SBC8153

Pentium All-in-One
PCI/ISA CPU Card Family

User's Manual

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ESD Precautions

Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This helps to discharge any static electricity on your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

SBC8153 Series Comparison Table

Model	SBC8153V	SBC8153	SBC8153V-2M
Processor	Intel Pentium (P54C, P55C/MMX) Cyrix 6x86, 6x86L, 6x86MX, MII AMD K5, K6, K6-2, IDT C6, W2-3D		
Processor Socket	ZIF Socket 7		
Chipset	Intel 430TX		
Multi I/O Chip	SMC 37C669		
BIOS	Award		
L2 cache	512KB P.B. SRAM		
Max. RAM	256MB FPM/EDO		
Memory Sockets	4 x 72-pin SIMMs		
VGA CRT/LCD	C&T 65550	None	C&T 65550
Display Memory	1MB	None	2MB
Watchdog Timer	16-level		
PC/104 Connector	yes		
Enhanced IDE	yes		
2S/1P	yes		
USB	yes		
IrDA	yes		
CPU Digital Temp. Sensor (LM75)	yes		
Board Size	388mm x 124mm		

Unpacking

After unpacking the CPU card, check and see if the following items are included and in good condition. If any of the items is missing or damaged, notify your dealer immediately.

- **SBC8153V, SBC8153V-2M, or SBC8153 Pentium All-in-One CPU Card x 1**
- **User's Manual x 1**
- **Warranty Card x 1**
- **3.5" FDD Cable x 1**
- **3.5" HDD Cable x 1**
- **COM, printer extension cables with bracket x 1**
- **PS/2 mouse cable with bracket x 1**
- **Mini-DIN to DIN keyboard adapter cable x 1**
- **Intel PCI IDE Driver and Flash Memory Utility Diskette x 1**
- **C&T 65550 VGA Driver Diskette x 1 (SBC8153 does not include this driver disk.)**

Make sure that all of the items listed above are present.

What To Do If There Is A Problem

If there are damaged or missing parts, contact your supplier and/or dealer immediately. Do not attempt to apply power to the board if there is damage to any of its components.

Table of Contents

Chapter 1
Introduction

The SBC8153 CPU Card Family consists of PCI Pentium Industrial CPU cards based on the Intel 430TX chipset and is fully designed for harsh industrial environment. It features ZIF Socket 7 compatible with various processors from Intel, AMD and Cyrix. This card accommodates up to 256MB of DRAMs in FPM or EDO configurations and a secondary level 512KB cache.

The SBC8153 CPU Card Family comes with onboard CPU temperature sensor to protect your processor from overheating. The power management feature provides power savings by slowing down the CPU clock, turning OFF the monitor screen and stopping the HDD spindle motor.

1.1 Features

- CPU Speed 90~366MHz, Intel P54C, P55C/MMX, Cyrix 6x86, 6x86L, 6x86MX, MII, AMD K5, K6, K6-2, IDT C6, W2-3D
- Intel 430TX PCIset
- Up to 256MB system memory
- Onboard VGA CRT/LCD
- 16 level programmable watchdog timer
- High speed bi-directional SPP/ECP/EPP parallel port
- PC/104 connector
- CPU Temperature monitoring and alert (LM75)
- Auto fan OFF

1.2 Specifications

- **CPU:**
  - Intel Pentium/P55C* 90/100/120/133/150/166/200/233
  - Cyrix 6x86/6x86L P150+/P166+
  - Cyrix 6x86MX-166/180/200
  - Cyrix MII 300
  - AMD K5 PR90/PR100/PR133/PR166
  - AMD K6-166/200/233/266/300
  - AMD K6-2/266/300/333/366/400
  - IDT C6/180/200/240
  - IDT Winchip2-3D/200/240

  NOTE: *Only hardware ver. C1 with BIOS ver. D11.11.x and later support the AMD K6-2-400MHz CPU.*

- **Processor Socket:** ZIF Socket 7
- **Chipset:** Intel 430TX PCIset with built-in PCI EIDE
- **BIOS:**
  - Award BIOS, PnP support
  - FLASH EEPROM (128KB/256KB) for BIOS update
  - ISA Plug and Play (PnP) extension
  - Power management

NOTE: *Hardware ver. C1 and later features Flash EEPROM upgrade from 128KB to 256KB.*

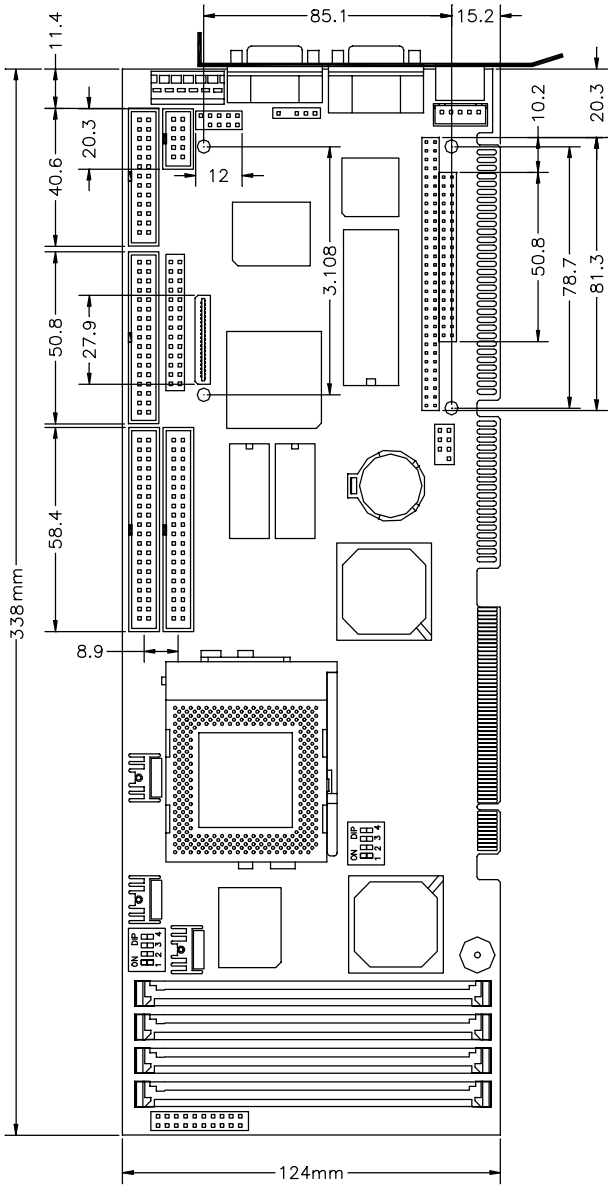
- **System Memory:**
  - Up to 256MB FPM/EDO DRAM
  - Four 72-pin SIMM sockets for DRAMs in 4MB, 8MB, 6MB, 32MB and 64MB configurations
- **L2 Cache:** 512KB Pipeline Burst SRAM
- **Multi I/O:** SMC 37C669 chipset
- **Parallel Port:** One high-speed parallel port, SPP/EPP/ECP mode
- **Serial Port:** Two 16550 UART compatible RS232/422/485 ports
- **Enhanced IDE:**
  - Two Bus Mastering EIDE mode, up to 4 devices
  - Two EIDE interfaces for up to four devices, support PIO Mode 3/4 or Ultra DMA/33 IDE Hard Disk and ATAPI CD-ROM
- **FDD Interface:** Two floppy drives (360/720KB, 1.2/1.44/2.88MB, LS-120)
- **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 Connector:** PC/AT type mini-DIN that supports PC/AT; supports a 5-pin external keyboard connector

- **IrDA Interface:** Pin-header connector for the optional IrDA external connector
- **VGA Display: (for SBC8153V and SBC8153V-2M only)**
  - C&T 65550 VGA chip onboard
  - SVGA for CRT & Panel
  - 32-bit PCI local bus
  - VGA BIOS with 128KB flash ROM and system BIOS
  - 15-pin connector
  - 1024 X 768 (256 colors) resolution on SVGA(1MB memory)
  - 41-pin connector for LCD panel, 640 x 480 resolution
  - LCD panel supports monochrome, color STN, TFT, EL
  - Simultaneous VGA and panel display
- **Environmental and Mechanical:**
  - **Power Supply:** 3.5A @+5V
  - **Temperature:** 0°C to 60°C
  - **Humidity:** 5% to 95%
  - **Dimensions:** 338mm x 124mm

1.3 Intelligence

- **CPU Slow Down:** When system overheating 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.
- **Auto Fan OFF:** To reduce energy consumption and system noise, the system fan automatically powers OFF during sleep mode.
- **Temperature Monitoring and Alert:** A sensor for the CPU temperature on the SBC8153 monitors the CPU temperature and alerts the user through the speaker when temperature exceeds the safe heat level.

1.4 Board Dimensions and Layout



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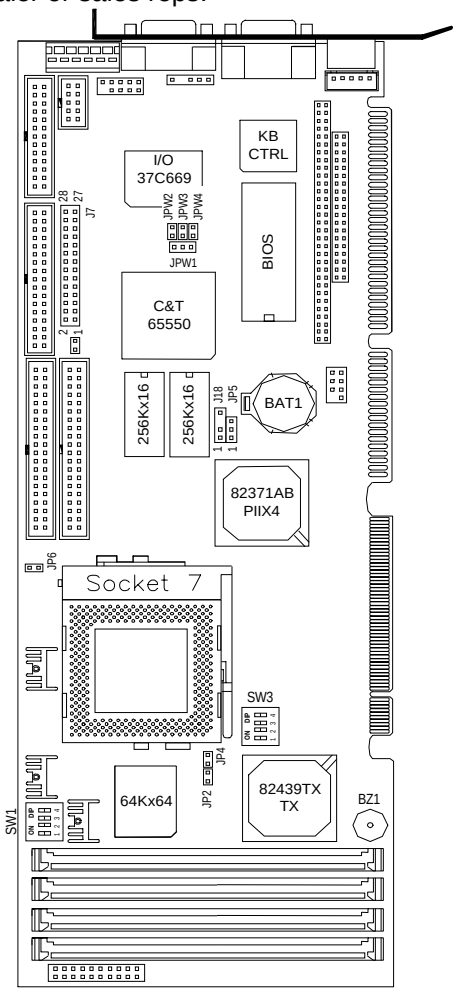
Chapter 2
Jumpers and Connectors

The onboard jumpers configure your CPU card according to the needs of your applications. If you doubt on the best jumper configuration, contact your dealer or sales reps.



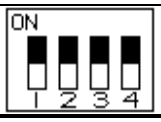
Jumper Locations on the SBC8153

2.1 Jumper Settings

Making the proper jumper settings configures the SBC8153 to match the your application needs. The following tables show the correct jumper settings for the onboard devices.

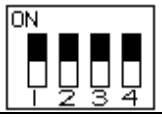
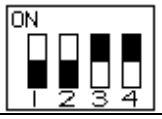
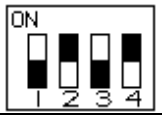
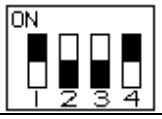
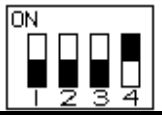
2.1.1 CPU Voltage Selector: JP2, JP4, SW1 (1-4)

For Single Voltage CPU: Intel P54C, Cyrix 6x86, AMD K5, and IDT C6/W2-3D**

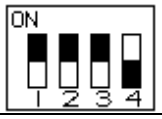
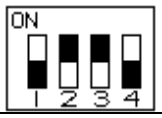
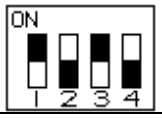
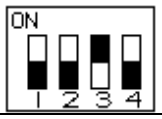
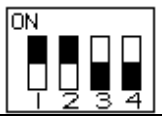
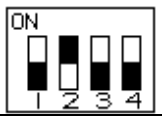
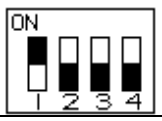
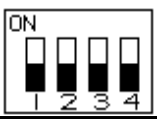
Vio	Vcore	JP2	JP4	SW1 (1-4)	Switch Setting
3.5V	3.5V	 OPEN	 SHORT		1 2 3 4 on on on on

***Default**

For Dual Voltage CPU: Intel P55C*, Cyrix 6x86L/MX/MII, AMD K6/K6-2

Vio	Vcore	JP2	JP4	SW1 (1-4)	Switch Setting
3.3V	3.5V	 SHORT	 OPEN		1 2 3 4 on on on on
3.3V	3.2V	 SHORT	 OPEN		1 2 3 4 off off on on
3.3V	3.0V	 SHORT	 OPEN		1 2 3 4 off on off on
3.3V	2.9V	 SHORT	 OPEN		1 2 3 4 on off off on
3.3V	2.8V	 SHORT	 OPEN		1 2 3 4 off off off on

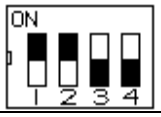
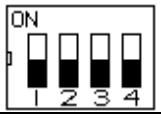
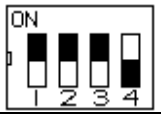
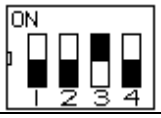
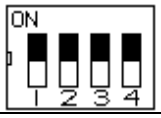
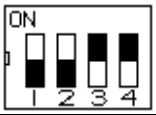
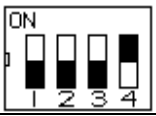
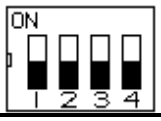
Continued . . . . .

Vio	Vcore	JP2	JP4	SW1 (1-4)	Switch Setting
3.3V	2.7V	 SHORT	 OPEN		1 2 3 4 on on on off
3.3V	2.6V	 SHORT	 OPEN		1 2 3 4 off on on off
3.3V	2.5V	 SHORT	 OPEN		1 2 3 4 on off on off
3.3V	2.4V	 SHORT	 OPEN		1 2 3 4 off off on off
3.3V	2.3V	 SHORT	 OPEN		1 2 3 4 on on off off
3.3V	2.2V	 SHORT	 OPEN		1 2 3 4 off on off off
3.3V	2.1V	 SHORT	 OPEN		1 2 3 4 on off off off
3.3V	2.0V	 SHORT	 OPEN		1 2 3 4 off off off off

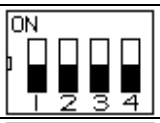
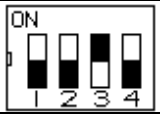
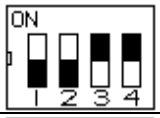
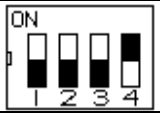
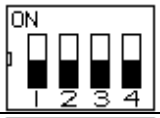
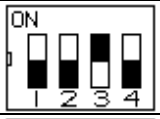
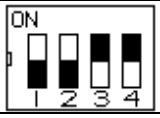
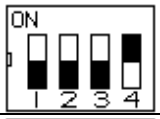
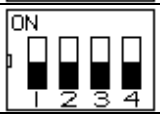
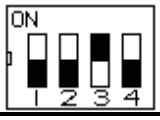
**** P55C = Pentium MMX***

2.1.2 CPU Frequency Selector: JP6, SW3 (1-4)

For Intel Pentium CPU

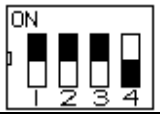
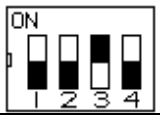
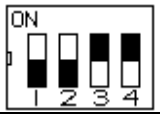
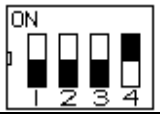
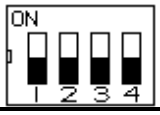
CPU FREQ.	Bus Clock Multiplier	JP6	SW3 (1-4)	Switch Setting
P54C-90	60MHz 1.5x	 OPEN		1 2 3 4 on on off off
P54C-100	66MHz 1.5x	 OPEN		1 2 3 4 off off off off
P54C-120	60MHz 2x	 OPEN		1 2 3 4 on on on off
P54C-133	66MHz 2x	 OPEN		1 2 3 4 off off on off
P54C-150	60MHz 2.5x	 OPEN		1 2 3 4 on on on on
P54C/P55C-166	66MHz 2.5x	 OPEN		1 2 3 4 off off on on
P54C/P55C-200	66MHz 3x	 OPEN		1 2 3 4 off off off on
P55C-233	66MHz 3.5x	 OPEN		1 2 3 4 off off off off

For AMD K5/K6/K6-2 CPU

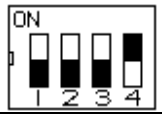
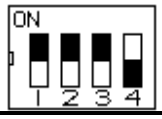
CPU FREQ.	Bus Clock Multiplier	JP6	SW3 (1-4)	Switch Setting
K5-PR100 (100MHz)	66MHz 1.5x	OPEN		1 2 3 4 off off off off
K5-PR133 (133MHz)	66MHz 1.5x	OPEN		1 2 3 4 off off on off
K5-PR166 (116.7MHz) K6-166	66MHz 1.75x	OPEN		1 2 3 4 off off on on
K6-200	66MHz 3x	OPEN		1 2 3 4 off off off on
K6-233	66MHz 3.5x	OPEN		1 2 3 4 off off off off
K6-266 K6-2-266	66MHz 4x	SHORT		1 2 3 4 off off on off
K6-300 K6-2-300	66MHz 4.5x	SHORT		1 2 3 4 off off on on
K6-2-333	66MHz 5x	SHORT		1 2 3 4 off off off on
K6-2-366	66MHz 5.5x	SHORT		1 2 3 4 off off off off
K6-2-400	66MHz 6.0x	OPEN		1 2 3 4 off off on off

NOTE: *The thermal specification of the AMD K6-2-400 CPU has a maximum thermal power of 22.7W. When using the AMD K6-2-400 on the SBC8153 CPU Card Family, make sure to install a compatible CPU cooling fan that can sustain such thermal power capacity. Ensure that the airflow specifications of the fan are sufficient enough to provide ventilation to the voltage regulators beside the CPU socket.*

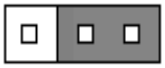
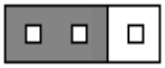
For Cyrix 6x86/MII CPU

CPU FREQ.	Bus Clock Multiplier	JP6	SW3 (1-4)	Switch Setting
6x86(L)-P150+ (120MHz)	60MHz 2x	 OPEN		1 2 3 4 on on on off
6x86(L)-P166+ (133MHz)	66MHz 2x	 OPEN		1 2 3 4 off off on off
6x86MX-PR166	60MHz 2.5x	 OPEN		1 2 3 4 on on on on
6x86MX-PR200	66MHz 2.5x	 OPEN		1 2 3 4 off off on on
6x86MX-PR233	66MHz 3x	 OPEN		1 2 3 4 off off off on
MII-300GP	66MHz 3.5x	 OPEN		1 2 3 4 off off off off

For IDT C6/Winchip2 CPU

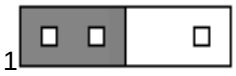
CPU FREQ.	Bus Clock Multiplier	JP6	SW3 (1-4)	Switch Setting
C6-180MHz	60MHz 3x	 OPEN		1 2 3 4 on on off on
C6/W2-3D 200MHz	66MHz 3x	 OPEN		1 2 3 4 off off off on
C6/W2-3D 240MHz	60MHz 4x	 SHORT		1 2 3 4 on on on off

2.1.3 Clear CMOS Content: JP5

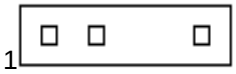
JP5	Setting	Function
 1 2 3	Pin 2-3 SHORT	Clear CMOS Content
 1 2 3	Pin 1-2 SHORT	Normal Operation

2.1.4 External Battery Connector: J18

This 4-pin connector allows the user to connect an external battery to maintain the information stored in the CMOS RAM in case the built-in battery malfunctions. The default is set to Internal Battery with a jumper connecting pin 1 and pin 2.



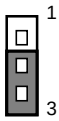
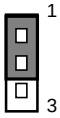
Internal Battery



External Battery

J18 Pin #	Signal Name
1	Ground
2	Battery GND
3	N.C.
4	Vcc

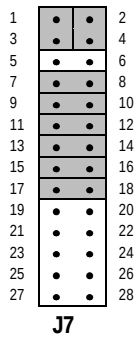
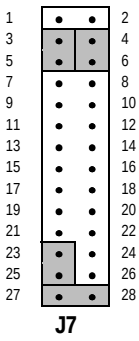
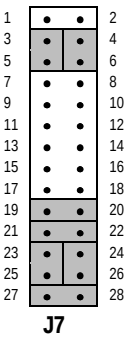
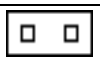
2.1.5 Panel Signal Level Setting: JPW1

JP5	Setting	Function
	Pin 2-3 Short	5V (default)
	Pin 1-2 Short	3.3V

NOTE: *This function setting is only available with the hardware ver. C1 and later.*

2.1.6 RS232/422/485 (COM2) Selection: J7, JPW2/3/4

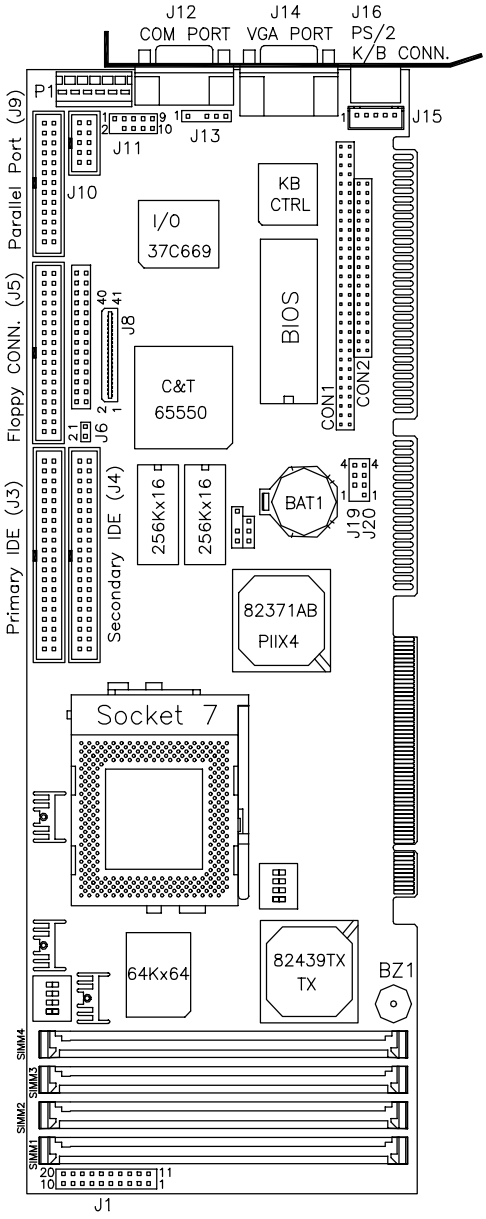
COM1 is fixed for RS-232 use only
COM2 is selectable for RS232, RS-422 and RS-485.
The following table describes the jumper settings of this connector.

COM2 Function	RS-232	RS-422	RS-485
J7 Jumper Setting (pin closed)	1-3 2-4 7-8 9-10 11-12 13-14 15-16 17-18	3-5 4-6 23-25 27-28	3-5 4-6 19-20 21-22 23-25 24-26 27-28
J7 Jumper Illustration			
JPW2	 OPEN	 SHORT	 SHORT
JPW3	 OPEN	 SHORT	 SHORT
JPW4	 OPEN	 SHORT	 OPEN

2.2 Connectors

The connectors on the SBC8153 allow you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table and diagram list the function and location of each connector on the SBC8153. Their corresponding pin assignments are described in Appendix C.

Connectors	Label
Front Bezel Connector	J1
EIDE Connectors	J3, J4
Floppy Drive Connector	J5
CPU Fan Power Connector	J6
LCD Panel Connector	J8
Parallel Port Connector	J9
COM1 Serial Port	J10
PS/2 Mouse Connector	J11
COM2 Serial Port	J12
IrDA Connector	J13
VGA CRT Connector	J14
External Keyboard Connector	J15
Keyboard Connector	J16
USB Connectors	J19, J20
Power Connector	P1
PC/104 Connectors	CON1, CON2

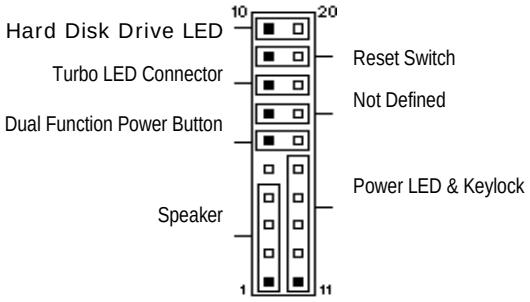


Connector Locations on the SBC8153

2.2.1 Improvised Connectors

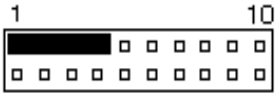
J1: Front Bezel Connector

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. J1 is a 20-pin header that provides interfaces for the following functions.



Speaker: Pins 1 - 4

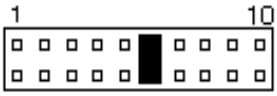
This connector provides an interface to a speaker for audio tone generation. An 8-ohm speaker is recommended.



J1 Pin #	Signal Name
1	Speaker out
2	Reserved
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.



J1 Pin #	Signal Name
6	Sleep
16	Ground

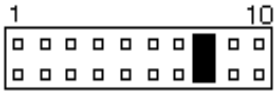
Power LED and Keylock: Pins 11 - 15

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

J1 Pin #	Signal Name
11	Power LED
12	Reserved
13	Ground
14	Keylock
15	Ground

Turbo LED Connector: Pins 8 and 18

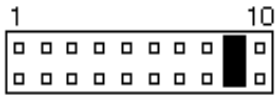
There is the no turbo/deturbo function on the CPU card. The Turbo LED on the control panel will always be ON when attached to this connector.



J1 Pin #	Signal Name
8	5V
18	Ground

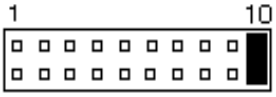
Reset Switch: Pins 9 and 19

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

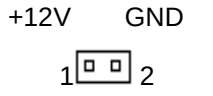
This connector connects to the hard drive activity LED on the control panel. This LED will flash when the HDD is being accessed.



J1 Pin #	Signal Name
10	HDD Active#
20	+5V

J6: CPU Fan Power Connector

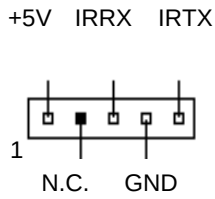
J6 is a 2-pin header for a CPU fan. The fan must be a 12V fan.



J6: CPU Fan Power Connector

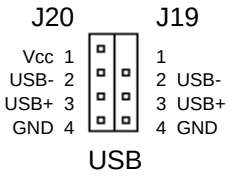
J13: IrDA Connector

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



J19, J20: USB Connectors

J19 and J20 are optional USB connectors. The following table shows the pin outs of these connectors.



USB

Chapter 3
Hardware Installation

This chapter provides information on how to use the jumpers and connectors on the SBC8153 in order to set up a workable system.

3.1 CPU Installation

The SBC8153 Industrial CPU Card supports a ZIF processor socket for Pentium-level processors.

Unlike PGA sockets, ZIF (Zero Insertion Force) sockets come with a lever to secure the processor. Make sure the notch on the corner of the CPU corresponds with the notch on the inside of the socket.

After you have installed the processor into the ZIF socket, check if the jumpers for the CPU type and speed are correct.

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.*

3.2 Memory Installation

The SBC8153 Industrial CPU Card supports four 72-pin SIMM sockets for a maximum total memory of 256MB. The DRAMs (5Volts) for the SIMM sockets can be 4MB, 8MB, 16MB, 32MB, and 64MB in EDO and FPM types.

The following should be noted when populating the SIMM sockets:

1. **SIMM1/SIMM2 and SIMM3/SIMM4 should consist of the same size SIMMs.**

   SIMM1/SIMM2 and SIMM3/SIMM4 should consist of the same type SIMMs. For example, *SIMM1 and SIMM2 are both be EDO or Page Mode*.

2. Either SIMM1/SIMM2 or SIMM3/SIMM4 can be populated first.

(SIMM1, SIMM2)	(SIMM3, SIMM4)	Total Memory
4MB×2		8MB
8MB×2		16MB
16MB×2		32MB
32MB×2		64MB
64MB×2		128MB
4MB×2	4MB×2	16MB
8MB×2	4MB×2	24MB
16MB×2	4MB×2	40MB
32MB×2	4MB×2	72MB
8MB×2	8MB×2	32MB
16MB×2	8MB×2	48MB
32MB×2	8MB×2	80MB
16MB×2	16MB×2	64MB
32MB×2	16MB×2	96MB
32MB×2	32MB×2	128MB
64MB×2	64MB×2	256MB

Chapter 4
Award BIOS Setup

The Award BIOS installed in your computer system's ROM supports Intel/Cyrix/AMD processors in a standard IBM-AT compatible I/O system. The BIOS provides critical low-level support for standard devices 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.

4.1 BIOS Setup

Award BIOS provides a Setup utility program for specifying the system configurations and settings. The system BIOS ROM stores the Setup utility. When you turn ON the computer, Award BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a bit late in pressing the <Del> key, POST 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 press 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 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.

ROM PCI/ISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT 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 Setup	(Shift) F2 : Change Color
Time, Date, Hard Disk Type	

The section below the setup items of the Main Menu displays the control keys for this menu. Another section at the bottom of the Main Menu, just below the control keys section, displays information on the currently highlighted item in the list.

NOTE: *After making and saving system changes with Setup, you find that your computer cannot boot, 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.

4.2 Standard CMOS Setup

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 Industrial CPU Card 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.

ROM PCI/ISA BIOS
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : **Mon**, Aug 19 1996
Time (hh:mm:ss) : 00 : 00 : 00

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	Auto	0	0	0	0	0	0	Auto
Primary Slave	None	0	0	0	0	0	0	-----
Secondary Master	None	0	0	0	0	0	0	-----
Secondary Slave	None	0	0	0	0	0	0	-----

Drive A	: 1.44M, 3.5in	Base Memory	: 640K
Drive B	: None	Extended Memory	: 15360K
Floppy 3 Mode Support	: Disabled	Other Memory	: 384K
Video	: EGA / VGA		
Halt On	: All Errors	Total Memory	: 16384K

ESC : Quit ↑ ↓ → ← : Select Item PU / PD / + / - : Modify
F1 : Help (Shift) F2 : Change Color

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	The day of week, from Sun to Sat, determined by the BIOS, is read only
month	The month, 1 to 12
date	The date, from 1 to 31 (or the maximum allowed in the month), can key in the numerical / function key
year	The year, 1994 to 2097

  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
HEADS	number of read/write heads
PRECOMP	write precompensation
LANDZ	landing zone
SECTORS	number of sectors
SIZE	Automatically adjusts 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:

None	No floppy drive installed
360K, 5.25 in	5.25 inch PC-type standard drive; 360Kb capacity
1.2M, 5.25 in	5.25 inch AT-type high-density drive; 1.2MB capacity
720K, 3.5 in	3.5 inch double-sided drive; 720Kb capacity
1.44M, 3.5 in	3.5 inch double-sided drive; 1.44MB capacity
2.88M, 3.5 in	3.5 inch double-sided drive; 2.88MB capacity

- **Floppy 3 Mode Support**

  This is the Japanese standard floppy drive. The standard stores 1.2MB in a 3.5-inch diskette. You have four options to choose:

Disabled	No 3 mode floppy drive installed. (default)
Drive A	Installed 3 mode drive at drive A
Drive B	Installed 3 mode drive at drive B
Both	Installed 3 mode drive at drive A and B

- **Video**

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

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 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. (default)
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.

4.3 BIOS Features Setup

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

ROM / PCI ISA BIOS
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

Virus Warning	**: Disabled**	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
External Cache	: Enabled	CC000-CFFFF Shadow	: Disabled
Quick Power On Self Test	: Disabled	D0000-D3FFF Shadow	: Disabled
Boot Sequence	: A, C, SCSI	D4000-D7FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	D8000-DBFFF Shadow	: Disabled
Boot Up Floppy Seek	: Enabled	DC000-DFFF Shadow	: Disabled
Boot Up Numlock Status	: On		
Boot Up System Speed	: High		
Gate A20 Option	: Fast		
Security Option	: Setup		
PCI /VGA Palette Snoop	: Disabled		
OS Select For DRAM>64MB	: Non-OS2		
		ESC : Quit	↑ ↓ → ← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

- **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 that 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 allow you to enable (speed up memory access) or disable the cache. 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***.

- **Boot Sequence**
  This field determines the drive that the system searches first for an operating system. The options are :
  - **A, C, SCSI**
  - **D, A, SCSI**
  - **SCSI, C, A**
  - **C, A, SCSI**
  - **E, A, SCSI**
  - **C only**
  - **C, CDROM, A**
  - **F, A, SCSI**
  - **LS120, C**
  - **CDROM, C, A**
  - **SCSI, A, C**

  The default value is ***A, C, SCSI***.
- **Swap Floppy Drive**
  This item allows you to determine whether to enable the swap Floppy Drive or not. 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.
- **Boot Up System Speed**
  This has no function and selects the default system speed *(High).*
- **Gate A20 Option**
  This field allows you to select how Gate A20 is worked. The Gate A20 is a device used to address memory above 1 MB. By default, this field is set to *Fast.*
- **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.
- **PCI / VGA Palette Snoop**
  Some display cards that are non-standard VGA may not show colors properly. This field allows you to set whether MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When this field is enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card. When this field is disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.

- **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.
- **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 optional ROM will be copied to RAM or not.

4.4 Chipset Features Setup

This Setup menu controls the configuration of the Industrial CPU Card chipset.

ROM PCI/ISA BIOS
CHIPSET FEATURES SETUP
AWARD SOFTWARE INC.

DRAM Timing	:	70ns	** System Hardware Monitor *	
System BIOS Cacheable	:	Disabled	Current CPU Temperature:	37°C/98°F
Video BIOS Cacheable	:	Disabled	CPU Warning Temperature:	80°C/176°F
8 Bit I/O Recovery Time	:	1		
16 Bit I/O Recovery Time	:	1		
Memory Hole At 15M-16M	:	Disabled		
PCI 2.1 Compliance		Disabled		
			ESC : Quit	↑ ↓ → ← : Select Item
			F1 : Help	PU/PD/+/- : Modify
			F5 : Old Values	(Shift) F2 : Color
			F6 : Load BIOS Defaults	
			F7 : Load Setup Defaults	

- **DRAM Timing**
  The DRAM Timing Registers control the DRAM timing. The timing type is dependent on the system design. Slower rates may be required in some system designs to support loose layouts or slower memory.
- **System BIOS Cacheable**
  When enabled, access to the system BIOS ROM addressed at F0000H-FFFFFH are cached, provided that the cache controller is enabled.

- **Video BIOS Cacheable**
  When enabled, access to video BIOS addressed at C0000H to C7FFFH are cached, provided that the cache controller is enabled.
- **8 Bit I/O Recovery Time**
  This field allows you to select the recovery time allowed for 8 bit I/O. By default, this field is set to ***1 Clock***.
- **16 Bit I/O Recovery Time**
  This field allows you to select the recovery time allowed for 16 bit I/O. By default, this field is set to ***1 Clock***.
- **Memory Hole at 15M-16M**
  In order to improve performance, certain space in memory can be reserved for ISA cards. This field allows you to reserve 15MB to 16MB memory address space to ISA expansion cards. This makes memory from 15MB and up unavailable to the system. Expansion cards can only access memory up to 16MB. By default, this field is set to ***Disabled.***
- **PCI 2.1 Compliance**
  Concurrent PCI allows multiple PCI transfers from the PCI master buses to memory to CPU. By default, this field is set to ***Disabled***.
- **System Hardware Monitor**
  The onboard hardware thermal sensor monitors CPU temperature changes and prevents the CPU from overheating. Alert is sounded through the speaker and CPU speed slows down when the temperature exceeds the temperature set in the BIOS until the temperature falls below a safe level. By default, this field is set to **80°C/176°F**.

4.5 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.

ROM PCI/ISA BIOS (2A59IM29)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management	: Disabled	** Reload Global Timer Events **	
PM Control by APM	: Yes	IRQ3 [3-7, 9-15],NMI	: Enabled
Video Off Method	: DPMS	Primary IDE 0	: Disabled
Video Off After	: Suspend	Primary IDE 1	: Disabled
Doze Mode	: Disabled	Secondary IDE 0	: Disabled
Standby Mode	: Disabled	Secondary IDE 1	: Disabled
Suspend Mode	: Disabled	Floppy Disk	: Disabled
HDD Power Down	: Disabled	Serial Port	: Enabled
VGA Active Monitor	: Disabled	Parallel Port	: Disabled
CPUFAN Off In Suspend	: Enabled	ESC : Quit	↑ ↓ → ← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

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

Disable	No power management. (Default)
Min. Power Saving	Minimum power management
Max. Power Saving	Maximum power management. Only available for SL CPU
User Define	Each of the ranges are from 1 min. to 1hr. Except for HDD Power Down which ranges from 1 min. to 15 min.

- **PM Control by APM**
  This field allows you to use the Advanced Power Management device to enhance the Max. Power Saving mode and stop the CPU internal clock. If the Max. Power Saving is not enabled, this will be preset to NO.

- **Video Off Method**
  This field defines the Video Off features.

V/H SYNC + Blank	Default setting, blank the screen and turn off vertical and horizontal scanning
DPMS	Allows the BIOS to control the video display card if it supports the DPMS feature
Blank Screen	This option only writes blanks to the video buffer

- **Video Off After**
  This specifies the mode after which the Video Off feature is enabled. The options are *Doze, Standby, Suspend*, and *N/A.*
- **Doze Mode**
  When enabled, and after the set time of system inactivity, the CPU clock will run at a slower speed while all other devices still operate at full speed.
- **Standby Mode**
  When enabled, and after the set time of system inactivity, the fixed disk drive and the video would be shut OFF while all other devices still operate at full speed.
- **Suspend Mode**
  When enabled, and after the set time of system inactivity, all devices except the CPU will be shut OFF.
- **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.
- **VGA Active Monitor**
  This option specifies if the BIOS is to monitor activity on the display monitor for power conservation purposes.
- **CPU Fan Off in Suspend**
  System fans will power OFF automatically even in suspend mode. This function reduces both energy consumption and system noise.

4.6 PNP/PCI Configuration

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

ROM PCI/ISA BIOS
PNP/PCI CONFIGURATION
AWARD SOFTWARE INC.

PNP OS Installed	: Yes	Used MEM base addr	: N/A
Resources Controlled by	: Manual		
Reset Configuration Data	: Disabled		
IRQ-3 assigned to	: Legacy ISA		
IRQ-4 assigned to	: Legacy ISA		
IRQ-5 assigned to	: Legacy ISA		
IRQ-7 assigned to	: Legacy ISA		
IRQ-9 assigned to	: PCI/ISA PnP		
IRQ-10 assigned to	: PCI/ISA PnP		
IRQ-11 assigned to	: PCI/ISA PnP		
IRQ-12 assigned to	: PCI/ISA PnP		
IRQ-14 assigned to	: PCI/ISA PnP		
IRQ-15 assigned to	: PCI/ISA PnP		
DMA-0 assigned to	: PCI/ISA PnP		
DMA-1 assigned to	: PCI/ISA PnP	ESC : Quit	↑ ↓ ← : Select Item
DMA-3 assigned to	: PCI/ISA PnP	F1 : Help	PU/PD/+/- : Modify
DMA-5 assigned to	: PCI/ISA PnP	F5 : Old Values	(Shift) F2 : Color
DMA-6 assigned to	: PCI/ISA PnP	F6 : Load BIOS Defaults	
DMA-7 assigned to	: PCI/ISA PnP	F7 : Load Setup Defaults	

- **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.*

- **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. The default value is *Manual.*

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

- **IRQ3/4/5/7/9/10/11/12/14/15, DMA0/1/3/5/6/7 assigned to**
  These fields allow you to determine the IRQ/DMA assigned to the ISA bus and is not available to any PCI slot.
- **Used MEM base addr**
  This field allows the user to set the base address and block size of a legacy (non-PnP) ISA card that uses any memory segment within the C800H and DFFFH address range. If the you have such a card and are not using an ICU (ISA Configuration Utility) to specify its address range, select a base address from the six available options. During selection, the "Used MEM Length" field will appear with the block size options. If you have more than one legacy ISA card in your system that require the use of this address range, you can increase the block size to either 8K, 16K, 32K or 64K. If you are using ICU to accomplish this task, leave "Used MEM base addr" to its default setting of N/A.

4.7 Load BIOS Defaults

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

ROM PCI/ISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAG	ETECTION
PNP/PCI CONF	UP
LOAD BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color

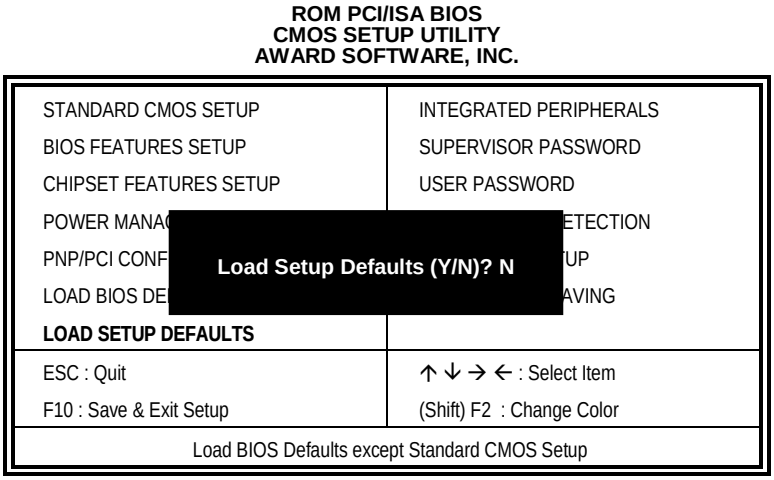
Load BIOS Defaults (Y/N)? N

Load BIOS Defaults except Standard CMOS Setup

To load BIOS defaults value to CMOS SRAM, enter "Y".

4.8 Load Setup 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.



To load SETUP defaults value to CMOS SRAM, enter "Y".

4.9 Integrated Peripherals

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

ROM PCI/ISA BIOS
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		
IDE Primary Slave UDMA	: Auto		
IDE Secondary Master UDMA	: Auto		
IDE Secondary Slave UDMA	: Auto		
On-Chip Primary PCI IDE	: Enabled		
On-Chip Secondary PCI IDE	: Enabled		
USB Keyboard Support	: Disabled		
Onboard FDD Controller	: Enabled		
Onboard UAART 1	: Auto	ESC : Quit	↑ ↓ ← : Select Item
Onboard UART 2	: Auto	F1 : Help	PU/PD/+/- : Modify
Onboard UART 2 Mode	: Standard	F5 : Old Values	(Shift) F2 : Color
Onboard Parallel Port	: 378H/IRQ7	F6 : Load BIOS Defaults	
Parallel Port Mode	: Normal	F7 : Load Setup Defaults	

- **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.
- **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.
- **IDE 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*.

- **On-Chip Primary/Secondary PCI IDE**
  These fields allow you either to enable or disable the Primary/Secondary controller. You might choose to disable the controller if you were to add a higher performance or specialized controller.
- **USB Keyboard Support**
  This field allows your system to support a USB keyboard.
- **Onboard FDD Controller**
  This option allows you to select the onboard FDD port.
- **Onboard Serial/Parallel Port**
  These fields allow you to select the onboard serial/parallel port and its address. The default value for these ports are:

Serial Port 1	3F8/IRQ4
Serial Port 2	2F8/IRQ3
Parallel Port	378H/IRQ7

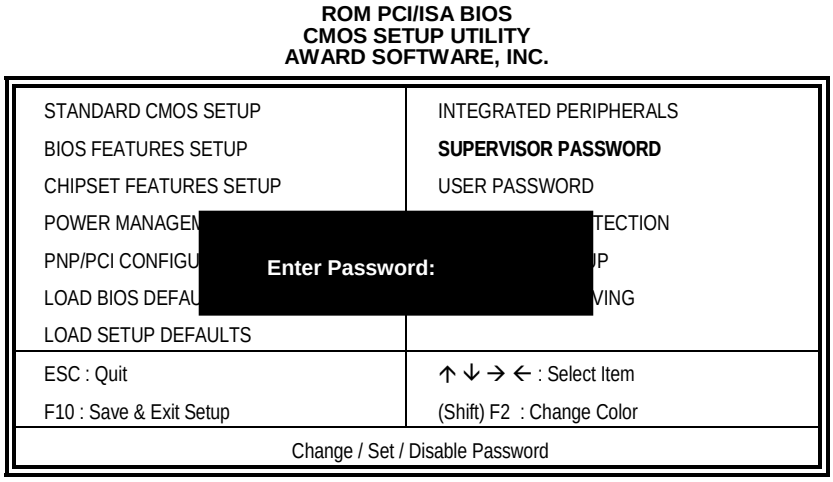
- **UART 2 Mode**
  This field determines the UART 2 mode in your computer. The options are *Standard*, *HPSIR*, and *ASKIR*.
- **Onboard Parallel Mode**
  This field allows you to determine parallel port mode function.

Normal	Normal Printer Port
EPP	Enhanced Parallel Port
ECP	Extended Capabilities Port
ECP + EPP	Extended Capabilities Port or Enhanced Parallel Port

4.10 Supervisor / User Password

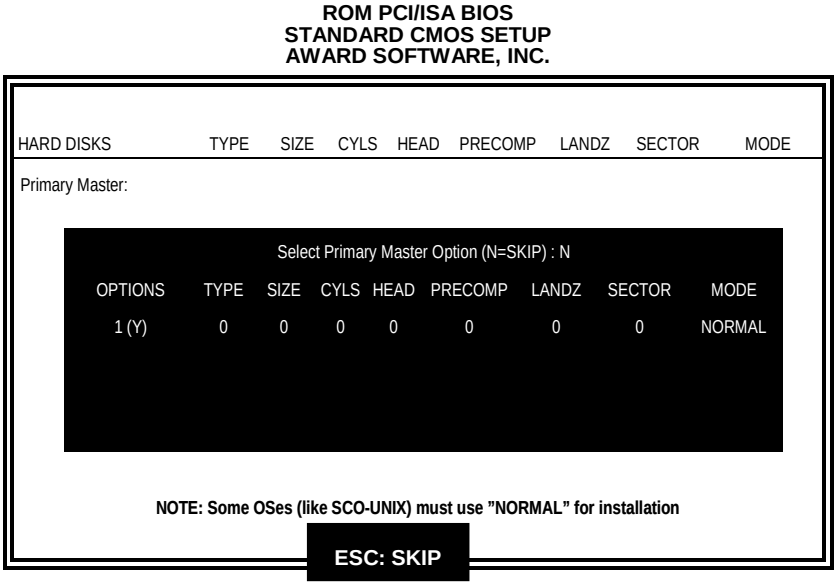
These two options set the system password. *Supervisor Password* sets a password that will be used to protect the system and Setup utility. *User Password* sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The **Enter Password:** 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.



4.11 IDE HDD Auto Detection

This option detects the parameters of an IDE hard disk drive, and automatically enters them into Standard CMOS Setup screen.



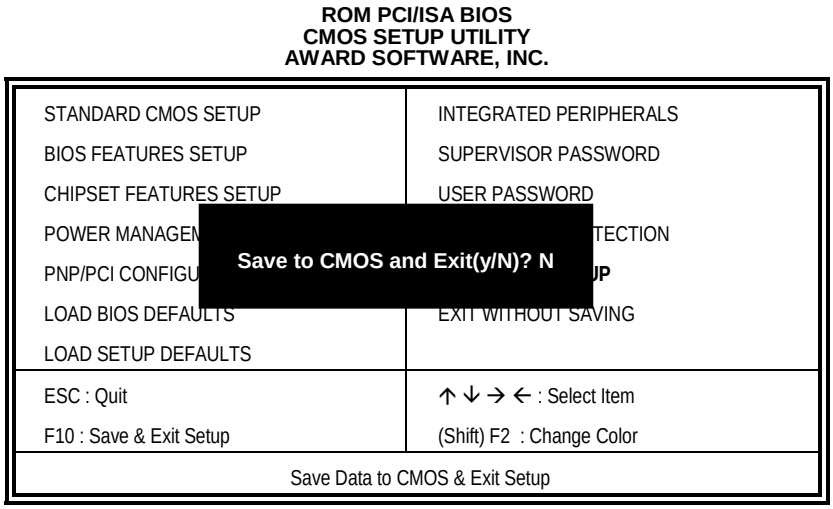
Up to four IDE drives can be detected, with parameters for each appearing in sequence inside a box. To accept the displayed entries, press the "Y" key; to skip to the next drive, press the "N" key. If you accept the values, the parameters will appear listed beside the drive letter on the screen.

4.12 HDD Low Level Format

This option should only be used by a professional. Low-level formatting can cause irreparable damage to your hard disk. The procedures include selecting the drive you want to low-level format, determining the bad tracks, and proceeding with pre-formatting.

4.13 Save & Exit Setup

This option allows you to determine whether to accept the modifications or not. 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.



4.14 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.

ROM PCI/ISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEAT[illegible]	[illegible]ORD
POWER MANA[illegible]	[illegible] DETECTION
PNP/PCI CONF[illegible]	[illegible]ETUP
LOAD BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Abandon all Data & Exit Setup	

Quit Without Saving (Y/N)? N

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Chapter 5
VGA Driver Installation

This chapter provides information on how to install the VGA drivers that come in the floppy diskette with your SBC8153 card. 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.

5.1 Installing Drivers for Windows 3.1

5.1.1 Driver Installation

Included in your VGA Drivers diskette are drivers designed for Windows 3.1. To install the drivers, please follow the procedure below.

1. **Run Windows as you would normally do to check if the operating system is working properly.**
2. **Insert the VGA Drivers diskette into your floppy disk drive that we will assume to be Drive A. In the Program Manager in Windows, choose File from the menu on top of the screen. From the pull-down menu , Choose Run. When prompted to enter the file to run, type a:\windows\setup and press <ENTER> or click OK to start the installation. The setup program then installs the drivers in the directory where the Windows program is. When the drivers are loaded, press <ENTER> to finish the installation. The Display Driver Control Panel appears when the installation is complete. It allows you to choose and load the installed display drivers.**

5.1.2 Changing Display Drivers

Windows allows you to change your display drivers. To do so, select **Windows Setup** in the **Main** window. Then select **Change System Settings** in the **Option** menu. Click on the arrow at the end of the Display line to see the list of display drivers available. Click on the driver you want and click on the **OK** button. Follow the instructions to complete the change.

5.1.3 Changing Color Schemes

Windows also allows you to change the color scheme of your system. From the **Main** window, select the **Control Panel** and then the **Color** icon. The screen shows you the current color scheme. To change the current color configuration, select the color scheme you want and click the **OK** button.

5.2 Installing Drivers for Windows 95

5.2.1 Driver Installation

The following section describes the normal display driver installation procedures for Windows 95. Use the following procedures when installing the display drivers for Windows 95.

1. **Click Start, then Settings, then Control Panel.**
2. **Double click on "Display".**
3. **Select the "Settings" page, click the "Change Display Type" button.**
4. **Click the "Change" button in the "Adapter Type" area.**
5. **Click the "Have Disk" button and press "OK".**
6. **Specify the path to the new driver and press <ENTER>:**

   Example 1: Insert the drivers' disk in the A: floppy drive, and enter A:\win95.

   Example 2: Type in the name of the directory where you copied the drivers, either on your local hard drive or on a network share.

Example 3: If you're not sure exactly where the drivers are, choose the "Browse..." button to find them.

7. **The "Select Device" dialog box will appear. Select the adapter that corresponds to the one you installed in your machine and click OK.**
8. **Windows 95 will copy the display drivers to the proper directories on your system.**
9. **Continue choosing Close until asked to restart your machine from the "Systems Settings Change" dialog box.**
10. **After the system has restarted, you can go back into the Display applet and select alternate screen resolutions and color depths.**

5.3 Installing Drivers for Windows NT 3.5x

5.3.1 Driver Installation

The following section describes the VGA driver installation procedures for Windows NT 3.5x.

1. **Run Windows NT Setup from Main Group**
2. **Choose Option from the menu (Alt-O)**
3. **Select Change System Setting (Alt-C)**
4. **Choose "Other" under the Display section**
5. **Insert display driver disk in appropriate floppy drive**
6. **Type the destination as "A:\NT35x**

5.4 Installing Drivers for Windows NT 4.0

5.4.1 Driver Installation

Once you are in the Windows NT 4.0 environment, follow the procedures below to install the VGA drivers in the diskette that comes with your CPU card.

1. **Click the Start button, then go to Settings and click on Control Panel.**
2. **Click on the Display icon to start the Display Properties window.**
3. **Click on the Settings tab, and then click on Display Type.**
4. **In the Change Display Type window, click on Change in Adapter Type. This will bring up the Select Device Window.**
5. **In the Change Display window, click on Have Disk. Follow the directions on the screen to supply the directory where the Windows NT driver files are located. Then select OK, or press ENTER.**
6. **Select Chips Video Accelerator from Display list provided, then click OK or press ENTER.**
7. **You will then see a warning panel about Third Party Drivers. Click on Yes to finish the installation.**
8. **Once the installation is complete, the system must be shut down and restarted for the new drivers to take effect.**
9. **When the system has restarted, the default graphics mode (usually 640x480x256color) has been automatically selected. Click the Start button, then go to Settings and click on Control Panel. Click on the Display icon to start the Display Properties window. Click on the Settings tab. A new screen setting can be selected using either of the following methods:**

   A. **Use the slide-bar in the Desktop Area to select new setting.**

B. Click on List All Modes. From the list provided, select a new setting, then click OK or press ENTER.

C. Click on Test to test the newly selected graphics mode. Follow the instructions given on the screen. A test screen should appear, followed by the Testing Mode window. Click on Yes to continue. Click on Apply to switch to the new graphics mode. Graphics modes are changed dynamically on NT 4.0, so you do not need to shut down and restart for the new screen settings to work.

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Chapter 6

Intel PIIX Bus Master IDE Driver Installation

This chapter describes the installation procedure for Intel PIIX Bus Master IDE Drivers for Windows 95.

6.1 System Requirements

This section describes system requirements for the PIIX Bus Master IDE Device Driver for Windows 95*. This driver has been designed for and tested with Windows 95 only. This driver will only install on systems with Windows 95.

1. **The system must contain a supported Intel processor and chipset configuration.**
2. **Ensure that a mouse is connected to the system.**
3. **One of the following versions of Windows 95* must be installed on the system prior to running utility program.**

   Windows 95* 4.00.950 (Retail)
   Windows 95* 4.00.950a (OSR1)
   Windows 95* 4.00.950b (OSR2 without USB Supplement)
   Windows 95* 4.00.950b (OSR2.1 with USB Supplement)

4. **This utility should only be used on desktop systems. The utility must not be executed on notebook or portable systems with or without dock.**
5. **It is assumed that the BIOS properly initialized the 82371xB IDE interface for Bus Master IDE operation.**
6. **There are no other non-82371xB IDE controllers (add-in IDE controller or sound card with IDE) enabled on the system.**

6.2 Installing the Software

This subsection describes how to install the software on a system where Windows 95 is installed.

NOTE: *Record the location of the Windows 95* directory before installing the driver.*

1. **Check the System Requirements. Windows 95* must be fully installed and running on the system prior to running this software.**
2. **Close any running applications.**
3. **Remove references to installed real-mode IDE device drivers in the AUTOEXEC.BAT and CONFIG.SYS files (especially any drivers that control ATAPI CD-ROM and special IDE features). Use the Notepad utility to do this.**

   The driver files are stored in an integrated application setup program. This program is a Windows 95* program that allows the driver files to be INSTALLED or DE-INSTALLED.

   Execute the driver setup program.

   Run SETUP.EXE.
4. **Click 'Next' on Welcome Screen to read and agree to the license agreement. View the text file and choose File\Exit to close Notepad and continue.**

   NOTE: *If you click 'No', the program will terminate.*
5. **Click 'Yes' if you agree to continue.**

   NOTE: *If you click 'No', the program will terminate.*
6. **Select 'INSTALL', to install the PIIX Bus Master IDE Device Driver when prompted to do so.**

   NOTE: *If the driver is currently installed on the system, SETUP will ask you whether or not you want to continue. Follow the prompts on the screen to Install the driver if desired.*
7. **Click 'OK' to restart the system when prompted to do so.**

8. Follow the screen instructions and use default settings to complete the setup when Windows 95* is re-started. Upon re-start, Windows 95* will display that it has found an Intel PCI Bus Master IDE controller hardware and is installing hardware for it.

If a "New Hardware Found" dialog box is displayed requesting the location of the drivers, use the mouse to click on the scrollbar and click on the <Windows 95* directory>\System\IOSubSys path:

For example:

Click on 'C:\WINDOWS\SYSTEM\IOSUBSYS\'

Click 'OK'.

9. Select 'Yes', when prompted to re-start Windows 95.

NOTE: *After installation, the following driver and related files are stored as listed.*

<Windows 95* directory>\System\IOSubSys\IDEATAPI.MPD
<Windows 95* directory>\System\IOSubSys\PIIXVSD.VXD
<Windows 95* directory>\INF\IDEATAPI.INF

This page does not contain any information.

Appendix A
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

This page does not contain any information.

Appendix B

I/O Port Address Map and Interrupt Request Lines (IRQ)

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 are a total of 1K port address space available. The following table lists the I/O port addresses used on the Industrial CPU Card.

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 a total of 15 IRQ lines available on the Industrial CPU Card. Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on the Industrial CPU Card.

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	Software Redirected to Int 0Ah
IRQ10	Reserved
IRQ11	Reserved
IRQ12	Reserved
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE

Appendix C
Connector Pin Assignments

Front Bezel Connector: J1

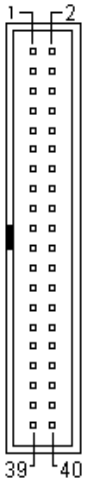
J1: Pins 1 – 4 Speaker
Pins 6 and 16: Green Function
Pins 11 – 15: Power LED and Keylock
Pins 8 and 18: Turbo LED Connector
Pins 9 and 19: Reset Switch
Pins 10 and 20: Hard Disk Drive LED Connector:

Pin #	Signal Name
1	Speaker Out
2	Reserved
3	Ground
4	+5V
5	Reserved
6	Sleep
7	Reserved
8	Turbo LED
9	External Reset
10	HDD Active#

Pin #	Signal Name
11	Power LED
12	Reserved
13	Ground
14	Keylock
15	Ground
16	Ground
17	Reserved
18	Ground
19	Ground
20	+5V

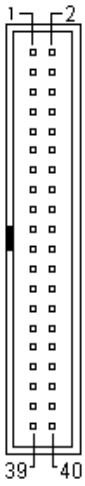
EIDE Connectors: J3, J4

J3 is the *primary* IDE connector and J4 is the *secondary* IDE connector.



J3

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	Reserved
Address 1	33	34	Reserved
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

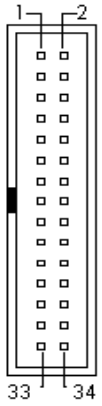


J4

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	Reserved
Address 1	33	34	Reserved
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

Floppy Drive Connector: J5

J5 of the SBC8153 is a 34-pin header and will support up to 2.88MB floppy drives.



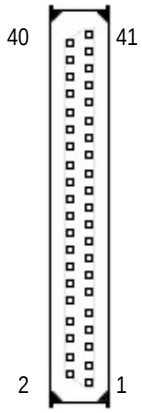
Signal Name	Pin	Pin	Signal Name
Ground	1	2	RM/LC
Ground	3	4	Reserved
Ground	5	6	Reserved
Ground	7	8	Index
Ground	9	10	Motor enable 0
Ground	11	12	Drive select 1
Ground	13	14	Drive select 0
Ground	15	16	Motor enable 1
Ground	17	18	Direction
Ground	19	20	Step
Ground	21	22	Write data
Ground	23	24	Write 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

CPU Fan Power Connector: J6

J6 Pin #	Signal Name
1	+12V
2	Ground

LCD Panel Connector: J8

J8 is a 41-pin (dual in line header) for flat panel LCD displays. The following shows the pin assignments of this connector.



Signal Name	Pin	Pin	Signal Name
P20	1	2	GND
P16	3	4	VCC
P21	5	6	P0
P17	7	8	P8
P22	9	10	P1
P18	11	12	P9
P23	13	14	P2
P19	15	16	P10
VCC	17	18	P3
FLM	19	20	P11
MDE	21	22	P4
LP	23	24	P12
SHFCLK	25	26	P5
3.3V	27	28	P13
3.3V	29	30	P6
ENABKL	31	32	P14
LCDVDD	33	34	P7
ENVEE	35	36	P15
GND	37	38	+12V
GND	39	40	+12V
Reserved	41		

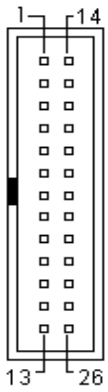
Flat Panel Display Interface Pin Descriptions

		Mono	Mono	Mono	Color	Color	Color STN	Color	Color	Color	Color	Color
65550		SS	DD	DD	TFT	TFT	TFT HR	STN SS	STN SS	STN DD	STN DD	STN DD
Pin#	Pin Name	8-bit	8-bit	16-bit	9/12/16 bit	18/24 bit	18/24 bit	8-bit (X4bP)	16-bit (4bP)	8-bit (4bP)	16-bit (4bP)	24-bit
71	P0	--	UD3	UD7	B0	B0	B00	R1	R1	UR1	UR0	UR0
72	P1	--	UD2	UD6	B1	B1	B01	B1	G1	UG1	UG0	UG0
73	P2	--	UD1	UD5	B2	B2	B02	G2	B1	UB1	UB0	UB0
74	P3	--	UD0	UD4	B3	B3	B03	R3	R2	UR2	UR1	LR0
75	P4	--	LD3	UD3	B4	B4	B10	B3	G2	LR1	LR0	LG0
76	P5	--	LD2	UD2	G0	B5	B11	G4	B2	LG1	LG0	LB0
78	P6	--	LD1	UD1	G1	B6	B12	R5	R3	LB1	LB0	UR1
79	P7	--	LD0	UD0	G2	B7	B13	B5	G3	LR2	LR1	UG1
81	P8	P0	--	LD7	G3	G0	G00	Shfclku	B3	--	UG1	UB1
82	P9	P1	--	LD6	G4	G1	G01	--	R4	--	UB1	LR1
83	P10	P2	--	LD5	G5	G2	G02	--	G4	--	UR2	LG1
84	P11	P3	--	LD4	R0	G3	G03	--	B4	--	UG2	LB1
85	P12	P4	--	LD3	R1	G4	G10	--	R5	--	LG1	UR2
86	P13	P5	--	LD2	R2	G5	G11	--	G5	--	LB1	UG2
87	P14	P6	--	LD1	R3	G6	G12	--	B5	--	LR2	UB2
88	P15	P7	--	LD0	R4	G7	G13	--	R6	--	LG2	LR2
90	P16	--	--	--	--	R0	R00	--	--	--	--	LG2
91	P17	--	--	--	--	R1	R01	--	--	--	--	LB2
92	P18	--	--	--	--	R2	R02	--	--	--	--	UR3
93	P19	--	--	--	--	R3	R03	--	--	--	--	UG3
94	P20	--	--	--	--	R4	R10	--	--	--	--	UB3
95	P21	--	--	--	--	R5	R11	--	--	--	--	LR3
96	P22	--	--	--	--	R6	R12	--	--	--	--	LG3
97	P23	--	--	--	--	R7	R13	--	--	--	--	LB3
67	FLM	FLM	FLM	FLM	FLM	FLM	FLM	FLM	FLM	FLM	FLM	FLM
68	LP	LP	LP	LP	LP	LP	LP	LP	LP	LP	LP	LP
69	MDE	M	M	M	M	M	M	M	M	M	M	M
70	ShfClk	ShfClk	ShfClk	ShfClk	ShfClk	ShfClk	ShfClk	ShfClk	ShfClk	ShfClk	ShfClk	ShfClk
	Pixels/ Clock	8	8	16	1	1	2	2-2/3	5-1/3	2-2/3	5-1/3	8

NOTE: *The higher order output lines should be used when only 9 or 12 bits are needed from the 9/12/16-bit TFT interface, or when only 18 bits are needed from the 18/24-bit TFT or TFT HR interfaces. The lower order bits should be left unconnected.*

Parallel Port Connector: J9

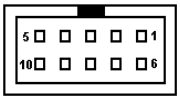
The following table describes the pin out assignments of this connector.



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

COM2 Serial Port: J10

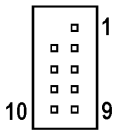
J10, a 10-pin header connector, is the onboard COM2 serial port of the SBC8153.



J10: COM2

Pin #	Signal Name		
	RS-232	R2-422	RS-485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	Reserved
4	DTR	RX	Reserved
5	GND	GND	GND
6	DSR	RTS-	Reserved
7	RTS	RTS+	Reserved
8	CTS	CTS+	Reserved
9	RI	CTS-	Reserved
10	Reserved	Reserved	Reserved

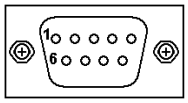
PS/2 Mouse Connector: J11



Signal Name	Pin #	Pin #	Signal Name
		1	Reserved
Mouse clock	4	3	Reserved
5V	6	5	Reserved
Reserved	8	7	Mouse data
Reserved	10	9	GND

COM1 Serial Port: J12

J12, a DB-9 connector, is an onboard serial port of the SBC8153. The following table shows the pin assignments of this connector.



J12: COM1

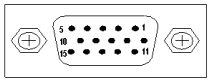
Pin #	Signal Name
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	RI, Ring indicator

IrDA Connector: J13

J13 Pin #	Signal Name
1	+5V
2	Reserved
3	Ir RX
4	Ground
5	Ir TX

VGA CRT Connector: J14

J14 is a 15-pin VGA CRT connector. The pin assignments are as follows:

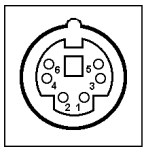


Signal Name	Pin	Pin	Signal Name
Red	1	2	Green
Blue	3	4	Reserved
GND	5	6	GND
GND	7	8	GND
Reserved	9	10	GND
Reserved	11	12	Reserved
HSYNC	13	14	VSYNC
Reserved	15		

External Keyboard Connector: J15

J15 Pin #	Signal Name
1	Keyboard clock
2	Keyboard data
3	PG
4	GND
5	Vcc

Keyboard Connector: J16



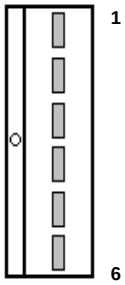
J16 Pin #	Signal Name
1	Keyboard data
2	Reserved
3	GND
4	5V
5	Keyboard clock
6	Reserved

USB Connectors: J19, J20

J20 Pin #	J19 Pin #	Signal Name
1	1	Vcc
2	2	USB-
3	3	USB+
4	4	Ground

Power Connector: P1

When using an AT compatible power supply, plug the power supply connectors into P1. Make sure the power supply connectors are connected in the right orientation. See the pin assignments below.

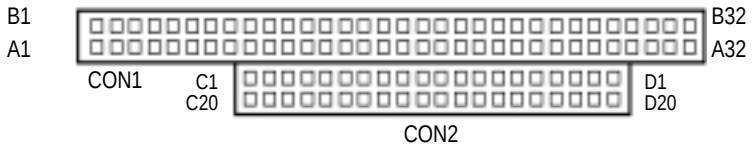


P1 Pin#	Signal Name
1	Reserved
2	+5V
3	+12V
4	-12V
5	GND
6	GND

PC/104 Connector: CON1, CON2

CON1 and CON2 are dual-in-line pin headers that support PC-104 modules. CON1 consists of 64 pins and CON2 has 40 pins. The following table shows the their pin assignments.

CON 1				CON 2			
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				


B1
A1
B32
A32
CON1
C1
C20
D1
D20
CON2