

PRELIMINARY

# PCI-FP Card

**Technical Reference Manual**

**Copyright 2000  
Computer Dynamics, Inc.**

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**FCC Testing**

This subassembly is marketed to be sold to equipment manufacturers for incorporation into systems. This equipment is not FCC tested. FCC testing is the responsibility of the final equipment manufacturer.

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# 1. INTRODUCTION

The PCIFP card from Computer Dynamics is a full-featured video graphics accelerator card specifically optimized for flat panel displays. It provides both TTL and LVDS interfaces, which will allow flat panel (LCD) displays to be located up to 30 feet from the computer. Up to three individual LCD displays and a CRT display may be driven simultaneously. In addition to normal computer graphics display functions it provides a COM port pass through and, as an option, NTSC/PAL video input and output functions. The COM port allows RS-232 functions, such as a touch screen or remote keyboard located at the display, to use the video cable for data transmission. The data can then be passed on to the computer COM port.

The PCIFP card is equipped with 4 Mbytes of memory, which allows full, 24 bit color presentation on displays up to 1280 x 1024 pixels. Both active and passive LCD panels are supported. The user's specific type and size panel is easily selected by means of jumpers on the card.

## 1.1. Feature Description

- \* Standard 6-ft remote capability via a SCSI-2 type connector for driving flat panel display.
- \* Optional cable lengths and connectors are available upon request.
- \* LCD display controller with Super VGA video.
- \* Simultaneous CRT and flat panel display. (Not available for all Panel/CRT combinations)
- \* One PC-compatible Pass-Through serial port allows one RS-232 device to use the video cable for data transmission.

## 1.2. Specifications

Compatibility	100% IBM hardware BIOS/software compatible
Video/Display	VGA compatible with analog video output (option). LCD or EL displays installed. Software initialization drivers included.
Serial I/O	One Pass-Through RS-232 serial port. Internal (header) and External (DB-9 and SCSI) connectors provided. Each RS-232 port (input and output) has a 16-byte FIFO on both transmit & receive. Max baud rate is 115.2Kbaud.
Power Requirements	+5 Vdc - 0.50 Amp +12 Vdc - 0.20 Amp -12 Vdc - 0.20 Amp

## 1.3. Display Information

Flat panel displays, unlike CRT displays, are not standardized and vary widely in their operating characteristics. Unlike a CRT monitor, it is not possible for your computer to interrogate the display to establish the identity of the flat panel display. As a result it is not possible to provide a fully automatic video display driver for these devices. Each panel therefore requires a specific setup of the PCIFP card to match the individual panel characteristics and the card must be re-configured if the panel type is changed.

### 1.3.1. CRT Dual Mode Operation

The PCIFP Card provides the capability to simultaneously operate both a LCD and CRT display. Normally there is no difference between this mode and the LCD only mode. Some panel configurations, however, will show degeneration in the CRT quality due to lowered and possibly non-standard frame rates. It may also be necessary to use a multi-sync monitor for viewing.

The CRT, when connected, is automatically detected at power on and the BIOS timing parameters are adjusted for a simultaneous LCD and CRT presentation. If you have problems with either the LCD or CRT display modes, your Application Engineer can provide software, which can override the BIOS and place the display in LCD only, CRT only, or simultaneous mode.

### 1.3.2. Display Flicker

Flicker on a CRT display is a result of slow frame rates. If this is a major problem with your system, it may be possible to customize a BIOS which will eliminate it.

“Flicker” on a LCD display does not normally exist. Rarely, a beat between the backlight frequency and the scan frequency of the panel can develop. This usually appears as moving or static, light and dark bands across the display. This phenomenon is primarily observed in hi-bright displays and, while not easily cured, your Applications Engineer may be able to provide settings to reduce the problem.

### 1.3.3. Stretching

LCD panels have a specific pixel value configuration which can not be changed. When a 800x600 pixel panel is placed in a 640x480 mode the picture is not stretched to fill the screen as with a CRT. Instead a smaller image is placed on the screen. For many users this presents a problem, when bit-mapped graphics developed for a 640x480 application, are shown on a larger screen. This problem may also be present in some Text modes.

While the PCIFP Card has the capability to stretch both text and graphic images to fill the LCD screen, the image may not always be acceptable to the user. To do this the controller must interpolate and create additional pixels required to completely fill the display. When interpolating from 640 to 800 pixels/line, the controller must “create” an additional 160 pixels/line. One method of accomplishing this is by periodically duplicating a vertical line. This works fine when going from 640 to 1280 pixels/line where every pixel could be duplicated. When stretching to a non-integer value such as 800 to 1024, however, only a fraction of the pixels are duplicated and the results may be unsatisfactory to the user.

If your application requires stretching, your Applications Engineer can provide test programs which will allow you to evaluate the potential of Text only, Graphics only, or Text & Graphics stretching. If the evaluation is satisfactory he can then provide permanent stretching in the BIOS or as TSR software program which may be installed at any time.

## 2. INSTALLATION PROCEDURES

Your product was packed at the factory for maximum protection during shipment. If any shipping damage is noted upon receipt, report it to your shipper. When unpacking, the following items should be included:

PCIFP Card  
Flat-Panel Display (with optional touchscreen, if ordered)  
QuickInstall Instructions  
Technical Reference Manual (this document, if ordered)  
Video and Touchscreen Driver Disks

### 2.1. Pre-Installation Checklist

- Make sure you have the latest video drivers.
- Make sure you have the proper cables needed to complete the installation.
- Make sure you have an available PCI slot in your computer.
- Make sure you have a 3.5" Floppy Disk Drive installed in the computer (can be temporary)

**Refer to Figure 3-12 Connector Locations, to aid in proper cable installation.**

### 2.2. Card Installation

1. Turn off power to your computer.
2. Open computer enclosure.
3. Attach any optional internal cabling to the PCIFP Card per the requirements of your application.
4. Carefully align the PCIFP Card connector with the PCI Slot in your computer, then press firmly into place.
5. Secure the PCIFP Card to the computer card cage with a mounting screw.
6. Connect the Flat Panel Display to the connector on the rear of the PCIFP Card.
7. You may now re-attach the computer enclosure.
8. Check all connections, then power on the computer power supply.

## 2.3. Video Setup

Note:

The following sections are based on prompts in Windows NT™ version 4.0. Other popular operating systems are similar.

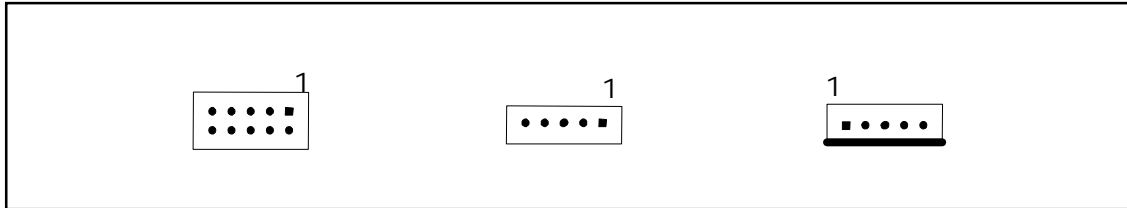
### 2.3.1. Video Driver

1. At Windows Desktop select: START | SETTINGS | CONTROL PANEL | DISPLAY
2. On Display Properties screen, select SETTINGS tab | DISPLAY TYPE
3. In Adapter Type dialog, click on CHANGE
4. On Change Display screen, click 'HAVE DISK'
5. Insert the 'Windows Video Install Disk' into Drive A:
6. In the 'Install From Disk' screen, enter "A:\video" to install from, then select OK
7. Select 'Chips Video Accelerator 65555', OK and YES on the Third Party Driver screen.
8. On 'Drivers were successfully installed' screen, select OK | CLOSE | CLOSE
9. Remove the Install Disk from Drive A:
10. Restart the Computer.
11. A screen will appear stating 'Default display resolution used', select OK
12. Go to display properties again, START | SETTINGS | CONTROL PANEL | DISPLAY
13. Select desired display settings on the 'Settings' tab, then select TEST
14. On 'The new mode will be tested' select OK
15. On 'Did you see the bitmap properly?' select OK if screen was readable.
16. Select APPLY on the Display Properties screen.

### 3. HARDWARE CONFIGURATION

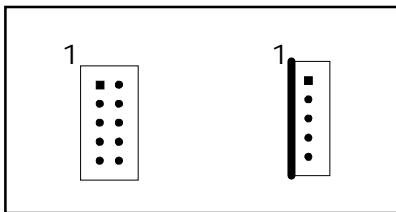
Before using your PCIFP™ Card you will want to attach your Flat Panel Display and RS-232 devices. The following drawings show the location of the option strapping fields and connector locations for the RS-232 port, video connectors and optional power connector for the board.

Unless otherwise specified, horizontal double row connectors have pin 1 in the top right corner or to the right of the strapping field. Horizontal single row connectors have pin 1 to the left. All single row connectors are locking type.. Pin 1 always has a square pad. All other pins have round pads.



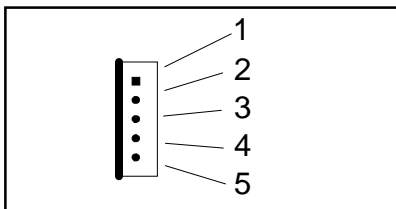
**Figure 3-1 Horizontal Connectors and Strapping Fields.**

Also if the connector is vertical, pin 1 is in the top left corner.



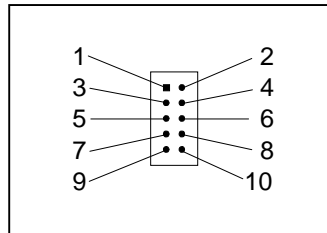
**Figure 3-2. Vertical Connectors and Strapping Fields.**

Single row connectors are numbered sequentially from top to bottom or one end to the other.

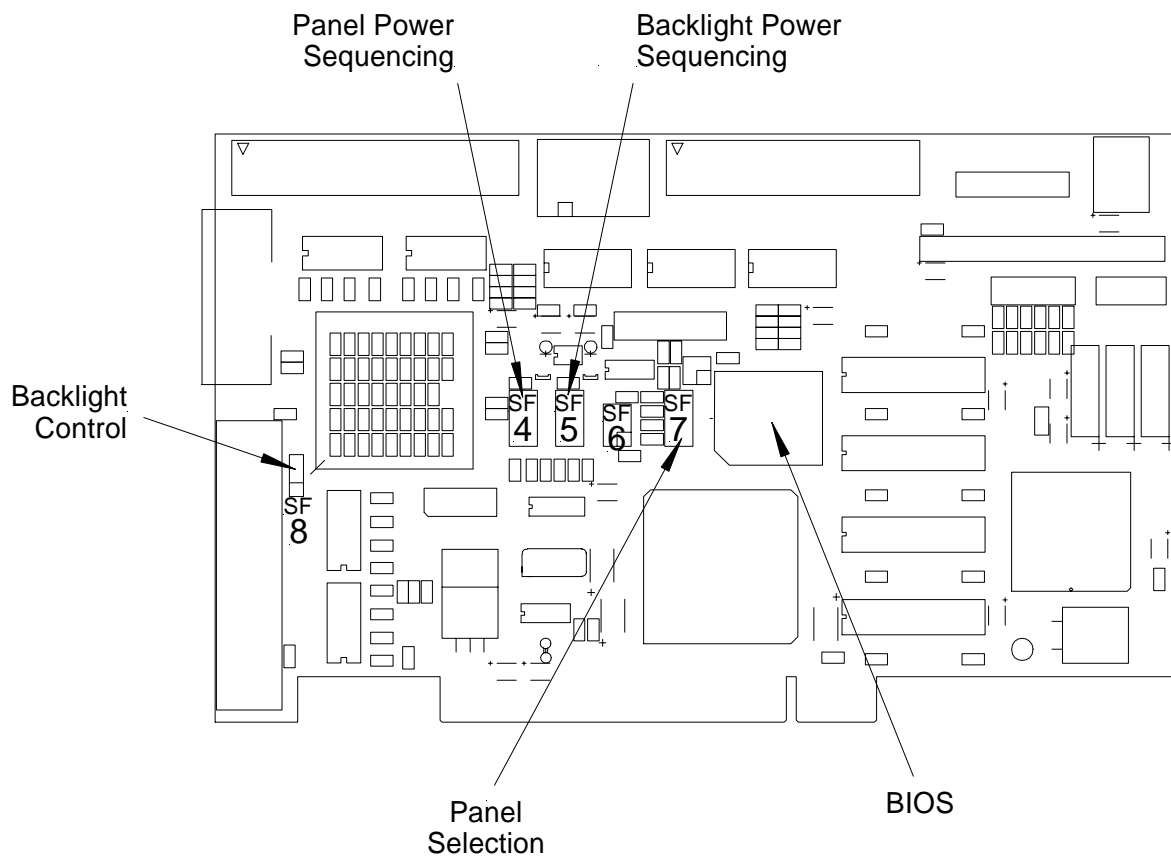


**Figure 3-3. Single Row Connector and Strapping Field Pin Numbers.**

Double row connectors are numbered with all even numbers on one side of the connector and all odd numbers on the other side.



**Figure 3-4. Double Row Connector and Strapping Field Pin Numbers.**



**Figure 3-5. Strapping Field Placement**

Programming and option selection jumpers on the PCIFP card are identified on the card and the pictorial as SFx (strapping fields). These are used to select the correct BIOS parameters and voltage levels for specific LCD panels. The user is cautioned that incorrect strapping selection may permanently damage the display.

These strapping fields are factory set for the chips on your board. The settings should not need to be changed and are provided only as an aid to troubleshooting and installation of a replacement PCIFP Card.

### 3.1. Default Configuration

The PCIFP Card is normally configured for the customer's specific application and no further setup is required on the part of the user. If it becomes necessary to change the panel type or any of the display characteristics it is recommended that the user contact an Application Engineer for specific setup parameters. There are eight different panel configurations in the video BIOS, which are available for driving specific panel types. These and the other jumper selectable parameters on the card insure support for a wide range of LCD displays. **The BIOS provides critical timing and data configuration for the panel. The user is cautioned that selection of the wrong BIOS setting or other card jumpers may irreversibly damage the LCD display.**

Where the on-board BIOS does not support a specific LCD display, it is possible to provide a custom BIOS chip or a program which will program the correct parameters for a unique application. Consult your Computer Dynamics Applications Engineer for details.

### 3.2. Video BIOS Identification

When your computer is booted, installed BIOS identification information of the PCIFP card is displayed on the monitor. If you need to contact Computer Dynamics concerning the performance of your system, your Application Engineer will require this information. If the LCD display is totally inoperative, a CRT monitor may be connected to the PCIFP card to obtain this information and aid in trouble analysis. The identification of the BIOS is also printed on the BIOS ROM installed on you card.

### 3.3. LVDS Strobe Select (SF1, SF9)

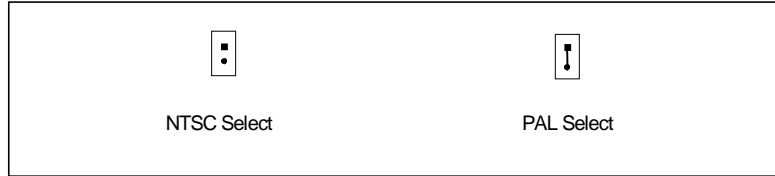
LVDS Strobe Select on the PCIFP™ Card selects between Rising edge or Falling edge to be used for the LVDS clock. SF1 is used to select which is used for the ODD LVDS channel, and SF9 is used to select which is used for the EVEN LVDS channel. The default as the board is shipped, is the correct setting for the flat panel display in your system. DO NOT make changes unless directed by your Computer Dynamics Applications Engineer.



Figure 3-6. LVDS Clock Edge Select

### 3.4. NTSC/PAL Input Select (SF3)

Video Input select on PCIFP™ Card selects between NTSC and PAL inputs for J7. NTSC select is the default as the board is shipped, unless otherwise specified in the order.



**Figure 3-7. Video Input Select**

### 3.5. Panel Power (SF4)

SF4 selects the supply voltage sequencing for the Flat Panel Display installed in this system. These straps will be set to the default value at the factory based on the flat panel configuration ordered.

Some LCD panels, particularly passive displays, are extremely sensitive to conditions where full biasing voltage VEE is applied to the liquid crystal material without enabling the control and data signals to the panel. Not only do they require that the voltages be applied to the panel in a specific sequence, but in many cases at specific time intervals. These strapping fields determine the sequence in which power is applied to and removed from the panel, however, the duration between sequences is set in the BIOS. For both the Panel Power (SF4) and Back Light Power (SF5) the sequence is:

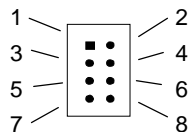
- Position 1 – 2 Always applied
- Position 3 – 4 ENAVEE
- Position 5 – 6 ENAVDD
- Position 7 – 8 ENAVKL

If you purchased your PCIFP card as part of a package including a flat panel display, these strapping fields have been configured for your specific panel.

#### **WARNING: Display Damage**

Improper settings of this jumper may result in damage to your Flat Panel Display

Maintaining an up-to-date chart for video strapping in this manual is not possible due to the constant addition of new flat panel displays supported by the PCIFP product line. If you are experiencing problems with your flat panel, or if you are implementing a panel and require additional information contact your Computer Dynamics Applications Engineer with the flat panel specifics. We will provide you with the appropriate information.



**Figure 3-8. SF4 Pin Definitions**

### 3.6. Backlight Power (SF5)

SF5 selects the supply voltage sequencing for the Backlights installed in this system. These straps will be set to the default value at the factory based on the flat panel configuration ordered.

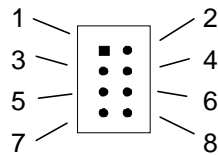
These strapping fields determine the sequence in which power is applied to and removed from the Backlights, however, the duration between sequences is set in the BIOS. For both the Panel Power (SF4) and Back Light Power (SF5) the sequence is:

- Position 1 – 2 Always applied
- Position 3 – 4 ENAVEE
- Position 5 – 6 ENAVDD
- Position 7 – 8 ENAVKL

#### **WARNING: Display Damage**

Improper settings of this jumper may result in damage to your Flat Panel Display

If you are experiencing problems with your flat panel, or if you are implementing a panel and require additional information contact your Computer Dynamics Applications Engineer with the flat panel specifics. We will provide you with the appropriate information.



**Figure 3-9. SF5 Pin Definitions**

### 3.7. VGA Panel Select (SF7)

Strapping field SF7, on PCIFP Card, provides power-on default options for video. These straps will be set to the default value at the factory based on the flat panel configuration ordered.

Note:

Maintaining an up-to-date chart for video strapping in this manual is not possible due to the constant addition of new flat panel displays supported by the PCIFP product line. The straps in SF7 are pre-configured for the flat panel ordered with your PCIFP Card. If you are experiencing problems with your flat panel, or if you are implementing a panel and require additional information contact your Computer Dynamics Applications Engineer with the flat panel specifics. We will provide you with the appropriate information.

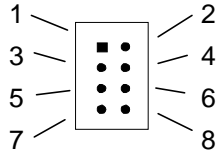


Figure 3-10 Panel Select (SF7)

### 3.8. Backlight Power Select (SF8)

Power voltage for the Backlight is selected with SF8. This strapping field is factory set for the Backlight used with your Flat Panel Display. This setting should not be changed unless directed by your Computer Dynamics Applications Engineer.

#### **WARNING: Display Damage**

Improper settings of this jumper may result in damage to your Flat Panel Display

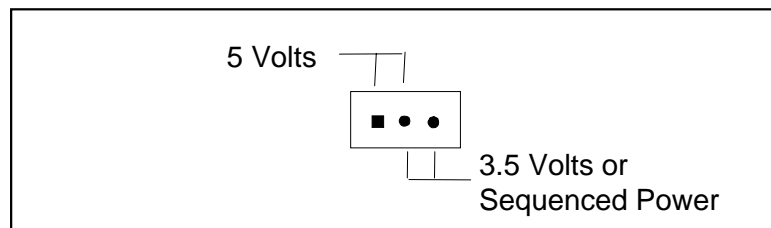
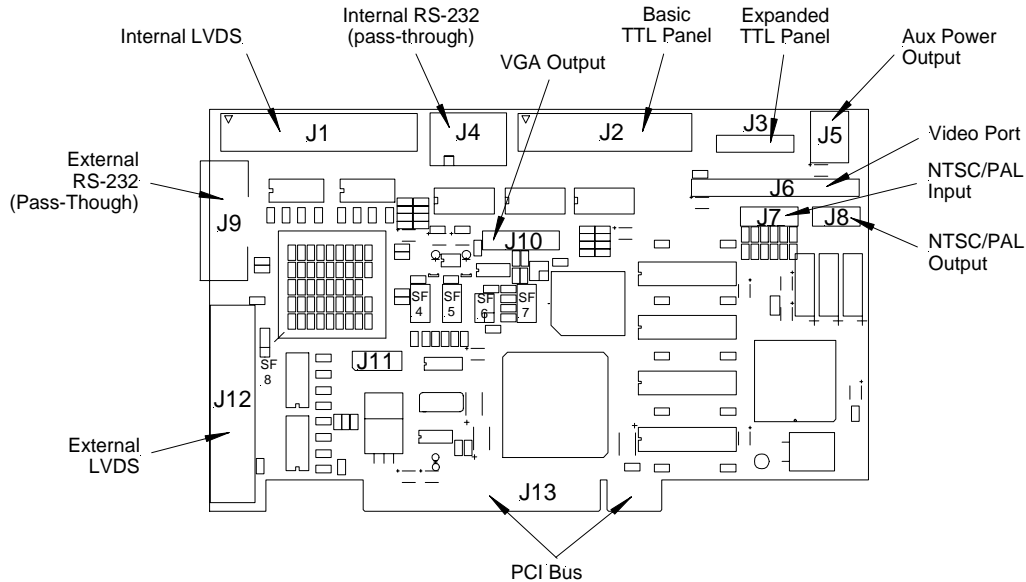


Figure 3-11. SF8 Pin Definitions

### 3.9. Connector Definitions

If configuration and setup are needed before using your PCIFP Card you will want to attach a display and any RS-232 devices. The following drawing shows the location of the RS-232 port, video connectors, and any auxiliary power needed.



**Figure 3-12 Connector Locations**

All connector orientations in this manual are relative to the board orientation as pictured in Figure 3-12 Connector Locations.

Unless otherwise specified, horizontal double row connectors have pin 1 in the top right corner or to the right of the strapping field. Horizontal single row connectors have pin 1 to the left. All single row connectors are locking type. Pin 1 always has a square pad. All other pins have round pads.

**J1 – Internal LVDS** – Provides up to 8 channels (56 bits) of video data in Low Voltage Differential Signaling protocol. Also provides COM data and power for a LCD panel located up to 3 ft from the PCIFP card. The data format is controlled by the BIOS and CPLD, if installed.

**J2 – Basic TTL** – Twenty four bits of digital video data and sync data.

**J3 – Extended TTL** – Additional digital video data which is used to extend the TTL data format to 36 bits of parallel data.

**J4 – Internal RS-232 pass-through** – Used to route data which has been sent on the panel data cable on to the computer COM port.

**J5 – External Power** – Low capability power I/O used primarily for system maintenance and programming. Not recommended for providing power to the LCD display.

**J6 – Video Port** – Zoom video input to the video controller. VESA feature connection.

**J7 – NTSC/PAL Input**

**J8 – BTSC/PAL Output**

**J9 – External RS-232**

**J10 - CRT Monitor** – Analog video data for CRT monitor. Adapter cables part numbers are listed in the Appendix

**J11 – Programming Connection** – Connection for programming CPLD when installed. Factory use only.

**J12 – External LVDS** – A 50-pin SCSI cable, LVDS interface which may be used to drive LCD displays located up to 30" from the computer.

### 3.10. Internal LVDS Interface (J1)

The LCD panel interface is driven by a LVDS, high density, HDB 50 pin connector at J1. This connector also supplies Switched +3.3V or +5V, and Unswitched +12V power supply outputs for panel and/or backlight power supply requirements.

Signal	Level	Pin	Pin	Level	Signal
Ground	Gnd	1	2	Power	Switched Panel Power
Ground	Gnd	3	4	Power	Switched Panel Power
PANEL_ON	Power	5	6	RS-232	RX_DATA
TX_DATA	RS-232	7	8	RS-232	RTS
CTS	RS-232	9	10	RS-232	RSLD
RI	RS-232	11	12	RS-232	DTR
DSR	RS-232	13	14	Gnd	Ground
0 TXOUT0 -	LVDS	15	16	LVDS	0 TXOUT0 +
0 TXOUT1 -	LVDS	17	18	LVDS	0 TXOUT1 +
0 TXOUT2 -	LVDS	19	20	LVDS	0 TXOUT2 +
Ground	Gnd	21	22	Gnd	Ground
0 TXCLKOUT -	LVDS	23	24	LVDS	0 TXCLKOUT +
Ground	Gnd	25	26	Gnd	Ground
0 TXOUT3 -	LVDS	27	28	LVDS	0 TXOUT3 +
Ground	Gnd	29	30	TTL	TXEVEN23
TXEVEN25	TTL	31	32	TTL	TXEVEN24
E TXOUT0 -	LVDS	33	34	LVDS	E TXOUT0 +
E TXOUT1 -	LVDS	35	36	LVDS	E TXOUT1 +
E TXOUT2 -	LVDS	37	38	LVDS	E TXOUT2 +
Ground	Gnd	39	40	Gnd	Ground
E TXCLKOUT -	LVDS	41	42	LVDS	E TXCLKOUT +
Ground	Gnd	43	44	Gnd	Ground
E TXOUT3 -	LVDS	45	46	LVDS	E TXOUT3 +
Ground	Gnd	47	48	Power	+ 12 V
+ 12 V	Power	49	50	Gnd	Ground

**Figure 3-13 Internal LVDS Interface (J1)**

### 3.11. Panel Connector (J2 and J3)

Liquid crystal Flat-panel displays may be connected to the PCIFP Card internally through J2 (2 x 22, 2mm connector) and J3 (2 x 10, 2 mm connector). These connectors provide TTL level signals.

Signal	Pin	Pin	Signal
Backlight Power (switched)	1	2	Backlight Power (switched)
Ground	3	4	Ground
Panel Power (switched)	5	6	Panel Power (switched)
Enable V <sub>EE</sub>	7	8	Ground
P00	9	10	P01
P02	11	12	P03
P04	13	14	P05
P06	15	16	P07
P08	17	18	P09
P10	19	20	P11
P12	21	22	P13
P14	23	24	P15
P16	25	26	P17
P18	27	28	P19
P20	29	30	P21
P22	31	32	P23
Ground	33	34	Ground
Shift Clock	35	36	FLM
M	37	38	LP
Ground	39	40	Enable Backlight
Ground	41	42	/Shift Clock
Panel Power (unswitched)	43	44	Panel Power (unswitched)

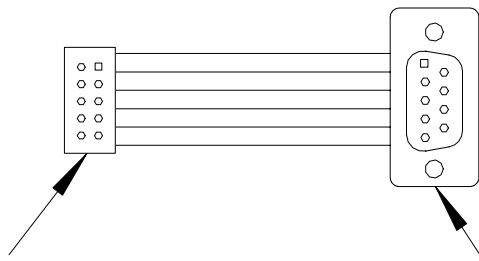
**Figure 3-14. Panel Connections (J2)**

Signal	Pin	Pin	Signal
Ground	1	2	Ground
P24	3	4	P25
P26	5	6	P27
P28	7	8	P29
P30	9	10	P31
P32	11	12	P33
P34	13	14	P35
Ground	15	16	Ground
+5 Volts	17	18	+5 Volts
Reserved (Ground)	19	20	Reserved (Ground)

**Figure 3-15. Extended Flat Panel Connections (J3)**

### 3.12. Serial Port Interface (J4 and J9)

The PCIFP Card has a pass-through serial port that is compatible with the standard PC 9-pin serial connector, as shown in the following figure. The connectors will provide a bi-directional, serial communication path between J4 and J9 for Touchscreen communications. The header table below shows the connections for J4, and the DB-9 table is for J9. When a cable is made per the following figure, a DB-9 connector can be adapted to the on-board header (J4).



Pin	Signal	Direction
1	DCD	In
2	DSR	In
3	Rx Data	In
4	RTS	Out
5	Tx Data	Out
6	CTS	In
7	DTR	Out
8	RI	In
9	GND	--
10	KEY	

Wire 10 Not Connected

Pin	Signal
1	DCD
2	Rx Data
3	Tx Data
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

**Figure 3-16 Serial Connectors**

### 3.13. Auxiliary Power Interface (J5)

The auxiliary power connector, J5 is a straight 4x1 locking header with 0.1" centers. It is used to supply power to other parts of the system. Do not connect input power for the PCIFP Card to this connector. This connector has the same pinout as the DP-POW-DIS™ board. Connections are as shown in the following table:

Aux Power	
1	+12V (OUT)
2	N/C
3	GND
4	+5V (OUT)

Figure 3-17 Auxiliary Power Connections

### 3.14. Video Port (J6)

The 65555 supports the ZV port PCMCIA standard for video input. The ZV port video data is fed directly to the graphics memory to reduce traffic on the PCI Bus.

Signal	Pin	Pin	Signal
+5Vdc	1	2	+5Vdc
Ground	3	4	Ground
VP00	5	6	VP01
VP02	7	8	VP03
VP04	9	10	VP05
VP06	11	12	VP07
VP08	13	14	VP09
VP10	15	16	VP11
VP12	17	18	VP13
VP14	19	20	VP15
/VRDY	21	22	Ground
HREF	23	24	VREF
VCLK2	25	26	DDC_DATA
DDC_CLK	27	28	Ground
Not Connected	29	30	Not Connected
Not Connected	31	32	Not Connected
Not Connected	33	34	Not Connected
Not Connected	35	36	Not Connected
Not Connected	37	38	Not Connected
Not Connected	39	40	Not Connected
Not Connected	41	42	Ground
Not Connected	43	44	Not Connected

Figure 3-18 Video Input Port

### 3.15. NTSC Input (J7)

The PCIFP Card has the capability of accepting NTSC or PAL video input at J7 (2 x 6, 2mm connector). Contact your Computer Dynamics Applications Engineer for ordering of the optional NTSC Daughter Card.

Signal	Pin	Pin	Signal
IN1	1	2	Ground
Chroma	3	4	Ground
AUX-2	5	6	Ground
Luminance	7	8	Ground
AUX-1	9	10	Ground
Composite Video	11	12	Ground

**Figure 3-19 NTSC Input Connections**

### 3.16. NTSC Output (J8)

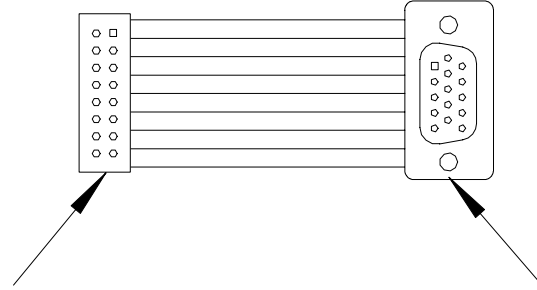
The PCIFP Card has the capability of outputting NTSC video at J8 (2 x 5, 2mm connector).

Signal	Pin	Pin	Signal
Composite Video	1	2	Ground
	3	4	Ground
Luminance	5	6	Ground
Chroma	7	8	Ground
	9	10	Ground

**Figure 3-20 NTSC Output Connections**

### 3.17. VGA Video Interface (J10)

A VGA monitor is connected to PCIFP Card using the VGA adapter cable. This module re-routes the signals from the header connector, J1, to the industry standard 15-pin high density D-type connector as shown in the following figure.



Function	Pin	Pin	Function
Gnd	1	2	N/C
Red	3	4	Gnd
DDC Data	5	6	Green
Gnd	7	8	Hsync
Blue	9	10	+5VDC
Vsync	11	12	N/C
Gnd	13	14	DDC Clk
Gnd	15	16	Gnd

Pin	Function	Pin	Function	Pin	Function
1	Red	6	Gnd	11	N/C
2	Green	7	Gnd	12	DDC Data
3	Blue	8	Gnd	13	Hsync
4	N/C	9	+5VDC	14	Vsync
5	Gnd	10	Gnd	15	DDC Clk

Figure 3-21. VGA Interface

### 3.18. SCSI LVDS Output (J12)

The PCIFP Card has the ability to output LVDS video input through J12 (SCSI connector). LVDS provides improved noise immunity for longer cable runs by using differential transmit and receive buffers on each end of the interface. CDI offers various cable interfaces, contact your Computer Dynamics Applications Engineer for availability for specific panels.

Signal	Pin	Pin	Signal
E TXOUT0 -	1	2	E TXOUT0 -
E TXOUT2 -	3	4	E TXOUT3-
E TXCLKOUT -	5	6	TXEVEN23
TXEVEN24	7	8	TXEVEN25
O TXOUT0 -	9	10	O TXOUT1 -
O TXOUT2 -	11	12	O TXOUT3 -
O TXCLKOUT -	13	14	Ground (Pull-down)
Ground	15	16	Ground
RX_DATA	17	18	RTS
RLSD	19	20	DTR
Ground	21	22	+12V
+12V	23	24	+12V
+12V	25	26	E TXOUT0 +
E TXOUT1 +	27	28	E TXOUT2 +
E TXOUT3 +	29	30	E TXCLKOUT +
	31	32	
	33	34	O TXOUT0 +
O TXOUT1 +	35	36	O TXOUT2 +
O TXOUT3 +	37	38	O TXCLKOUT +
	39	40	PANEL ON
PANEL ON	41	42	TX_DATA
CTS	43	44	RI
DSR	45	46	BACKLIGHT CONTROL
Ground	47	48	Ground
Ground	49	50	Ground

**Figure 3-22 SCSI Video Interface**

### 3.19. PCI Connector (J13)

The PCIFP Card computer interface is driven by a PCI Bus, high-density board edge connector at J13. This connector also supplies Unswitched +5V, +3.3V and +12V power supply inputs for panel and backlight power supply requirements.

Signal	Pin	Pin	Signal
/TRST	A1	B1	-12 Volts
+12 Volts	A2	B2	TCK
TMS	A3	B3	Ground
TDI	A4	B4	No Connection
+5 Volts	A5	B5	+5 Volts
/IRQA	A6	B6	+5 Volts
/IRQC	A7	B7	/IRQB
+5 Volts	A8	B8	/IRQD
No Connection	A9	B9	/PRSNT11
+5 Volts	A10	B10	No Connection
No Connection	A11	B11	/PRSNT12
Ground	A12	B12	Ground
Ground	A13	B13	Ground
No Connection	A14	B14	No Connection
/RESET	A15	B15	Ground
+5 Volts	A16	B16	CLK
/GNT	A17	B17	Ground
Ground	A18	B18	/REQ
/PME	A19	B19	+5 Volts
ADDR/DATA 30	A20	B20	ADDRESS 31
+3.3 Volts	A21	B21	ADDRESS 29
ADDR/DATA 28	A22	B22	Ground
ADDR/DATA 26	A23	B23	ADDRESS 27
Ground	A24	B24	ADDRESS 25
ADDR/DATA 24	A25	B25	+3.3 Volts
IDSEL	A26	B26	/CBE3
+3.3 Volts	A27	B27	ADDRESS 23
ADDR/DATA 22	A28	B28	Ground
ADDR/DATA 20	A29	B29	ADDRESS 21
Ground	A30	B30	ADDRESS 19
ADDR/DATA 18	A31	B31	+3.3 Volts

Signal	Pin	Pin	Signal
ADDR/DATA 16	A32	B32	ADDR/DATA 17
+3.3 Volts	A33	B33	/CBE2
/FRAME	A34	B34	Ground
Ground	A35	B35	/IRDY
/TRDY	A36	B36	+3.3 Volts
Ground	A37	B37	/DEVSEL
/STOP	A38	B38	Ground
+3.3 Volts	A39	B39	/LOCK
SDONE	A40	B40	/PERR
/SBO	A41	B41	+3.3 Volts
Ground	A42	B42	/SERR
PAR	A43	B43	+3.3 Volts
ADDR/DATA 15	A44	B44	/CBE1
+3.3 Volts	A45	B45	ADDR/DATA 14
ADDR/DATA 13	A46	B46	Ground
ADDR/DATA 11	A47	B47	ADDR/DATA 12
Ground	A48	B48	ADDR/DATA 10
ADDR/DATA 09	A49	B49	Ground
Key	A50	B50	Key
Key	A51	B51	Key
/CBE0	A52	B52	ADDR/DATA 08
+3.3 Volts	A53	B53	ADDR/DATA 07
ADDR/DATA 06	A54	B54	+3.3 Volts
ADDR/DATA 04	A55	B55	ADDR/DATA 05
Ground	A56	B56	ADDR/DATA 03
ADDR/DATA 02	A57	B57	Ground
ADDR/DATA 00	A58	B58	ADDR/DATA 01
+5 Volts	A59	B59	+5 Volts
/ACK64	A60	B60	/REQ64
+5 Volts	A61	B61	+5 Volts
+5 Volts	A62	B62	+5 Volts

Figure 3-23 PCI Bus Interface (J13)

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## **4. Troubleshooting Guide**

### **4.1. Major System Failures**

#### **4.1.1. No Response on Power-up**

1. Check Fuses on Computer Power Supply

*Make sure Power is OFF*, remove Fuse from holder and check for continuity between contacts.

2. Check Supply Power

*Make sure Power is OFF*, remove computer cover from over the PCIFP Card. Restore Power and check for input power on the PCIFP Card, on J5-3 (ground) to J5-4 (+ 5 V). Input Voltage must be between + 4.75 VDC and + 5.25 VDC. Also check from J5-3 (ground) to J5-1 (+ 12 V). Input Voltage must be between + 11.5 VDC and + 12.5 VDC.

3. Make sure PCIFP Card is securely seated in the PCI Card slot.
4. If any external cabling is installed, check all cable connections are secure.
5. Remove PCIFP Card from the computer, and check for computer boot-up.
6. Substitute PCIFP Card.

#### **4.1.2. No Display with Backlight lit**

1. Check cabling to J12, SCSI LVDS output to display panel.
2. With POWER OFF, remove computer enclosure cover and substitute the PCIFP Card.
3. Remove PCIFP Card from the computer, and check for computer boot-up.

### **4.2. Touch Panel (Optional)**

#### **4.2.1. No response from Touch Panel**

1. Check Touch Panel RS-232 cabling
2. Make sure SCSI LVDS connector is securely seated in J12 of the PCIFP Card.
3. Check the connector and cable to J4 (if used).
4. Run TouchTst software and recalibrate the touch panel.
5. Substitute the PCIFP Card.

#### **4.2.2. Missed Touches**

1. Run TouchTst software and recalibrate the touch panel.

#### **4.2.3. Improper placement of Cursor upon Touch**

1. Run TouchTst software and recalibrate the touch panel.

### **4.3. Flat Panel Display**

#### **4.3.1. Visual Noise in Display**

1. Make sure that all of the latest drivers have been installed in your computer.
2. Make sure that the proper Resolution and Refresh Rates have been selected for the Flat Panel Display installed.
3. Check SCSI display cable is securely connected at both ends and has not been damaged along its length
4. Make sure both ends of the cable are securely seated in their sockets on the LVDS Term Board, FPINC Board and that this board is secured to the display panel.
5. Substitute LVDS Term board.
6. Substitute FPINC board.
7. Substitute PCIFP Card.

#### **4.3.2. Multiple Display Images**

1. Make sure that all of the latest drivers have been installed in your computer.
2. Make sure that the proper Resolution and Refresh Rates have been selected.
3. Check SCSI display cable is securely connected at both ends and has not been damaged along its length.
4. Make sure both ends of the cable are securely seated in their sockets on the LVDS Term Board, FPINC Board and that this board is secured to the display panel.
5. Substitute LVDS Term board.
6. Substitute FPINC board.
7. Substitute PCIFP Card.

## 4.4. HighBrite Backlights

### 4.4.1. No Backlight

1. Check SCSI display cable is securely connected at both ends and has not been damaged along its length.

#### **CAUTION:**

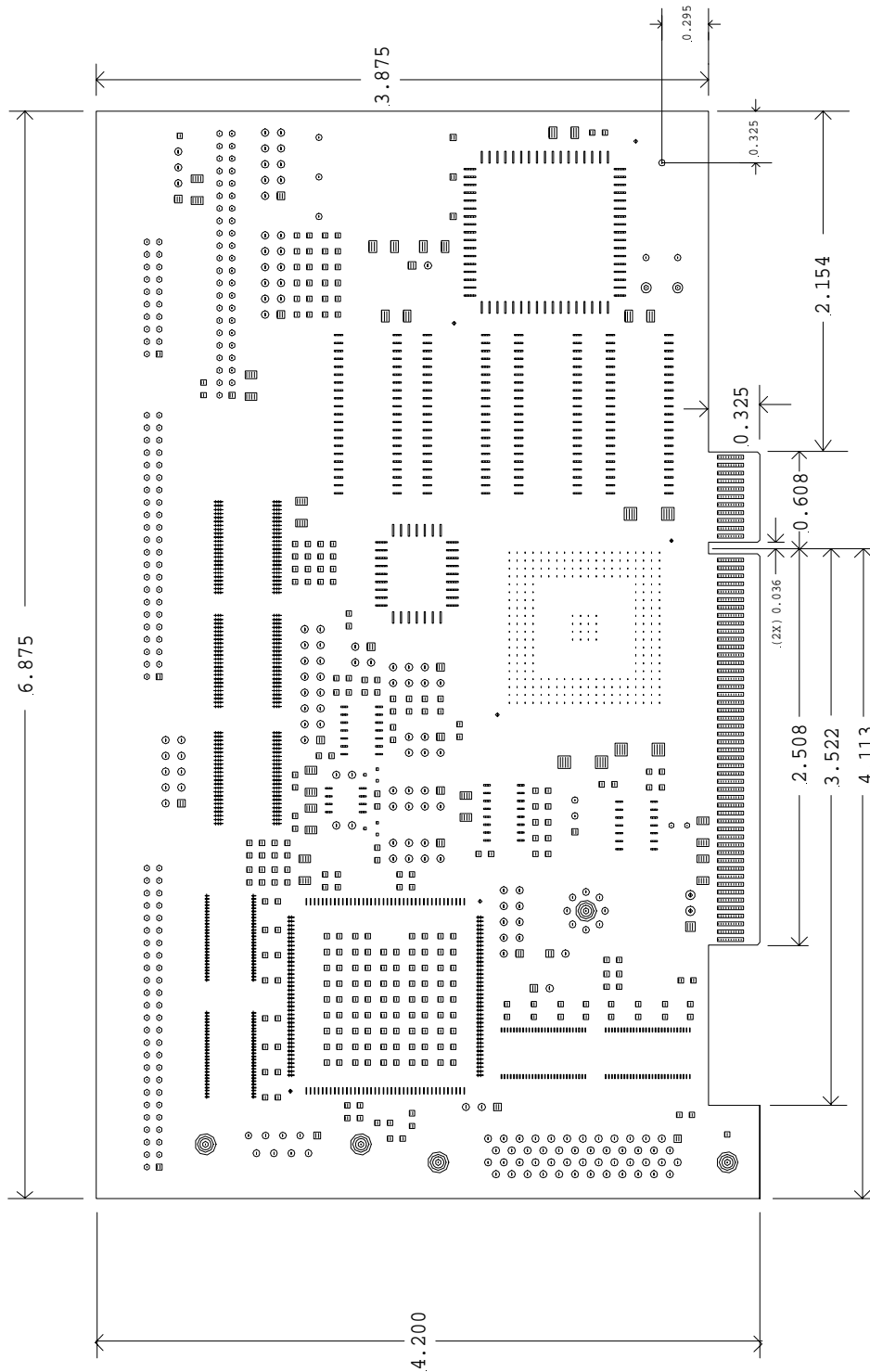
High Voltages appear throughout the Backlight and Inverter circuits.

2. *Make sure Power is OFF*, Check HB Inverter cabling. (CAUTION: HIGH VOLTAGE)
3. Make sure connector is securely seated in socket (J3) on the Hi-Brite Inverter Board. Make sure backlight connector is securely seated (J10).
4. Check for power to the HB Inverter board (CAUTION: HIGH VOLTAGE is present on this board), +12 Vdc (J3-1) between +11.50 and +12.50 Vdc to GND (J3-3).  
-12 Vdc (J3-2) between -11.50 and -12.50 Vdc to GND (J3-3).
5. *Make sure Power is OFF*, Substitute HB Inverter Board (CAUTION: HIGH VOLTAGE)
6. Substitute LVDS Term board.
7. Substitute the PCIFP Card.

### 4.4.2. Dim Backlight

1. Check SCSI display cable is securely connected at both ends and has not been damaged along its length.
2. *Make sure Power is OFF*. Check HB Inverter cabling (CAUTION: HIGH VOLTAGE)
3. Check that power to the HB Inverter board is within tolerance.  
+12 Vdc (J3-1) between +11.50 and +12.50 Vdc to GND (J3-3).  
-12 Vdc (J3-2) between -11.50 and -12.50 Vdc to GND (J3-3).
4. Substitute HB Inverter Board (CAUTION: HIGH VOLTAGE)
5. Substitute LVDS Term Board.
6. Substitute PCIFP Card.

# Appendix A - MECHANICAL OUTLINE





COMPUTER DYNAMICS INCORPORATED  
7640 Pelham Rd., Greenville, SC 29615  
Phone: (864) 627-8800

WARRANTY

CDI products are warranted for a period of one year from the date of purchase against all defects in materials and workmanship provided they are properly used and not modified by non-CDI personnel. Subassemblies and items not manufactured by CDI (power supplies, disk drives, etc.) are warranted for the period established by their original manufacturer. CDI will repair or replace the product, provided that it is returned promptly to CDI at the owner's expense. Prior to returning a component or subsystem, the purchaser must obtain a Return Material Authorization number (RMA#) from CDI. All board level products are shipped in an anti-static bag to prevent damage to the electronic components due to electrostatic discharge. Failure to use the bag in shipment will VOID the warranty. No other warranty is expressed or implied.

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To Our Customers:

It is our intention to provide you with accurate and useful information about our product. Although the information is correct to the best of our knowledge, we cannot assume responsibility for inaccuracies within the manual.

We request that you inform us of any errors found, areas difficult to understand or suggestions to improve this manual. Please fill out the bottom portion (using additional sheets if necessary) with your comments and return it to CDI.

Thank you.

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Company: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Product Type: \_\_\_\_\_

Computer Dynamics, Inc.  
7640 Pelham Rd.  
Greenville, S.C. 29615  
Phone: (864) 627-8800

Card Serial No. \_\_\_\_\_

COMMENTS: