

D G – 2

Installation Guide

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Revision	Changes	Date
0.0	Preliminary Edition	20.02.2002
0.1	Added Chapters for Windows 2000 installation	05.04.2002
0.2	Modification for dip switch S5 and added 1280x1024x72	17.04.2002
0.3	Added screenshots for Windows 2000 installation	27.05.2002
0.4	Modification in both resolution tables	27.08.2002
1.0	Update for Windows panel and resolution tables	10.06.2003

The Following Information is Required by the FCC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) the device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

FCC Class B Notice

If your system is FCC Class B, the following applies:

Note - This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE Compliance Statement

The manufacturer hereby declares that the device conforms to the following standards in accordance with the European Commission Directive 89/336/EEC:

EN 55022:1998

EN 50024:1998

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Chapter 1 Introduction

The TRITEC DG-2 card is a 32bit/66Mhz PCI-based two channel graphics controller for SUN workstations or PC platforms with PCI interface support.

This package comes with drivers for Solaris 7, Solaris 8, Windows 2000 and Windows XP. Linux drivers are available upon request.

The card has the following features:

- Dual-DVI connectors: analog video (RS-343) or TMDS output.
- VESA miniDIN-3 connector for Stereoscopic Display Support.
- 8-bit pseudo color or 24 bit true color.
- PCI bus version 2.1; 5V, 3.3V 32bit 66/33MHz.
- Short PCI board (168mm).
- Resolution up to 1280x1600 75Hz in dual screen mode.
- Device driver for Solaris 7, Solaris 8, Windows 2000 and Windows XP.

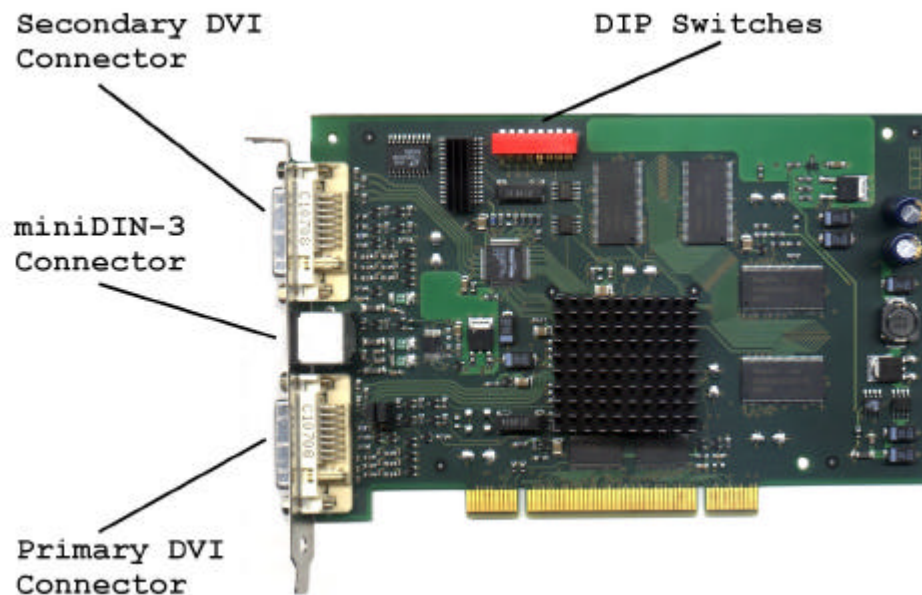


Figure 1-1 DG-2 Card

Chapter 2 Hardware Installation

System Requirements

Your system must have the following resources in order to install the DG-2 card.

- SUN or SUN compatible workstation or server with available 32bit 33 MHz or 66 MHz PCI slot Version 2.1
- Solaris 7 or Solaris 8.

or

- PC platform with a short length 32bit 33 MHz or 66 MHz PCI slot compliant with PCI Version 2.1 or higher
- Windows 2000 or Windows XP

Installation

Refer to the hardware documentation provided with your workstation, server, or PC for instructions on installing a PCI card.

Note Before installing the DG-2, make sure that you have enabled the BIOS of the DG-2 by setting DIP switch S1 to ON.

The graphics board where the VGA (primary) display is connected to must have DIP switch S3 set to OFF. All other (further) boards must set DIP switch S3 to ON.

Refer to table 4-4 for a detailed description of the DIP switch setting.

Verifying the Correct Installation (SUN Platform)

1. Power on the system
2. When the banner is displayed, press the Stop-A key or the Control-Break key if a PS/2 keyboard is connected to your system.
3. At the **ok** prompt type **show-devs**. The output should look like the following example for a Ultra 10 with two DG-2 installed. There is one line for each DG-2 card installed. The DG-2 card is identified by the device tree entry **TRTC, dg2**.

```
ok show-devs
/SUNW,UltraSPARC-IIi@0,0
/pci@1f,0
...
/pci@1f,0/pci@1,1/TRTC,dg2@4          <-- DG-2 in slot #4
/pci@1f,0/pci@1,1/TRTC,dg2@2          <-- DG-2 in slot #2
...
```

If you do not find one entry in the device tree for each installed DG-2 card, check that the card is installed correct, and re-seat the card if necessary.

Chapter 3 Software Installation for Windows

System Requirements

Your system must have the following resources in order to install the DG-2 card.

- PC platform with available PCI slot
- Microsoft Windows 2000 with SP2 (recommended) or Windows XP

Note If the DG-2 is NOT the primary display (no BIOS boot messages), set DIP-Switch S3 to on to ensure proper initialization.

Installation

Installation of the DG-2 in a Windows system

To install the DG-2 Windows 2000 or Windows XP device driver on a system where the current installed graphics card is replaced by the DG-2, perform the following steps:

1. After installation of the DG-2, Windows 2000 or Windows XP will automatically detect the new hardware and starts the **Found New Hardware** wizard. Click **Next** to continue.



2. Select the **Search for suitable driver ...** option and click **Next**



3. Insert the TRITEC support CD into the appropriate drive and click Next to start searching the driver.
4. Click Yes to accept the DG-2 driver without a digital signature.



5. Once the driver is successfully installed, Click **Finish** to close the Wizard.

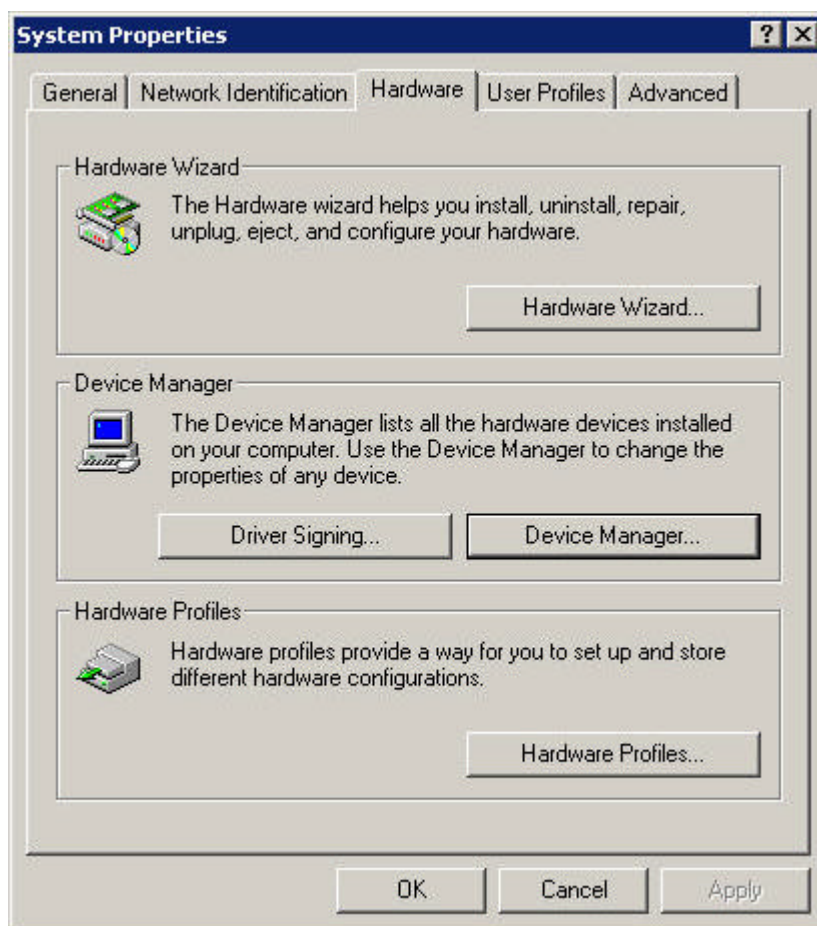


6. Click **Yes** to accept the DG-2 CRTC2 driver without a digital signature.
7. If ask to restart the system. Click **Yes**.
8. Continue with *"Changing the Resolution and additional Setups"*.

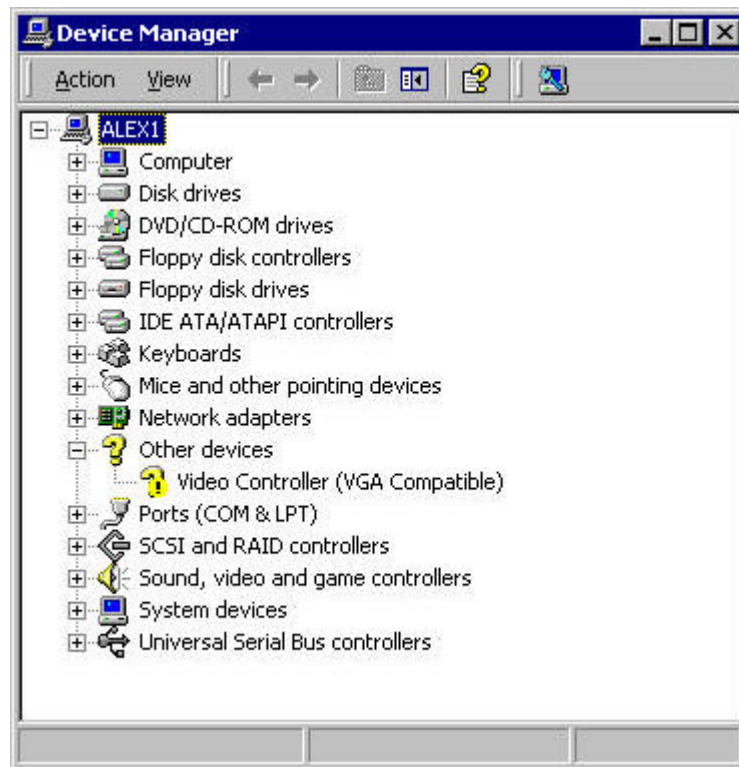
Installation of Windows 2000 or Windows XP with DG-2

If Windows is installed with the DG-2 as the primary graphics card, it uses the VGA compatible driver. To install the driver for the DG-2, do the following steps:

1. Click Start --> Settings --> Control Panel
2. Doubleclick on the System icon
3. Click on Hardware tab and go to Device Manager



1. You should now see a question mark under Other devices --> Video Controller (VGA Compatible). Doubleclick on the Video Controller to get its properties.



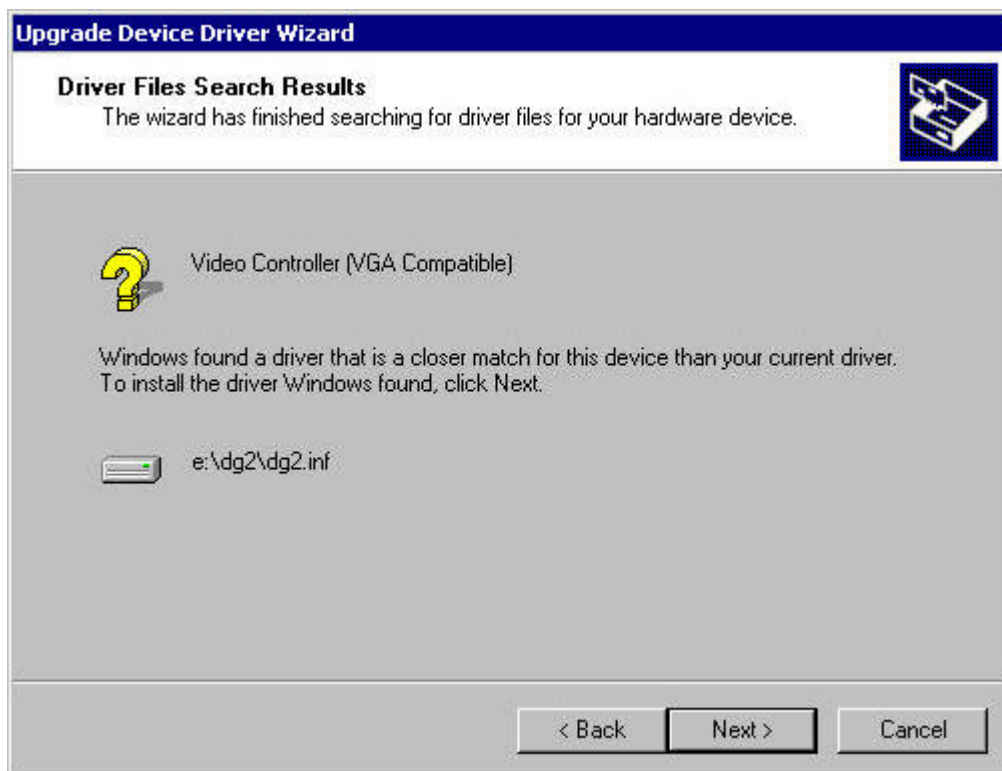
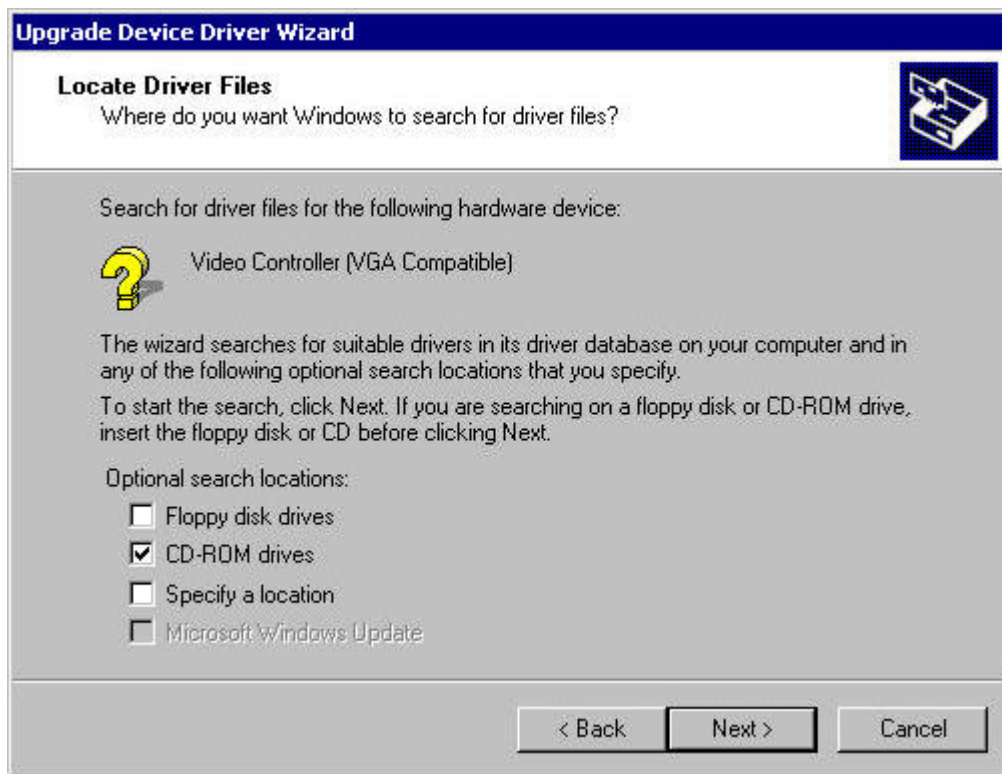
5. Select Driver and click on Update Driver



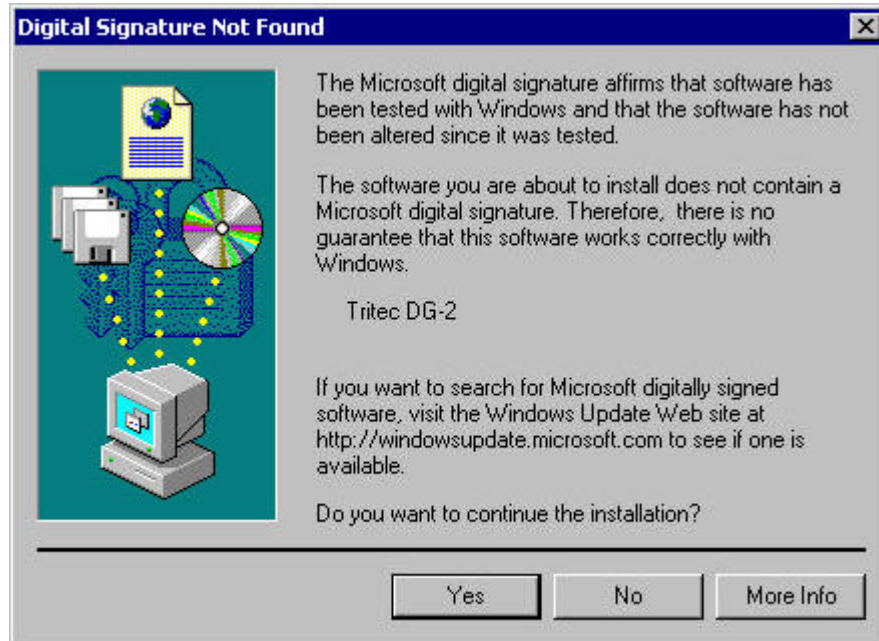
6. To continue updating the driver, click the Next buttons



7. Select CD-ROM drivers, insert the TRITEC support CD into your CD-ROM drive, and click the Next button.



8. Click Yes to accept the DG-2 driver without digital signature.



9. Click Finish, Close and Yes to restart the computer.



10. After restarting, Windows will automatically detect the second channel of the DG-2. Click Yes to accept the driver without a digital signature then Ok to install the driver for the second channel.

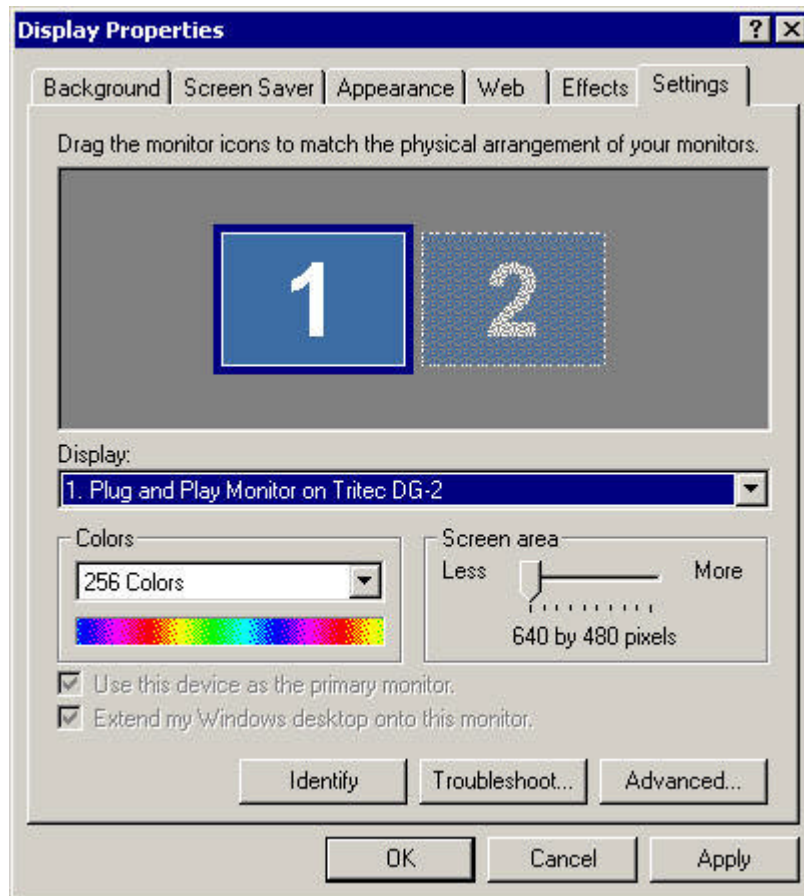


11. Continue with *"Changing the Resolution and additional Setups"*.

Changing the Resolution and additional Setups

Changing Resolution

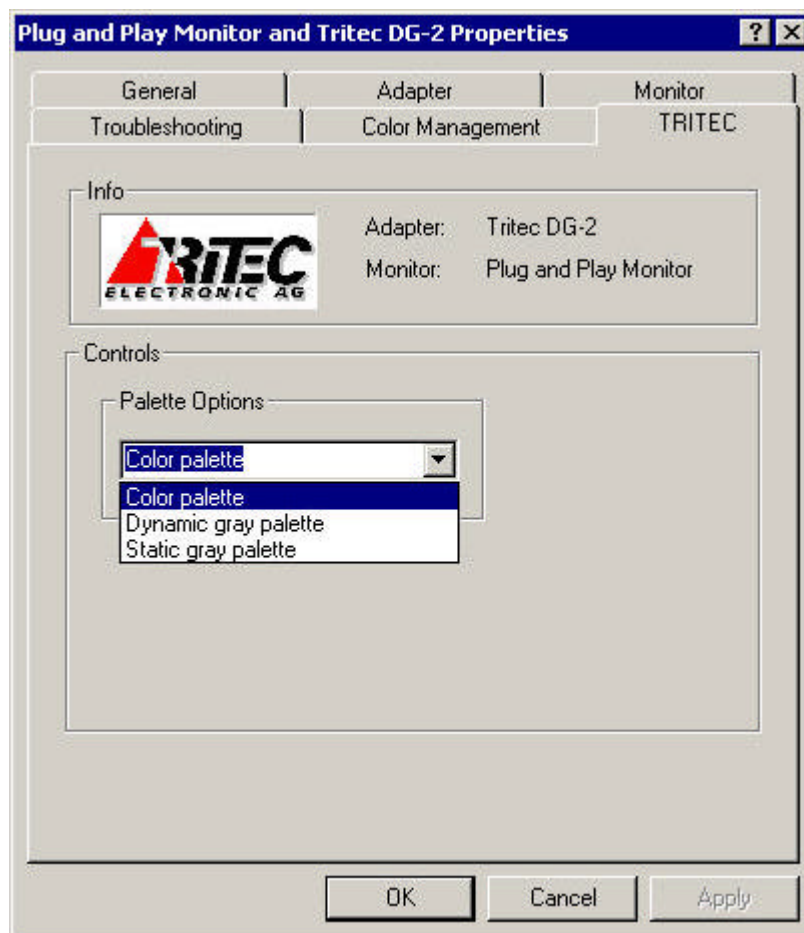
To change the resolution right-click on your desktop, select the Properties and click on the Settings tab. You can also enable additional monitors and change the resolution from the Settings tab located under the Display Properties dialog box.



Setting palette options

By default Windows is using a palette (look up table) to manage colors or grayscales in 8 bit mode. Therefor Windows always reserves 20 color/grayscale steps out of the total 256 steps. So, application programs can control 236 steps only. To take control off all 256 steps palettes have to be switched to “static gray palette” (non-palette-device).

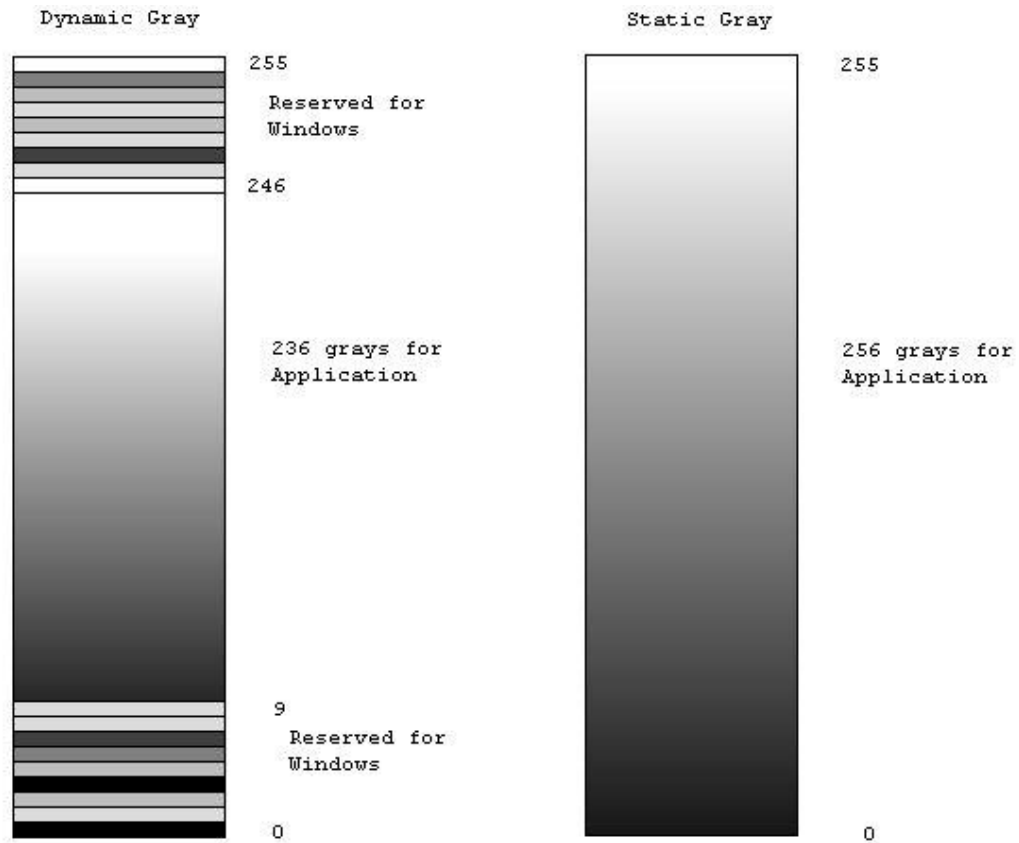
Right-click on your desktop, select the Properties and click on the Settings tab. Double-click on the monitor and select the TRITEC tab.



Windows can handle all monitors connected either as palette device (Windows control palette) or as Non-Palette Device (static gray).

Palette Devices	Non-Palette Devices
Color palette	
Dynamic gray palette	Static gray palette

This illustration shows the assignment of values on the grayscale palette



Chapter 4 Software Installation for Solaris

System Requirements

Your system must have the following resources in order to install the DG-2 card.

- SUN or Sun compatible workstation or server with available PCI slot
- Solaris 7 or Solaris 8 installed

Installation

Package Installation

The DG-2 software is delivered in Solaris package format called TRTCdg2.u, TRTCdg2w, and TRTCdg2cf. The pkgadd command adds the device driver, called dg2, to your system.

Each output on the DG-2 is represented by a device name within the /device directory. The outputs are also represented by short symbolic links in the /dev/fbs directory that are automatically created when the DG-2 device driver is installed. The primary output of the first DG-2 has the device name /dev/fbs/dg20 and the secondary output is named /dev/fbs/dg21 and so on.

1. Make sure the TRITEC DG-2 card is correctly installed (see Chapter 2).
2. Boot your system by typing:

```
ok boot -r
```

3. Login to your system as root
4. Remove any previously installed DG-2 software.
5. Insert the CD-ROM labeled <tt>TRITEC Support CD into the drive.
6. If the CD-ROM drive is mounted by the vold use the following command to change your working directory:

```
# cd /cdrom/cdrom0
```

Otherwise use the following command to mount the CD-ROM drive. Note that the CD-ROM device may be different on your system.

```
# mount -F hsfs -o ro /dev/dsk/c0t6d0s0 /cdrom
```

```
# cd /cdrom
```

7. Select the directory of your Solaris version and use the pkgadd command to install the driver package.

```
# cd Solaris_2.7
# pkgadd -d . TRTCdg2.u TRTCdg2w TRTCdg2cf
```

8. Reboot your system

```
# reboot
```

After rebooting the new driver will be activated. To set the screen resolution refer to chapter Changing the Resolution.

Verify the Correct Installation

To verify that installation is complete use the pkginfo command, which shows you all available information about the designated package.

```
# pkginfo -l TRTCdg2 TRTCdg2w TRTCdg2cf
```

Remove the Driver Package

To uninstall the DG-2 driver package from your system, login as root and type the following:

```
# pkgrm TRTCdg2 TRTCdg2w TRTCdg2cf
```

Upgrade the Driver Package

If it becomes necessary to upgrade to a newer version of the DG-2 driver package, the following steps should be taken:

2. Remove the old version of the driver package by running pkgrm
3. Use the pkgadd command to install the new driver package.

4. Reboot your system.

Changing the Resolution

At powerup the OBP firmware of the DG-2 tries to find the best fitting resolution using the DDC information provided by the monitor. If the monitor does not support DDC or if no monitor is connected the default SUN resolution 1152x900x66 is used.

See Figure 3-1 for a detailed description how the resolution is determined after power up.

Note During OBP (ok prompt) both, the primary and the secondary output of the DG-2 use the same resolution and also show the same contents.

Changing the console resolution within OpenBoot

To change the resolution of the DG-2 within the OpenBoot (also known as NVRAM setting) change the environment variable output-device. Refer to Table 4-1 for a list of known resolutions. For example: To change the poweron resolution to 1024x768 @ 75 Hz, type the following at the ok prompt:

```
ok setenv output-device screen:r1024x768x75
ok reset
```

Note The new resolution will take effect following the reset, and will hold the resolution information until the output-device variable is changed manually.

Changing the Open Windows/CDE/Gnome resolution

To change the resolutions of the primary and secondary output of each DG-2 independently use the dg2config. Refer to the man page of the dg2config for a detailed description of this utility.

For example: To change the CDE resolution to 1920x1440 @ 75 Hz, type the following at the shell prompt:

```
# dg2config -res 1920x1440x75
```

Note The new resolution will take effect at the next start of the X server.

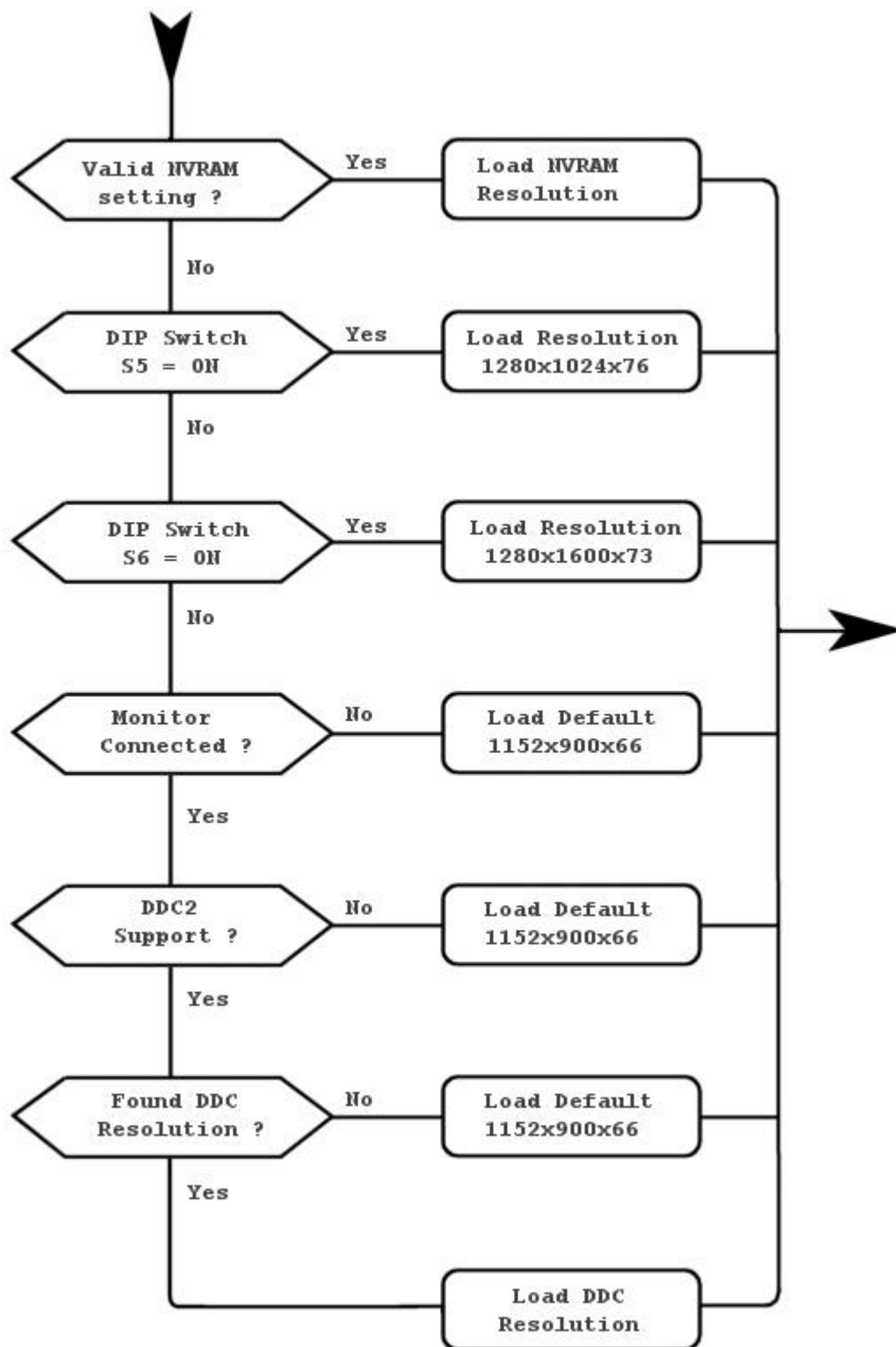


Figure 3-1 Resolution Setup after Power On

The following issues are known for the Windows2000 or Windows XP device driver:

- The drivers date is not shown in the Display Properties-->Setting-->Advanced->Driver tab. The drivers date is suppressed by Windows for drivers without a digital signature.
- It can happen that the BIOS Version No. is not displayed in the Display Properties Setting --> Advanced --> Driver tab. "No BIOS version" is shown instead. This has no effect for any program.
- Without a correct installed monitor driver the Monitor tab in Display Properties --> Setting --> Advanced hangs up with some monitors connected on the primary port of the DG-2. To fix this hangup install the correct monitor driver supplied with your monitor or use the Plug-and-Play Monitor driver.

SPARC Solaris Platform Resolutions

Name (for dg2config)	PixClock (MHz)	Horizontal (Pixel)				Vertical (Lines)			
		Total	Display	Front Proch	Sync Width	Total	Display	Front Proch	Sync Width
800x600x75	49.5	1056	800	25	80	625	600	1	3
1024x768x60	64.8	1344	1024	34	136	806	768	3	6
1024x768x70	74.46	1328	1024	33	136	806	768	3	6
1024x768x75	78.75	1312	1024	25	96	800	768	1	3
1024x768x77	84.38	1360	1024	42	64	805	768	2	4
1024x800x84	94.5	1320	1024	26	128	837	800	2	4
1152x900x66	94.5	1528	1152	50	128	937	900	2	4
1152x900x76	108.0	1504	1152	42	128	943	900	2	8
1280x800x76	101.25	1568	1280	26	112	846	800	3	7
1280x1024x60	108.0	1688	1280	58	112	1066	1024	1	3
1280x1024x67	117.0	1632	1280	25	112	1067	1024	2	8
1280x1024x72	135.0	1760	1280	64	192	1066	1024	5	3
1280x1024x75	135.0	1688	1280	25	144	1066	1024	1	3
1280x1024x76	135.0	1664	1280	25	144	1066	1024	2	8
1280x1024x85	157.5	1728	1280	57	160	1072	1024	1	3
1280x1600x73	216.0	1800	1280	68	232	1646	1600	0	2
1440x900x76	135.0	1880	1440	50	160	944	900	2	3
1600x1000x66	135.0	1968	1600	49	136	1039	1000	2	5
1600x1000x76	170.1	2128	1600	26	216	1051	1000	2	3
1600x1200x60	162.0	2160	1600	73	192	1250	1200	1	3
1600x1200x70	189.0	2160	1600	73	192	1250	1200	1	3
1600x1200x76	198.0	2080	1600	32	392	1250	1200	3	5
1920x1440x60	234.5	2640	1920	48	296	1502	1440	3	4
1920x1440x75	297.6	2640	1920	48	296	1502	1440	3	4
2048x2560x71 ¹	500.0	2688	2048	165	168	2620	2560	0	1
2048x2560x76 ¹	540.0	2712	2048	117	168	2620	2560	0	1

¹ Resolutions only available with DTAC

Table 4-1 SPARC Solaris Platform Resolutions

WINDOWS Platform Resolutions

Name	PixClock (MHz)	Horizontal (Pixel)				Vertical (Lines)			
		Total	Display	Front Proch	Sync Width	Total	Display	Front Proch	Sync Width
640x480x60	25.18	800	640	16	96	525	480	10	2
640x480x75	31.50	840	640	16	64	520	480	1	3
800x600x60	40.00	1056	800	40	128	625	600	1	2
800x600x75	49.50	1056	800	25	80	625	600	1	3
1024x768x60	64.80	1344	1024	34	136	806	768	3	6
1024x768x70	75.21	1328	1024	33	136	806	768	3	6
1024x768x75	78.75	1312	1024	25	96	800	768	1	3
1024x768x77 ²	84.38	1360	1024	42	64	805	768	2	4
1024x800x84 ²	94.50	1320	1024	26	128	837	800	2	4
1152x900x66 ²	94.50	1528	1152	50	128	937	900	2	4
1152x900x76 ²	108.00	1504	1152	42	128	943	900	2	8
1200x1600x60	120.00	1248	1200	8	24	1620	1600	2	3
1200x1600x75 ²	214.02	1720	1200	66	184	1696	1600	1	2
1280x800x76 ²	101.25	1568	1280	26	112	846	800	3	7
1280x1024x60	108.0	1688	1280	58	112	1066	1024	1	3
1280x1024x67 ²	117.0	1632	1280	25	112	1067	1024	2	8
1280x1024x72	135.0	1760	1280	64	192	1066	1024	5	3
1280x1024x75	135.0	1688	1280	25	144	1066	1024	1	3
1280x1024x76 ²	135.0	1664	1280	25	144	1066	1024	2	8
1280x1024x85	157.5	1728	1280	57	160	1072	1024	1	3
1280x1600x73	216.0	1800	1280	68	232	1646	1600	0	2

WINDOWS Platform Resolutions (continued)

Name	PixClock (MHz)	Horizontal (Pixel)				Vertical (Lines)			
		Total	Display	Front Proch	Sync Width	Total	Display	Front Proch	Sync Width
1440x900x76 ²	135.00	1880	1440	50	160	944	900	2	3
1536x2048x30	127.00	1984	1536	124	64	2147	2048	2	1
1536x2048x33	110.00	1600	1536	8	8	2080	2048	3	2
1600x1000x66 ²	135.00	1968	1600	49	136	1039	1000	2	5
1600x1000x76 ²	170.10	2128	1600	26	216	1051	1000	2	3
1600x1200x59	130.90	1776	1600	20	80	1225	1200	1	3
1600x1200x60	162.00	2160	1600	73	192	1250	1200	1	3
1600x1200x70	189.00	2160	1600	73	192	1250	1200	1	3
1600x1200x75	202.50	2160	1600	73	192	1250	1200	1	3
2048x1536x30	127.80	2608	2048	64	128	1633	1536	1	1
2048x1536x33	110.00	2112	2048	8	8	1568	1536	2	2
2048x2560x25	149.85	2328	2048	96	120	2574	2560	1	1
2560x2048x25	149.85	2872	2560	96	96	2081	2048	1	1
2048x2560x71 ¹	500.00	2688	2048	165	168	2620	2560	0	1
2048x2560x76 ¹	540.00	2712	2048	117	168	2620	2560	0	1

¹ Resolutions only available with DTAC-1

² Composit Sync

Table 4-2 WINDOWS Platform Resolutions

Appendix

DVI Connector

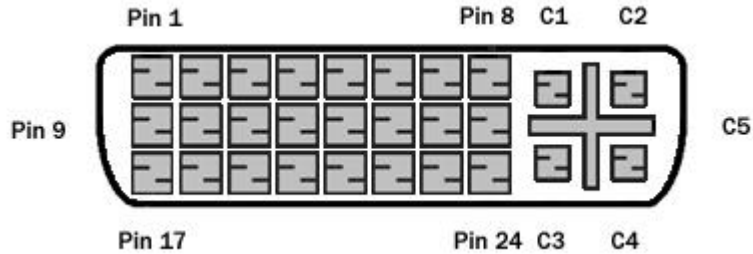


Figure 4-1 DVI Connector Pinouts

Pin	Signal	Pin	Signal
1	TMDS Data2-	13	TMDS Data3+
2	TMDS Data2+	14	+5V Power
3	TMDS Data2/4 Shield	15	Ground
4	TMDS Data4-	16	Hot Plug Detect
5	TMDS Data4+	17	TMDS Data0-
6	DDC Clock	18	TMDS Data0+
7	DDC Data	19	TMDS Data0/5 Shield
8	Analog Vertical Sync	20	TMDS Data5-
9	TMDS Data1-	21	TMDS Data5+
10	TMDS Data1+	22	TMDS Clock Shield
11	TMDS Data1/3 Shield	23	TMDS Clock+
12	TMDS Data3-	24	TMDS Clock-
C1	Analog Red Video	C4	Analog Horizontal Sync
C2	Analog Green Video	C5	Analog Ground
C3	Analog Blue Video		

Table 4-3 DVI Connector Description

miniDIN-3 Connector

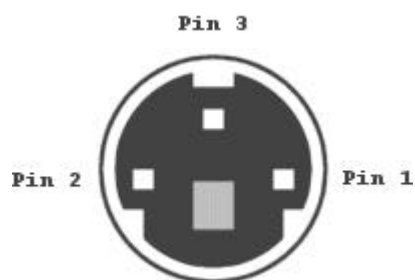


Figure 4-2 miniDIN-3 Connector Pinouts

Pin	Signal
1	+5V Power
2	Ground
3	Stereo Sync

Table 4-4 miniDIN-3 Connector Description

DIP Switch setting

DIP Switch	ON	OFF
1	DG-2 BIOS/OBP enabled	DG-2 BIOS/OBP disabled
2	ATI BIOS/OBP enabled	ATI BIOS/OBP disabled
3	Secondary display controller	Primary display controller
4		
5	Force 1280x1024x72 BIOS/OBP boot screen	
6	Force 1280x1600x73 BIOS/OBP boot screen	
7		
8		

Table 4-5 DIP Switch Settings

TRITEC Electronic AG, Carl-Zeis-Str. 41, D-55129 Mainz
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