

POS-560-B1

All-in-one Single Board Pentium®
Processor-based Computer with
SVGA, Ethernet, and SSD

User's Manual for POS-560-B1

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This manual is for the POS-560.RevB102-3 or higher.

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Packing List

Before installing your board, insure that the following materials have been received:

- 1 POS-560-B1 All-in-one single board computer
- 1 utility disk with system BIOS, VGA BIOS, and Ethernet utility programs
- 1 utility disk with SVGA utility programs and drivers for Windows 3.1/95
- 1 warranty certificate
- 2 FDD/HDD cables

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

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General Information

This chapter gives background information on the POS-560-B1.

Sections include:

- Board specifications
- Board layout and dimensions

1.1 Introduction

The POS-560-B1 is a cost-effective and powerful Pentium® processor-based control board that has been designed for the unique requirements of point of sale (POS) applications. It is compatible with the Intel Pentium® P54C, P55C (MMX), AMD K5 and K6, and Cyrix 6x86 processors. Its on-board Super I/O, LCD controller, VGA, solid state disk (SSD) and Ethernet simplify POS system integration.

The POS-560-B1 uses a standardized layout based on Western Digital's LPM/LPX format. It is 100% PC compatible and can be easily connected to any existing PC hardware and software. Special POS features, including digital I/Os and four on-board serial ports, each with +5 V/+12 V power output capability, are available to accommodate a wide array of POS peripherals.

The POS-560-B1's industrial grade construction allows it to withstand continuous operation in a harsh POS environment where reliability is essential. Other on-board industrial features not found on conventional motherboards include a watchdog timer for dependability during unmanned operations, and CMOS backup to Flash ROM. An on-board SSD socket can support 512 KB of SRAM, Flash or EPROMs for POS data backup or floppy disk drive emulation. The on-board SSD socket can also be used to support DiskOnChip® Flash modules.

The POS-560-B1 includes two 72-pin SIMM sockets (maximum 128 MB DRAM) and one 168-pin DIMM socket (maximum 32 MB).

1.2 Specifications

Standard SBC functions

- **Processor:** Intel Pentium®, P55C (MMX)
AMD K5, K6
Cyrix 6x86
- **BIOS:** Award 128 KB Flash BIOS includes Ethernet boot ROM, SSD driver and VGA BIOS. Supports Plug and Play
- **System chipset:** SiS 5571
- **Green function:** APM 1.1 compliant
- **Second level cache:** On-board 512 KB pipelined burst SRAM
- **RAM:** Two 72-pin SIMM (128 MB max.) sockets and one 168-pin DIMM socket (32 MB max.)
- **Enhanced IDE interface:** Two Enhanced IDE interfaces, one 44-pin header for 2.5" HDD & Flash module (PCD-1230-2M/4M) and one 40-pin header supports 3.5" HDD & CD-ROM
- **FDD interface:** Supports up to two FDDs (360 KB/1.2 MB/720 KB/1.44 MB/2.88 MB)
- **Parallel port:** Two parallel ports, supporting SPP/EPP/ECP parallel mode
- **Serial port:** Serial ports with +5 V/+12 V power capability
COM 1, 2, 3: RS-232
COM 4: RS-232/422/485
- **Watchdog timer:** Software enabled/disabled. Timer interval of 1.5 seconds generates system reset in the event of program failure
- **Keyboard connector:** Mini-DIN keyboard connector and 5-pin header connector
- **PS/2 mouse connector:** PS/2 mouse
- **USB interface:** Two USB connectors with fuse protection. Complies with USB Spec. Rev. 1.0
- **I/O bus expansion:** EISA bus connector provides ISA/PCI signals

PCI SVGA/Flat panel interface

- **Chipset:** C & T 65550
- **Display memory:** 1 MB on-board memory, supports up to 2 MB
- **Display type:** simultaneously supports CRT and flat panel (EL,LCD and gas plasma) displays. Supports 3.3 V and 5 V LCD
- **Display resolution:** Supports non-interlaced and interlaced CRT and LCD displays up to 1024 x 768 @ 256 colors with 1 MB on-board memory

Ethernet interface

- **Chipset:** DM9008F Ethernet controller
- **Ethernet interface:** ISA 10 Mbps Ethernet controller. Includes setup/diagnostic software drivers and boot ROM

Solid state disk

- One 32-pin socket supports DiskOnChip® PCD-2000 Flash Disk (2 ~ 72 MB) supports DOS, Windows 3.1/95/NT
- 44-pin EIDE interface can support SanDisk 2M/4M IDE/Flash module (PCD-1230-2M/4M)
- 512 KB SRAM/Flash/ROM, DOS and Windows 3.1 command compatible

Digital I/O

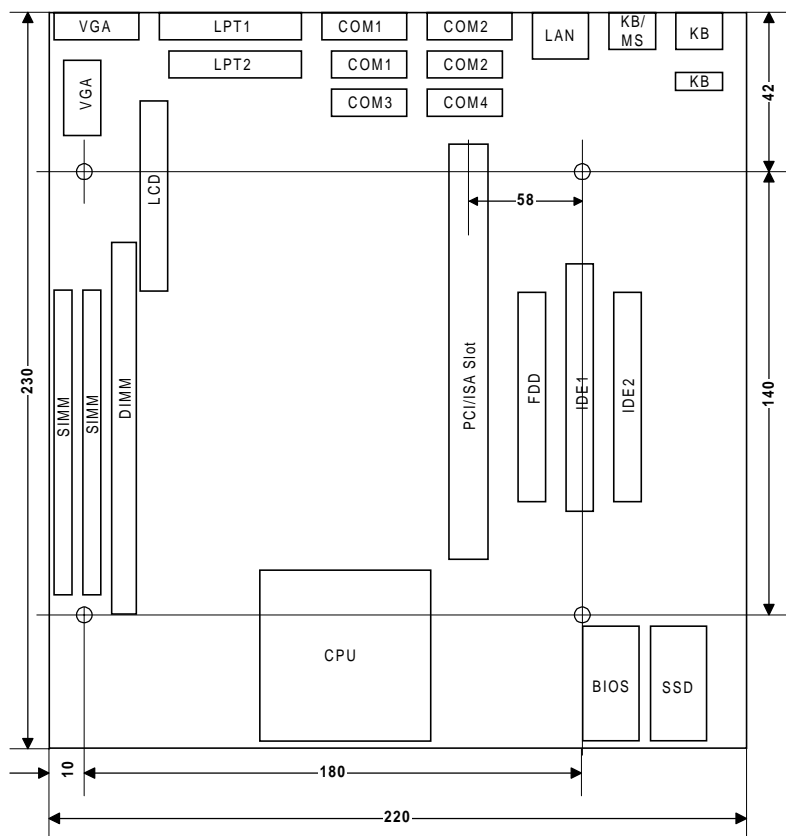
- Two high-drive digital output; MOS FET output to direct drive relay or solenoid up to 2 A/50 V_{DC}
- Four digital inputs; TTL compatible

Mechanical and environmental

- **Max. power requirements:** 7 A @ 5 V (4.75 to 5.25), 0.15 A @ ± 12 V
- **Operating temperature:** 0 to 60° C (32 to 140° F)
- **Size:** 220 mm (L) x 235 mm (W) (8.7" x 9.25")
- **Weight:** 0.5 kg (1.1 lbs.)

Note: Specifications are subject to change without notice.

1.3 Board Layout and Dimensions



WD/LPM/LPX Format
Overall Size: 220 mm x 230 mm
All units in mm

Figure 1-1: POS-560-B1 board configuration

CHAPTER 2

Installation

This chapter explains how to set up the POS-560-B1 hardware, including instructions on setting jumpers and connecting peripherals, switches and indicators. Be sure to read all the safety precautions before you begin the installation procedure.

2.1 Jumpers and Connectors

Connectors on the board link the POS-560-B1 to external devices such as hard disk drives, a keyboard or floppy drives. The board has a number of jumpers that allow you to configure your system to suit your application. The tables below list the function of each of the board's jumpers and connectors:

Table 2-1: POS-560-B1 peripheral connections

Label	Connection type	Peripheral type
CN1	Mini DIN	PS/2 keyboard
CN2	5 x 2 pin header	Digital I/O
CN3	3-pin header	CPU fan connector
CN4	3-pin header	SSD functions
CN5	Mini DIN	PS/2 mouse and PS/2 keyboard
CN6	5-pin header	Internal PS/2 keyboard
CN7	DB-9	RS-232 COM2 (external)
CN8	10-pin header	RS-232 COM2 (internal)
CN9	DB-9	RS-232 COM1 (external)
CN10	10-pin header	RS-232 COM1 (internal)
CN12	44-pin header	LCD port
CN13	DB-15	CRT VGA
CN14	10-pin header	CRT VGA and internal keyboard connector
CN16	14-pin header	Ethernet AUI-BNC connector (internal)
CON2	40-pin header	Primary IDE: HDD (IDE) 3.5"
COM3	10-pin header	RS-232 COM3 (secondary I/O)
COM4	10-pin header	RS-232/422/485 COM4 (secondary I/O)
CON5	26-pin header	Parallel port LPT2
CON6	5-pin header	IR connector
CN11	DB-25	Parallel port LPT1
J1	12-pin connector	Power supply input
JP10	44-pin header	Secondary IDE: 2.5" HDD or Sandisk SSD
JP13	34-pin header	FDD
JP18	10-pin header	USB
Slot1	EISA slot	PCI/ISA expansion slot
UT1	RJ-45A	Ethernet connection
JP17	---	Reserved for factory
JP30	---	Reserved for factory
JP29	---	Reserved for factory
JP32	---	Reserved for factory

Table 2-2: POS-560-B1 jumpers and switches

Label	Function
J2	Speaker
J3	Power LED and keylock
J4	Reset switch
J5	SSD functions
JP1	SSD functions
JP2	Turbo switch
JP3	Turbo LED
JP5	HDD LED
JP6	SSD functions
JP7	SSD functions
JP9	CMOS discharge
JP11	COM4 RS-232/422/485 select
JP12	COM4 RS-232/422/485 select
JP14	CPU speed (core/bus)
JP15	Flat panel signal select
JP16	On-board VGA enable/disable
JP19	CPU bus clock speed
JP20	LCD 3.3 V/5 V select
JP22	CPU voltage
JP23	Special power supply selection for DIO
JP24	COM1 power selection
JP25	COM2 power selection
JP26	COM3 power selection
JP27	COM4 power selection
JP28	CN5 keyboard/mouse selection
JP31	CPU core voltage selection
JP34	CPU P54C / P55C selection
LED1	POWER LED
LED 2	LAN LED
SW1	SSD function

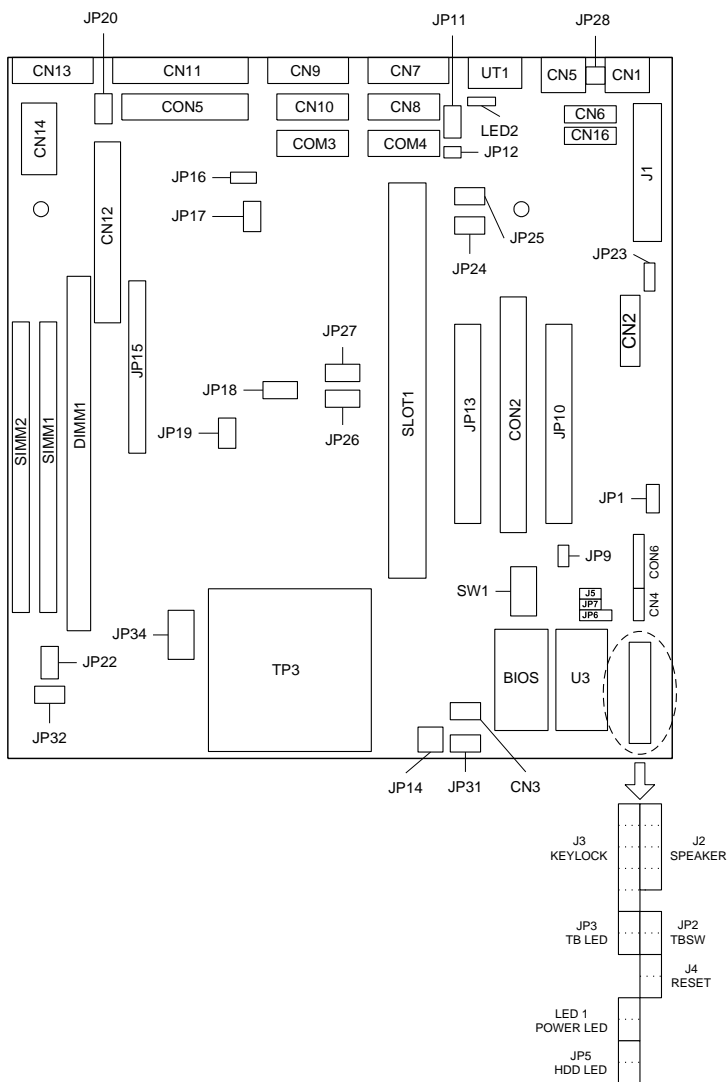


Figure 2-1: POS-560-B1 jumpers and connectors

2.3 Safety Precautions

Warning! *Always disconnect the power cord from your chassis before you begin 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 board. 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.*



2.4 Installing the CPU

The POS-560-B1 All-in-one CPU module supports most 586 CPUs. The system's performance depends upon the installed CPU. You can install or upgrade the CPU in the board's ZIF socket by following the procedures outlined below.

Removing a CPU

1. Disconnect power from the chassis, and unplug all connections to the CPU board. Consult your chassis user's manual for instructions on removing the CPU board.
2. Unclip and lift the side lever of the CPU socket. Once the lever is up, the CPU should be easy to remove.

Installing a CPU

Follow the installation instructions that came with your CPU. The general procedures for installing a CPU are as follows:

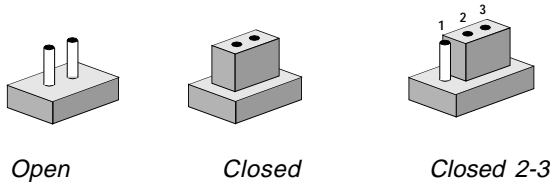
1. Unclip and lift the side lever of the CPU socket to an upright position.
2. Carefully align the CPU so that it is parallel to the socket. Make sure that the notch on the corner of the CPU matches the notch on the inside of the socket.
3. Gently insert the CPU into the socket. There will probably be a small gap between the CPU and the socket even when it is fully seated. Lower the side lever to lock the CPU in place. Make sure that the lever is clipped securely.

When you install a new CPU, you may have to adjust other settings on the board, including CPU type, CPU clock, and PCI speed. Make sure that the settings are correct for your CPU.

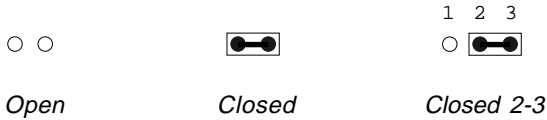
Improper settings may damage the CPU.

2.5 Setting Jumpers

You configure your board 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.



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



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

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

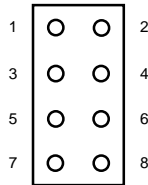
Generally, you simply need a standard cable to make most connections.

2.6 CPU Setup

CPU core voltage supply select (JP31)

JP31 must be set to match the CPU type. The chart below shows the proper jumper settings for their respective V_{CC} . A CPU's core voltage requirement is usually printed on top of the processor.

Select the voltage supply that is closest to the voltage printed on the CPU.





Voltage	Pin Number			
	1 - 2	3 - 4	5 - 6	7 - 8
2.0	Open	Open	Open	Open
2.1	Closed	Open	Open	Open
2.2	Open	Closed	Open	Open
2.3	Closed	Closed	Open	Open
2.4	Open	Open	Closed	Open
2.5	Closed	Open	Closed	Open
2.6	Open	Closed	Closed	Open
2.7	Closed	Closed	Closed	Open
2.8	Open	Open	Open	Closed
2.9	Closed	Open	Open	Closed
3.0	Open	Closed	Open	Closed
3.1	Closed	Closed	Open	Closed
3.2	Open	Open	Closed	Closed
3.3*	Closed	Open	Closed	Closed
3.4	Open	Closed	Closed	Closed
3.5	Closed	Closed	Closed	Closed

*default setting

Table 2-3: CPU core voltage supply select (JP31)

P55C / P54C selection (JP34)

Table 2-4: P55C / P54C selection (JP34)

CPU	1-3 2-4	3-5 4-6	
P55C	closed	open	
P54C*	open	closed	

*default setting

CPU clock speed select (JP19, JP14, JP22)

To ensure the proper clock speed setting for your CPU (either AMD, Intel or Cyrix), follow these instructions very carefully:

CPU speed = CPU clock speed x frequency ratio

Example:

(133, 150, 200MHz)=(50, 60, 66, 75 MHz) x (1.5, 2, 3.3, 3.5, etc.)

Table 2-5: CPU speed relationship chart

CPU speed	CPU clock speed	CPU frequency ratio
75 MHz	50	1.5
90	60	1.5
100	50	2
100	66	1.5
120	60	2
133*	66	2
150	50	3
150	75	2
166	66	2.5
200	66	3
233	66	3.5

*default setting

Clock speed setup procedure

- Check your CPU speed and type (ex. Intel P-133)
- From the above CPU speed relationship chart, find your CPU's corresponding clock speed and frequency ratio setting (ex. 133 MHz = 66 MHz x 2)
- Set your CPU's clock setting on (JP19)

Table 2-6: CPU bus clock setting (JP19)

CPU bus clock 1-2		3-4	5-6	PCI clock
50 MHz	open	closed	open	25.0 MHz
60 MHz	closed	open	open	30.0 MHz
66 MHz*	open	open	open	33.3 MHz
75 MHz**	open	closed	closed	32.0 MHz

*default setting

**cannot support SDRAM-type DIMM

- Set CPU's frequency ratio (JP14). Consult your CPU's manufacturer for further information when making your selection.

Table 2-7: CPU select jumper settings(JP14)

Speed multiplier	1-2	3-4	5-6
1.5	open	open	closed
2*	closed	open	closed
2.5	closed	closed	closed
3	open	closed	closed
3.5	open	open	closed
4	closed	open	closed
4.5	closed	closed	closed
5 (Reserved)	open	closed	closed
5.5 (Reserved)	open	open	closed

*default setting


- Finally, set the SiS 5571 DLL optimizing timing adjust (JP22) based on your CPU's bus clock speed setting in Step c.

Table 2-8: CPU clock speed jumper select (JP22)

Bus clock	1-2	3-4	5-6
50 MHz	closed	open	closed
60 MHz	open	closed	closed
66 MHz*	open	closed	open
75 MHz**	open	open	closed
*default setting ** cannot support SDRAM-type DIMM			

CMOS discharge jumper (JP9)

Table 2-9: CMOS discharge jumper (JP9)

Normal (default)	Clear CMOS
	

Note: To discharge CMOS, first make sure the power is off. Move jumper JP9 from 1-2 to 2-3 for a few seconds so the CMOS can discharge. Move the jumper back to 1-2. The CMOS setting will be reset to the "BIOS default" setting.

2.7 DRAM Installation

There are two on-board 72-pin SIMM sockets and one on-board 168-pin DIMM socket. You can use either SIMM or DIMM type DRAM, you can NOT use them simultaneously.

SIMM DRAM (SIMM 1 and SIMM 2)

You can install up to 64 MB of SIMM DRAM on each socket for a total of 128 MB DRAM with two sockets filled. The POS-560-B1 can also support single SIMM operation. However, DRAM size and type must match when installing two SIMMs in each socket.

DIMM DRAM (DIM 1)

You can also install one 168-pin DIMM (up to 32 MB DRAM) in the DIMM socket. The POS-560-B1 can operate with only DIMM

DRAM installed. Note that POS-560-B1 cannot support SDRAM-type DIMM modules with CPU clock speed running at 75 MHz. EDO-type DIMM is acceptable.

Caution: When installing SIMM or DIMM, make sure the module is oriented properly. Do not use excessive force during installation.

Note: The 168-pin on-board DIMM socket is for 3.3 V DIMM only. 5 V DIMM will not fit in the socket. 3.3 V DIMM is much more popular in the market than the 5 V version.

2.8 40-pin Primary IDE (3.5" HDD) Connector (CON2)

The 40-pin IDE connector (CON2) supports up to two 40-pin IDE interface devices, including CD-ROM drives, tape-backup drives, HDDs, etc. When connecting, make sure pin 1 of the connector is matched with pin 1 of the device's connector.

The built-in Enhanced IDE (Integrated Device Electronics) controller supports up to two IDE devices, including CD-ROM drives, tape backup drives, a large hard disk drive and other IDE devices. It also supports faster data transfer rates and allows IDE hard disk drives with capacities in excess of 528 MB.

Connecting the hard drive

Connecting drives is done in a daisy-chain fashion. Wire number 1 on the cable is red or blue, while the other wires are gray.

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.

2.9 44-pin Secondary Mini-pitched IDE Interface (2.5" HDD or SSD) (JP10)

The on-board 44-pin mini-pitched IDE interface allows users to support either a 2.5" HDD or a Sandisk IDE Flash module (P/N: PCD-1230-2M/4M) that is available in both 2 and 4 MB versions.

Follow the same connection arrangement as the 3.5" HDD if you want to connect to a 2.5" IDE device. Read the BIOS setup section for more information regarding system settings.

2.10 Floppy Drive Connector (JP13)

You can attach up to two floppy disks to the POS-560-B1's 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 JP13. Make sure that the red wire corresponds to pin one 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 one. Look for a number printed on the circuit board indicating pin number one. Also, the connector on the floppy drive connector may have a slot. When the slot is up, pin number one should be on the right. Check the documentation that came with the drive for more information.

The B: drive can be attached to the connectors in the middle of the cable as described above.

2.11 Primary Parallel Port Connector (LPT1: CN11)

The primary parallel printer port is located at the rear edge of the board with the DB-25 connector. The printer port is typically used to connect a printer via an adapter cable. LPT1's IRQ is defined as IRQ7.

2.12 Secondary Parallel Port (LPT2: CON5)

The secondary parallel port is internally located next to the primary parallel port with a 26-pin box header. The IRQ setting is defined as IRQ11. You can select the LPT1 SPP/EPP/ECP selection and enable/disable from BIOS (see Chapter 4).

2.13 Keyboard Connector (CN1, CN5, CN6)

The POS-560-B1 is uniquely designed to allow several ways for keyboard input.

- 1) External mini-DIN jack (CN1)
- 2) External mini-DIN
(CN5 selectable from PS/2 mouse to PS/2 keyboard)
- 3) Internal 5-pin header (CN6)

Special connectors for keyboard and monitor

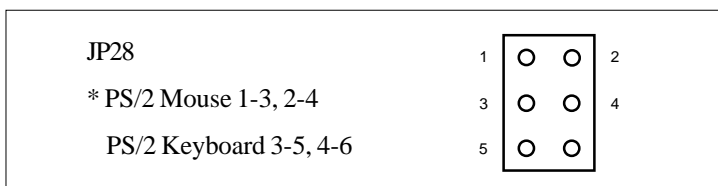
- 4) Bundled within internal CRT/VGA 10-pin header (CN14)

5) Bundled within internal LCD/VGA 44-pin header (CN12)

Note that only one input source can be used at a given time. They cannot be used simultaneously. Choices 3, 4 and 5 are provided for the convenience of the system designer using POS-560-B1. For example, choice 2 would be good for an All-in-one system requiring keyboard to be connected internally, whereas choice 4 and 5 would be good if the system to be designed required the keyboard and the monitor (LCD or CRT) together but positioned separately from the main system housing the POS-560-B1. This way only one cable is required to transmit both VGA and keyboard signals. All pin assignments can be found in the appendix.

2.14 PS/2 Mouse/Keyboard Connector (CN5)

The CN5 external Mini-din jack can be jumper selected to be for either a PS/2 mouse or keyboard, depending on the jumper setting of JP28. Pin assignments are shown in the appendix. The IRQ setting is defined as IRQ12. Enabling the PS/2 mouse connector can be controlled via the BIOS setup under "Integrated Peripherals". See Chapter 3 for more details.



* Default setting

2.15 Front Panel Connectors

6

You may want to install external switches and LEDs to monitor and control the POS-560-B1. These features are completely optional — install them only if necessary.

Table 2-10 Front panel connection jumpers

Jumper	Function
CON6	IR connector
J2	Speaker
J3	Power LED and keylock
J4	Reset switch
JP2	Turbo switch
JP3	Turbo LED
JP5	HDD active LED
LED2	Ethernet LED

Speaker

The POS-560-B1 can drive an 8 W speaker at 0.5 watts. Ensure that alternatives to this specification do not overload the board.

LED interface

The front panel LED indicator for hard disk access is an active low signal (24 mA sink rate).

Reset switch

If you install a reset switch, it should be an open single pole switch. Momentarily pressing the switch will activate a reset. The switch should be rated for 10 mA, 5 V.

2.16 Power Connector (J1)

The power connection is a 12-pin connector requiring ± 5 V and ± 12 V power. Always keep the ground wires (black color) toward the middle when connecting the power wire from the power supply.

2.17 CPU Fan Power Connector (CN3)

CN3 is provided for direct connection to the CPU fan. It provides +5 V/ +12 V/ GND pins. See Appendix B for pin assignments.

2.18 Serial Ports (COM1 - 4)

The POS-560-B1 has a total of four on-board RS-232 serial ports, COM1 - 4. They are differentiated by COM1 and COM2 as primary serial ports and COM4 (RS-232/422/485) and COM3 as secondary ports. All four serial ports have +5 V and +12 V power capabilities on both pin #1 and pin #9, depending on the jumper setting. Pin assignments for both internal and external COM ports can be found in the appendix.

Primary serial ports (COM1: CN9/CN10, COM2: CN7/CN8)

Each primary serial port has two connections, one external DB-9 and one internal 10-pin header giving the user the flexibility to adapt the board to many different systems. IRQ for COM1 and COM2 is fixed with COM1 on IRQ4 and COM2 on IRQ3. COM1 and COM2 can be enabled or disabled via BIOS (see Chapter 4).

Secondary serial ports (COM3: COM3, COM4: COM4)

The secondary serial ports each have one 10-pin, internally positioned header connection. The IRQ for COM3 is fixed at IRQ10 and COM4 is fixed at IRQ9. COM3 and COM4 can be enabled/disabled via BIOS (See Chapter 4.)

RS-232 serial ports (COM1 - 4) +5 V and +12 V power selection (JP24/25/26/27)

All COM ports on the POS-560-B1 have +5 V or +12 V capability on Pin 1 and Pin 9, depending on where you set the jumpers. You can also select no power on all COM ports if you do not set any jumpers.

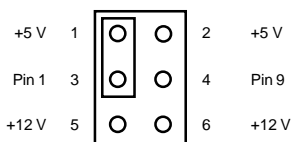
COM1 = JP24*	+5 V	1	○	○	2	+5 V	
COM2 = JP25*		Pin 1	3	○	○	4	Pin 9
COM3 = JP26*				○	○	6	
COM4 = JP27*	+12 V	5	○	○	6	+12 V	

*default setting is no jumper

Note: *Only provide power if your peripheral requires it. Unnecessary power in the serial port will damage peripherals that do not require it.*

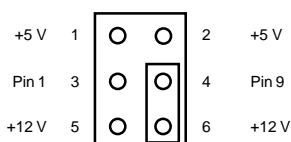
Example 1

+5 V on pin 1 of COM2



Example 2

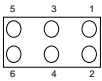
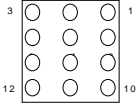
+12 V on pin 9 of COM4



2.19 COM4 RS-232/422/485 Selection (JP11 and JP12)

Follow the jumper chart below to set the desired mode for COM4.



Table 2-11: RS-232/422/485 selection jumper settings

		RS-232	RS-422	RS-485
JP12		1-2	3-4	5-6
JP11		2-3 5-6 8-9 11-12	1-2 4-5 7-8 10-11	1-2 4-5 7-8 10-11

2.20 VGA Interface Connections

The POS-560-B1's SVGA interface can drive conventional CRT displays and is capable of driving a wide range of flat panel displays, including electroluminescent (EL), gas plasma, passive LCD and active LCD displays. The board has two connectors to support these displays, one for standard CRT VGA monitors and one for flat panel displays.

Table 2-12: On-board VGA hardware enable/disable (JP16)

	Enable*	Disable
JP16		

* default setting

CRT display connector (CN13 and CN14)

CN13 is a standard 15-pin D-SUB connector commonly used for the CRT VGA monitor only. CN14 is a 10-pin header connector allowing user to extend VGA connector and keyboard interface elsewhere via customized cable. Pin assignment appears in the appendix.

Flat panel display connector (CN12)

CN12 consists of a 44-pin, dual-in-line header. Power supplies (+12 V, -12 V) present on CN12 depend upon the supply connected to the board. CN13 also contains keyboard interface signal allowing both LCD and keyboard connection elsewhere via customized cable. Pin assignment appears in the appendix. (For more information on LCD connection information between CN13 and LCD, refer to Chapter 3).

Flat panel display 3.3 V/5 V selection

The POS-560-B1 is jumper selectable to support either 3.3 V or 5 V LCD to the V_{cc} voltage line.

Table2-13: LCD 3.3 V/5 V Select (JP20)

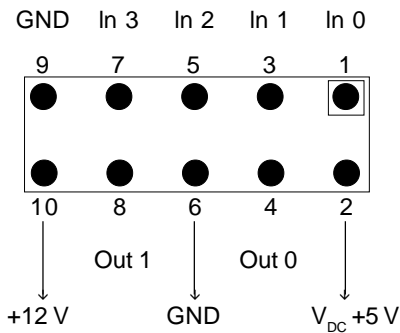
LCD voltage	jumper settings
3.3 V	1-2
5.0 V*	2-3

* default setting

Configuration of the VGA interface is done completely via the software utility. You don't have to set any jumpers. (Refer to Chapter 3 for software setup details and details on connecting to 3 standard LCD examples (MONO, DSTN and TFT)).

2.21 Digital I/O (CN2: 2 Outputs, 4 Inputs)

The POS-560-B1 has two high drive digital outputs (50 V_{DC}, 2 A max) and four digital inputs (TTL level). You can configure the digital I/O to control the opening of the cash drawer and to sense the closing of the cash drawer. The following explains how the digital I/O is controlled via software programming and how a 12 V solenoid or relay can be triggered:



Digital output programming

Output is CMOS MOSFET (high drive) type, capable of handling 50 V_{DC}/2 A loading. It is meant to drive relays or solenoid.

Table 2-14: Digital output programming

Output	Address	Bit
Out 1	220	0
Out 2	220	1

Example: ("0" = off "1" = on)

Data 00 = Out 0 and Out 1 = "0"

Data 01 = Out 0 = "1"

Data 02 = Out 1 = "1"

Data 03 = Out 0 and Out 1 = "1"

Digital output solenoid wiring examples:

POS-560-B1's CN2 digital I/O connector contains power pin for +5 and +12 V. +5 V is on pin 2 and +12 V is on pin 10

Example:

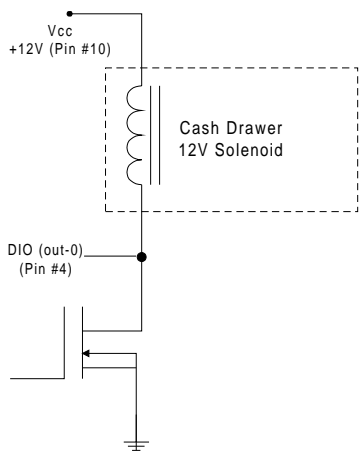


Figure 2-2: POS-560-B1 digital output solenoid wiring example

Special voltage selection for DIO Pin #10 (JP23)

Other voltage like 24 V can be output from CN2's pin 10 by supplying that voltage into the board via the "power good signal" Pin # 1 of the main power connector J1. By supplying other voltage (like +24 V) into Pin # 1 of J1 and switching JP23, Pin #10 of CN2 will provide that special voltage.

Table 2-15: Special voltage selection for DIO CN2 Pin # 10 (JP23)		
JP23	1-2	DIO pin 10 provides special voltage (input via J1/pin 1)
	2-3	DIO pin 10 provides +12 V (default normal voltage)

2.22 Digital Input Programming

Table 2-16: Digital input programming

Input	Address	Bit
IN-0	220	0
IN-1	220	1
IN-2	220	2
IN-3	220	3

EXAMPLE: If INPUT 220 is [0111], then INPUT 3 is "0"
If INPUT 220 is [0011], then INPUT 3 & 4 are "0"

Note: The INPUT signal must be TTL compatible.

2.23 Ethernet Configuration

The POS-560-B1 is equipped with a high performance 16-bit Ethernet interface which is fully compliant with IEEE 802.3 10Mbps CSMA/CD standards. It is supported by all major network operating systems and is 100% Novell NE-2000 compatible.

Configuration of the Ethernet is very easy and can be done via the DIAG9008.EXE program included on the utility disk. This program enables you to view the current Ethernet configuration, to reconfigure the Ethernet interface (IRQ, I/O address, etc.), and to execute useful diagnostic functions. (See Chapter 3 for detailed information)

The DIAG9008.EXE program provides ways to configure the Ethernet interface without using jumpers. The following IRQ and I/O address settings are available.

Table 2-17: POS-560-B1 Ethernet settings

	IRQ option	I/O address range
Jumperless Configuration	3, 4, 5, 7, 9, 10, 11, 12	300H, 240H, 280H, 2C0H, 320H, 340H, 360H

Default Settings: IRQ = 5 ; I/O Address = 300H

Note: 1. You can select an IRQ from the options shown above, but make sure your selection does not conflict with other I/O devices.

10BASE-T connector (UT1)

10BASE-T connects to the POS-560-B1 via an adapter cable to the RJ-45 standard jack (UT1) located at the rear of the board.

Network boot

The Network Boot feature is built into the BIOS. It can be enabled/disabled in the "Integrated Peripherals" section of the CMOS configuration. Please refer to the BIOS setting in Chapter 4 for more information.

2.24 Solid State Disk Configuration (U3)

The POS-560-B1's SSD supports 512 KB of Flash/EPROM/SRAM or DiskOnChip 2000. This drive emulates a floppy disk drive by using solid-state memory chips (Flash or EPROM) to store programs and data instead of the magnetic particles on the mechanical drive's disk. The Flash/ROM disk and DOC 2000 offer much faster access times than a floppy or hard disk and greatly increased reliability in harsh environments.

The Flash/ROM disk/DOC 2000 works by modifying the BIOS INT-13 disk I/O routine on boot-up. The routine then translates read and write commands to the disk so that they will correctly access the memory chips. You don't need any special drivers. You simply set the drive to act as a DOS drive (e.g. A: or C:) and use standard DOS commands (COPY, DIR, etc) to manipulate your data.

Before you use the Flash/ROM disk, you will need to set it correctly to match the type of SSD used. You also need to enable the SSD function in the BIOS setting under "Integrated Peripherals" section in chapter 4.

Memory devices

The Flash/ROM disk supports the following memory devices, DiskOnChip 2000 series, or their equivalents:

- 27C010 128 Kb x 8 EPROM
- 27C040 512 Kb x 8 EPROM
- 29C010 128 Kb x 8 +5 V Flash Memory (ATMEL only)
- 29C040 512 Kb x 8 +5 V Flash Memory (ATMEL only)
- 29C040A 512 Kb x 8 +5 V Flash Memory (ATMEL only)
- MD-2200-DXX (DOC 2000 series)

If you use EPROM, files on the disk are read only. You will need an external programmer to load your program and data files on the EPROMs.

If you use +5 V Flash memories (29C010) for the solid state disk, you can read or write data just like a floppy disk; you need not use an external programmer.

Jumper setting for SSD and DiskOnChip 2000

Table 2-18: Jumper settings for SSD and DiskOnChip

Device	CN4	J5	JP1	JP6	JP7
DiskOnChip	1-2	open	closed	2-3	closed
EPROM 128 KB	1-2	closed	open	1-2	closed
EPROM 512 KB	1-2	open	open	1-2	closed
Flash 128 KB	1-2	closed	open	2-3	closed
Flash 512 KB	1-2	open	open	2-3	closed
SRAM 128 KB	2-3	closed	open	—	open
SRAM 512 KB	2-3	open	open	—	open

Drive configuration for Flash/SRAM/EPROM

Before you activate the Flash/ROM drive (using the BIOS Chipset Features Setup program), you will need to set the drive's I/O and memory addresses to avoid conflicts with other plug-in cards. You

will also need to set the DOS drive designation to be used by the Flash/ROM drive. DIP switch SW1 controls each of these settings, as described in the following sections:

I/O address selection (SW1)

Positions 1 and 2 on DIP switch SW1 control the disk's I/O address.

Table 2-19: I/O address selection (SW1)

Position 1	Position 2	I/O Address (hex)
Off	Off	2D0
Off	On	290
On	Off	250
On	On	210

SSD function enabled/disabled

The SSD occupies a window in the memory address range of D000: 0000-1FFF. Positions 3 and 4 on SW1 enable/disable the Flash/ROM disk's memory address. If you select "Disabled", the disk will not function.

Table 2-20: Memory address selection

Position 3	Position 4	SSD Function
Off	Off	Disabled
On	On	Enabled

Drive emulated (SW1)

Positions 5 and 6 of SW1 control the DOS drive emulated by the Flash/ROM disk: 1st, 2nd, 3rd or 4th.

Table 2-21: Drive emulation

Position 5	Position 6	Drive
Off	Off	4th
Off	On	3rd
On	Off	2nd
On	On	1st

The actual drive letter assigned by DOS to the Flash/ROM disk depends on the floppy or hard disks installed in the system. If you are using a DOS version prior to DOS 5.0, the drive designation may also differ.

DOS 5.0 (and later)

Floppy disks

The Flash/ROM disk will replace the corresponding floppy disk. For example, if you have a single floppy disk (drive A) and assign the Flash/ROM disk to be the first drive (both switches 5 and 6 are on), any drive operations directed at drive A will go to the Flash/ROM disk. This floppy drive will then be assigned to drive D. The example below illustrates this.

Hard disks

The Flash/ROM disk will not replace corresponding hard disks. Instead, DOS will assign the Flash/ROM disk to the next free drive designation. For example, if you have a single hard disk (drive C) and assign the Flash/ROM disk to be the 3rd drive (switch 5 off, switch 6 on), the Flash/ROM drive will become drive D. If you have two hard disks, the Flash/ROM drive will become drive E.

Example 1

Installing the Flash/ROM disk as drive A (switches 5 and 6 are on)

Table 2-22: Installing Flash/ROM drive as drive A (with 2 FDD)

Drive	A	B	C	D
Before	FDD1	FDD2	HDD	---
After	Flash/ROM	FDD2	HDD	FDD1

Table 2-23: Installing Flash/ROM drive as drive A (with 1 FDD)

Drive	A	B	C	D
Before	FDD1	---	HDD	---
After	Flash/ROM	---	HDD	FDD1

Example 2

You (try to) install the Flash/ROM disk as drive C.

Table 2-24: Installing Flash/ROM disk as drive C

Drive	A	B	C	D
Before	FDD	FDD	HDD	
After	FDD	FDD	HDD	Flash/ROM

Booting from the Flash/ROM disk

If you wish to have the system boot from the Flash/ROM disk, simply set positions 5 and 6 on SW1 for the first FDD. Copy your application files to the disk along with the standard system files required to boot (command.com, io.sys, autoexec.bat, etc). The next time you start the system, it will boot from the solid state disk.

Inserting memory devices

After you have set all the jumpers and switches on the POS-560-B1, insert the appropriate memory devices into the card's sockets. Remember that you will need to program EPROMs before you insert them.

1. Make sure that the pins of the memory chips are perpendicular to the case and both rows are parallel to each other. Many times the chips come with the pins spread out slightly. Place the chip

on a table top and carefully bend each line of pins together until they point directly down.

2. Insert each chip. Align the chips so their pins are perpendicular to the connector and the semicircular notch on the end of the chip matches the notch on the end of the socket. There will probably be a gap between the chip body and the socket when it is fully seated – Do not push too hard!

Formatting the solid state disk

If you use Flash memory or SRAM, it is advisable to format the Flash/SRAM disk before copying files to it. The DOS command is as follows:

```
FORMAT drv: /U ...
```

where drv = solid state disk drive A, B, C, etc.

File copy utility

The utility program COOKROM.EXE, included on the card's utility disk, splits the files on a diskette into a series of binary files. You can then use an external programmer to copy the files to EPROM or +12 V Flash memory chips. It produces up to three files, depending on the size of the source files.

Using a memory manager (EMM386.EXE)

If you are using an extended or expanded memory manager (such as EMM386 or QEMM386), you will need to configure it to avoid the addresses used by the Flash/ROM disk (set by positions 3 and 4 of SW1). Otherwise, the memory manager will attempt to use these addresses, causing unreliable operation.

For example, the line in your CONFIG.SYS file that invokes EMM386, the DOS memory manager, might be the following:

```
DEVICE=EMM386.SYS X=D600-D7FF
```

This excludes an 8 KB range for the card from D6000 to D7FFF (the default addresses).

If you are using expanded memory, you will need to make sure that the memory manager is not putting the page frame in the disk's addresses. For example,

```
DEVICE=EMM386 .EXE X=D600-D7FF FRAME = D800
```

You should also make sure that the disk's memory address is not shadowed in the BIOS.

DiskOnChip configuration

If you purchased a DiskOnChip memory module, it should have come with its own manual and utility diskette to setup the POS-560-B1 for the DiskOnChip, refer back to "Jumper Setting for SSD and DiskOnChip" section for more information. Follow instructions that came with the module to configure the drive and the I/O address.

USB connector (JP18)

The POS-560-B1 board provides one USB (Universal Serial Bus) interface which supports plug and play and hot attach/detach for up to 127 external devices. The USB interface complies with USB specification rev. 1.0 and is fuse protected.

The USB interface is accessed through a 5-pin flat-cable connector, JP18. You will need an adapter cable if you use a standard USB connector. The adapter cable has a 5-pin connector on one end and a USB connector on the other.

The USB interfaces can be disabled in the system BIOS setup.

Note:

Due to limitations in the POS-560-B1 system chipset, the POS-560-B1 USB interface cannot be used with a USB keyboard under a DOS environment, since the system will hang. When the same USB peripheral is used under a Windows 95 (OSR2) or a Windows NT environment, the system works fine.

2.25 Flat Panel Display Signal (JP15)

Pin Definitions

KB_DATA	01	○ ○	02	KB_CLK
PIN41	03	○ ○	04	PIN42
GND	05	○ ○	06	LCDCLK
KB_ GND	07	○ ○	08	ASHFCLK
PIN43	09	○ ○	10	LCDCLK
ENAVDD	11	○ ○	12	DOTCLK
VCC3	13	○ ○	14	V _{CC} 3
PIN44	15	○ ○	16	PIN44
V _{CC}	17	○ ○	18	V _{CC}
NC	19	○ ○	20	NC

Figure 2-3: Pin Definitions for Flay Panel Disply Signals (JP15)

Table 2-25: JP15 Signal Selection (CN12)

Pin	JP15	Signal	Function
41	1-3	closed	KB Data
	3-5	closed	GRND
42	2-4	closed	KB Clk
	4-6, 8-10	closed	ASHF Clk
	4-6, 10-12	closed	DOT Clk
43	7-9	closed	KB Gnd
	9-11	closed	END VDD
44	14-16, 13-15	closed	V _{CC} (3.3 V for 3.3 V LCD)
	16-18, 17-19	closed	KB V _{CC} (5 vfor 5 V LCD)

Software Configuration

This chapter details the software configuration information. It shows you how to configure the card to match your application requirements. AWARD System BIOS is covered in Chapter 4.

Sections include:

- VGA display software configuration
- Connections for three standard LCDs
- Ethernet software configuration

3.1 Introduction

The POS-560-B1 system BIOS and custom drivers are located in a 128 KB, 32-pin (JEDEC spec.) Flash ROM device, designated U15. A single Flash chip holds the system BIOS, VGA BIOS, and network Boot ROM image. The display can be configured via software. This method minimizes the number of chips and eases configuration. You can change the display BIOS simply by reprogramming the Flash chip.

3.2 Utility Disk

The POS-560-B1 is supplied with a software utility disk. This disk contains the necessary file for setting up the VGA display and Ethernet controller. Directories and files on the disk are as follows:

Root	AWDFLASH.EXE
	560_SYS.BIN
	560_CRT.BIN
	560_TFT.BIN
	560_STN.BIN
	560_MON.BIN
	CBROM.EXE
	DIAG9008.EXE

AWDFLASH.EXE

This program allows you to write the VGA display driver files to the BIOS Flash ROM. The VGA files all come ready formatted for the POS-560-B1 with .BIN extensions. They are custom written and can be made available upon request.

560_SYS.BIN

This binary file contains the system BIOS.

560_CRT.BIN

Supports CRT only.

560_TFT.BIN (default)

Supports 640 x 480 color TFT (Toshiba LTM10C042).

560_STN.BIN

Supports 640 x 480 color STN DD 8/16-bit displays (Sharp LM64C142).

560_MON.BIN

Supports 640 x 480 dual scan monochrome displays (Sharp LM64P83/64P89).

CBROM.EXE

This program allows you to combine your own VGA BIOS with system BIOS (560_SYS.BIN).

DIAG9008.EXE

This program is the UMC 9008 Ethernet controller auto-scan/setup/diagnostic function.

3.3 VGA Display Software Configuration

The POS-560-B1's on-board VGA interface supports a wide range of popular LCD, EL, gas plasma flat panel displays and traditional analog CRT monitors. With on-board 1 MB display memory, the interface can drive CRT displays with resolutions up to 1024 x 768 in 256 colors. It is also capable of driving color panel displays with resolutions of 640 x 480 in 64K colors.

The VGA interface is configured completely via the software utility, so you don't have to set any jumpers. Configure the VGA display as follows:

1. Apply power to the POS-560-B1 with a color TFT display attached. This is the default setting for the POS-560-B1. Ensure that the AWDFLASH.EXE and *.BIN files are located in the working drive.

NOTE: *Ensure that you do not run AWDFLASH.EXE while your system is operating in EMM386 mode.*

2. At the prompt, type AWDFLASH.EXE and press <Enter>. The VGA configuration program will then display the following:

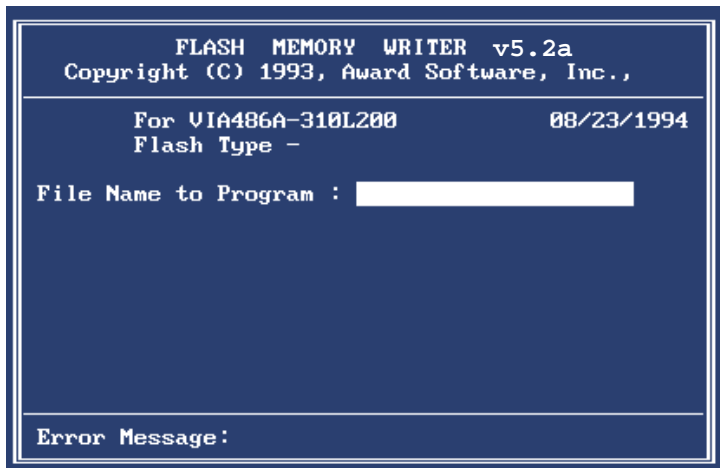


Figure 3-1: VGA setup screen

3. At the prompt, enter the new BIN file which supports your display. When you are sure that you have entered the file name correctly press <Enter>.
4. The screen will ask “Do you want to save BIOS?” If you change your mind or have made a mistake, press N to abort and end the setup procedure. Press Y if you wish to save the existing configuration before changing it. Then type the name under which you want to save the current configuration.
5. The prompt will then ask “Are you sure to program?” Press Y if you want the new file to be written into the BIOS. Press N to exit the program.

The new VGA configuration will then write to the ROM BIOS chip. This configuration will remain the same until you run the AWDFLASH.EXE program and change the settings.

3.4 Connections for Three Standard LCDs

Connections to Sharp LM64183P (640 x 480 DSTN MONO LCD)

Table 3-1: POS-560-B1 Connection for Sharp LM64P83 LCD (CN12)

Pin	Pin name	Pin	Pin name
CN1-1	S	36	FLM
CN1-2	CP1	38	LP
CN1-3	CP2	35	SHFCLK
CN1-4	DISP	5	+5 V
CN1-5	VDD	6	+5 V
CN1-6	VSS	3	GND
CN1-7	VEE	-	-17 V (external power)
CN1-8	DU0	12	P3
CN1-9	DU1	11	P2
CN1-10	DU2	10	P1
CN1-11	DU3	9	P0
CN1-12	DL0	16	P7
CN1-13	DL1	15	P6
CN1-14	DL2	14	P5
CN1-15	DL3	13	P4

* LM64183P -17 V

LM64P89 -20 V

Connections to Toshiba LTM10C042 (640 x 480 TFT Color LCD)

Table 3-2: POS-560-B1 Connection for Toshiba LTM10C042 LCD (CN12)

Pin	Pin name	Pin	Pin name
1	GND	3	GND
2	CLK	35	SHFCLK
3	GND	4	GND
4	R0	27	P18
5	R1	28	P19
6	R2	29	P20
7	GND	8	GND
8	R3	30	P21
9	R4	31	P22
10	R5	32	P23
11	GND	33	GND
12	G0	19	P10
13	G1	20	P11
14	G2	21	P12
15	GND	33	GND
16	G3	22	P13
17	G4	23	P14
18	G5	24	P15
19	GND	34	GND
20	ENAB	37	M
21	GND	34	GND
22	B0	11	P2
23	B1	12	P3
24	B2	13	P4
25	GND	39	GND
26	B3	14	P5
27	B4	15	P6
28	B5	16	P7
29	GND	39	GND
30	VDD	5	+5 V
31	VDD	6	+5 V

Connections to Sharp LM64C142 (640 x 480 DSTN Color LCD)

Table 3-3: POS-560-B1 Connection for Sharp LM64C142 LCD (CN12)

Pin	Pin name	Pin	Pin name
CN1-1	YD	36	FLM
CN1-2	LP	38	LP
CN1-3	XCX	35	SHFCLK
CN1-4	DISP	5	+5 V
CN1-5	VDD	6	+5 V
CN1-6	VSS	3	GND
CN1-7	VEE	-	+27 V (external power)
CN1-8	DU0	20	P11
CN1-9	DU1	19	P10
CN1-10	DU2	18	P9
CN1-11	DU3	17	P8
CN1-12	DU4	12	P3
CN1-13	DU5	11	P2
CN1-14	DU6	10	P1
CN1-15	DU7	9	P0
CN2-1	VSS	4	GND
CN2-2	DL0	24	P15
CN2-3	DL1	23	P14
CN2-4	DL2	22	P13
CN2-5	DL3	21	P12
CN2-6	DL4	16	P7
CN2-7	DL5	15	P6
CN2-8	DL6	14	P5
CN2-9	DL7	13	P4
CN2-10	VSS	8	GND

3.5 Ethernet Software Configuration

The POS-560-B1's on-board Ethernet interface supports all major network operating systems. I/O addresses and interrupts are easily configured via the Award BIOS Setup. To configure the medium type, to view the current configuration, or to run diagnostics, do the following:

1. Power the POS-560-B1 on. Ensure that the DIAG9008.EXE file is located in the working drive.
2. At the prompt type DIAG9008.EXE and press <Enter>. The Ethernet configuration program will then be displayed.
3. This simple screen shows all the available options for the Ethernet interface. Just highlight the option you wish to change by using the Up and Down keys. To change a selected item, press <Enter>, and a screen will appear with the available options. Highlight your option and press <Enter>. Each highlighted option has a helpful message guide displayed at the bottom of the screen for additional information.
4. After you have made your selections and you are sure that this is the configuration you want, press ESC. A prompt will appear asking if you want to save the configuration. Press Y if you want to save.

The Ethernet Setup Menu also offers three very useful diagnostic functions. These are:

1. Run EEPROM test
2. Run Diagnostics on Board
3. Run Diagnostics on Network

Each option has its own display screen which shows the format and result of any diagnostic tests undertaken.

CHAPTER 4

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

4.1 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 POS-560-B1'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.

4.2 AWARD BIOS Setup

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 immediately. This will allow you to enter the setup.

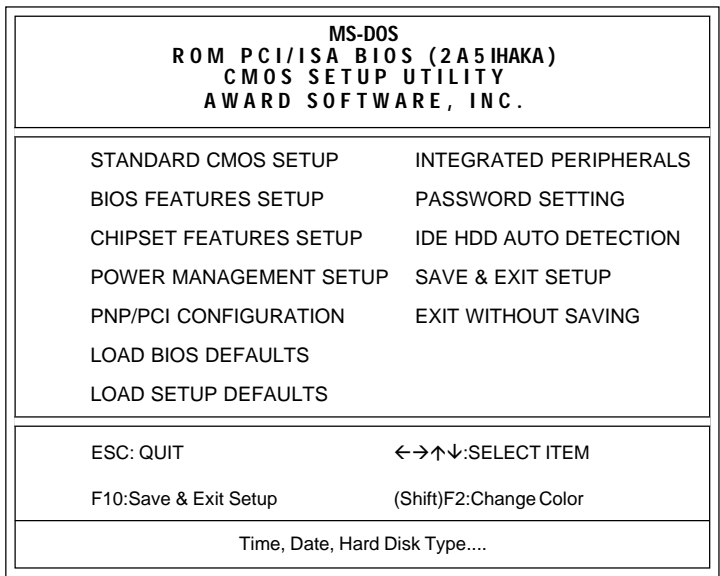


Figure 4-1: Setup program initial screen

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.

ROM PCI/ISA BIOS (2A5IHAKA) STANDARD CMOS SETUP AWARD SOFTWARE, INC.								
Date (mm:dd:yy)		:Mon, Jan 1 1996						
Time (hh:mm:ss)		:8:20:23						
HARD DISK	TYPE	SIZE	CYLS.	HEADS	PRECOMP	LANDZONE	SECTORS	MODE
Primary-Master		0	0	0	0	0	0	NORMAL
Primary-Slave		0	0	0	0	0	0	N/A
Secondary-Master		0	0	0	0	0	0	AUTO
Secondary-Slave		0	0	0	0	0	0	AUTO
Drive A : 1.44M,3.5 in.				<div style="border: 1px solid black; padding: 5px;"> Base Memory : 0K Extended Memory : 0K Other Memory : 512K <hr/> Total Memory : 512K </div>				
Drive B : None								
Video: EGA/VGA								
Halt On: All, But Keyboard								
ESC: Quit		←→↑↓ :Select Item				PU/PD/+/-:Modify		
F1:Help		(Shift)F2:Change Color						

Figure 4-2: CMOS setup screen

BIOS features setup

By choosing the BIOS FEATURES SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the POS-560-B1.

MS-DOS ROM PCI/ISA BIOS (2A5IHAKA) 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 : Enabled	D0000-D3FFF Shadow : Disabled
Boot Sequence : A, C	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	
Typematic Rate Setting : Disabled	
Typematic Rate (Chars/Sec) : 6	
Typematic Delay (Msec) : 250	Esc:Quit ←→↑↓: Select Item
Security Option : Setup	F1 : Help PU/PD/+/- : Modify
PCI/VGA Palette Snoop : Disabled	F5 : Old Values (Shift)F2 : Color
OS Select for DRAM > 64 MB : Non-OS2	F6 : Load BIOS Defaults
	F7 : Load Setup Defaults

Figure 4-3: BIOS features setup screen

By choosing the **CHIPSET FEATURES SETUP** option from the **INITIAL SETUP SCREEN** menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the **POS-560-B1**.

ROM PCI/ISA BIOS (2A5 IHAKA) CHIPSET FEATURES SETUP AWARD SOFTWARE, INC.			
Auto Configuration	: Enabled	System BIOS Cacheable	: Enabled
L2 (WB) Tag Bit Length	: 8 Bits	Video BIOS Cacheable	: Enabled
SRAM Back-to-Back	: Enabled	Memory Hole at 15M - 16M	: Disabled
N#A# Enable	: Enabled		
DRAM RD Leadoff Time	: 5T		
Refresh Cycle Time (us)	: 62.4		
RAS Pulse Width Refresh	: 5T		
RAS Precharge Time	: 4T		
RAS to CAS Delay	: 4T		
CAS # Pulse Width (FP)	: 2T		
CAS # Pulse Width (EDO)	: 1T		
RAMW # Assertion Timing	: Normal		
EDO Back-to-Back Timing	: 3T		
CPU to PCI Post Write	: 3T		
SDRAM WR Retire Rate	: x-2-2-2		
Read Prefetch Memory RD	: Enabled		
SDRAM CAS Latency	: 3T		
CPU to PCI Burst Mem. WR	: Disabled		
ISA Bus Clock Frequency	: PC1CLK/4		

Power management setup

By choosing the POWER MANAGEMENT SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer’s default values for the POS-560-B1.

<div>MS-DOS</div> <div>ROM PCI/ISA BIOS (2A51HAKA)</div> <div>POWER MANAGEMENT SETUP</div> <div>AWARD SOFTWARE, INC.</div>	
<div>Power Management : Disabled</div> <div>PM Control by ADM : Yes</div> <div>Video Off Option : Susp.Stby→off</div> <div>Video Off Method : DPMS Supported</div> <div>Switch Function : Break/Wake</div> <div>Doze Speed (div by) : 2</div> <div>Stdbby Speed (div by) : 3</div> <div>Modem Use IRQ : 3</div> <div>***PM TIMERS***</div> <div>HDD Off After : Disabled</div> <div>Doze Mode : Disabled</div> <div>Standby Mode : Disabled</div> <div>Suspend Mode : Disabled</div> <div>***PM EVENTS***</div> <div>COM Ports Activity : Enabled</div> <div>LPT Ports Activity : Enabled</div> <div>HDD Ports Activity : Enabled</div> <div>VGA Activity : Disabled</div>	<div>IRQ3 (COM2) : Enabled</div> <div>IRQ4 (COM1) : Enabled</div> <div>IRQ5 (LPT2) : Enabled</div> <div>IRQ6 (Floppy Disk) : Enabled</div> <div>IRQ7 (LPT1) : Enabled</div> <div>IRQ8 (RTC Alarm) : Disabled</div> <div>IRQ9 (IRQ2 Redirect) : Enabled</div> <div>IRQ10 (Reserved) : Enabled</div> <div>IRQ11 (Reserved) : Enabled</div> <div>IRQ12 (PS/2 Mouse) : Enabled</div> <div>IRQ13 (Coprocesor) : Enabled</div> <div>IRQ14 (Hard Disk) : Enabled</div> <div>IRQ15 (Reserved) : Enabled</div> <div>Esc:Quit ←→↑↓ : Select Item</div> <div>F1 : Help PU/PD/+/-: Modify</div> <div>F5 : Old Values (Shift)F2 : Color</div> <div>F6 : Load BIOS Defaults</div> <div>F7 : Load Setup Defaults</div>

Figure 4-5: Power management setup screen

PnP/PCI configuration setup

By choosing the PNP/PCI CONFIGURATION option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the POS-560-B1.

MS-DOS ROM PCI/ISA BIOS (2A5IHAKA) PNP/PCI CONFIGURATION SETUP AWARD SOFTWARE, INC.	
Resources Controlled By	: <input type="button" value="Manual"/>
Reset Configuration Data	: Disabled
IRQ-3 assigned to	: Legacy ISA
IRQ-4 assigned to	: Legacy ISA
IRQ-5 assigned to	: PCI/ISA PnP
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	: Legacy ISA
IRQ-15 assigned to	: Legacy ISA
DMA-1 assigned to	: PCI/ISA PnP
DMA-3 assigned to	: PCI/ISA PnP
DMA-5 assigned to	: PCI/ISA PnP
DMA-6 assigned to	: PCI/ISA PnP
DMA-7 assigned to	: PCI/ISA PnP
PCI IRQ Activated By	: Level
PCI IDE 2nd Channel	: Enabled
PCI IDE IRQ Map To	: PCI-AUTO
Primary IDE INT #	: A
Primary IDE INT #	: B
Esc:Quit	←→↑↓ : Select Item
F1 : Help	PU/PD/+/- : Modify
F5 : Old Values	(Shift)F2 : Color
F6 : Load BIOS Defaults	
F7 : Load Setup Defaults	

Figure 4-6: PCI configuration setup screen

Integrated peripherals

By choosing the INTEGRATED PERIPHERALS option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer’s default values for the POS-560-B1.

<div>MS-DOS ROM PCI/ISA BIOS (2A5IHAKA) INTEGRATED PERIPHERALS AWARD SOFTWARE, INC.</div>	
<div>Internal PCI/IDE : Both IDE Primary Master PIO : Auto IDE Primary Slave PIO : Auto IDE Secondary Master PIO : Auto IDE Secondary Slave PIO : Auto IDE Burst Mode : Disabled IDE Data Port Post Write : Enabled IDE HDD Block Mode : Enabled Onboard FDC Controller : Enabled Onboard UART 1 : 3F8/IRQ4 Onboard UART 2 : 2F8/IRQ3 Onboard UART 2 mode : Standard Onboard UART 3 : 3E8/IRQ10 Onboard UART 4 : 2E8/IRQ9</div>	<div>Onboard Parallel Port 1 : 378/IRQ7 Onboard Parallel Mode : Normal Onboard Parallel Port 2 : 278/IRQ11 PS/2 mouse function : Enabled USB controller : Disabled Ethernet Boot ROM : Disabled Onboard SSD : Disabled Panel Type : Ignore INT 15 Hook Esc:Quit ←→↑↓ : Select Item F1 : Help PU/PD/+/-: Modify F5 : Old Values (Shift)F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults</div>

Figure 4-7: Integrated peripherals setup screen

Load BIOS defaults

LOAD BIOS DEFAULTS loads the default system values directly from ROM. If the stored record created by the Setup program becomes corrupted (and therefore unusable), these defaults will load automatically when you turn the POS-560-B1 on.

ROM PCI/ISA BIOS (2A5IHAKA) CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	PASSWORD SETTING
CHIPSET FEATURES SETUP	IDE HDD AUTO DETECTION
POWER MANAGEMENT SETUP	SAVE & EXIT SETUP
PNP/PCI CONFIGURATION	EXIT WITHOUT SAVING
LOAD BIOS DEFAULTS	
LOAD SETUP DEFAULTS	
ESC: QUIT	←→↑↓:SELECT ITEM
F10:Save & Exit Setup	(Shift)F2:Change Color
Time, Date, Hard Disk Type....	

Figure 4-8: Load BIOS defaults screen

Change password

To change the password, choose the PASSWORD SETTING option from the Setup main menu and press <Enter>.

1. If the CMOS is bad or this option has never been used, there is default password which is stored in the ROM. The screen will display the following messages:

Enter Password:

Press <Enter>.

2. If the CMOS is good or this option has been used to change the default password, the user is asked for the password stored in the CMOS. The screen will display the following message:

Confirm Password:

Enter the current password and press <Enter>.

3. After pressing <Enter> (ROM password) or the current password (user-defined), you can change the password stored in the CMOS. The password can be at most 8 characters long.

Remember - to enable this feature, you must first select either Setup or System in the BIOS FEATURES SETUP.

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 (2A5IHAKA) CMOS SETUP UTILITY AWARD SOFTWARE, INC.							
HARD DISK TYPE	SIZE	CYLS.	HEADS	PRECOMP	LANDZ	SECTORS	
MODE							
Drive C	:	(MB)	790	15	65535	789	57
Select Secondary Slave Option (N=Skip) : N							
ESC = SKIP							

Figure 4-9: IDE HDD auto detection 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.

CHAPTER 5

PCI SVGA Setup

The POS-560-B1 features an on-board PCI flat panel/VGA interface. This chapter provides instructions for installing and operating the software drivers on the included display driver diskette.

5.1 Before You Begin

To facilitate the installation of the enhanced display device drivers and utility software, you should read the instructions in this chapter carefully before you attempt installation. The enhanced display drivers for the POS-560-B1 board are located on the software installation diskette. You must install the drivers and utility software by using the supplied SETUP program for DOS drivers.

Note: The files on the software installation diskette are compressed. Do not attempt to install the drivers by copying the files manually. You must use the supplied SETUP program to install the drivers.

Before you begin, it is important to note that most display drivers need to have the relevant software application already installed in the system prior to installing the enhanced display drivers. In addition, many of the installation procedures assume you are familiar with both the relevant software applications and operating system commands. Review the relevant operating system commands and the pertinent sections of your application software's user's manual before performing the installation.

5.2 Installation

Disk 1: Windows 3.1, Windows 95 and Windows NT drivers

5.3 Simultaneous Display Mode

The 65550 VGA BIOS supports monochrome LCD, EL, color TFT and STN LCD flat panel displays. It also supports interlaced and non-interlaced analog monitors (VGA color and VGA monochrome) in high-resolution modes while maintaining complete IBM VGA compatibility. Digital monitors (i.e. MDA, CGA, and EGA) are NOT supported. Multiple frequency (multi-sync) monitors are supported as analog monitors.

Both CRT and panel displays can be used simultaneously. The POS-560-B1 can be set in one of three configurations: on a CRT, on a flat panel display, or on both simultaneously. The system is initially set to simultaneous display mode. In the utility diskette, there are three .COM files which can be used to select the display. Simply type the filename at the DOS prompt:

CT.COM Enables CRT display only

FP.COM Enables panel display only

SM.COM Enables both displays at the same time.

5.4 Sleep Mode

The display driver diskette contains two files that support sleep mode. Simply type the filename at the DOS prompt:

ON.COM switches to normal display mode.

OFF.COM switches to sleep mode.

5.5 Driver Installation

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, and know how to format a floppy disk. If you are uncertain about any of these concepts, please refer to the DOS or Windows user reference guides for more information before you proceed with the installation.

Before you begin

Before you begin installing software drivers, you should make a backup copy of the display driver diskette and store the original in a safe place. The display driver diskette contains drivers for several versions of certain applications. You must install the correct version in order for the driver to work properly so make sure you know which version of the application you have.

5.5.1 Windows 3.1 drivers setup procedure

These drivers are designed to work with Microsoft Windows 3.1. You may install these drivers through Windows or in DOS.

Windows setup

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

Step 2: Place the display driver diskette 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:\WINSETUP**. 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. Press <ENTER> to complete the installation. Once completed, the Display Driver Control Panel appears on the screen. This Control 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:**. Then double-click on **WINSETUP.EXE** to begin installation.

Changing display drivers in Windows

To change display drivers in Windows, select the **Windows Setup** icon from the Main window. You will be shown the current setup configuration. Select **Change System Settings** from the Option menu. Click on the arrow at the end of the Display line. You will be shown a list of display drivers. Click on the driver you want. Then click on the **OK** button. Follow the directions to complete the setup.

Changing color schemes

After you change display drivers, you may notice that the color scheme used by Windows looks strange. This is because different drivers have different default colors. To change the color scheme, select the **Control Panel** from the Main window. Select the **Color** icon. You will be shown the current color scheme. Choose a new color scheme and click the **OK** button.

DOS setup

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

Step 2: Place the display driver diskette in drive A. Type **A:** <ENTER> to make this the default drive. Type **SETUP** <ENTER> to run the driver SETUP program. Press any key to get to the applications list. Using the arrow keys, select **Windows Version 3.1** and press the <ENTER> key. Press the <ENTER> key to select **All Resolutions**, and then press <END> to begin the installation. At this point you will be asked for the path to your Windows System directory (default C:\WINDOWS). When the installation is complete, press any key to continue. Press <ESC> followed by Y to exit to DOS.

Step 3: Change to the directory where you installed Windows (usually C:\WINDOWS).

Step 4: Type **SETUP** <ENTER> to run the Windows Setup program. It will show the current Windows configuration. Use the up arrow key to move to the Display line and press <ENTER>. A list of display drivers will be shown. Use the arrow keys to select one of the drivers starting with an asterisk (*) and press <ENTER>.

Step 5: Follow the directions on the screen to complete the setup. In most cases, you may press <ENTER> to accept the suggested option. When Setup is done, it will return to DOS. Type **WIN** <ENTER> to start Windows with the new display driver.

Changing display drivers in DOS

To change display drivers from DOS, change to the Windows directory and run Setup, repeating steps 4 and 5 from the previous page. Besides the special display drivers marked by an asterisk (*), you should be able to use the following standard drivers:

VGA	640x480, 16 colors
Super VGA	800x600, 16 colors

Panning drivers

Special panning drivers are provided to allow high-resolution modes to be displayed on a flat panel or CRT. These drivers will show a section of a larger screen and will automatically pan, or scroll, the screen horizontally and vertically when the mouse reaches the edge of the display.

Linear acceleration drivers

A special high-performance linear acceleration driver is provided for 256-color modes. This driver may require special hardware and may not be supported on all systems. It is only available for Windows3.1.

5.5.2 Windows 95 drivers setup procedure

1. Boot your system with VGA or SuperVGA driver
2. Select properties from a menu after right button press
3. Select display
4. Select Change Display
5. Select Change Monitor
6. Select Change Adapter
7. Select Have Disk

Note: Installation for Windows 95/98 on POS-560 Networking:

*The detail expression of how to install the Windows 95/98 networking on POS-560 is shown in the attached Utility Disk (Ver. 1.43).
(Path: D:\pos\560\utility.143\network.pdf.)*

5.5.3 Windows NT drivers setup procedure

Step 1

1. Install Windows NT as you normally would for a VGA display.
2. Click the Start button, choose Settings and click on Control Panel.
3. Choose the Display icon and click on the icon.
4. In the Display Properties window, click on the Settings tab.
5. 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.

Step 2

1. In the Select Device window, click on the Other button. Enter source directory where the Windows NT driver files are located.
2. Press <ENTER> and the name of the Chips and Technologies Video Accelerator driver will appear at the end of the Models list box. Scroll to the end of the list box and double click on the driver.
3. Once the installation is complete, the system must be restarted.

Step 3

1. Upon restarting your computer, select the desired display settings from the Display property dialog box.
2. Click on Test to test the newly selected graphics mode. A color test screen should appear, followed by the Testing Mode window.
3. Click on Yes to continue. The Display Settings Change window will appear.
4. Click on Restart Now for the new settings to take effect.

APPENDIX **A**

Programming the Watchdog Timer

The POS-560-B1 is equipped with a watchdog timer that resets the CPU if processing comes to a standstill for whatever reason. This feature ensures system reliability in industrial standalone or unmanned environments.

To enable the watchdog timer, you must read (input) to the SSD's address + 400(hex) and then continue to read from that address at regular intervals. The first time your program reads the port, it enables the watchdog timer. After that, your program must read the port during a time interval of less than 1.6 seconds, otherwise the watchdog timer will activate and reset the CPU.

If CPU processing comes to a standstill because of EMI or a software bug, the program will stop reading SSD address + 400 (hex) port and the timer will be interrupted. The timer will then automatically reset the CPU and data processing will continue normally.

You must write your program so that it reads the SSD's address + 400(hex) at an interval shorter than the timer's preset interval. The timer's intervals have a tolerance of $\pm 30\%$, so you should program an instruction that will refresh the timer about every second.

To disable the watchdog timer, write (output) to the same address port.

The following program shows how you might program the watchdog timer in BASIC. If the SSD's base address is 2D0 (hex), then the watchdog timer's address is 6D0 (hex):

```
10    REM  Watchdog timer example program
20    X=inp (&H6D0) REM  Enable the watchdog
30    GOSUB 1000 REM  Task #1, takes 1.6 seconds to complete
40    X=inp (&H6D0) REM  Refresh the watchdog before it resets
50    GOSUB 2000 REM  Task #2, takes 1.6 second to complete
60    X=out (&H6D0) REM  Disable the watchdog
70    END
1000  REM  Subroutine #1, takes less than 1.6 second to complete
1990  RETURN
2000  REM  Subroutine #2, takes 1.6 second to complete
.
.
2940  RETURN
```

Pin Assignments

This appendix contains information of a detailed or specialized nature. It includes:

- Flat panel display connector (CN12)
- VGA Internal Connector (CN14)
- Ethernet AUI-BNC connector (CN16)
- IDE 40-pin primary connector (CON2)
- 44-pin secondary connector (JP10)
- RS-232 connections (COM1:
CN7/CN8,
Keyboard connectors (CN2A, CN1,
CN2)
- Floppy drive connector (JP13)
- Parallel port connector
- Digital input/output (CN2)
- Main power connector (J1)
- Power LED and keylock (J3)
- Speaker (J2)
- IRQ Mapping Chart
- Universal serial bus (USB) connector (JP18)
- PS/2 mouse connector (CN5)
- IR Connector (CON1)
- PCI/ISA slot

Flat panel display connector (CN12)

Table B-1: POS-560-B1 Flat panel display connector

Pin	Signal	Pin	Signal
1	+12 V	2	+12 V
3	GND	4	GND
5	V _{cc} (3.3 V/5 V)	6	V _{cc} (3.3 V/5 V)
7	ENAVEE	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	GND	34	GND
35	SHFCLK	36	FLM
37	M/DE	38	LP
39	GND	40	ENABKL
41	KB Data/GND*	42	KB CLK/AHSF CLK/Dot CLK*
43	KB GND/ENA VDD*	44	KB V _{cc} (5V)/V _{cc} (3.3V)*

*Set by JP15

VGA Internal Connector (CN14)

Table B-2: POS-560-B1 Internal VGA connector

Pin	Signal	Pin	Signal
1	RED	2	KB Data
3	GREEN	4	KB Clk
5	BLUE	6	VGND
7	HSYNC	8	V _{cc}
9	VSNC	10	VGND

VGA External Connector (CN13)

Table B-3: POS-560-B1 External VGA connector (CN13)

Pin	Signal
1	RED
2	GREEN
3	BLUE
4	NC
5	VGND
6	VGND
7	VGND
8	VGND
9	NC
10	VGND
11	NC
12	NC
13	VGND
14	VGND
15	NC

Ethernet AUI-BNC connector (CN16)

Table B-4: POS-560-B1 Ethernet AUI-BNC connector

Pin	Signal	Pin	Signal
1	TD+	11	TX-
2	TD-	12	BNC EN
3	RD+	13	GND
4	RD-	14	V _{CC}
5	NC		
6	CD+		
7	CD-		
8	RX+		
9	RX-		
10	TX+		

Primary IDE 40-pin connector (CON2)

Table B-5: POS-560-B1 IDE 40-pin connector

Pin	Signal	Pin	Signal
1	IDE RESET	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	SIGNAL GND	20	N/C
21	N/C	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO CHANNEL READY	28	BALE
29	N/C	30	GND
31	IRQ14	32	IOCS16
33	ADDR 1	34	N/C
35	ADDR 0	36	ADDR 2
37	HARD DISK SELECT 0	38	HARD DISK SELECT 1
39	IDE ACTIVE	40	GND

Secondary 44-pin IDE connector (JP10)

Table B-6: IDE hard drive connector

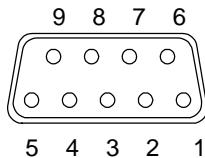
Pin	Signal	Pin	Signal
1	IDE RESET*	2	GND
3	DATA7	4	DATA8
5	DATA6	6	DATA9
7	DATA5	8	DATA10
9	DATA4	10	DATA11
11	DATA3	12	DATA12
13	DATA2	14	DATA13
15	DATA1	16	DATA14
17	DATA0	18	DATA15
19	SIGNAL GND	20	N/C
21	HDD 0	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	HD READY	28	N/C
29	HDACK 0*	30	GND
31	IRQ14	32	N/C
33	ADDR 1	34	N/C
35	ADDR 0	36	ADDR 2
37	HDD SELECT 0*	38	HDD SELECT 1*
39	IDE ACTIVE 0*	40	GND
41	VCC	42	VCC
43	GND	44	N/C

**RS-232 connections (COM1: CN7/CN8,
COM2: CN9/CN10, COM3: COM3, COM4: COM4)**

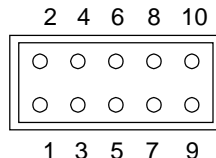
Different devices implement the RS-232 standard in different ways. If you are having problems with a serial device, be sure to check the pin assignments for the connector. The following table shows the pin assignments for the board's RS-232 port.

Table B-7: POS-560			
COM1-3 RS-232 serial ports		COM4: CN12 RS-422/485	
Pin	Signal	Pin	Signal
1	DCD/+5 V/+12 V	1	TX-
2	RX	2	TX+
3	TX	3	RX+
4	DTR	4	RX-
5	GND	5	GND
6	DSR	6	DSR
7	RTS	7	RTS
8	CTS	8	CTS
9	RI/+5 V/+12 V	9	RI/+5/+12V

Note: Pin 10 on internal COM 1-4 are all NC



COM1 - 2



Internal COM1-4

Keyboard connectors (CN1, CN6)

Table B-8: POS-560-B1internal keyboard connector 5-pin header (CN6)	
Pin	Function
1	K/B clock
2	K/B data
3	N/C
4	GND
5	+5 V _{DC}

Table B-9: External keyboard connectors (6-pin mini DIN) (CN1)

Pin	Function
1	K/B data
2	N/C
3	GND
4	+5 V _{DC}
5	K/B clock
6	N/C

Floppy drive connector (JP13)

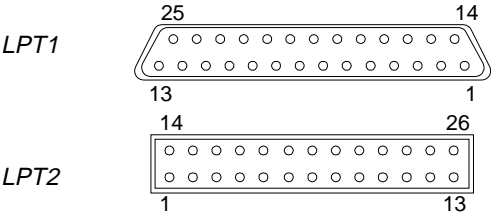
Table B-10: POS-560-B1 Floppy drive connector

Pin	Signal	Pin	Signal
1	GND	2	DENSITY SELECT
3	GND	4	N/C
5	GND	6	DRIVE TYPE
7	GND	8	INDEX
9	GND	10	MOTOR 0
11	GND	12	DRIVE SELECT 1
13	GND	14	DRIVE SELECT 2
15	GND	16	MOTOR 1
17	GND	18	DIRECTION
19	GND	20	STEP
21	GND	22	WRITE DATA
23	GND	24	WRITE GATE
25	GND	26	TRACK 0
27	GND	28	WRITE PROTECT
29	GND	30	READ DATA
31	GND	32	HEAD SELECT
33	GND	34	DISK CHANGE

Parallel port connector (Cn11: LPT1, CON5: LPT2)

Table B-11: POS-560-B1Parallel port connector

Pin	Signal
1	\STROBE
2	D0
3	D1
4	D2
5	D3
6	D4
7	D5
8	D6
9	D7
10	\ACK
11	BUSY
12	PE
13	SLCT
14	AUTOFD
15	ERR
16	INIT
17	SLIN
18	GND
19	GND
20	GND
21	GND
22	GND
23	GND
24	GND
25	GND
26	NC



Digital input/output (CN2)

Table B-12: POS-560-B1digital I/O (CN2)

Pin	Signal
1	I/O IN 0
2	V _{cc}
3	I/O IN 1
4	I/O OUT 0
5	I/O IN 2
6	GND
7	I/O IN 3
8	I/O OUT 1
9	GND
10	+12 V/special power

CPU fan connector (CN3)

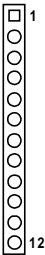
Table B-13: CPU fan connector (CN3)

Pin	Function
1	5 V
2	GND
3	12 V

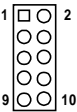
Main power connector (J1)

Table B-14: POS-560-B1main power connector (J1)

Pin	Signal
1	Special power input for pin 10 of CN2
2	V_{CC}
3	+12 V
4	-12 V
5	GND
6	GND
7	GND
8	GND
9	-5 V
11	V_{CC}
12	V_{CC}



Power



Digital I/O

Power LED and keylock (J3)

Table B-15: POS-560-B1power LED & keylock (J3)

Pin	Signal
1	V_{CC}
2	N/C
3	GND
4	Keylock
5	GND

Speaker (J2)

Table B-16: POS-560-B1speaker (J2)

Pin	Signal
1	V _{cc}
2	GND
3	GND
4	Speaker

IRQ Mapping Chart

Table B-17: POS-560-B1IRQ mapping chart

IRQ	Function
0	Interval timer
1	Keyboard
2	Interrupt from Controller 2
3	COM2
4	COM1
5	Ethernet
6	FDD
7	LPT1
8	RTC
9	COM4
10	COM3
11	LPT2
12	PS/2 mouse
13	INT from co-processor
14	Primary IDE
15	Secondary IDE

Universal serial bus (USB) connector (JP18)

Table B-18: Universal serial bus connector (USB)

USB1		USB2	
Pin	Function	Pin	Function
1	V _{CC}	2	V _{CC}
3	-Data	4	-Data
5	+Data	6	+Data
7	GND	8	GND

PS/2 mouse connector (CN5)

Table B-19: PS/2 mouse connector (CN5)

Pin	Function
1	Mouse data
2	NC
3	GND
4	V _{CC}
5	Mouse clock
6	NC

IR Connector (CON1)

Table B-20: IR connector (CON1)

Pin	Function
1	+5V
2	N/C
3	IRRX
4	GND
5	IRTX

PCI/ISA slot (component side view)

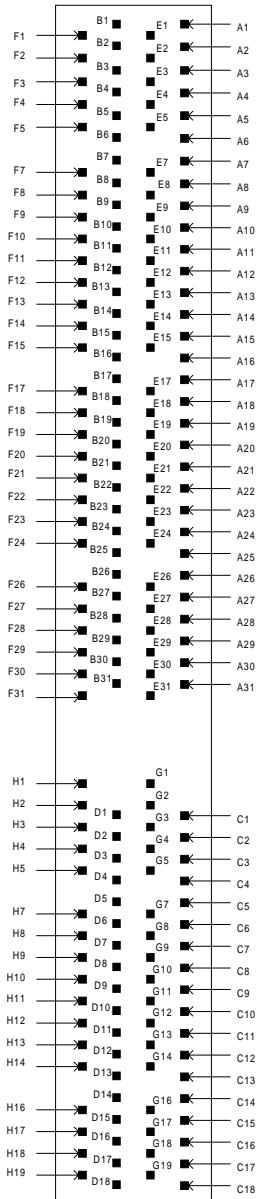


Table B-21: PCI/ISA slot pin assignments (pins A and B)

Pin	Signal	Pin	Signal
A1	IOCHK	B1	GND
A2	SD7	B2	RST
A3	SD6	B3	VCC
A4	SD5	B4	IRQ9
A5	SD4	B5	-5 V
A6	SD3	B6	DRQ2
A7	SD2	B7	-12 V
A8	SD1	B8	OWS
A9	SD0	B9	+ 12 V
A10	IORDY	B10	GND
A11	AEN	B11	SMW
A12	SA19	B12	SMR
A13	SA18	B13	IOW
A14	SA17	B14	IOR
A15	SA16	B15	DACK3
A16	SA15	B16	DRQ3
A17	SA14	B17	DACK1
A18	SA13	B18	DRQ1
A19	SA12	B19	REF
A20	SA11	B20	SCLK
A21	SA10	B21	IRQ7
A22	SA9	B22	IRQ6
A23	SA8	B23	IRQ5
A24	SA7	B24	IRQ4
A25	SA6	B25	IRQ3
A26	SA5	B26	DACK2
A27	SA4	B27	TC
A28	SA3	B28	ALE
A29	SA2	B29	VCC
A30	SA1	B30	OSC
A31	SA0	B31	GND

Table B-22: PCI/ISA slot pin assignments (pins C and D)

Pin	Signal	Pin	Signal
C1	SBHE	D1	MEM16
C2	LA23	D2	IO16
C3	LA22	D3	IRQ10
C4	LA21	D4	IRQ11
C5	LA20	D5	IRQ12
C6	LA19	D6	IRQ15
C7	LA18	D7	IRQ14
C8	LA17	D8	DACK0
C9	MEMR	D9	DRQ0
C10	MEMW	D10	DACK5
C11	SD8	D11	DRQ5
C12	SD9	D12	DACK6
C13	SD10	D13	DRQ6
C14	SD11	D14	DACK7
C15	SD12	D15	DRQ7
C16	SD13	D16	VCC
C17	SD14	D17	MASTER
C18	SD15	D18	GND

Table B-23: PCI/ISA slot pin assignments (pins E and F)

Pin	Signal	Pin	Signal
E1	GND	F1	GND
E2	GND	F2	GND
E3	INT 1	F3	INT3
E4	INT 2	F4	INT4
E5	VCC	F5	VCC
E6	---	F6	---
E7	VCC	F7	VCC
E8	RST	F8	PCLKF
E9	GNT0	F9	GND
E10	REQ0	F10	GND
E11	GND	F11	GNT1
E12	PCLKE	F12	REQ1
E13	GND	F13	AD31
E14	AD30	F14	AD29
E15	NC	F15	NC
E16	---	F16	---
E17	NC	F17	NC
E18	AD28	F18	AD27
E19	AD26	F19	AD25
E20	AD24	F20	CBE3
E21	AD22	F21	AD23
E22	AD20	F22	AD21
E23	AD18	F23	AD19
E24	NC	F24	NC
E25	---	F25	---
E26	IDSEL1	F26	NC
E27	AD16	F27	AD17
E28	FRAME	F28	IRDY
E29	CBE2	F29	DEVSEL
E30	TRDY	F30	LOCK
E31	STOP	F31	PERR

Table B-24: PCI/ISA slot pin assignments (pins G and H)

Pin	Signal	Pin	Signal
G1	SDONE	H1	SERR
G2	SBO	H2	AD15
G3	CBE1	H3	AD14
G4	PAR	H4	AD12
G5	GND	H5	GND
G6	---	H6	KEY
G7	GND	H7	GND
G8	AD13	H8	AD10
G9	AD11	H9	AD8
G10	AD9	H10	AD7
G11	CBEO	H11	AD5
G12	AD6	H12	AD3
G13	AD4	H13	AD1
G14	AD2	H14	AD0
G15	---	H15	KEY
G16	VCC	H16	VCC
G17	VCC	H17	VCC
G18	GND	H18	GND
G19	GND	H19	GND

1st MB memory map

Table B-25: 1st MB memory map

Addr. range (Hex)	Device
F000h-FFFFh	System ROM
C800h-EFFFh	Unused
C000h-C7FFh	Expansion ROM
B800h-BFFFh	CGA/EGA/VGA text
B000h-B7FFh	Unused
A000h-AFFFh	EGA/VGA graphics
0000h-9FFFh	Base memory
D000-D400H*	DOC® 2000/SSD

* default setting

System I/O ports

Table B-26: System I/O ports

Addr. range (Hex)	Device
000-01F	DMA controller
020-021	Interrupt controller 1, master
022-023	Chipset address
040-05F	8254 timer
060-06F	8042 (keyboard controller)
070-07F	Real-time clock, non-maskable interrupt (NMI) mask
080-09F	DMA page register,
0A0-0BF	Interrupt controller 2
0C0-0DF	DMA controller
0F0	Clear math co-processor
0F1	Reset math co-processor
0F8-0FF	Math co-processor
1F0-1F8	Fixed disk
200-207	Game I/O (not used)
210, 250, 290	SSD (DOC-2000)
2D0	SSD (DOC-2000)
610, 650, 690	Watchdog timer
6D0	Watchdog timer
278-27F	Parallel printer port 2 (LPT 2)
2E8	Serial port 4
2F8-2FF	Serial port 2
300-31F	Prototype card (not used)
360-36F	Reserved
378-37F	Parallel printer port 1 (LPT 1)
380-38F	SDLC, bisynchronous 2 (not used)
3A0-3AF	Bisynchronous 1 (not used)
3B0-3BF	Monochrome display and printer adapter (LPT1) (not used)
3C0-3CF	Reserved
3D0-3DF	Color/graphics monitor adapter
3E8	Serial port 3
3F0-3F7	Diskette controller
3F8-3FF	Serial port 1

* MPU-401 select from 300 ~ 330H (2 bytes)

APPENDIX C

DOC® 2000 Installation Guide

This appendix contains information on the DiskOnChip® 2000 quick installation guide. It includes:

- DiskOnChip® 2000 installation instructions
- Additional information and assistance

C.1 DiskOnChip® 2000 Quick Installation Guide

DiskOnChip® 2000 installation instructions

1. Make sure the target platform is powered OFF.
2. Plug the DiskOnChip® 2000 device into its socket. Verify the direction is correct (pin 1 of the DiskOnChip® 2000 is aligned with pin 1 of the socket).
3. Power up the system.
4. During power up you may observe the messages displayed by the DiskOnChip® 2000 when its drivers are automatically loaded into the system's memory.
5. At this stage the DiskOnChip® 2000 can be accessed as any disk in the system.
6. If the DiskOnChip® 2000 is the only disk in the system, it will appear as the first disk (drive C: in DOS).
7. If there are more disks besides the DiskOnChip 2000, the DiskOnChip® 2000 will appear by default as the last drive, unless it was programmed as the first drive. (Please refer to the DiskOnChip® 2000 utilities user manual.)
8. If you want the DiskOnChip® 2000 to be bootable:
 - a . Copy the operating system files into the DiskOnChip® by using the standard DOS command (for example: sys d:).
 - b . The DiskOnChip® should be the only disk in the systems or would be configured as the first disk in the system (c:) using the DUPDATE utility.

```
DUPDATE D /S: DOC104.EXB /FIRST (set as c:)  
DUPDATE C /S: DOC104.EXB (set as d:)
```

Additional information and assistance

1. Visit M-Systems' Web site at www.m-sys.com where you can find Utilities Manual, Data Sheet and Application Notes. In addition, you can find the latest DiskOnChip® 2000 S/W Utilities.
2. Contact your dealer for technical support if you need additional assistance, and have the following information ready:
 - Product name and serial number.
 - Description of your computer hardware (manufacturer, model, attached devices, etc.)
 - Description of your software (operating system, version, application software, etc.)
 - A complete description of the problem.
 - The exact wording of any error messages.

APPENDIX

D

Mechanical Drawing

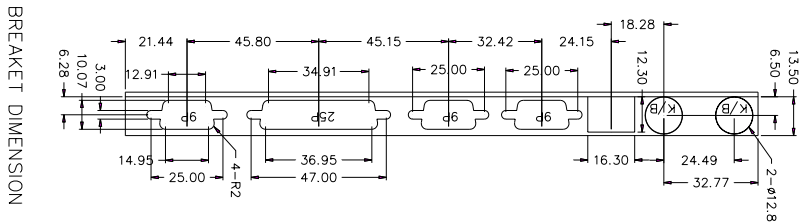


Figure D-1: POS-560-B1 Mechanical Drawing