOR*
15	SA16	47	DACK3*
16	SA15	48	DRQ3
17	SA14	49	DACK1*
18	SA13	50	DRQ1
19	SA12	51	REFRESH*
20	SA11	52	SYSCLK
21	SA10	53	IRQ7
22	SA9	54	IRQ6
23	SA8	55	IRQ5
24	SA7	56	IRQ4
25	SA6	57	IRQ3
26	SA5	58	DACK2*
27	SA4	59	TC
28	SA3	60	BALE
29	SA2	61	+5V
30	SA1	62	OSC

Pin No.	CN10 Row D	Pin No.	CN10 Row C
1	0V	21	0V
2	MEMCS16*	22	SBHE*
3	IOSC16*	23	LA23
4	IRQ10	24	LA22
5	IRQ11	25	LA21
6	IRQ12	26	LA20
7	IRQ15	27	LA19
8	IRQ14	28	LA18
9	DACK0*	29	LA17
10	DRQ0	30	MEMR*
11	DACK5*	31	MEMW*
12	DRQ5	32	SD8
13	DACK6*	33	SD9
14	DRQ6	34	SD10
15	DACK7*	35	SD11
16	DRQ7	36	SD12
17	+5V	37	SD13
18	MASTER*	38	SD14
19	0V	39	SD15
20	0V	40	(KEY)

31	SA0	63	0V
32	0V	64	0V

3.13 Flat-Panel Connector

The HS-5220/HS-5620 provides a 50pin 2.0 mm pitch header connector (JP12) for 3.3V Flat panel connection with following pin-assignment.

+12V	1	2	+12V
GND	3	4	GND
+3V PVcc	5	6	ENAVdd
FPVee	7	8	GND
P ₀	9	10	P ₁
P ₂	11	12	P ₃
P ₄	13	14	P ₅
P ₆	15	16	P ₇
P ₈	17	18	P ₉
P ₁₀	19	20	P ₁₁
P ₁₂	21	22	P ₁₃
P ₁₄	23	24	P ₁₅
P ₁₆	25	26	P ₁₇
P ₁₈	27	28	P ₁₉
P ₂₀	29	30	P ₂₁
P ₂₂	31	32	P ₂₃
P ₂₄	33	34	P ₂₅
SHFCLK	35	36	FLM
M	37	38	LP
GND	39	40	ENABKL
P ₂₆	41	42	P ₂₇
P ₂₈	43	44	P ₂₉
P ₃₀	45	46	P ₃₁
P ₃₂	47	48	P ₃₃
P ₃₄	49	50	P ₃₅

JP6 : Panel Power Selection

JP6	DESCRIPTION
-----	-------------

1-2	3.3V Power
2-3	5V Power

3.14 USB Ports Connector

The HS-5220/HS-5620 provides one 8pin connector for USB-0 & USB-1 ports. Please refer to the following default pin information.

2/2 CN12 : USB Ports Connector

PIN NO.	USB-0	PIN NO.	USB-1
1	VCC	2	VCC
3	USB PO-	4	USB P1-
5	USB PO+	6	USB P1+
7	GND	8	GND

Chapter-4

AWARD BIOS Setup

The HS-5220/HS-5620 uses Award PCI/ISA BIOS for the system configuration. The Award BIOS setup program is designed to provide the maximum flexibility in configuring the system by offering various options which could be selected for end-user requirements. This chapter is written to assist you in the proper usage of these features.

To access AWARD PCI/ISA BIOS Setup program, press key during memory testing when first power on. The Main Menu will be displayed at this time.

4.1 Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to enter the sub-menu.

ROM PCI/ISA BIOS (2A5KKD2B)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGURATION	HDD LOW LEVEL FORMAT
LOAD BIOS DEFAULTS	SAVE & EXIT SETUP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING
Esc : Quit	←←←← : Select Item
F10 : Save & Exit	(Shift)F2 : Change Color

Note that a brief description of each highlighted selection appears at the bottom of the screen.

4.2 Standard CMOS Setup

The Standard Setup is used for the basic hardware system configuration. The main function is for Data/Time and Floppy/Hard Disk Drive settings. Please refer to the following screen for the setup. When the IDE hard disk drive you are using is larger than 528MB, please set the HDD mode to **LBA** mode. Please use the IDE Setup Utility in BIOS SETUP to install the HDD correctly.

ROM PCI/ISA BIOS (2A5KKD2B)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Data (mm:dd:yy) : Fri, Oct 19 1999																						
Time (hh:mm:ss) : 00:00:00																						
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>CYLS</th> <th>HEAD</th> <th>PRECOMP</th> <th>LANDZ</th> <th>SECTOR</th> <th>MODE</th> </tr> </thead> <tbody> <tr> <td>Driver C ? Auto (0Mb)</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>Auto</td> </tr> <tr> <td>Driver D ? Auto (0Mb)</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>Auto</td> </tr> </tbody> </table>		CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE	Driver C ? Auto (0Mb)	0	0	0	0	0	Auto	Driver D ? Auto (0Mb)	0	0	0	0	0	Auto
	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE																
Driver C ? Auto (0Mb)	0	0	0	0	0	Auto																
Driver D ? Auto (0Mb)	0	0	0	0	0	Auto																
Drive A	: 1.44M , 3.5in.																					
Drive B	: None																					
LCD&CRT	: CRT																					
Halt On	: No Errors																					
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>Base Memory</td> <td>: 640K</td> </tr> <tr> <td>Extended Memory</td> <td>: 130048K</td> </tr> <tr> <td>Other Memory</td> <td>: 384K</td> </tr> <tr> <td>Total Memory</td> <td>: 131072K</td> </tr> </tbody> </table>	Base Memory	: 640K	Extended Memory	: 130048K	Other Memory	: 384K	Total Memory	: 131072K													
Base Memory	: 640K																					
Extended Memory	: 130048K																					
Other Memory	: 384K																					
Total Memory	: 131072K																					
ESC : Quit	Del Del Del : Select Item PU/PD/ + / - : Modify																					
F1 : Help	(Shift) F2: Change Color																					

4.3 BIOS Features Setup

This section allows you to configure your system for the basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

ROM PCI/ISA BIOS (2A5KKD2B)
 BIOS FEATURES SETUP
 AWARD SOFTWARE, INC.

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBF Shadow	: Disabled
External Cache	: Enabled	FF	
Quick Power On Self Test	: Disabled	CC000-CFF Shadow	: Disabled
Boot Sequence	: A,C,SCSI	FF	
Swap Floppy Drive	: Disabled	D0000-D3F Shadow	: Disabled
Boot Up Floppy Seek	: Enabled	FF	
Boot Up NumLock Status	: On	D4000-D7F Shadow	: Disabled
Boot Up System Speed	: High	FF	
Gate A20 Option	: Fast	D8000-DBF Shadow	: Disabled
Typematic Rate Setting	: Disabled	FF	
Typematic Rate (Chars/Sec)	: 6	DC000-DFF Shadow	: Disabled
Typematic Delay (Msec)	: 250	FF	
Security Option	: Setup	Cyrix 6x86/MII CPUID	: Enabled
PCI/VGA Palette Snoop	: Disabled		
Assign IRQ For VGA	: Enabled	ESC	: Quit
OS Select For DRAM > 64MB	: Non-OS2		ESC ESC ESC ESC : Select Item
Report No FDD For WIN 95	: Yes	F1	: Help
		F5	: Old Values (Shift) F2 : Color
		G6	: Load BIOS Defaults
		G7	: Load Setup Defaults

4.4 Chipset Features Setup

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and the access to the system memory resources, such as DRAM and the external cache. It also coordinates the communications between the conventional ISA and PCI buses. It must be stated that these items should never be altered. The default settings have been chosen because they provide the best operating conditions for your system. You might consider and make any changes only if you discover that the data has been lost while using your system.

ROM PCI/ISA BIOS (2A5KKD2B)
 CHIPSET FEATURES SETUP
 AWARD SOFTWARE, INC.

Auto Configuration	: Enabled	
AT Bus Clock	: CLK2/4	
L2 TA RAM Size	: 8	
DRAM Timing	: Nomal	
SDRAM CAS Latency	: 3	
Pipilined Function	: Enabled	
Graphics Aperture Size	: 64 MB	
DRAM Date Integrity Mode	: Disabled	
Memory Hole At 15M-16M	: Disabled	
Host Read DRAM Command	: Syn.	
Mode		
AGP Read Burst	: Enabled	
ISA Line Buffer	: Enabled	
Passive Release	: Enabled	
Delay Transaction	: Disabled	
Primary Frame Buffer	: All	
VGA Frame Buffer	: Enabled	ES : Quit Esc Esc Esc : Select Item
		C
Data Merge	: Disabled	F1 : Help PU/PD/+/-: Modify
IO Recovery Period	: 1 us	F5 : Old Values (Shift) F2 : Color
Auto Detect DIMM/PCI Slk	Enable	F6 : Load BIOS Defaults
Spread Spectrum	Disable	F7 : Load Setup Defaults

4.5 Integrated Peripherals

The IDE hard drive controllers can support up to two separate hard drives. These drives have a master/slave relationship which is determined by the cabling configuration used to attach them to the controller. Your system supports two IDE controllers--a primary and a secondary--so you can install up to four separate hard disks.

PIO means Programmed Input /Output. Rather than having the BIOS issue a series of commands to affect the transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by them. This is much simpler and more efficient (also faster).

ROM PCI/ISA BIOS (2A5KKD2B)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

On-Chip Primary IDE	: Enabled	KBC clock source	: 8 MHz
Master PIO	: Auto	Onboard FDC Controller	: Enabled
Slave PIO	: Auto	Onboard UART Port 1	: 3F8/IRQ4
Master Ultra DMA	: Auto	Onboard UART Port 2	: 2F8/IRQ3
Slave Ultra DMA	: Auto		
IDE HDD Block Mode	: Enabled	Onboard Parallel Port	: 378/IRQ7
On-Chip USB Controller	: Disabled	Parallel Port Mode	: ECCEPP 1.9
		ECP Mode Use DMA	: 3
Init Display First	: PCI Slot	Onboard IrDA Port	: Disabled
Ring/Wake On LAN	: Disabled		
Control		Onboard Serial Port 3	: 3E8
RTC Alarm Controller	: Disabled	Serial Part 3 Use IRQ	: IRQ10
		Onboard Serial Port 4	: 2E8
		Serial Port 4 Use IRQ	: IRQ11
Power On Function	: Button Only	LCD Panel Type	: Panel 5

Panel#	Panel Type
0	1024*768 Dual Scan STN Color Panel
1	128*1024 TFT Color Panel
2	640*480 Dual Scan STN Color Panel
3	800*600 Dual Scan STN Color Panel
4	640*480 Sharp TFT Color Panel
5	640*480 18-bit TFT Color Panel
6	1024*768 TFT Color Panel
7	800*600 TFT Color Panel
8	800*600 TFT Color Panel (Large BIOS ONLY)
9	800*600 TFT Color Panel (Large BIOS ONLY)
10	800*600 Dual Scan STN Color Panel (Large BIOS ONLY)
11	800*600 Dual Scan STN Color Panel (Large BIOS ONLY)
12	1024*768 TFT Color Panel (Large BIOS ONLY)
13	1280*1024 Dual Scan STN Color Panel (Large BIOS ONLY)
14	1024*600 Dual Scan STN Color Panel (Large BIOS ONLY)
15	1024*600 TFT Color Panel (Large BIOS ONLY)

4.6 Power Management Setup

The Power Management Setup allows user to configure the system for saving energy in a most effective way while operating in a manner consistent with his own style of computer use.

ROM PCI/ISA BIOS (2A5KKD2B)
 POWER MANAGEMENT SETUP
 AWARD SOFTWARE, INC.

Power Management	: User Define	** External Switch **	
PM Control by APM	: Yes	Power Button Mode	: Instant-off
MODEM Use IRQ	: 3	DOCK I/O SMI	: Disabled
Video Off Option	: Susp, stby ->Off	AC Power SMI	: Disabled
Video Off Method	: DPMS Support	Thermal SMI mode	: Disabled
** PM Times **			
HDD Off After	: Disabled		
Doze Mode	: Disabled		
Standby Mode	: Disabled		
Suspend Mode	: Disabled		
FAN Off Option	: Suspend-> Off		
Wake on LAN Use	: NA		
** PM Events **			
Primary HDD	: Disabled	ESC	: Quit : Select Item
Floppy	: Disabled	F1	: Help PU/PD/+/-: Modify
COM Ports	: Enabled	F5	: Old Values (Shift) F2 : Color
Keyboard	: Enabled	F6	: Load BIOS Defaults
LPT Ports Activity	: Disable	F7	: Load Setup Defaults

Chapter-5

Software Utilities

This chapter the detailed information of VGA and LAN function. How to install the configuration is also included.

Section include:

- VGA DRIVER INSTALLATION
- NETWORK DRIVER INSTALLATION

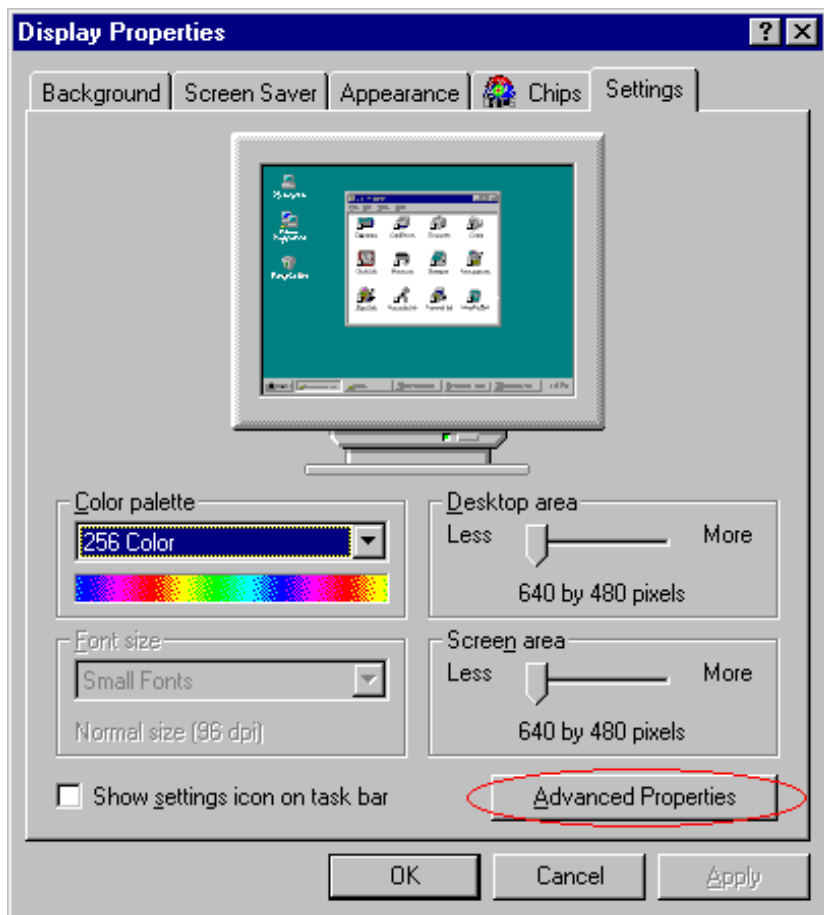
5.1 VGA DRIVER INSTALL FOR WIN95&98

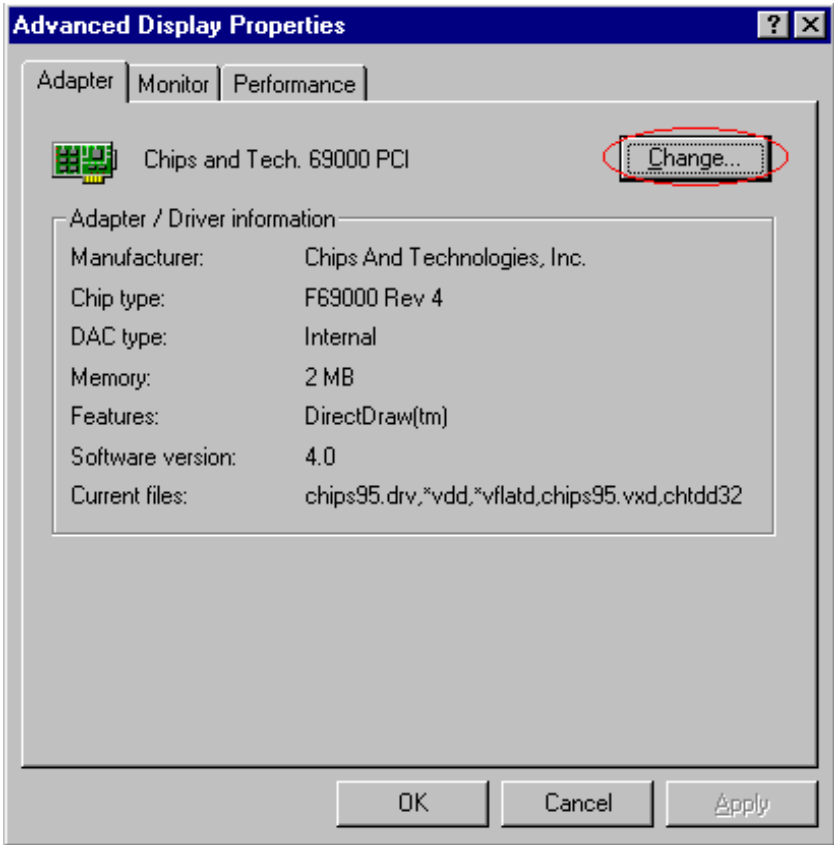
1. Click Start, then Setting, then Control Panel. Start the Display applet program.
2. Select the setting page, push the advanced properties button. Push the change button in the adapter area.
3. Continue to click "Next". Select Display a list of all drivers in a specific location, So you can select the drivers you want. Click "Next".
4. Select the Specify a location checkbox and click "Browse". Specify the path to the new driver and press the <ENTER> key.
(if in driver A:, select a:\win95)
5. The Select device dialog box will appear.

Select **Chips and Tech. 69000 PCI**

6. Continue choosing close until asked to restart machine.
7. After the system has restarted, you can go back into the display applet and select alternate screen resolutions and color depths.

Note: Installation procedure for Windows 98 is similar to Windows95.



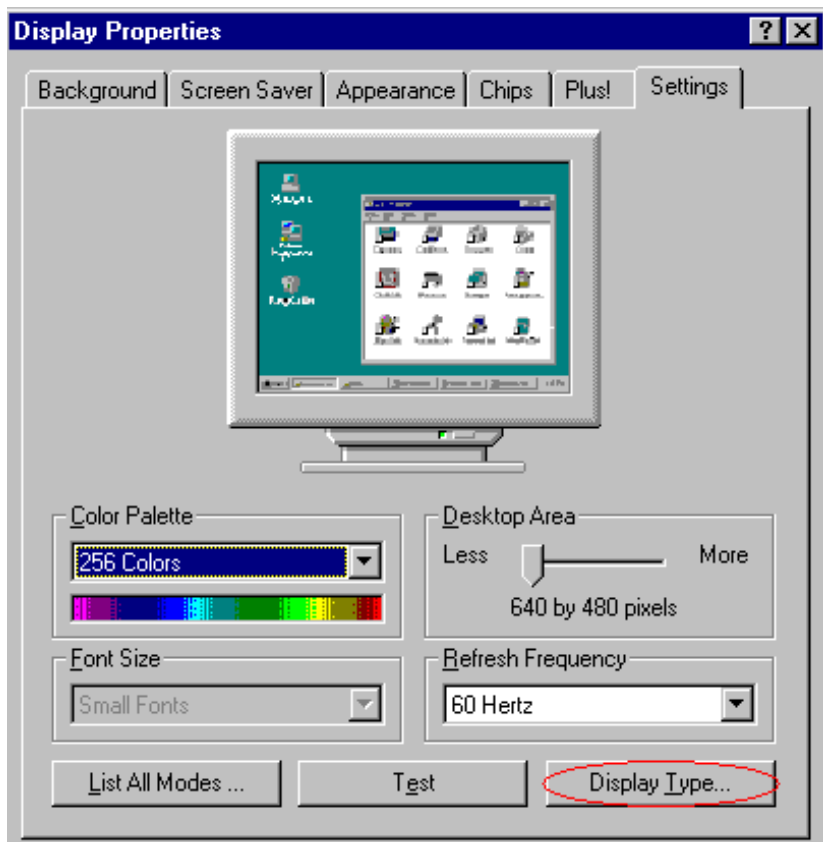


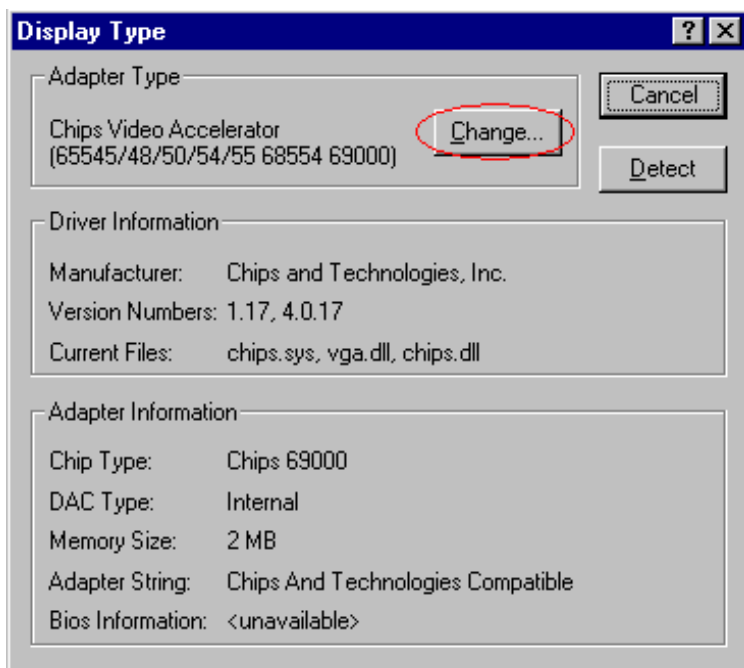
5.2 VGA DRIVER INSTALL FOR WIN NT4.0

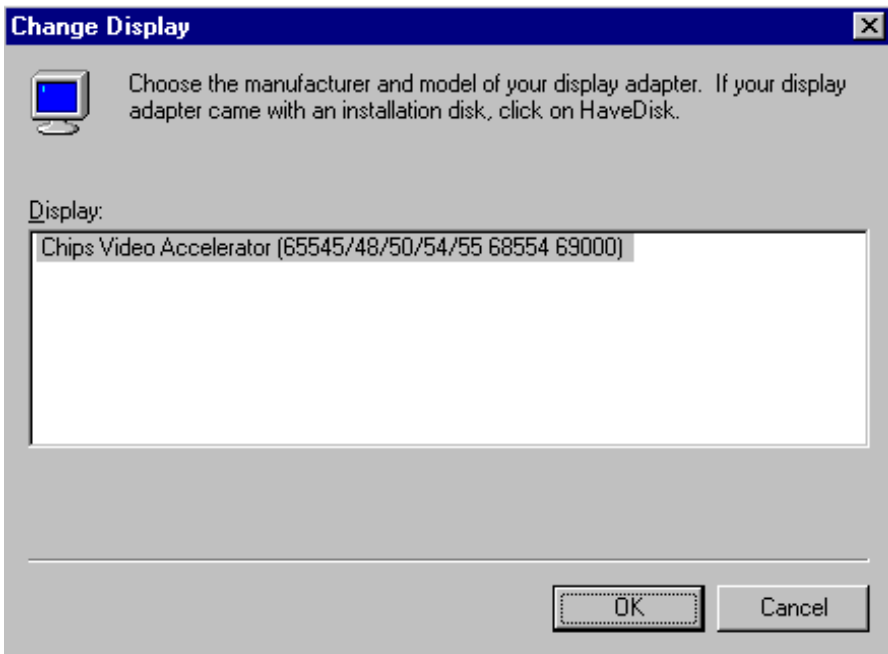
1. Click the Start button, then go to Setting and click on Control Panel. Click on Display icon to start the Display Properties Window.
2. Click on the Settings tab, and then click on Display Type. In the Change Display Type window, click on "Have Disk".
3. Specify the path to the new driver and press the <ENTER>key.
(if in driver A:, type a:\nt40)

Select **Chips Video Accelerator**
(655545/48/50/54/55/68554 69000)

4. Click OK or press Enter. You will see warning panel about Third Party Drivers. Click on Yes to finish the installation.
5. Once the installation is completed, the system must shut down and restart for the new driver to take effect.
6. After restart, checking on the VGA driver, the properties of the driver should look similar to the following figure.







5.3 NETWORK DRIVER INSTALL FOR WIN98&95

Win98

Windows 98 will detect the network driver automatically.

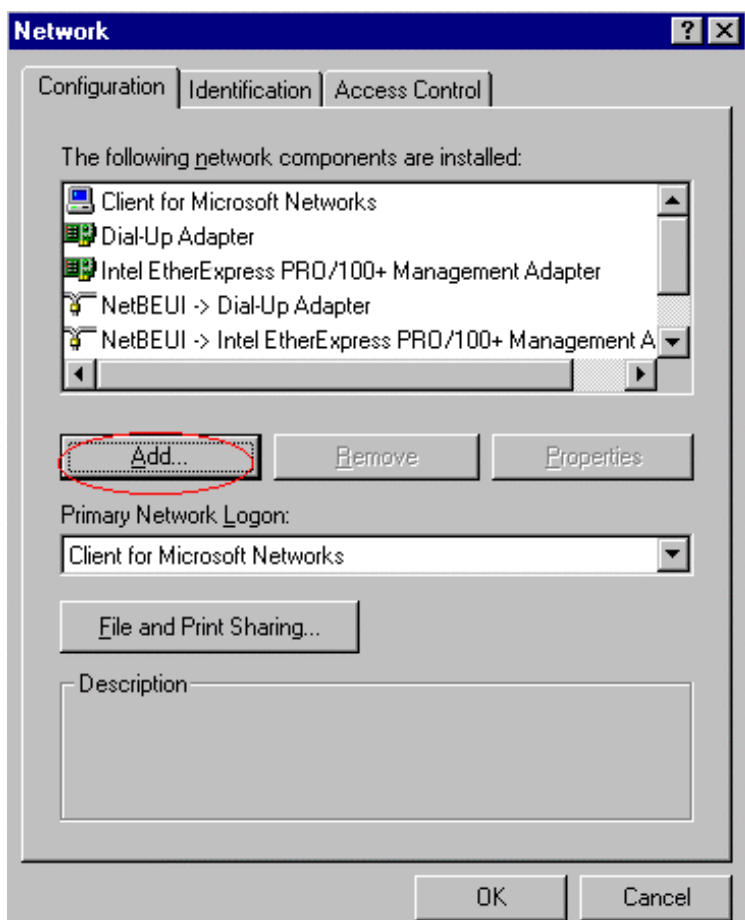
Win95

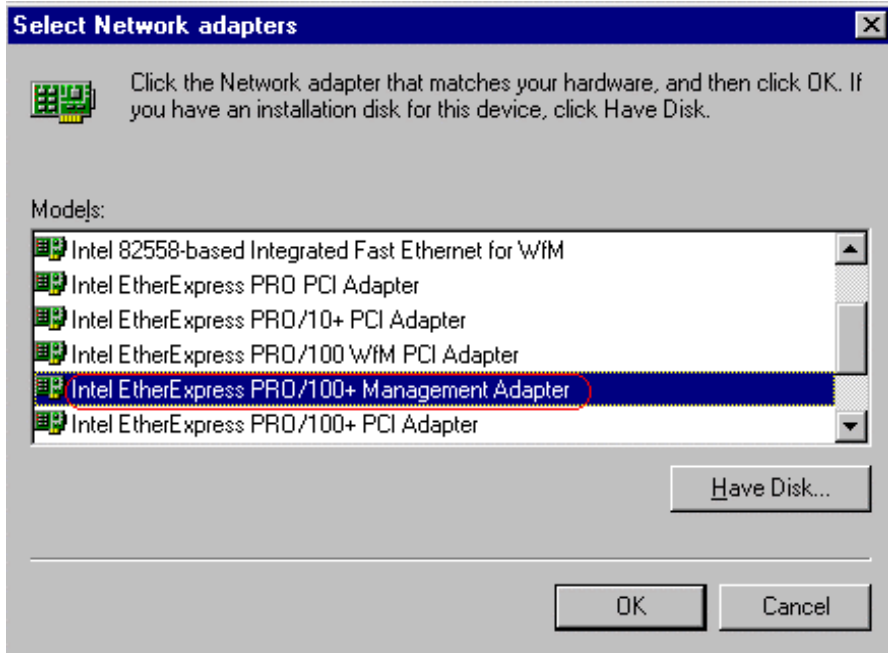
1. Click Start, then Setting, in the “Setting” select Control panel. Start the network applet program.
2. In the Network window, click “Add”. In the Select Network Component Type, select Adapter then click “Add”.
3. When the Select Network Component Type, Select Adapter, then click “Add”. Specify the path the new driver and press <ENTER> key. (If in driver a:, type a:)

(If you're not sure exactly where the drivers are, choose the “Browse” button and find it)

Select Intel EtherExpress PRO/100+ Management Adapter

4. Click OK.
5. Windows 95 will copy the network drivers to the proper directories on your system.
6. Continue choosing “OK”, until asked to restart your system.
7. After restart, checking on the network driver, the Properties of the driver should look similar to the following figure.





5.4 NETWORK DRIVER INSTALL FOR WIN NT4.0

1. Click the Start button, then go to Setting and click on Control Panel. Click on the Network icon to start the Network Window.
2. Click on the Adapters tab, and then click "Add". In the Select Network Adapter window, click "Have Disk".
3. This will bring up the Insert Disk window.
4. Supply the directory where the Windows NT driver files are located. (If in driver a: , type a:\)
5. The Select OEM Option window will show up.

Select Intel EtherExpress PRO Adapter

6. Click OK to finish the installation.
7. Once the installation is completed, the system must be shut down and restarted for the new driver to take effect.
8. After restart, checking on the Network driver, the Properties of the driver should look similar to the following figure.

