TURBOchannel Options

User's Guide

U.S.A.

This equipment generates, uses, and may emit radio frequency energy. The equipment has been type tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such radio frequency interference. Operation of this equipment in a residential area may cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Using This Guide

This guide explains how to operate the TURBOchannel options that are in your system.

- Chapter 1, *Using TURBOchannel Options*, tells you what TURBOchannel options are and how they can be combined in a system.
- Each of the later chapters describes an individual option that your system has. Each chapter tells you

    - About the hardware for the option

    - How to install and remove the option

    - How to make sure that the option is operating properly

Conventions Used in This Guide

Table 1.

Convention	Use
Monospace type	Anything that appears on your monitor screen is set in monospace type like this.
Boldface type	**Anything that you are asked to type is set in boldface type like this.**

1

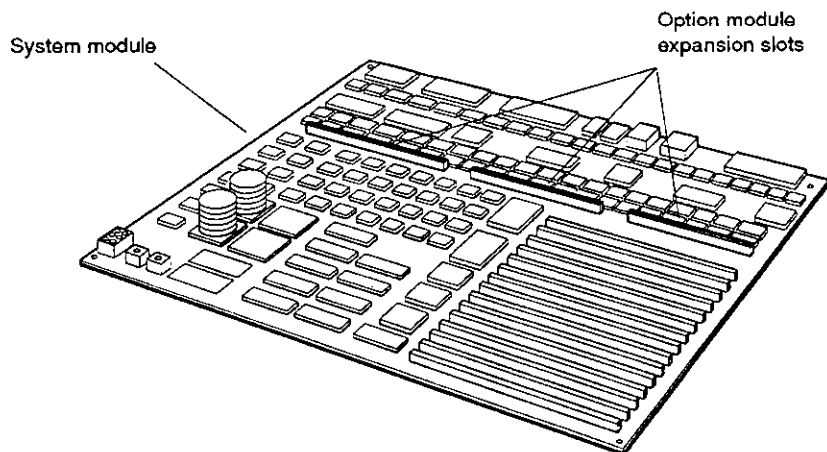# Using TURBOchannel Options

This chapter explains

- What TURBOchannel options are
- How TURBOchannel options connect to the base system of your workstation
- Where to find detailed installation and testing information about specific TURBOchannel options.

A Look at TURBOchannel Options

TURBOchannel options include TURBOchannel modules that connect to your base system and the devices that those modules support.

These options operate on any base system that supports TURBOchannel. The number of TURBOchannel modules that a system supports depends on the specific system.

TURBOchannel modules can have different widths, but all TURBOchannel modules have similar connectors that attach to TURBOchannel expansion slots on the system module or an intermediate module that connects to the system module. An opening in the wall of the system unit allows the TURBOchannel module to connect to an external device.

WSETM001

Figure 1-1.   TURBOchannel connectors on a typical system module

External   System module
connector   connector

Single width module

External   System module
connector   connectors

Double width module
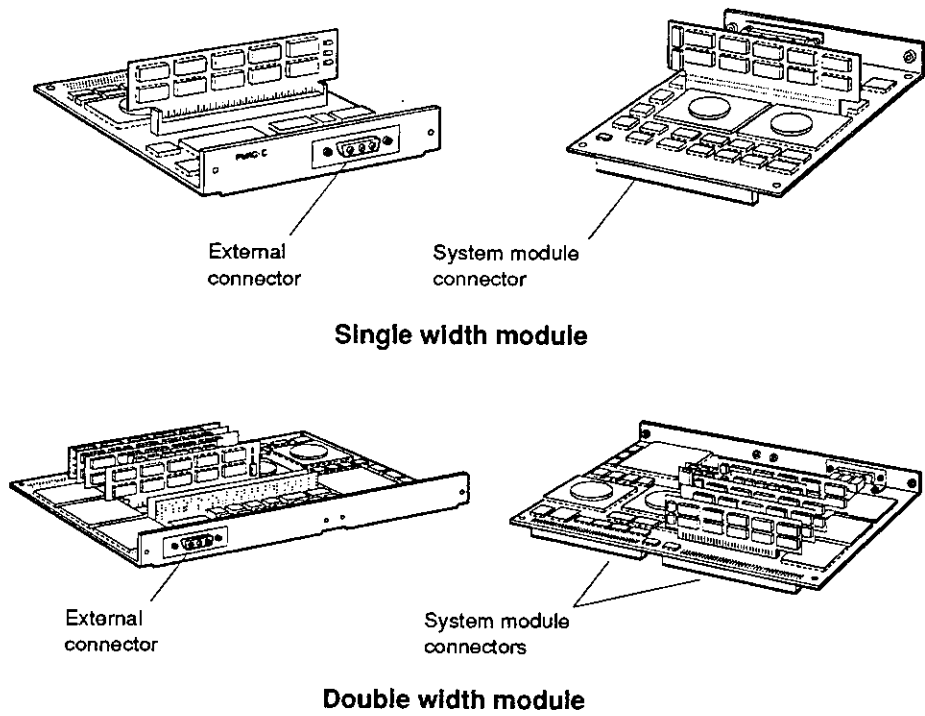
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Figure 1-2.   Typical TURBOchannel modules

For Further Information

For detailed information about a specific TURBOchannel option in your workstation, see the chapter later in this guide that describes that TURBOchannel option.

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VR319 Monitor

EK-VR319-TC-001

This chapter describes the VR319 monitor. It tells you about

- VR319 monitor controls and indicators
- Graphics modules that work with the VR319 monitor
- How to connect a VR319 monitor to your workstation

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VR319 Monitor Hardware

The VR319 monitor is a 19-inch monitor that can display monochrome or gray-scale graphics. There are two versions of the VR319 monitor, each of which operates at a different frequency.

- The VR319-CA operates at 66-Hz.
- The VR319-DA operates at 72-Hz.

The monitor model number appears on the back of the monitor on the label next to the cable connector.

Several controls and connectors on the VR319 monitor let you adjust the monitor and connect it to your workstation. Table 1 lists the purpose of each control and connector.

Table 1.   Controls and Connectors on the VR319 Monitor

Item	Function
Power indicator light	Glows green when the monitor is receiving power.
Contrast control	Adjusts the intensity of the display on the screen.
Brightness control	Adjusts the brightness of the background on the screen.
Vertical centering (V-CENT)	Moves the picture upward or downward on the screen.
Horizontal centering (H-CENT) control	Moves the picture sideways on the screen.
Rotational (ROT) control	Rotates the picture around the center of the screen.
Video cable connector	Connects the video cable to the monitor.
Power connector	Connects the power cord to the monitor.
On/off switch	Turns the monitor on and off.

On/off switch

Contrast control   Brightness control

Horizontal centering (H-CENT) control

Vertical centering (V-CENT) control   Rotational (ROT) control

Cable connector
Power connector
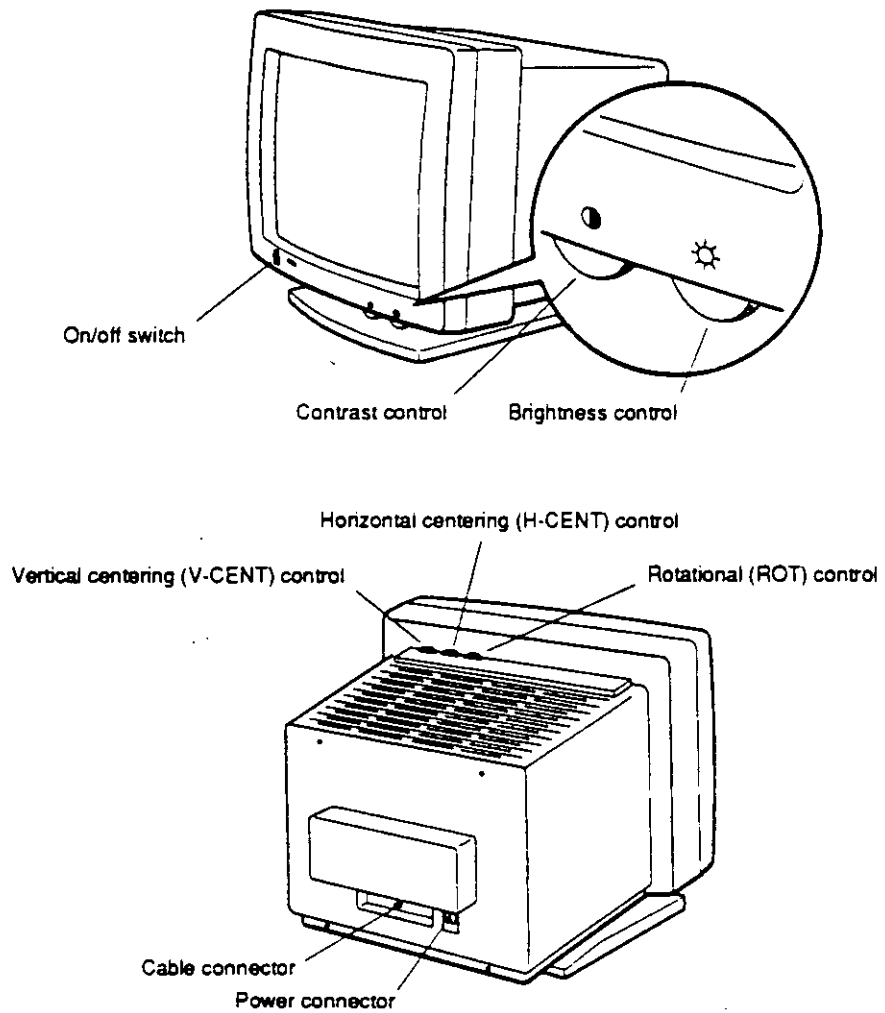
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Figure 1.   VR319 monitor controls and indicators

Connecting the VR319 Monitor To a Graphics Module

The VR319-CA/C4 monitor can display graphics generated by these TURBOchannel graphics modules:

- 2D graphics accelerator module, model type PMAG-CA
- Smart frame buffer module, model type PMAGB-BA
- Low 3D graphics module, model type PMAG-DA
- Low 3D graphics plus module, model type PMAGB-DC

The VR319-DA/D4 monitor can display graphics generated by these TURBOchannel graphics modules:
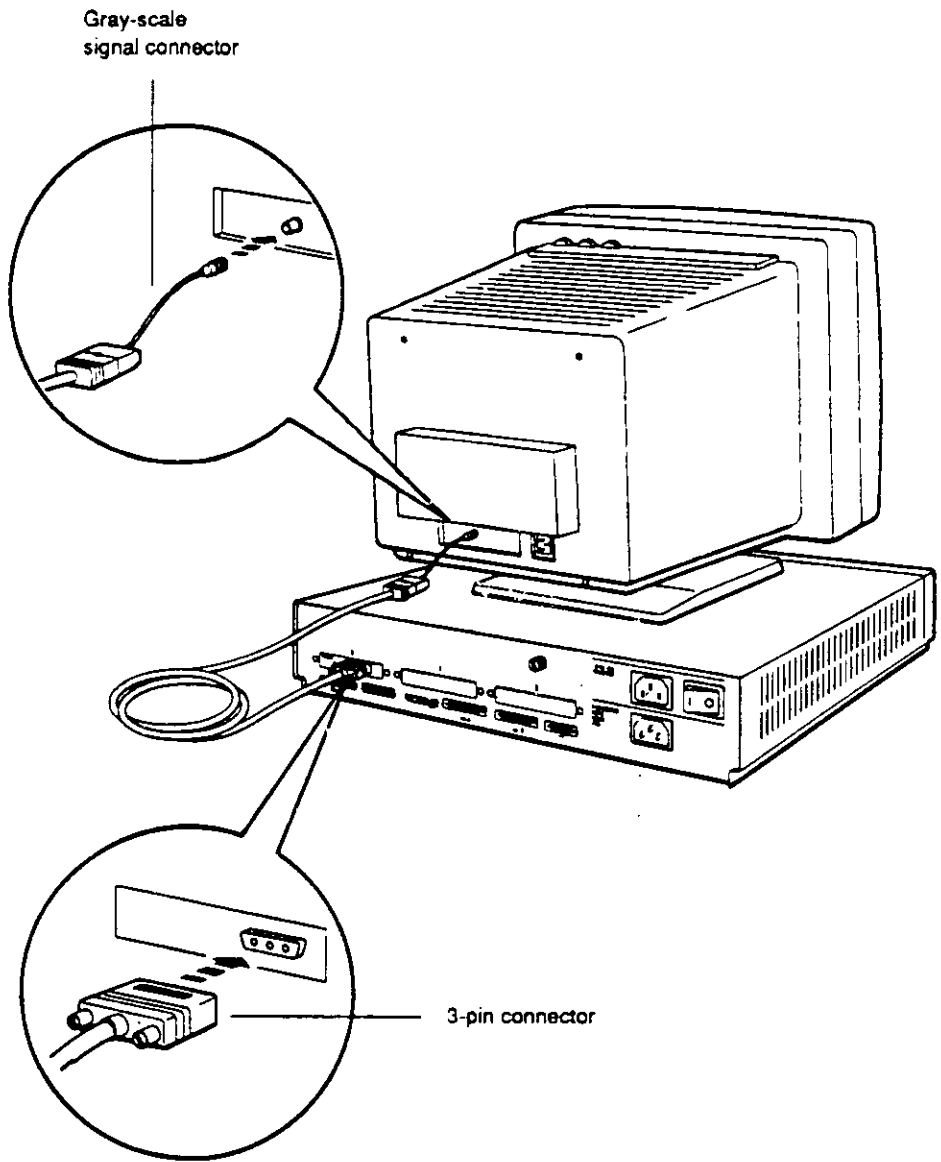
- Monochrome frame buffer module, model type PMAG-AA
- Smart frame buffer module, model types PMAGB-BA, PMAG-BC, and PMAGB-BE
- Low 3D graphics plus module, model type PMAGB-DA

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To connect the VR319 monitor to a color graphics module,

1. Find the gray-scale video cable that came with your shipment.

2. Turn off the monitor. Then turn off the workstation or TURBOchannel extender that contains the graphics module to which you want to connect the monitor.

3. Hold the 3-pin connector of the cable assembly so the widest part of the connector is on top.

4. Firmly push the cable connector into the 2D graphics accelerator module connector on the system unit.

5. Tighten the screws on the 3-pin connector to lock the connector securely in place.

6. Align the slots on the collar of the signal cable connector with the pins on the monitor connector.

7. Push the signal cable connector onto the monitor connector. Then twist the cable connector to the right to lock it.

To Disconnect a VR319 Monitor from a Color Graphics Module

1. Turn off the monitor. Then turn off the workstation or TURBOchannel extender connected to the monitor that you want to disconnect.

2. Twist the signal cable connector all the way to the left. Then pull the connector away from the monitor.

3. Loosen the two screws that hold the 3-pin connector to the graphics module.

4. Pull the 3-pin connector away from the graphics module.

Gray-scale
signal connector

3-pin connector

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Figure 2. Connecting a VR319 monitor to a color graphics module

To Connect a VR319 Monitor to a Monochrome Frame Buffer Module,

1. Locate the video cable that came with your shipment.

2. Turn off the monitor. Then turn off the workstation or TURBOchannel extender that contains the graphics module to which you want to connect the monitor.

3. Press the threaded video cable connector onto the monochrome frame buffer module connector and twist it to the right to tighten it.

4. Align the slots on the collar of the slotted connector with the pins on the monitor connector.

5. Push the slotted connector onto the monitor connector. Then twist the connector to the right to lock it.

To Disconnect a VR319 Monitor from a Monochrome Frame Buffer Module

1. Turn off the monitor. Then turn off the workstation or TURBOchannel extender attached to the monitor that you want to disconnect.

2. Twist the signal cable connector all the way to the left. Then pull the connector away from the monitor.

3. Twist the video cable connector all the way to the left. Then pull the connector away from the monochrome frame buffer module.

Signal cable connector

Video cable connector
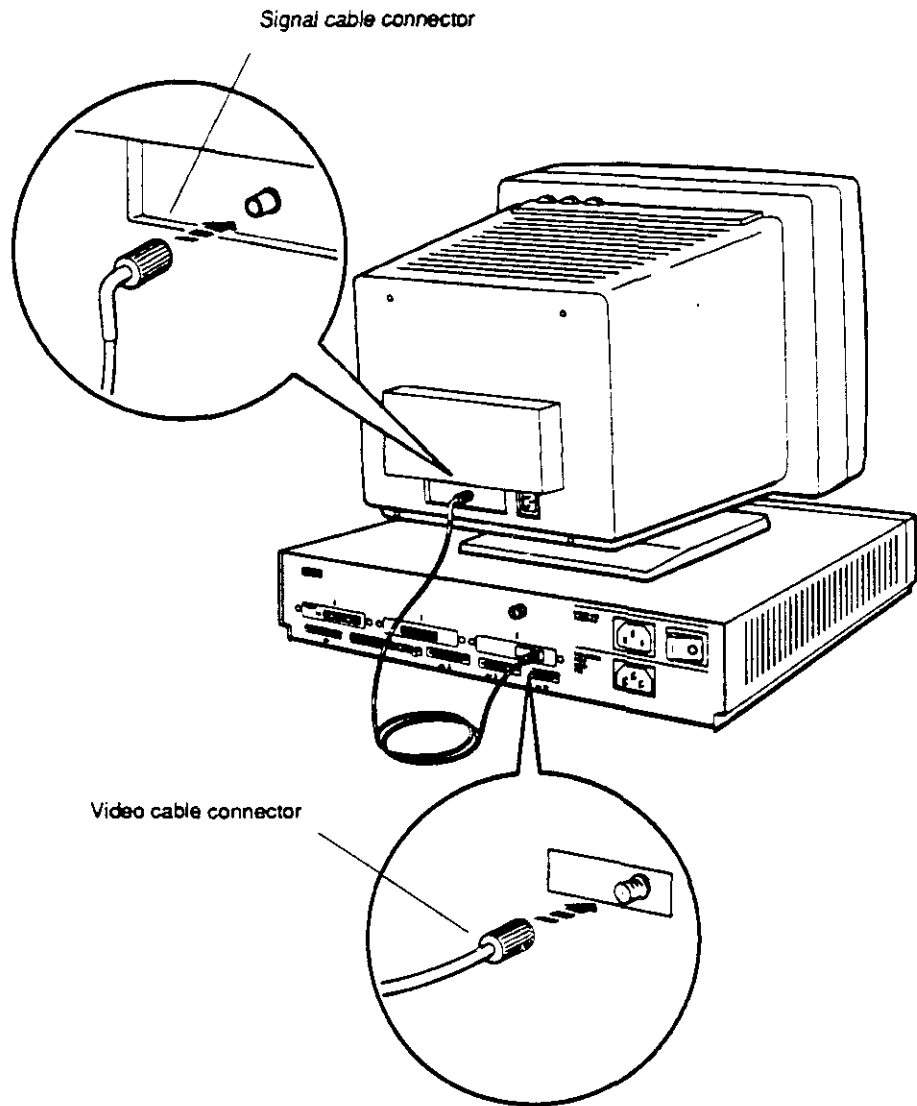
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Figure 3. Connecting a VR319 monitor to a monochrome frame buffer module

For Further Information

For information about the graphics module that connects to
the monitor, see the chapter in this guide that describes that   .
module.

A

VR319 Monitor Specifications

Table A-1. VR319-DA and VR319-D4 Monitor Description

Weight	22.68 kg (50.00 lb)
Height	45.72 cm (18.00 in)
Width	49.55 cm (19.50 in)
Depth	40.13 cm (15.80 in)
External controls, switches, and indicators	Brightness Contrast Degauss Power switch Power indicator Rotation H-center V-center
Tilt range	5° to 15°
Swivel range	±90°
Cathode-ray tube (CRT)	483 mm (19 in) diagonal Monochrome High resolution Paper-white phosphor High-efficiency antiglare treatment
Display characteristics	1280 pixels horizontal by 1024 lines vertical Approximate picture size 342 by 273 mm Maximum brightness no less than 30 footlamberts (fl)

Video input	
– Termination	75 ohms BNC
– Amplitude	1.0 Vpp composite video
Refresh rate	72 Hz
	Factory or field service configurable
Horizontal rate timing	
– Active video time	9.7853 μs
– Back porch	1.7124 ns
– Blanking interval	3.1802 μs
– Frequency	77.173 kHz
– Front porch	0.2446 ns
– Horizontal period	12.9579 μs
– Pixels displayed	9.7853
– Sync pulse	1.2232 ns
Vertical rate timing	
– Active video time	13.2767 μs
– Back porch	0.427864 ns
– Blanking interval	0.505658 μs
– Front porch	0.038897 ns
– Horizontal period	13.7842 μs
– Lines displayed	13.2767
– Sync pulse	0.038897 ns
Power	
– Power supply type	Switch mode ac to dc converter
– ac input	Automatic voltage select
– Frequency	47 to 63 Hz
– Power consumption	Approximately 123 watts
Fuse	250 V: 5 A
	6.35 by 31.8 mm (0.25 by 1.25 in) slow blow

Table A-2. VR319-DA and VR319-D4 Monitor Operating Conditions

Temperature range [1]	10°C to 40°C (50°F to 104°F)
Temperature change rate	11° (52°F) per hour maximum
Relative humidity	10% to 90% noncondensing
Maximum wet-bulb temperature	28°C (82°F)
Minimum dew-point temperature	2°C (36°F)
Altitude	2,400 m (8,000 ft) maximum

[1]Reduce maximum temperature by 1.8°C for each 1,000 meter (1.0°F for each 1,000 ft) increase in altitude.

Table A-3. VR319-DA and VR319-D4 Monitor Nonoperating Conditions

Temperature range	−40°C to 66°C (−40°F to 151°F)
Relative humidity	10% to 95% noncondensing
Maximum wet-bulb temperature	46°C (115°F) packaged
Altitude	4,900 m (16,000 ft) maximum