



***INDUSTRIAL COMPUTER SOURCE***<sup>®</sup>

# **Model PC104FPC Product Manual**

**MANUAL NUMBER : 42448-005-1A**



***INDUSTRIAL COMPUTER SOURCE***<sup>®</sup>

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## FORWARD

This product manual provides information to install, operate and or program the referenced product(s) manufactured or distributed by Industrial Computer Source. The following pages contain information regarding the warranty and repair policies.

Technical assistance is available at: **1-800-480-0044**.

**Manual Errors, Omissions and Bugs:** A "Bug Sheet" is included as the last page of this manual. Please use the "Bug Sheet" if you experience any problems with the manual that requires correction.

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To reduce risk of damage, returns of product must be in an Industrial Computer Source shipping container. If the original container has been lost or damaged, new shipping containers may be obtained from Industrial Computer Source Customer Service at a nominal cost.

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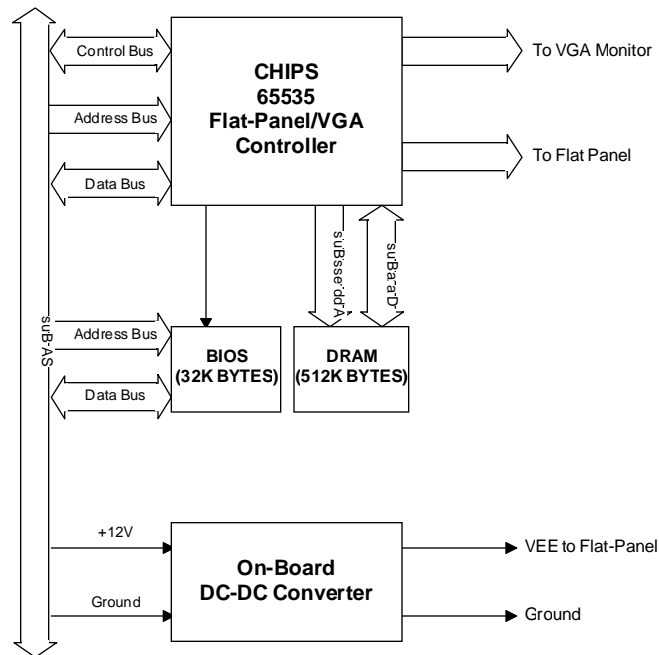


# Chapter 1: Introduction

The PC104FPC Flat Panel/CRT VGA PC/104 Module connects to the 104 pin connector on your CPU card, taking the place of a traditional plug-in VGA or flat panel controller card. It supports a wide range of popular LCD, EL and gas plasma flat panel displays and traditional analog CRT monitors in high resolution display modes, while maintaining complete register, gate, and BIOS compatibility with the IBM VGA. It supports the use of a flat panel and a CRT VGA display at the same time.

Its CHIPS 65535 chip provides a variety of programmable features to optimize display quality: vertical and horizontal compensation, text enhancement, RGB-color-to-gray scale reduction, and a polynomial FRC gray scale algorithm to reduce flicker on fast-response “mouse quick” displays without increasing the panel’s vertical refresh rate.

A general purpose 40 pin connector is provided for the easy installation of the most popular 640 x 480 TFT LCD, mono LCD and EL panels. An on-board DC-DC converter supplies a wide range of  $V_{ee}$  outputs. An on-board variable resistor is provided for panel contrast adjustment which may be extended through lines and controlled from the panel side.



**Figure 1:** System Block Diagram

## Chapter 2: Specifications

- CHIPS 65535 chip
- PC/104 connector for quick installation onto your CPU card
- Socket for additional PC/104 modules
- Built-in 40 pin general purpose connector
- High resolution display:

B/W panel:	800 x 600 with 64 gray level
Color panel:	640 x 480 with 256 colors
CRT:	800 x 600 with 256 colors 1024 x 768 with 16 colors

- 512 KB RAM
- 16-bit data bus
- On-board DC-DC converter supplies LCD bias voltage ( $V_{cc}$ ) from -40 to +40 volts
- On-board variable resistor for panel contrast adjustment (may be extended through wires to display)

### Initial Inspection

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Inside the shipping container you should find, in addition to this manual, the following items

- One PC104FPC Flat Panel/CRT VGA PC/104 Module
- Four diskettes with display drivers and utilities
- Four mounting supports
- Bracket with 15 pin cable connector for VGA CRT

Your PC104FPC was carefully inspected both mechanically and electrically before being shipped. It should be free of marks and scratches and in perfect working order upon receipt.

When unpacking, check the unit for shipping damages (damage box, scratches, dents, ect.). If there is any damage to the unit or if it fails to meet specifications, notify our service department or your local sales representative immediately. Also, call the carrier immediately and retain the shipping carton and packing material for inspection by the carrier. We will then make arrangements to repair or replace the unit.

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## WARNING

Discharge your body's static electric charge by touching the back of the grounded chassis of the system unit (metal) before handling the board. You should avoid contact with materials which hold a static charge, such as plastic, vinyl, and styrofoam. The board should be handled only by its edges to avoid static damage to its integrated circuits. Avoid touching the exposed circuit connectors.

---

### Video BIOS

The PC104FPC's hardware supports a wide variety of flat panel and analog CRT displays. However, special software routines and parameters are needed in order to interface correctly with any given display. These routines are stored on the PC104FPC in a 64 KB ROM BIOS chip. The high performance CHIPS 65535 VGA BIOS used with the PC104FPC is optimized for use with the 65535 VGA Flat Panel/CRT controller chip.

### Display Support

The 65535 VGA BIOS supports monochrome LCD, EL, Plasma, 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 mode, while maintaining complete IBM VGA compatibility. Digital monitors (i.e. MDA, CGA, and EGA) are not supported. Multiple frequency (multisync) monitors are supported as analog monitors. Both CRT and panel displays can be used simultaneously.

# Chapter 3: Configuration

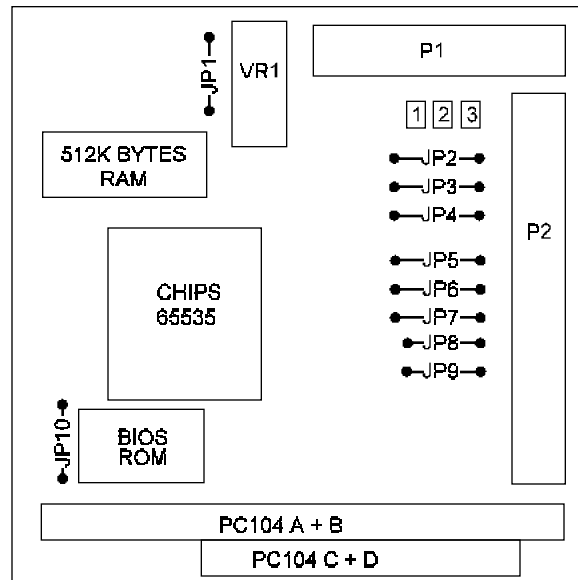
The PC104FPC supports a wide variety of flat panel and VGA displays, but configuration is actually quite simple, as most of the work is done by the BIOS. This section describes the hardware settings necessary to get your display up and running and access some of the PC104FPC's special features.

## Quick Reference Jumper Setting

For safe operation, check the user manual's detailed descriptions before installing the panel.

### Jumper settings

- JP1: External VR connector for panel contrast adjustment.
- JP2: Direct Vcc output to panel or controlled by 65535
  - 1-2: The LCD VDD output is controlled by the 65535's /ENVDD signal
  - 2-3: The LCD VDD output is direct output from on-board Vcc (+5V)
- JP3: LCD's  $V_{ee}$  power source select
  - 1-2: +LCD  $V_{EE}$  (positive Vee voltage)
  - 2-3: -LCD  $V_{EE}$  (negative Vee voltage)



PCM-3520 Component layout

**Figure 2:** PC104FPC Component layout

- JP10: ROM BIOS upper/lower 32K bytes select  
 OPEN: Toshiba LTM-09C015-1  
 CLOSE: Sharp LM64P83
- JP4: Panel OFF Control  
 1-2: -ENVEE  
 2-3: +ENVEE
- JP5: Panel control signal output setting  
 1-2: M/DE signal output (65535's pin 55)  
 2-3: LP signal output (65535's pin 54)
- JP6: Panel clock (SHFCLK) polarity select  
 1-2: -SHFCLK  
 2-3: +SHFCLK
- JP7: ENABKL control signal selection  
 1-2: ENABKL (65535's pin 76)  
 2-3: ENAVEE (65535's pin 47)

#### Function summary of JP3, JP8, JP9

JP3	JP8	JP9	Description
1-2	short	short	Onboard DC-DC positive power
2-3	short	short	Onboard DC-DC negative power
1-2	open	short	External positive power input from JP8 Pin2
2-3	short	open	External negative power input from JP9 Pin2

#### Connectors

- P1: VGA Connector  
 P2: General Flat Panel Connector

#### Adjustment

- VR1: LCD  $V_{ee}$  Adj.

## Chapter 4: Installation

After all of the jumpers have been set, you can install the PC104FPC on your CPU card. If this is the first time you are installing your CPU card, check its jumpers as well before installing the PC104FPC, as they may later be inaccessible. Next, carefully slide the pins on the PC104FPC into the PC/104 connector on the card. Fasten the PC104FPC to the CPU card using the included screw.

### Adjusting $V_{ee}$ Output

It may be necessary for you to adjust the  $V_{ee}$  output for our LCD panel. First, power up the system and connect a voltmeter to pin 1 LCD Vee and pin 39/40 (GND) of P2. Adjust variable resistor VR1 with a screwdriver until the Vee is correct for your display.

### Connectors

Next, connect the panel cable to the proper connector on the PC104FPC for your display. Continue installing your CPU card according to its manual, then power-up your system. If you have problems, see section Troubleshooting.

# Chapter 5: Display drivers and Utilities

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

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

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

- High performance in Microsoft Windows
- Resolutions up to 1024 X 768 in graphics modes with 16 colors
- Resolutions up to 640 X 480 in graphics modes with 256 colors
- 132 column text mode

The Windows drivers included in this package have several special features.

- Pen Windows Extensions
- Panning Drivers
- Linear Acceleration Drivers

## Hardware Configuration

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

1. Change the display controller to CRT-only mode, rather than flat panel or simultaneous display mode. Some high-resolution drivers will display correctly only in CRT mode.
2. If a high-resolution mode is not supported on your system, try using a lower-resolution mode. For example, 1024 x 768 mode will not work on some systems, but 800 x 600 mode is supported on most.
3. The 65510 Flat Panel VGA Controller support only those drivers that can display on a 640 x 480 panel. See the following section on Driver Resolutions and Filenames for a list of the drivers that can be used on the 65510.
4. The 65535 and 65540 Flat Panel VGA Controllers support additional drivers that functions with the F65535 and F65540 only. See the following section on Driver Resolutions and Filenames for a list of these drivers.

These software drivers support the following software applications in the filename and resolutions listed:

Application	Filename	Resolution	Colors	Notes	
Windows 3.1	LINEAR4.DRV	640x480	16	510	
		800x600	16		
		1024x768	16		
		1280x1024	16		
	LINEAR8.DRV	640x480	256	510	
			800x600	256	535/540
			1024x768	256	
	LINEAR15.DRV	640x480	32K	535/540	
	LINEAR16.DRV	640x480	64K	535/540	
	LINEAR24.DRV	640x480	16M	540	
	W3LM600P.DRV	800x600	16		
	W3LM768P.DRV	1024x768	16		
	W3LM480.DRV	640x480	256	510	
	W3LM600P.DRV	800x600	256		
	R12.DRV	480x640	16	510	
OS/2 Version 2.1	SV480256.DLL	640x480	256		
	PD600256.DLL	800x600	256		
	PD768256.DLL	1024x768	256		
AutoCAD	DLDVGA.EXE	640x480	16	510	
		800x600	16		
		1024x768	16		
		640x480	256		
Lotus 1-2-3	V132X25.DRV	132x25(text)	16		
	V132X50.DRV	132x50(text)	16		
Word 5.0	VGA600.VID	800x600	16		
	VGA768.VID	1024x768	16		
Word 5.5	VGA55600.VID	800x600	16		
	VGA55768.VID	1024x768	16		
WordPerfect 5.0	CHIPS600.WPD	800x600	16		
	CHIPS768.WPD	1024x768	16		
WordPerfect 5.1	VGA600.VRS	800x600	16		
	VGA768.VRS	1024x768	16		



# Windows

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These drivers are designed to work with Microsoft Windows Version 3.1 and Pen Windows Version 3.1.

## Driver Installation

1. Install Windows as you normally would for a VGA display. Run Windows to make sure that it is working correctly. Then exit from Windows.
2. Place the Display Driver Diskette #1 in driver 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, 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.
3. Change to the directory where you installed Windows (usually C:\WINDOWS).
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>.
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 from DOS

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

VGA:	640 x 480, 16 colors
Super VGA:	800 x 600, 16 colors

## Changing Display Drivers from Windows

To change display drivers from 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 to select. 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. You can correct this by choosing the same color scheme or a new color scheme. First 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.

## **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 horizontal 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 mode. This driver may require special hardware and may not be supported on all systems. This driver is only available for Windows 3.1. One feature that is quoted is Quick-Time-Aware.

## **OS/2**

These drivers are designed to function with the OS/2.21 operating system.

## **Driver Installation**

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### **NOTE:**

Always use the INSTALL.COM for the FIRST installation of the video device drivers. To change video resolutions, use the DSPINSTL program.

---

- 1: Install OS/2 as you normally would for a VGA display. Open an OS/2 full screen or window session.
- 2: Place the Display Driver Diskette #3 in drive A. Type A:<ENTER> to make this the default drive. Then type INSTALL A:C<ENTER>. Once the drivers are installed, the DSPINSTL program is automatically invoked. Follow the instructions of the program to set up the OS/2 drivers in your system. Once the installation is complete, the system must be shut down and restarted for changes to take effect.

## **Driver diskette copy**

---

### **NOTE:**

Diskette copies of the OS/2 drivers must have a VOLUME LABEL that reads 'DISP 1' in order to be an installable diskette.

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To copy the OS/2 Display Driver Diskette #3, follow these instructions:

- 1: Copy all files on the Display Driver Diskette #3 as you normally would onto another diskette.
- 2: Place the diskette copy in drive A. At the C:\prompt, type LABEL A:DISK 1 to properly label your diskette.

Then store your diskette copy in a safe place.

For proper installation of OS/2 drivers, all diskette copies must be properly labeled 'DISK 1'.

## **AutoCAD**

These drivers are designed to work with Autodesk AutoCAD and AutoCAD/386 Release 10 and 11, and corresponding versions of AutoShade. They conform to the Autodesk Device Interface (ADI) for Rendering drivers and Display drivers. These display list drivers accelerate redraw, pan and zoom functions.

### **Driver installation**

- 1: Place Display Driver Diskette #1 into drive A. Make A the default drive by typing A:<ENTER>. Run the SETUP program by typing SETUP <ENTER>. Press any key to display a list of supported applications. Use the arrow keys to select Lotus/Symphony and press <ENTER>. A list of supported screen resolutions will be displayed. Use the arrow keys to select the desired screen resolution and press <ENTER> (make sure your monitor is able to display the resolution desired). Press <END> to begin the driver installation process. A default drive and directory path will be displayed. Use the backspace key to erase this default and type i the 123 directory. At this point you may be prompted to insert one of the other driver diskettes. You also may be asked to create the target directory if it does not already exist. After the files have been installed, press any key to return to the list of supported applications. Press <ESC> followed by Y to exit to DOS. Copy all the files that were just created on the temporary directory onto a formatted floppy diskette.
- 2: Go to your 123 directory and start the installation program. Type the following commands:

```
C:<ENTER> INSTALL <ENTER>
```

- 3: The Lotus installation program will load and present the installation menu. From this menu, select ADVANCED OPTIONS. From the Advanced options menu, select ADD NEW DRIVERS TO LIBRARY. From the Add New Drivers Menu, select MODIFY CURRENT DRIVER SET. From the Modify Driver Set Menu, select TEXT DISPLAY. From the text display menu, select one of the drivers.
- 4: After the selection of the appropriate VGA display driver, you will need to exit this menu and return to the Main Lotus Installation Menu. Do this by selecting RETURN TO MENU.

### **Configuring AutoCAD**

The first time you use AutoCAD with the ADI driver, you need to configure AutoCAD for ADI display. Select CONFIGURE AUTOCAD from the AutoCAD main menu. After you see the current configuration (if any) select CONFIGURE VIDEO DISPLAY. Select ADI as your new driver (installed at interrupt 7A hex). Save the new configuration and return to the main menu.

## Configuring AutoShade

The first time you use AutoCAD with the ADI driver, you need to configure AutoShade for an ADI display. Before you run the AutoShade program, remove the file SHADE.CFG (use the DOS DELETE command if needed). Then run the AutoShade program. The program will ask for a display and rendering driver. Select ADI for both drivers and indicate that you have a dual display system. When you exit the AutoShade program, a new SHADE.CFG will be created.

## Changing Colors

To change the colors that AutoCAD uses for drawing, background, menus and text, use the utility COLOR 16 (16-color mode) or COLOR256 (256-color mode). When running these utilities, use the ? key at any time to get context-sensitive help messages explaining how to use the program.

For example, to change the background color used by AutoCAD in 16-color mode, run the utility COLOR 16. Press O for object. Use the left and right arrows to move through the different objects (shown at the top of the screen) until Graphics Area Background appears. Press <ENTER> to select this object. The current color will be shown at the bottom of the screen. Use the left and right arrows to move to a new color and press <ENTER> to select this color.

When you are done changing objects, press <ESC> to exit to the main menu. Press S to save these colors in the file DLDCOLOR.DAT. Then press E to exit.

## Lotus 1-2-3 Lotus Symphony

These drivers are designed to work with Lotus 1-2-3 Version 2.0, 2.01 and 2.2, and with Lotus Symphony Version 1.0 and 1.1.

### Driver Installation

1. Place Display Driver Diskette #1 into drive A. Make A the default drive by typing A:<ENTER>. Run the SETUP program by typing SETUP <ENTER>. Press any key to display a list of supported applications. Use the arrow keys to select Lotus/Symphony and press <ENTER>. A list of supported screen resolutions will be displayed. Use the arrow keys to select the desired screen resolution and press <ENTER> (make sure your monitor is able to display the resolution desired). Press <END> to begin the driver installation process. A default drive and directory path will be displayed. Use the backspace key to erase this default and type in the 123 directory. At this point you may be prompted to insert one of the other driver diskettes. You also may be asked to create the target directory if it does not already exist. After the files have been installed, press any key to return to the list of supported applications. Press <ESC> followed by Y to exit to DOS. Copy all the files that were just created on the temporary directory onto a formatted floppy diskette.
2. Go to your 123 directory and start the installation program. Type the following commands:

```
C:<ENTER> INSTALL <ENTER>
```

3. The Lotus installation program will load and present the installation menu. From this menu, select ADVANCED OPTIONS. From the Advanced options menu, select ADD NEW DRIVERS TO LIBRARY. From the Add New Drivers Menu, select MODIFY CURRENT DRIVER SET. From the Modify Driver Set Menu, select TEXT DISPLAY. From the text display menu, select one of drivers.

4. After the selection of the appropriate VGA display driver, you will need to exit the menu and return to the Main Lotus Installation Menu. Do this by selecting RETURN TO MENU.
5. At Main Menu, select SAVE CHANGES.
6. At this point the Installation Menu will prompt you for the name of your new Lotus configuration file. The Lotus system will prompt you with the default value-123 SET. You do not have to use this name, however. You may want to use a filename that indicates the resolution of the driver it contains. For example, if you installed the 132 column by 25 line driver, you could name this driver 132x25 SET. Or if you installed the 80 by 50 driver, you may want to call the file 80 x 50 SET.
- 7: The installation of your Lotus 1-2-3 driver is now complete. You will need to exit the Lotus installation program at this point. At the main Lotus installation Menu, select EXIT.

If you use a different name of the driver set than 123 SET you have to remember to place the filename of your driver set on the command line when you start Lotus 1-2-3. For example, if you named your driver set 132 x 25 SET, give the following command to start Lotus 1-2-3:

132x25.SET <ENTER>

## WordPerfect

These drivers are designed to work with WordPerfect Version 5.0 or 5.1. They support 132-column display in editing mode and high-resolution graphics display in preview mode.

### Driver Installation

1. Place Display Driver Diskette #1 into drive A. Make A the default driver by typing A:<ENTER>. Run the SETUP program by typing SETUP <ENTER>. Press any key to display a list of supported applications. Use the arrow keys to select WordPerfect and press <ENTER>. A list of supported screen resolutions will be displayed. Use the arrow keys to select the desired screen resolution and press <ENTER> (make sure your monitor is able to display the resolution desired). Press <END> to begin the driver installation process. A default drive and directory path will be displayed. Use the backspace key to erase this default and type in the WordPerfect directory. At this point you may be prompted to insert one of the other driver diskettes. You also may be asked to create the target directory if it does not already exist. After the files have been installed, press any key to return to the list of supported applications. Press <ESC> followed by Y to exit to DOS.
2. Start WordPerfect and press <SHIFT> + <F1> to enter the setup menu. Select D for DISPLAY and G for Graphics SCREEN TYPE and then choose the desired Chips VGA resolution.

### Configuring WordPerfect 5.0 for 132 columns

1. Use the SETCOL program to set 132 columns and 25 rows. Type *SETCOL 132, 25* <ENTER>.
2. Start WordPerfect. The program will detect the number of rows and columns automatically. If for some reason WordPerfect is unable to adapt to 132 columns by 25 rows, start WordPerfect by typing: *WP /SS=25, 132* <ENTER>.

### **Configuring WordPerfect 5.1 for 132 columns**

Start WordPerfect and press <SHIFT> + <F1> to enter the setup menu. Select D for DISPLAY and T for TEXT SCREEN TYPE and then select Chips 132 Columns Text.

# Chapter 6: Display Drivers and Utilities

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

## The CHIPSCPL utility program

---

This utility program is designed to work with Microsoft Windows Version 3.1.

### Installing the utility

CHIPSCPL.CPL is a Windows based utility to select resolutions and color depth. It is a Control Panel with its own icon that is automatically installed when installing CHIPS Windows 3.1 linear drivers. The Control Panel icon is in the Main Windows group. To invoke the control panel applet, simply click on the icon. The driver resolution and color depth take effect only after Windows is rebooted with the new driver.

### How to use the utility

#### **SIZE <ALT>+<S>**

Allows you to select the number of colors from the following:

640x480      800x600      1024x768      1280x1024

By selecting the resolution first, it will determine the allowable selections for color depth.

#### **COLOR <ALT>+<0>**

Allows you to select the number of colors from the following:

16(4 bits per pixel), 256(8bpp), 32K(15bpp), 64K(16bpp) or 16M(24bpp).

By selecting the color depth first, it will determine the allowable selections for resolution.

#### **DISPLAY TYPE <ALT>+<D>**

Allows you to select the display type from the following:

CRT only      <ALT>+<C>

LCD (Flat Panel) only      <ALT>+<L>

Both CRT and Flat Panel      <ALT>+<B>

#### **POWER SAVER <ALT>+<D>**

Allows you to save power by turning off either the back light or the panel after an inactive period of time. This feature is available for the 6535 and 6540 only.

#### **FONT <ALT>+<F>**

Allows you to select a larger or smaller font.

**VERSION (ALT)+<V>**

Displays version information about the current driver.

**BIG CURSOR <ALT>+<G>**

Allows you to select a big cursor for better viability of the Flat Panel.

## The SETCOL utility program

---

This utility program is used to provide 132 text columns in popular text-based applications such as WordPerfect. If you do not intend to use 132 column text mode to not install this utility.

### Installing the utility

- 1: Determine where you want to store the program. Locate a directory on your hard disk where you have other utility programs. For your convenience, this directory should be specified in the PATH=statement in your AUTOEXEC.BAT file.
- 2: Place Display Driver Diskette #1 into drive A. Make A the default drive by typing A:<ENTER>. Run the SETUP program by typing SETUP <ENTER>. Press any key to display a list of supported applications. Use the arrow keys to select Utilities and press <ENTER>. A list of utilities will be displayed. Use the arrow keys to select the utilities desired and press <ENTER>. Press <END> to begin the utility installation process. A default drive and directory path will be displayed. Use the backspace key to erase this default and type in the proper directory. At this point you may be prompted to insert one of the other driver diskettes. You also may be asked to create the target directory if it does not already exist. After the files have been installed, press any key to return to the list of supported applications. Press <ESC> followed by Y to exit to DOS.

### How to use the utility

The SETCOL utility program allows you to specify the number of rows and columns on the screen. You indicated these values to the SETCOL program by placing them after the name SETCOL on the command line. The format for the command is:

```
SETCOL COLUMNS. ROWS <ENTER>
```

Valid values for COLUMNS and ROWS are:

```
Columns Rows 80 or 132 or 50
```

If you want to set 132 columns with 25 rows, give the following command:

```
SETCOL 132, 25 <ENTER>
```

To use this program with an application program such as WordStar or WordPerfect, the application may need to be configured for the specific screen size. Please refer to other sections in this manual on how to configure your applications for this.



Certain monitors cannot display 50 character rows on the screen, due to hardware limitations in these monitors. The following table specifies how many rows can be displayed on common monitors:

<b>Monitor</b>	<b>Rows</b>
IBM Monochrome	25
IBM Color Graphics Display	25
IBM Enhanced Graphics Display	25
IBM VAG Display (analog)	25 or 50
Multi-frequency Display	25 or 50

## Chapter 7: Troubleshooting

If you experience a problem after installing the PC104FPC, check the following areas:

- Make sure all electrical cords and cables are properly connected, and that all plugs are firmly seated in their sockets.
- See that the display is properly connected, and that its power is turned on.
- Make sure that the module is correctly attached to your CPU card.
- Make sure that the CPU card is operating correctly.
- Be sure that no other device, such as a Flash/RAM/ROM disk, CPU card, or DA&C card occupies the same I/O address as the PC104FPC. If this is the case, consult the device's manual to set it to an alternative address. The PC104FPC uses I/O addresses from 3B0H to 3DCH, except for addresses 3BCH, 3BDH and 3BEH which are reserved by the systems for its parallel ports.

If this does not solve the problem, check the manual for your flat-panel display.

### Boot Test Audible Signals

---

The 6535 BIOS runs tests on the display system on boot up. If an error is encountered, the problem will be indicated by one long beep, followed by a number of short beeps, as shown below:

<b>Beep Pattern</b>	<b>Error Condition</b>
1 Long, 2 Short	Horizontal retrace failed
1 Long, 3 Short	DAC test failed
1 Long, 4 Short	Monitor sense failed
1 Long, 5 Short	Vertical retrace failed
1 Long, 6 Short	Video memory test failed

# Appendix A: Connector pin assignments

## PC/104 Connector pin assignments

PIN	J1/ROW A	J1/ROW B	J2/ROW C	J2/ROW D
0	-	-	GROUND	GROUND
1	IOCHCHK*	GROUND	SBHE*	MEMCS16*
2	SD7	RESET DRV	LA23	IOCS16*
3	SD6	+5V	LA22	IRQ10
4	SD5	IRQ9	LA21	IRQ11
5	SD4	-5V	LA20	IRQ12
6	SD3	DRQ2	LA19	IRQ15
7	SD2	-12V	LA18	IRQ14
8	SD1	OWS	LA17	DACK0*
9	SD0	+12V	MEMR*	DRQ0
10	IOCHRDY	(KEY)	MEMW*	DACK5*
11	AEN	SMEMW*	SD8	DRQ5
12	SA19	SMEMR*	SD9	DACK6*
13	SA18	IOW*	SD10	DRQ6
14	SA17	IOR*	SD11	DACK7*
15	SA16	DACK3*	SD12	DRQ7
16	SA15	DRQ3	SD13	+5V
17	SA14	DACK1*	SD14	MASTER*
18	SA13	DRQ1	SD15	GROUND
19	SA12	REFRESH*	(KEY)	GROUND
20	SA11	SYSCLK	-	-
21	SA10	IRQ7	-	-
22	SA9	IRQ6	-	-
23	SA8	IRQ5	-	-
24	SA7	IRQ4	-	-
25	SA6	IRQ3	-	-
26	SA5	DACK2*	-	-
27	SA4	TC	-	-
28	SA3	BALE	-	-
29	SA2	+5V	-	-
30	SA1	OSC	-	-
31	SA0	GROUND	-	-
32	GROUND	GROUND	-	-

**P1: Analog CRT VGA monitor pin assignments**

<b>PIN</b>	<b>FUNCTION</b>	<b>PIN</b>	<b>FUNCTION</b>
1	RED	9	Not Used
2	GREEN	10	GROUND
3	BLUE	11	Not Used
4	Not Used	12	Not Used
5	GROUND	13	Horizontal Sync
6	GROUND	14	Vertical Sync
7	GROUND	15	Not Used
8	GROUND	-	-

**P2: LCD Flat Panel Connector pin assignment**

<b>Pin</b>	<b>Description</b>	<b>Pin</b>	<b>Description</b>
1	LCD VEE	2	P7
3	LCD VDD	4	P6
5	GROUND	6	P5
7	LCD VDD	8	P4
9	M/DE	10	P3
11	FLM	12	P2
13	LP	14	P1
15	ASHFCLK	16	P0
17	P11	18	P15
19	P10	20	P14
21	P9	22	P13
23	P8	24	P12
25	PANEL OFF	26	ACT1
27	P17	28	ENABKL
29	DE	30	GROUND
31	+12V	32	+12V
33	Vcc	34	Vcc
35	+VEE	36	+VEE
37	-VEE	38	-VEE
39	GROUND	40	GROUND

### PC104FPC Interface with Toshiba LTM-09C015-1 (640x480 512-Color TFT LCD Panel)

P2 connector Pin	Functional Description	Functional Description Toshiba	Panel Connector Pin
15	ASHFCLK	NCLK	CN1-1
20	P14(R4)	R2	CN1-7
22	P13(R3)	R1	CN1-5
24	P12(R2)	R0	CN1-3
21	P9(G4)	G2	CN1-13
23	P8(G3)	G1	CN1-11
2	P7(G2)	G0	CN1-9
8	P4(B4)	B2	CN2-5
10	P3(B3)	B1	CN2-3
12	P2(B2)	B0	CN2-1
29	BLANK#(DE)	ENAB	CN2-7
33/34	VCC	VCC	CN2-9/CN2/10
30-40	GROUND	GND	CN1-2/CN1-4 CN1-6/CN1-8 CN1-10/CN1-12 CN1-14/CN2-2 CN2-4/CN2-6 CN2-10

### PC104FPC Interface with Sharp LM64P83 (640x480 Monochrome LCD DD Panel)

PIN	FUNCTION	FUNCTION	PIN
15	ASHFCLK	CP2	3
13	LP(HS)	CP1	2
11	FLM(VS)	S1	-
2	P7	DL0	12
4	P6	DL1	13
6	P5	DL2	14
8	P4	DL3	15
10	P3	DU0	8
12	P2	DU1	9
14	P1	DU2	10
16	P0	DU3	11
39/40	GROUND	VSS	6
3/7	VDD(+5V)	VDD/DISP	5/4
/32	+12V	-	-
1	VEE	VEE	7

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## BUG REPORT

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