

ATD-1200 Dolby Digital/Analog Basement Reader

Test Setup with Oscilloscope

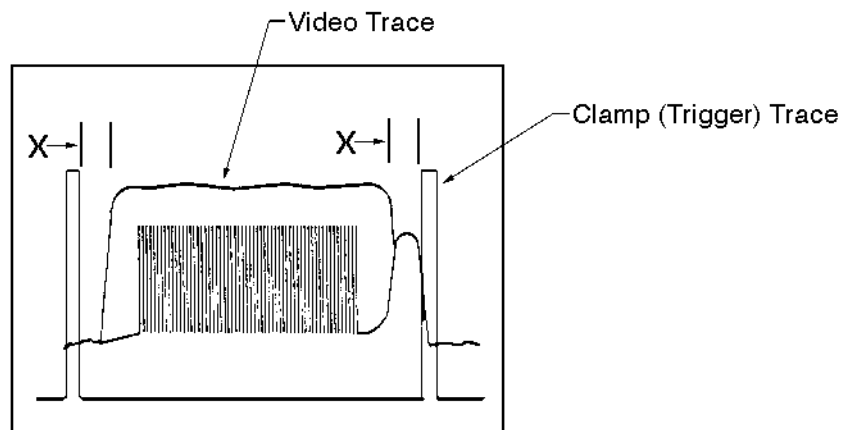
The following test setup will enable adjustment of focus and confirmation and adjustment of LED level and optical alignment.

1. Make sure power to ATD-1200 power supply is provided, Power to the Digital Processor should also be turned on.
2. Open the Digital Processor to gain access to the test points.
3. Connect a probe from Channel 1 of a 20MHz or greater bandwidth oscilloscope to the VIDEO test point of the Video Acquisition Card, with the ground lead to the VGND.
4. Connect a second probe from the scope's Channel 2 to the CLAMP signal test point to trigger the scope. Connect the second probes ground to DGND.
5. Set the trigger source on the scope to Ch.2.
6. Adjust the Ch.2 vertical trace position to move the trace off the screen. It is not necessary to view this signal once triggering has been established. Adjust the scope for 1 horizontal trace across the screen and adequate vertical gain (approx. 2 usec / div. horizontal, 1 V / div. vertical). With SRD film threaded and running in the projector, observe the video waveform. (see figure 1 in next section)

Focus Adjustment

The ATD-1200 Readers are factory adjusted and should not require adjustment during installation. If the unit has become misadjusted focusing may be performed. Using the setup as above, adjust the lens/ CCD assembly in the reader by loosening the clamp screw located on the upper lens holder assembly, and move the lens assembly back and forth. The best focus is achieved when the scope pattern has minimum brightness in the center of the trace. There will always be some light here; one is looking for the most "focused looking" display, with minimum brightness inside the envelope. This should correlate with a minimum error rate. Re-tighten the lens clamping screw.

figure 1



Adjust for minimum brightness in center of image.

LED Level Confirmation and Adjustment

The output voltage of the LED supply is factory set to be between 3.5 and 4 volts. LED intensity has a direct relationship to the video signal voltage. The acceptable range for the peak video signal voltage (of unobstructed light through the perf hole) is between 2.7 and 5 volts (see figure 1). Under normal circumstances, the LED power supply voltage will never need adjustment to achieve the acceptable video voltage range. However, some combinations of individual LED intensity and projector speed may result in a video signal outside the 2.7 and 5 volt range. In that case, it may be necessary to adjust the LED power supply.

If the top of the video waveform is not reasonably flat (± 1 division), check for dirt, dust, or other obstruction to the light path, and clean as necessary.

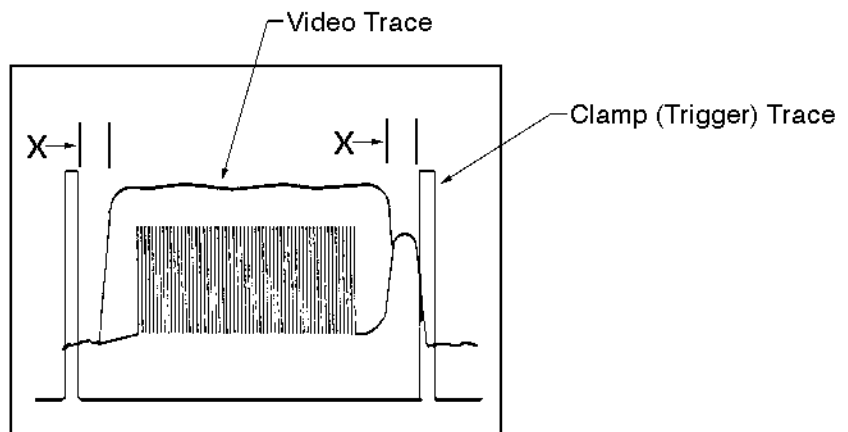
Optical Alignment

The Reader is optically aligned at manufacture and should not require adjustment unless the CCD board has been removed or replaced (the CCD sensor is located on the CCD circuit board, Optical alignment of the sensor depends on the position of the circuit board). The procedure for confirming or adjusting the position of the CCD board follows.

Lateral

Lateral position can be confirmed if the video signal (of unobstructed light through the perf hole) on the oscilloscope falls in the center of the total CCD video signal. To center the video signal on the scope do the following.

1. Use the scope setup described in the first section of these instructions, observe both channel 1 and 2.
2. Run SRD film through projector.
3. The scope image should be adjusted to look like the diagram at right.
4. If the CCD circuit board is aligned, the video signal of light through the perf hole will be centered



- between the falling edge of clamp (trigger trace and the rising edge of the clamp trace. As in the diagram, distance "X" will be equal on each side of the video signal.
5. To re-align the CCD board, first loosen the lateral lock screw, and then adjust the lateral position using the lateral adjust screw. When the video trace is centered with respect to the clamp trace, tighten the lock screw.

Azimuth

The azimuth adjustment controls the angular position of the CCD board with respect to the film. To adjust the azimuth of the CCD do the following.

1. Loosen the azimuth lock screw.
2. Turn the azimuth adjust screw clockwise then counterclockwise and observe the LEDs on the Cat.671 boards of the processor.
3. Center the rotation of the CCD circuit board assembly between the angles at which synchronization pattern finding begins to fail. See discussion below.
4. Tighten the azimuth lock screw, and then refocus the Soundhead.

Verification of synchronization pattern finding

The Cat.671 cards are responsible for resampling and locating sync patterns in the digital data. These cards display sync found on their LEDs. The 8 LEDs from top to bottom display sync found as follows:

- * Upper Left found first pass
- * Upper Right found first pass
- * Lower Left found first pass
- * Lower Right found first pass
- * Upper Left found at all
- * Upper Right found at all
- * Lower Left found at all
- * Lower Right found at all

If any of these LEDs are constantly unlit, this may indicate improper positioning of the film or CCD circuit board.

Proper adjustment of position, intensity and focus will be verified by observing no error light flashing and minimum error rate displayed on the Cat.673 FIFO/Resources/Error Correction/Delay board.