



XPAND ONE 3D System
3D Cinema IR Emitter System for Small Theater
Installation Manual

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System Overview

LIKE ANY XPAND 3D System, the XPAND ONE IR synchronization system generates the infrared signal that synchronizes the active 3D glasses with the digital projector.



ADE1512H – XPAND ONE

Sync Distribution Module/Emitter Assembly

The ADE1512H receives the frame sync signal from the projector, converts it to XPAND's proprietary synchronization pulse code and powers an IR array. In addition to the powerful IR array on the front side, the unit has a set of IR emitters on the back side that will flood the projection booth with the IR signal. These IR diodes can be turned off if necessary. The module is designed to be mounted on the window frame in the projection booth. Its dimensions are 12.48" (317 mm) x 3.43" (87 mm) x 1.34" (34 mm), (width/height/depth). They add a minimum of 0.2" (5 mm) and a maximum of 0.5" (13 mm) to the vertical dimension of the emitter. The module weighs 17.28 ounces (0,49 kg).

Recommendation: Coverage of the XPAND ONE system is dependent on a mix of variables, such as the gain of the screen, the size of the screen, the throw distance from the projector to the screen and the size and configuration of the room. XPAND ONE can be used in theaters with **up to 125 seats, but this should be considered a limit.** High gain screens give more IR reflection back into the center of the audience

but can drop off significantly as one moves away from the center. Low gain screens mean lower range but more uniform reflection throughout the theater.

To conserve power and extend life, the ADE1512H activates the IR array only if the frame sync signal is of a frequency higher than 36 Hertz and less than 80 Hertz. 3D movies use a sync rate of 48 to 72 Hertz while 2D movies use a sync rate of 24 Hertz. For this reason the unit does not have to be deactivated when 2D movies are being shown or if the projector is idle.

When the system is first installed or if verification of system operation is desired, the ADE1512H is supplied with a 60 Hertz frame sync generator built into the module. It is activated by pushing the on/off switch for "Setup Frame Sync" to the "on" position. If the sync generator is operating and a valid (36 to 80 Hertz) external frame sync signal is received from the projector or other source, operation of the test generator will cease and the ADE1512H will be synchronized to the external signal.

The ADE1512H includes a laser pointer to assist in aiming the emitter array at the screen. The laser pointer is activated by a switch on the ADE1512H labeled "Laser Pointer", but can only be activated when the "Setup Frame Sync" generator is operating. This prevents the laser diode from being turned on while a 3D video is being shown.



For diagnostic purposes, the following indicator lights are provided:

1. A green power LED indicating that the ADE1512H is powered.
2. A green sync LED positioned near the input connector indicating that a valid (36 to 80 Hertz) sync signal is being received.
3. A flashing yellow LED positioned near the "Setup Frame Sync" label indicating that the test generator is active.

To perform a test of the system, the ADE1512H can be activated by turning "ON" the "Setup Frame Sync" feature. The system can now be tested with the use of XPAND glasses. In the absence of the IR sync signal, the glasses will be in a clear state (both

lenses clear – at least as clear as they get - 100% of the time). In the presence of an IR sync signal, the lenses will alternate between the opaque and clear state in synchronization with the IR signal. They will alternate too quickly to have the flicker perceived, but the effective transmission will drop by 50%. This is detectable by the viewer, but not objectionable so it is a suitable test condition just before the movie is started even in the presence of an audience, if needed. If IR is present, placing your hand over the IR detection window will cause the lenses to go to a bright clear state. Removing your hand from the IR detection window will cause the lenses to darken. This is a confirmation that the system is working.

Installation

Installation is straightforward. The XPAND – ONE bundle consists of the following components:

- The ADE1512H
- A cable to be run from the projector to the ADE1512H
- The 24VDC AC adapter for the ADE1512H
- Cable to be run from the power brick to the ADE1512H
- AT100 tester
- Hardware for mounting the ADE1512H



Connections

The ADE1512H should be mounted on the window frame in the projection booth near the projector and an AC power outlet, in a position easily seen by the projectionist but not such that it provides a distraction.

The power brick is plugged into a standard AC outlet and is connected to the ADE1512H by a six foot DC power cable. The connection is made with a locking connector to minimize the possibility of accidental disconnection.

Connection between the projector and the ADE1512H is made with a 10 foot shielded multi-conductor cable. The end at the Projector is terminated by a male DB37 connector. The termination at the ADE1512H is a female DB9 connector. Other lengths can be fabricated onsite or specially ordered from XPAND.

The VESA Frame Sync Standard calls for a TTL level square wave with a "TRUE" state indicating a left eye image and a "FALSE" state indicating a right eye image. The ADE1512H will respond properly to this signal. Today's modern DLP projectors do not supply such a signal. Instead they provide access to an optocoupler which, when supplied with a proper pull-up voltage and a suitable pull-down resistor, will generate the TTL signal. The ADE1512H is equipped to handle this configuration.

The hardware is provided to mount the ADE1512H to a variety of surfaces. This hardware should be bolted to a secure surface.

After mounting the ADE1512H, apply power. Activate the setup generator (Setup Frame Sync) and, if desired, the laser pointer. Note that the presence of a frame sync signal from the projector will inhibit the setup generator and the laser pointer. Next, aim the ADE1512H at the screen. Aiming is not critical and can be done without aids, but the laser pointer is included to facilitate aiming at small screens in large rooms. The ADE1512H should be pointed at the center of the screen.

Recommendation: XPAND ONE is suitable for theaters up to 125 seats, but this should be considered a limit. High gain screens give more IR reflection back into the center of the audience, but can drop off significantly as one moves away from the center. Low gain screens mean less reflection back in the center but more uniform reflection throughout the theater.

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