MIC-3520

VGA/PanelLink LCD module for
CompactPCI ™

Copyright Notice

Acknowledgments

CE Notification

The MIC-3520, developed by Advantech CO., LTD., has passed the CE test for environment specification when shielded cable are used for external wiring. We recommend the use of shielded cables.

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Product warranty

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for one year from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Packing List

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

- One MIC-3520 CompactPCI VGA/PanelLink LCD module
- One utility CD-ROM disc
- One warranty certificate
- This user's manual

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

Technical Support and Sales Assistance

If you have any technical questions about the MIC-3520 or any other Advantech products, please visit our support website at:

- **http://www.advantech.com.tw/support**

For more information about Advantech's products and sales information, please visit:

- **http://www.advantech.com**

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CHAPTER 1

Introduction

1.1 Description

The MIC-3520 uses Intel C&T 69000 chipset as its VGA controller. The VGA controller has an integrated 2 MB SDRAM and can drive CRT displays with resolutions up to 1024 x 768 at 64 K colors. It is completely IBM VGA compatible. The MIC-3520 also supports a LCD display. A PanelLink DFP connector for flat panel display is available on the front panel as well.

1.2 Specifications

- **Controller:** Intel C&T 69000
- **Display memory:** On-chip 2 MB SDRAM
- Complies with PICMG 2.0 R 2.1 CompactPCI Specification
- Complies with PCI Bus Specification R 2.1
- **Display resolution:**
  - 640 x 480 with 256/64 K/16 M color display, 60/75/85 MHz
  - 800 x 600 with 256/64 K/16 M color display, 60/75/85 MHz
  - 1024 x 768 with 256/64 K color display, 60/75/85 MHz
  - 1280 x 1024 with 256 color display, 60 MHz
- One PanelLink DFP connector for flat panel display on the front panel
- Compatible with DFP specification version 1.6
- **Board size:** 160 x 100 mm (6.3"x3.9", 3U), 1-slot (4TE) wide
- **Weight:** 0.2 kg
- **Power consumption:** +5 V @ 1.0 A (max.), and +12 V if Advantech DFP-series panels are used
- **Operating temperature**: 0 ~ 65° C (32 ~ 149° F)
- **Storage temperature**: -20° C ~ 70° C(-4 ~ 165° F)
- **Humidity (operating and storage)**: 5 ~ 95% (non-condensing)
- **Shock**: 20 G (operating); 50 G (storage/transit)
- **Random vibration**: 1.5 Grms

1.3 Safety Precautions

Follow these simple precautions to protect yourself from harm and the products from damage.

1. To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
2. Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.
3. Always ground yourself to remove any static charge before you touch your CPU card. Be particularly careful not to touch the chip connectors. Modern integrated electronic devices, especially CPUs and memory chips, are extremely sensitive to static electric discharges and fields. Keep the card in its antistatic packaging when it is not installed in the PC, and place it on a static dissipative mat when you are working with it. Wear a grounding wrist strap for continuous protection.

CHAPTER 2

Hardware and Drivers Installation

2.1 Initial Inspection

We carefully inspected the MIC-3520 mechanically and electronically before shipping. It should be free of marks and scratches and in perfect working order on receipt.

As users unpack the MIC-3520, check it for signs of shipping damage (damaged box, scratches, dents, etc.). If it is damaged or fails to meet specifications, notify Advantech's service department or the local sales representative immediately. Also notify the carrier that was used to ship the product to user's location from Advantech's factory or distributor. Retain the shipping carton and packing material for inspection by the carrier. Advantech will make arrangements to repair or replace the unit after an inspection.

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 that hold a static charge such as plastic, vinyl and styrofoam. Touch the board only by its edges to avoid static damage to its integrated circuits. Avoid touching the exposed circuit connectors.*

2.2 Board Dimensions

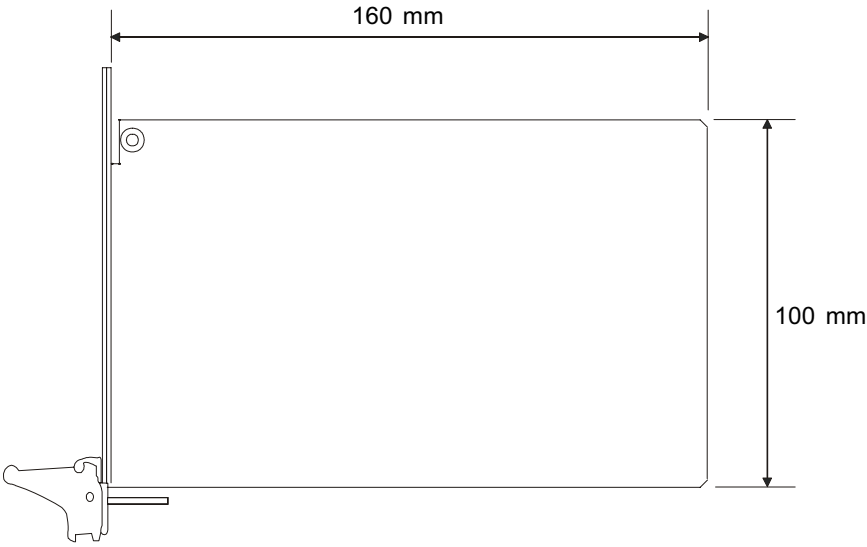


Figure 2-1: MIC-3520 board dimensions

2.3 Jumpers and Connectors

2.3.1 Jumper and Connector Locations

The MIC-3520 provides jumpers for configuring the board for specific applications other than default settings. Please refer to Figure 2-2 for jumper locations. The default jumper settings are illustrated in Figure 2-2 as well. The MIC-3520 also provides two on-board connectors which can be linked to external devices. Figure 2-3 illustrates each connector location.

Table 2-1: MIC-3520 jumpers and connectors

Number	Function
JP3	Panel voltage setting
JP4	PanelLink configuration
SW1	Panel type setting
SW2	Back light and Clock shift setting
CN1	VGA connector
CN2	PanelLink DFP connector
CN4	Digital panel connector
J1	CompactPCI J1 connector

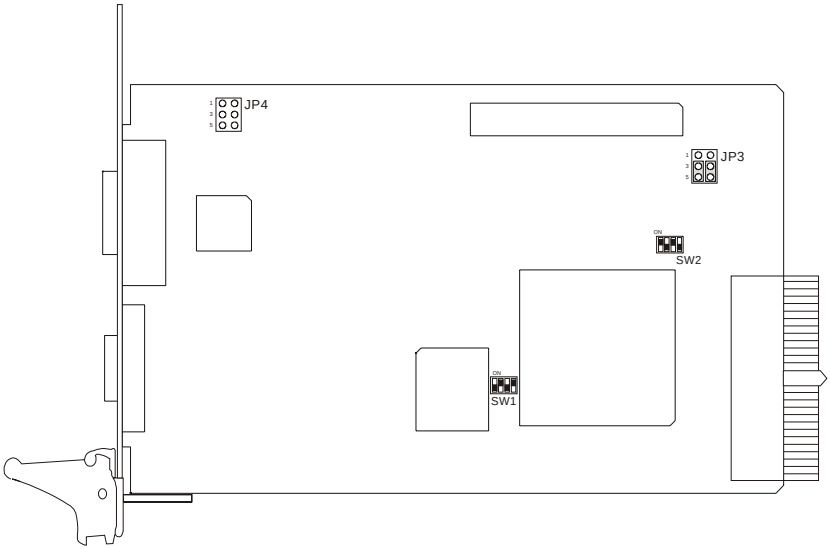


Figure 2-2: MIC-3520 jumper locations

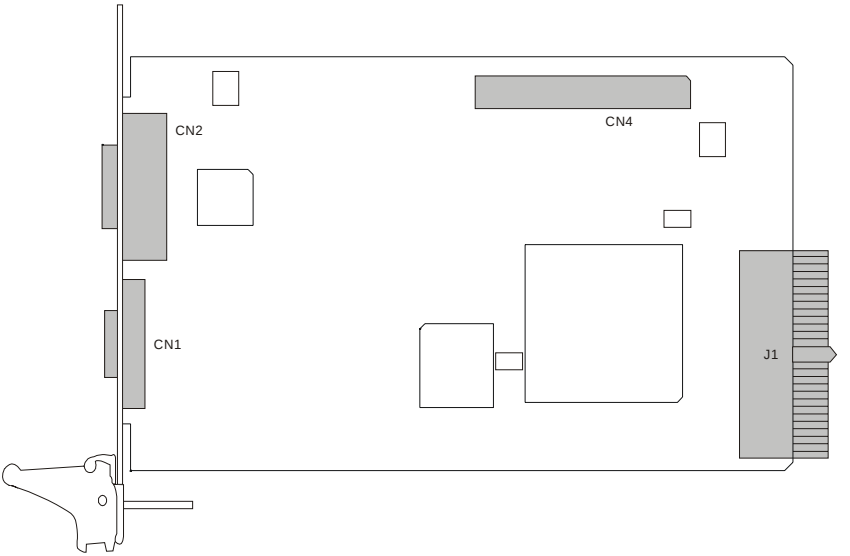


Figure 2-3: MIC-3520 connector locations

2.3.2 Panel Voltage Setting (JP3)

This jumper is used to set the panel voltage as +5 V or +3.3 V. This jumper works only when the panel is connected to the Digital Panel connector (CN4).

Table 2-2: Panel voltage setting

	JP3
+5 V	
+3.3 V	

2.3.3 PanelLink configuration (JP4)

This jumper is used to configure the PanelLink DFP connector (CN2). Users can connect the MIC-3520 to Advantech's FPM series panels or commercial PanelLink LCD panels. Advantech's FPM-38 and FPM-3100 panels provide MDR-26 connectors which need +12 V power signals in addition to PanelLink connector signals. If users would like to use Advantech's FPM series panels, just follow Table 2-3 to configure the JP4 jumper and the MIC-3520 will transfer the necessary +12 V power to the panels. Advantech also provides a 20-pin to 26-pin connector when users connect the MIC-3520 to Advantech FPM series panels.

Table 2-3: PanelLink DFP connector configuration

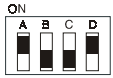
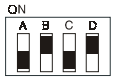
	JP4
Advantech's FPM series panels	
Commercial PanelLink panels	

Note: *If connecting to a commercial panel, please do not set JP4 as FPM series configuration. It may damage your commercial panels.*

2.3.4 Panel Type Setting (SW1)

The MIC-3520 can support Advantech's FPM-38 and FPM-3100 panels. Follow Table 2-4 to properly configure the MIC-3520 depening on the type of panel used.

Table 2-4: Panel type setting

	SW1				
FPM-38		On	Off	Off	On
FPM-3100		Off	On	Off	On

2.3.5 Backlight and Clock Phase Setting(SW2)

The SW2 consists of two jumper setting functions. A and B are used for backlight signal. C and D are used for clock phase setting. Please contact Advantch for more information on the backlight signal and clock phase setting.

Table 2-5: Back light signal setting

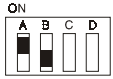
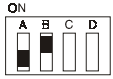
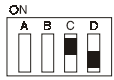
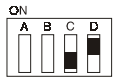
	SW2		
Backlight enable signal high		On	Off
Backlight enable signal low		Off	On

Table 2-6: Clock phase setting

	SW2		
Shift clock		On	Off
/ Shift clock (inverse phase)		Off	On

2.3.6 VGA Display Connector (CN1)

The MIC-3520 provides an VGA controller for a high performance VGA interface. The MIC-3520's CN1 is a DB-15 connector for VGA monitor input.

2.3.7 PanelLink DFP Connetor (CN2)

The PanelLink DFP connector on the MIC-3520 complies with DFP specification version 1.6. The on-board PanelLink DFP connector supports Advantech's FPM series panels if used with Advantech's 20-pin to 26-pin cable since Advantech's FPM series panels (FPM-38 and FPM-3100) all use MDR-26 connectors (26-pin connectors). If users would like to connect the MIC-3520 to the commercial LCD panels, please contact Advantech's application engineers for help.

2.3.8 Digital Panel Connector (CN4)

The CN4 connector on the MIC-3520 is used to provide digital LCD panel signals. The CN4 connectors provide 24 bits for RGB, 8 bits each. Please refer to Appendix A for this connector's pin assignment.

2.4 Front Panel Connectors and Indicators

Figure 2-4: MIC-3520 front panel connectors and locations

2.5 Card Installation

The CompactPCI connectors are firm and rigid and require careful handling while plugging and unplugging. Improper installation of a card can easily damage the backplane of the chassis.

The insert/eject handle of the MIC-3520 helps you to install and remove the card easily and safely. Follow the procedure below to install the MIC-3520 into a chassis:

To install a card:

1. Hold the card vertically. Be sure that the card is pointing in the correct direction. The components of the card should be pointing to the right-hand side.
2. Holding the lower handle, pull out the red portion in the middle of the handle to unlock it.

Caution: Keep your fingers away from the hinge to prevent your fingers from getting pinched.

3. Insert the card into the chassis by sliding the upper and lower edges of the card into the card guide.
4. Push the card into the slot gently by sliding the card along the card guide until the handle meets the rectangular holes of the cross rails.

Note: If the card is correctly positioned and has been slid all the way into the chassis, the handle should match the rectangular holes. If not, remove the card from the card guide and repeat step 3 again. Do not try to install a card by forcing it into the chassis.

5. Lift the lower handle up to push the card into place.
6. Secure the card by pushing in the red portion to lock it into place.

To remove a card:

1. Unscrew the two screws on the front panel. Pull out the red position in the middle of the handle to unlock the handle.
2. Press the lower handle down to release the card from the backplane.
3. Slide the card out.

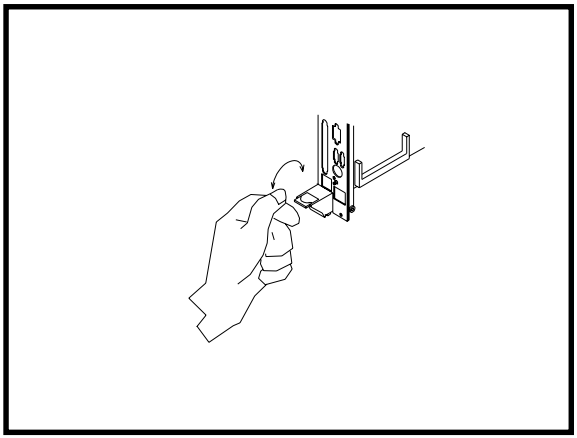


Figure 2-5: Installing the card into the chassis

2.6 Driver and Utility Installation

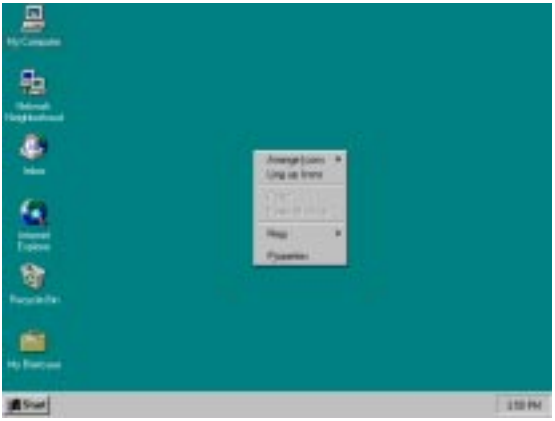
The MIC-3520 is supplied with a utility CD-ROM disc that holds the necessary file for setting up the MIC-3520's drivers under the directory \MIC-3520\VGA. The contents and pathnames of this directory are listed below:

- **MIC3365\VGA\Win31:** VGA utility for Windows 3.1
- **MIC3365\VGA\Win95:** VGA utility for Windows 95
- **MIC3365\VGA\Win98:** VGA utility for Windows 98
- **MIC3000\VGA\Winnt:** Utility for Windows NT 4.0

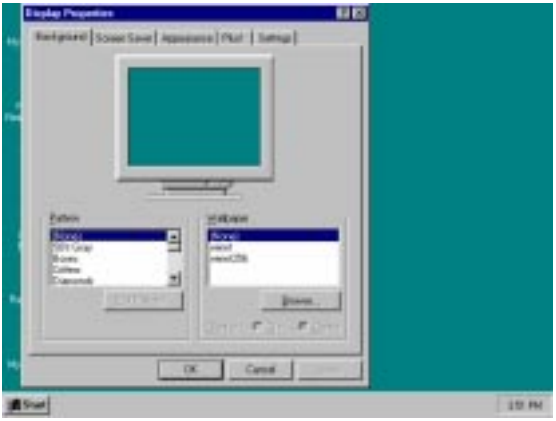
Complete the following steps to install the VGA driver. Follow the procedures in the flow chart that apply to the operating system you are using with your MIC-3520.

2.6.1 Installation for Windows NT 4.0

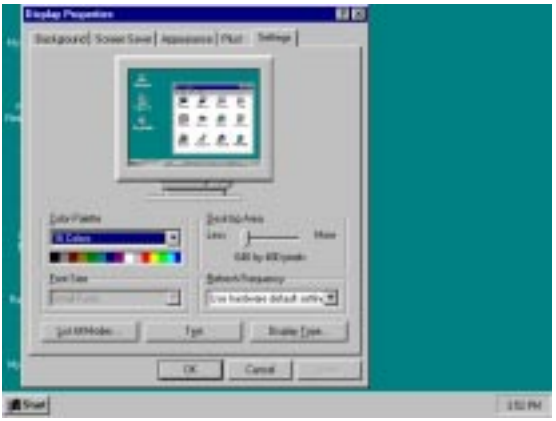
1. Insert the utility CD-ROM disc in the CD-ROM drive. Click the right button on the mouse. After the menu pops up, click "Properties".



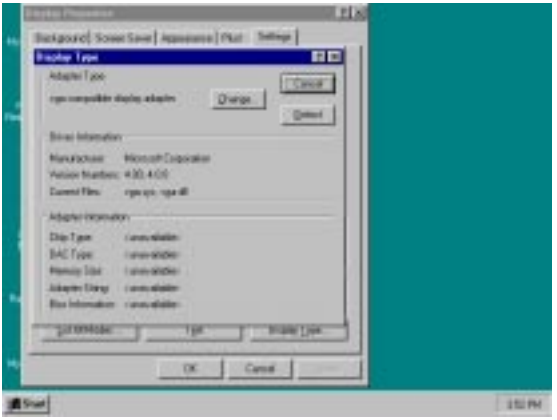
2. Click "Settings".



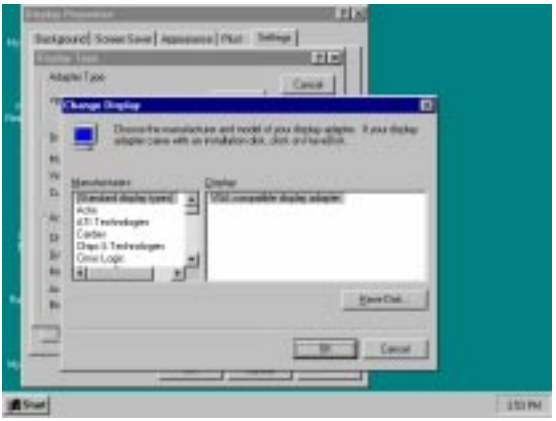
3. Click "Display Type".



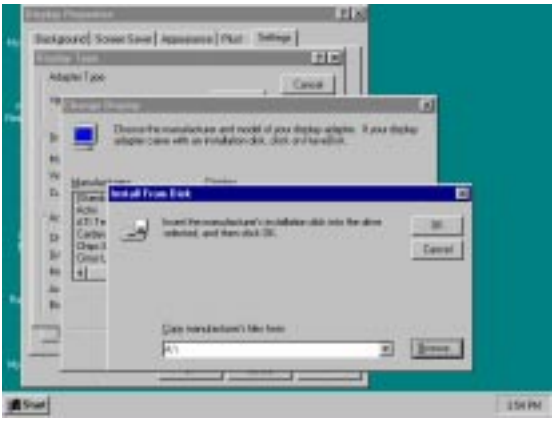
4. Click "Change".



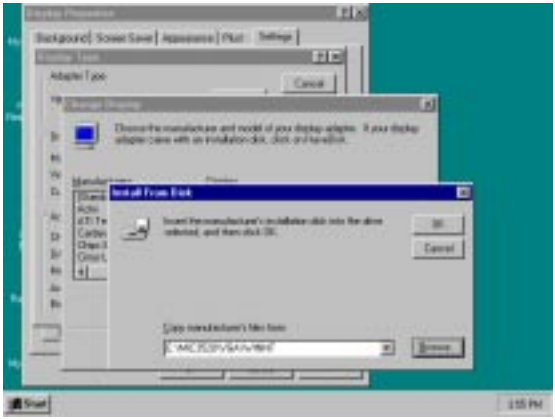
5. Click "Have Disk".



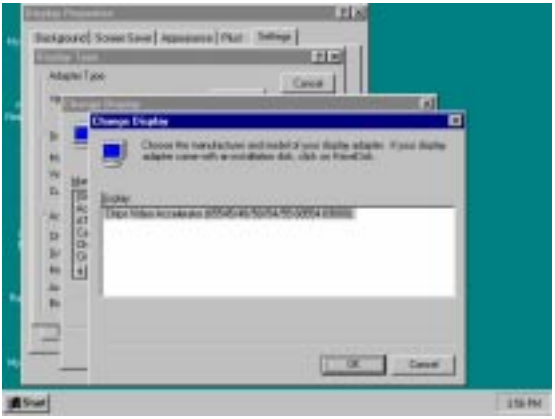
6. Click "Browse".



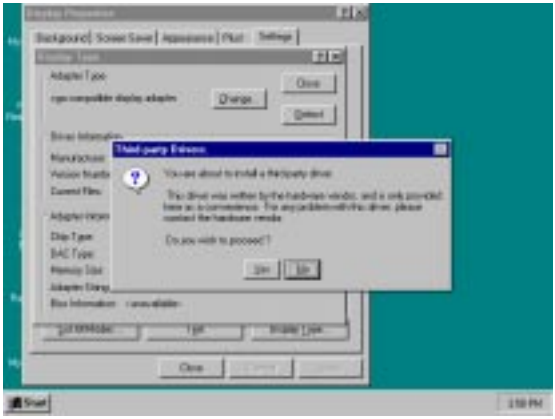
7. Select directory "E:\MIC3520\VGA\WINNT". Click "OK".



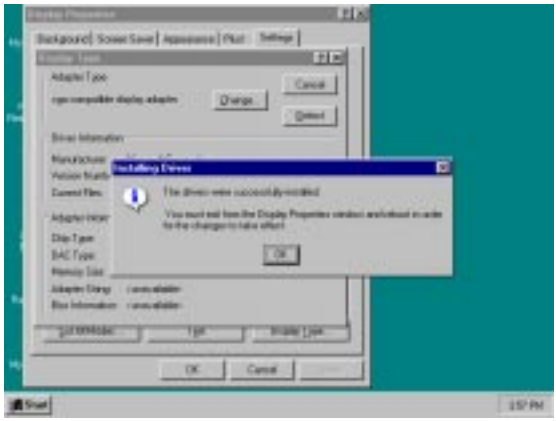
8. Click "OK".



9. Click "Yes".



10. Click "OK" and restart the computer to enable the changes to take effect.



APPENDIX A

Pin Assignments

A.1 VGA Connector (CN1)

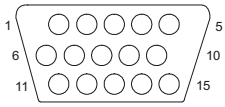


Table A-1: MIC-3520 VGA connector

Pin	Signal
1	Red
2	Green
3	Blue
4	N/C
5	GND
6	GND
7	GND
8	GND
9	VCC
10	GND
11	N/C
12	SDA
13	HSYNC
14	VSYNC
15	SCL

A.2 PanelLink DFP Connector (CN2)

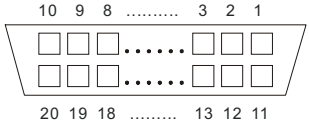


Table A-2: MIC-3520 PanelLink DFP connector

Pin	Signal
1	TX1+
2	TX1-
3	GND
4	GND
5	TXC+
6	TXC-
7	GND
8	DDC5V
9	+12VP
10	N/C
11	TX2+
12	TX2-
13	GND
14	GND
15	TX0+
16	TX0-
17	+12VP
18	PEDGE
19	PDDCDAT
20	PDDCCLK

A.3 Digital LCD Panel Connector (CN4)

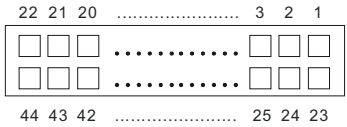


Table A-3: MIC-3520 digital LCD panel connector

Pin	Signal	Pin	Signal
1	+12V	23	PP14
2	+12V	24	PP15
3	GND	25	PP16
4	GND	26	PP17
5	VDDSAFE	27	PP18
6	VDDSAFE	28	PP19
7	ENAVEE	29	PP20
8	GND	30	PP21
9	PP0	31	PP22
10	PP1	32	PP23
11	PP2	33	GND
12	PP3	34	GND
13	PP4	35	SSCLK
14	PP5	36	FLLM
15	PP6	37	MMM
16	PP7	38	LPPP
17	PP8	39	GND
18	PP9	40	ENBKL
19	PP10	41	N/C
20	PP11	42	N/C
21	PP12	43	ENAVDD
22	PP13	44	N/C