□□→□□ Rescanning

Rescanning is a capture method where you simply point a digital video camera at a screen that is displaying your analog video signal.

Cameras

It is important to have manual control over at least the shutter speed, exposure, and focus of the camera you're using to rescan. If you don't have a digital camera available with manual settings, there are now many smartphone apps that allow you to manually control these settings on a phone camera. Many smartphones now have very OK cameras in them so this can actually yield very good results, especially if it is also possible to record without compression. It can be helpful to use an adapter that lets you mount the phone on a tripod.

Here are some manual camera phone apps that we have heard about (availability & price may vary by OS):

- Pro Shot
- ProCam
- Filmic Pro (subscription-based)
- Blackmagic Cam

If you do have a dedicated camera available, DSLRs and good digital camcorders will offer manual controls as well.

You will most likely want to lock the focus, exposure, and other image settings such as white balance, so that the camera will not automatically change these during your recording.

Screens

The two main types of screens you will find are **CRTs** and **digital screens** (including LCDs, plasma, and OLED.)

When working with CRTs, it is important to lock your shutter speed to 1/60 for NTSC, or 1/50 for PAL, to make sure that each frame of your camera's recording will contain one full frame of your analog video signal. If you see slices of the screen as dark on the camera, but the image on the screen looks normal to your eyes, you are probably not shooting at 1/60.

LCDs and other digital displays have to digitize each frame of your signal as it appears on the screen. This means that they will be less forgiving of a glitchy or unstable signal than CRTs. Some

HD screens will upscale an analog signal before it is displayed, which can change its visual qualities. Whether you like the way a given screen renders your signal is a matter of preference. Be sure to familiarize yourself with the settings available on your monitor if you want maximum control over the appearance of your image.

Also be aware of aspect ratio. Many screens have options for either 4:3 or 16:9. You can use whichever you prefer or feel looks best for your image. If you are capturing a 4:3 image but your camera does not have that as an option, you may want to crop the video in an editor.

Tips

Lighting

Generally, it can be helpful to try to work in a darkened room to prevent accidental reflections and screen glare. If you can't control the lighting in the room, you can also build a "hood" just around the camera and the screen to keep the light out. As examples, this could be made out of cardboard, wood, or a frame draped with blackout fabric.

Camera position

Unless you want to play with angle and perspective, you probably want the camera to be positioned so it is pointing squarely at the screen. (If you are also working with an analog camera for feedback, it can be helpful to use a separate monitor for rescanning so that both cameras can be pointing directly at the screen without getting in the way of each other.)

Usually it is preferred to have the image of the screen centered in the frame of the camera. It is up to you if you want to zoom in so that the analog video fills the camera's view, or stay a bit more zoomed out to keep the edges visible (for example, if you are rescanning a CRT with nice rounded edges and you want to preserve that effect).

Note: you can always crop in an editing program later, but you can not zoom out.

Using a heavy tripod for extra stability can be helpful to prevent accidental bumps or vibrations from messing up the capture.

Moiré

Sometimes the grid of the pixels on your camera can interact strangely with the grid of pixels (or the pattern of the shadow mask) of your display. When this happens, it can be helpful to put your camera very slightly out-of-focus to soften the image.

It can also help to shoot in UHD/4k if possible so that the camera's pixels will be small enough to prevent this interference pattern.

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