30Video GS Installation Guide

Howdy! Thank you for purchasing my 30Video GS card! – zigzagjoe :)

To install the card, follow these instructions carefully. If you are at all uncomfortable with working near high voltages, seek a qualified individual to assist you with the installation. Please take care: I am not responsible if you accidentally injure yourself or cause damage to your computer during the installation process.

In the Box

1. 30Video PDS card
2. IO cover
3. VGA cable
4. 2x M3 Philips screw and nuts

Optional Grayscale Kit

1. CRT Neckboard
2. Wire harness
3. Adjustment tool

Installation

Before working in your computer, leave it unpowered overnight to discharge the electronics.

⚠️ **You may discharge the CRT directly if skilled. This involves high voltage and risk of harm to yourself and the machine. Use caution if you choose to do this.** ⚠️

1. Remove plastic programmer's switch, if present.
2. Using a long Torx T-15 screwdriver, remove the two screws near the IO area and 2 screws under the handle, then remove the rear of the case.
3. Remove the 3 screws attaching the expansion port bracket to the chassis.
4. Install the VGA cable into the IO cover, if needed
5. Attach the IO cover to your expansion port bracket using the provided screws.
6. Plug the VGA cable into the connector labeled "VGA" on the PDS card.
   a. ⚠️ **Connector only fits one way**! ⚠️
7. Seat the card **carefully** into the PDS slot on the motherboard.
   a. It may take some force, but it should seat smoothly.
   b. Ensure the logic board is entirely forward in the chassis rails if the card does not seem to be seating correctly. Check that no pins have become bent and nothing is stuck in your PDS slot.
8. **If you purchased the grayscale kit, stop here, and proceed to grayscale kit installation instructions.**
9. Attach the expansion port bracket to the chassis.
   a. If grayscale kit installed, connect remaining grounding lead to the center screw.
10. Remove the plastic IO port cover from the rear of the case by carefully pushing on it.
11. Reassemble machine.

plugs into video card vga connector

SE/30 Expansion Port Bracket
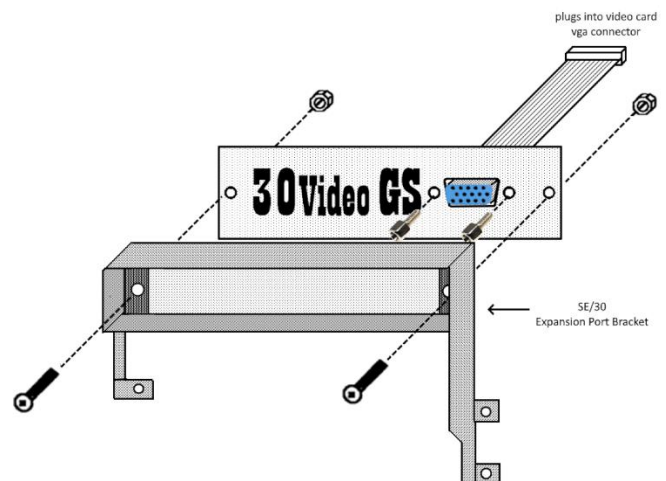
Stacking cards

You may stack additional PDS cards on top of the 30Video card. If doing so, you will need to carefully bend the card support tabs on the SE/30 chassis away from the second card. You should cover the sides of the brackets with insulating tape to avoid shorting out your cards.

You may need to change the 30Video card's ID if installing multiple cards. 30Video supports slots **9** and slot **A**, selectable by the slide switch on the card.

Grayscale kit installation

⚠️ **This involves working near fragile parts. USE EXTREME CAUTION while working around the CRT.** ⚠️

1. Disassemble the machine and install the PDS card as directed above.
2. Remove the upper-right torx screw securing the CRT to the frame to free the neck board's grounding lug.
3. With utmost caution, pull the apple neckboard straight off the back of the CRT tube
DO NOT ROCK OR WIGGLE THE BOARD!! YOU WILL BREAK THE CRT!
4. Unplug the connector from P4 on the analog board. The neckboard can now be removed from the machine.
5. Unplug the logic board cable from the logic board and unplug it from the analog board, then remove it.
6. You are now ready to install the grayscale harness.
7. Connect harness **J2** to **P4** on analog board (this is where stock logic board cable plugged in)
8. Connect harness **J3** to **P2** on analog board (this is where stock neck board cable plugged in)
9. Connect harness **J1** to **J12** on the logic board (other side of logic board cable)
10. Reinstall the torx screw securing the CRT to the frame with the longer of the grounding cables attached to J5.
11. Attach **J5** to the new neckboard.
12. **With care,** seat the new neckboard onto the CRT neck. **DO NOT ROCK OR WIGGLE THE BOARD!**
13. Attach **J4** to the 30Video GS card seated in the PDS slot.
14. During reassembly, attach the remaining grounding lug to one of the expansion card screws.
15. Proceed to adjust the cutoff.
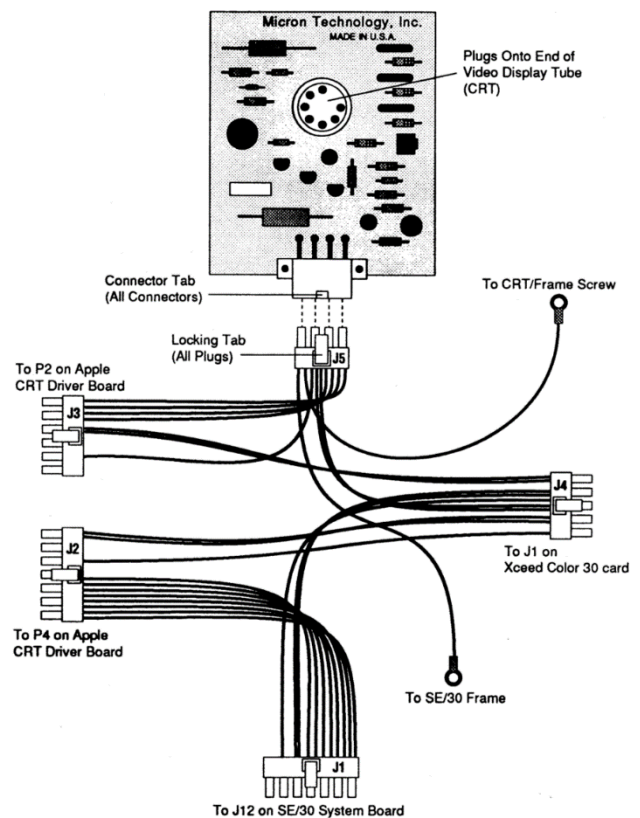
Grayscale Cutoff adjustment

1. Power on your computer on with the back off.
2. Verify you have 256 shades of gray in the Monitors control panel, but leave it in B&W mode. Put something with high contrast on the screen. Allow machine to run for 5 minutes to warm up.
⚠️ **DO NOT TOUCH ANYTHING METAL INSIDE THE MACHINE WHILE IT IS POWERED.** ⚠️
3. Adjust the external brightness adjustment to maximum.
4. **Using the provided nonconductive adjustment tool,** adjust the cut-off control located on the side of the analog board to the point just before retrace lines (zigzag lines across the screen) are visible, and black sections of the screen remain dark. See figures on following page.
5. **Using the provided nonconductive adjustment tool,** adjust the potentiometer **RV1** on the right side of the neckboard just below the point at which fine detail / text becomes "smeared".

Main Cutoff Adjustment

Secondary Neckboard adjustment
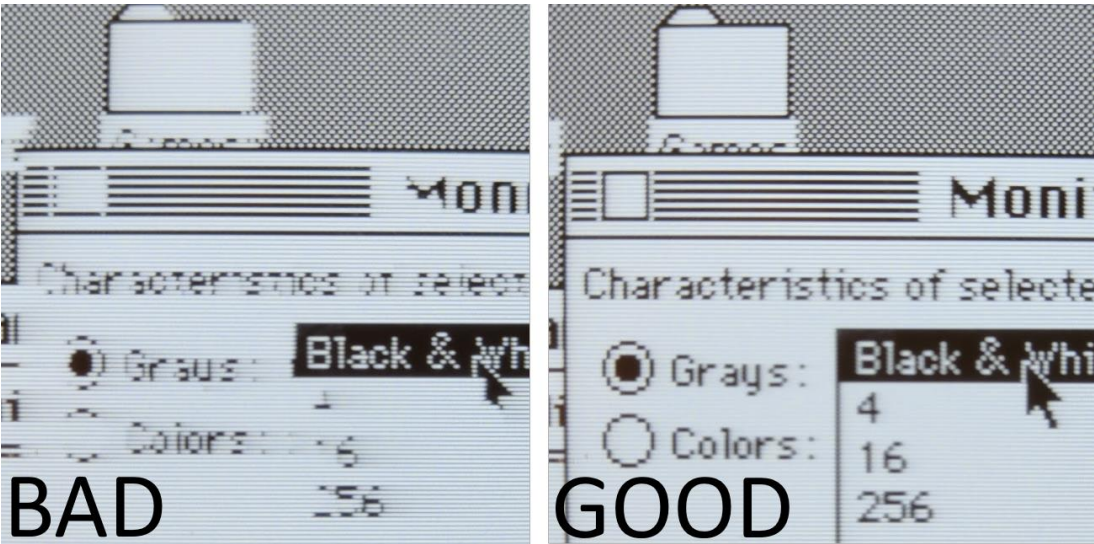
Usage

No software is required to use the card – plug-and-play!

Connect a VGA cable and monitor to the VGA connector **prior to turning system power on**. Do not plug VGA in while the system is powered. Your monitor will be detected and turn on shortly after system boot.

If grayscale harness is installed, **and external monitor is not connected,** the internal screen will have 256 shades of gray available. You may also use any of the color modes as they will be mapped to appropriate shades of gray.

To change the active resolution, open Monitors control panel, select the 30Video screen, and click the Options button. Pick the new resolution, then reboot your system. This will work on System 6.0.8+. Changing resolutions is not supported when internal grayscale is active.

Gamma correction: VGA monitors will default to a linear gamma appropriate for **LCD** monitors. In grayscale mode, the internal screen will default to an appropriate CRT correction table for the SE/30.

You may change the active gamma table by opening the Monitors dialog and holding the option key while clicking the Options button. A linear (uncorrected) and CRT table are provided for both external VGA and internal grayscale modes. Additional gamma tables can be created using third party software.

Other Notes

- While 256 shades of grays are supported on external VGA monitors, only 16 shades of gray will be available. This is normal, and there is not a workaround. This limitation does not apply to internal grayscale.
- While using netBSD or MacsBug, you may notice that the right margin of the display has turned on and has white or random contents. While strange looking, this is not harmful.

Compatibility notes

No issues have been discovered to date.

- Supports System 6 - 8.1, A/UX (3.0, maybe others), netBSD
- Works with Carrera 040, Interware Booster, DiimoCache, and likely all accelerators.
- Compatible with IIsi and SE/30 ROMs in either 24 bit or 32 bit mode.
- Highly recommended to have a recapped or retrofitted power supply.

Reporting issues

I've done the best I can to test this card thoroughly, but bugs are always possible. Please report any issues through this github repository. Updated firmware and flashing utilities will be posted here as well, and please feel free to ask questions.

https://github.com/ZigZagJoe/30Video-Support

🖥 **Happy Macing!! :)**