

Thunder 3D and Thunder TX•1152 1.0.7 Software

INSTALLATION INSTRUCTIONS & SUPPLEMENTARY INFORMATION

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Important Notes

- Do NOT install two drawing engines. It is not a supported configuration and may cause memory errors.
 - Thunder 3D and Thunder TX•1152 provide the best 3D performance in the 16 bit (thousands) color depth.
 - 3D programs often run best on 7500, 7600, 8500, 8600, 9500, 9600 and similar systems with "interleaved" (128 bit wide) memory configurations. Interleaved 128-bit memory configurations can improve 3D performance up to 50%.
 - Radius does not recommend using VM (Virtual Memory) with Thunder 3D and Thunder TX•1152.
 - The default drawing engine installed with the installer application is equal to the "Radius 3D Engine.nn" located in the "Alternate Drawing Engines" folder.
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Updating Your Thunder3D/TX•1152 ROM

To take advantage of the latest performance enhancements for your Thunder3D/TX•1152, you will need to update the ROM on the video card.

To update the ROM, follow these instructions:

1)

Drag the "Thunder3D/TX•1152 ROM" file onto the "RadiusFlash" application.

2) The RadiusFlash application will present you with a list of slots by number and attempt to identify the installed 3D video card. The correct choice for this ROM will be the card identified as "shorty".

3)

Enter the number that corresponds to the card identified as "shorty" and hit "Return".

4) Hit the "f" key to flash your ROM

5) The application will ask for confirmation. If you wish to update your ROM, hit the "y" key followed by a Return. If you do not wish to update your ROM, hit the "n" key followed by a Return.

6) If you entered "y", the software will then begin the process of upgrading your 3D card. Do NOT interrupt this process.

7)

Wait for the application to report, "Flash was successful!!!" If the application does not quit automatically, select "Quit" from the File menu.

8) Restart your computer.

Installation Instructions

1) Double-Click on the application "Double-Click Me".

2) The installer application will install the following:

Extensions Folder

Radius 3D QuickColor

Radius 3D Interface

Radius 3D Texture Config

Radius 3D Engine

3) Select the "Restart" button.

Alternate Drawing Engines

A folder is included on the Thunder3D/TX•1152 Installer disk named, "Alternate Drawing Engines." These engines may increase performance, but may have compatibility issues with your configuration.

To use these drawing engines:

- 1) Remove the 3D Engine from the extensions folder.
- 2) Place your selected drawing engine inside the Extensions folder.

****The drawing engine does NOT need to be renamed nor does the CPU need to be restarted for it to work****

Alternate Engines and their functions:

Radius 3D Engine.bi (bilinear drawing engine) - highest quality texture mapping - lower speed

Radius 3D Engine.nn (nearest neighbor drawing engine) - lower quality texture mapping - fastest speed

We have included two experimental drawing engines. These drawing engines may give more 3D performance, but may also cause artifacts:

Radius 3D Engine.exp.bi (experimental bilinear drawing engine) - highest quality texture mapping - lower speed

Radius 3D Engine.exp.nn (experimental nearest neighbor drawing engine) - lower quality texture mapping - fastest speed

****Do NOT install two drawing engines in the Extensions folder. It is not a supported configuration and may cause memory errors****

Compatibility

- Thunder 3D and Thunder TX•1152 are NOT compatible with Apple Macintosh 7200/70 and 7200/90 PCI machines. Thunder 3D and Thunder TX•1152 are also not compatible with Power Computing (and other machines) based on certain versions of the Catalyst motherboard. We are working with the various parties to provide a solution to this problem.
 - Thunder 3D and Thunder TX•1152 ARE compatible with the Apple 7200/120 and other machines based on this motherboard design.
 - Thunder 3D and Thunder TX•1152 are NOT compatible with the DayStar Quad processor system.
 - Thunder 3D and Thunder TX•1152 ARE compatible with the DayStar Dual processor system which includes Daystar and Apple MP systems (Dual-Processor).
 - Thunder 3D does NOT work "behind" the DEC PCI bridge chip used on some SuperMac (UMAX) systems. In these systems, two of the slots are connected directly to the Apple PCI Bridge chip (Bandit) and the other (four) slots are connected to the DEC PCI bridge chip. Please use Thunder 3D in the direct slots which are the top two slots in the system.
 - The MacOS needs certain OpenFirmware patches stored in NVRAM (parameter RAM) to properly configure and load the Thunder 3D driver from its flash PROM. If you reset your NVRAM, Thunder 3D and Thunder TX•1152 may not boot (video will not be displayed) the first time after the NVRAM reset. However, the patches are installed early in the boot processes. Subsequent reboots will configure Thunder 3D and Thunder TX•1152 and load the driver from the flash PROM.
 - 1920x1080 was listed as an available resolution in some early Thunder 3D brochures and press releases. Unfortunately, Thunder 3D does not support the 1920x1080 resolution.
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Known Problems and Issues

Known problems and issues with the 1.0.7 release. Please visit our internet web site at <http://www.radius.com> for the most recent information and latest software and driver updates.

1) Resolution or color depth changes while 3D is running can produce strange and unexpected results. We suggest that you do not change resolutions or color depths while 3D is "active."

- 2) 2D textures may overwrite 3D textures.
 - 3) Alpha blending (transparency) may not always image correctly.
 - 4) 3D bitmaps may have a column of pixels replicated due to floating point rounding errors.
 - 5) 3D Acceleration in 32 bit (millions of colors) mode with double-buffering active, will be slower than 16-bit color and may show tearing when rotating 3D models. Thunder 3D and Thunder TX•1152 provide the best 3D performance in 16-bit (thousands) color mode.
 - 6) The 1360x1024 resolution is really 1344x1024. This will be fixed in a later version of the ROM driver.
 - 7) Due to the way that Thunder 3D and Thunder TX•1152 do double buffering in 16 bit color mode, text highlighting will not work correctly unless the "Radius 3D QuickColor" Init is loaded.
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QuickDraw 3D and RAVE Support

Thunder 3D and Thunder TX•1152 provide all standard RAVE capabilities and most optional capabilities. The following are currently not supported.

- 1) Thunder 3D and Thunder TX•1152 are compatible with QuickDraw 3D v1.0.6, v1.5 and v1.5.1.
- 2) Memory and cached contexts are not supported.
- 3) Texture depths supported are 1, 16, and 32 bit with or without an alpha channel. In the future 4 and 8 bit palletized textures will be supported. However the texture allocator and loader will probably convert them to 16 bit textures.
- 4) Thunder 3D and Thunder TX•1152 support thirteen 3D contexts (accelerated 3D windows). Thunder 3D and Thunder TX•1152 returns the correct error code when it runs out of contexts but many applications do not process the return correctly and crash. Others silently invoke Apple's software interactive renderer.

Each Thunder 3D and Thunder TX•1152 context currently takes 512 KB of pool allocated contiguous memory for DMA buffers. The driver takes 256 KB of pool allocated contiguous memory for DMA buffers. These numbers may change in future releases.

5) Thunder 3D and Thunder TX•1152 returns the following RAVE Engine Gestalt:

```
ASCIINameLength: 16
ASCIIName: Radius 3D Engine
VendorID: 2
EngineID: 1
Revision: 1
Texture Memory available: 1
Fast Texture Memory available: 1
FastFeatures:
  Antialiasing
OptionalFeatures:
  DeepZ
  Texture
  Blend
  BlendAlpha
  Antialias
```

Note that the Texture Memory available numbers are wrong.
Anti-aliasing is currently not supported.

6) MipMapping is currently not supported.

7) OpenGL RAVE support is not provided.

How Thunder 3D and Thunder TX•1152 Work ...

Thunder 3D and Thunder TX•1152 do not support some older SuperMac and Radius monitors.

Essentially, Thunder 3D and Thunder TX•1152 support the same monitors that Apple's PCI machines support with built in video (BIV), with the exception for NTSC, PAL, and a few other (not often used) monitor types.

On Apple's Built in Video, a monitor is identified by a 3 bit standard sense code and a 6 bit extended sense code. The following table lists the currently supported sense codes, the associated monitor type, and the type of monitor sync supported.

Apple Built in Video sense codes

Standard Extended Monitor

Sense Sync
Sense Sense

Type
Type

0 0x00 Apple 21" Color

H- and V-

1 0x14

Apple 15" Portrait Mono
H- and V-

3

0x25

Apple 21" Mono (Kong) H- and V-

5 0x1E

Apple 15" Portrait RGB H- and V-

6

0x2B

Apple 13" (Hi-Res) RGB Composite

6

0x03

13" Multi Scan H- and V-

6

0x0B

17" Multi Scan H- and V-

6

0x23

21" Multi Scan

H- and V-

7

0x17

VGA

Sync on Green

7

0x2D

Apple 16" RGB

H- and V-

7

0x3A

19" 1024x768

H- and V-

7

0x3B

19" 1024x768

H- and V-

Resolutions and Acceleration Modes available at different color depths

Thunder 3D

Resolution	8 bit (256 Colors)	16 bit (Thousands)	32 bit (Millions)
640 x 480	2D Only	2D / 3D	2D / 3D
832 x 624	2D Only	2D / 3D	2D / 3D
1024 x 768	2D Only	2D / 3D	2D / 3D
1152 x 870	2D Only	2D / 3D	2D / 3D
1280 x 1024	2D Only	2D / 3D	2D / 3D*
1344 x 1024	2D Only	2D / 3D	2D / 3D*
1600 x 1200	2D Only	2D / 3D	2D / 3D*

* Note: 3D acceleration will be single-buffered ONLY

Thunder TX•1152

Resolution	8 bit (256 Colors)	16 bit (Thousands)	32 bit (Millions)
640 x 480	2D Only	2D / 3D	2D / 3D
832 x 624	2D Only	2D / 3D	2D / 3D
1024 x 768	2D Only	2D / 3D	2D Only
1152 x 870	2D Only	2D / 3D	2D Only
1280 x 1024	2D Only	2D Only	

NA 1344 x 1024	2D Only	2D Only
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NA 1600 x 1200	2D Only	2D Only
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NA

Customer Support

If you have a problem you cannot resolve through your Radius Authorized Reseller, contact Radius Customer Support by phone at +1 (408) 541-5700, Monday through Friday, 7:00 a.m. to 5:00 p.m. Pacific Time, or by FAX at +1 (408) 541-5008.

Radius maintains user forums, where we post updated versions of our software, on the following on-line information services. Customer Support personnel can also be contacted directly via these information services by sending mail directly to the specified address:

Service	Forum	Address
Internet World Wide Web	WWW	http://www.radius.com
CompuServe	GO APVENB, LIB 14	76004,2155
America Online	Keyword: RADIUS	RadiusTS

Internet ftp site: "ftp.radius.com" support@radius.com
Radius BBS +1 (408) 541-6190

For up-to-date information on any Radius product call our automated
Fast-Fax Information System at (800) 966-7360.

For Technical Fax back information please call (800) 332-9225

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