XPAND Cinema 3D System

IR Emitter System for Cinema Installation Manual

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System Overview

XPAND 3D Cinema System's IR network generates the infrared signal that synchronizes the active 3D glasses with the digital projector.

The system consists of:

» 1x Sync Distribution Module (AD1012H)
» up to four Emitters (AE210)
» 1x AT100 glasses tester
» 2x sync cable between the projector and the Distribution Module (CAB-01-3701 and CAB-01-1501)
» up to four connecting cables between the Distribution Module and the Emitters (CAB-01-0909)
» 1x 24VDC power adapter + 2x interchangeable AC cable (EU, US)
» up to four Wall Mounts for the Emitters
» 1x User manual
» 1x Warranty sheet

Components

AD1012H – Sync Distribution Module

The Distribution Module receives the frame sync signal from the projector or other source, converts it to XPAND's proprietary synchronization pulse code and sends it to the IR emitter arrays. It also supplies power to the emitter arrays and monitors their performance. It can control up to four IR emitter arrays simultaneously. In addition to the external IR arrays, the unit has its own set of IR emitters 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 front wall of the projection booth. Its dimensions are 226 mm x 116 mm x 35 mm (8.9" x 4.6" x 1.4") w/h/d. It weighs 0,42 kg (15 oz).

To conserve power and extend life, the distribution module activates the IR emitter arrays only if the frame sync signal is of a frequency higher than 36 Hertz and less than 144 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 distribution module 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 144 Hertz) external frame sync signal is received from the projector or other source, operation of the test generator will cease and the emitter arrays will be synchronized to the external signal.

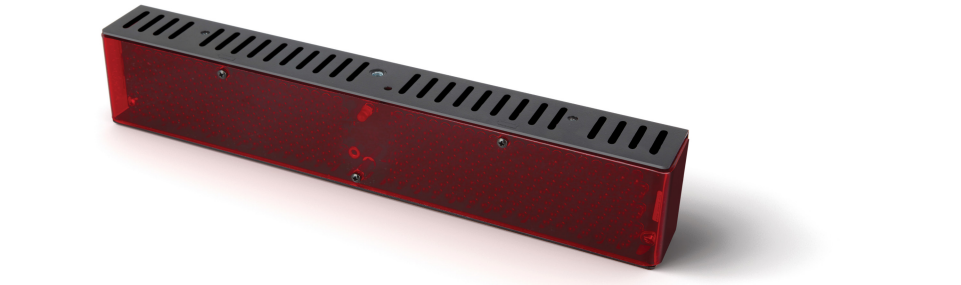
The long range emitter array includes a laser pointer to assist in aiming the emitter array at the screen. The laser pointer is activated by a switch on the distribution module labeled "Laser Pointer", but can only be activated when the "Setup Frame Sync" generator is operating. This prevents the laser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

For diagnostic purposes, the following indicator lights are provided:

» A green power LED indicating that the module is powered.
» A green sync LED positioned over the input connector indicating that a valid (36 to 144 Hertz) sync signal is being received.
» A flashing yellow LED positioned near the “Setup Frame Sync” label indicating that the test generator is active.
» A green and red LED are positioned over each of the four output connectors. The green LED indicates that an IR array is connected and transmitting IR signal. The red LED indicates that an array is connected and should be emitting IR radiation, but is not. A red LED indicates a fault condition that requires attention. The green LED is designed to provide the projection personnel assurance that everything is hooked up and operating normally or will work normally when an input sync signal is received. In order to perform a test of the system, the sync generator can be activated by turning “ON” the “Setup Frame Sync” feature. The green LED with the absence of the red LED will now indicate that the system is working and emitting IR pulses. Alternatively, the system can 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.

AE210 – Emitter

Long-Range, Narrow Angle (Requires the AD1012H for power and signal)



This is a powerful emitter built in a small form factor, designed to be mounted either in the theater or in the projection booth behind a standard projection window and aimed at the screen. Two emitters are needed for small to medium sized theaters.

An XPAND representative should be consulted when installing the emitters in large theaters or theaters with a balcony (up to 4 units can be installed to increase coverage or provide redundancy).

The AE210 - Emitter contains narrow-angle (±10°) IR diodes. The unit includes a laser pointer that can be turned on to align it with the screen. Its dimensions are 307 mm x 56 mm x 45 mm (12.1" x 2.2" x 1.8") w/h/d. It weighs 0,46 kg (16 oz).

The narrow angle emitter is designed to be placed near the projector and aimed at the screen. The IR signal will be reflected back to the audience from the screen. The narrow angle of coverage will insure that the IR energy is concentrated on the screen instead of the walls and the ceiling which may absorb rather than scatter it.

AT100 – Glasses Tester

Testing of the glasses prior to distribution to a user can be performed using the AT100 Active Glasses Tester. The AT100 is "ON" if the "ON/OFF" button is pressed and the red LED is lit. The AT100 is designed to generate a low intensity IR signal that, when passed within 60 cm (2 ft) of the XPAND Cinema 3D Glasses, causes the lenses to flicker in response to the IR signal. Both lenses should flicker at a visible rate and in doing so indicate that the glasses are functioning properly and are ready for distribution. If the lenses do not flicker, the battery is empty and should be replaced before further use. The AT100 shuts off automatically after several hours or can also be turned off manually.

Installation of 3D Cinema System

The Distribution Module should be mounted on the front wall of 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 green LEDs on its front surface will be subdued, but the red LEDs when illuminated, if they ever are, will be quite bright to command attention. (The Red LEDs make a short flash when the frame sync is turned on or off.)

The power adapter is plugged into a standard AC outlet and is connected to the Distribution Module by a 1,8 m (6 ft) DC power cable. The connection is made with a locking connector to minimize the possibility of accidental disconnection.

Connection between the projector and the Distribution Module is made with a 6 m (20 ft) shielded multi-conductor cable. The end at the Projector is terminated by a male DB37 or male DB15 connector. The termination at the Distribution Module is a female DB9 connector. A 6 m (20 ft) cable is supplied with each emitter with a male DB9 on one end (going into the Distribution Module) and a female DB9 connector on the other end going into the emitter. Other lengths can be fabricated onsite or specially ordered from XPAND.

The Wall Mount is provided to mount the IR emitter assemblies to a variety of surfaces. This hardware should be bolted to a secure surface, whether to the projection window frame (inside) or to the rear wall of the theatre.

After mounting the array, connect it to the distribution module and 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 emitter at the screen. Aiming is not critical and can be done without aids, but the laser pointer is included in the long range IR emitter to facilitate aiming at small screens in large rooms. If a single array is used, it should be pointed at the center of the screen. If multiple arrays are used, the aim points should be distributed along the horizontal center of the screen.

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