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Dolby Laboratories Inc

Field Bulletin 218

Reverse Scan Analog Soundhead Readers
Extending LED Life
Solar cell preamp gain change and LED drive current change

- ☐ Modification Urgent
- ☒ Modification Recommended
- ☐ Modification Required on Early Units
- ☐ Modify Only if Problem is Present

Introduction

Insufficient light output from visible (660nm) Red LEDs in some analog soundtrack readers results in the inability to reach Dolby Level when adjusting the A-chain gain on the cinema processor.

The following modification will increase the overall gain of the solar cell preamp by approximately 2.5 times, allowing LED drive current to be reduced. The LED will run cooler and its life will be extended.

We suggest that you perform this modification even if your reader currently achieves Dolby Level during normal A-chain level adjustment. The LED will usually not stop emitting red light suddenly. When the light output is insufficient to reach Dolby Level, even after completing the modifications outlined below, the LED must be replaced.

Cause

Some analog reader manufacturers have set the Cat. No. 655 solar cell preamp gain jumpers to 1X. To achieve Dolby Level, the 1X gain setting requires greater LED output. With higher drive current, the LED runs hotter, reducing the light intensity more quickly over the life of the LED.

In normal operation, the LED will exhibit gradually reduced light output over its life (approximately 15,000 hours, average, several times longer than the expected life of a standard tungsten lamp). In order to achieve Dolby Level, periodic adjustment to the power supply current driving the LED may be necessary.

Switching off the LED when not in use, by connecting its power source to the projector motor start, may extend both the time between adjustments and the life of the LED.

Modification

Perform these two modification steps:

- Remove wire jumpers J3 and J4 on the Cat. No. 655 solar cell preamp board.
- Reduce the power supply current driving the LED while maintaining enough LED illumination to achieve Dolby Level.

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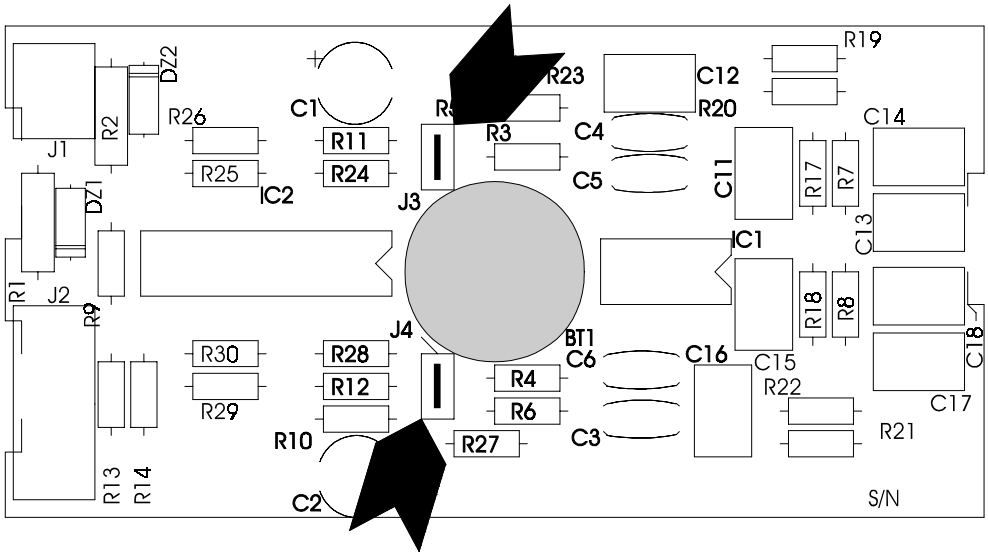
Modification Details

1. Use wire cutters to carefully remove jumper wires J3 and J4 on the Cat. No. 655 solar cell board. See the figure below showing jumper locations.



2. Reduce the current driving the reader LED to minimum using the control on the LED power supply.
3. Set the gain adjustment on the cinema processor optical preamp board to maximum.
4. Thread and play Cat. No. 69T Dolby tone test film.
5. Adjust the LED current so that the **top** (red) level indicators on the Cat. No. 222 noise reduction module are illuminated (both channels).
6. Reduce the preamp gain until the **bottom** red LEDs are illuminated.
7. Adjust the current driving the reader LED until the two green **Dolby Level** indicators are equally illuminated on one or both channels.
8. If necessary, adjust the preamp gain on the other channel to indicate Dolby level for that channel.

If the LED output cannot produce enough signal to achieve Dolby Level, then the LED is at the end of its useful life and should be replaced.

Avoid direct eye exposure to the red LED beam. Do not attempt to view the LED beam with any type of optical device.

Note: For other OEM analog reader boards requiring this modification, please contact Dolby Laboratories for specific information.