HS-5060

PICMG Pentium® MMX™ VGA & LAN & SCSI I.S.B.
• Full-size • All-in-one • VGA Interface • LAN •
• 2xDIMM sockets • DOC • CTA • DMA33-IDE • USB •
• IrDA • SCSI-III • PC/104 • PCI Bridge • RS-232/422/485 •

HS-5060V

PICMG Pentium® MMX™ VGA I.S.B.
• Full-size • All-in-one • VGA Interface •
• 2xDIMM sockets • DOC • CTA • DMA33-IDE •
• IrDA • PC/104 • PCI Bridge • RS-232/422/485 • USB •

HS-5060LV

PICMG Pentium® MMX™ VGA & LAN I.S.B.
• Full-size • All-in-one • VGA Interface • LAN •
• 2xDIMM sockets • DOC • CTA • DMA33-IDE •
• IrDA • PC/104 • PCI Bridge • RS-232/422/485 • USB •

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Chapter-1

General Information

The HS-5060 is an all-in-one full-size card for compatible with PICMG. The Intel® TX chipset provides Ultra DMA Function up to 33 MB/sec, and the H.D.D access speed is approach to Ultra SCSI' s (40 MB/sec). It makes the system' s effects higher. HS-5060 provides two DIMM sockets to support SDRAM. There are two RAM Modules to support for FP, EDO, BEDO RAM up to 256 MB. In addition to support for various CPU, including Pentium®MMX™ 75 ~ 300 MHz, AMD K5/K6 and Cyrix 6x86/M2.

HS-5060 also features the built-in VGA control carry 2MB RAM, the VGA Resolution is support up to 1024 by 1024, at 256 colors.

HS-5060 using the temperature control device to setup the limited of system temperatures. If the temperatures to rise over the range will trigger the HS-5060' s warning buzzer alarm until temperatures stabilize.

The HS-5060 can option a "DiskOnChip™" device, with the socket supporting the memory up to 144MB. That means you can issue commands directly from DOS, and you don' t need any other driver or application.

The HS-5060 on-board provides one Intel® 82558B LAN interface with RJ-45 connector, and one AIC® 7880 SCSI-III controller with one 68-pin D-Type and one 50-pin Header connectors.

HS-5060, is like the others HS-50xx series, also provides the following advanced functions: USB, Polyswitch, IR, DOC, etc. USB and IR ports are also on board to reserve the upgrade space for the interface transmission.

The HS-5060 design with advanced PCI-2030 PCI Bridge chipset for on-board PCI bus management.

The model HS-5060V which is base on HS-5060 but without LAN and SCSI-III interface.

The model HS-5060LV which is base on HS-5060 but without SCSI-III

interface.

1.1 Major Features

- Intel® MMX™Pentium® CPU 75 ~ 300 MHz, AMD® k5, k6, Cyrix® 6x86,M2, Socket-7 ZIF socket.
- Intel® TX system chipset with Ti® PCI-2030 PCI Bridge chipset.
- CPU Voltage and Ratio setting by BIOS.
- Two DIMMs and two SIMMs socket supports EDO or Fast Page DRAM or SDRAM up to 256 MB.
- Fast PCI DMA33-IDE controller supports four IDE drives includes large size hard disks, CD-ROM, tape backup, etc.
- PnP I/O address & IRQ selection.
- One high speed RS-232 serial port and one RS-232/422/485 serial port. All including 16C550 UART with 16-byte FIFO.
- One enhanced bi-directional parallel port with which supports SPP/EPP/ECP.
- On board keyboard and PS/2 Mouse connector.
- On board Winbond® W83977 super I/O.
- On board 32 bit PCI-bus S3® 86C775 SVGA controller.
- "DiskOnChip™" Socket Supported Memory sizes up to 144 MB.
- Switch Power Regulator.
- CPU Temperature Alarm supported.
- Provides one SCSI-III port.
- Provides one Intel® 82558A LAN port.
- Connector for PC/104 module expansion.

1.2 Specifications

- **CPU:** Intel® MMX™Pentium® CPU 75 ~ 300 MHz, AMD® k5, k6, Cyrix® 6x86,M2.
- **Bus interface:** PCI / ISA bus, comply with PICMG standard.
- **PC/104 Bus Connector:** Industrial 104-pin for 16-bit bus.
- **Chipset:** Intel® 82430 TX with PCI-2030 PCI Bridge chipsets.
- **Data bus:** 64-bit
- **Processing ability:** 64-bit
- **CRT SVGA controller:** S3® 86C775 Chipset with 2 MB memory, supports CRT resolutions up to 1280 x 1024 256 colors. Provides extra internal 10-pin VGA connector.
- **PCI Enhanced IDE interface:** Four IDE devices support DMA33 with transfer rate 33MB/sec.
- **SCSI-III Controller:** AIC® 7880 chipset provides one port. Provides one 50-pin header and one 68-pin D-type on board connectors.
- **LAN Controller:** Intel® 82558B chipset with one RJ-45 Connector port.
- **RAM memory:** Two 72-pin SIMM socket supports BEDO, EDO, Fast page DRAM and two DIMM socket support SDRAM. Provides up to 256MB.
- **Cache memory:** 512KB Pipeline burst cache memory.
- **Floppy disk drive interface:** Supports up to two floppy disk drives.
- **Parallel port:** One bi-directional parallel port. Supports SPP/ECP/EPP mode.
- **Serial port:** One RS-232 ports & one RS-232 / 422 / 485 port. Both including 16C550 UART with 16-byte FIFO.
- **BIOS:** AWARD flash BIOS.

- **Watchdog timer:** Hardware circuit provides periods set 1, 2, 10, 20, 110, or 220 seconds, activity trigger with Reset or NMI to the system when CPU did not periodically trigger the timer.
- **DMA channels:** 7
- **Interrupt levels:** 15
- **Keyboard:** 6-pin mini-DIN connector or internal 5-pin header supports standard PC/AT keyboard.
- **Mouse:** 6-pin mini-DIN connector support PS/2 standard mouse.
- **USB:** Supports 2 USB header.
- **IR interface:** Supports one IrDA TX/RX header.
- **Flash memory Disk:** Reserved socket for "DiskOnChip™", support up to 144MB Flash memory disk.
- **Fuse:** automatically resumes with polyswitch resettable fuses after short circuit releases.
- **CMOS:** Real-time clock/calendar and battery backup by DS12B887 or equivalent device.
- **Power Voltage:** +5V (4.75 to 5.25V), +12V / -12V.
- **Extra Connector:** 8-pin DC-power input header.
- **Max. Power requirement:** +5V @3.5A (K6-266), +12V/-12V @20mA.
- **Operating temperature:** 0-55℃ (CPU need cooler).
- **Board size:** 13.26"(L) x 4.8" (W) (337mm x 122mm).

1.3 Delivery Package

The delivery package of HS-5060 includes all following items:

- HS-5060 Industrial Single Board
- One Printer & COM2 Bracketed Flat Cable
- Two IDE ports Flat Cables
- One FDD port Flat Cable
- One Keyboard Transfer Cable (for PS/2 type transfer to PC/AT type)
- VGA Utility Diskette
- 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-5060. 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-5060 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:

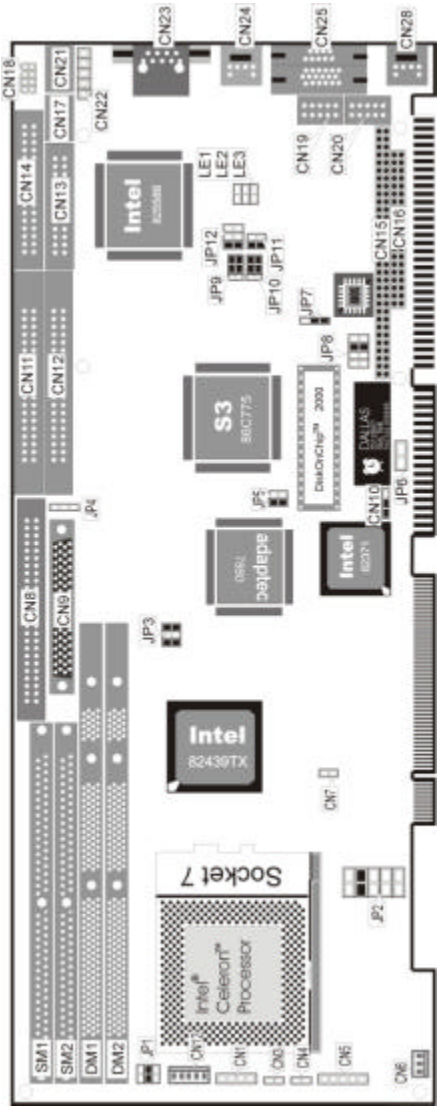
1. Please use a grounding wrist strap on whoever needs to handle the HS-5060. Well clip the ALLIGATOR clip of the strap to the end of the shielded wire lead from a grounded object. Please put on and connect the strap before handle the HS-5060 for harmlessly discharge any static electricity through the 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-5060 from electricity discharge. With refer to section 1.3, please check the delivery package again with following steps:

1. Unpacking the HS-5060, 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-5060's Layout



2.4 Quick Listing of Jumpers

JP1 (Y 3-4)	—	CPU Clock-in Select
JP2 (R 7-8)	—	CPU Vcore Voltage
JP3 (Y 1-2, 5-6)	—	CPU Clock Based Select
JP4 (B 2-3)	—	Manufacturer Default Setting
JP5 (B 1-2)	—	DiskOnChip™ Address
JP6 (Open)	—	RTC Clear
JP7 (B 1-2)	—	WATCHDOG Active Select
JP8 (B 5-6)	—	Time of WATCHDOG
JP9 (B 3-5, 4-6)	—	RS232 or RS232/422/485 Select
JP10 (B 3-5, 4-6)	—	RS232 or RS232/422/485 Select
JP11 (B 1-2)	—	RS232/422/485 Enable Control
JP12 (B 1-2)	—	RS232/422/485 Data Control

✍✍B means blue jumper-cap, R means read jumper-cap, Y means yellow jumper-cap.
✍✍JP1 (Y 3-4) means to use a yellow jumper-cap short between pin-3 and pin-4 of JP1.

2.5 Quick Listing of Connectors

CN1: SPEAKER
CN2: JST-5P KEYBOARD CONNECTOR
CN3: RESET IN CONNECTOR
CN4: IDE-DRIVE LED
CN5: KEYLOCK
CN6: FAN DC-POWER OUTPUT CONNECTOR
CN7: ATX POWER SUPPLY SUSPEND CONTROL
CN8: INTERNAL 50-PIN HEADER SCSI-III CONNECTOR
CN9: INTERNAL 68-PIN FEMALE D-SUB SCSI-III CONNECTOR
CN10: ATX POWER SWITCH CONTROL
CN11: 1st HDD(IDE) CONNECTOR
CN12: 2nd HDD(IDE) CONNECTOR
CN13: PARALLEL PORT
CN14: FDD CONNECTOR
CN15: PC/104 BUS 64-PIN HEADER CONNECOTR
CN16: PC/104 BUS 40-PIN HEADER CONNECOTR
CN17: RS-232/422/485 COM2 (HEADER 5x2)
CN18: USB0 & USB1
CN19: RS-232 COM2 (HEADER 5x2)
CN20: INTERNAL 10-PIN HEADER VGA CONNECTOR
CN21: RS-232 COM1 (HEADER 5x2)
CN22: IR CONNECTOR
CN23: RJ-45 LAN NETWORK CONNECTOR
CN25: MINI-DIN 6-PIN PS/2 MOUSE CONNECTOR
CN26: EXTERNAL DB-15 VGA CONNECTOR
CN28: MINI-DIN 6-PIN PS/2 KEYBOARD CONNECTOR
LD1: POWER LED INDICATOR
LE1, LE2, LE3: LAN NETWORK LED INDICATORs

U17: SOCKET OF DiskOnChip™ MODULE

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.

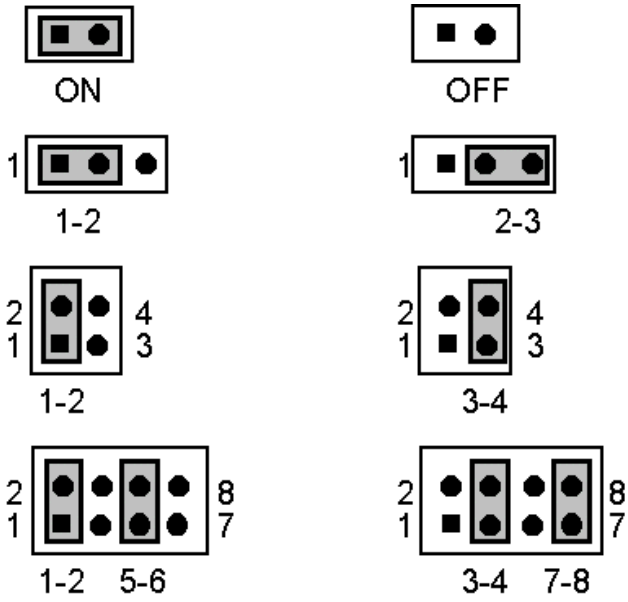


Figure 2.2

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 Setting the CPU of HS-5060

The HS-5060 provides all possibility in jumper setting for wide using all types of CPU with JP1 setting as following:

CPU Clock Setting :

CPU Clock Ratio	1-2	3-4	5-6
2.0X	ON	OFF	OFF
2.5X	ON	ON	OFF
3.0X	OFF	ON	OFF
3.5X	OFF	OFF	OFF
4.0X	ON	OFF	ON
4.5X	ON	ON	ON
5.0X	OFF	ON	ON
5.5X	OFF	OFF	ON

✍ CPU Vcore Voltage Selection

Correspond to different type CPU, it is request to set JP2 for match the CPU's Vcore operating voltage. Here shows at below of the proper jumper settings for their respective Vcore at range 2.0V to 3.5V.

CPU Vcore Voltage	JP2				
	9-10	**7-8**	**5-6**	**3-4**	**1-2**
1.80V	ON	ON	OFF	ON	OFF
1.85V	ON	ON	OFF	ON	ON
1.90V	ON	ON	ON	OFF	OFF
1.95V	ON	ON	ON	OFF	ON
2.00V	ON	ON	ON	ON	OFF
2.05V	ON	ON	ON	ON	ON
2.00V	OFF	OFF	OFF	OFF	OFF
2.10V	OFF	OFF	OFF	OFF	ON
2.20V	OFF	OFF	OFF	ON	OFF
2.30V	OFF	OFF	OFF	ON	ON
2.40V	OFF	OFF	ON	OFF	OFF
2.50V	OFF	OFF	ON	OFF	ON
2.60V	OFF	OFF	ON	ON	OFF
2.70V	OFF	OFF	ON	ON	ON
*** 2.80V**	**OFF**	**ON**	**OFF**	**OFF**	**OFF**
2.90V	OFF	ON	OFF	OFF	ON
3.00V	OFF	ON	OFF	ON	OFF
3.10V	OFF	ON	OFF	ON	ON
3.20V	OFF	ON	ON	OFF	OFF
3.30V	OFF	ON	ON	OFF	ON
3.40V	OFF	ON	ON	ON	OFF
3.50V	OFF	ON	ON	ON	ON

JP3 used to setting the CPU clock based rate. The CPU clock based setting will preset the system operating clocking base rate.

CPU Clock based select

CPU Clock based	JP3
50 MHz	1-2, 3-4, 5-6
55 MHz	1-2, 3-4
60 MHz	3-4, 5-6
61.6 MHz	1-2
*** 66.6 MHz**	**1-2, 5-6**
68.4 MHz	All OPEN
75 MHz	3-4

*) : default setting

2.8 System Memory DRAM

The HS-5060 provides a wide range on-board DRAM memory by two pieces SIMM sockets (SM1 & SM2) to accept 1 MB, 2MB, 4MB, 8MB, 16MB, 32MB or 64MB and two pieces DIMM sockets (DM1 & DM2). The SIMMs (Single In-Line Memory Modules) RAM request the access time should be 70 n-second or faster. The total capacity of the on board memory by SIMM are between 2MB to 128MB. The maximum capacity of the on board memory by DIMM is 256MB.

See the figure on section 2.3 for get the identifying the banks. Please take notes that the memory access capability should meet the specification requested.

2.9 Watch-Dog Timer

There are three activity 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 043H. A continue Enable cycle after a first Enable cycle means Refresh.

Once if the Enable cycle activity, a Refresh cycle is request before the time-out period for restart counting 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 JP7 is using for 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.

JP7 : Watch-Dog Active Type Setting

JP7	DESCRIPTION
***1-2**	**System Reset**
2-3	Active NMI
OFF	disable Watch-dog timer

JP8 : WDT Time - Out Period

PERIOD	1-2	3-4	5-6	7-8
***1 sec**	**OFF**	**OFF**	**ON**	**OFF**
2 sec	OFF	OFF	ON	ON
10 sec	OFF	ON	OFF	OFF
20 sec	OFF	ON	OFF	ON
110 sec	ON	OFF	OFF	OFF
220 sec	ON	OFF	OFF	ON

The Watch-dog timer is disabled after the system Power-On. The watch-dog timer can be enabled by a 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 (043H). 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 120 seconds.

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. User should pre-scale setting the JP8 for assign the WDT timeout cycle.

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.
043H	I/O Read	The Disable cycle.

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

```
WDT_EN_RF       EQU     0443H
WDT_DIS         EQU     0043H

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_Rresh        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
```

2.10 PCI VGA Controller

The HS-5060 has built-in a S3® VGA Controller. If you want to use the external VGA Card, the BIOS can disable the on board VGA controller and use the external one.

Video Modes

S3® 86C775 Chipset with 2 MB memory, support resolutions up to 1280 x 1024 256 colors, reserved internal 10 pin VGA connector.

To get more VGA drivers information, please refer to the S3 Internet web site : **WWW.S3.COM**

2.11 DiskOnChip? Address Setting

The HS-5060 provides a U17 socket for install the DiskOnChip? module.

A JP5 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 another extra memory devices in the system with the same memory, neither the HS-5060 nor the extra memory devices will function normally. Please setting both at different memory address mapping.

✍ **JP5 : DiskOnChip? Address**

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

*) : default setting

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

2.12 RTC Clear

The HS-5060 provides a JP6 for clear the RTC CMOS data. User may clear the data by short (ON) the pins. Please keep OFF (open) when normal operating.

✍ **JP6 : RTC CMOS Clear**

JP6	Status
ON	Clear Data
***OFF**	**Normal Operating**

*) : default setting

2.13 Manufacturer Default Setting

The HS-5060 has some engineering setting which does not allowed any change by user. The information here in is for notice only, no technical information provides in this section.

✍ **Manufacturer Default Setting**

Jumper	Default Setting
JP4	2-3 ON

*) : default setting

2.14 COM-2 Select and Control

This section descriptor how to select and control the COM-2 as an RS-232 or RS-232/422/485. Please reference to the following table for select and control the port.

User may uses COM-2 as RS-232 port at CN19, and uses COM-2 as RS-232/422/485 port at CN17. For more information, please reference to section 3.4 in this manual.

✍ **COM-2 Port Select and Control**

Jumper / Mode	JP9	JP10	JP11	JP12
RS-232	3-5, 4-6	3-5, 4-6	1-2	1-2

RS-232/422/485	1-3, 2-4	1-3, 2-4	1-2 or 3-4	1-2 or 3-4 or 5-6

*) : default setting

Chapter-3

Connection

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

3.1 The Floppy Disk Drive Connector

A standard 34-pin header daisy-chain driver connector provides as CN14 with following pin assignment. Total two FDD drivers may connect.

✍ **CN14 : 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#

3.2 PCI E-IDE Drive Connector

Two standard 40-pin header daisy-chain driver connectors provide as CN11 & CN12 with following pin assignment. Total four IDE (Integrated Device Electronics) drivers may connect.

CN11(IDE 1) : Primary IDE Connector

CN12(IDE 2) : Secondary IDE Connector

✍ **CN11/CN12 : IDE Interface 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

3.3 Parallel Port Connector

A standard 26-pin flat cable driver connector provides as CN13 with following pin assignment for connection to parallel printer.

CN13 : 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

3.4 Serial Ports Connectors

The HS-5060 offers two high speeds NS16C550 compatible UARTs with Read/Receive 16 byte FIFO serial ports provides one internal RS-232 COM-1 serial port, and one internal RS-232 or RS-232/422/485 port. All ports provide by 10-pin header connector. The board provides CN21 as COM-1 RS-232 port, CN19 as COM-2 RS-232 port, CN17 as COM-2 RS-232/422/485 port. The COM-2 port only select as CN19 or CN17. Please reference to section 2.14 for COM-2 port selection.

The following table shows out the pin assignment of CN21 and CN19 as RS-232 communication ports of COM-1 and COM-2.

✍ **CN21, CN19 : Serial Port 10-pin Header (ACE1)**

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

If the COM-2 select as an RS-232/422/485 port, the HS-5060 provides an advanced setting at JP11 and JP12 for user to control the CN17 industrial control output. Please reference to the following tables for CN17 detail description.

✍ **CN17 : RS-232/422/485 Port 10-pin Header**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TX-	2	TX+
3	RX+	4	RX-
5	GND	6	RTS-
7	RTS+	8	CTS+
9	CTS-	10	NC

✍ **JP11 : Receiver Enable Control**

JP11	CN17 DESCRIPTION
1-2 OFF	Always Disable
3-4 ON	Enable by writing the REG : 2 EFH BIT1=1
***1-2 ON**	**Always Enable**

✍ **JP12 : Transceiver Enable Control**

JP12	CN17 DESCRIPTION
1-2 OFF	Always Disable
3-4 ON	Enable by ”-RTS” signal
5-6 ON	Enable by writing the REG : 2 EFH BIT0=1

***1-2 ON**	**Always Enable**

3.5 Keyboard Connectors

The HS-5060 offers two possibilities for keyboard connections to external PS/2 type keyboard at CN28, or an internal 5-pin header at CN2.

✍ **CN2 : 5-pin Header Keyboard Connector**

PIN NO.	DESCRIPTION
1	KEYBOARD CLOCK
2	KEYBOARD DATA
3	N/C
4	GROUND
5	+5V

✍ **CN28 : 6-pin Mini-DIN Keyboard Connector**

PIN NO.	DESCRIPTION
1	KEYBOARD DATA
2	N/C
3	GROUND
4	+5V
5	KEYBOARD CLOCK
6	N/C

3.6 Power's LED, Key-Lock and Reset Button

The following provides the pin information for Power's LED indicator, Key-Lock and Reset Button connections from CN5, CN3 and CN4.

✍ **CN5 : POWER LED & KEYLOCK**

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

✍ **CN3 : RESET BUTTON**

PIN NO.	DESCRIPTION
1	GND
2	RESET

✍ **CN4 : IDE LED connector**

PIN NO.	DESCRIPTION
1	HDD ACTIVE#
2	+5V

3.7 External Speaker

The HS-5060 has an on-board buzzer. And it also provides the CN1 in allows user to connecting to the external speaker.

✍ **CN1 : Speaker Connector**

PIN NO.	DESCRIPTION
1	SPEAKER SIGNAL
2	NC
3	GROUND
4	+5V

3.8 PS/2 Mouse 6-pin Mini-DIN Connector

The HS-5060 provides an external PS/2 mouse connector at CN25 with following pin information.

✍ **CN25 : PS/2 Mouse Connector**

PIN NO.	DESCRIPTION
1	DATA
2	NC
3	GROUND
4	+5V
5	CLK
6	NC

3.9 VGA Connectors

The HS-5060 provides two possible connectives of VGA connections. One standard DB-15 external VGA connector CN26, and one internal 10-pin header connector CN20 as following pin information.

✍ **CN26 : 15-pin DB-15 Female VGA connector**

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

✍ **CN20 : 10-pin Header VGA connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RED	2	GROUND
3	GREEN	4	GROUND
5	BLUE	6	GROUND
7	HSYNC	8	GROUND
9	VSYNC	10	GROUND

3.10 IR Connector

The HS-5060 provides a 5-pin internal IR communication connector as following CN22 pin information.

✍ **CN22 : 5-PIN IR CONNECTOR**

PIN NO.	DESCRIPTION
1	Vcc
2	FIRRX
3	IRRX

4	GROUND
5	IRTX

3.11 FAN-Power, Power-Suspend, ATX Power-Switch Connectors

The HS-5060 provides more extra connector pin-set for user application in power saving or system temperature control.

The CN6 FAN DC-Power output connector provides for connect to a DC-FAN. The system will provide a DC +12V power to the cooling FAN.

✍ **CN6 : 3P FAN DC-Power Output Connector**

PIN NO.	DESCRIPTION
1	GROUND
2	DC +12V
3	GROUND

The CN7 ATX Power Supply Suspend Control connector provides for connect to a ATX Power Supply.

✍ **CN7 : ATX Power Supply Suspend Control Connector**

PIN NO.	DESCRIPTION
1	NC
2	5VSB
3	NC
4	Control Single
5	GND

The CN10 SMI-Switch Input Control allows user to control the system and force the system into a SMI mode (The power suspend mode).

✍ **CN10 : 2P SMI-Switch Input Control Connector**

PIN NO.	DESCRIPTION
1	3VSB
2	ATX Power Switch

3.12 Power-ON LED Indicator

The HS-5060 provides a indicator LED LD1 to indicate the system power status. A light ON means the power supply is under Power-ON operating.

3.13 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 10-pin header of the CN23 Connector.

✍ **CN23 : Ethernet Connector (RJ-45 9-pin)**

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

The on board three LED indicators (LE1, LE2, LE3) will show out the status of the LAN operating.

3.14 SCSI-III Connector

The HS-5060 provides two internal SCSI-III connectors for all kinds of user application and easy connection, one 50-pin header connector CN8 for 8-bit SCSI port and one 68-pin female D-Sub connector for 16-bit SCSI port. Please reference to the following for detail pin assignment.

CN8 and CN9 Pin Assignment

Pin	CN8 Assignment	CN9 Assignment	Pin	CN8 Assignment	CN9 Assignment
1	GROUND	GROUND	35	GROUND	SCD12
2	SCD0	GROUND	36	BSY#	SCD13
3	GROUND	GROUND	37	GROUND	SCD14
4	SCD1	GROUND	38	ACK#	SCD15
5	GROUND	GROUND	39	GROUND	SCDPH#
6	SCD2	GROUND	40	RST#	SCD0
7	GROUND	GROUND	41	GROUND	SCD1
8	SCD3	GROUND	42	MSG#	SCD2
9	GROUND	GROUND	43	GROUND	SCD3
10	SCD4	GROUND	44	SEL#	SCD4
11	GROUND	GROUND	45	GROUND	SCD5
12	SCD5	GROUND	46	CD#	SCD6
13	GROUND	GROUND	47	GROUND	SCD7
14	SCD6	GROUND	48	REQ#	SCDPL#
15	GROUND	GROUND	49	GROUND	GROUND
16	SCD7	GROUND	50	IO#	GROUND
17	GROUND	NC	51		VCC
18	SCDPL#	NC	52		VCC
19	GROUND	NC	53		NC
20	GROUND	GROUND	54		GROUND
21	GROUND	GROUND	55		ATN#
22	GROUND	GROUND	56		GROUND
23	NC	GROUND	57		BSY#
24	NC	GROUND	58		ACK#
25	NC	GROUND	59		RST#
26	VCC	GROUND	60		MSG#
27	NC	GROUND	61		SEL#
28	NC	GROUND	62		CD#
29	GROUND	GROUND	63		REQ#
30	GROUND	GROUND	64		IO#
31	GROUND	GROUND	65		SCD8
32	ATN#	GROUND	66		SCD9
33	GROUND	GROUND	67		SCD10

34	GROUND	GROUND	68		SCD11

3.15 USB Ports Connector

The HS-5060 provides one internal 8-pin connector for USB0 & USB1 ports. Please refer to the following detail pin information.

✍ **CN18 : 10-pin Header USB0 & USB1 connector**

PIN NO.	CN18(USB0)	PIN NO.	CN18(USB1)
1	Vcc	2	Vcc
3	USBP0-	4	USBP1-
5	USBP0+	6	USBP1+
7	GROUND	8	GROUND

3.16 PC/104 Bus Connection

The HS-5060' s PC/104 expansion bus provides you in connect to all kind of PC/104 modules. The PC/104 bus has been already become the industrial embedded 16-bit PC standard bus. You can easily install to 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 CN15 and CN16 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.

CN15&CN16 : PC/104 Expansion Bus

(CN15 = 64-pin female connector; CN16 = 40-pin female connector.)

Pin No.	CN15 Row A	Pin No.	CN15 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

Pin No.	CN16 Row D	Pin No.	CN16 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)

30	SA1	62	OSC
31	SA0	63	0V
32	0V	64	0V

Chapter-4

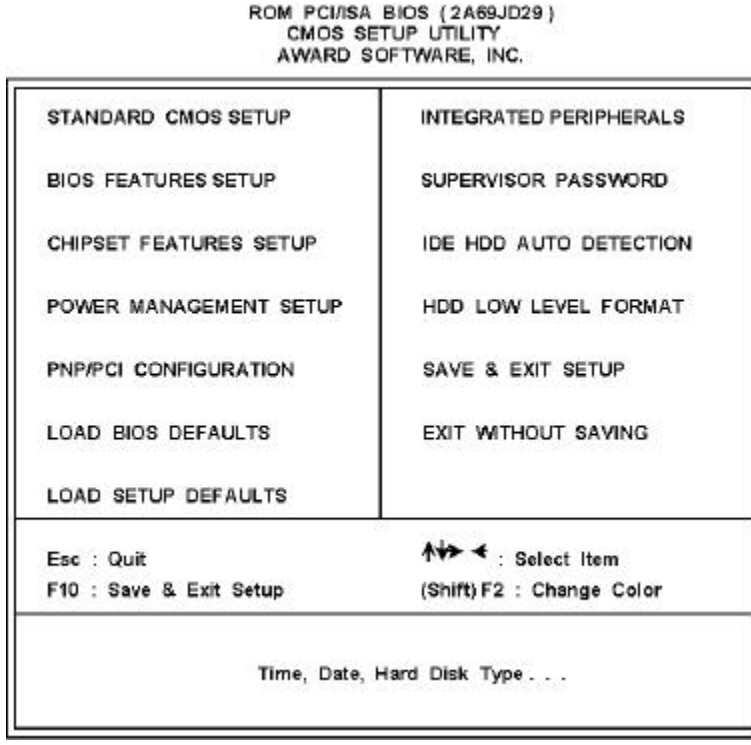
AWARD BIOS Setup

The HS-5060 uses the 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 <Del> key. 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.



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 (2A59ID2A)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Data (mm:dd:yy) : Fri, Nov 15 1999

Time (hh:mm:ss) : 00:00:00

		TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	?	Auto	0	0	0	0	0	0	AUTO
Primary Slave	?	Auto	0	0	0	0	0	0	AUTO
Secondary Master	:	Auto	0	0	0	0	0	0	AUTO
Secondary Slave	:	Auto	0	0	0	0	0	0	AUTO

Drive A : 1.44M , 3.5in.
Drive B : None
Floppy 3 Mode Support : Disable
Video : EGA/VGA

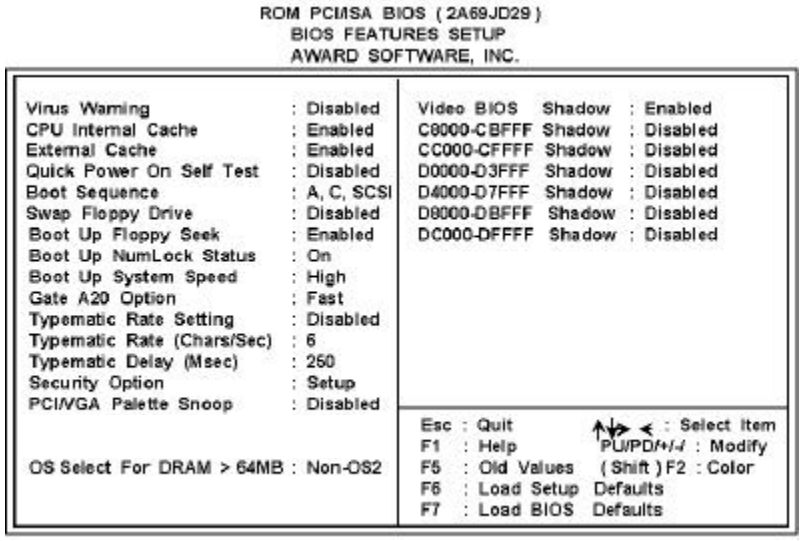
Halt On : All, But keyboard

Base Memory	:	640K
Extended Memory	:	130048K
Other Memory	:	384K
Total Memory	:	131072K

ESC : Quit ←↑→↓ : 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.



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 (2A59ID2A)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Auto Configuration	:	Enabled	DRAM Refresh Rate	:	3
DRAM Speed Selection	:	70 ns	CPU Warming Temperature	:	15.6 usd
DRAM Timing	:	70	Current CPU Temperature	:	65°C/149°F
DRAM Read Burst (EDO/FP)	:	X333/X444			
DRAM Write Burst Timing	:	X333			
Fast EDO Lead off	:	Disabled			
Refresh RAS# Assertion	:	5 Clks			
Fast RAS To RAS Delay	:	3			
DRAM Page Idle Timer	:	2 Clks			
DRAM Enhanced Paging	:	Enabled			
Fast Ma to RAS# Delay	:	2 Clks			
Video BIOS Cacheable	:	Disabled			
Video RAM Cacheable	:	Disabled			
8 Bit I/O Recovery Time	:	1			
16 Bit I/O Recovery Time	:	2			
Memory Hole At 15M-16M	:	Disabled	ESC : Quit		↙↙↙↙: Select Item
Passive Release	:	Enabled	F1 : Help		PU/PD/+/-: Modify
SDRAM (CAS Lat/RAS-to-CAS)	:	3/3	F5 : Old Values		(Shift) F2 : Color
SDRAM Sepculative Read	:	Disabled	F6 : Load BIOS Defaults		
PCI 2.1 Comliance	:	Disabled	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 are 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 (2A59ID2A)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

IDE HDD Block Mode	:	Enabled			
IDE Primary Master PIO	:	Auto			
IDE Primary Slave PIO	:	Auto			
IDE Secondary Master PIO	:	Auto			
IDE Secondary Slave PIO	:	Auto			
IDE Primary Master UDMA	:	Auto	Onboard Serial Port	:	3F8/IRQ7
IDE Primary Slave UDMA	:	Auto	Parallel Mode	:	SPP
IDE Secondary Master UDMA	:	Auto			
IDE Secondary Slave UDMA	:	Auto			
On Chip Primary PCI IDE	:	Enabled			
On Chip Secondary PCI IDE	:	Enabled			
Onboard PCI SCSI Chip	:	Enabled			
USB Keyboard Support	:	Disabled			
KBC input clock	:	8M			
Onboard FDC Controller	:	Enabled	ESC : Quit		↙↙↙↙: Select Item
Onboard Serial Port 1	:	3F8/IRQ4	F1 : Help		PU/PD/+/-: Modify
Onboard Serial Port 2	:	2F8/IRQ3	F5 : Old Values		(Shift) F2 : Color
UART Mode Select	:	Normal	F6 : Load BIOS Defaults		
			F7 : Load Setup Defaults		

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 (2A69JD29)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management	: Disable	** Reload Global Timer Events **	
PM Control by APM	: Yes	IRQ[3-7, 9-15], NMI	: Enabled
Video Off Method	: V/H SYNC+Blank	Primary IDE 0	: Disabled
Video Off After	: Standby	Primary IDE 1	: Disabled
MODEM Use IRQ	: 3	Secondary IDE 0	: Disabled
Doze Mode	: Disabled	Secondary IDE 1	: Disabled
Standby Mode	: Disabled	Floppy Disk	: Disabled
Suspend Mode	: Disabled	Serial Port	: Enabled
HDD Power Down	: Disabled	Parallel port	: Disabled
Throttle Duty Cycle	: 62.5%		
ZZ Active in suspend	: Disabled		
VGA Active Monitor	: Enabled		
CPU FAN Off In Suspend	: Enabled		
Resume by Ring	: Enabled		
Resume by Alarm	: Disabled		
		Esc : Quit	↑↓→← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Defaults	
IRQ 8 Break Suspend	: Disabled	F7 : Load Setup Defaults	

Chapter-5

A Brief Information of 10/100 based-T LAN

The HS-5060 provides an on board 32-bit PCI 10/100 based-T Intel™ 82558A Ethernet LAN interface RJ-45 connection for easy using the HS-5060 Half size all-in-one Pentium® VGA Interface with 100-Based Network Industrial Single Board in connection to-with Novell NE2000 compatible LAN network system.

The HS-5060' s design that is basing on Intel™ 82558A chipset with provides a RJ-45 100 base-T NE2000 compatible interfaces. For more information, please contact with your supplier.

For completed information, please visit Intel Web and Internet Sites:

Support: http://support.intel.com

News: news://cs.intel.com

Network Products: http://www.intel.com/comm-net.sns

Corporate: http://www.intel.com

FTP Host: ftp.intel.com

FTP Directory:
/pub/support/enduser_reseller/etherexpress_lan_adapters