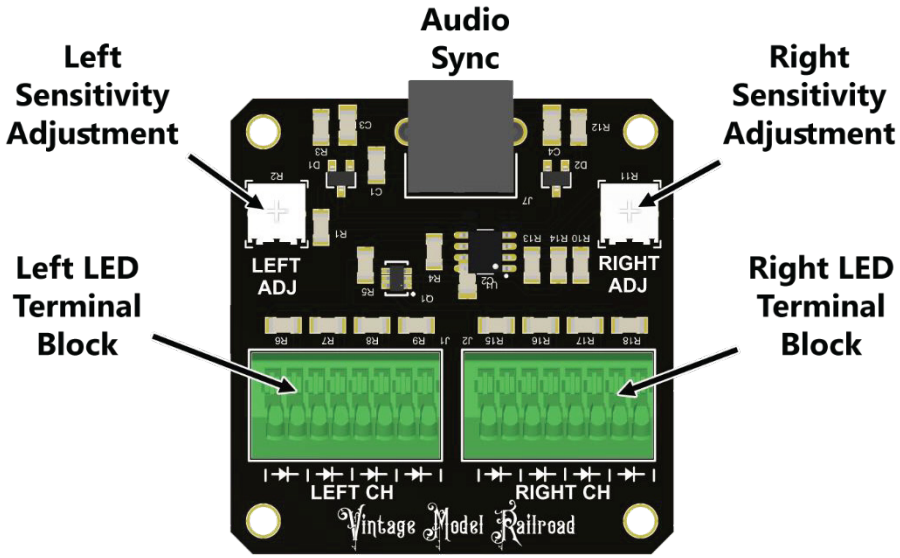
Environmental Sound Module Pro – Audio Sync

The Environment Sound Module Pro Audio Sync Board (ESM-ProSync) is used synchronize the intensity of LEDs to the sound level being played from the ESMPro.



Features:

Audio and Light Synchronization

The ESMProSync board drives the intensity of two banks of LEDs in proportion to the sound level of the sound being played by ESMPro. This can be used to add sophisticated sound and light automation to your layout. For example, an campfire using LEDs of different colors can flash in synchronization with a fire crackling sound being played by the ESMPro.

Dual Channel Support

The ESMProSync receives both a left and right channel audio signal from the ESMPro, whether that signal is stereo or mono. This provides the user to drive two separate banks of four LED each with different sensitivity levels.

Sensitivity Adjustment

Each audio channel has its own sensitivity adjustment. This provides the user with the ability to set different condition for when the LEDs in each bank will be on and off.

Operation:

Connecting the ESMProSync

Connect the ESMProSync to the ESMPro using any standard 6conduction RJ11/12 phone cable. Connect this cable to the Audio Sync jack on the ESMPro and the ESMProSync.

LED Connection to the ESMProSync

Each bank of the ESMProSync drives up to four LEDs. The drive signal is 5V at 20mA. LEDs are connected directly to the LED terminals. A dropping resistor is not needed as one is already provided on the ESMProSync board. Note the polarity as labeled. Connecting the LEDs incorrectly will not damage the LED or the ESMProSync board. The LEDs will just not light if connected incorrectly.

Adjusting the LED Sensitivity

Each channel on the ESMProSync board has its own sensitivity adjustment. When the sound volume of the incoming audio channel exceeds the set threshold, the LEDs in that bank will turn on. They will turn off when the incoming signal drops below the set threshold.

To adjust the sensitivity, play the desired sound and adjust the sensitivity potentiometers until the desired LED operation is achieved.

Examples:

Thunder and Lightning

The addition of thunder and lightning can add a very dramatic effect to your layout.

LED Setup

To achieve maximum brightness, it is recommended that white LEDs be connected to all eight of the LED terminals.

If placed behind your scenery, these LEDs will illuminate your background sky as if the lightning has occurred off in the distance.

Sensitivity Adjustment

An impressive effect can be achieved if the two sensitivity adjustments are set to different levels. Start by setting both levels to their maximum so that the LEDs are not lit when the sound plays.

Initiate a trigger signal on the ESMPro to play the thunder sound. Reduce the sensitivity on one bank until the LEDs in that bank are on when the thunder strikes AND continues when it rumbles. These LEDs should be off when no sound is playing.

Now reduce the sensitivity of the second bank until the LEDs in that bank are on ONLY when the thunder strikes and the sound is at its loudest.

Welding

Achieving a welding effect is similar but simpler than a thunder and lightning effect. Use as many LEDs as are appropriate for your application. When playing a welding sound, adjust the sensitivity of each bank on the ESMProSync board until the LEDs flash only when the welding sound is heard. White LEDs are recommended for this application although a few blue LEDs can be considered as well.

Fire

A campfire, bonfire, or building fire effect highlights the ability of the ESMProSync. Unlike the previous examples, a fire is never off. It just varies in intensity over time.

LED Setup

It is recommended that the right and left channels be set up differently. In this example, use the right channel for the base illumination. Use a combination of red and yellow LEDs in this bank. Experiment with the ratio of red and yellow LEDs to get the desired effect.

The left channel will be used for the high intensity flashes of the fire. Connect either all yellow or possibly a combination of yellow and white LEDs to this bank.

Sensitivity Adjustment

Start with the sensitivity adjustments on both channels set to maximum so that no LED are on when the sound is being played. Adjust the right channel until the LEDs are flickering but almost always on. This establishes your base fire effect.

Adjust the left channel sensitivity until the LEDS in that channel are on only when the fire sound is at its highest level.