

# PCM-3521 Advanced Flat-Panel/ CRT VGA Module

## Introduction

The PCM-3521 is a PC/104 form factor Super VGA controller for CRT and LCD displays. It supports CRT color monitor and LCD display, monochrome, Single-scan, Dual-scan, and TFT panels. It can serve as a connector to create a compact video solution for embedded applications.

### Features:

The advanced features of the PCM-3521 include:

- **compatible** *100% IBM-VGA*
- C&T F65545 High Performance Flat Panel/CRT VGA controller
- Hardware Windows acceleration
- Supports panel resolutions up to 1280x1024, including 800x600 and 1024x768
- Supports non-interlaced CRT monitors with resolutions up to 1024x768 @ 256 colors
- True-color and Hi-color display capability with flat panels and CRT monitors, resolutions up to 640x480
- Direct interface to Color and Monochrome Dual Drive (DD) and Single Drive (SS) panels (supports 8, 9, 15, 16, 18, and 24-bit data interfaces)
- PC/104 Form-factor (92x97mm/3.6"X3.8") on a 4-layer PCB

## Checklist

In addition to this manual, you should have the following:

- VGA Graphic Adapter
- One Driver and Utility Diskette

If either of these items are missing or damaged, please contact your dealer. Please have the serial number from your PCM-3521 adapter ready when you call.

**NOTE:** Keep all packaging materials that accompany your adapter in the event you need to return the product

## Configuring Your Adapter

This section explains how to configure your adapter for use with your computer system.

**WARNING:** *Incorrect setting or use of the adapter may result in damage to the computer system or the graphics adapter itself. Carefully read through this manual before installing the adapter in your system. Your VGA adapter must use a 16-bit expansion slot.*

## Hardware Configuration

Figure 1 (page 2) shows the layout of the PCM-3521 PC/104 module VGA adapter. Familiarize yourself with this diagram as the components shown will be referred to in this manual.

## Jumper Settings

See tables 1 and 2 (Page 2)

## Pin Assignments

See tables 3-6 (Page 2-3)

## Software Utilities

This section describes operation and installation of the following software utilities supplied on the Display Driver Diskettes.

**.FP .CT .SM .SETCOL**

**NOTE:** *Changes or modifications not expressly approved by the device provider may void the warranty.*

## The FP, CT, SM utility programs

FP, CT, and SM are switch display commands. Use these commands as shown below to configure display options.

CT <Enter>: Switches the PCM-3521 display to CRT only.

FP <Enter>: Switches the PCM-3521 display to Flat-Panel only.

SM <Enter>: Switches the PCM-3521 display to both CRT and Flat-Panel simultaneously

## Using the SETCOL Utility Program

1. Place the display driver diskette in drive A (or B)
2. From the correct prompt type SETUP and <Enter>.
3. Press any key to display a list of supported applications.

4. Use the arrow keys to select utilities. Press <Enter> to install the utility.

5. Press ESC followed by Y to exit to DOS.

## Software Drivers

### Supported Drivers List

- Windows 3.1
- Lotus/Symphony
- Word 5.0
- WordPerfect 5.0
- AutoCAD Release 12
- VESA version 1.2
- Word 5.5
- WordPerfect 5.1

### Install the Windows 3.1 driver

1. Select the Main Menu in the Program Manager
2. From the FILE menu select RUN
3. Type A:\WINSET and then press <Enter>.
4. When installation is complete, changes in appearance can be made from the control panel.

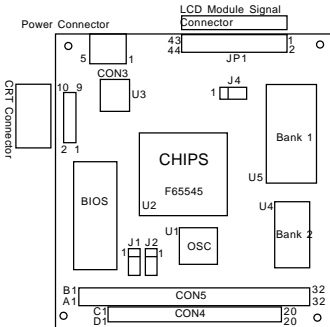
### Install the Windows 3.1 driver from the DOS prompt

1. Place the diskette in drive A (or B).
2. From the correct prompt type SETUP <Enter>.
3. Press any key to get the application list.
4. Select Windows 3.1 and press <Enter>.
5. Type install in the Windows sub-directory.
6. After the installation is complete, press ESC followed by Y to exit DOS.

### Other Drivers

1. Place the diskette in drive A (or B).
2. From the correct prompt type SETUP <Enter>.
3. Press any key to get the application list.
4. Use arrow keys to select the driver and press <Enter>.
5. Install according to SETUP program instructions.

**Figure 1: Card Layout**



**Table 1: Jumper Setting (factory use only)**

J1	Short	Default
A	1,2	●
B	2,3	

J2	Short	Default
A	1,2	●
B	2,3	

**Table 2: Panel Select (factory use only)**

J4	Short	Default
A	1,2	●
B	2,3	

**Table 3: Panel Connector Pin Assignment**

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

**Table 4: CRT Connector**

CON 2	Signal	CON 2	Signal
PIN 1	R Output	PIN 2	GND
PIN 3	G Output	PIN 4	AGND
PIN 5	B Output	PIN 6	AGND
PIN 7	VS	PIN 8	AGND
PIN 9	HS	PIN 10	GND

**Table 5: Power Connector**

CON3	Signal
Pin 1	ENAVEE
Pin 2	GND
Pin 3	+12V
Pin 4	GND
Pin 5	VEE

**Table 6: PC/104 Bus Connectors Pin Assignment**

PIN	Signal	PIN	Signal
B1	GND	A1	IOCHCHK
B2	RESET DRV	A2	SD7
B3	+5V DC	A3	SD6
B4	IRQ 9	A4	SD5
B5	-5V DC	A5	SD4
B6	DRQ2	A6	SD3
B7	-12V DC	A7	SD2
B8	QWS	A8	SD1
B9	+12V DC	A9	SD0
B10	GND	A10	IOCHDRY
B11	SMEMW	A11	AEEN
B12	SMEMR	A12	SA19
B13	IOW	A13	SA18
B14	IOR	A14	SA17
B15	DACK3	A15	SA16
B16	DRQ3	A16	SA15
B17	DACK1	A17	SA14
B18	DRQ1	A18	SA13
B19	REFRESH	A19	SA12
B20	CLK	A20	SA11
B21	IRQ7	A21	SA10
B22	IRQ6	A22	SA9
B23	IRQ5	A23	SA8
B24	IRQ4	A24	SA7
B25	IRQ3	A25	SA6
B26	DACK2	A26	SA5
B27	T/C	A27	SA4
B28	BALE	A28	SA3
B29	+5V DC	A29	SA2
B30	OSC	A30	SA1
B31	GND	A31	SA0
B32	GND	A32	0V

PIN	Signal	PIN	Signal
D1	GND	C1	GND
D2	MEM CS16	C2	SBHE
D3	I/O CS16	C3	LA23
D4	IRQ 10	C4	LA22
D5	IRQ 11	C5	LA21
D6	IRQ 12	C6	LA20
D7	IRQ 13	C7	LA19
D8	IRQ 14	C8	LA18
D9	DACK0	C9	LA17
D10	DRQ0	C10	MEMR
D11	DACK5	C11	MEMW
D12	DRQ5	C12	SD8
D13	DACK6	C13	SD9
D14	DRQ6	C14	SD10
D15	DACK7	C15	SD11
D16	DRQ7	C16	SD12
D17	+5V DC	C17	SD13
D18	MASTER	C18	SD14
D19	GND	C19	SD15
D20	GND	C20	GND

**Video Support Modes: VGA Standard**

Mode no. (HEX)	Display Mode	Colors	Text Display	Font Size	Pixel Resoluti	Max mclk/ Dot clk	Horizont Freq(Kh	Vertical Freq (Hz)	Video Memory
0+, 1+	Text	16	40x25	9x16	360x400	50/28.322	31.5	70	256 KB
0+, 1+	Text	16	40x25	8x14	320x350	56/25.175	31.5	70	256 KB
0+, 1+	Text	16	40x25	8x8	320x200	56/25.175	31.5	70	256 KB
2+, 3+	Text	16	80x25	9x16	720x400	56/28.322	31.5	70	256 KB
2+, 3+	Text	16	80x25	8x14	640x350	56/25.175	31.5	70	256 KB
2+, 3+	Text	16	80x25	8x8	640x200	56/25.175	31.5	70	256 KB
4	Graphics	4	40x25	8x8	320x200	56/25.175	31.5	70	256 KB
5	Graphics	4	40x25	8x8	320x200	56/25.175	31.5	70	256 KB
6	Graphics	2	80x25	8x8	640x200	56/25.175	31.5	70	256 KB
7+	Text	Mono	80x25	9x16	720x400	56/25.322	31.5	70	256 KB
7+	Text	Mono	80x25	9x14	720x350	56/25.322	31.5	70	256 KB
7+	Text	Mono	80x25	9x8	720x350	56/25.322	31.5	70	256 KB

**Video Support Modes: Extended Resolution**

Mode no. (HEX)	Display Mode	Colors	Text Display	Font Size	Pixel Resoluti	Max mclk/ Dot clk	Horizont Freq(Kh	Vertical Freq (Hz)	Video Memory
20	Note 3	16	80x30	8x16	640x480	56/25.175	31.5	60	512 KB
22	Note 3	16	100x37	8x16	800x680	65/40.000	37.5	60	512 KB
24	Note 3	16	128x48	8x16	1024x768	65/65.000	48.5	60	512 KB
24I						65/44.900	35.5	43	512 KB
30	Note 1	256	80x30	8x16	640x480	56/25.175	31.5	60	512 KB
32	Note 1	256	100x37	8x16	800x680	56/40.000	37.5	60	512 KB
34	Note 1	256	128x48	8x16	1024x768	65/65.000	48.5	60	1 MB
34I						65/44.900	35.5	43	1 MB
40	Note 4	32K	80x30	8x16	640x480	65/50.350	31.5	60	1 MB
41	Note 5	64K	80x30	8x16	640x480	65/50.350	31.5	60	1 MB
60	Text	16	132x25	8x16	1056x400	65/40.000	30.5	68	256 KB
61	Text	16	132x50	8x16	1056x400	65/40.000	30.5	68	256 KB
72/75I						65/44.900	35.5	43	512 KB
78	Note 2	16	80x25	8x16	640x400	56/25.175	31.5	70	1 MB

- Note 1: 8 bit linear
- Note 2: Packed Pixel
- Note 3: 4 bit linear
- Note 4: 15 bit liner

**Note:** The I in the Mode No. column indicates "Interlaced".  
**Max MCLK** refers to the maximum clock rate required for proper mode operation.

**Acknowledgments:**

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