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Reference Manual

EPM-SVGA-2

SVGA Module for the
PC/104-*Plus* Bus





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CORPORATION

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EPM-SVGA-2

SVGA Module for the
PC/104-*Plus* Bus

MEPMSVGA2

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EPM-SVGA-2

SVGA Module for the
PC/104-*Plus* Bus

REFERENCE MANUAL

Doc. Rev. 7/30/2001

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1 Introduction

Description

The EPM-SVGA-2 module combines a high speed SVGA interface for PC/104-*Plus* systems with an on-board DiskOnChip site for non-volatile system storage. It is fully compatible with popular operating systems such as QNX, Windows CE, NT, Win95/98 and VxWorks.

The video section features outputs for standard display monitors and for flat panel displays (optional). A wide selection of operating modes allows the display to be tailored to a variety of OEM requirements.

One MB of on-board video RAM (standard) allows color depth up to 16M colors and screen resolutions up to 1280 x 1024 pixels. Two MB of RAM (optional) allows screen resolutions up to 1600 x 1200 pixels.

The DiskOnChip (DOC) site allows the use of plug-in non-volatile solid state Flash storage. Combining both video and Flash expansion on a single module provides cost and space savings for systems that do not have adequate Flash capacity. Under most operating systems, the DOC supports normal file reads and writes, as well as system booting, from the totally non-volatile solid state storage.

The EPM-SVGA-2 features high reliability design and construction, along with 48-hour burn-in and 100% functional testing. It is backed by a two-year limited warranty and VersaLogic's outstanding service and support. The EPM-SVGA-2 is a PC/104-*Plus* compliant Super VGA display module with a single chip VGA controller, up to 2 megabytes of vram (1 MB standard), flat panel support (optional), and DiskOnChip site for system Flash memory support. The card's VGA BIOS and software provide support for Windows 3.1, 95, and NT installations.

FEATURES

- High speed PC/104-Plus PCI interface
- Fully SVGA compatible
- DiskOnChip® Flash socket
- Standard analog video monitor support
- Flat panel display support (optional)
- 1 MB VRAM (2 MB optional)
- 800 x 600 resolution with 64K colors
- DOS, Win 3.1, and Win95 video drivers

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VGA/SVGA Controller and ROM BIOS

A single Asiliant Technologies 65550 VGA controller chip provides VESA-standard VGA and SVGA graphics modes and registers. The circuitry can output displays of up to 1600 x 1200 pixels in 256 colors, or 800 x 600 pixels in up to 16M colors using the standard SVGA BIOS. Custom BIOS support can be added to allow the use of VGA and SVGA Flat Panel Displays.

DiskOnChip

The EPM-SVGA-2 DiskOnChip site accommodates a plug-in, 32-pin flash module.

The site features 7 jumper-selectable 8K block start addresses and a socket disable.

Software Drivers and Utilities

The included disk contains performance-enhanced VGA drivers for Windows 3.1, Windows 95, and Windows NT.

The drivers are also available from the download section of our website, www.versalogic.com.

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Technical Specifications

Specifications are typical at 25°C with a 5.0V supply voltage unless otherwise noted.

Size:
3.55" x 3.775" (PC/104 standard)

Storage Temperature:
–40°C to +85°C

Free Air Operating Temperature:
0°C to +60°C

Power Requirements:
+5V ±5% @ 450 ma typical

Video Controller:
Asiliant Technologies 65550 VGA controller

Video RAM:
1 MB standard, 2 MB optional

Video Modes:

1 MB VRAM	2 MB VRAM
640 x 480, 16M colors	640 x 480, 16M colors
800 x 600, 64K colors	800 x 600, 16M colors
1024 x 768, 256 colors	1024 x 768, 64K colors
1280 x 1024, 16 colors	1280 x 1024, 256 colors
	1600 x 1200, 256 colors

Video Outputs:
Standard SVGA analog
Flat Panel Drive (optional)

Video BIOS:
40 KB at address C0000h–C9FFFh

Video BIOS Compatibility:
x86 compatible processor with PCI-compatible BIOS

DiskOnChip Site:
32-pin DIP socket
7 jumper selectable addresses or socket disable

External Connectors:
Analog VGA: 16-pin .1” latching header
Flat Panel: 44-pin 2mm header

Bus Compatibility:
PC/104 (pass through)
PC/104-*Plus*

Specifications are subject to change without notice.

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Technical Support

If you have problems that this manual can't help you solve, contact VersaLogic for technical support at **(541)485-8575**. You can also reach VersaLogic by e-mail at support@versalogic.com, or visit our website at www.versalogic.com.

REPAIR SERVICE

If your product requires service, you must obtain a Returned Material Authorization (RMA) number by calling (541)485-8575. Our standard turn-around time for repairs is five working days after we receive the product.

Please provide the following information:

- Your name, the name of your company, and your phone number
- The name of a technician or engineer who we can contact if we have questions
- Quantity of items being returned
- The model and serial number (bar code) of each item
- A description of the problem
- Steps you have taken to resolve or repeat the problem
- The return shipping address

Warranty Repair All parts and labor charges are covered, including return shipping charges for UPS 2nd Day Air delivery to United States addresses.

Non-warranty Repair All non-warranty repairs are subject to diagnosis and labor charges, parts charges, and return shipping fees. We will need to know what shipping method you prefer for return back to your facility, and we will need to secure a purchase order number for invoicing the repair.

Note! Please mark the RMA number clearly on the outside of the box before returning. Failure to do so can delay the processing of your return.

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2 Configuration

This chapter describes how to configure the on-board jumper option for the EPM-SVGA-2 module.

Hardware Jumper Summary

Hardware option configuration is accomplished by installing or removing jumper plugs. In this chapter, the term “in” is used to indicate an installed jumper and “out” is used to indicate a removed jumper.

JUMPER BLOCK LOCATIONS

Note Jumpers shown in as-shipped configuration.

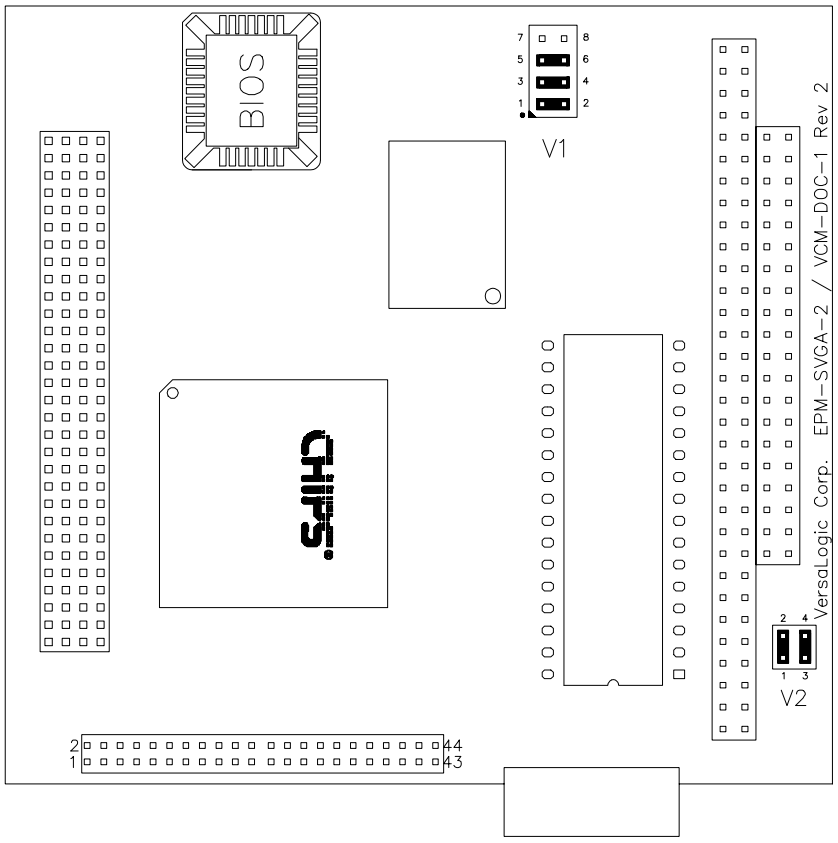


Figure 1. Jumper Block Locations

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JUMPER SUMMARY

Table 1: Jumper Summary

Jumper Block	Description	As Shipped	Page
V1	**DiskOnChip Address Selector** **V1[5-6] V1[3-4] V1[1-2] Address** In In In Disabled Out Out Out CC000h Out Out In D0000h Out In Out D4000h Out In In D8000h In Out Out DC000h In Out In E0000h In In Out E4000h	Disabled	7
V2	**PC/104-Plus Slot Position Selector** **V2[3-4] V2[1-2] Slot Position** In In 0 (closest to CPU board) In Out 1 Out In 2 Out Out 3	Position 0	8

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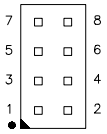
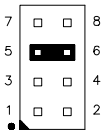
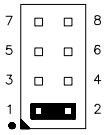
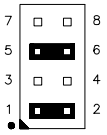
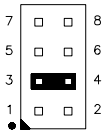
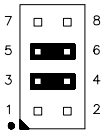
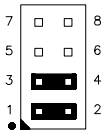
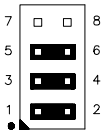
DISKONCHIP CONFIGURATION

The EPM-SVGA-2 DiskOnChip site accommodates a plug-in, 32 pin flash module. Note that the DOC is a paged device and occupies only an 8K block of memory regardless of the DOC device storage size.

Jumper block V1 selects between 7 different 8K block start addresses and DOC disable. Any of the addresses shown may be used by the DOC chip. The system BIOS will search each of these addresses at start-up time in order to determine whether any DOC devices are present in the system. However, the DOC chip address must be selected so that it does not conflict with any other device in the system that is using that memory area. Select any address that does not conflict with existing system hardware.

Note V1[7-8] is reserved for factory use only.

Table 2: DiskOnChip Start Address Selector

Jumper Block V1	Address	Jumper Block V1	Address
	CC000h		DC000h
	D0000h		E0000h
	D4000h		E4000h
	D8000h		Disabled (as shipped)

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PC/104-PLUS BUS CONFIGURATION

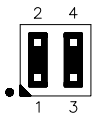
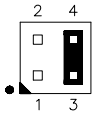
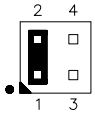
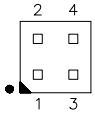
PC/104-*Plus* is limited to the same 4-slot configuration as desktop PCI. While the technology allows stacks of up to 4 PC/104-*Plus* modules and theoretically up to 10 regular PC/104 modules, rarely will systems consist of this many boards.

If a stack consists of a mixture of PC/104-*Plus* and regular PC/104 modules, the PC/104-*Plus* modules must occupy positions 0, 1, 2, or 3 (0 being closest to the SBC/CPU board).

The EPM-SVGA-2 module is a PC/104-*Plus* product, therefore it must occupy one of the first four positions in the stack, usually position 0. Jumper block V2 must be configured to match the position of the module within the stack.

The function of V2 is to choose a distinct pair of slot-specific signals (Clock and ID Select) from the PCI feed-through connector. Each PC/104-*Plus* module must be jumpered differently to utilize a unique set of slot-specific signals.

Table 2: Module Position Jumper.

Jumper Block V2	Module Position
	0 (As Shipped)
	1
	2
	3

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3 Hardware Installation

Introduction

This chapter describes EPM-SVGA-2 module installation procedures and describes the external connections.

Warning! Electrostatic discharge (ESD) can damage boards, disk drives, and other components. Do the installation procedures described in this chapter only at an ESD workstation. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part on the card cage.

Circuit boards can be extremely sensitive to ESD and always require careful handling. After removing the board from its protective wrapper or from the stack, place the board on a grounded, static-free surface, component side up. Do not slide the card over any surface. During storage or shipment, protect the card with anti-static foam or bubble wrap.

Arranging the PC/104-*Plus* Stack

1. Turn the system power **off**.
2. Install the EPM-SVGA-2 module in stack position 0, 1, 2, or 3.
3. Make sure that jumper V2 matches the chosen stack position. See page 6 for details.
4. Additional stack-through modules can be stacked on top of the EPM-SVGA-2. Up to three more PC/104-*Plus* modules and/or six regular PC/104 modules can be added.

Warning! Installing or removing modules from the PC/104-*Plus* stack while the power is on may damage the system.

Note The EPM-SVGA-2 module is designed to work with PC/104-*Plus* systems. It is not compatible with regular PC/104 stacks (without the PCI connector.)

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External Connectors

This chapter describes the external interfaces available on the EPM-SVGA-2 module.

CONNECTOR FUNCTIONS

Table 3: Connector Functions

Connector	Function
J1	Flat Panel Output (Optional)
J2	SVGA Video Output

CONNECTOR LOCATIONS

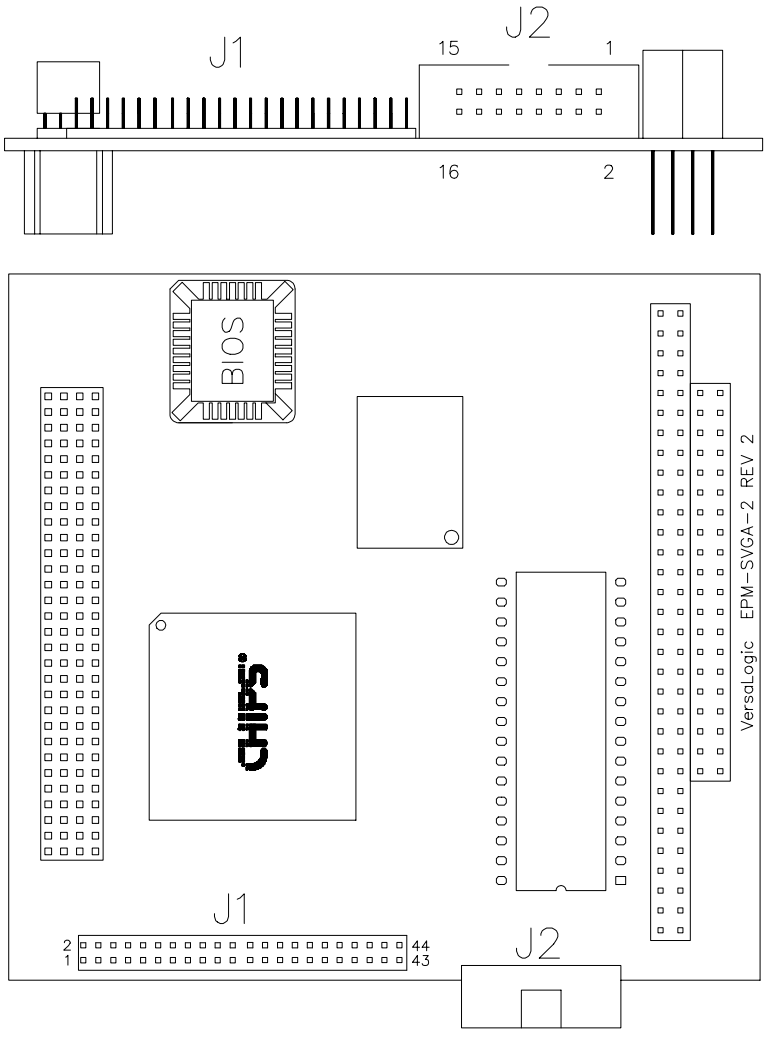


Figure 2. Connector Locations

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Mating Connectors and Cable Assemblies

Connections to the EPM-SVGA-2 can be made using flat ribbon cable and mass-terminated mating connectors. To bring the video connector on the EPM-SVGA-2 card out to standard PC/AT style VGA pinouts, the VersaLogic cable assembly listed below can be used.

See pages 12 and 13 for pinout details.

Table 4: Mating Connectors and Cable Assemblies

Connector	Mating Connector	Cable Part #	Description	Connects to:
J1 (LCD Output)	3M 87044-1000	Custom	—	Flat Panel Display
J2 (Video Output)	3M 3452-6616	VL-CBL-1601	12" 16-pin IDC to mini DB-15F	VGA Monitor

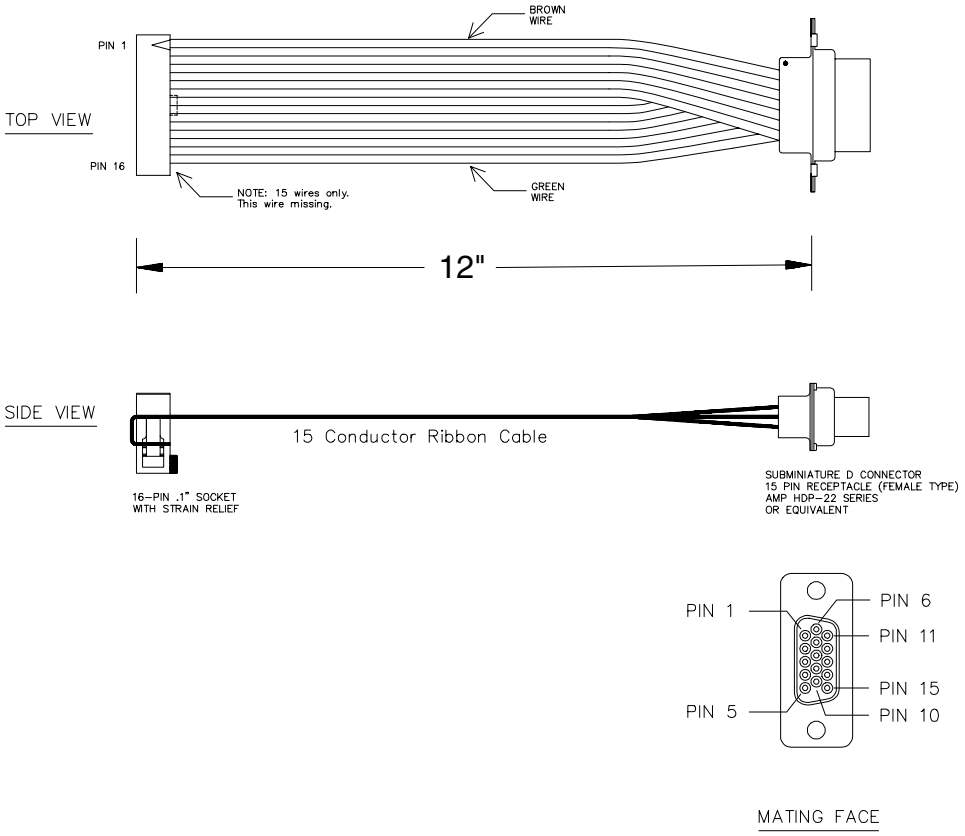


Figure 3. Video Adapter Cable

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Connecting the Video Display

Any standard VGA monitor or flat panel display that uses SVGA control signals may be connected to the EPM-SVGA-2. Adapter cable VL-CBL-1601 is used to convert the dual-row connector J2 to a standard 15-pin mini-D connector.

Warning! Do **not** connect or disconnect a monitor from the EPM-SVGA-2 while the module power is on.

SVGA CONNECTOR

A 16-pin header connector, J2, provides the SVGA output signals.

Table 5: Video Output Pinout.

J2 Pin	Mini DB15 Pin	Signal Name	Function
1	1	CRED	Red video
2	9	NC	No connect
3	2	CGRN	Green video
4	10	SGND	Sync return (digital ground)
5	3	CBLU	Blue video
6	11	N/C	No connect
7	4	N/C	No Connect
8	12	DDC1D	Auto configuration input
9	5	GND	Digital ground
10	13	CHSYNC	Horizontal sync
11	6	GND	Red ground
12	14	CVSYNC	Vertical sync
13	7	GND	Green ground
14	15	DDC2C	Auto Configuration Input
15	8	GND	Blue ground
16	N/C	NC	No connect

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FLAT PANEL DISPLAY CONNECTOR

A 44-pin, 2mm header provides a digital interface to a variety of Flat Panel Display units.

Note Flat Panel Display capability is an optional feature. The feature is enabled by the use of a custom video BIOS written specifically for the display type to be used. Contact VersaLogic Technical Support for assistance in implementing this feature.

Table 6: Flat Panel Output Pinout.

J1 Pin	Function	J1 Pin	Function	J1 Pin	Function	J1 Pin	Function
1	V+12	12	P3	23	P14	34	GND
2	V+12	13	P4	24	P15	35	SHFCLK
3	GND	14	P5	25	P16	36	FLM
4	GND	15	P6	26	P17	37	M
5	Vcc	16	P7	27	P18	38	LP
6	Vcc	17	P8	28	P19	39	GND
7	ENAVEE	18	P9	29	P20	40	ENABKL
8	GND	19	P10	30	P21	41	GND
9	P0	20	P11	31	P22	42	N/C
10	P1	21	P12	32	P23	43	Vcc
11	P2	22	P13	33	GND	44	Vcc

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FLAT PANEL DISPLAY CONNECTOR

See the *Connector Location Diagram* on page 10 for pin and connector location information.

Table 7: Flat Panel Display Pinout

J1 Pin	Signal Name	Function	Mono SS 8-bit	Mono DD 8-bit	Mono DD 16-bit	Color TFT 9/12/ 16-bit	Color TFT 18/24 bit	Color TFT HR 18/24 bit	Color STN STN SS 8-bit (X4bP)	Color STN SS 16-bit (4bP)	Color STN DD 8-bit (4bP)	Color STN DD 16-bit (4bP)	Color STN DD 24-bit
1	+12V	Power Supply											
2	+12V	Power Supply											
3	GND	Ground											
4	GND	Ground											
5	+5V	Power Supply											
6	+5V	Power Supply											
7	ENAVEE	Power sequencing control for LCD bias voltage											
8	GND	Ground											
9	P0	Data Output		UD3	UD7	B0	B0	B00	R1	R1	UR1	UR0	UR0
10	P1	" "		UD2	UD6	B1	B1	B01	B1	G1	UG1	UG0	UG0
11	P2	" "		UD1	UD5	B2	B2	B02	G2	B1	UB1	UB0	UB0
12	P3	" "		UD0	UD4	B3	B3	B03	R3	R2	UR2	UR1	LR0
13	P4	" "		LD3	UD3	B4	B4	B10	B3	G2	LR1	LR0	LG0
14	P5	" "		LD2	UD2	G0	B5	B11	G4	B2	LG1	LG0	LB0
15	P6	" "		LD1	UD1	G1	B6	B12	R5	R3	LB1	LB0	UR1
16	P7	" "		LD0	UD0	G2	B7	B13	B5	G3	LR2	LR1	UG1
17	P8	" "	P0		LD7	G3	G0	G00	SHF CLKU	B3		UG1	UB1
18	P9	" "	P1		LD6	G4	G1	G01		R4		UB1	LR1
19	P10	" "	P2		LD5	G5	G2	G02		G4		UR2	LG1
20	P11	" "	P3		LD4	R0	G3	G03		B4		UG2	LB1
21	P12	" "	P4		LD3	R1	G4	G10		R5		LG1	UR2
22	P13	" "	P5		LD2	R2	G5	G11		G5		LB1	UG2
23	P14	" "	P6		LD1	R3	G6	G12		B5		LR2	UB2
24	P15	" "	P7		LD0	R4	G7	G13		R6		LG2	LR2
25	P16	" "					R0	R00					LG2
26	P17	" "					R1	R01					LB2
27	P18	" "					R2	R02					UR3
28	P19	" "					R3	R03					UG3
29	P20	" "					R4	R10					UB3
30	P21	" "					R5	R11					LR3
31	P22	" "					R6	R12					LG3
32	P23	" "					R7	R13					LB3
33	GND	Ground											
34	GND	Ground											
35	SHFCLK	Shift Clock. Pixel clock for flat panel data.	SHF CLK	SHF CLK	SHF CLK	SHF CLK	SHF CLK	SHF CLK	SHF CLK	SHF CLK	SHF CLK	SHF CLK	SHF CLK
36	FLM	First Line Marker. Flat panel equivalent of VSYNC.											
37	DE	Display Enable or M signal (ADCCLK) or BLANK#											
38	LP	Latch Pulse. Flat panel equivalent of HSYNC.											
39	GND	Ground											
40	ENABKL	Enable Backlight. Can be programmed for other functions.											
41	N/C	No Connection											
42	N/C	" "											
43	N/C	" "											
44	N/C	" "											

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4 Software Installation

Introduction

This chapter summarizes the software drivers supplied on the *EPM-SVGA-2 Utility Diskette* included with this manual. These drivers are also available in the download section of the VersaLogic web page (WWW.VERSALOGIC.COM).

The purpose of these software drivers is to provide the most current driver versions to Windows users.

Windows 3.1 Installation

1. Insert the *EPM-SVGA-2 Display Drivers Disk* into floppy drive (A:)
2. Copy A:\31132.EXE to an empty directory on your hard drive.
3. Execute the self extracting file W31132.EXE
4. Execute the self extracting file SW.EXE
5. Execute the batch file SETUP.BAT

Windows 95 Installation

1. Insert the *EPM-SVGA-2 Display Drivers Disk* into floppy drive (A:)
2. Copy W95306.EXE to an empty directory on your hard drive.
3. Execute the self extracting file W95306.EXE
4. Execute the self extracting file SW.EXE
5. Click Start, then Settings, then Control Panel.
6. Start the "Display" applet program.
7. Select the "Settings" page, push the "Change Display Type" button.
8. Push the "Change" button in the "Adapter Type" area.
9. Push the "Have Disk" button and press "OK".
10. Push the "Browse" button and navigate to the directory which contains the extracted files. CHIPS95.INF should be highlighted in the filename box. Click OK.
11. The "Install from Disk" dialog box will appear. Click OK.
12. The "Select Device" dialog box will appear. Select "Asiliant Technologies 65550 PCI". Click OK.
13. Windows 95 will copy the display drivers to the proper directories on your system.
14. Continue choosing Close until asked to restart your machine from the "Systems Settings Change" dialog box.
15. After the system has restarted, you can go back into the Display applet and select alternate screen resolutions and color depths.

Windows 98 Installation

Windows 98 provides native support for the 65550. No additional drivers are required.

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