SBC-554V
Half-size 586 CPU Card with PISA Bus

SBC-555

Half-size 586 CPU Card with ISA Bus

FCC STATEMENT

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THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES. THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINTST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQENCY ENERGY AND , IF NOT INSTATLLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

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Packing list

Before you begin installing your card, please make sure that the following materials have been shipped:

- 1 SBC-554V CPU card/ or SBC-555 CPU Card

- 1 6-pin mini-DIN dual outlet adapter for keyboard and PS/2 mouse

- 1 Hard disk drive (IDE) interface cable (40 pin)

- 1 Floppy disk drive interface cable (34 pin)

- 1 Parallel port adapter (26 pin) and COM2 adapter (9 pin) kit

- 4 Utility disks with CHIPS 65554 utility programs and drivers

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

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General Information

This chapter provides background information for the SBC-554V/555.

Sections include:

• Card specifications

• Board layout

Introduction

The SBC-554V/555 is an all-in-one single board Pentium computer incorporating the latest **PISA Bus** interface for SBC-554V and one ISA Bus for SBC-555. Unlike ISA Bus card, SBC-554V supports PCI and ISA interface for the user to connect PCI and ISA add-on cards. With an **on-board flat panel/CRT SVGA controller,** the SBC-554V/555 packs all the functions of an industrial computer and its display capabilities onto a single, half-size card. This means the SBC-554V/555 is your absolute best solution for embedded applications.

The on-board PCI-bus, flat panel/CRT SVGA controller uses the CHIPS 65554 chipset with 2 MB of video memory on board. This chipset, used with local PCI-bus, is a 64-bit graphics engine. Excellent for display-intensive applications, this card supports various LCD types, including TFT, DSTN, MONO, and EL.

Another feature of the SBC-554V/555 is the inclusion of a high speed, local bus IDE controller. This controller supports (through ATA PIO) mode 3 and mode 4 hard disks, and Ultra DMA/33, enabling data transfer rates up to 33 MB/second. Up to two IDE devices can be connected, including large hard disks, CD-ROM drives, tape backup drives, or other IDE devices.

On-board features include two high-speed RS-232 serial ports with 16C550 UARTs, one bidirectional SPP/EPP/ECP parallel port, and one floppy drive controller. In addition, the SBC-554V/555 includes an extra 512 KB of second level on-board cache memory.

If program execution is halted by a program bug or EMI, the board's watchdog timer can automatically reset the CPU or generate an interrupt. This ensures reliability in unmanned or stand alone systems.

The SBC-554V/555 supports 5V or 3.3V EDO DRAM. It also provides two 72-pin SIMM (Single In-line Memory Module) sockets for its on-board system DRAM. These sockets give you the flexibility to configure your system from 1 MB to 128 MB of DRAM using the most economical combination of SIMMs.

Features

- **CPU**: Intel Pentium 75~200 MHz, P55C (MMX), Cyrix / IBM / SGS 6X86 PR100+~166+, AMD K5 PR75~166, K6 PR2 166~233

- Half-size PISA (PCI+ISA) Bus CPU Card (SBC-554V); ISA Bus CPU card (SBC-555)

- **BIOS**: Award FLASH BIOS

- **Chipset**: SiS5582

- **Level 2 Cache**: Onboard 512 KB pipeline burst 2nd level cache

- **VGA Controller**: C&T 65554 with display memory 2 MB onboard

- **Display type**: Support CRT and flat panel (TFT, DSTN, MONO and EL) display. Can display both CRT and flat panel simultaneously; support resolution up to 1024x768 @ 64K color.

- **FPD Link (Flat Panel Display Link)**: Optional function to support LVDS (Low Voltage Differential Signaling) for high-speed and low-power data transfer

- **DiskOnChip**: One 32-pin DIP socket supports M-System DiskOnChip 2000 series, memory capacity up to 72 MB.

Specifications

CPU: Intel Pentium 75~200 MHz, P55C(MMX) 166~233 MHz, Cyrix / IBM / SGS 6X86 PR100+~166+, AMD K5 PR75~166, K6 PR2 166~300

Bus interface: SBC-554V - PISA (PCI+ISA), SCB-555 - ISA

CPU Socket: PGA type

BIOS: Award FLASH BIOS

Chipset: SiS5582

Super I/O Chipset: UMC8669F with Fully 16-bit I/O decoded

Level 2 Cache: Onboard 512 KB pipeling burst 2nd level cache

System memory: 8 MB to 128 MB. Two 72-pin SIMM socket on board

Enhanced IDE hard disk drive interface: Supports up to two hard disk drives. Supports PIO mode 4 and Bus Master. Also supports Multi-word DMA and Ultra DMA/33

Floppy disk drive interface: supports up to two floppy disk drives, 5.25"(360 KB and 1.2 MB) and/or 3.5" (720 KB, 1.44 MB and 2.88 MB)

Multi-mode parallel port: Configured to LPT1, LPT2, LPT3 or disabled. Supports SPP, ECP, and EPP.

Serial ports: One RS-232 and one RS-232/422/485 serial ports. Ports can be configured as COM1, COM2, COM3, COM4 or disabled individually. Two 16C550 serial UARTs. IR connector reserved for future use.

Keyboard/mouse connector: 6-pin mini DIN connector supports standard PC/AT keyboard and PS/2 mouse.

USB connectors: Dual USB connectors onboard

Battery: Lithium battery for data retention of up to 10 years

Watchdog Timer: Can generate a system reset, IRQ15 or NMI. Supports Win95, Win3.1. Software selectable timeout interval (1 sec. ~ 128 min., 1sec./step).

DMA channels: 7

Interrupt levels: 15

Power management: I/O peripheral devices support power saving and doze/standby/suspend modes. APM 1.2 compliant.

Flat panel VGA interface

Chipset: C&T 65554

Display memory: 2 MB onboard

Display type: Supports CRT and flat panel (TFT, DSTN, MONO and EL) display. Can display both CRT and flat panel simultaneously.

Resolution: Supports up to 1024x768 @ 64K colors.

SSD interface

One 32-pin DIP socket supports M-system Disk-On-Chip 2000 series, memory capacity from 1 MB to 24 MB

Mechanical and environmental

Power supply voltage: +5V (4.75V to 5.25V),

$\qquad\qquad$ +12V (11.75V to 12.25V)

Power Requirement:

Bare Bone power consumption: +5V @ 1.5A

Power Requirement (with Pentium MMX): +5V @ 6A

Power Requirement (with K6-233): +5V @ 10A

Operating temperature: 32 to 140°F (0 to 60°C)

Board size: 7.3" (L) x 4.8" (W) (185 mm x 122 mm)

Board weight: 1.32 lb. (0.6 Kg)

Board layout

Card dimensions

185.00
178.00

98.50

D4x4

19.50

122.00
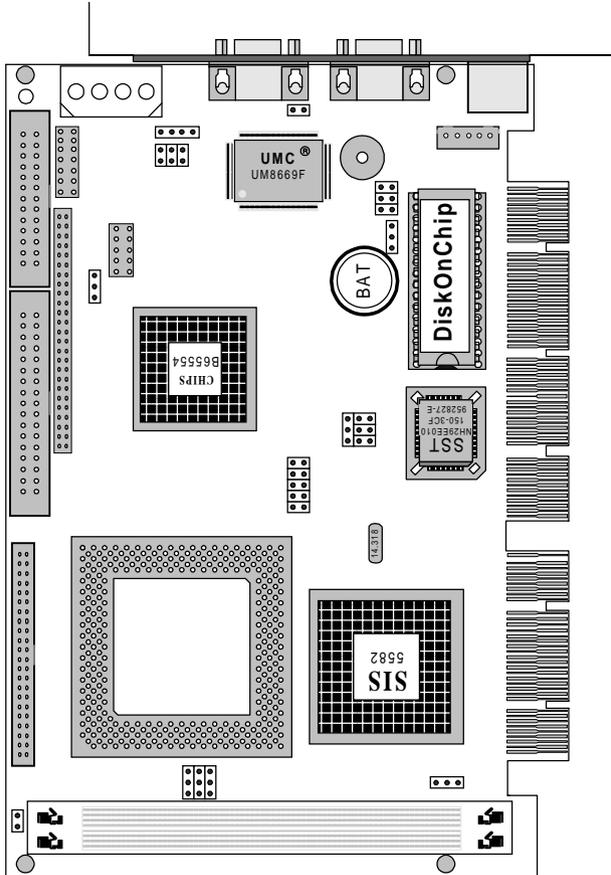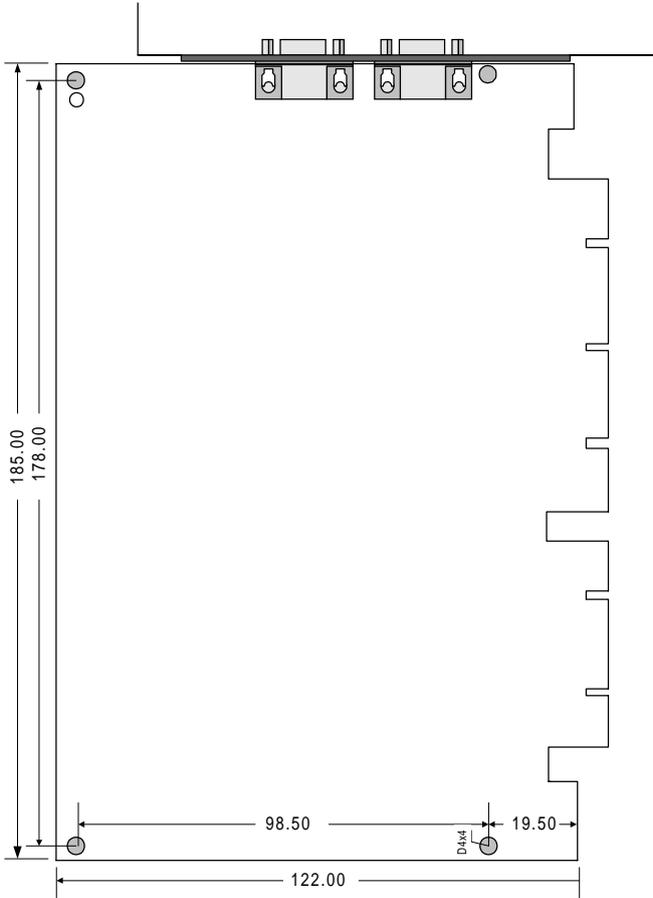
Installation

This chapter explains set-up procedures for the SBC-554V/555 hardware, including instructions on setting jumpers and connecting peripherals, switches, and indicators. Be sure to read all safety precautions before you begin the installation procedure.

Jumpers and connectors

Connectors on the board link it to external devices such as hard disk drives, keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your applications.

The table below lists the function of each of the board jumpers and connectors:

Jumpers and connectors

Label	Function
JP1	CPU clock ratio
JP2	DRAM voltage setting
JP3	VIO voltage setting
JP4	Vcore voltage setting
JP5	PCI bus clock Sync/Async mode setting
JP6	CPU external clock selection
JP7	LCD panel's voltage setting
JP8	Clear CMOS data
JP9	SSD address setting
JP10	RS232/422/485 selection
JP11	Hardware reset
CN1	HDD connector
CN2	FDD connector
CN3	LCD connector
CN4	USB connector
CN5	Parallel connector
CN6	COM2 connector
CN7	COM1 connector (D-SUB 9-pin)
CN8	VGA connector (D-SUB 15-pin)
CN9	KB/PS2 mouse connector
CN10	Power connector (4-pin)
CN11	Inverter connector (5-pin)
CN12	Reserved IR connector
CN13	HDD LED connector

Locating jumpers and connectors

Setting jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To close a jumper you connect the pins with the clip. To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either pins 1 and 2 or 2 and 3.
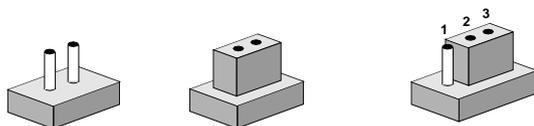
Open   **Closed**   **Closed 2-3**

The jumper settings are schematically depicted in this manual as follows:

Open   **Closed**   **Closed 2-3**

A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubt about the best hardware configuration for your applications, contact your local distributor or sales representative before you make any change.

Generally, you simply need a standard cable to make most connections.

Safety precautions

Warning! Always completely disconnect the power cord from your chassis whenever you are working on it. Do not make connections while the power is on because sensitive electronic components can be damaged by the sudden rush of power. Only experienced electronics personnel should open the PC chassis.

Caution! Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.

Installing the CPU

The SBC-554V CPU card supports most Pentiums and their compatible CPUs. The system's performance depends on the CPU you choose. You can install or upgrade the CPU in the board's PGA socket by following the procedures outlined below. If your system has an existing CPU, you need to remove it before installing the new CPU.

Removing a CPU

1. Disconnect power from the chassis, and unplug all connections to the CPU card. Then, remove the CPU card from the chassis by following the instructions in the user's manual for your chassis.

2. Lift the CPU out of the PGA socket. The old chip may be difficult to remove. You may find spray chip lubricant, designed for pin-grid-array (PGA) devices, and a chip puller helpful. These are available at electronics hobbyists' supply stores.

Installing a CPU

To install the CPU, follow the instructions that came with it. If no documentation was provided, the general procedures for installing a CPU are outlined below:

1. Lubricate the pins on the CPU with lubricant for PGA devices. This makes the CPU slide in much easier and greatly reduces the chance of damaging the pins and other components.

2. Carefully align the CPU so that it is parallel to the socket. Make sure that the notch on the corner of the CPU matches the notch on the inside of the socket.

3. Gently push the CPU into the socket. There will probably be a small gap between the CPU and the socket even when it is fully seated. DO NOT USE EXCESSIVE FORCE!

When you install a new CPU, you may have to adjust other settings on the board, such as CPU type, CPU clock, and PCI speed, to accommodate it. Make sure that the settings are correct for your CPU. **Improper settings may damage the CPU.**

CPU clock ratio (JP1)

JP1 must be set to match the CPU clock ratio. The chart below shows the proper jumper settings for P54C, P55C, and AMD-K6, and their respective clock ratio.

CPU Clock Ratio (JP1)		(Default)	
P54C x1.5 P55C x3.5 AMD-K6 x3.5	P54C x2.0 P55C x2.0 AMD-K6 x2.0	P54C x3.0 P55C x3.0 AMD-K6 x3.0	P54C x2.5 P55C x2.5 AMD-K6 x2.5
6 ○ ○5 4 ○ ○3 2 ○ ○1	6 ●—●5 4 ○ ○3 2 ○ ○1	6 ○ ○5 4 ●—●3 2 ○ ○1	6 ●—●5 4 ●—●3 2 ○ ○1
AMD-K6 x5.5	AMD-K6 x4.0	AMD-K6 x5.0	AMD-K6 x4.5
6 ○ ○ 5 4 ○ ○ 3 2 ●—●1	6 ●—●5 4 ○ ○ 3 2 ●—●1	6 ○ ○5 4 ●—●3 2 ●—●1	6 ●—●5 4 ●—●3 2 ●—●1

DRAM voltage setting (JP2)

SBC-554V/555 supports 5V DRAM and 3.3V DRAM. JP2 must be set to match the DRAM type.

5V (Default)	3.3V
○ 3 █ 2 █ 1	█ 3 █ 2 ○ 1

Vcore voltage setting (JP4)

CPU core voltavge can be set by JP4 to reduce power consumption and heat.

Vcore Voltage settings (JP-4)

1.9V	2.0V	2.1V
2 4 6 8 ○ ○ ○ ○ ○ ○ ○ ○ 1 3 5 7	2 4 6 8 ▮ ○ ○ ○ ▮ ○ ○ ○ 1 3 5 7	2 4 6 8 ○ ▮ ○ ○ ○ ▮ ○ ○ 1 3 5 7

2.2V	2.3V	2.4V
2 4 6 8 ▮ ▮ ○ ○ ▮ ▮ ○ ○ 1 3 5 7	2 4 6 8 ○ ○ ▮ ○ ○ ○ ▮ ○ 1 3 5 7	2 4 6 8 ▮ ○ ▮ ○ ▮ ○ ▮ ○ 1 3 5 7

2.5V	2.6V	2.7V
2 4 6 8 ○ ▮ ▮ ○ ○ ▮ ▮ ○ 1 3 5 7	2 4 6 8 ▮ ▮ ▮ ○ ▮ ▮ ▮ ○ 1 3 5 7	2 4 6 8 ○ ○ ○ ▮ ○ ○ ○ ▮ 1 3 5 7

2.8V(Default)	2.9V	3.0V
2 4 6 8 ▮ ○ ○ ▮ ▮ ○ ○ ▮ 1 3 5 7	2 4 6 8 ○ ▮ ○ ▮ ○ ▮ ○ ▮ 1 3 5 7	2 4 6 8 ▮ ▮ ○ ▮ ▮ ▮ ○ ▮ 1 3 5 7

3.1V	3.2V	3.3 V
2 4 6 8 ○ ○ ▮ ▮ ○ ○ ▮ ▮ 1 3 5 7	2 4 6 8 ▮ ○ ▮ ▮ ▮ ○ ▮ ▮ 1 3 5 7	2 4 6 8 ○ ▮ ▮ ▮ ○ ▮ ▮ ▮ 1 3 5 7

3.4V
2 4 6 8 ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ 1 3 5 7

VIO voltage setting (JP3)

JP3 must be set to match the CPU type. The chart below shows the proper jumper settings for their respective CPU I/O voltage:

VIO voltage setting (JP3)	
3.5 V	**3.3 V (Default)**
○ ○	▮

PCI Bus clock Sync / Async mode settings (JP5)

JP5 allows users to select Sync or Async PCI clock. The Sync PCI clock depends on half of the CPU external clock; in contrast, the Async PCI clock is fixed on 33MHz.

33MHz (Async mode setting)	25MHz 30MHz 33MHz (Sync mode setting) (Equal to 1/2 x CPU Ext. CLK)
1 2 3 ●━●○	1 2 3 ○●━● (Default)

CPU External clock selection (JP6)

JP6 allows users to select CPU external clock.

50 MHz	**60MHz**	**66MHz (Default)**
2 4 6 ▮▮▮ 1 3 5	2 4 6 ○▮▮ ○ 1 3 5	2 4 6 ▮○▮ ○ 1 3 5

CPU jumper setting example

CPU (Vcore)	Internal Clock	External Clock	Ratio	JP1 (Ratio)	JP6 (External)	JP4
Intel Pentium	200MHz	66MHz	3*	6 ○ ○ 5 4 ●─● 3 2 ○ ○ 1	2 4 6 (jumpers) 1 3 5	2 4 6 (jumpers) 1 3 5 7 (3.3V)
Intel Pentium	166MHz	66MHz	2.5*	6 ●─● 5 4 ●─● 3 2 ○ ○ 1	2 4 6 (jumpers) 1 3 5	2 4 6 (jumpers) 1 3 5 7 (3.3V)
Intel Pentium MMX	200MHz	66MHz	3*	6 ○ ○ 5 4 ●─● 3 2 ○ ○ 1	2 4 6 (jumpers) 1 3 5	2 4 6 (jumpers) 1 3 5 7 (2.8V)
Intel Pentium MMX	166MHz	66MHz	2.5*	6 ●─● 5 4 ●─● 3 2 ○ ○ 1	2 4 6 (jumpers) 1 3 5	2 4 6 (jumpers) 1 3 5 7 (2.8V)
AMD K6 pr2-233	233MHz	66MHz	3.5*	6 ○ ○ 5 4 ○ ○ 3 2 ○ ○ 1	2 4 6 (jumpers) 1 3 5	2 4 6 (jumpers) 1 3 5 7 (3.2V)
AMD K6 pr2-200	200MHz	66MHz	3*	6 ○ ○ 5 4 ●─● 3 2 ○ ○ 1	2 4 6 (jumpers) 1 3 5	2 4 6 (jumpers) 1 3 5 7 (2.9V)
AMD K6 pr2-166	166MHz	66MHz	2.5*	6 ●─● 5 4 ●─● 3 2 ○ ○ 1	2 4 6 (jumpers) 1 3 5	2 4 6 (jumpers) 1 3 5 7 (2.9V)
Cyrix 6 x 86 pr-166+	133MHz	66MHz	2*	6 ●─● 5 4 ○ ○ 3 2 ○ ○ 1	2 4 6 (jumpers) 1 3 5	2 4 6 (jumpers) 1 3 5 7 (3.4V)

LCD panel's voltage setting (JP7)

JP7 allows users to select two different voltage settings of LCD panel.

5 V (Default)	3.3V
1 2 3	1 2 3

Clear CMOS data (JP8)

JP8 allows users to clear CMOS data.

Normal (Default)	Clear CMOS
1 2 3	1 2 3

SSD address settings (JP9)

You can select SDD address by setting JP9.

Address	CC000	D0000	D4000
	2 4 6 ○ ○ ○ ○ ○ ○ 1 3 5	2 4 6 ○ ○ ▮ ○ ○ ▮ 1 3 5	2 4 6 ○ ▮ ○ ○ ▮ ○ 1 3 5
Address	**D8000 (Default)**	**DC000**	
	2 4 6 ○ ▮ ▮ ○ ▮ ▮ 1 3 5	2 4 6 ▮ ○ ○ ▮ ○ ○ 1 3 5	

RS-232/422/485 selections (JP10)

You can configure COM2 as RS232, RS422, or RS485 by setting JP10.

RS-232 (Default)	RS-422	RS-485
6 ○ ○ 5	6 ○ ○ 5	6 ●—● 5
4 ○ ○ 3	4 ●—● 3	4 ○ ○ 3
2 ●—● 1	2 ○ ○ 1	2 ○ ○ 1

Hardware Reset (JP11)

Normal (Default)	Reset
○ 2	▮ 2
○ 1	▮ 1

Installing SIMMs

Note that the modules can only fit into a socket one way.

1. Insert the memory module into the socket at a moderate angle.

2. Push the module toward the vertical posts at both ends of the socket until the module is upright and the retaining clips at both ends of the module click into place. When positioned correctly, the pins on top of the vertical posts should correspond to the circular holes on the ends of the module.

3. Repeat steps 1 and 2 for each module you install.

Removing SIMMs

If you need to remove a SIMM, follow the procedures below:

1. Supporting the SIMM with a finger, use a pen or a similarly shaped object and press one retaining clip straight down.

2. Repeat for the other side. When released, the retaining clips will push the SIMM up and out of its upright position.

3. Carefully pull the SIMM out of the socket with your fingers.

4. Repeat the above steps for each module you remove.

IDE hard drive connector (CN1)

You can attach one or two Enhanced Integrated Device Electronics hard disk drives to the SBC-554V/555's internal controller. The SBC-554V/555's IDE controller uses a PCI local-bus interface and supports faster data transfer.

Connecting the hard drive

Connecting drives is done in a daisy-chain fashion and requires one of two cables, depending on the drive size. 1.8" and 2.5" drives need a 1 x 44-pin to 2 x 44-pin flat-cable connector. 3.5" drives use a 1 x 44-pin to 2 x 40-pin connector.

Wire number 1 on the cable is red or blue, and the other wires are gray.

1. Connect one end of the cable to CN1. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).

2. Plug the other end of the cable to the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drive. (See your hard drive's documentation for the location of the connector.)

Connect a second drive as described above.

Unlike floppy drives, IDE hard drives can connect to either end of the cable. If you install two drives, you will need to set one as the master and one as the slave by using jumpers on the drives. If you install just one drive, set it as the master.

Pin assignments

The following table lists the pin numbers and their respective signals:

IDE Connector (CN1)

Pin	Signal	Pin	Signal
1	Reset	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	N.C.
21	N.C.	22	GND
23	IOW	24	GND
25	IOR	26	GND
27	IORDY	28	BALE
29	N.C.	30	GND
31	IRQ 14	32	-I/O CS16
33	A1	34	N.C.
35	A0	36	A2
37	CS0	38	CS1
39	-ACT	40	GND

Floppy drive connector (CN2)

You can attach up to two floppy disks to the SBC-554V/555 on-board controller. You can use any combination of 5¼" (360 KB and 1.2 MB) and/or 3½" (720 KB, 1.44 MB, and 2.88 MB) drives.

A 34-pin daisy-chain drive connector cable is required for a dual-drive system. On one end of the cable is a 34-pin flat-cable connector. On the other end are two sets of floppy disk drive connectors. Each set consists of a 34-pin flat-cable connector (usually used for 3½" drives) and a printed-circuit board connector (usually used for 5¼" drives).

Connecting the floppy drive

1. Plug the 34-pin flat-cable connector into CN2. Make sure that the red wire corresponds to pin 1 on the connector.

2. Attach the appropriate connector on the other end of the cable to the floppy drive(s). You can use only one connector in the set. The set on the end (after the twist in the cable) connects to the A: drive. The set in the middle connects to the B: drive.

3. If you are connecting a 5¼" floppy drive, line up the slot in the printed circuit board with the blocked-off part of the cable connector.

   If you are connecting a 3½" floppy drive, you may have trouble determining which pin is pin number 1. Look for a number printed on the circuit board indicating pin number 1. Also, the connector on the floppy drive connector may have a slot. When the slot is up, pin number 1 should be on the right. Check the documentation that came with the drive for more information.

   If you desire, connect the B: drive to the connectors in the middle of the cable as described above.

Pin assignments

The following table lists the pin assignments for the CN2 connector:

FLOPPY drive connector (CN2)			
Pin	**Signal**	**Pin**	**Signal**
1~33 (odd)	GND	2	High density
4, 6	Unused	8	Index
10	Motor enable A	12	Driver select B
14	Driver select A	16	Motor enable B
18	Direction	20	Step pulse
22	Write data	24	Write enable
26	Track 0	28	Write protect
30	Read data	32	Select head
34	Disk change		

Display connectors (LCD) (CN3)

The SBC-554V/555 card features one LCD connector, which allows you to connect various flat panel displays. The following table lists their pin assignments:

LCD connector (LCD)

Pin	Function	Pin	Function
1	+12 V$_{DC}$	2	+12 V$_{DC}$
3	GND	4	GND
5	PVCC	6	PVCC
7	ENABLE VEE	8	GND
9	P0	10	P1
11	P2	12	P3
13	P4	14	P5
15	P6	16	P7
17	P8	18	P9
19	P10	20	P11
21	P12	22	P13
23	P14	24	P15
25	P16	26	P17
27	P18	28	P19
29	P20	30	P21
31	P22	32	P23
33	P24	34	P25
35	SHFCLK	36	FLM (V SYS)
37	M	38	LP (H SYS)
39	GND	40	ENABKL
41	P26	42	P27
43	P28	44	P29
45	P30	46	P31
47	P32	48	P33
49	P34	50	P35

USB connector (CN4)

The USB connector supports two universal serial ports. This connector allows optional external port bracket and attached cable to connect external USB devices. If the USB ports are installed, the USB setting in the CMOS setup should be set to "Enabled". The USB ports also require operating system support for USB devices.

USB Connector		
Pin		Function
1	2	+5V
3	4	-Data
5	6	+Data
7	8	GND
9	10	NC

Parallel port connector (CN5)

Normally, the parallel port CN5 is used to connect the card to a printer. You need an adapter cable if you use a traditional DB-25 connector. The cable has a 26-pin connector on one end and a DB-25 connector on the other.

Parallel port IRQ

The SBC-554V/555 supports one parallel port. The port is designated as LPT1 and can be disabled or changed to LPT2 or LPT3 in the system BIOS setup.

Pin assignments

Parallel (printer) Connector (CN5)			
Pin	**Signal**	**Pin**	**Signal**
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	+Select	14	-Auto feed
15	-Error	16	-Init printer
17	-Select input	18~25	GND

Serial ports connectors (CN6, CN7)

The SBC-554V/555 offers one RS-232 serial port and one selectable RS-232/422/485 serial port. You can enable or disable the address for each port within the BIOS Peripheral Setup Menu.

The card mounting bracket holds COM1, the DB-9 serial port connector for the first port. For COM2 selection, please refer to Jumper settings on the previous page.

(COM2/CN6)

(COM1/CN7)
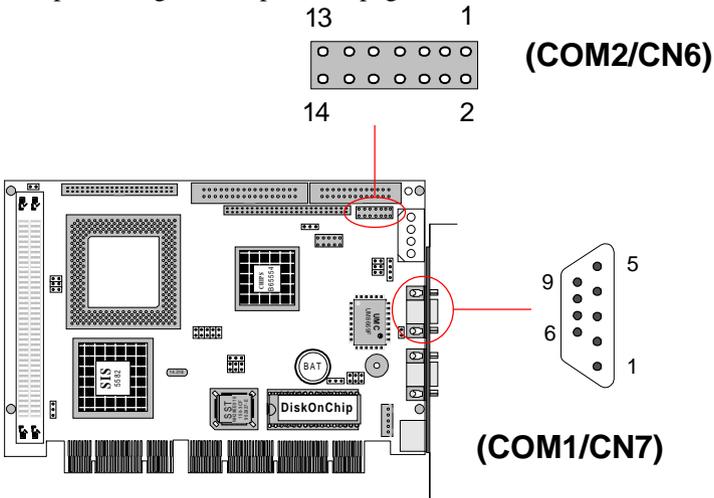
Pin	RS-232	RS-422/485	Pin	RS-232	RS-422/485
1	DCD	DCD	2	DSR	DSR
3	RX	RX	4	RTS	RTS
5	TX	TX	6	CTS	CTS
7	DTR	DTR	8	RI	RI
9	GND	GND	10	NC	NC
11	NC	422TXD + (485 DATA+)	12	NC	422TXD - (485 DATA-)
13	NC	422RXD+	14	NC	422RXD-

VGA connector (CN8)

The SBC-554V/555's SVGA connector with PCI bus supports monochrome display as well as high-resolution color displays.

SVGA connector (CN8)	
Pin	**Signal**
1	Red video
2	Green video
3	Blue video
4	Not used
5	GND
6	Red return (GND)
7	Green return (GND)
8	Blue return (GND)
9	Key (no pin)
10	Sync return (GND)
11	Monitor ID (not used)
12	Monitor ID
13	Horizontal sync
14	Vertical sync
15	Not used

KB/PS2 Mouse connector (CN9)

The SBC-554V/555 board provides two 6-pin mini-DIN connectors (KB/PS2 MOUSE) on the card mounting bracket supports single board computer applications. The card comes with an adapter to convert the 6-pin mini-DIN connector, used for the mouse, to the standard DIN connector for the keyboard.
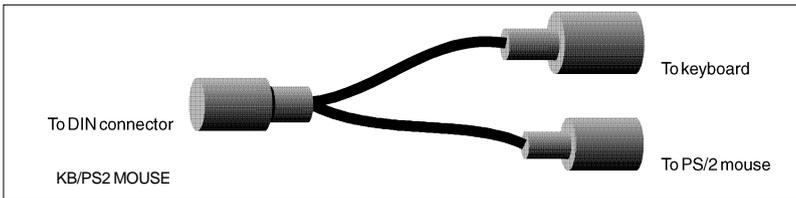
Keyboard connector

Pin	Function
1	K.B. clock
2	K.B. data
3	N.C.
4	GND
5	+5 V_{DC}

Keyboard & PS/2 mouse connector

Pin	Function
1	K.B. data
2	PS/2 mouse data
3	GND
4	+5 V_{DC}
5	K.B. clock
6	PS/2 mouse clock

Power connector (CN10)

In single board computer (non-passive backplane) applications, you need to connect power directly to the SBC-554V/555. This connector is fully compatible with the standard PC power supply connector. See the following table for its pin assignments:

Power connector (CN10)	
Pin	Function
1	+12V
2	GND
3	GND
4	+5V

Invertor connector (CN11)

The CN11 is a 5-pin invertor connector which can provide the power for an LCD invertor. The following table is the pin assignment of CN11. The pin-5 "Invertor Enable" is normally active "high". Please refer to "Power Management Setup" in the BIOS SETUP Menu and select "LCD off Option" to enable power management.

1 ● : +12V

2 ● : GND

3 ● : Reserved

4 ● : NC

5 ● : Invertor Enable

Reserved IR connector (CN12)

The onboard IR connector supports an Infra-Red port module that enables wireless communication between the computer and other computers and devices with infrared capacity. The port module is an optional component. If it is installed, you must set the IR Transfer Mode in the Peripheral section of the CMOS setup utility.

IR connector

Pin	Function
4	5V
3	TX
2	GND
1	RX

HDD LED connector (CN13)

The HDD LED connector (CN13) allows user to connect to the hard disk activity indicator light on the case.

*IDE LED pin assignments (CN13)*

Pin	Signal
1	-R/W IDE
2	Pull high

DiskOnChip socket

The DiskOnChip 2000 family of products provides a single chip solid-state flash disk in a standard 32-pin DIP package. The DiskOnChip 2000 is a solid-state disk with no moving parts, resulting in a significant reduction in power consumption and an increase in reliability. The DiskOnChip is a small, plug and play Flash disk. It is easy to use and saves integration overhead.

The DiskOnChip 2000 family of products is available in capacities ranging from 2MB up to 72 MB, unformatted. In order to manage the disk, the DiskOnChip 2000 includes the TrueFFS, M-Systems' Flash File System proprietary software. The DiskOnChip 2000 package is pin-to-pin compatible with standard 32-pin EPROM devices.
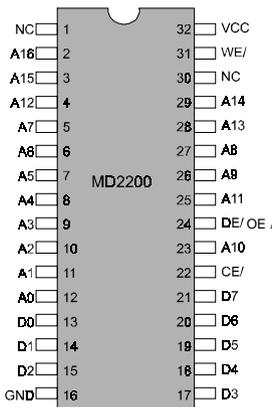
pin Name	Description	Pin Number	Direction	Note
A0-A12	Address bus	4-12,23,25-27	Inputs	
A13-A16	Address bus	2,3,28,29	Inputs	1
D0-D7	Data bus	13-15,17-21	I/O	
CE/	Chip Enable	22	Input	
OE/	Output Enable	24	Input	
WE/	Write Enable	31	Input	
NC	Not connected	1.30		2
VCC	Power	32		
GND	Ground	16		

Note 1: Pins A13 through A16 are not used by the MD2200. They are kept for socket backward compatibility with ED 1100 (DiskOnChip 1000)

Note 2: Pins 1 and 30 are not used by MD2200

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

System test and initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions:

```
press <F1> to RESUME
```

Write down the message and press the F1 key to continue the bootup sequence.

System configuration verification

These routines check the current system configuration against the values stored in the card's CMOS memory. If they don't match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time

2. You have changed the hardware attached to your system

3. The CMOS memory has lost power and the configuration information has been erased.

The SBC-554V's/555's CMOS memory has an integral lithium battery backup. The battery backup should last ten years in normal service, but when it finally runs down, you will need to replace the complete unit.

AWARD BIOS setup

```
        R O M   P C I / I S A   B I O S   ( 2 A 5 I I A K D )
                C M O S   S E T U P   U T I L I T Y
              A W A R D   S O F T W A R E ,   I N C .
              I N T E G R A T E D   P E R I P H E R A L S
```

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	IDE HDD AUTO DETECTION
CHIPSET FEATURES SETUP	SUPERVISER PASSWORD
POWER MANAGEMENT SETUP	USER PASSSWORD
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....
```

Setup program initial screen

Award's BIOS ROM has a built-in Setup program that allows
users to modify the basic system configuration. This type of
information is stored in battery-backed CMOS RAM so that it
retains the Setup information when the power is turned off.

Entering setup

Power on the computer and press <Del> immediately. This will
allow you to enter Setup.

Standard CMOS setup

When you choose the STANDARD CMOS SETUP option from
the INITIAL SETUP SCREEN menu**,** the screen shown below is
displayed. This standard Setup Menu allows users to configure
system components such as date, time, hard disk drive, floppy
drive, display, and memory. Once a field is highlighted, on-line
help information is displayed in the left bottom of the Menu
screen.

***   In the Panel selection item, you can use Page/Up/Down key
to select requried LCD BIOS.   There are eight various LCD BIOS
available in this BIOS selection table: 800 x 600 TFT, 1024 x 768
DSTN, 1280 x 1024 TFT, 640 x 480 DSTN, 800 x 600 STN, 640
x 480 SHARP TFT, 640 x 480 18 BIT TFT, 1024 x 768 TFT.

```
                  R O M   P C I / I S A   B I O S   ( 2 A 5 I I A K 9 )
                        S T A N D A R D   C M O S   S E T U P
                        A W A R D   S O F T W A R E ,   I N C .


 Date (mm:dd:yy) : Mon, Aug 1 1997
 Time (hh:mm:ss) : 8:20:23
                          CYLS.    HEADS   PRECOMP  LANDZONE SECTORS  MODE

 Drive C : Auto (  0Mb)      0        0         0         0        0  AUTO
 Drive D : Auto (  0Mb)      0        0         0         0        0  AUTO

 Drive A : 1.44M,3.5 in.
 Drive B : None

 LCD & CRT : Both
 Panel : 640 x 480 18BIT TFT          Base Memory        : 640K
 Halt On:All Errors                   Extended Memory    : 27648K
                                      Other Memory       : 384K
                                      Total Memory       : 28672K

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

CMOS setup screen

BIOS features setup

By choosing the BIOS FEATURES SETUP option from the
INITIAL SETUP SCREEN menu, the screen below is displayed.
The following configurations are based on the manufacturer's
SETUP DEFAULTS settings.

```
          ROM  PCI/ISA  BIOS  (2A5L9AK9)
                 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              : C, A,     D4000-D7FFF Shadow       : Disabled
Swap Floppy Drive          : Disabled  D8000-DBFFF Shadow       : Disabled
Boot Up Floppy Seek        : Enabled   DC000-DFFFF Shadow       : Disabled
Boot Up NumLock Status     : On
Boot Up System Speed       : High
Gate A20 Option            : Fast
Memory Parity Check        : Enabled
Security Option            : Setup      Esc:Quit          ↑↓→←: Select Item
                                        F1 : Help         PU/PD/+/- : Modify
                                        F5 : Old Values   (Shift)F2 : Color
                                        F6 : Load BIOS Defaults
                                        F7 : Load Setup Defaults
```

BIOS features setup

Virus Warning

When this item is enabled, the Award BIOS will monitor the boot
sector and partition table of the hard disk drive for any attempt at
modification. If an attempt is made, the BIOS will halt the system
and the following error message will appear. Afterwards, if
necessary, you will be able to run an anti-virus program to locate
and remove the problem before any damage is done.

```
              ! WARNING !

        Disk boot sector is to be modified

   Type "Y" to accept write or "N" to abort write

            Award Software, INC.
```

CPU Internal Cache/External Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

Quick Power On Self Test

This category speeds up Power On Self Test(POST) after you power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

Boot Sequence

This category determines which drive to search first for the disk operating system (i.e., DOS).

Swap Floppy Drive

This item allows you to determine whether you want to swap floppy drive or not.

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 760K, 1.2M and 1.44M are all 80 tracks.

Boot Up NumLock Status

This allows you to determine the default state of the numeric keypad.

Boot Up System Speed

This allows you to determine the Boot Up Speed. The choice is High / Low.

Gate A20 Option

This entry allows you to select how the gate A20 is handled. The gate A20 is a device used to address memory above 1 Mbytes. Initially, the gate A20 was handled via a pin on the keyboard. Today, while keyboards still provide this support, it is more common, and much faster, for the system chipset to provide support for gate A20.

Memory Parity Check
Set this option to Enabled to Check the Parity of all system memory.

Security Option
This category allows you to limit access to the system.

Video BIOS Shadow
Determines whether video BIOS will be copied to RAM. However, it is optional depending on chipset design. Video shadow will increase the video speed.

CHIPSET features setup

By choosing the CHIPSET FEATURES SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed. The following configurations are based on the manufacturers SETUP DEFAULTS settings.

```
        ROM PCI/ISA BIOS (2A5IIAK9)
              CMOS SETUP UTILITY
            CHIPSET FEATURES SETUP
─────────────────────────────────────────────────────────────
Auto Configuration      : Enabled    Video BIOS Cacheable    : Enabled
L2(WB) Tag Bit length   : 8 bits     Memory Hole at 15M-16M  : Disabled
SRAM Back-to-Back       : Enabled
NA# Enable              : Disabled
Starting point of paging : 1T
Refresh Cycle Time (US) : 187.2
RAS Pulse Width Refresh  : 6T
RAS precharge Time      : 4T
RAS to CAS Delay        : 4T
CAS# Pulse Width (FP)    : 2T
CAS# Pulse Width (ED0)   : 1T
RAMW# Assertion Timing   : 3T
CAS Precharge Time (FP)  : 1T/2T
CAS  Precharge Time (EDO) : 1T/2T
Read Prefetch Memory RD  : Enabled
CPU to PCI Post Write    : 3T
CPU to PCI Burse Mem. WR : Disabled
ISA Bus Clock Frequency  : PCI CLK/4
System BIOS Cacheable    : Enabled
                                     Esc:Quit        ↑↓→←:Select Item
                                     F1 : Help       PU/PD/+/- : Modify
                                     F5 : Old Values (Shift)F2 : Color
                                     F6 : Load BIOS Defaults
                                     F7 : Load Setup Defaults
```

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system.

The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

Auto Configuration
Set this item to *Enabled* to pre-defined values for DRAM, cache.. timing according to CPU type & system clock. Thus, each item value may display differently depending on your system configurations.

When this item is enabled, the pre-difined items will become SHOW-ONLY.

System BIOS Cacheable
When enabled, accesses to the system BIOS ROM addressed at F0000H-FFFFFH are cached, provided that the cache controller is enabled.

Video BIOS Cacheable
As with caching the System BIOS above, enabling the Video BIOS cache will cause access to video BIOS addressed at C0000H to C7FFFH to be cached, if the cache controller is also enabled.

Memory Hole At 15M-16M
In order to improve performance, certain space in memory can be reserved for ISA cards. the memory must be mapped into the memory space below 16 MB.

Power management setup

By choosing the POWER MANAGEMENT SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed. The following configurations are setup menu on the screen.

```
             R O M   P C I / I S A   B I O S   ( 2 A 5 I I A K 9 )
               P O W E R   M A N A G E M E N T   S E T U P
                   A W A R D   S O F T W A R E ,   I N C .

Power Management       : Disabled        VGA Activity          :Disabled
PM Control by APM      : Yes             IRQ3 (COM 2)          :Enabled
Video Off Option       : Always on       IRQ4 (COM 1)          :Enabled
Video Off Method       : DPMS Supported  IRQ5 (LPT 2)          :Enabled
                                         IRQ6 (Floppy Disk)    :Enabled
LCD Off Option         :Susp, Stby →Off  IRQ7 (LPT 1)          :Enabled
Doze Speed (div by)    :2                IRQ8 (RTC Alarm)      :Disabled
Stdby  Speed (div by)  :3                IRQ9 (IRQ2 Redir)     :Enabled
MODEM Use IRQ          :3                IRQ10 (Reserved)      :Enabled
Hot Key SMI            :Disabled         IRQ11 (Reserved)      :Enabled
                                         IRQ12 (PS/2 Mouse)    :Enabled
        **PM Timers**                    IRQ13 (Coprocessor)   :Enabled
HDD Off After          :Disable          IRQ14 (Hard Disk)     :Enabled
Doze Mode              : Disable         IRQ15 (Reserved)      :Enabled
Standby Mode           :Disable
Suspend Mode           : Disable

        **PM Events**
COM Ports Activity      :Enabled
LPT Ports Activity      :Ebabled
HDD Ports Activity      :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 setup

Power Management
There are four selections for Power Management, Disabled, Min
Saving, Max Saving, User Define. Except Disabled, three of
above selections have fixed mode settings. When PM is set
Disabled, the pre-defined items will become show only.

PM Control by APM
When enabled, an Advanced Power Management device will be
activated to enhance the Max. Power Saving mode and stop the
CPU internal clock.

Video Off Option
User can selct All Modes→Off , Always On, Suspend→Off, or
Susp, Stby→Off to execute the PM mode.

Video Off Method
This determines the manner in which the monitor is blanked.

Blank screen	This option only writes blanks to the vide buffer.
DPMS	Initial display power management signaling.

LCD Off Option
You can setup LCD Off Options by selecting All Modes→Off,
Always On, Suspend→Off, or Susp, Stby→Off. For detailed
setup, you can select saving mode for switch funciton, time
interval for Doze, Stdby, and MODEN, and Hot Key Power Off.
When LCD off is executed, the LCD's backlight will be turned off
and save system power consumption. The on-board 5-pin invertor
power connector CN11 allows user to use this PM function and
trully increase the life of backlight. The item of Hot Key SMI
allows user to use "Ctl-Alt-Back Space" to enter Suspend Mode,
and press any key to wake-up.

PM Timers

The following four modes are Green PC power saving functions which are only user configurable when User Defind Power Management has been selected. See above for available selections.

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

Doze Mode
When enabled and after th eset time of system inactivity, th eCPU clock will run at 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.

PM Events

PM events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device which is configured as *Enabled*, even when the system is in a power down mode.

The following is a list of IRQ, Interrupt ReQuests, which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

- IRQ3 (COM 2)
- IRQ4 (COM 1)
- IRQ5 (LPT 2)
- IRQ6 (Floppy Disk)
- IRQ7 (LPT 1)
- IRQ8 (RTC Alarm)
- IRQ9 (IRQ2 Redir)
- IRQ10 (Reserved)
- IRQ11 (Reserved)
- IRQ12 (Reserved)
- IRQ13 (Coprocessor)
- IRQ14 (Hard Disk)
- IRQ15 (Reserved)

PnP/PCI Configuration setup

By choosing the PCI CONFIGURATION SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings. The following configurations are based on the manufacturer's SETUP DEFAULTS Settings.

```
               R O M   P C I / I S A   B I O S   ( 2 A 5 I I A K 9 )
                   P C I   C O N F I G U R A T I O N   S E T U P
                        A W A R D   S O F T W A R E ,   I N C .

  Resources Controlled By    : Manual        PCI IRQ Actived By       :Level
  Reset Configuration Data   : Disabled      PCI IDE IRQ Map to       :PCI-AUTO
                                             Primary IDE INT#         :A

  IRQ3 Assigned to      : Legacy ISA
  IRQ4 Assigned to      : Legacy ISA
  IRQ5 Assigned to      : PCI/ISA PnP
  IRQ7 Assigned to      : Legacy ISA
  IRQ9 Assigned to      : PCI/ISA PnP
  IRQ10 Assigned to     : PCI/ISA PnP
  IRQ11 Assigned to     : PCI/ISA PnP
  IRQ12 Assigned to     : PCI/ISA PnP
  IRQ14 Assigned to     : Legacy ISA
  IRQ15 Assigned to     : Legacy ISA

  DMA-0 Assigned to     : PCI/ISA PnP
  DMA-1 Assigned to     : PCI/ISA PnP
  DMA-3 Assigned to     : PCI/ISA PnP    Esc:Quit          ↑↓→←   : Select Item
  DMA-5 Assigned to     : PCI/ISA PnP    F1 : Help         PU/PD/+/- : Modify
  DMA-6 Assigned to     : PCI/ISA PnP    F5 : Old Values   (Shift)F2  : Color
  DMA-7 Assigned to     : PCI/ISA PnP    F6 : Load BIOS Defaults
                                         F7 : Load Setup Defaults
```

PCI Configuration setup

Resource Controlled by
The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows® 95.

Reset Configuration data
This item allows you to determine reset the configuration data or not.

IRQ3/4/5/7/9/10/11/12/14/15, DMA0/1/3/5/6/7 assigned to
This item allows you to determine the IRQ/DMA assigned to the ISA bus and is not available to any PCI slot.

PCI IRQ Activated By
This sets the method by which the PCI bus recognizes that an IRQ service is being requested by a device. Under all circumstances, you should retain the default configuration unless advised otherwise by your system manufacturer.

Choices are *Level* and *Edge*.

PCI IDE IRQ Map To
This allows you to configure your system to the type of IDE disk controller in use. The more apparent difference is the type of slot being used.

If you have equipped your system with a PCI controller, changing this allows you to specify which slot has the controller and which PCI interrupt (A, B, C or D) is associated with the connected hard drives.

Remember that this setting refers to the hard disk drive itself, rather than individual partitions. Since each IDE controller supports two separate hard drives, you can select the INT# for each. Again, you will note that the primary has a lower interrupt than the secondary.

Selecting *PCI Auto* allows the system to automatically determine how your IDE disk system is configured.

Primary IDE INT#
Refer to the abve description of PCI IDE IRQ.

Load BIOS DEFAULTS / LOAD SETUP DEFAULTS

LOAD BIOS DEFAULTS loads the default system values directly from ROM. The BIOS DEFAULTS provides the most stable settings, though they do not provide optimal performance. LOAD SETUP DEFAULTS, on the other hand, provides for maximum system performance. If the stored record created by the Setup program becomes corrupted (and therefore unusable), BIOS defaults will load automatically when you turn the SBC-554V/555 on.

```
          R O M   P C I / I S A   B I O S   ( 2 A 5 I I A K 9 )
                  C M O S   S E T U P   U T I L I T Y
                  A W A R D   S O F T W A R E ,   I N C .
                  I N T E G R A T E D   P E R I P H E R A L S

   STANDARD CMOS SETUP              INTEGRATED PARIPHERALS

   BIOS FEATURES SETUP             IDE HDD AUTO DETECTION

   CHIPSET FEATURES SETUP          SUPER VISER PASSWORD

   POWER MANAGEMENT SETUP          USER PASSSWORD

   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....
```

Integrated Peripherals

Integrated Peripherals options are displayed by choosing the INTEGRATED PERIPHERALS icon from the INITIAL SETUP SCREEN. This section sets the IDE transfer mode for all IDE channels. It also configures the other onboard ports. The following configurations are based on the manufacturer's SETUP DEFAULTS settings.

```
ROM PCI/ISA BIOS (2A5IIAKD)
INTEGRATED PERIPHERALS
CHIPSET FEATURES SETUP

Internal PCI/IDE          :Primary      USB Controller        :Enabled
IDE Primary Master PIO    :Auto         USB Keyboard support  :Disabled
IDE Primary Slave PIO     :Auto
Primary Master Ultra DMA  :Auto
Primary Slave Ultra DMA   :Auto
IDE Burst Mode            :Disabled
IDE Data Port Post Write  :Enabled
IDE HDD Block Mode        :Enabled
Onboard FDD Controller    :Enabled
Onboard Serial Port1      :Auto
Onboard Serial Port 2     :Auto
Infra Red (IR) function   :Disabled
Onboard Parallel Port     :378/IRQ7
Onboard Parallel Mode     :ECP+EPP
ECP Mode Use DMA          :3
IR Transfer Mode          :Half-Dup
PS/2 mouse funciton       :Enabled

                                        Esc:Quit            ↑↓→←:Select Item
                                        F1 : Help           PU/PD/+/- : Modify
                                        F5 : Old Values     (Shift)F2 : Color
                                        F6 : Load BIOS Defaults
                                        F7 : Load Setup Defaults
```

Internal PCI/IDE

You can choose *Disable* to terminate the on-board PCI/IDE controller and then support external HDD devices. When the setting is Primary, users can setup IDE Mode or UltraDMA mode depending on the respective HDD drive.

IDE Primary Master/Slave PIO

These four lines set the hard disk PIO transfer mode, which affects the hard disk data transfer rate. The system will auto-detect the PIO mode of a device in any of these positions when they are set to 'Auto', the recommended setting. Alternatively, you can set the mode manually. Modes 0 to 4 are supported.

Primary Master/Slave UltraDMA

These four lines enable hard disk UltraDMA transfer mode, which requires a drive that supports this data transfer method. The system will auto-detect an UltraDMA device in any of these four positions when they are set to 'Auto', the recommended setting. The other setting is 'Disabled". You can leave these set to Auto without effect if there are no UltraDMA devices installed

IDE Burst Mode

When this item is *Enabled*, the system will support burst data transfer mode to increase HDD transfer speed.

IDE Data Port Post Write

This item allows users to select *Enabled* to use data port post write for IDE drive.

IDE HDD Block Mode

Set this item to *Enable* to use HDD block transfer mode.

Onboard FDD Controller

Enables or *Disables* the onboard Floppy Druve controllers.

Onboard Serial Port 1/2

Sets the I/O address for serial ports 1/2. The system will auto-detect the COM port address when this item set Auto, the default setting.

| COM1/3F8 (Default of onboard serial port) |
| COM2/2F8 (Default of onboard serial port) |
| COM3/3E8 |
| COM4/2E8 |

Infra Red(IR) Function
You can select *Enable* to use the IR function.

Onboard Parallel Port
Sets the I/O address for the onboard parallel port. The setting options are:

378H/IRQ7 (default)
Disabled
278H/IRQ5
38CH/IRQ7

Onboard Parallel mode
Selects the parallel port mode: The setting option are:

SPP
ECP+EPP
EPP
ECP

If you set this option to 'SPP' or 'EPP', the ECP Mode Use DMA' option will not appear on the screen. If you set this option to 'SPP' or 'ECP', the 'Parallel Port EPP Type' option will not appear on the screen.

ECP Mode Use DMA
Selects the ECP Mode DMA channel. The setting options are:

3
1

USB Controller/ USB Keyboard Support
Enbales or Disables the onboard USB port controller, and USB Keyboard support.

Supervisor/User Password Setting

You can set either supervisor or user password, or both of then. The differences between are;

supervisor password: can enter and change the options of the setup menus.

user password   : just can only enter but do not have the right to change the options of the setup menus.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

```
          R O M   P C I / I S A   B I O S   ( 2 A 5 I I A K D )
                      C M O S   S E T U P   U T I L I T Y
                     A W A R D   S O F T W A R E ,   I N C .
                   I N T E G R A T E D   P E R I P H E R A L S

   STANDARD CMOS SETUP             INTEGRATED PERIPHERALS

   BIOS FEATURES SETUP             IDE HDD AUTO DETECTION

   CHIPSET FEATURES SETUP          SUPERVISER PASSWORD

   POWER MANAGEMENT SETUP          USER PASSSWORD

   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....
```

ENTER PASSWORD:

Type the password, up to eight characters in length, and press
<Enter>. The password typed now will clear any previously
entered pssword from CMOS memory. You will be asked to
confirm the password. Type the password again and press
<Enter>. You may also press <Esc> to abort the selection and not
enter a password.

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

PASSWORD

When a password has been enabled, you will be prompted to enter
it every time you try to enter Setup. This prevents an unau-
thouized. The would prevent unauthouized use of your computer.

Auto detect hard disk

The IDE HDD AUTO DETECTION utility can automatically detect the IDE hard disk installed in your system. you can use it to self-detect and/or correct the hard disk type configuration.

```
ROM PCI/ISA BIOS (2A5L9AKD)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

                  CYLS.  HEADS  PRECOMP  LANDZONE  SECTORS  MODE
Drive C  : (  Mb)  790    15    35535     789         57

         Select Drive C Option (N=Skip) : N


                    ESC = SKIP
```

IDE HDD auto detection screen

HDD low level format

Selecting this utility allows you to execute HDD low level formatting. This Award Low-Level-Format Utility is designed as a tool to save your time formatting your hard dsk. The Utility automatically looks for the necessary information of the drive you selected. The Utility also searches for bad tracks and lists them for your reference.

Shown below is the menu appears after you enter into the Award Low-Level-Format Utility.

```
┌──────────────────────────────────────────────────────────────────┐
│           R O M   P C I / I S A   B I O S   ( 2 A 5 L 9 A K D )    │
│                   C M O S   S E T U P   U T I L I T Y              │
│                 A W A R D   S O F T W A R E ,   I N C .            │
├────────────────────────────────────┬─────────────────────────────┤
│  HARD DISK LOW LEVEL FORMAT UTILITY │       NO. CYLS HEAD         │
│                                     │                             │
│              SELECT DRIVE           │                             │
│             BAD TRACK LIST          │                             │
│               PREFORMAT             │                             │
│                                     │                             │
│      CURRENT SELECT DRIVE IS: C     │                             │
│                                     │                             │
│  Drive: C    Cylinder:        Head: │                             │
├────────────────────────────────────┴─────────────────────────────┤
│            SIZE   CYLS  HEAD  PRECOMP   LANDZ  SECTOR   MODE        │
│  Drive C:    0      0     0      0        0       0     AUTO        │
│  Drive D:    0      0     0      0        0       0     AUTO        │
│                                                                    │
│                                                                    │
├────────────────────────────────────────────────────────────────┤
│    Up/Down:  SELECT ITEM      ENTER: ACCEPT        ESC: Exit/Abort │
│                                                                    │
│     Copyright (c) Award Software, Inc. 1992-1994 All Rights reserved │
└──────────────────────────────────────────────────────────────────┘
```

HDD low level format screen

Save & exit setup

If you select this option and press <Enter>, the values entered in the setup utilities will be recorded in the chipset's CMOS memory. The microprocessor will check this every time you turn your system on and compare this to what it finds as it checks the system. This record is required for the system to operate.

Exit without saving

Selecting this option and pressing <Enter> lets you exit the Setup program without recording any new values or changing old ones.

4

Flat Panel/CRT Controller Display Drivers and Utilities

This chapter provides information about:

• Driver types and installation

Software drivers

This chapter describes the operation and installation of the software drivers supplied on the *Display Driver Diskettes* that are shipped with your VGA adapter.

Your VGA adapter is based on the CHIPS VGA Flat Panel/CRT controller and is fully IBM VGA compatible. This controller offers a large set of extended functions and higher resolutions. If you intend to use your VGA adapter in standard VGA modes only, you do not need to install any of these drivers. Since your VGA adapter is fully compatible, it does not require any special drivers to operate in standard modes.

The purpose of the enclosed software drivers is to take advantage of the extended features of the CHIPS VGA Flat Panel/CRT controller.

Hardware configuration

Some of the high-resolution drivers provided in this package will work only in certain system configurations. If a driver does not display correctly, try the following:

1. Change the display controller to CRT-only mode, rather than flat panel or simultaneous display mode. Some high-resolution drivers will display correctly only in CRT mode.

2. If a high-resolution mode is not supported on your system, try using a lower-resolution mode. For example, 1024 x 768 mode will not work on some systems, but 800 x 600 mode is supported on most.

Necessary prerequisites

The instructions in this manual assume that you understand elementary concepts of MS-DOS and the IBM Personal Computer. Before you attempt to install any driver or utility, you should:

• Know how to copy files from a floppy disk to a directory on the hard disk

• Understand the MS-DOS directory structure

• Know how to format a floppy disk

If you are uncertain about any of these concepts, please refer to the DOS or OS/2 user reference guides for more information, *before* you proceed with the installation.

Before you begin

Before you begin the driver software installation, you should make backup copies of the *Display Driver Diskettes*. Store the original disks in a safe place.

Make sure you know the version of the application for which you are installing drivers. Your *Display Driver Diskettes* contain drivers for several versions of certain applications. For your driver to operate properly, you must install the driver for your version of the application program.

Windowsô 95

These drivers are designed to work with Microsonftᔥ Windowsô. You just install these drivers through the Windowsô operating system.

Driver installation

1. Install Windowsô 95 as you normally would for a VGA display. Click the **Start** button, go to **Settings** and click on **Control Panel**. Choose the **Display** icon and double click on the icon. In the *Display Properties* window, click on **Change Display type**. In the *Change Display Type* window, click on the **Change** button under *Adapter Type*. This will bring up the *Select Device* window.

2. Place the Windowsô 95 *Display Driver Diskette* in drive A. In the *Select Device* window, click on **Have Disk**, Select **Browse**, and find the Win95 driver "chips95.inf" in the drive A:\win95, and then click OK. The name of the *Chips And Technologies Inc. Video Controller* driver will appear highlighted in the *Models* list box. Select Chips and Tech. 65554 PCI(new) and Click OK. Click OK to start the driver installation.

3. Once the installation is complete, the *Change Display Type* window will reappear. Click on Close to close the window. Then the *Display Properties* window will reappear. Click on **Apply**. Restart the system for new settings to take effect.

Windows ô 3.1

These drivers are designed to work with Microsoft Windows Version 3.1. You should install these drivers through Windows.

Driver installation

1. Install Windows as you normally would for a VGA display. Run Windows to make sure that it is working correctly.

2. Place the Windows 3.1 Display Driver in drive A. In Windows Program Manager, choose *File* from the Options Menu. Then from the pull-down menu, choose *Run*. At the Command Line prompt, type A:\SETUP. Press the <ENTER> key or click OK to begin the installation.

At this point the setup program locates the directory where Windows is installed. **For proper operation, the drivers must be installed in the Windows subdirectory**.

3. Press <ENTER> to complete the installation. Once completed, you can find the icon Chips CPL under the Control Panel. The icon Panel allows you to select and load the installed drivers.

Another method of installing these drivers is through the File Manager. Click on *Drive A:*, and then double-click on WINSETUP.EXE to begin installation.

OS/2

These drivers are designed to function with the OS/2 Version 4.0, 3.0 and 2.11 operating systems.

To install this driver, do the following steps:

1. Open an OS/2 full screen or windowed session.

2. Place the 65554 Display Driver diskette in drive A.

3. At the OS/2 command prompt, type the following commands to copy the files to the OS/2 drive:

> Type A:<ENTER> to make this default drive.

> Type SETUP A: C:<ENTER>

>> Where A: is the floppy disk drive and

>>> C: is hard disk partition containing \ OS2

When the Setup Program is completed, you will need to perform a shutdown and then restart the system in order for changes to take effect.

A log of the information output during the install can be found

in <root>:\OS2\INSTALL\DISPLAY.LOG

4. After restarting the system, perform the following steps:

    1. Open the OS/2 System folder.

    2. Open the System Setup folder.

    3. Open the Display Driver Install Object

This step will execute the Display Driver Installation (DSPINSTL) utility program to finish installation of the new drivers.

    4. When the Display Driver Install window appears, select Primary Displsy and then select OK.

    5. When The Primary Display Driver List window appears, select "Chips and Technologies 65554" from the list of adapter types, then select OK or install the video driver.

6. When the installation is complete, you will need to shutdown and then restart the system for the changes to take effect. Make sure to remove the install diskette before restarting the system.

Windowsô NT 3.51

These drivers are designed to work with Microsonftô Windowsô.

Driver installation

1. Install Windowsô NT3.51 as you normally would for a **VGA** display. Run Windowsô NT Control Panel from the Main Group. Choose the **Display** option. In the *Display Settings* dialog box, click on *Change Display Type*. Click on **Change** from the Adapter Type in the Display Type dialog box. Click on **Other** in the *Sleect Device* dialog box.

2. Place the Windowsô *NT Display Driver Diskette* in drive A. Type A:\ Winnt3.5 and press<ENTER>. Select the adapter "Chips and Tech 65554PCI" and click OK.

   Click on Install to install the selected driver. Once the installation is complete, shutdown and restart the system.

Windows NT 4.0

Driver installation

1. Install Windows NT4.0 as you normally would for a **VGA** display. First click the **Start** button, go to **Settings** and click on **Control Panel**. Choose the **Display** icon and click on the icon. In the *Display Properties* window, click on the Settings tab. Then click on Change Display Type. In the *Change Display Type* window, click on the **Change** button under *adapter Type*. This will bring up the Select Device window.

2. Place the Windowsô *NT Display Driver Diskette* in drive A. In the *Select Device* window, click on **Have Disk**, select "**Browse**" and find the NT4.0 driver in the Drive A:\Winnt4.0, and then click OK. The name of the *Chips and Technologies, Inc*. *Video Controller* driver will appear highlighted in the Modules list box. Select Chips and Tech. 65554 PCI(new) and Click **OK**. Click **OK** to start the driver installation.

3. Once the installation is complete, the *Change Display Type* window will reappear. Click on Close to close the window. Then the *Display Properties* window will reappear. Click on **Apply**. Restart the system for new settings to take effect.

Programming the Watchdog Timer

The SBC-554V/555 is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for whatever reason. This feature ensures system reliability in industrial stand-alone and unmanned environments.

Programming the watchdog timer

If you decide to program the watchdog timer, you must write data to I/O port 443 (hex). The output data is a value timer. You can write from 80 (hex) to FF (hex) for input minute data plus from 00 (hex) to 7F (hex) for input second data, and the related timer is 0 second to 127 minutes plus 127 seconds sec.

After data entry, your program must refresh the watchdog timer by rewriting the I/O port 443 (hex) while simultaneously setting it. When you want to disable the watchdog timer, your program should write I/O port 80 (hex) a Hex value.

The following procedure is a sample program for the watchdog timer:

• Type C:\DOS\Debug   <ENTER>

• To start watchdog timer and set function "Reset" type;
   o 444 0 <Enter>; out 444h data 0

• To input watchdog timers time-out interval of 3 minutes type;
   o 443 83 <Enter>; o 443 0 <ENTER>; out 443h data 83

• To input Watchdog timers time-out interval of 5 seconds type;
   o 443 05 <Enter>; out 443h data 05

• To disable the watchdog timer type;
   o 80 x <Enter>; out 080h data x (x can be any Hex value)

The time interval data of the watchdog timer is shown in binary code (8 bits).

8	7	6	5	4	3	2	1
x							

If bit 8 is "1" = To input "minute"

If bit 8 is "0" = To input "second"

Sample 1: 3 minutes

1	0	0	0	0	0	1	1

Sample 2: 5 seconds

0	0	0	0	0	1	0	1