



NetStreams™ DigiLinX™

Installation and Design Guide

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Introduction

The DigiLinX™ system is an IP-based audio and video distribution and control system. DigiLinX devices communicate with each other over a network using Transmission Control Protocol/Internet Protocol (TCP/IP) (see Figure 1-1).

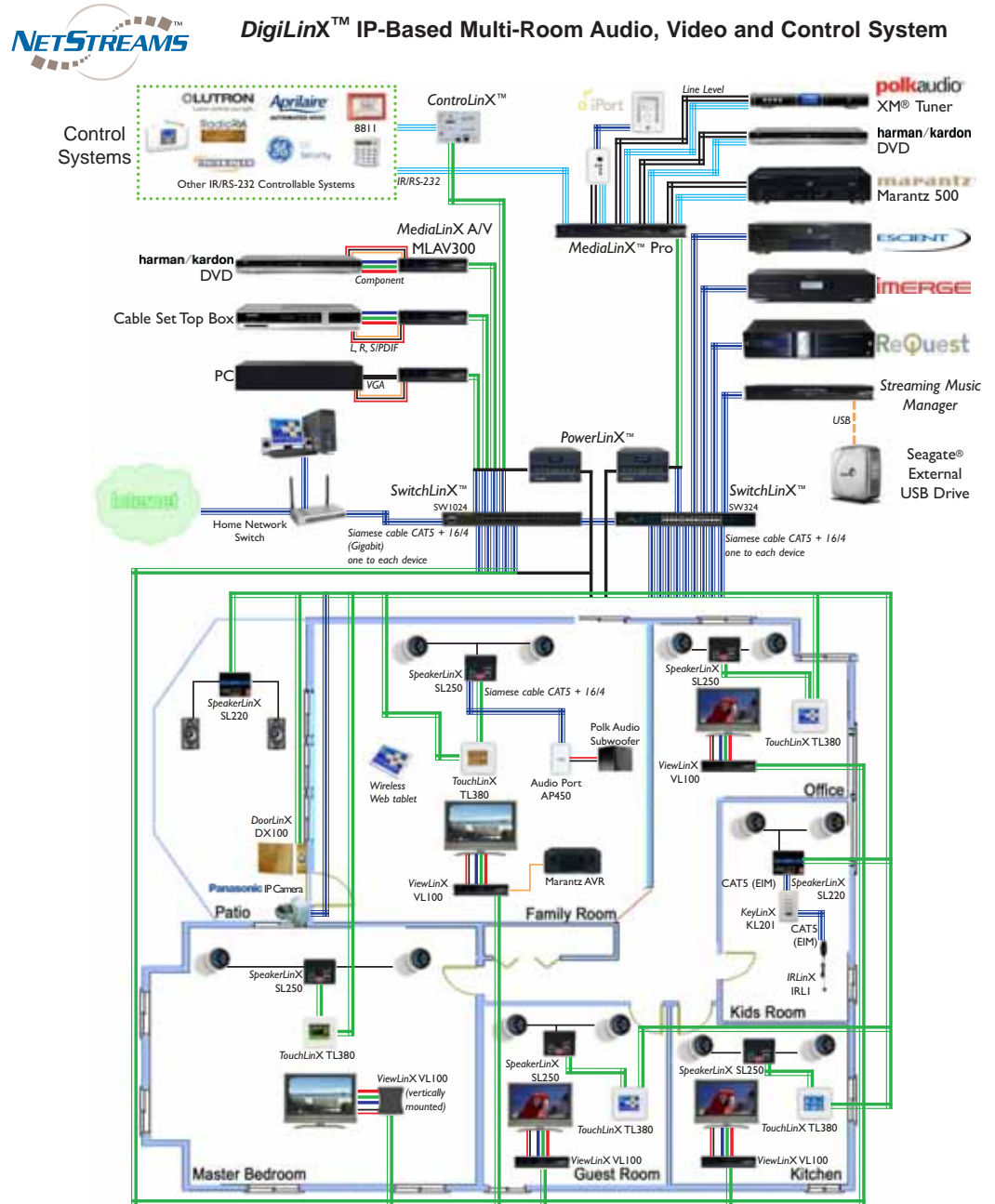


Figure 1-1 DigiLinX architecture

NOTE: Properly label all cables to facilitate installation.

Notice that there is no head end in this architecture. Each *NetStreams*[®] device is distributed according to its function in the network, meaning no central processor is required.

StreamNet™ Technology

NetStreams patent-pending *StreamNet* technology reduces the maximum audio delay to 1 millisecond between any two speakers and video to 30 milliseconds between any two displays. *StreamNet* allows audio and video in any and all rooms to be synchronized when playing the same source throughout the house. This technology solves a major problem when distributing audio over TCP/IP packet-switched streams.

DigiLinX Dealer Setup

The *NetStreams* DigiLinX Dealer Setup is a Microsoft® Windows®-compatible application that is used to configure all DigiLinX products. For more information on DigiLinX Dealer Setup, download the *DigiLinX Dealer Setup Manual* from the Dealer section of the *NetStreams* website at www.netstreams.com.

Manuals

All *NetStreams* manuals can be downloaded by authorized *NetStreams* dealers from the Dealer section of the *NetStreams* website at www.netstreams.com.

Prerequisites

Before you begin installing and configuring the DigiLinX IP-Based Multi-Room Audio, Video, and Control system, please note the following prerequisites.

Installer Requirements

This manual assumes the installer:

- has completed DigiLinX Dealer Authorization Training
- knows how to install audio keypads and connect audio components
- knows how to use basic installation tools such as an RJ45 crimper to terminate CAT5 cables
- has pulled all necessary wire to the locations where the preamp, keypads, and speakers are to be installed
- understands basic Microsoft® Windows® commands such as how to browse, create folders, save files, etc.

For more information on meeting the prerequisites, contact *NetStreams* Technical Support at +1(866)353-3496.

PC Requirements

The minimum PC requirements for the DigiLinX Dealer Setup Program are:

- Windows XP operating system with Service Pack 2 (SP2) or Windows Vista

NOTE: Like many software applications, the DigiLinX system is not compatible with personal computers that run the Microsoft Vista operating system at this time.

- 512 MB of RAM
- 1.2GHz processor (1.6GHz processor recommended).

Prior to Installation

The following are important to know before installing the DigiLinX system:

- Cable Connections - Ensure all cables are connected and terminated properly.
- Firewall - Temporarily disable all firewalls that may be running on your PC.
- IP Addressing for third-party hardware - Set the IP address for IP cameras and media servers prior to configuring them in DigiLinX. Consult the product user's guide for information on setting the IP address.

NOTE: If you have difficulty establishing a network connection after completing these steps, call *NetStreams* Technical Support at +1(866)353-3496.

Additional Hardware

There are several third-party devices that can work with the DigiLinX system. Each should be installed and set up using the manufacturer's software before configuration with the DigiLinX Dealer Setup program. These additional products include but are not limited to:

- Panasonic[®] IP Cameras
- Polk[®] IP Speakers
- media servers - Audio ReQuest[®] (all models), Imerge Soundserver MKII[®], Imerge S3000[®], and Escient Fireball[®]
- Lutron[®] RadioRA[®]
- Lutron HomeWorks[®]
- Aprilaire[®] HVAC system
- Sonance[®] IPort[™]
- GE[®] Concord[™]
- Vantage[™]
- devices connected to the system through use of *NetStreams'* General Purpose Driver.

NOTE: RS-232 connections for General Purpose devices are one-way only. With the release of DigiLinX Dealer Setup v. 1.50, installers with programming experience will be able to custom-program RS-232 drivers. See the *Writing*

StreamNet Device Drivers manual in the Dealer Documents area of the *NetStreams* web site for more detail.

NOTE: If any device uses an IP address, verify that it is using an IP address that is valid for the DigiLinX network and note the address for use later in these procedures. We recommend the following for the IP address scheme for the DigiLinX network, static devices, and the home network.

Device Type	IP Address Range
Static (IP cameras, media servers)	192.168.0.1 - 192.168.0.50
DigiLinX	192.168.0.51 - 192.168.0.200
Home Network	192.168.0.201 - 192.168.0.255

DigiLinX Devices

The DigiLinX system consists of several types of StreamNet devices. The following sections discuss these devices in more detail.

SpeakerLinX™ SL220/SL250/SL254/SL9250-CS

SpeakerLinX is shown in Figure 2-1. It functions as the zone or room controller and amplifier and has a built-in web server for the user interface.

NOTE: For each zone of audio at least one SpeakerLinX is required.

Each zone of audio must have at least one SpeakerLinX. SpeakerLinX includes:

- a digital amplifier:
 - 2 channels at 20 watts per channel (for the SL220)
 - 2 channels at 50 watts per channel (for the SL250 and SL9250-CS). The SL9250-CS is designed for the commercial market and features balanced audio outputs.
 - 4 channels at 25 watts per channel (used primarily for *StreamNet* Ready speakers (for the SL254)
- Ethernet input
- line level input/output (with adapter).



Figure 2-1 SL250, SL9250-CS and SL 220

MediaLinX™ MLA101/ MLA9101-CS/ MLA4000

The MediaLinX line of source converters (Figure 2-2) are IP-Based units designed to convert analog, or digital signals in real time from a legacy source into TCP/IP packet-switched, uncompressed (WAV) audio streams. Legacy sources can include a DVD/CD player, AM/FM/satellite tuner, or cassette player. After conversion, analog and

digital sources as well as their transport controls are distributed over an entertainment network via an Ethernet connection on the MediaLinX unit.

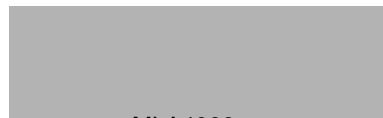
NOTE: For each analog or digital legacy audio source in your DigiLinX system, one MediaLinX MLA101 is required. The MLA4000 can support up to four sources.

NetStreams offers two IP audio MediaLinX models.

- MediaLinX MLA101 and MLA9101-CS - converts from one stereo analog or digital audio source. The MLA9101-CS is designed for the commercial market and features balanced audio inputs also.
- MediaLinX Pro MLA4000 - converts the stereo analog or digital audio of up to four legacy audio sources. It has four definable channels, with each channel capable of functioning as an MLA101 or ControLinX CL100. A fifth channel provides a dedicated CL100. It also includes four contact closures and two interfaces for a doorbell/telephone ring connector that notifies DigiLinX to mute the audio so the ring can be heard.



MLA101



MLA4000

Figure 2-2 MediaLinX MLA 101, MLA9101-CS and MediaLinX Pro MLA 4000

MediaLinX A/V MLAV300/MLAV9300-CS

MediaLinX A/V is an IP video component that provides real time encoding of audio and video sources from a legacy video source into a TCP/IP uncompressed A/V stream that can be distributed over a DigiLinX TCP/IP network at a rate of 1GB/second. The MediaLinX A/V MLAV300 features component, S-video, composite or VGA video inputs as well as analog and S/PDIF RCA audio inputs for maximum connection flexibility. The MediaLinX A/V MLAV9300-CS is specifically designed for the needs of the commercial market and features BNC connectors, as well as balanced audio inputs.



Figure 2-3 *MediaLinX A/V*

ViewLinX™ VL100/ VL9100-CS

ViewLinX is an IP Video component that provides for real time decoding of a TCP/IP uncompressed A/V stream from the DigiLinX gigabit network into an analog or S/PDIF audio signal and a component, composite S-Video or VGA video signal for output to a display. Designed for installation at or near the location of the video display, ViewLinX also encode audio from a TV monitor output for listening on networked speakers in a room. The VL9100-CS is designed for the commercial market and features BNC connectors, and balanced audio outputs. Additionally, the VL9100-CS features support for the *NetStreams* Multimedia wall plate that allows the integrator to extend the output 150 feet or 50 meters from the ViewLinX. The Multimedia wall plate also supports the same output from both the ViewLinX and wall plate simultaneously.



Figure 2-4 *ViewLinX VL100*

Streaming Music Manager SMM100

The Streaming Music Manager SMM100 is a hardware device designed to search a computer network for MP3 and WAV music files and playlists. It builds a database and makes them available to the DigiLinX network. DigiLinX users can then browse the database, locate files, and view metadata such as cover art. See Figure 2-5.



Figure 2-5 *Streaming Music Manager SMM100*

ControLinX™ CL100/ CL9100-CS

The ControLinX CL100 (shown in Figure 2-6) allows you to easily integrate and control supported brands of lighting, automated heating, cooling, security and other third party systems with your DigiLinX system. The ControLinX CL100 enables control of non-IP-Based sources from DigiLinX using RS-232, IR, or voltage sensing. The CL100 features a two-pin Phoenix connector for power and an Ethernet connector to connect to your DigiLinX network. Each third party system requires one CL100. Multiple CL100s can be connected to a SwitchLinX. The CL9100-CS is specifically designed for the commercial market and features the same foot print (1U high, 1/2 rack wide) as the other commercial products.



Figure 2-6 ControlLinX CL100

TouchLinX™ TL380/TL430/TL700

Three models of TouchLinX are available:

- TL380
- TL430
- TL700

TouchLinX TL380 is a 3.8-inch, in-wall touch screen (Figure 2-7) that includes a four-port Ethernet switch and power input/output for distribution. This device includes Adobe® Flash®.

TouchLinX TL430 features a 4.3-inch Thin-Film Transistor (TFT) color touch screen, while the TL700 features a 7-inch TFT color touch screen. Both the TL430 and TL700 feature a Windows CE embedded operating system. Both devices also include Adobe Flash. The TL430 and TL700 have a 2-port Ethernet switch and 4-pin connector for communications, power, and cascading one SpeakerLinX. Additionally, both the TL430 and TL700 feature a built-in microphone for IP Intercom, including whole house paging, room to room paging, and room monitoring via the DigiLinX system. Both the TL430 and 700 feature IR support.



Figure 2-7 TouchLinX TL700, TL430 and TL380

SwitchLinX™ SW324/SW208/SW1024/SW1124/SW1148

SwitchLinX is a family of IGMP (Internet Group Management Protocol) enabled, multicasting, non-blocking 10/100Mbps Fast Ethernet and 10/100/1000 Gigabit Ethernet switches. SwitchLinX is designed specifically for handling the high demands of networked audio and video distribution products. Additional SwitchLinX can be employed to expand the number of network connections.

There are four sizes of SwitchLinX depending on what is required for your project (Figure 2-8):

- SW208 - 8 10/100 Mbps ports
- SW324 - 24 10/100 Mbps ports
- SW1024 - 24 10/100/1000 Mbps ports

NOTE: The SW1024 is limited to 64 multicast IP addresses. If you need more multicast IP addresses, you will need to add an additional device.

- SW1124 - 24 10/100/1000 Mbps ports
- SW1148 - 48 10/100/1000 Mbps ports



Figure 2-8 SwitchLinX SW324/SW208/SW1024

IRLinX™ IRL1

IRLinX (Figure 2-9) allows DigiLinX to receive IR commands in zones that do not have an IR receiver. It provides installers with the flexibility to locate the IR receiver in a convenient location to meet the homeowner's needs. IRLinX processes DigiLinX native IR commands such as volume up, volume down, and mute, from an IR remote.

IRLinX will also accept IR commands from a source's original remote, or universal remote, and pass them on to the active source using network IR pass-through.



Figure 2-9 IRLinX

PowerLinX™ PL228/PL250/PL600/PL750/PL751

PowerLinX is a family of power supplies for the DigiLinX system. There are four sizes of PowerLinX depending on what is required for your project (as shown in Figure 2-10):

- PL228 - designed to distribute 2.96A max @ 28VDC and can power one SpeakerLinX SL220, *MediaLinX*, *ControLinX*, or *TouchLinX*. The *PowerLinX* PL228 is a local power supply and is the perfect solution for retrofit installations.
- PL250 - designed to distribute 3.57A max @ 28VDC to power one SL250, SpeakerLinX and TouchLinX.
- PL600 - designed to distribute 21A max @ 28VDC of power, to multiple *DigiLinX* products (do not use with SL250s).
- PL750/PL751 - designed to distribute 27A max @ 28VDC of power to multiple *DigiLinX* products on an IP-Based Multi-Room Audio network (can be used with all *DigiLinX* products).

NOTE: The SpeakerLinX 250 requires the use of the PL750/PL751 or PL250.



Figure 2-10 PowerLinX

DoorLinX™ DX100

DoorLinX enhances the IP intercom functionality in DigiLinX systems by providing a front door intercom to communicate with guests and a means to remotely unlock the door. The homeowner can also use a customized MP3 doorbell that plays throughout the DigiLinX system, or in specific designated rooms.



Figure 2-11 *DoorLinX*

DoorLinX can be purchased as follows:

- mounting bracket (DXB100)
- electronics package and chassis (DX100)
- faceplate and doorbell (DXF100-B brushed brass, DXF100-N brushed nickel, or DXF100-O venetian bronze).

Power Requirements for DigiLinX Devices

A NetPower calculator and power ratings chart are used to allow you to determine power requirements for DigiLinX devices.

NetPower™ Calculator

NetStreams offers an online NetPower calculator to assist in determining how many PowerLinX units your DigiLinX system requires. See Figure 2-12 for an example of this software interface.

You can download the NetPower Calculator from the *NetStreams* web site at <http://www.netstreams.com>. It is located in the Dealer Documents section under DigiLinX Tools.



Figure 2-12 NetPower Calculator

NetPower Ratings

To assist in determining how many PL600's and PL750's a project requires, each DigiLinX product comes with a NetPower rating as shown in Table 2-1.

Table 2-1
NetPower Ratings

Model	NetPower Rating
1 SpeakerLinX SL250/254/9250-CS	24
1 SpeakerLinX SL220	12
1 MediaLinX A/V (MLAV300 and 9300-CS)	4
1 ViewLinX (VL100 and 9100-CS)	4
1 MediaLinX MLA4000	2
1 MediaLinX MLA100	1
1 MediaLinX MLA101/MLA9101-CS	1
1 TouchLinX TL380	1
1 KeyLinX KL101	1
1 KeyLinX KL201	1
1 ControLinX CL100/CL9101-CS	1
1 DoorLinX DX100	1
1 IRLinX IRL1	1

When designing your DigiLinX system, add the NetPower rating for all devices planned and choose the appropriate quantity of PowerLinX power supplies as follows:

- Each PL228 can support one SpeakerLinX, MediaLinX, or TouchLinX.

NOTE: The SpeakerLinX SL250 requires the use of the PL750 or PL250.

- Each PL250 can support one SL250 SpeakerLinX and one TouchLinX.
- Each PL600 can support DigiLinX devices that equal a total NetPower of 84 or less, unless an SL250 is in the project. If an SL250 is in the project, you must use a PL750.
- Each PL750 can support DigiLinX devices that equal a total NetPower of 168 or less.

EIM Products

The Expansion Interface Module (EIM) port on a SpeakerLinX provides an interface for additional audio and control products.

KeyLinX™ KL101/201

The KeyLinX KL101 and KL201 (as shown in Figure 2-13) are single-gang, in-wall hard button keypads that control up to four audio sources with presets. Both models feature an IR window for IR pass-through to a local source connected to an Audio Port. The KL201 also features an embedded microphone and a Talk button for IP intercom. Both products connect to the SpeakerLinX and Audio Port using an EIM splitter and CAT5 cable (see Figure 2-14). Both products also have an additional connection for an IRLinX.



Figure 2-13 KeyLinX 101 and 201

NOTE: The EIM CAT5 cable length of all EIM connections together cannot be more than 60 ft total.

Legend

 CAT5

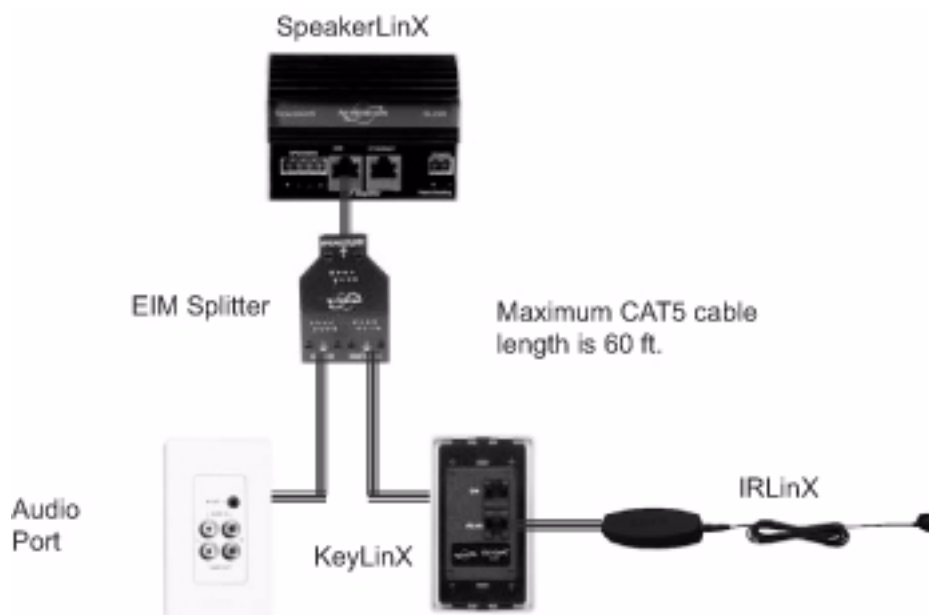


Figure 2-14 Connecting a SpeakerLinX using an EIM splitter

MU290

The SpeakerLinX built-in amplifier provides the sufficient power for most installations. But if you need more power for a larger zone, or outdoor application, or you just really want to push the envelope, the MU290 is the solution. This high performance power amplifier delivers 100 watts/channel into 4 ohms, 200 watts bridged for high quality audio output. You can also daisy-chain up to six MU290s for a total of 600 watts of stereo power or 1200 watts bridged power. The MU290 connects directly to a *Musica* keypad or SpeakerLinX via RJ45 connectors (labeled EIM).



Figure 2-15 MU290

AMP2200

The AMP2200 Professional Amplifier is an alternative for the MU290, providing 200 watts per channel at 8 ohms and 600 watts bridged. Up to 6 AMP2200 can be daisy-chained together. The AMP2200 connects to the SpeakerLinX via a RJ45 connector, labeled EIM.



Figure 2-16 AMP2200

Audio Port

The Audio Port makes it easy to connect a local audio device. There are several models of Audio Port to choose from:

- The AP300 provides the SpeakerLinX with line level audio in and out using stereo RCA connectors. The AP300 also has an IR out to control local audio sources. This IR out can also be configured to function as an audio in. Audio outputs are also provided, which are useful for subwoofers or receivers.
- The AP450 is designed for rooms only requiring line level audio output. This is commonly used with subwoofers.
- The AP500 has stereo RCA connections for line level audio in and out as well as a connector for IR out.



Figure 2-17 Audio Port AP500

EIM2RCA Adapter

You can use the EIM2RCA adapter when you don't want to install a faceplate in your wall and you want to connect a SpeakerLinX with an external power amplifier or source (such as an A/V receiver for a home theater). The EIM2RCA adapter has one RJ45 connector on one end and two stereo pairs of RCA female connectors on the other end for input and output.



EIM2RCA Adapter

Figure 2-18 EIM2RCA adapter

StreamNet Card

NetStreams also offers our technology in the form of a *StreamNet* card. This card can be used to enable Polk Audio's® IP-Addressable in-wall and in-ceiling speakers to become addressable nodes on a *NetStreams* DigiLinX network. Because these speakers contain built-in amplifiers, this eliminates the need for a SpeakerLinX in rooms where the Polk Audio LC265i-IP or LC80i-IP speakers and a StreamNet card are installed. Refer to Tech Bulletin 040017, *Installing a StreamNet Card into a Polk Speaker* for more details. The StreamNet card can also be used by other devices.



Figure 2-19 StreamNet Card

Pre-Wiring for IP Audio and IP Video

Introduction

This chapter covers pre-wiring for a DigiLinX audio and video network. DigiLinX architecture is similar to the architecture used in computer networking. You require devices, a network connection, and power.

Pre-Wiring for IP Audio

Requirements

Cables

The following cables are required to pre-wire for DigiLinX IP audio:

NOTE: When wiring for Ethernet, do not exceed 100 meter (328 foot) cable runs.

- Siamese CAT5 16/4 (or CAT5 14/4) AWG cable
- RG6 cable
- CAT5e cable.

Terminating Wires

The following are required to terminate wires:

- RJ45 crimpers
- CAT5 stripper
- wire cutters/strippers
- small flat-head screw driver
- RJ45 connectors
- Phoenix connectors (for power and speaker connections). These are provided with your *NetStreams* system.

To terminate wires, use the 568a standard (see Table 3-1).

Table 3-1
Ethernet 568a Standard for Terminating Wires

Pin 1	White/Green
Pin 2	Green
Pin 3	White/Orange
Pin 4	Blue
Pin 5	White/Blue
Pin 6	Orange
Pin 7	White/Brown
Pin 8	Brown

Example

Figure 3-1 shows an example of how to pre-wire a room for DigiLinX audio.

NOTE: This diagram is a general overview of audio pre-wiring and is subject to change depending on the design of the system. This pre-wire will allow you to grow with technology.

Figure 3-1 *Pre-Wiring Diagram for DigiLinX*

Procedures

The following pre-wire procedure is designed to allow DigiLinX or *Musica* to later be installed. To pre-wire a room, complete the following steps:

1. From the head end, run a siamese CAT5 16/4 (or CAT5 14/4) cable to the touch screen location.
2. Leave a service loop at this location and continue (do not cut the cable) to the first speaker location in the room.
3. Leave a service loop at this location and continue (do not cut the cable) to the second speaker location.
4. Cut the cable.
5. From the touch screen location, run a siamese CAT5 16/4 (or CAT5 14/4) cable to the first speaker location.
6. Leave a service loop and continue (do not cut the cable) using a different route to the wall location chosen for the Audio Port installation.
7. Cut the cable.
8. From the head end, run an RG6 cable to the touch screen location.
9. From the head end, run an RG6 cable to a location for an antenna to be mounted. This will be used for antenna distribution.
10. From the head end, run a siamese 16/4 or 14/4 cable to the display location.
11. From the head end, run a standard structured wiring bundle (2 CAT5, 2 RG6) to the display location.
12. Run an RG6 cable from the display location.

13. Repeat steps 1 through 8 for each pre-wired room.

Pre-Wire for IP Video

Requirements

- one structured wire consisting of two twisted pair (CAT5e or better) cables and two coaxial cables (RG6 or better)
- one four-port flush mounted wall plate consisting of two RJ45 connectors and two F connectors
- one 16/4 DC power cable

NOTE: You can also use a *NetStreams* local power supply such as a PL228 or PL250 to power *NetStreams* IP video products at the display location.

Procedures

Figure 3-2 shows how to pre-wire for IP-Based video.

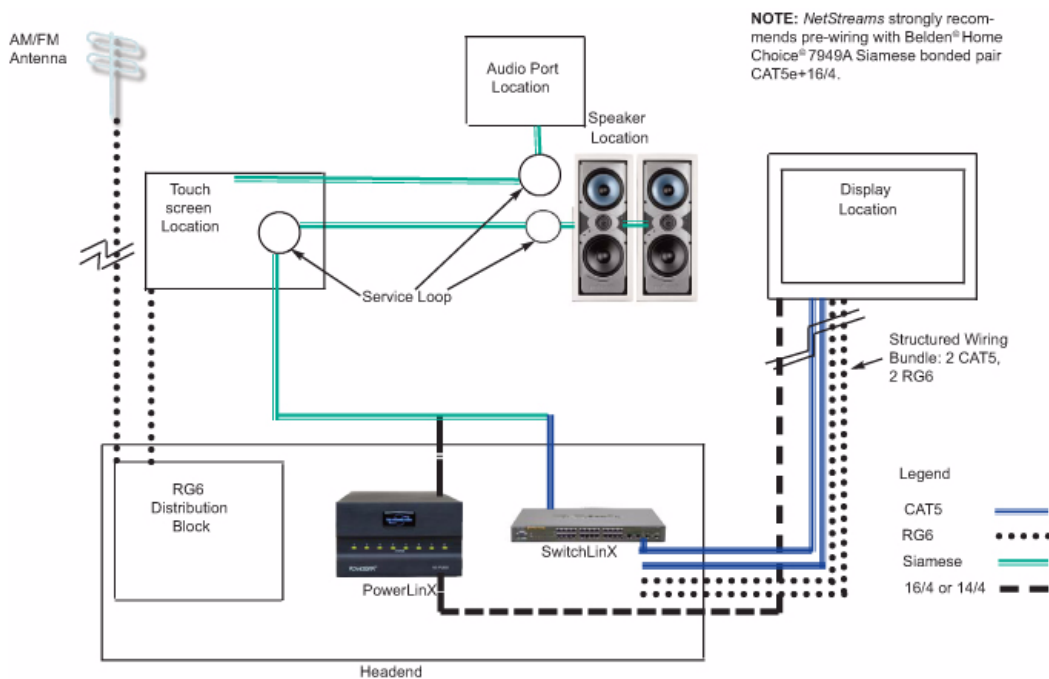


Figure 3-2 Pre-Wiring for IP-Based Video

To pre-wire for IP-Based video, complete the following steps:

1. Install a four-port flush mounted wall plate (with CAT5e and RG6 connections) at the video location.

NOTE: If you are installing a home theater system, also install a four-port flush mounted wall plate (with CAT5e and RG6 connections) near the theater equipment.

2. From the head end, run the structured cable to the four-port flush mounted wall plate.
3. From the head end, run a 16/4 cable for power.
4. Terminate using 568A terminations on the CAT5e cables.
5. Terminate F type connections on the RG6 cables.

NOTE: None of the runs should exceed 328 feet maximum cable length.

SpeakerLinX

The SpeakerLinX is the heart of the DigiLinX system. It contains a built-in web server and amplifier, and can be placed installed nearly anywhere. Typically, the SpeakerLinX is installed very close to the speakers.

CAUTION! Connecting the power connector incorrectly or plugging the power connector into the speaker connection causes damage to the amplifier and voids the warranty.

SL220 Specifications

8 Ohms Stereo Power	20 watts/channel
4 Ohms Stereo Power	12 watts/channel
Frequency Response	20-20KHz, +/-db
Signal-to-Noise Ratio	95 dB
Input Impedance	17K Ohms
THD +N	1% (20 Hz to 20KHz) @8 Ohms
Input Connectors	RJ45 (EIA568a)
Output Connectors	4-pin Phoenix Connector (speakers)
Dimensions	3.625" high x 2.875" wide x 1.75" deep (91mm x 72mm x 44mm)
Weight	0.5 lbs. (0.23Kg)
<i>NetPower</i>	12

SL250 Specifications

8 Ohms Stereo Power	35 watts/channel RMS
---------------------	----------------------

4 Ohms Stereo Power	50 watts/channel RMS
Frequency Response	20-20KHz +/-1dB
Signal-to-Noise Ratio	98 dB
Input Impedance	17K Ohms
THD +N	0.1% (20 Hz to 20 KHz@8 Ohms) 0.1% (20 Hz to 20KHz@4 Ohms)
Dimensions	3.65" wide x 2.875" high x 1.75" deep (91mm x 72mm x 44mm)
Weight	0.5lbs (.023 Kg)
<i>NetPower</i>	24

SL254 Specifications

8 Ohms Stereo Power	20 watts/channel RMS
4 Ohms Stereo Power	25 watts/channel RMS
Frequency Response	20-20KHz +/-1dB
Signal-to-Noise Ratio	98 dB
Input Impedance	17K Ohms
THD +N	0.1% (20 Hz to 20 KHz@8 Ohms) 0.1% (20 Hz to 20KHz@4 Ohms)
Dimensions	3.65" wide x 2.875" high x 1.75" deep (91mm x 72mm x 44mm)
Weight	0.5lbs (.023 Kg)
<i>NetPower</i>	24

SL9250-CS Specifications

8 Ohms Stereo Power	35 watts/channel RMS
4 Ohms Stereo Power	50 watts/channel RMS
Frequency Response	20-20KHz +/-1dB
Signal-to-Noise Ratio	98 dB
Input Impedance	17K Ohms
THD +N	0.1% (20 Hz to 20 KHz@8 Ohms) 0.1% (20 Hz to 20KHz@4 Ohms)

Dimensions	9.5" wide x 1.75" high x 8.67" deep (244mm x 45mm x 220mm)
Weight	3.57lbs (1.62 Kg)
NetPower	24

Connections

Figure 4-1 shows the connectors on the SL220 and SL250.

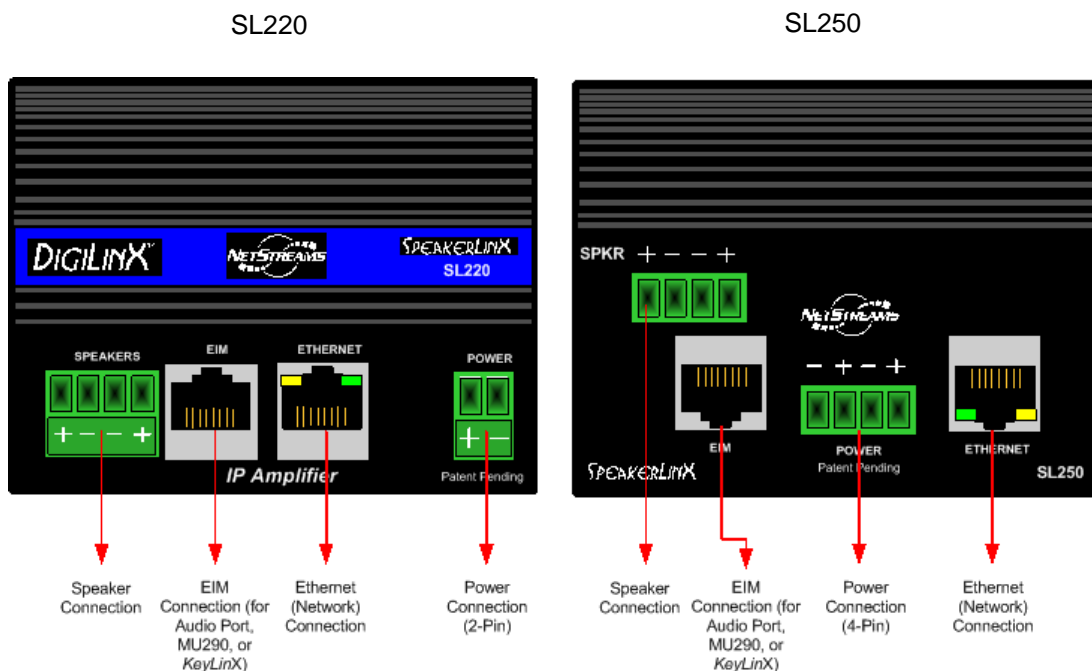


Figure 4-1 SpeakerLinX SL220 and SL250 Connections

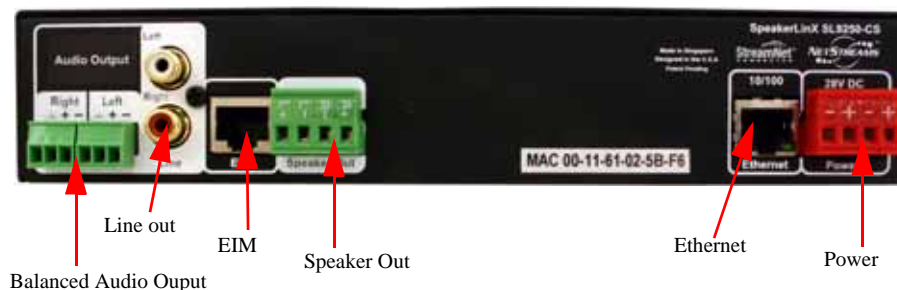


Figure 4-2 SpeakerLinX SL9250-CS Connections

4-3

Connectors

Connectors for the SL220, SL250, SL254, and SL9250-CS include:

- Input Connectors (SL220, 250, 254):
 - RJ45 (EIA 568a)
 - RJ45 (EIM use EIA 568a)
 - 4-pin Phoenix connector (Power) on SL250
 - 2-pin Phoenix connector (Power) on SL220
- Output Connectors: 4-pin Phoenix Connector (speakers) (2 4-pin connectors on the SL254)
- Input Connectors (SL9250)
 - RJ45 (EIA 568a)
 - RJ45 (EIM)
 - 4-pin Phoenix connector (Power)
- Output Connectors: 4-pin Phoenix Connector (speakers), 3-Position Phoenix Connector for balanced audio output

Installation

Installing a Surface-Mounted SpeakerLinX

The SpeakerLinX can be surface-mounted at the speaker (recommended) or to a secure location (such as a wall stud). To perform this installation, you need:

- an SL220 or SL250 or SL254
- a SpeakerLinX Surface Mounting Plate (NS-MKSL220-SM) - mounts either the SL220 or SL250 or SL254
- #6 or #8 wood screws (not provided).

To complete the installation:

IMPORTANT! If you are mounting in an attic, ensure that the device will not be covered by insulation, and that there is 1 ft. of air space around the SpeakerLinX.

1. Screw the surface mounting plate either to the back of a speaker or to a secure location (like a wall stud).

2. Install the SpeakerLinX by sliding the bottom of the device into the clip and pushing back until you feel it snap into place (see Figure 4-3).
3. Connect all wires.



Figure 4-3 Wall mounting a SpeakerLinX

Installing a Wall-Mounted SpeakerLinX

The SpeakerLinX can be wall-mounted into walls that are 2 1/2" (64mm) or deeper. To perform this installation, you need:

- an SL220 or SL250 or SL254
- a standard 2-gang box
- a SpeakerLinX In-Wall Mounting Plate (NS-MKSL220-IW) - mounts either the SL220 and SL250 or SL254.

To complete the installation:

1. Install a 2-gang box at the location.
2. Attach the SpeakerLinX to the metal mounting plate.
3. Connect all wires.
4. Insert the SpeakerLinX into the 2-gang box with the connection pointed into the wall.
5. Screw the metal mounting plate to the box.
6. Snap the in-wall plate over the metal plate.

Installing a SpeakerLinX into a Rack

The SpeakerLinX can be installed into a rack location. To perform this installation, you need:

- an SL220 or SL250 or SL254

- an RP24/RP25 rack mount plate (sold separately).
- The SL9250-CS will mount directly into a rack using the include rack mount ears.

To install a SpeakerLinX into a rack, complete the following steps:

1. Screw the SpeakerLinX' (up to four) onto the rack mount plate (see Figure 4-4).
2. Screw the rack mount plate to the back of the rack.



Figure 4-4 SpeakerLinX rack mount

3. Screw the rack mount plate cover in place, if desired (see Figure 4-5).



Figure 4-5 Rack mount plate cover

Installing a SpeakerLinX with an IRLinX and TouchLinX

The SpeakerLinX can be installed with an *IRLinX* via an EIM splitter as shown in Figure 4-6. Follow these steps to connect an *IRLinX* and a *TouchLinX* to a SpeakerLinX.

1. Connect the *TouchLinX* to the SpeakerLinX connector labeled Ethernet.
2. Locate the EIM splitter under the cardboard at the bottom of the *IRLinX* box.
3. Connect the EIM splitter to the SpeakerLinX connector labeled EIM using the provided 1 foot CAT5 cable.
4. Connect the *IRLinX* to the EIM splitter connector labeled *KeyLinX*.
5. Connect the *TouchLinX* to the *SwitchLinX*.

NOTE: Only one SpeakerLinX can be plugged into a *TouchLinX*.

Legend

 CAT5

Figure 4-6 SpeakerLinX, IRLinX, and TouchLinX configuration

The MediaLinX line of source converters includes the MediaLinX MLA101 and MediaLinX Pro MLA4000.

MediaLinX MLA 101

Figure 5-1 shows the front panel of the MLA101.

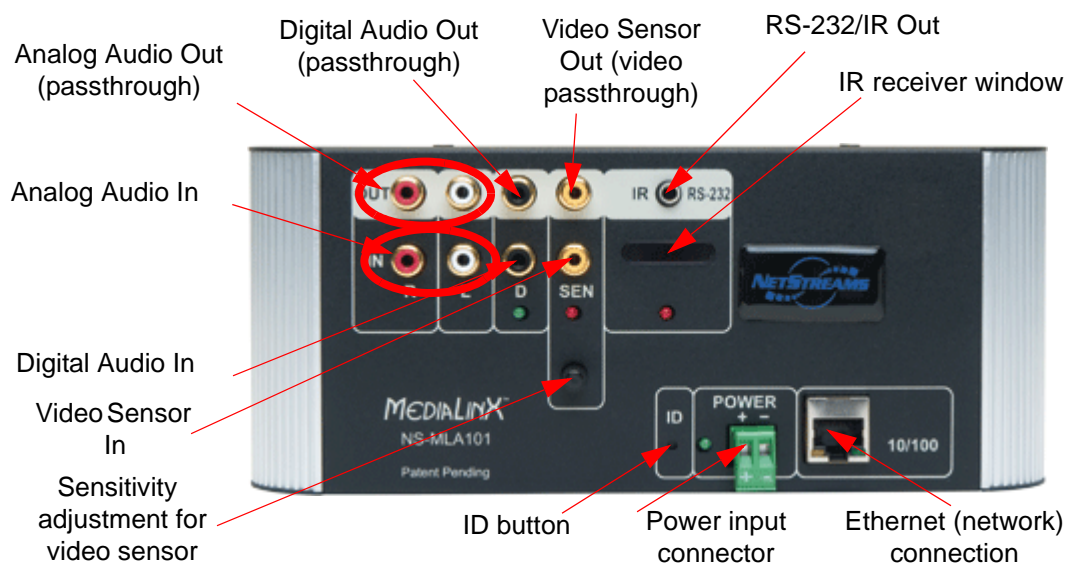


Figure 5-1 MLA101 Front Panel

Specifications

The MediaLinX MLA101 has the following specifications:

- Real-time conversion of one stereo analog audio source to TCP/IP uncompressed audio streams
- Burr-Brown[®] 24-bit/96kHz Analog-to-Digital Converters

- RCA and S/PDIF inputs and outputs for connection flexibility and pass-through of analog and digital stereo audio
- High capacity Digital Signal Processor for individual sources
- Power management sensor for video, LED, or level sensing of audio sources for audio playback
- Mounting holes for easy screw mounting in rack for optional rack mount shelf (sold separately) allows up to 2 MediaLinX to be mounted side by side
- Integrated IR receiver for IR learning
- LEDs for signal detection, power detection, and activity status
- 3.5mm RS-232/IR for 2-way control of compatible traditional sources (cable included)
- Dimensions 8.25”high x 3.41” wide x 2” deep (210mm x 86.5mm x 50mm)
- Weight 1 lb. (0.6 kg)
- NetPower: 1.

Connectors

The MediaLinX MLA101 has the following connectors:

- audio inputs: two gold-plated RCA jacks and one coaxial digital connector
- audio outputs (pass-through): two gold-plated RCA jacks and one coaxial digital connector
- Ethernet RJ45 connectors. If CAT5 cable is being used, a CAT5 connector is needed (not included)
- power: two-pin Phoenix connector (included)
- video sensor I/O: two composite video connectors (output is pass-through)
- RS-232/IR output: one 3.5mm jack.

Installation

The MediaLinX MLA101 can be rack mounted using the RP24/RP25 Universal Rack Plate or it can function as a standalone device.

Installing a MediaLinX101 into a Rack

The MediaLinX MLA101 can be installed into a rack location. To perform this installation, you need:

- a MediaLinX MLA101
- an RP25 rack mount plate (sold separately).

To install a MediaLinX MLA101 into a rack, complete the following steps:

1. Screw the MediaLinX MLA101 (up to two) onto the rack mount plate (see Figure 5-2).

2. Screw the rack mount plate to the back of the rack.



Figure 5-2 MediaLinX rack mount

3. Connect all legacy sources.
4. Connect Ethernet.
5. Connect power.

Installing a Free Standing MediaLinX MLA101

The MediaLinX MLA101 can be installed in a free standing environment. Complete the following steps:

1. Connect all legacy sources.
2. Connect Ethernet.
3. Connect power.

MediaLinX MLA 9101-CS



Specifications

The MediaLinX MLA9101-CS has the following specifications:

- Real-time conversion of one stereo analog audio source to TCP/IP uncompressed audio streams
- Burr-Brown[®] 24-bit/96kHz Analog-to-Digital Converters
- RCA and S/PDIF inputs and outputs for connection flexibility and pass-through of analog and digital stereo audio

5-3

- High capacity Digital Signal Processor for individual sources
- Power management sensor for video, LED, or level sensing of audio sources for audio playback
- Mounting holes for easy screw mounting in rack for optional rack mount shelf (sold separately) allows up to 2 MediaLinX to be mounted side by side
- Integrated IR receiver for IR learning
- LEDs for signal detection, power detection, and activity status
- 3.5mm RS-232/IR for 2-way control of compatible traditional sources (cable included) plus RS-232 via a DB9 connector.
- Dimensions 9.5”high x 1.75” wide x 8.67” deep (244mm x 45mm x 220mm)
- Weight 3.39 lb. (1.54 kg)
- NetPower: 1.

Connectors

The MediaLinX MLA9101-CS has the following connectors:

- audio inputs: two gold-plated RCA jacks and one coaxial digital connector
- audio outputs (pass-through): two gold-plated RCA jacks and one coaxial digital connector
- Ethernet RJ45 connectors. (cable not included)
- 3-Position Phoenix Connector for Balanced Audio Input
- power: two-pin Phoenix connector (included)
- RS-232 (DB-9) for serial input
- video sensor I/O: two composite video connectors (output is pass-through)
- RS-232/IR output: one 3.5mm jack.

Installation

The MediaLinX MLA9101-CS can be rack mounted or placed anywhere that a network connection is available. The MLA9101-CS uses the included rack mount ears for rack mounting.

Installing a MediaLinX MLA9101-CS into a Rack

The MediaLinX MLA101 can be installed into a rack location. To perform this installation, you need:

- a MediaLinX MLA9101-CS
- Rack mount ears (included)

To install a MediaLinX MLA9101-CS into a rack, complete the following steps:

Screw the rack mount ears into MediaLinX, then attached the completed unit into the rack with the screws.

MediaLinX Pro MLA4000

Figure 5-3 shows the rear panel of the MLA4000. The rear panel has five channels. For illustration purposes, a MediaLinX is shown in channel 1 (the far left) and a ControLinX is shown in channel 4. However, channels 1, 2, 3 and 4 can be MediaLinX or ControLinX in DigiLinX Dealer Setup depending on your particular configuration. Channel 5 (the far right) is always a dedicated ControLinX.

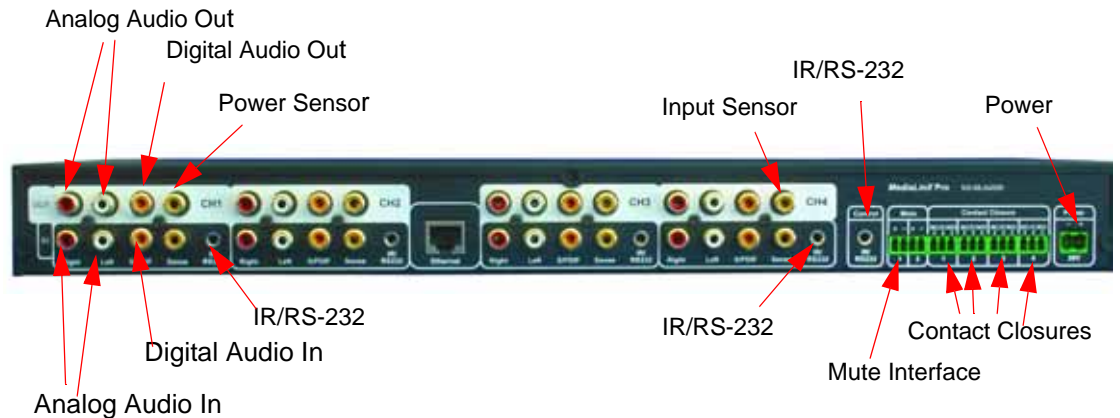


Figure 5-3 *MLA4000 Rear Panel*

Specifications

The MediaLinX MLA4000 has the following specifications:

- Real-time conversion of up to 4 stereo, digital, or analog audio sources to TCP/IP uncompressed audio streams
- Burr-Brown[®] 24-bit/96kHz Analog-to-Digital Converters
- RCA and S/PDIF inputs and outputs for connection flexibility and pass-through
- Power management sensor for video, LED, or level sensing of audio sources for audio playback
- Integrated IR receiver for IR learning
- Plug and play integration of:
 - Lutron[®] lighting systems
 - AprilAire[®] HVAC system
 - GE[®] security systems
 - Vantage[™] lighting systems
 - *Panorama*
 - Doorbell mute Interface
 - IR-Controlled devices
 - RS-232 controlled devices

5-5

- LEDs for signal detection, power detection, and activity status
- Dimensions 17.25” wide x 1.75” high x 9.25” deep (438mm x 44mm x 235mm)
- Weight 5.44 lb. (2.47 kg)
- NetPower: 2
- Five 3.5mm to RS-232 cables (included).

Connectors

The MediaLinX Pro has the following connectors:

- audio input connectors: four gold-plated RCA jacks
- audio output connectors: four gold-plated RCA jacks, four coaxial digital (S/PDIF)
- RJ45 connector
- four power sensing RCA inputs
- composite video passthrough
- four 3.5mm IR emitter outputs/RS-232 outputs
- four contact closures
- doorbell mute interface.

Installation

The MediaLinX MLA4000 can be rack mounted or it can function as a standalone device.

Installing a MediaLinX MLA4000 in a Rack

The MediaLinX MLA4000 can be mounted using rack ears. To install a MediaLinX MLA4000, complete these steps:

1. Screw the rack mount ears into the MLA4000.
2. Slide the MLA4000 into the rack.
3. Screw the rack ears into the rack.

For a MediaLinX:

4. Connect all legacy sources.
5. Connect Ethernet.
6. Connect power.

For a ControLinX:

7. Configure the third-party system using the manufacturer’s instructions.
8. Connect the IR emitter or RS-232 connector to the third party device.
9. Connect a 16/2 cable from the power port of the ControLinX to a PowerLinX.
10. Connect a CAT5 Ethernet cable from the ControLinX to a SwitchLinX.

Installing a Free Standing MediaLinX MLA4000

The MediaLinX MLA4000 can be installed in a free standing environment. Complete the following steps:

For a MediaLinX:

1. Connect all legacy sources.
2. Connect Ethernet.
3. Connect power.

For a ControLinX:

4. Configure the third-party system using the manufacturer's instructions.
5. Connect the IR emitter or RS-232 connector to the third party device.
6. Connect a 16/2 cable from the power port of the ControLinX to a PowerLinX.
7. Connect a CAT5 Ethernet cable from the ControLinX to a SwitchLinX.

MediaLinX A/V MLAV300

Figure 5-4 shows the rear panel of the MediaLinX A/V 300 rear panel. The input connectors are located on the bottom. The pass-through connectors are located at the top.

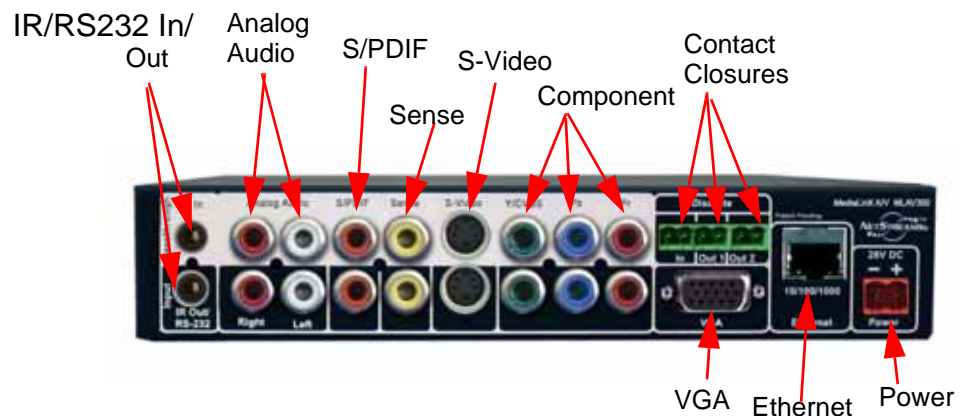


Figure 5-4 MediaLinX A/V 300 rear panel

NOTE: The MLAV300 does not ship with a power supply. We recommend connecting the power to a PowerLinX PL600 or PL140.

Specifications

- Distribute uncompressed HD Video and surround sound over a TCP/IP network

- Real-time conversion of one component, composite, S-Video or VGA video signal, and one stereo analog and digital S/PDIF audio signal from a video source into TCP/IP uncompressed audio/video streams
- 480i format conversion across: Composite to S-Video, S-Video to Component or vice versa
- BURR-BROWN 24-bit/96KHz Analog-to-Digital converters
- Power management sensor for Video, LED, or Level sensing of video sources for audio playback
- Integrated IR receiver
- IR/RS-232 (two way) control of sources (cable included)
- Includes three contact closures - two function as output contact closures and one functions as a circuit closure detector
- NTSC and PAL capable
- LEDs for Signal detection, Power detection, and Activity status
- Power State Sense Input
- Dimensions: 9 1/2" high x 1 3/4" high x 8 2/3" deep (24mm x 45mm x 240mm)
- Weight: 4 lbs (2.722 Kg)
- NetPower: 4
- ROHS compliant

Connectors

Video Input/Output Connectors	Composite Input and pass-through (480i, 576i) S-video Input and pass-through (480i, 576i) Component Input and pass-through (480i, 480p, 720p, 1080i) VGA Input (up to 1024 x 768 @ 60Hz)
Audio Input Connectors	One pair of analog RCA jacks (Gold Plated) One Coaxial Digital (S/PDIF) (Gold Plated)
Audio Output Connectors	One pair of analog RCA jacks (Gold Plated) One Coaxial Digital (S/PDIF) (Gold Plated)
Gigabit Ethernet Connection	RJ45
2-position Phoenix Connector - power20 - 32VDC	
IR Emitter output/RS232	One 3.5mm
IR Receiver input	One included
3 Contact Closures	One input, Two output

Installation

The MediaLinX A/V is a half-rack width, 1U high device. Use a RS1U rack shelf to fit two MediaLinX A/Vs per shelf. To fit only one MediaLinX A/V, use the blank plate provided with the RS1U. Screws are included to screw the rack mounted device on the rack shelf.

Depending on its use, connect S/PDIF, component, composite, VGA, or S-Video. If you are connecting it to a PC, you would use the VGA connection. Be sure to connect both Analog Audio and S/PDIF. Connect the Ethernet CAT5 cable to the Ethernet port. Connect the power cable to the Power port.

MediaLinX A/V MLAV9300-CS

Figure 5-4 shows the rear panel of the MediaLinX A/V 300 rear panel. The input connectors are located on the bottom. The pass-through connectors are located at the top.

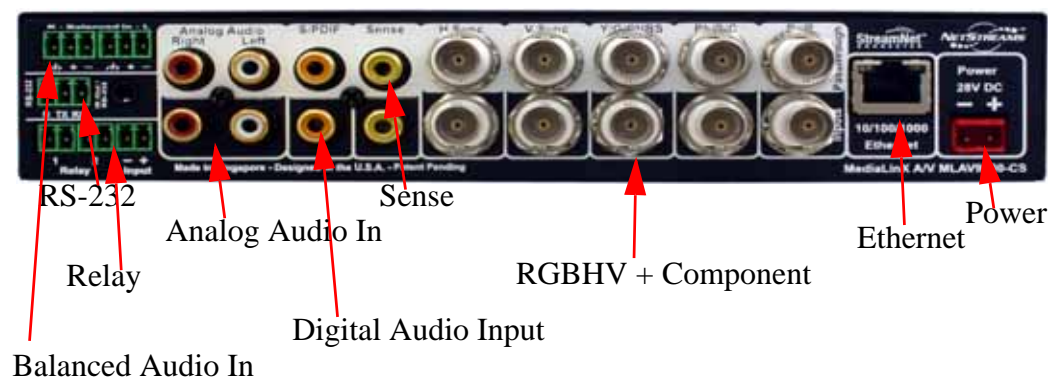


Figure 5-5 MediaLinX A/V 9300-CS rear panel

NOTE: The MLAV9300-CS does not ship with a power supply. We recommend connecting the power to a PowerLinX PL600 or PL140.

Specifications

- Distribute uncompressed or MotionXT compressed HD Video and surround sound over a TCP/IP network
- Real-time conversion of one component, composite, S-Video or RGBHV video signal, and one stereo analog and digital S/PDIF audio signal from a video source into TCP/IP uncompressed audio/video streams
- 480i format conversion across: Composite to S-Video, S-Video to Component or vice versa

- BURR-BROWN 24-bit/96KHz Analog-to-Digital converters
- Power management sensor for Video, LED, or Level sensing of video sources for audio playback
- Balanced Audio Input - Phoenix Connectors
- Integrated IR receiver
- IR/RS-232 (two way) control of sources (cable included)
- Includes three contact closures - two function as output contact closures and one functions as a circuit closure detector
- NTSC and PAL capable
- LEDs for Signal detection, Power detection, and Activity status
- Power State Sense Input
- Dimensions: 9 1/2" high x 1 3/4" high x 8 2/3" deep (24mm x 45mm x 240mm)
- Weight: 4 lbs (2.722 Kg)
- NetPower: 4
- ROHS compliant

Connectors

Video Input/Output Connectors	Video Connectors are BNC Composite Input and pass-through (480i, 576i) S-video Input and pass-through (480i, 576i) Component Input and pass-through (480i, 480p, 720p, 1080i) RGBHV Input (up to 1024 x 768 @ 60Hz)
Audio Input Connectors	One pair of analog RCA jacks (Gold Plated) One Coaxial Digital (S/PDIF) (Gold Plated) 3-Position Phoenix Connectors - Balanced Audio
Audio Output Connectors	One pair of analog RCA jacks (Gold Plated) One Coaxial Digital (S/PDIF) (Gold Plated)
Gigabit Ethernet Connection	RJ45
2-position Phoenix Connector - power20	- 32VDC
IR Emitter output/RS232	One 3.5mm
IR Receiver input	One included
3 Contact Closures	One input, Two output

Installation

The MediaLinX A/V is a half-rack width, 1U high device. Use a RS1U rack shelf to fit two MediaLinX A/Vs per shelf. To fit only one MediaLinX A/V, use the blank plate

provided with the RS1U. Screws are included to screw the rack mounted device on the rack shelf.

Depending on its use, connect S/PDIF, component, composite, RGBHV, or S-Video. If you are connecting it to a PC, you would use the VGA to BNC adapter for the connection. Be sure to connect both Analog Audio and S/PDIF. Connect the Ethernet CAT5 cable to the Ethernet port. Connect the power cable to the Power port.

Programming IR Codes

To program IR codes into the MediaLinX, refer to Chapter 5 in the *DigiLinX Dealer Setup Manual* located on the Dealer Documents page on the *NetStreams* web site.

TouchLinX

TouchLinX TL380 is a 3.8-inch, high-resolution Thin Film Transistor (TFT) touch screen controller that runs the Windows[®] CE operating system. TouchLinX TL430 and TL700 also run the Windows CE operating system, and have 4.3-inch and 7-inch screens, respectively. All TouchLinX models feature built-in Adobe[®] Flash[®] and deliver a dynamically-generated, highly interactive user interface. Four laser-etched hard key buttons provide control for power, mute, and volume while the interactive LCD touch screen displays contextual buttons for the selected source.

A microphone is included in the keypad for IP intercom.



Figure 6-1 TL380



Figure 6-2 TL430



Figure 6-3 TL700

TL380 Specifications

The following are the specifications for a TouchLinX TL380:

- Built-in four-port Ethernet switch
- Fits standard two-gang box
- Operating system: Windows CE 4.2
- Faceplates: white, almond, ivory, black, and titanium
- In wall dimensions:
 - 3 5/8" wide x 2 13/16" high x 2" deep (98mm x 72mm x 45mm)

- External dimensions:
4 9/16" high x 4 5/8" wide x 2" deep (114mm x 116mm x 50mm)
- Weight:
0.5 lbs (0.23 Kg)
- NetPower: 1

TL430 Specifications

- Connectors:
Two Ethernet RJ45 (EIA 568a)
Two 4-pin Phoenix connectors (28V power)
- Embedded Adobe® Flash Player®
- Operating system: Windows® CE 5.0
- Built-in 2-port Ethernet switch
- Built-in microphone for intercom, paging, and zone monitoring
- Resolution: 480x272
- Viewing angle: 65° horizontal, 80° vertical
- In wall dimensions:
4 3/4" wide x 3 3/16" high x 1 1/4" deep (120mm x 97mm x 322mm)
- External dimensions:
5 1/2" high x 4 5/8" wide 1 9/16" deep (140mm x 117mm x 39.7mm)
- Weight: 0.8 lbs. (.0.363 Kg)
- NetPower: 1
- Faceplates: white, ivory, black, almond.

TL700 Specifications

- Connectors:
Two Ethernet RJ45 (EIA 568a)
Two 4-pin Phoenix connectors (28V power)
- Embedded Adobe® Flash Player®
- Operating system: Windows® CE 5.0
- Built-in 2-port Ethernet switch
- Built-in microphone for intercom, paging, and zone monitoring
- Resolution: 800x480
- Viewing angle: 65° horizontal, 50° vertical
- In wall dimensions:
7 1/16" wide, 4 15/16" high, 1 1/4" deep (180mm x 126mm x 32.2mm)

- External dimensions:
7 7/8" high x 4 15/16" wide x 1 9/16" deep (200mm x 146mm x 39.7mm)
- Weight: 1 lb., 6 oz. (0.612 Kg)
- NetPower: 1
- Faceplates: white, ivory, black, almond.

Connectors

The following connectors are on a TouchLinX:

- Ethernet: two (TL430 and TL700) or four (TL380) RJ45 ports.
- power input: four-pin Phoenix connector (included)
- power output: four-pin Phoenix connector (included).

TL380 Installation

To install a TouchLinX TL 380 into a wall, complete the following steps:

1. Install a double-gang backless box into a wall. (TL380 only)
2. Make all connections to the device.
3. Mount the device in the box.
4. Turn power on to the device.
5. Refer to the *DigiLinX Dealer Setup Manual* located on the Dealer Documents page on the *NetStreams* web site to configure the device.

NOTE: A white, screwless faceplate is included. Ivory, Almond, and Black color kits are sold separately.

6. Snap the screwless faceplate onto the cover.

TL430/TL700 Installation

To install a TouchLinX TL430 or TL700, complete the following steps.

1. Use the included template to mark the wall and cut the hole for the TouchLinX.

NOTE: The tolerance between the edge of the template and the edge of the TouchLinX is about 1cm. Measure twice, cut once.

2. Make all connections to the device.
3. Insert the TouchLinX into the hole.

4. Screw the mounting screws at the top right and bottom left until the butterfly tabs catch on the inside of the wall.

NOTE: For thicker walls back out the butterfly tabs before inserting the TouchLinX into the wall to give them room to grab.

5. Snap on the magnetic face plate.

Installation of a TL430/TL700 in a Rough-In Box

For instructions on installing a TL430/TL700 in a rough-in box, refer to the Dealer section of the *NetStreams* web site and see Technical Bulletin 040031 - *Installing a TL430 or TL700 in a Rough-In Box*.

KeyLinX

KeyLinX KL100/KL101 and KL200/KL201 are single-gang, in-wall keypads that control up to four sources (see Figure 7-1). The KL201 also features:

- an integrated microphone
- a Do Not Disturb LED
- a Talk button for IP intercom.



Figure 7-1 KeyLinX

NOTE:The only difference between the KL100 and KL101 and the KL200 and KL201 are that the KL101 and KL201 models are compliant with the European Reduction of Hazardous Substances (RoHS) directive and have an IRLinX EIM port connector on the rear.

IMPORTANT! Both the KL100/KL101 and KL200/KL201 ship with an Expansion Interface Module (EIM) splitter. This EIM splitter must be used when installing both a KeyLinX and an Audio Port or MU290 power amplifier.

KeyLinX are perfect for smaller rooms that do not require a touchscreen. The KeyLinX models feature up to six presets for each one of the four audio sources. These presets are programmed from the DigiLinX Dealer Setup Program and are accessible by pressing and holding the corresponding key on the KeyLinX for two seconds.

Specifications

- Two RJ-45 connectors (EIM)
- Fits in standard single-gang box
- Green LEDs for volume status
- IR Receiver
- Built-in microphone
- Ten laser-etched hard key buttons
- Faceplate: white, almond, ivory, or black
- In-wall dimensions: 1 3/4" wide x 2 13/16" high x 1 1/4" deep (45mm x 71mm x 32mm)
- External dimensions: 2 3/4" wide x 4 5/8" high x 1 1/2" deep (69mm x 117mm x 38mm)
- Weight: 4.9 oz. (139 grams)
- NetPower: 1.

Connectors

The KeyLinX has two RJ45 connectors.

Installation

To install a KeyLinX, complete procedures in the following sections.

Installing in a Wall

To install a KeyLinX into a wall, complete the following steps:

1. Install a single-gang backless box into a wall.
2. Make all connections to the device.
3. Mount the device in the box.

4. Turn on power to the SpeakerLinX that the KeyLinX is connected to.

NOTE: A white screwless faceplate is included. Others are sold separately.

5. Refer to the *DigiLinX Dealer Setup Manual* located on the Dealer Documents page on the *NetStreams* web site to configure the device.
6. Snap the screwless faceplate onto the cover.

Installing an EIM Splitter in a KeyLinX Configuration

The EIM splitter is **required** in **all** KeyLinX and IRLinX installations. This provides a port for the KeyLinX (KL101 or KL201) and for the Audio Port. Figure 7-1 shows a KeyLinX configuration using an EIM splitter, SpeakerLinX, SwitchLinX, MU290, Audio Port, and IRLinX.

Note that in the following configuration, an IRLinX can be used with a KeyLinX (KL101 or KL201) to position an IR receiver in a more convenient location.

IMPORTANT! The cable and EIM splitter are located under the cardboard bottom in the KeyLinX box.

Legend

==== CAT5

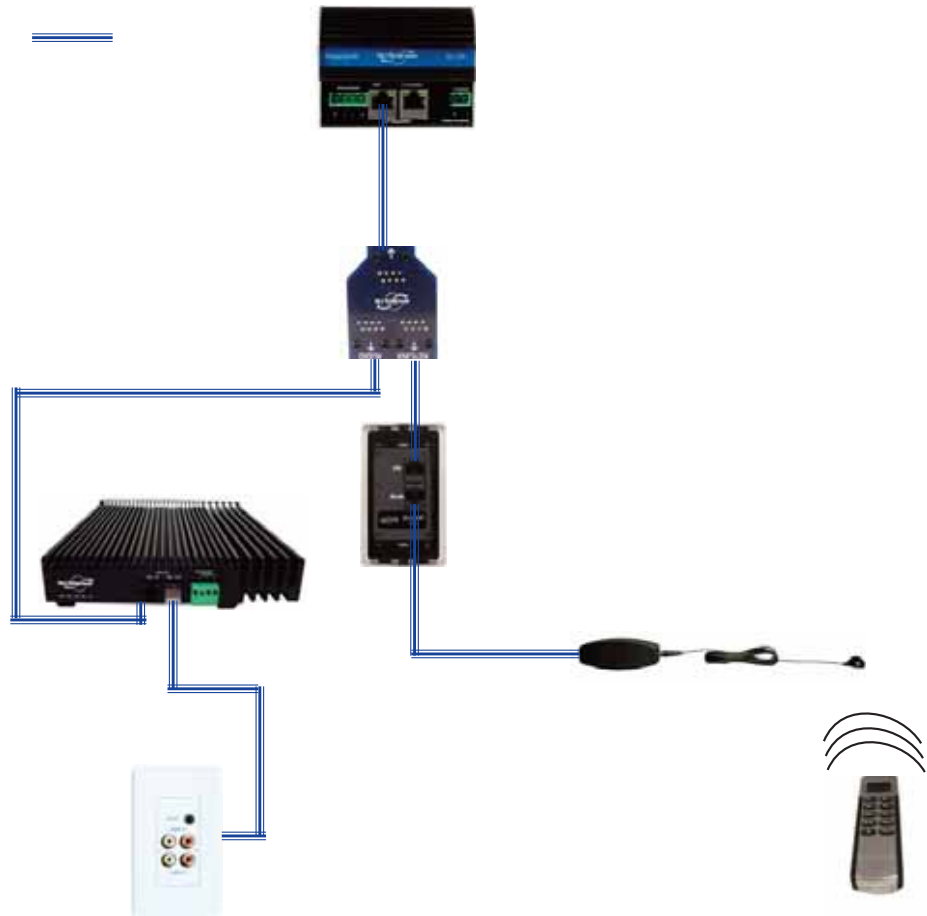


Figure 7-1 KeyLinX Configuration

NOTE:Maximum CAT5 cable length for EIM connections is 60 feet.

To connect the KeyLinX configuration shown in the figure above, follow these steps:

1. Locate the cable and splitter under the cardboard located at the bottom of the KeyLinX box.
2. Connect the SpeakerLinX to the EIM splitter connector labeled SpeakerLinX using the 1 foot cable provided.
3. Connect the KeyLinX to the EIM splitter jack labeled KeyLinX.

4. Connect the Audio Port or MU290 to the EIM splitter jack labeled Audio.
5. Connect the IRLinX to the KeyLinX connector labeled IRLinX.
6. Run a CAT5 cable from the KeyLinX port on the EIM splitter to the KeyLinX.
7. From the Audio port located on the EIM splitter, run a CAT5 cable to the Audio Port (or to the MU290 and then to the Audio Port if you are using an MU290).

ControlinX

The ControlinX CL100/CL9100-CS enables the control of non IP-Based sources from the *DigiLinX* Multi-Room Audio and Control system. Control is through RS-232, one-way IR, or voltage sensing.

The ControlinX CL100 includes but is not limited to *NetStreams*-written two-way drivers for:

- Lutron® RadioRA® lighting system
- Lutron HomeWorks® lighting system
- Aprilaire® HVAC system
- *Panorama*
- GE® Concord™ security system
- Vantage™ lighting systems
- custom two-way drivers.

ControlinX is not limited to these systems. You can control other systems using one of the following:

- one-way RS-232
- one-way IR
- two-way RS-232 using a custom driver written for *NetStreams*' Control Application Programming Interface (API).



CL9100-CS - Commercial Series ControlinX

Specifications

- Drivers included
- Voltage sensor with potentiometer for adjustment
- LEDs for IR and voltage sensing detection
- Dimensions: 4 6/10" wide x 3 1/5" high x 1 6/10" deep (120mm x 89mm x 40mm) (CL100); 9 1/2" wide x 1 3/4" high x 8 2/3" deep (244mm x 45mm x 220mm) (CL9100-CS)
- Weight: 1 lb. (0.6 kg) (CL100); 3.25lbs (1.47kg) (CL9100-CS)
- NetPower: 1.

Connectors

The following are connectors for the ControLinX:

- Ethernet: one RJ45 connector
- power input: two-pin Phoenix connector (included)
- IR/RS-232: 3.5mm IR emitter (cable included) or 3.5mm to RS-232 (cable included)
- RCA input: for voltage trigger sensing (use an RCA to two-tinned lead cable - sold separately).

Installation

Figure 8-1 shows how to install a ControLinX. To install a ControLinX, complete the following steps:

1. Configure the third-party system using the manufacturer's instructions.
2. Connect the IR emitter or RS-232 connector to the third party device.
3. Connect a 16/2 cable from the power port of the ControLinX to a PowerLinX.
4. The ControLinX CL-9100-CS can be rack mounted using the included rack mount ears.

5. Connect a CAT5 Ethernet cable from the ControLinX to a SwitchLinX.

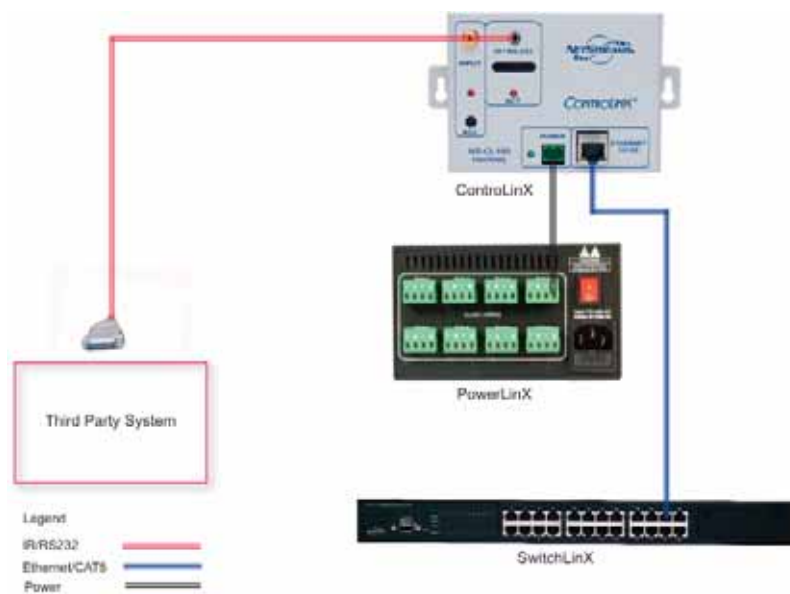


Figure 8-1 *Installing ControLinX*

PowerLinX

The PowerLinX distributes power to DigiLinX products. It is a tightly-regulated power supply with built-in intelligence to indicate over-currents or failures. There are several models of PowerLinX:

- PL750/PL751 - The high powered PowerLinX PL750/PL751 is required for installations with SpeakerLinX SL250s and is designed to distribute up to 27A @ 28VDC of power to multiple DigiLinX products on an IP-Based Multi-Room Audio network. Additional PowerLinX power supplies may be required as the DigiLinX system is scaled in size. Note that a PL750/PL751 is required when installing an SL250.
- PL600 - PowerLinX is an intelligent power supply that is designed to distribute up to 21A @ 28VDC of power to multiple DigiLinX products on an IP-Based Multi-Room Audio network. This tightly-regulated power supply is essential for a DigiLinX IP-Based Multi-Room Audio system, with additional PowerLinX power supplies required as the number of nodes on the network increases. The PL600 features over current protection and LEDs for current feedback. Available in 120VAC and 240VAC.
- PL250 - 100 Watt PowerLinX Plug-in Power Supply designed to power one SL250 SpeakerLinX and one TouchLinX touch screen.

NOTE: PL228 and PL600 are not for use with the SL250.

- PL228 - 80 Watt PowerLinX Power Supply designed to power one SpeakerLinX SL220, MediaLinX, ControLinX, or TouchLinX, the PowerLinX PL228 local power supply is the perfect solution for retrofit installations.

PL750/PL751

The following are specifications for the PL750/PL751:

- 27A /28VDC Intelligent Power Supply (7A max from any one output connector)
- 8.5A /115 VAC Input (constant power supply)
- 8 discrete output channels of power at 28VDC
- dual-color status LEDs

- 8 x 5.5mm removable Phoenix connectors
- 1 IEC power cord UL, CE, and FCC Certified
- optional Rack Shelf for rack mounting up to 3 PowerLinX (sold separately)
- overload protection: 105%~125% of rated output per output connector: 4.5A
- dimensions: 5 4/5" wide x 3 1/2" high x 14 1/3" deep (147mm x 86mm x 363mm)
- weight: 9 lbs (4.1 kgs)
- *NetPower*: 168.

See Figure 9-1 for an example of the PL750/PL751 rear panel.

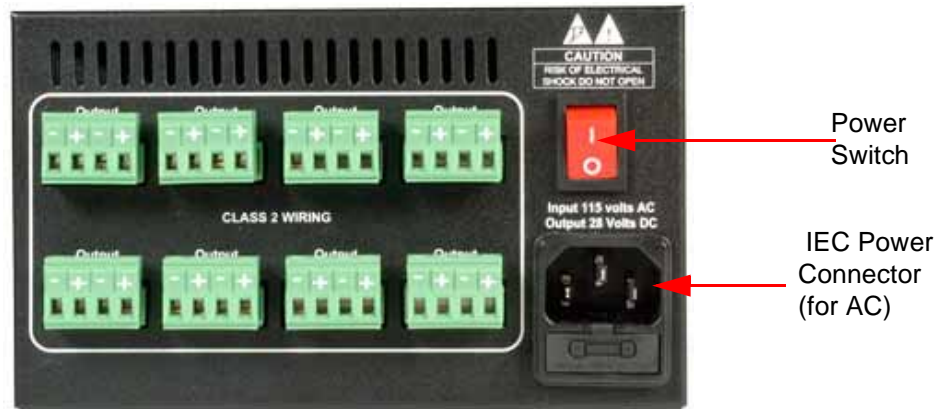


Figure 9-1 PowerLinX PL750/PL751

NOTE: The PL750/751 is known to generate high levels of noise. Please select a location with this in mind.

PL600

The following are specifications for the PL600:

- 21A /28VDC Intelligent Power Supply (4.5A max from any one output connector)
- 12A /115 VAC Input (inrush 30A current)
- eight discrete output channels of power at 28VDC
- dual-color status LEDs
- 8 x 5.5mm removable Phoenix connectors
- 1 IEC power cord UL, CE, and FCC Certified
- optional Rack Shelf for rack mounting up to 3 PowerLinX (sold separately)
- overload protection: 105%~125% of rated output per output connector: 4.5A
- dimensions: 5 4/5" wide x 3 1/2" high x 14 1/3" deep (147mm x 86mm x 363mm)
- weight: 9 lbs (4.1 kgs)
- *NetPower*: 84.

See Figure 9-2 for an example of the PL600 rear panel.

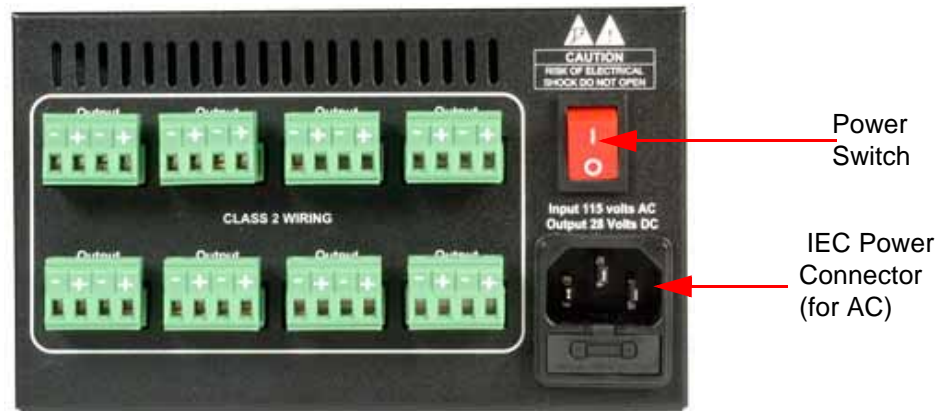


Figure 9-2 PowerLinX PL600

PL250

Specifications for the PL250 include:

- 120/240 VAC 50/60 Hz input
- 100 Watts of output at 28VDC
- CE, C-Tick, and RoHS compliant.

See Figure 9-3 for an example of the PL250 rear panel.

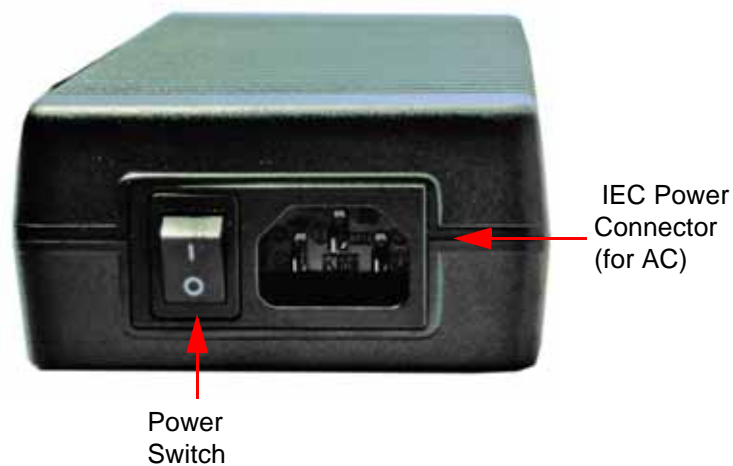


Figure 9-3 PowerLinX PL250

PL228

Specifications for the PL228 include:

- 120/240 VAC 50/60 Hz input

9-3

- 80 Watts at 28VDC
- power LED
- IEC power cord
- CE, C-Tick, and RoHS compliant.

See Figure 9-4 for an example of the PL228.



Figure 9-4 PowerLinX PL228

Installation

This section discusses the installation of all PowerLinX devices.

Installing a PowerLinX PL600 or PL750

This section discusses installation of the PowerLinX PL600 or PL750 in either a rack or a free standing environment. Refer to Table 9-1 for the maximum number of SL220s or SL250s for the PL600 or PL750.

Table 9-1 Maximum Number of SL220s or SL250s per PowerLinX PL600 or PL750

PowerLinX Model	Maximum SL220s	Maximum SL250s
PL600	6	0
PL750	12	6

Installing in a Rack

To install a PL600 or PL750 into a rack, complete the following steps:

1. Install the PL51 plate (sold separately) into the rack.

2. Place the PowerLinX on the PL50/PL51.

NOTE: If only one PowerLinX is being used, then two blank faceplates are needed to cover the open spaces. The PL51 comes with two blank faceplates.

3. Install the PL10 blank plate to cover any open spaces.
4. Terminate all power wires to the Phoenix connectors (ensure polarity is correct).
5. Plug the PowerLinX into the AC outlet.

Note that a minimum of six SpeakerLinX can be used on each power supply with a maximum of one SpeakerLinX per port. This leaves two extra ports for other devices.

Installing Free Standing

1. Terminate all power wires to the Phoenix connectors (ensure polarity is correct).

NOTE: To avoid heat build-up, ensure all electronics have a minimum of 1 cubic ft. of air space.

2. Plug the PowerLinX into the AC outlet.

LED Indicators

The LEDs on the PL600 and PL750 front panel indicate status for each of the eight power connections on the unit. These LEDs identify any problems with power from the PowerLinX. The following are the indications used:

- Green Active/OK
- Amber Potential Current Overdraw
- Red Current Overdraw.

Installing a PL250 or PL228

To install the PL250 or PL228, complete the following steps:

NOTE: Ensure the polarity is correct. Look on the bottom of the PowerLinX to determine which wire is negative and which is positive.

1. Attach a two-pin Phoenix connector to the cable from the PL250 or PL228.
2. Plug it into a SpeakerLinX, ControLinX, MediaLinX, or TouchLinX.
3. Turn on the PL250 or PL228.

SwitchLinX is a family of Internet Group Management Protocol (IGMP)-enabled, multicasting, non-blocking 10/100 and 10/100/1000 Mbps Fast Ethernet switches designed for handling the high demands of networked audio/video distribution products. Additional SwitchLinX devices can be used to expand the network. There are four models of SwitchLinX: SW324, SW208, SW1024, and SW1048.

SW324

The following are specifications for the SW324:

- technology store and forward architecture, non-blocking
- IP multicast supports IGMP snooping
- IGMP querier devices
- Up to 256 multicast groups
- standards: IEEE 802.3 10Base-T Ethernet
- IEEE 802.3u 100Base-TX
- 100Base-FX Fast Ethernet
- filtering address: Unicast/Multicast/Broadcast
- filtering rate: 14,880 pps for Ethernet; 148,800 pps for Fast Ethernet
- forwarding rate: 14,880 pps for Ethernet; 148,800 pps for Fast Ethernet
- connector: RJ45 jack
- LED indicators: Link/Activity, Full Duplex/Collision status for each port
- environment operating temperature: 0° C to 50°, storage -40° to 70° C
- dimensions: 17 3/10" wide x 6 5/8" high x 1 7/10" deep (440mm x 172mm x 43mm).

SW208

The following are specifications for the SW208:

- technology store and forward architecture, non-blocking

- IP multicast supports IGMP snooping
- Up to 256 multicast groups
- standards: IEEE 802.3 10Base-T Ethernet, IEEE 802.3u 100Base-TX, 100Base-FX Fast Ethernet
- filtering address: Unicast/Multicast/Broadcast
- filtering rate: 14,880 pps for Ethernet; 148,800 pps for Fast Ethernet
- forwarding rate: 14,880 pps for Ethernet; 148,800 pps for Fast Ethernet
- connector: RJ45 jack
- LED indicators: Link/Activity, Full Duplex/Collision status for each port
- environment operating temperature: 0° C to 50°, storage -40° to 70° C
- dimensions: 5 1/3" wide x 1 1/2" high x 10" deep (133mm x 37mm x 250mm)

SW1024

NOTE: The SW1024 has a limit of 64 multicast addresses. If you need more addresses, you will need to add another device.

The following are the specifications for the SW1024:

- technology store and forward architecture, non-blocking
- IP multicast supports IGMP snooping (64 multicast addresses)
- D-Link[®] certified, configured by *NetStreams*
- 48 Gbps switching capacity
- 24 1Gbps ports
- 4 combo SFP ports
- standards: IEEE 802.3, IEEE 802.3u Fast Ethernet, 802.3ab Gigabit Ethernet, 802.3z Gigabit Ethernet, 802.1d Spanning tree, 802.1p priority tags (4 queues), 802.1q VLANs (up to 255), 802.1x Port-Based Authentications, 802.3ad link aggregation, IAC:SNTP:GVRP support, broadcast storm control, 802.1w Rapid Spanning Tree, 802.1s Multiple Spanning Tree, Jumbo Frames (9216 bytes), rate limiting down to 64Kb
- Emissions: CE and FCC Class A approved
- Power supply, 100-240VAC, 50/60Hz Internal Universal
- Power consumption: 30 watts (max)
- BTU 15,336/hr
- connector: shielded RJ-45 jack
- LED indicators Link/Activity, Full Duplex Collision status for each port
- certification: CSA International, FCC Class A, CE Class A. CUL International

- environment operating temperature: 0° to 40° C (32° to 104° F), storage -10° to 70° C (14° to 158° F)
- humidity: operating: 10% to 90 RH, non-condensing; storage: 0 to 95% RH, non-condensing)
- *NetPower*: 0
- Weight: 7lbs
- Dimensions: 12.17” wide x 1.736”high x 1.73” deep (309.1mm x 440.9mm x 43.9mm)
- 19” rack mountable

SW1148

The following are the specifications for the SW1148:

- technology store and forward architecture, non-blocking
- IP multicast supports IGMP snooping (256 multicast addresses)
- Dell certified, configured by *NetStreams*
- 96 Gbps switching capacity
- 48 1Gbps ports
- 4 combo SFP ports
- standards: IEEE 802.3, IEEE 802.3u Fast Ethernet, 802.3ab Gigabit Ethernet, 802.3z Gigabit Ethernet, 802.1d Spanning tree, 802.1p priority tags (4 queues), 802.1q VLANs (up to 255), 802.1x Port-Based Authentications, 802.3ad link aggregation, IAC:SNTP:GVRP support, broadcast storm control, 802.1w Rapid Spanning Tree, 802.1s Multiple Spanning Tree, Jumbo Frames (9216 bytes), rate limiting down to 64Kb
- Emissions: CE and FCC Class A approved
- Power supply, 100-240VAC, 50/60Hz Internal Universal
- connector: shielded RJ-45 jack
- LED indicators Link/Activity, Full Duplex Collision status for each port
- certification: CSA International, FCC Class A, CE Class A. CUL International
- environment operating temperature: 0° to 45° C (32° to 113° F)
- humidity: operating: 10% to 90 RH, non-condensing;
- *NetPower*: 0
- Weight: 3.6Kg
- Dimensions: 17.32” wide x 1.73”high x 10.03” deep (440mm x 44mm x 255mm)
- 19” rack mountable

SW1124

The following are the specifications for the SW1048:

- technology store and forward architecture, non-blocking
- IP multicast supports IGMP snooping (256 multicast addresses)
- Dell certified, configured by *NetStreams*
- 96 Gbps switching capacity
- 24 1Gbps ports
- 4 combo SFP ports
- standards: IEEE 802.3, IEEE 802.3u Fast Ethernet, 802.3ab Gigabit Ethernet, 802.3z Gigabit Ethernet, 802.1d Spanning tree, 802.1p priority tags (4 queues), 802.1q VLANs (up to 255), 802.1x Port-Based Authentications, 802.3ad link aggregation, IAC:SNTP:GVRP support, broadcast storm control, 802.1w Rapid Spanning Tree, 802.1s Multiple Spanning Tree, Jumbo Frames (9216 bytes), rate limiting down to 64Kb
- Emissions: CE and FCC Class A approved
- Power supply, 100-240VAC, 50/60Hz Internal Universal
- connector: shielded RJ-45 jack
- LED indicators Link/Activity, Full Duplex Collision status for each port
- certification: CSA International, FCC Class A, CE Class A. CUL International
- environment operating temperature: 0° to 45° C (32° to 113° F)
- humidity: operating: 10% to 90 RH, non-condensing;
- *NetPower*: 0
- Weight: 3.6Kg
- Dimensions: 17.32” wide x 1.73”high x 10.03” deep (440mm x 44mm x 255mm)
- 19” rack mountable

Installation

There are three ways to install the SwitchLinX depending on the model number.

Installing in a Rack (SW324 Only)

The *SwitchLinX* is packaged with two detachable rack ears for easy rack mounting.

1. Mount the SW324 on the back of the rack with the removable IEC power cord facing front.
2. Plug in all of the Ethernet connections.

3. Plug in the power cord.

Installing in a Rack (SW1024 and SW1148 and SW1124)

The SW1024 and SW1048 are mounted in a rack with rack ears.

1. Install the rack ears on the SW1024 or SW1048.
2. Using the rack ears, install the SW1024 or SW1048 in a rack.
3. Plug in all of the Ethernet connections.
4. Plug in the power cord.

Installing Free Standing (all models)

To install a SwitchLinX as free standing, complete the following steps:

1. Plug in all of the Ethernet connections.
2. Plug in the power cord.

DoorLinX offers front door options including a doorbell, intercom, and door strike contact closure.

Overview

The DoorLinX, an IP-based door station/intercom, extends DigiLinX to the front door. DoorLinX includes a built-in microphone and speaker, a doorbell, and a door strike contact closure. A third-party camera can also be integrated with the system. You can install DoorLinX at entry points, such as the front door or at a gate.

DoorLinX consists of three parts, some of which are shown below in Figure 11-1.

- mounting bracket
- electronics package and chassis
- faceplate (includes doorbell and doorbell mounting plate).

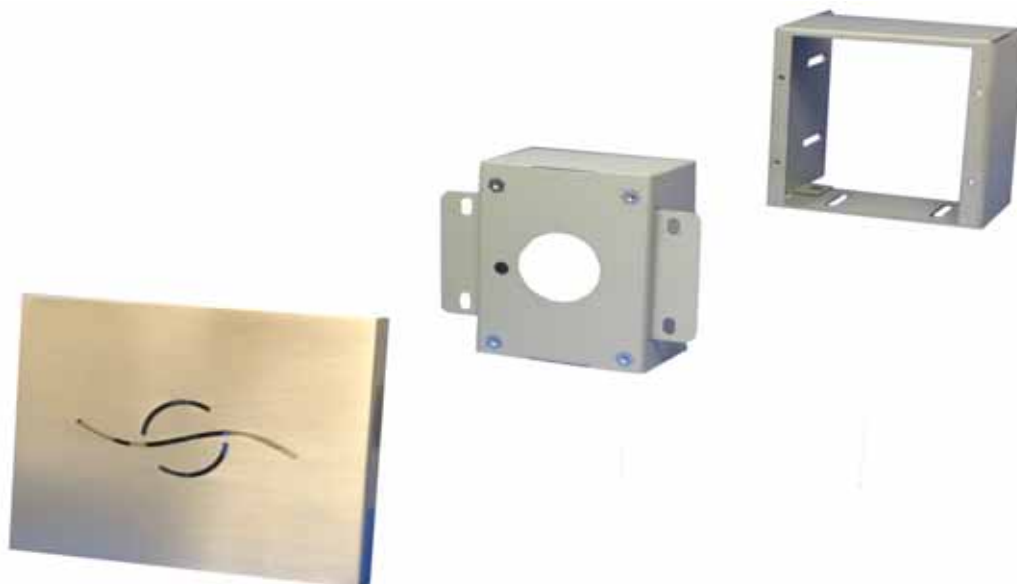


Figure 11-1 DoorLinX faceplate, electronics package, and mounting bracket

NOTE: The faceplate, electronics package and mounting bracket are each sold separately.

The DoorLinX faceplate covers the built-in speaker and microphone. When a guest presses the matching doorbell, the DigiLinX system plays an MP3 file in all designated rooms through the sound system. The system temporarily mutes anything currently playing. A message appears on the designated TouchLinX giving the user the option of establishing an intercom session. After the user activates these controls, the other TouchLinX return to their previous screens.

The intercom session allows the user to communicate with the guest and also provides other additional features. If a door latch is installed, it can be triggered by a built-in contact closure that can be activated by a button on the TouchLinX. In addition, a third-party camera can be integrated with the DoorLinX and the image from that camera shown on the TouchLinX.

Specifications

The DoorLinX components have the following specifications:

- omnidirectional microphone
- contact closure relay: 1A @ 30VDC
- dimensions:
 - doorbell: 25mm wide, 75mm high, 6mm deep
 - faceplate: 130mm wide, 110mm high, 10mm deep
- speaker: 8 Ohms, maximum power 5 Watts.
- *NetPower*: 1

Connectors

Figure 11-2 shows the connections on the DX100.

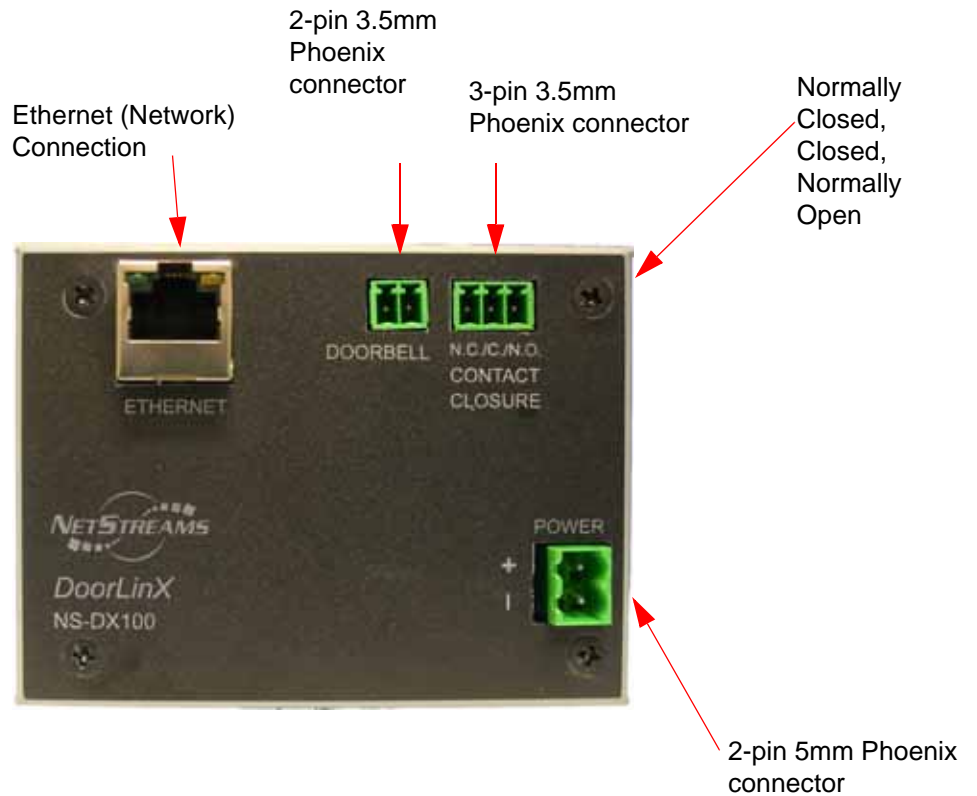


Figure 11-2 DoorLinX connections

The DoorLinX electronics package contains the connectors needed to connect the DoorLinX into the DigiLinX network. Terminations for the DoorLinX include:

- Ethernet: RJ45 connectors, 568a termination standard
- power: 2-pin Phoenix connector (provided)

CAUTION! The contact closure is rated to a maximum of 1A. Do not attempt to drive a door strike directly from the contact closure. Connect another relay to the DoorLinX contact closure and use the DoorLinX to trip this relay to run the high-current door strike.

- doorbell: 2-pin Phoenix connector (provided)
- contact closure: 3-pin Phoenix connector (provided).

Installation

To install DoorLinX, you must install the mounting bracket and the doorbell mounting plate, connect the cables, and mount the electronics package, faceplate, and doorbell.

11-3

DoorLinX installations can include the following components:

- DoorLinX mounting bracket (DXB100)
- DoorLinX electronics package (DX100)
- DoorLinX faceplate and doorbell (DXF100-B brushed brass, DXF100-N brushed nickel, or DXF100-O venetian bronze)
- screws (provided)
- wood screws (not provided).

Connecting with DigiLinX

DoorLinX works with the following DigiLinX components: PowerLinX, SwitchLinX, SpeakerLinX, and TouchLinX. Figure 11-3 shows DoorLinX and the relevant DigiLinX components, including an optional camera.

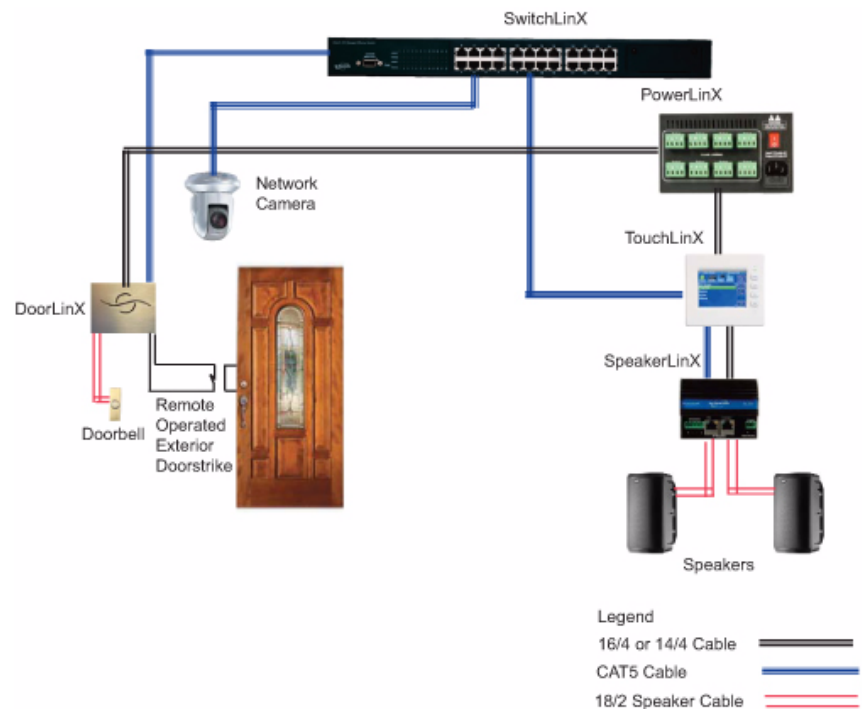


Figure 11-3 DoorLinX and DigiLinX components

DoorLinX connects to the DigiLinX network like most DigiLinX networked devices using CAT5 cable and speaker wire (for power). Be sure to run the cables through the mounting bracket and doorbell mounting plate. To connect DoorLinX, complete the following steps:

1. Connect a CAT5 cable from the SwitchLinX to the ETHERNET port on the DoorLinX. If a TouchLinX is nearby, you can connect the CAT5 and power cables to it from the DoorLinX instead of to the SwitchLinX and PowerLinX.
2. Connect a 16/4 or 14/4 cable from the PowerLinX to the DoorLinX POWER port.

You can use a 16/2 or 14/2 cable since two wires on the 16/4 cable are clipped and not used. However, using the 16/4 or 14/4 cable allows for easy future expansion or upgrades.

3. Connect two 20 AWG cables from the DoorLinX DOORBELL 2-pin Phoenix port to the two screws on the back of the doorbell.
4. If you are installing a remote door latch, connect three 20 AWG cables from the DoorLinX CONTACT CLOSURE 3-pin Phoenix port to the contact connections of the latch. Follow the remote relay's manual for complete cable configuration.

Installing the Mounting Bracket

Although the DX100 fits into a standard backless 2-gang box (mounted horizontally), use the provided DXB100 mounting bracket to ensure a good fit and seal with the faceplate. The mounting bracket provides the flexibility of either being installed during new home construction or being retrofitted into an existing home. You can place exterior materials such as rock or stucco around the mounting bracket after it has been installed.

The optimal position for the mounting bracket is at least 54" high and within 5' of either side of the door frame. To install the mounting bracket, complete the following steps as shown in Figure 11-4:

1. Position the bracket with the mounting tab vertical against a stud.
2. Screw the mounting bracket most of the way into the stud with wood screws.
3. Slide the mounting bracket forward or back on the screw hole rails to adjust the mounting bracket to the appropriate depth to be flush with the wall.
4. Tighten the screws.

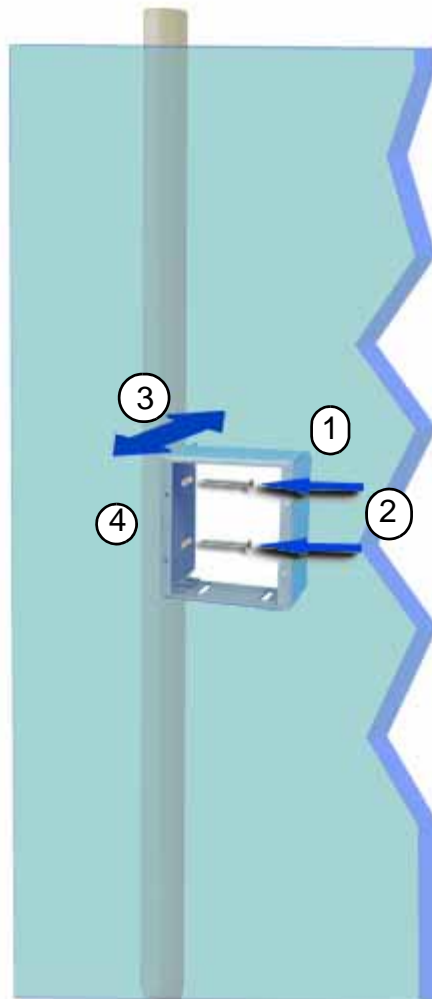


Figure 11-4 *Installing the Mounting Bracket*

Installing the Doorbell Mounting Plate

The doorbell and faceplate hooks onto a mounting plate. Figure 11-5 shows the doorbell mounting plate and the backside of the doorbell and faceplate.

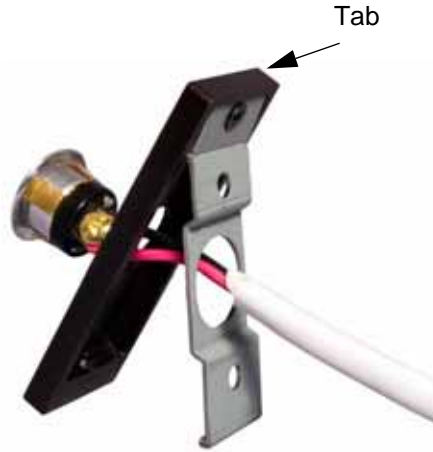


Figure 11-5 *Doorbell Mounting Plate and Backside of the Doorbell and Faceplate*

The doorbell does not need to be placed over a stud. The home determines the location of the doorbell and the material it is attached to.

To install the doorbell mounting plate, complete the following steps:

1. Position the mounting plate vertically over the doorbell hole.
2. Screw the mounting plate into the material with appropriate screws, such as wood or masonry screws.

Do not force the mounting plate into the material. The tab on the faceplate back must hook over the top of the mounting plate.

Installing the DoorLinX Faceplate

After mounting the electronics package, you may install the faceplate.

NOTE: Do not install the faceplate before the electronics package is completely mounted in the wall.

To install the faceplate, complete the following steps (as shown in Figure 11-6):

1. Mount the DoorLinX backbox into a horizontal 2-gang hole against a wall stud. Use the adjustment sliders to adjust the backbox to the proper depth for the

thickness of the outer wall material, taking into account a tight seal for the gasket on the faceplate.

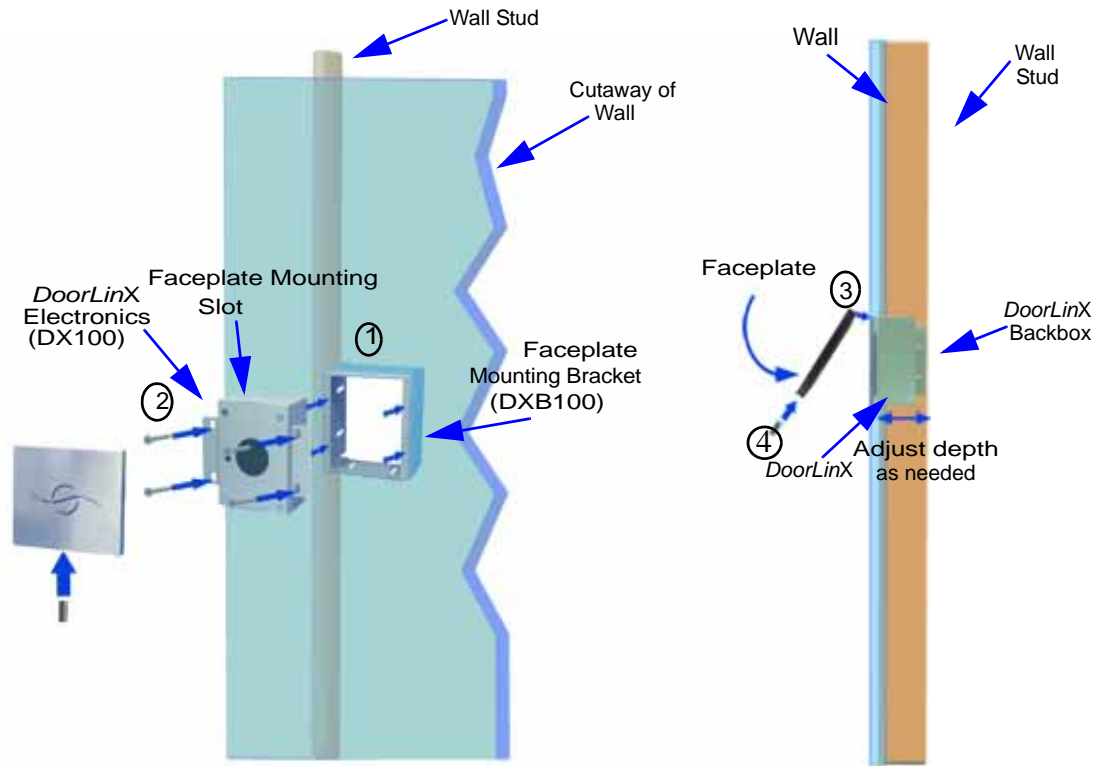


Figure 11-6 *Installing DoorLinX faceplate*

2. Make all wiring connections, and then insert the DoorLinX electronics (DX100) into the mounting box using the four mounting screws. Ensure that the faceplate mounting slot faces up.
3. Fit the hanger bracket on the faceplate to the faceplate mounting slot on the DoorLinX and push the faceplate down and towards the DoorLinX.
4. Push the faceplate against the DoorLinX so that it compresses the gasket. While maintaining pressure, insert the set-screw at the bottom of the faceplate and screw in to lock the faceplate in place.

Installing the Doorbell

The doorbell easily attaches to the mounting plate. To install the doorbell, complete the following steps (refer to Figure 11-7):

1. Hang the doorbell faceplate's tab over the top of the mounting plate.

2. Pull the doorbell wires through the doorbell faceplate and mounting tab. Connect the wires to the doorbell button.

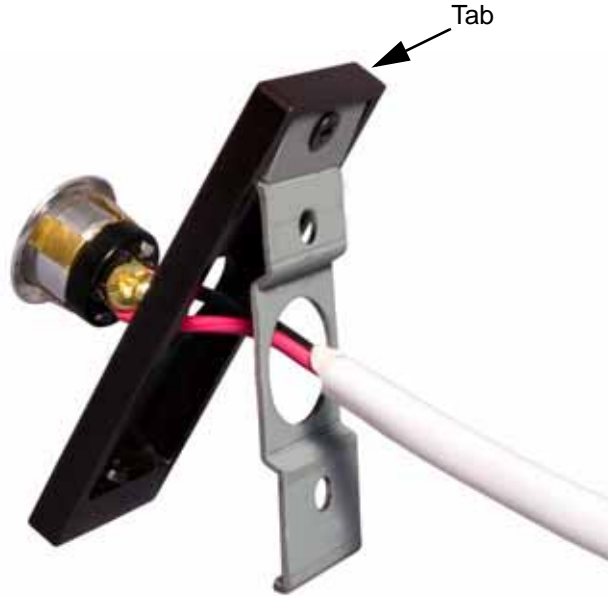


Figure 11-7 Doorbell and doorbell mounting bracket

3. Push the doorbell button and faceplate into the mounting bracket.
4. Use the wrench provided to tighten the set-screw on the bottom of the doorbell.

The ViewLinX VL100/VL9100-CS is an IP-based audio/video decoder for distributing multi-room video to a display. The ViewLinX features component, S-Video, composite, or VGA video outputs as well as analog stereo and S/PDIF RCA audio outputs for maximum flexibility. An RCA audio input is included for TV monitor output. The VL100 also includes an RCA input for power management sensing (video, level, or LED sensing), a 3.5mm IR/RS232 connection for easy control of the display, an IR Receiver input connection (IR Receiver included), and a Phoenix connector for power. An additional IR Out/RS232 connection provides two way control of an A/V receiver. The relay output can drive a projector lift, motorized screen, or other items. The commercial version of the ViewLinX, VL9100-CS, features BNC connectors for the component, composite, S-Video outputs as well as a VGA connector. A 3-position phoenix connector is used for balanced audio. Also included on this version of the ViewLinX is the dual-RJ45 connector for the multimedia wall plate (sold separately).

The ViewLinX can be mounted on the wall behind the display (wall bracket tabs included), rack mounted, or used in a set-top box configuration. Various mounting options are available for the ViewLinX: free-standing placed on top of a cabinet shelf or TV (rubber feet included), wall mount, and rack mount.

See Figure 12-1 for a detailed picture of the VL100.

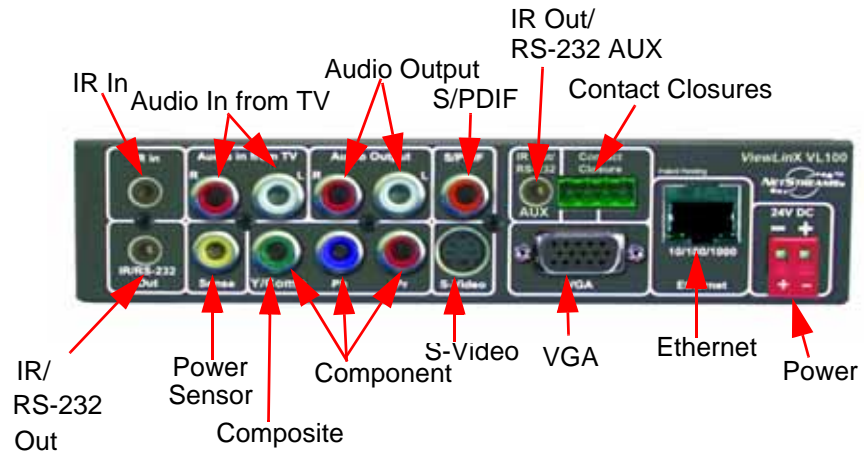


Figure 12-1 ViewLinX VL100 (need identifiers)

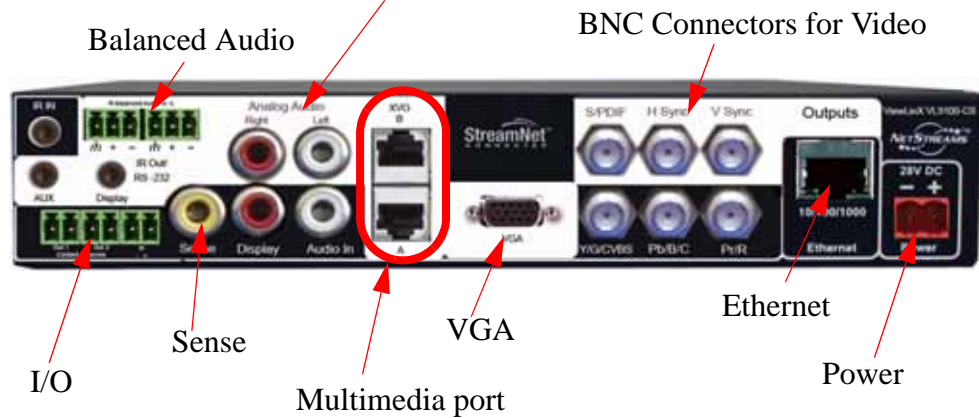
NOTE: The VL100 does not ship with a power supply. We recommend connecting the power to a *PowerLinX* PL600 or PL228 or PL140. The VL9100-CS DOES ship with a power supply.

- **IR In.** Allows you to plug in a DigiLinX IR receiver. This allows ViewLinX to function as an *IRLinX*.
- **Audio In from TV.** Allows the ViewLinX to receive audio from a TV.
- **Audio Output.** Outputs line level audio out to a TV, receiver, or third party system.
- **Balanced Audio (VL9100-CS only).** Outputs balanced audio signal.
- **S/PDIF.** Outputs PCM or bitstream, depending on the setting of the MediaLinX A/V.
- **IR Out/RS-232 AUX.** Allows RS-232 devices (for example, an A/V receiver) to be connected and controlled from the ViewLinX.
- **Contact Closures.** Allows the ViewLinX to function as contact closure and input sensor. (2 on the VL100, 3 on the VL9100-CS)
- **Ethernet.** A 10/100/1000 network interface.
- **Power.** Standard *PowerLinX* connection.
- **VGA.** Outputs a VGA signal to a computer monitor, up to 1024x768 @70Hz.
- **S-Video.** Outputs an S-Video signal. (Via BNC connection on the VL9100-CS)
- **Component and Composite Outputs.** Outputs either a component signal or a composite signal. (Via BNC connection on the VL9100-CS)
- **Power Sensor.** Used to detect if a device is powered ON.
- **Dual RJ45 Connectors for multimedia wall plate (VL9100-CS only).** The wall plate allows the video and control signals to be extended up to 150ft from the

ViewLinX. The wall plate will output simultaneously with the ViewLinX. This can support up to 3 simultaneous component displays (1 from the VL, 2 from the wall plate) or 2 simultaneous VGA displays (1 from the VL and 1 from the wall plate). The wall plate also supports IR and RS-232 control for displays. The wall plate is sold separately.

- **IR/RS232 Out.** An IR emitter or an RS232 connection is used to control the display.

Figure 12-2 VL9100-CS Commercial ViewLinX Audio



Specifications

VL100

Standards Supported	NTSC, PAL
Video Output Connectors	Composite (480i, 576i) S-Video (480i, 576i) Component (480i, 576i, 576p, 720p, 1080i) VGA (up to 1024 x 768 @ 70Hz)
Audio Output Connectors	One S/PDIF output (PCM or Digital Bitstream)
Audio Input Connectors	One RCA Analog Input for accepting a TV monitor
Gigabit Ethernet Connection	RJ45
XVO Connection	Dual RJ45 for Multimedia wall plate
Power Connection	Two-pin Phoenix connector (20-30VDC)
IR Emitter Outputs/RS232	One 3.5mm
IR Receiver Input	One 3.5mm
Auxiliary Output (IR/RS232)	One 3.5mm
LEDs	Signal detection, Power detection, Activity status

Two I/O Channels	One input sensor, one output closure
IR Emitter	Included
IR Receiver	Included
Power State Sense Input	
Dimensions	9 1/2" wide x 1 3/4" high x 8 2/3" deep (244mm x 45mm x 220mm)
Weight	4 lbs. (2.722 Kg)
<i>NetPower</i>	4
Restrictions on Use of Certain Hazardous Substances (RoHS)	Compliant

VL9100-CS

Standards Supported	NTSC, PAL
Video Output Connectors	BNC Connectors for following video signals Composite (480i, 576i) S-Video (480i, 576i) Component (480i, 576i, 576p, 720p, 1080i) DB15 - VGA(up to 1024 x 768 @ 70Hz)
Audio Output Connectors	One S/PDIF output (PCM or Digital Bitstream) Analog audio out 3-position phoenix connector for balanced audio
Audio Input Connectors	One RCA Analog Input for accepting a TV monitor
Gigabit Ethernet Connection	RJ45
Power Connection	Two-pin Phoenix connector (20-30VDC)
IR Emitter Outputs/RS232	One 3.5mm
IR Receiver Input	One 3.5mm
Auxiliary Output (IR/RS232)	One 3.5mm
LEDs	Signal detection, Power detection, Activity status
Two I/O Channels	One input sensor, two output closure
IR Emitter	Included
IR Receiver	Included
Power State Sense Input	
Dimensions	9 1/2" wide x 1 3/4" high x 8 2/3" deep (244mm x 45mm x 220mm)

Weight	4 lbs. (2.722 Kg)
<i>NetPower</i>	4
Restrictions on Use of Certain Hazardous Substances (RoHS)	Compliant

Installation

There are three ways to mount a ViewLinX:

- Free-standing
- Wall mount
- Rack mount.

Free-Standing

In this type of installation, the ViewLinX is located next to a TV or in a shelf.

1. Connect the video inputs (component, composite, or S-Video).
2. Connect the Ethernet port.
3. Connect S/PDIF and Analog Audio.
4. Connect power.

Wall Mount

To mount a ViewLinX in a wall, complete these steps.

1. Screw the four screws in the wall.
2. Drill 4 holes in the wall.
3. Install the mounting brackets using four screws (not provided).
4. Place the ViewLinX in the mounting brackets.
5. Connect the video inputs (component, composite, or S-Video).
6. Connect the Ethernet port.
7. Connect S/PDIF and Analog Audio.
8. Connect power.

Rack Mount

VL100 is rack mounted using the RS1U rack shelf (sold separately).

1. Install the ViewLinX using the ears (built-in) in the rack.
2. Screw the four screws in the bottom of the ViewLinX in the rack.
3. Connect the video inputs (component, composite, or S-Video).

4. Connect the Ethernet port.
5. Connect S/PDIF and Analog Audio.
6. Connect power.

VL9100-CS can be rack mounted using the included rack ears.

1. Install the ViewLinX using the ears provided.
2. Connect the video inputs (BNC to VGA or RCA adapters maybe required depending on your source)
3. Connect the Ethernet port.
4. Connect the audio connector (balanced, S/PDIF, or analog)
5. Connect power.

Overview

TheaterLinX functions as a bridge between DigiLinX and the home theater. This allows the two channel audio of a source that exists on the DigiLinX network to be used on the home theater's receiver. It also allows the two channel audio of the receiver to be used by DigiLinX. Sources that are fed into the receiver can be controlled and played by DigiLinX using the receiver's line level stereo output. In addition to controlling the receiver and the sources, the TH100 also includes IR output for controlling the display.

TheaterLinX (TH100) includes IR control or two-way RS-232 for control of the home theater's audio/video receiver/processor, or sources. TheaterLinX includes a built-in IR receiver to enable IR learning for commands such as volume up/down, mute, audio/video mode, power on/off, source select, channel up/down, tone adjustment surround sound, navigation buttons and more. All functions can be offered to a homeowner via an intuitive interface on a TouchLinX touch screen or any IP-enabled device in the home.

Additional benefits of TheaterLinX include the use of DigiLinX macros for automation control of drapes, theater screens, projector lifts, etc. via three contact closures. Macros can be used to automatically execute a list of functions such as turning on the projector, opening up the movie drapes, set the screen masking (i.e. 2.35.1), turn on the processor, amplifier(s) and HD video source, and start the movie, as audio is then distributed to other rooms throughout the home. The input sensor is capable of monitoring the power level of a device and triggering a DigiLinX macro. For example, a home theater could have a motion sensor that triggers a macro to turn on walkway lights when motion is detected.

Three RS-232 AV receiver drivers are included: Marantz, Denon, and Arcam. These drivers have been written to work with the new receiver GUI. For receivers that don't have drivers, the TH100 can use IR.

TheaterLinX can be shelf, or rack mounted.

Figure 13-1 shows the front panel of the TheaterLinX.



Figure 13-1 TheaterLinX front panel

Connectors

Figure 13-2 shows the connectors on the back panel of TheaterLinX

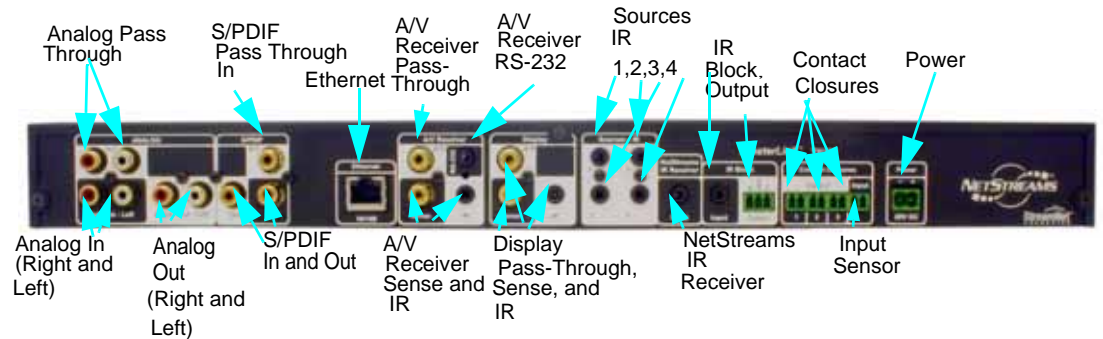


Figure 13-2 TheaterLinX back panel

The following are the major functional areas of the back panel.

Analog and S/PDIF

Stereo audio output connections go to the receiver.

Analog

Input and output of the stereo analog audio with pass-through connections on the inputs.

Ethernet

10/100 Ethernet connection that goes to the SwitchLinX.

A/V Receiver

This section includes a power sense connection like those used on an MLA101 (used to determine if a device is powered), a pass-through for the power sense, an IR output used to control the Receiver, and an RS-232 connection used to control the A/V receiver.

Display

This section includes a power sense connection like those used on an MLA101 (used to determine if the device is powered), a Pass-through for power sense, and an IR output used to control the display.

Sources - IR

This section contains slots for connecting the IR emitter to the TH100; used to control sources.

NetStreams IR Receiver

A connection for the *NetStreams* IR receiver. 3rd party IR receivers are not compatible, use the IR block connection for 3rd party IR systems.

IR Block

If a third party IR distribution system is used, it would be connected here.

Contact Closures

Output relays can be set to normally open or closed, and triggered by a macro. Input contact closures look for high/low and open/closed signals to trigger macros.

Power

Power connection for usage with any DigiLinX power supply.

Specifications

Audio Input Connectors	Analog RCA (1 pair) Stereo S/PDIF
Control	
IR (Receiver, Display, and Sources)	3.5mm to IR
RS-232 (Receiver Only)	3.5mm to DB9 (Female)
IR Block Connection (output)	3 pin modular connector
IR Block Connection (input)	3.5mm
Ethernet Connection	RJ45
Power Sense (Receiver & Display)	RCA
Contact Closures	
1) Input	2 pin modular connector
3) Output	2 pin modular connector
IR Emitter	3 included
IR Receiver	1 included
Adhesive rubber feet	4 included

RS-232 to 2.5mm Cables	1 included
Dimensions (W x H x D)	17 ¼ x 1 ¾" x 9 ¼" 438mm x 44mm x 235mm
Weight	5.44 lbs. (2.47kg)

Installation

This section will provide you with a starting point for installing the TheaterLinX. Before installing TheaterLinX, you will need to:

1. Get a basic DigiLinX system up and tested. This should include a SwitchLinX, a PowerLinX, a couple of SpeakerLinX, and a MediaLinX.
2. Connect the Receiver to the sources you have decided to use in the home theater.

NOTE: Note which device is going into which source input on the Receiver.

3. Test both systems. This will validate that all your connections are correct.

Connecting the TheaterLinX to your Receiver

The TheaterLinX will input and output stereo audio to the Receiver (the TheaterLinX is a stereo only device not designed to handle multi-channel audio).

1. For the Receiver to receive audio from the TheaterLinX, connect either the Analog Out or the S/PDIF Out to a source input on the Receiver using an RCA cable.
2. Connect the TheaterLinX Analog Input or S/PDIF (two channel) Input to a fixed line level output such as a Tape Out on the Receiver using an RCA cable.

If you connected Analog Out and Analog In, your setup should look something like what is displayed in the following diagram:

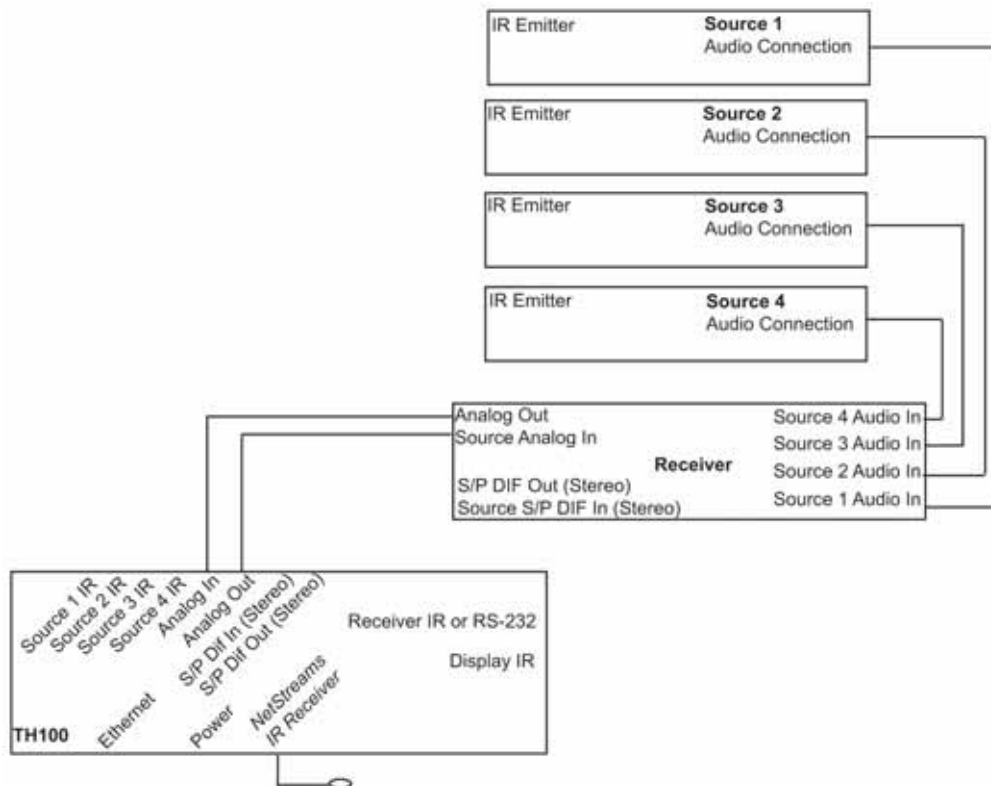


Figure 13-3 Connecting Analog In and Out

3. Connect the appropriate control cable (IR or RS-232) from the TheaterLinX Receiver IR or RS-232 port to the Receiver.
 - For RS-232 (used if a *NetStreams* A/V receiver driver is used), use the included RS-232 cable. Go from the A/V Receiver RS-232 port on the TheaterLinX to the DB9 RS-232 port on the Receiver.
 - For IR, use the included IR emitter cable and connect it from the A/V Receiver IR port on the TheaterLinX and connect the emitter end so that it covers the front of the IR receiver on the receiver on the AVR.
4. To control the display through the TheaterLinX, connect the IR emitter like you did for the Receiver, but use the Display IR port on the back of the TheaterLinX.

Your setup should now look like the following diagram assuming you are using analog for the audio in and out.

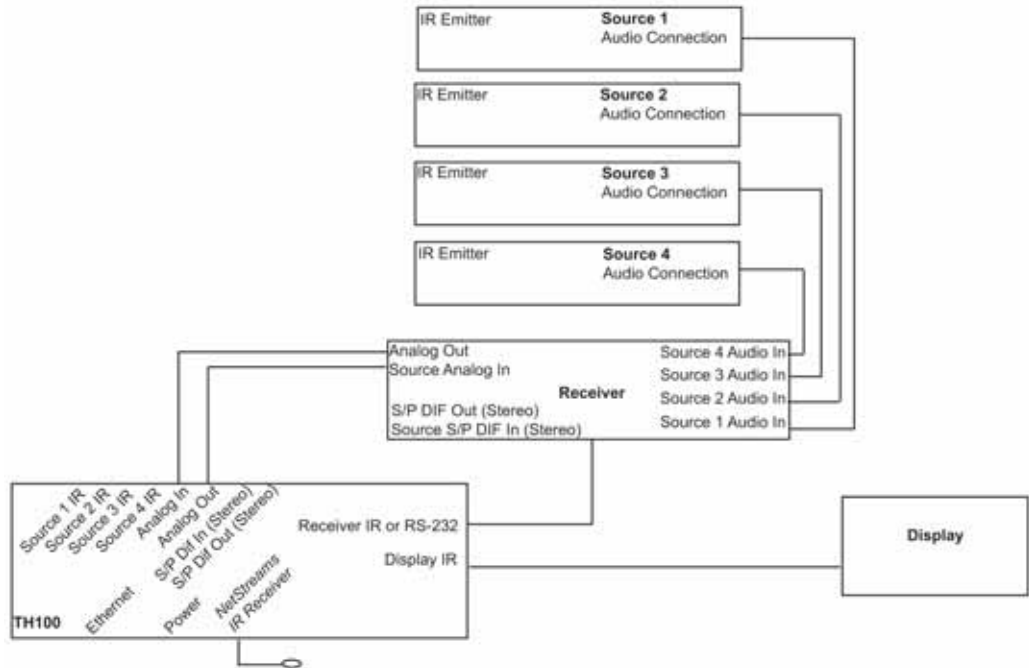


Figure 13-4 Connecting the Appropriate Control Cable

5. TheaterLinX can control the sources attached to the receiver using the included IR emitters or a third party IR system. To use the *NetStreams* IR emitters, connect the IR emitter side over the IR receiver on the source and plug the other end into an available IR source port on the TheaterLinX.

Also included is an IR reciever that can be used to control DigiLinX from an IR

based remote. The *NetStreams* IR receiver only works with the included IR receiver.

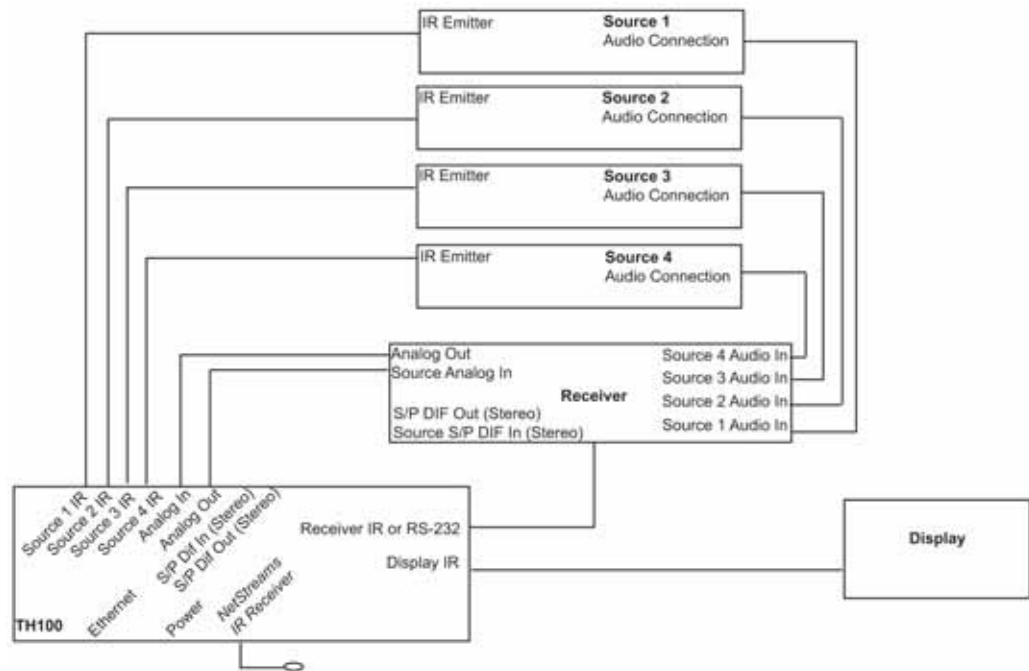


Figure 13-5 Controlling Sources

NOTE: TheaterLinX also contains contact closures that can be used to trigger shades, curtains, and lifts. There is an input contact closure that can trigger a *NetStreams* macro.

Connecting TheaterLinX to the SwitchLinX and PowerLinX

Once TheaterLinX is physically connected to the home theater, all that remains is to connect the TheaterLinX to the SwitchLinX and PowerLinX.

1. Connect the power cord from the PowerLinX to the Power port on the back of the TheaterLinX.

2. Connect a CAT5 cable between the Ethernet port on the back of the TheaterLinX and the SwitchLinX.

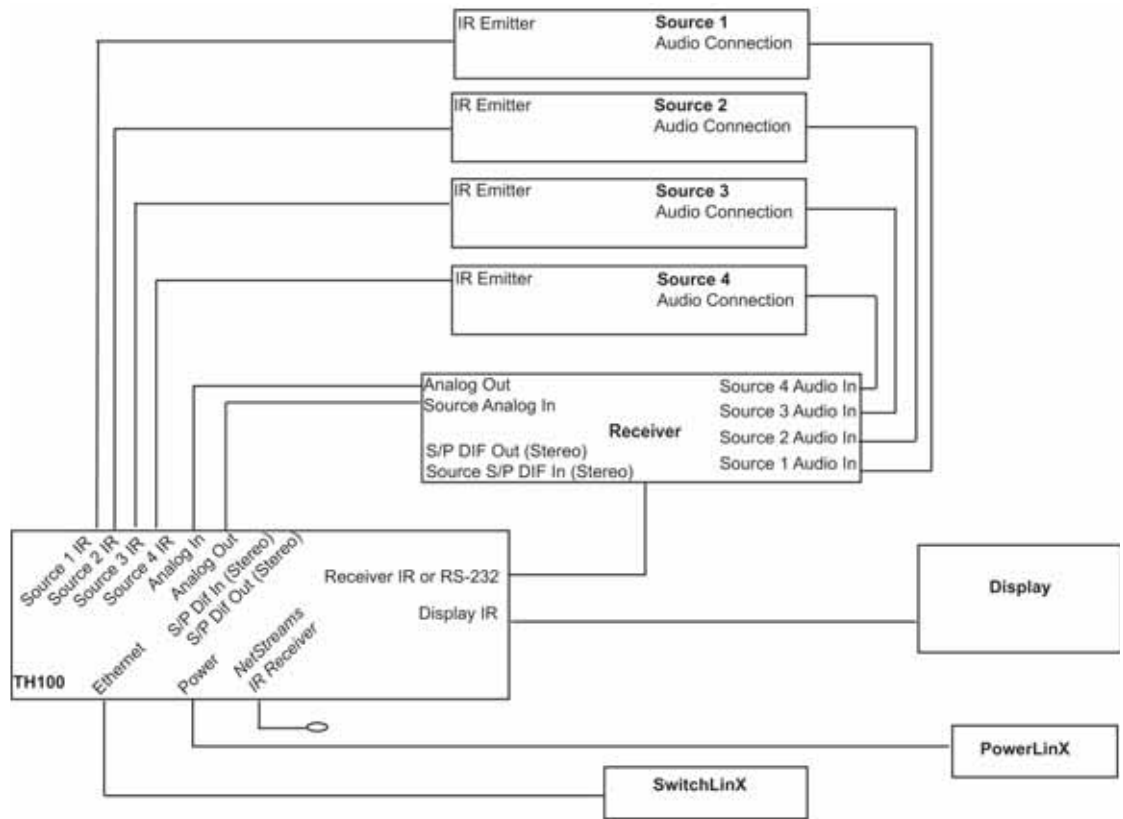


Figure 13-6 Connecting TheaterLinX to a SwitchLinX and PowerLinX

Installing TheaterLinX in a Rack

The TheaterLinX can be mounted using rack ears. To install a TheaterLinX in a rack, complete these steps:

1. Screw the rack mount ears into the TheaterLinX.
2. Slide the TheaterLinX into the rack.
3. Screw the rack ears into the rack.
4. Follow the instructions for *Installation, Connecting TheaterLinX to your Receiver* and *Connecting TheaterLinX to the SwitchLinX and PowerLinX*.

Streaming Music Manager

The Streaming Music Manager (SMM100) is an IP-Based networked music manager that discovers shared music (WAV and MP3) and playlists (M3U) on a network stored on a PC, NAS system, or USB storage device, and makes this music available for playback across the *NetStreams* DigiLinX system.

Streaming Music Manager builds a database containing the locations of music files and makes this information available to the DigiLinX network. DigiLinX can then browse the database, locate and play the files from the computer, and display metadata from those files on the DigiLinX graphical interface.

Specifications

- 1U in height
- set top or rack mounted
- one 10/100 Mbps Ethernet connection (for network)
- four USB connections
- standard power connection
- VGA, Composite, and S-Video connections - these are video for status display outputs when connected to a monitor.

See Figure 14-1 for a back view of the connectors on the SMM100.

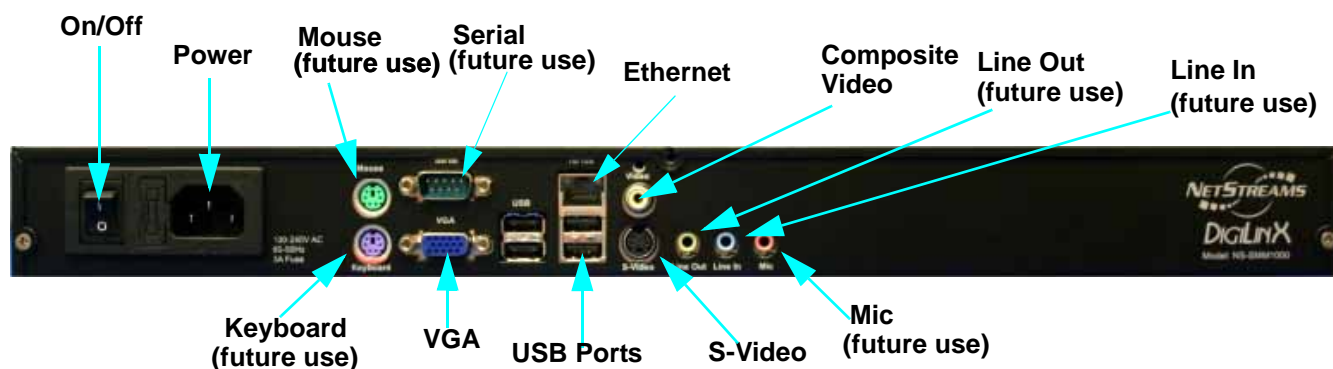


Figure 14-1 Connectors on the SMM100

Connecting the SMM100 to the Network

Installation of the SMM100 requires three steps:

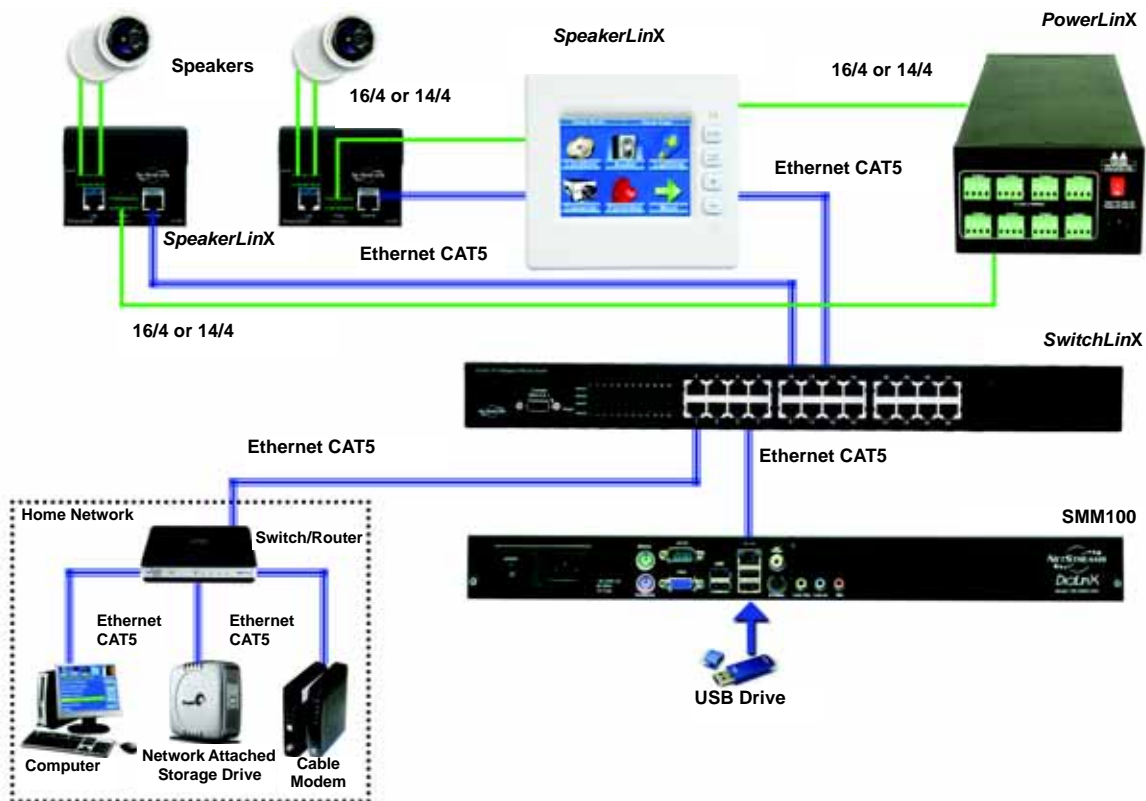
1. Install and connect hardware.
2. Set up the folder you have stored music in as a shared folder.
3. Use the DigiLinX Dealer Setup program to configure the DigiLinX system to recognize the SMM100 (this is covered in Chapter 15 of the *DigiLinX Dealer Setup Manual* found on the *NetStreams* web site www.netstreams.com on the Dealer Documents page).

You can have a DigiLinX only network or you can combine your home computer network with DigiLinX so that the SMM100 can access the music source (computer, USB storage device, or NAS drive).

The IP addressing and subnet masking schema of the *DigiLinX* network and the home network must match for the SMM100 to find network shared music on the home network.

If you want to connect DigiLinX to your existing home network, see Figure 14-2.

Figure 14-2 *DigiLinX and a home network*



NOTE: This is the recommended method of integrating the SMM100 with a home network.

Step 1: Installing and Connecting Hardware

Figure 14-2 illustrates how to install and connect the hardware.

Connecting DigiLinX Devices

1. Turn power off to all devices.
2. Connect the speakers to the SpeakerLinX.
3. Using CAT5 cable or using 16/4 or 14/4 speaker wire, connect the SpeakerLinX to the *TouchLinX*.
4. Using 16/4 or 14/4 speaker wire, connect the TouchLinX to the *PowerLinX*.
5. Using CAT5 cable connect the TouchLinX to the SwitchLinX.
6. Using CAT5 cable connect the SMM100 to the SwitchLinX.

Connecting a PC/Mac/Windows Media Center

Using CAT5 cable connect the computer to the switch/router on the home network.

Connecting the NAS Drive

Configure the NAS drive using the manufacturer's software. Use CAT5 cable to connect the NAS drive to the PC's switch/router.

IMPORTANT! Ensure that you configure your computer and NAS drive with an IP address that matches the IP address range used by the DigiLinX and home network. Refer to Chapter 15 of the *DigiLinX Dealer Setup Manual* on the Dealer Documents page of the *NetStreams* web site.

Connecting USB Devices

Connect any USB storage device into one of the USB ports on the SMM100.

NOTE: If you are rack mounting and want to insert a USB device into the SMM100, you may install a USB extension so that the port is accessible at the front of the unit after mounting.

Examples of USB storage devices include the Apple™ iPod, Creative Nomad, Dell™ DJ, USB Flash-based storage drives, and USB-connected hard drives.

Connecting Power

Connect power to the PC, NAS drive, SMM100, and *PowerLinX*. Turn on the power to all devices.

Step 2: Setting up Shared Folders

For music on a hard drive to be recognized by the SMM100, the folder **must** be shared. This is a process where a folder on a computer or Network Accessible Storage (NAS) drive is set so that it is accessible by other computers on the network.

NOTE: The time it takes for the SMM100 to recognize music on a new shared folder, catalog its folder, and make that information available to the DigiLinX network is not instantaneous. Please wait up to 15 minutes on the first configuration attempt to ensure your new shared folder is recognized by the SMM100 and that music files are properly identified.

Since the procedures for setting up shared folders vary from operating system to operating system, refer to your operating system manual for procedures on setting up shared folders.

For each computer hosting music, a unique shared folder name must be applied.

If more than one computer is hosting music on the network, complete this procedure for each computer. Each shared folder name must be unique.

Step 3: Configure the SMM100 with DigiLinX

The SMM100 ships with an IP address of 10.15.1.25. This address can be changed from DigiLinX Dealer Setup. For further information on configuring the SMM100, refer to the *DigiLinX Dealer Setup Manual* on the *NetStreams* Dealer section of the web site (www.netstreams.com) on the Dealer Documents page.

Connecting Third-Party Devices

Configuring an iPort for DigiLinX

This section shows you how to configure an iPort for a *NetStreams* DigiLinX system using DigiLinX Dealer Setup.

Wiring

To wire an iPort into a DigiLinX system, see Figure 15-1.

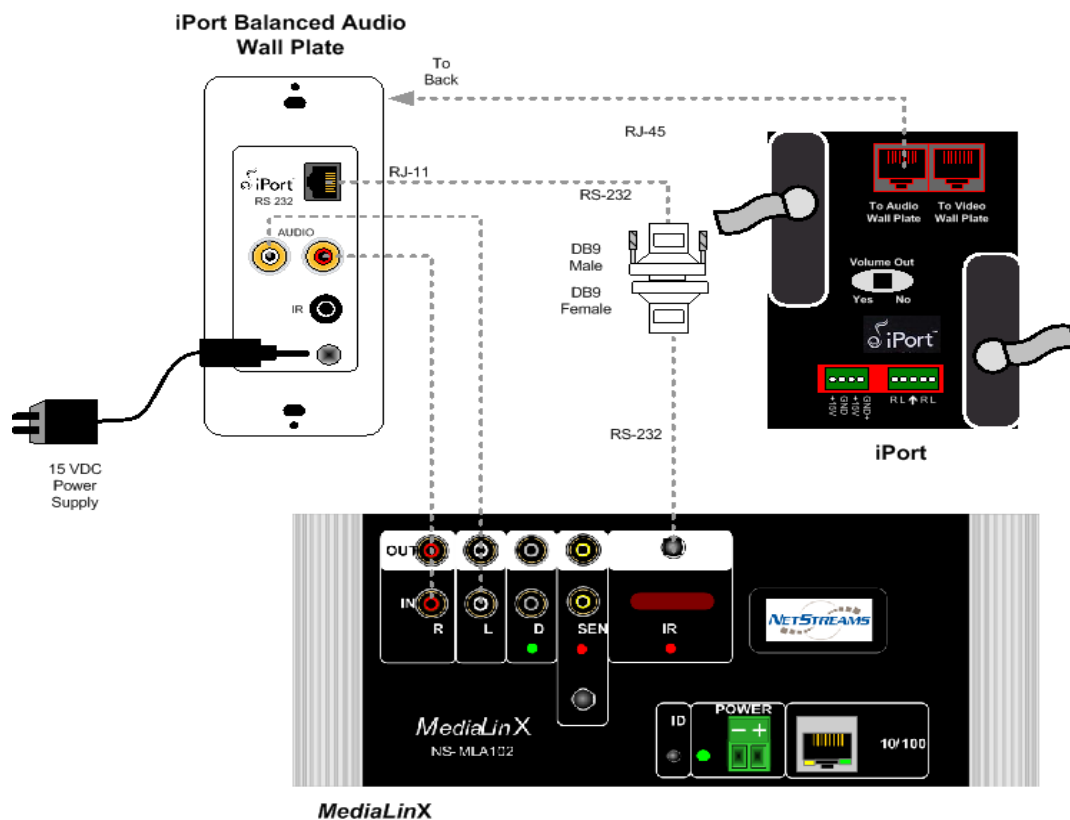


Figure 15-1 Wiring an iPort

1. Using an RJ45 connector, connect the iPort audio to the back of the iPort wall plate.

2. Using RCA cables, connect the left and right audio of the iPort wall plate to the left and right in ports on the *MediaLinX*.
3. Connect the RJ11 connector from the RS-232 port on the iPort wall plate.
4. Connect the 3.5mm connector from the RS-232 port on the *MediaLinX*.
5. Connect the male and female DB9 connectors on the loose ends of the cables in steps 3 and 4.

NOTE: Every manufacturer's cable end is different. Therefore, you may need a gender changer in step 5. However, do not use a null modem gender changer.

6. Connect power to the iPort wall plate.

Connecting Home Theater Audio

This section explains how to integrate home theater audio with a *NetStreams* DigiLinX system.

Requirements

- speaker audio level switches as required
- A/V receiver
- sources
- speakers
- CAT5 cable with RJ45 connectors
- RCA cables
- speaker wire with four-pin Phoenix connectors
- *NetStreams* AP300 Audio Port.

How it Works

When voltage is sensed from the speaker wires of the output on the receiver, a relay is switched over. This routes output to the speakers.

To configure for home theater, complete the following steps:

1. Connect each of the sources to the theater receiver as needed (four are shown in Figure 15-2).
2. Using an RCA cable, connect the receiver sub out to the line level switching device (in normally open mode).
3. Using an RCA cable, connect the line level switching device (in normally closed mode) to the AP300 (out left and right).
4. Using a CAT5 cable, connect the EIM port of the AP300 to the SpeakerLinX.
5. Using an RCA cable, connect the line level switching device to the sub woofer.
6. Using speaker wire, connect the receiver to each of three speakers (left, center, and right).
7. Using speaker wire, connect the receiver to the speaker switching device (in normally open mode).
8. Using speaker wire, connect the speaker switching device to the two rear surround sound speakers (out).
9. Using speaker wire, connect the speaker switching device to the speaker connection on the SpeakerLinX (in normally closed mode).

System Programming and Design

System Programming

DigiLinX Dealer Setup is a PC-based program that allows you to configure DigiLinX devices so that they can communicate across a DigiLinX network. Phases of the software setup include:

- creating a project
- matching the physical hardware devices to the hardware setup in the project
- configuring devices with system-specific information
- saving the project
- sending the configuration files to the server
- learning IR commands.

The DigiLinX Dealer Setup Program requires Windows XP Service Pack 2 (SP2). You can download the DigiLinX Dealer Setup Program and manual from the Dealer Documents page on the NetStreams website at www.netstreams.com.

System Design

Because DigiLinX is scalable, system design and configuration possibilities are endless. There are some diagrams included in this section to get you started. Remember to use the NetPower calculator to figure out how many PowerLinX power supplies your system requires.

Example Configuration 1 - Single Zone Wiring

Figure 16-1 shows a possible DigiLinX configuration. This is not the only configuration you can have for a single room, but it illustrates how the wiring is run in more detail.

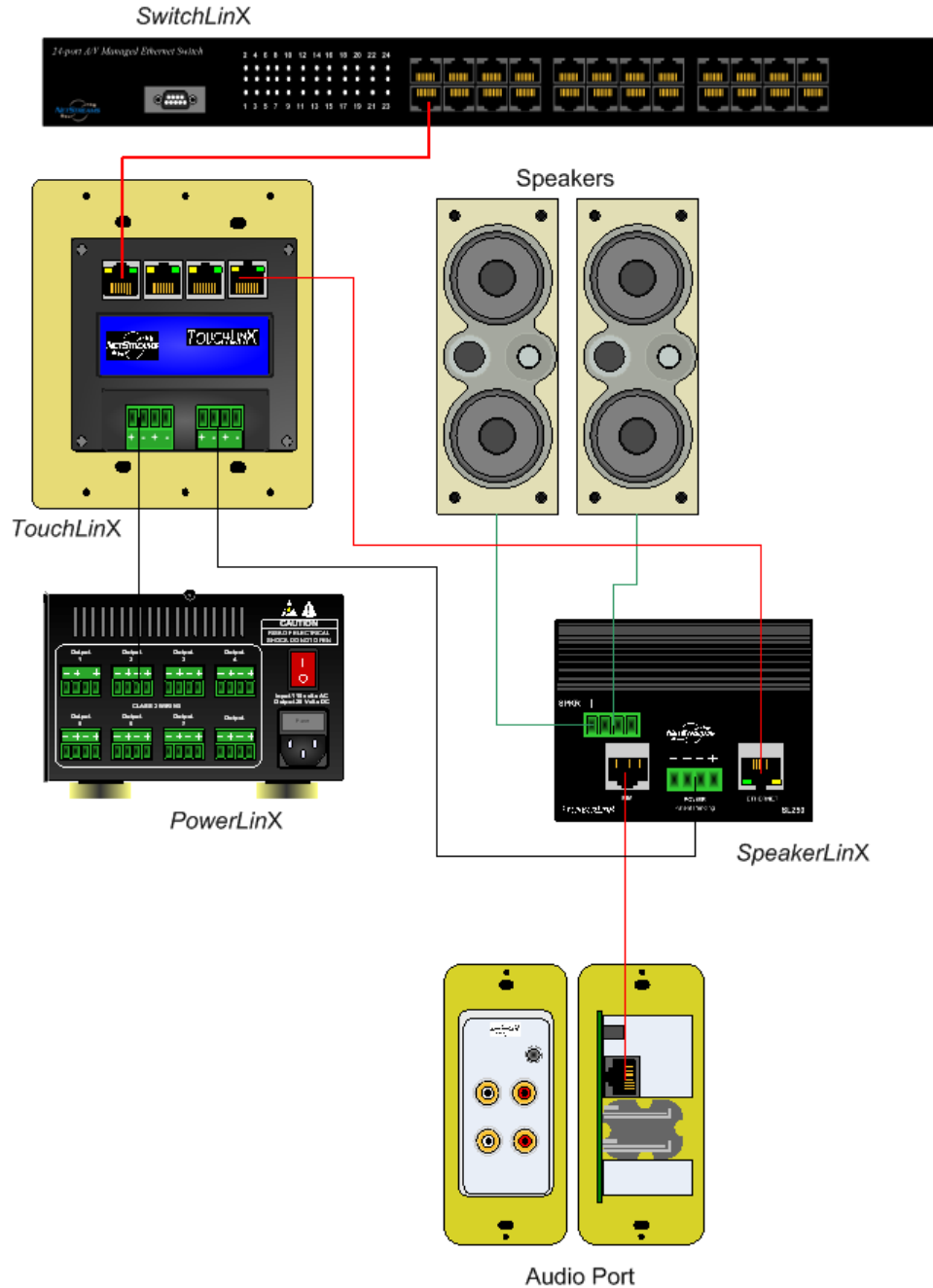


Figure 16-1 Example 1 - Single Room System

Example Configuration 2 - Three-Zone Wiring

Figure 16-2 shows another possible DigiLinX configuration.

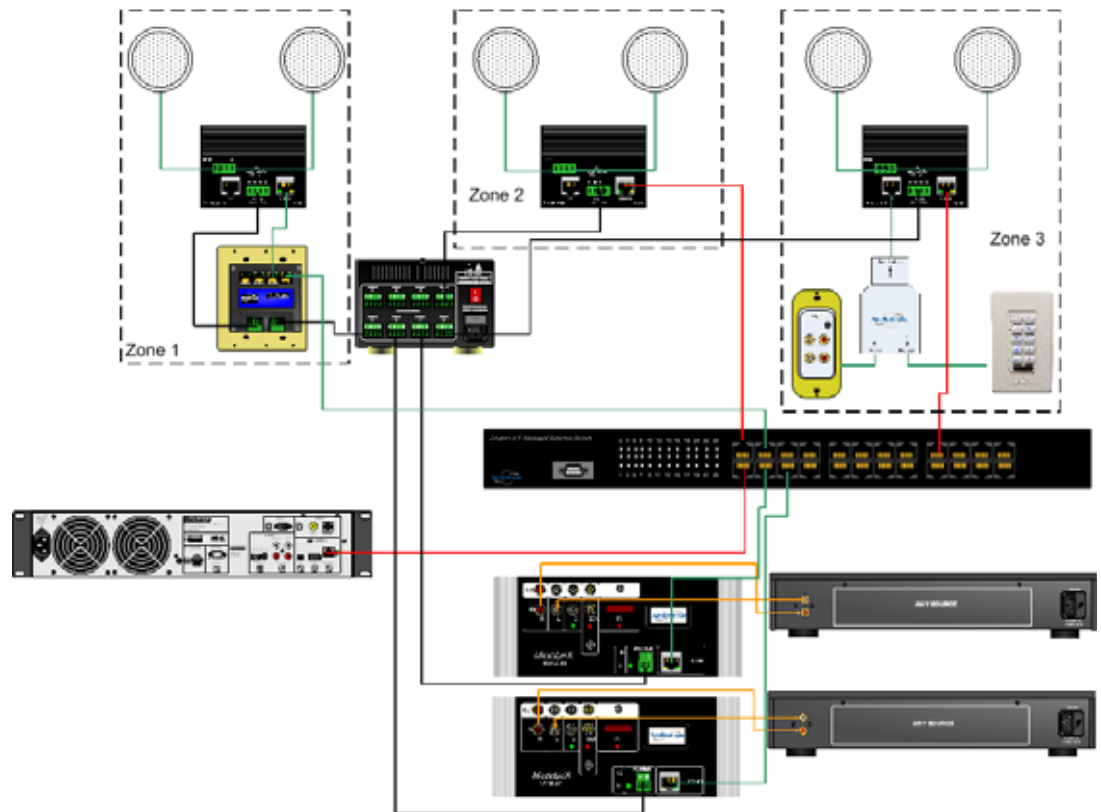


Figure 16-2 Example 2 - Three-Zone System

- Zone 1 - shows a *TouchLinX* wired to the switch and to the *SpeakerLinX*.
- Zone 2 - shows no user interface and a *SpeakerLinX*.
- Zone 3 - shows a *SpeakerLinX* attached to an Audio Port and a *KL201* using an *EIM* splitter.

Example Configuration 3 - Four - Zone Wiring

Figure 16-3 shows another possible DigiLinX configuration. This is a four-zone system.

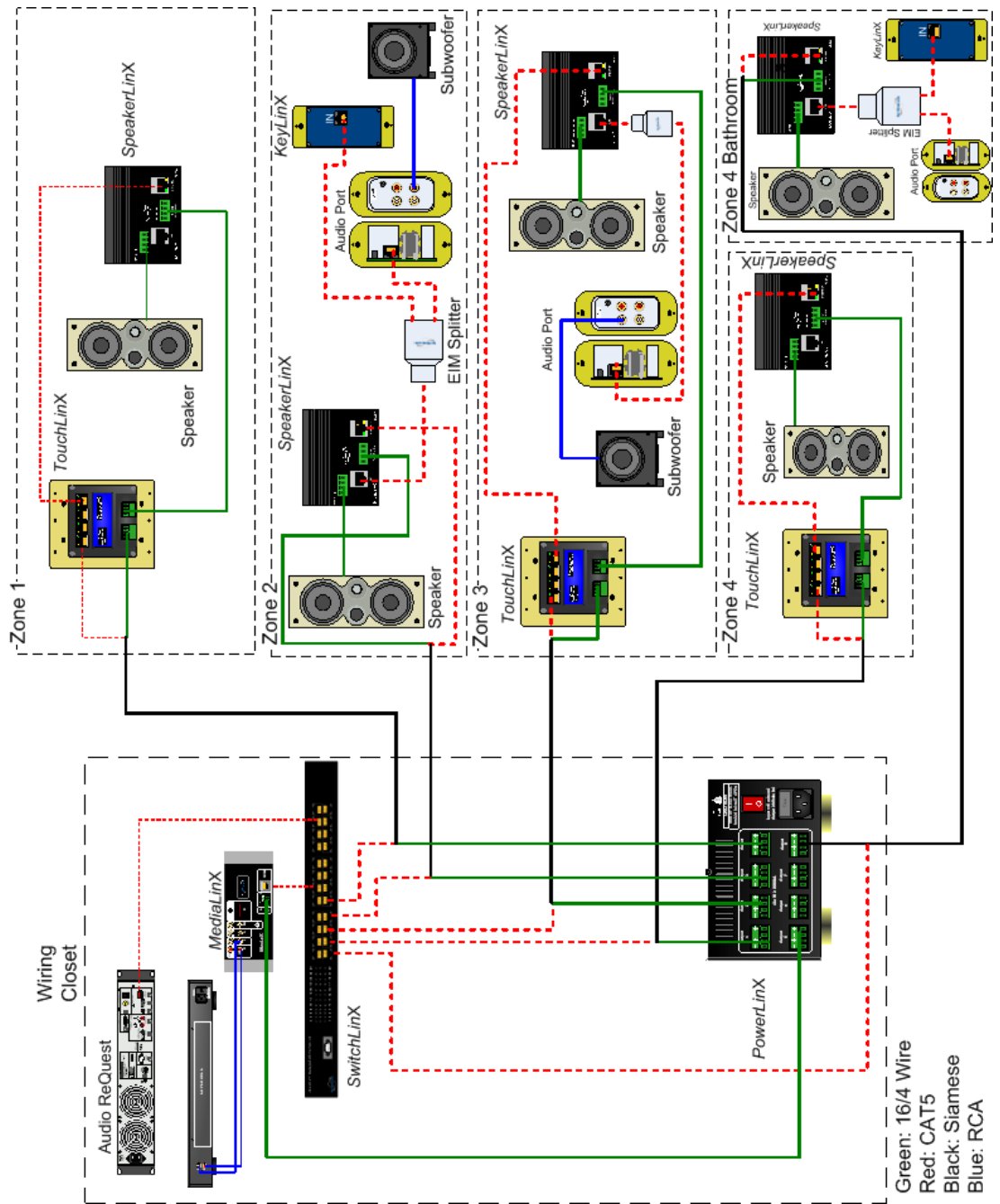


Figure 16-3 Example 3 - Four-Zone System

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