

# Eliminating ADAT Mishaps

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at the scanner amp or projector. Here's how to calibrate the ADAT outputs.

For the original models, you should have an external gain and offset box that can be precision adjusted. For the newer models, you will be adjusting the output controls on the CADA-MOD. Use an oscilloscope to adjust each channel's output gain control to produce the same voltage that is seen at the input.

If you do not have a scope, the best solution is to eyeball the output projected by the laser. Make the laser image appear the same size and color whether the ADAT is in the circuit or not.

## Audio Level Calibration

Audio levels are far less critical than the image levels. For channel 6, SMPTE readers have a large window of acceptability. For channels 7-8, audio levels can easily be adjusted on the stereo amplifier. The main concern is clipping. Unlike analog recorders which can record well into the red zone, the ADAT absolutely can not record into the red zone. Therefore make sure that audio channels never illuminate the red "MAX" light or you will hear a very unflattering distorted version of the audio.

It is easy to maximize compatibility with other ADAT users by following the standard track assignments, signal polarity and amplitude. The key factor is making sure your input levels are calibrated. Fortunately, this needs to be done only once. After your input levels are set correctly with the "MAX" light technique, don't adjust them further.

One laserist unknowingly had a problem with his output levels being too low; he tried to "fix" the problem by increasing his input levels. Little did he know that he was masking a downstream output problem while creating an incompatibility with all other ADAT users. When he played his tape on other systems, the images were too large.

To avoid this, and other problems, simply follow the basic techniques outlined in this article.

# Avoid ADAT Mishaps with Simple Steps

## ADAT Makes Exchanging Laser Shows Easy—if the Recording Is Done Right

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One of the success stories of the laser display industry is the standardization of graphic shows produced on ADAT tapes. If you need a laser show, you can have one sent to you on a low-cost S-VHS videotape, which then plays back on an ADAT tape deck almost exactly as the laser artist originally recorded it. Unfortunately, the "almost" part is because some tapes are not recorded correctly.

In recent months, I have received tapes that produced images too small or too large to fill a screen. I have also seen tapes played at awards ceremonies that began mirror-reversed, until someone backstage flipped a switch. To reduce these problems, I would like to briefly review the ADAT specifications and adjustments.

There are three key ILDA specifications: channel assignment, signal polarity, and signal amplitude.

Channel assignment is not usually a problem, but should be mentioned here for completeness. ADAT channels 1 through 8 are assigned to the following signals: X, Y, Red, Green, Blue, SMPTE/DMX, left audio and right audio.

Signal polarity follows the ILDA connector standards. For X and Y, a positive voltage moves the beam toward the right and top, referenced to a front projection configuration. For Red, Green and Blue, a positive voltage produces color output while zero voltage produces no color output.

What usually causes trouble here is an inverted X voltage, used by some people because they are rear projecting. But this is shortsighted. An ADAT tape recorded in such a way could not be used for other productions or for awards submissions—at least, not without some embarrassment when text and graphics are mirror-imaged. Instead, everything

should be recorded as if it will be front projected. At the show site, simply use your scanner amp or other hardware to invert the signal after it is output from the ADAT deck.

Signal amplitude gives the most trouble. For channels 1-5 (X, Y, Red, Green and Blue), the input gain should be calibrated just below clipping—just before the red "MAX" light illuminates. For channels 6-8 (SMPTE/DMX, left audio, and right audio), the input gain is less critical, as described below.

### Input Calibration

Input calibration for the laser signals on channels 1-5 is done with input gain controls. On the original black-faced Alesis ADAT and Fostex RD-8 models, input calibration is handled externally (before signals reach the ADAT) by gain and offset boxes. If these boxes are not used, an alternative is to place resistors

or pots in the signal cables. On newer Alesis models such as the XT, input gain controls are internal on the CADA-MOD board.

Input calibration requires only the laser graphics source and the ADAT machine itself. Simply input a full-size all-white test pattern. Increase the input gain control on each channel until the red "MAX" light is illuminated, then slowly decrease the input gain until the MAX light extinguishes. This calibration is critical, as it ensures that all ADAT tapes will be recorded in the same manner. Fortunately, input calibration is easy and accurate, since the MAX light monitors the internal digital data.

### Fine-Tuning the Output

Calibration of the ADAT's output level is more difficult, but is less critical since any inaccuracies can be compensated for

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