EM31AX User's Manual (Firmware 1.0)

Specifications

File Formats: MP3 (ISO 11172-3), WAV (uncompressed PCM)
Audio Output: stereo line level (no built-in power amplifier)
Memory Card: CompactFlash (CF) type I, 2 GB max.
Max. Animation Cycle Time: 8.5 minutes
Min. Animation Resolution: 1/8 seconds
Max. Relay Load: 12A @ 120VAC, 10A @ 240VAC/28VDC
Operating Voltage: 12V DC
Typical Current Consumption: 60 mA standby, 100 mA operating
Physical Dimensions: 6.6" x 3.1" x 1.5" without mounting brackets

Inputs & Outputs

Power Input: VDC & GND
Use a 12VDC, 200mA power supply. Connect the positive to VDC, and the negative to GND (ground).

Trigger Input: TRG
The animation is started by shorting the trigger input to GND momentarily. This can be achieved through various devices such as push buttons, pressure mats, and motion sensors (with normally open contacts.) The animation will automatically repeat if the trigger input is still tied to GND at the end of the cycle.

Reset Input: RST
The system can be reset by shorting the reset input to GND. The animation cycle, if activated at the moment, will be stopped right away.

Relay Output: N.C. / N.O. / COM
Both normally closed (N.C.) and normally open (N.O.) contacts are available for external device control. Maximum load is 12A @ 120VAC, or 10A @ 240VAC/28VDC.

Audio Out
The stereo, line level output is available from the 1/8" stereo headphone jack located on the left side of the unit.

CF Card Slot
The system utilizes CompactFlash card for sound files storage. Maximum capacity supported is 2 GB. The card must be formatted with the FAT file system. Be sure to turn the power off before inserting the card, otherwise the unit will not work until the power is recycled.

Programming Instructions

The animation cycle, up to 8.5 minutes long, can be programmed into the unit through the following procedures:

1. Either disconnect the trigger input or make sure that the trigger input will not be activated accidentally during the programming.

2. Press the PGM button for more than one second to enter the programming mode. When the PGM button is released, the PGM light will be turned on and the programming cycle starts.

3. During the programming cycle, press/release the AUDIO button at any time to activate the sound. If the previous sound is still playing, pressing the AUDIO button will have no effect.

4. During the programming cycle, press/hold the ACTION button at any time to activate the relay. The ACTION light will be turned on while the relay is activated. The relay will be deactivated when the ACTION button is released.

5. Minimum animation resolution is 1/8 second.
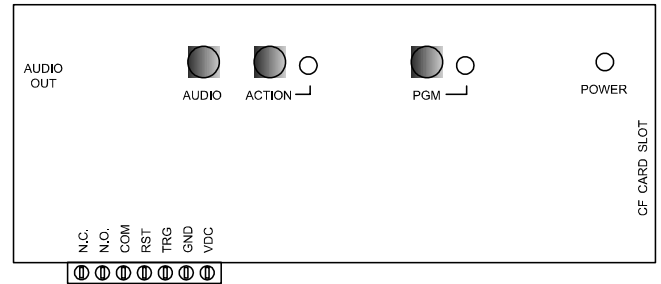
6. Press the PGM button again to exit the programming mode. Both the audio and the relay will be forced off upon exit. The PGM light will also be turned off to indicate that the unit is no longer in the programming mode. The unit will exit the programming mode automatically if the maximum cycle time is exceeded.

7. The programming is now complete and stored in the unit's internal nonvolatile memory (not the flash card.) If necessary, the unit can be reprogrammed for thousands of times.

8. To verify the programming, either press the AUDIO button or activate the trigger input. The PGM light will be flashing during the animation replay cycle, and the ACTION light will be turned on whenever the relay is activated.

Sound File Considerations

The system can play MP3 and WAV files in their native formats. No conversion or transcoding is necessary, therefore the sound quality is just as good as the original.

Sound files should be copied to the root folder (root directory) on the flash card. A unique file number must be added to the beginning of each filename for identification purpose. For example, "001 oldname.mp3".

The file number must be three digits and within the following ranges:

001 ~ 099 for group #0
101 ~ 199 for group #1
......
901 ~ 999 for group #9

Maximum number of files is 512, but that number will be reduced if long filenames are used (filenames longer than 8 letters or containing lower cases/special characters.)

When the animation cycle starts for the first time after power-up or programming, it will always use files in group #0. When the cycle starts the next time, it will use files in the next group. If the next group does not exist, the system will reset to group #0. Therefore, group numbers should be consecutive, or some groups will not be accessible.

Within an animation cycle, the first audio activation will play the first file in a certain group (as described above.) The next audio activation will play the next file. If the next file does not exist, the system will reset to the first file in that same group. Therefore, file numbers should be consecutive within each group, or some files will not be accessible.

In the simplest case, there is only one file numbered 001 and every audio activation uses this file.